

3015	83.3263	84.6529	88.4059	86.2519	66.2519	66.2519
3016	83.2297	84.5563	88.3093	86.1187	66.1187	66.1187
3017	83.1355	84.4622	88.2151	85.9868	65.9868	65.9868
3018	83.043	84.3696	88.1226	85.8581	65.8561	65.8561
3019	82.9516	84.2783	88.0312	85.7266	65.7266	65.7266
3020	82.8612	84.1879	87.9408	85.5984	65.5984	65.5984
3021	82.7716	84.0982	87.8512	85.4713	65.4713	65.4713
3022	82.6827	84.0094	87.7623	85.3455	65.3455	65.3455
3023	82.5945	83.9211	87.6741	85.2209	65.2209	65.2209
3024	82.4171	83.6605	87.2043	85.0972	65.0972	65.0972
3025	82.2609	83.4897	86.9972	84.9747	64.9747	64.9747
3026	82.1157	83.3299	86.801	84.8533	64.8533	64.8533
3027	81.9761	83.1758	86.6111	84.7331	64.7331	64.7331
3028	81.8395	83.025	86.4254	84.6139	64.6139	64.6139
3029	83.5801	86.1227	94.3835	84.4993	64.4993	64.4993
3030	84.333	86.4665	94.3816	84.3854	64.3854	64.3854
3031	84.5461	88.2868	93.8697	84.2721	64.2721	64.2721
3032	84.5039	85.9429	93.2561	84.1596	64.1596	64.1596
3033	84.4451	85.8261	93.0294	84.048	64.048	64.048
3034	84.3781	85.701	92.7981	83.9374	63.9374	63.9374
3035	84.3003	85.5711	92.5654	83.8278	63.8278	63.8278
3036	84.2198	85.4381	92.3332	83.7191	63.7191	63.7191
3037	84.1264	85.266	92.062	83.6114	63.6114	63.6114
3038	84.0145	85.0481	91.7444	83.5046	63.5046	63.5046
3039	83.8908	84.8208	91.4198	83.3987	63.3987	63.3987
3040	83.7587	84.5878	91.0919	83.2937	63.2937	63.2937
3041	83.6203	84.3509	90.7625	83.1895	63.1895	63.1895
3042	83.4767	84.1113	90.4328	83.0863	63.0863	63.0863
3043	83.3875	84.0153	90.3459	82.984	62.984	62.984
3044	83.3308	83.956	90.3002	82.8827	62.8827	62.8827
3045	83.2918	83.9145	90.2721	82.7824	62.7824	62.7824
3046	83.2628	83.883	90.2536	82.6831	62.6831	62.6831
3047	83.2393	83.8571	90.2404	82.5847	62.5847	62.5847
3048	83.2191	83.8345	90.2304	82.4872	62.4872	62.4872
3049	83.1995	83.8132	90.2157	82.3907	62.3907	62.3907
3050	83.1796	83.7919	90.1974	82.2951	62.2951	62.2951
3051	83.1594	83.7706	90.1789	82.2004	62.2004	62.2004
3052	83.1394	83.7493	90.1605	82.1066	62.1066	62.1066
3053	83.1196	83.7282	90.1422	82.0137	62.0137	62.0137
3054	83.1	83.7075	90.1241	81.9217	61.9217	61.9217
3055	83.0809	83.6869	90.1062	81.8306	61.8306	61.8306
3056	83.061	83.6662	90.0863	81.7403	61.7403	61.7403
3057	83.0393	83.6432	90.0574	81.6509	61.6509	61.6509
3058	83.0165	83.6192	90.0276	81.5624	61.5624	61.5624
3059	82.8932	83.5948	89.9975	81.4747	61.4747	61.4747
3060	82.9696	83.5701	89.9675	81.3878	61.3878	61.3878
3061	82.946	83.5455	89.9378	81.3017	61.3017	61.3017
3062	82.9224	83.5209	89.9083	81.2165	61.2165	61.2165
3063	82.8989	83.4964	89.8792	81.1321	61.1321	61.1321
3064	82.8755	83.4721	89.8505	81.0484	61.0484	61.0484
3065	82.8522	83.448	89.8221	80.9656	60.9656	60.9656
3066	82.078	82.466	86.4308	80.8822	60.8822	60.8822
3067	81.6336	82.0262	86.0784	80.7996	60.7996	60.7996
3068	81.3451	81.7379	85.7942	80.7178	60.7178	60.7178
3069	81.14	81.5328	85.5881	80.6367	60.6367	60.6367



3070	80.9696	81.3604	85.3781	60.5564	60.5564	60.5564
3071	80.8225	81.2121	85.208	60.4769	60.4769	60.4769
3072	80.6922	81.0815	85.07	60.398	60.398	60.398
3073	80.5722	80.9612	84.945	60.3199	60.3199	60.3199
3074	80.4657	80.8559	84.8609	60.2426	60.2426	60.2426
3075	80.3626	80.763	84.7638	60.166	60.166	60.166
3076	80.2617	80.6525	84.6689	60.0901	60.0901	60.0901
3077	80.1581	80.546	84.5466	60.0149	60.0149	60.0149
3078	80.0527	80.4426	84.4432	59.9404	59.9404	59.9404
3079	79.9509	80.3408	84.3413	59.8666	59.8666	59.8666
3080	79.8502	80.2401	84.2406	59.7934	59.7934	59.7934
3081	79.7504	80.1403	84.1409	59.721	59.721	59.721
3082	79.6515	80.0414	84.042	59.6493	59.6493	59.6493
3083	79.5534	79.9433	83.9439	59.5782	59.5782	59.5782
3084	79.458	79.846	83.8465	59.5078	59.5078	59.5078
3085	79.3594	79.7493	83.7499	59.438	59.438	59.438
3086	79.2635	79.6534	83.6539	59.3689	59.3689	59.3689
3087	79.1682	79.5581	83.5587	59.3005	59.3005	59.3005
3088	79.0737	79.4636	83.4641	59.2327	59.2327	59.2327
3089	78.9717	79.2448	82.886	59.1653	59.1653	59.1653
3090	78.5985	78.9565	82.2095	59.0983	59.0983	59.0983
3091	78.288	78.6349	81.5206	59.0318	59.0318	59.0318
3092	77.9613	78.3035	80.8667	58.9657	58.9657	58.9657
3093	79.2583	90.5563	82.3884	65.3022	65.3022	89.4939
3094	79.9629	91.362	83.0124	68.4605	68.4605	92.7739
3095	78.9127	81.8236	80.9376	66.8339	66.8339	77.6387
3096	78.0128	78.5237	80.1725	63.1963	63.1963	63.1963
3097	77.4501	77.961	79.8098	61.8947	61.8947	61.8947
3098	77.0831	77.5781	79.2942	61.0126	61.0126	61.0126
3099	76.8373	77.3056	79.1541	60.8776	60.8776	60.8776
3100	76.6388	77.1024	78.9782	60.4899	60.4899	60.4899
3101	76.4667	76.9256	78.8291	60.3649	60.3649	60.3649
3102	76.3105	76.7642	78.6982	60.2669	60.2669	60.2669
3103	76.1295	76.6056	78.4073	60.1807	60.1807	60.1807
3104	75.9448	76.4406	78.1529	60.0998	60.0998	60.0998
3105	75.7583	76.2753	77.8983	60.0216	60.0216	60.0216
3106	75.5711	76.1105	77.6449	59.9449	59.9449	59.9449
3107	75.3853	75.9503	77.3977	59.8693	59.8693	59.8693
3108	75.1988	75.7907	77.1511	59.7945	59.7945	59.7945
3109	75.0059	75.6804	76.8474	59.7204	59.7204	59.7204
3110	76.5818	87.9974	79.5365	66.0823	66.0823	90.3924
3111	77.3756	88.4535	80.2409	69.0867	69.0867	92.9334
3112	77.974	88.8108	81.8243	70.5463	70.5463	93.5279
3113	78.5281	89.1452	83.1723	71.2741	71.2741	93.1828
3114	79.0733	89.6041	84.6918	71.6537	71.6537	92.439
3115	80.1416	91.5977	85.1227	71.8621	71.8621	91.5242
3116	80.6373	91.4565	86.3531	71.9728	71.9728	90.5137
3117	80.781	90.8688	86.2426	72.0097	72.0097	89.4011
3118	80.9429	90.7955	86.6821	71.9872	71.9872	88.2157
3119	81.3865	91.744	89.8984	71.9176	71.9176	86.9911
3120	81.5317	91.3801	89.8503	71.7889	71.7889	85.6445
3121	81.731	91.4275	90.7377	71.6218	71.6218	84.3086
3122	82.0458	91.9544	91.9521	71.4272	71.4272	82.9922
3123	82.4211	92.75	93.1539	71.1987	71.1987	81.6411
3124	82.7493	93.4378	94.124	70.9149	70.9149	80.1586



3125	83.0448	94.2235	95.2882	70.6047	70.6047	78.7321
3126	82.2914	90.5082	91.9033	69.2748	69.2748	72.4207
3127	81.2705	88.3818	89.7095	67.9124	67.9124	67.9124
3128	80.7715	89.373	90.3459	67.3142	67.3142	67.3142
3129	78.5494	78.5494	78.5494	67.0468	67.0468	67.0468
3130	77.3108	77.3108	77.3108	66.9257	66.9257	66.9257
3131	76.6186	76.6186	76.6186	66.8687	66.8687	66.8687
3132	76.23	76.23	76.23	66.8398	66.8398	66.8398
3133	76.0101	76.0101	76.0101	66.8231	66.8231	66.8231
3134	75.884	75.884	75.884	66.8119	66.8119	66.8119
3135	75.81	75.81	75.81	66.8029	66.8029	66.8029
3136	75.7649	75.7649	75.7649	66.795	66.795	66.795
3137	75.7359	75.7359	75.7359	66.7876	66.7876	66.7876
3138	75.7159	75.7159	75.7159	66.7803	66.7803	66.7803
3139	75.7008	75.7008	75.7008	66.7732	66.7732	66.7732
3140	75.6884	75.6884	75.6884	66.7661	66.7661	66.7661
3141	75.6776	75.6776	75.6776	66.759	66.759	66.759
3142	75.6677	75.6677	75.6677	66.7519	66.7519	66.7519
3143	75.6582	75.6582	75.6582	66.7448	66.7448	66.7448
3144	75.649	75.649	75.649	66.7377	66.7377	66.7377
3145	75.64	75.64	75.64	66.7307	66.7307	66.7307
3146	79.4588	95.0681	98.3846	66.7304	66.7304	66.7304
3147	81.6948	94.7008	98.5013	66.7302	66.7302	66.7302
3148	83.049	93.5653	98.007	66.7299	66.7299	66.7299
3149	83.9297	93.1514	98.426	66.7297	66.7297	66.7297
3150	84.5303	92.7127	98.7673	66.6854	66.6854	66.6854
3151	84.962	92.2147	99.0227	66.5898	66.5898	66.5898
3152	85.3256	91.8826	99.3693	66.4734	66.4734	66.4734
3153	85.6324	91.4402	99.6479	66.3489	66.3489	66.3489
3154	85.8804	90.8688	99.8633	66.2216	66.2216	66.2216
3155	86.1092	90.739	99.8995	66.0939	66.0939	66.0939
3156	86.3569	90.828	99.9221	65.9668	65.9668	65.9668
3157	86.9514	91.696	101.593	65.8413	65.8413	65.8413
3158	87.4059	91.9582	102.034	65.717	65.717	65.717
3159	87.2857	90.9921	100.344	65.5929	65.5929	65.5929
3160	87.0823	90.9618	99.3554	65.4697	65.4697	65.4697
3161	87.0126	90.1819	99.0922	65.3475	65.3475	65.3475
3162	87.0259	90.1232	98.9641	65.2265	65.2265	65.2265
3163	87.1078	90.2043	98.9956	65.1067	65.1067	65.1067
3164	87.2263	90.3221	99.0865	64.9881	64.9881	64.9881
3165	87.1455	89.8817	98.3061	64.8702	64.8702	64.8702
3166	86.8324	89.0254	96.9908	64.7529	64.7529	64.7529
3167	86.3844	88.0494	95.5688	64.6361	64.6361	64.6361
3168	85.9929	87.3997	94.852	64.5202	64.5202	64.5202
3169	85.7215	87.0511	94.157	64.4053	64.4053	64.4053
3170	85.5138	86.7687	93.733	64.2913	64.2913	64.2913
3171	85.3355	86.5075	93.334	64.1783	64.1783	64.1783
3172	85.1481	86.1694	92.8542	64.0662	64.0662	64.0662
3173	84.953	85.8274	92.374	63.9551	63.9551	63.9551
3174	84.7512	85.4821	91.894	63.8448	63.8448	63.8448
3175	84.5691	85.1983	91.5217	63.7355	63.7355	63.7355
3176	84.4608	85.086	91.4305	63.6272	63.6272	63.6272
3177	83.0454	83.6318	85.2156	63.5176	63.5176	63.5176
3178	82.1836	82.7775	84.331	63.409	63.409	63.409
3179	82.9812	83.6022	89.9687	63.3038	63.3038	63.3038



3180	83.4084	84.0234	90.4106	63.1996	63.1996	63.1996
3181	83.6286	84.2424	90.6447	63.0964	63.0964	63.0964
3182	83.7386	84.3502	90.7574	62.9942	62.9942	62.9942
3183	83.7878	84.3974	90.8094	62.893	62.893	62.893
3184	83.8043	84.4118	90.8285	62.7927	62.7927	62.7927
3185	83.8033	84.4088	90.83	62.6934	62.6934	62.6934
3186	83.7885	84.3918	90.8029	62.5951	62.5951	62.5951
3187	84.118	95.4793	87.1995	68.9189	68.9189	93.1876
3188	84.2752	95.6831	87.2737	72.0321	72.0321	96.3438
3189	84.3069	95.5615	87.2173	73.7099	73.7099	97.7987
3190	84.3034	95.2364	87.3804	74.6672	74.6672	98.1556
3191	82.1679	82.402	82.5986	69.4883	69.4883	70.3766
3192	81.5367	82.2177	84.1504	67.0165	67.0165	67.0165
3193	81.1347	81.7928	83.8324	65.8991	65.8991	65.8991
3194	80.8586	81.5016	83.6358	65.3554	65.3554	65.3554
3195	80.653	81.2813	83.5123	65.055	65.055	65.055
3196	80.5193	81.1231	83.5803	64.8583	64.8583	64.8583
3197	80.4031	81.0029	83.5866	64.7062	64.7062	64.7062
3198	80.3001	80.8967	83.572	64.5735	64.5735	64.5735
3199	80.188	80.7838	83.4983	64.4498	64.4498	64.4498
3200	80.0287	80.6274	83.2203	64.3304	64.3304	64.3304
3201	79.8749	80.4738	83.0666	64.2135	64.2135	64.2135
3202	79.7246	80.3233	82.9163	64.0982	64.0982	64.0982
3203	79.5207	80.1338	82.5011	63.9842	63.9842	63.9842
3204	79.2796	79.9301	82.0173	63.8712	63.8712	63.8712
3205	79.0281	79.7376	81.5475	63.7592	63.7592	63.7592
3206	78.7769	79.5886	81.1144	63.6482	63.6482	63.6482
3207	78.2819	78.8473	79.6747	63.5378	63.5378	63.5378
3208	77.7471	78.1862	78.5517	63.8518	63.8518	65.516
3209	77.6043	78.4487	79.1515	64.3456	64.3456	67.5457
3210	77.6881	78.9378	79.978	64.9453	64.9453	69.6813
3211	77.4765	78.4206	79.2064	64.9326	64.9326	68.5104
3212	76.9112	77.2473	77.5271	64.3462	64.3462	65.8201
3213	78.5387	76.8435	77.2895	63.7358	63.7358	63.7358
3214	76.7098	77.6031	78.946	63.4163	63.4163	63.4163
3215	76.7333	77.6185	78.9821	63.2201	63.2201	63.2201
3216	78.5048	89.2407	82.7796	68.9916	68.9916	91.4241
3217	79.6272	90.1089	84.6731	71.507	71.507	92.8095
3218	80.8116	91.8517	87.7267	72.6192	72.6192	92.7881
3219	81.8083	93.0172	89.8128	73.1136	73.1136	92.1527
3220	82.151	92.5212	89.607	73.3196	73.3196	91.2234
3221	82.2649	91.9881	89.7337	73.3888	73.3888	90.0995
3222	82.8617	92.8437	90.8838	73.3329	73.3329	88.9099
3223	82.9533	93.0223	91.3556	73.2272	73.2272	87.8104
3224	83.1101	92.8356	91.7278	73.0668	73.0668	86.2549
3225	83.3709	93.0866	92.8866	72.8999	72.8699	84.908
3226	83.7423	93.9032	94.1591	72.6502	72.6502	83.5964
3227	84.0802	94.6114	95.1742	72.3766	72.3766	82.1387
3228	84.3791	95.3454	96.2462	72.065	72.065	80.676
3229	84.2131	94.193	95.4517	71.3013	71.3013	77.1428
3230	82.9547	89.2654	90.7836	69.5318	69.5318	69.5318
3231	82.3244	90.2802	91.4068	68.7552	68.7552	68.7552
3232	80.0331	80.0331	80.0331	68.4096	68.4096	68.4096
3233	78.7558	78.7558	78.7558	68.2542	68.2542	68.2542
3234	78.0419	78.0419	78.0419	68.182	68.182	68.182



3235	77.6412	77.6412	77.6412	68.1463	68.1463	68.1463
3236	77.4144	77.4144	77.4144	68.1266	68.1266	68.1266
3237	77.2842	77.2842	77.2842	68.1138	68.1138	68.1138
3238	77.2078	77.2078	77.2078	68.1041	68.1041	68.1041
3239	77.1612	77.1612	77.1612	68.0957	68.0957	68.0957
3240	77.1313	77.1313	77.1313	68.0879	68.0879	68.0879
3241	77.1105	77.1105	77.1105	68.0804	68.0804	68.0804
3242	77.0948	77.0948	77.0948	68.073	68.073	68.073
3243	77.082	77.082	77.082	68.0656	68.0656	68.0656
3244	77.0708	77.0708	77.0708	68.0583	68.0583	68.0583
3245	77.0605	77.0605	77.0605	68.0509	68.0509	68.0509
3246	77.0506	77.0506	77.0506	68.0436	68.0436	68.0436
3247	77.0411	77.0411	77.0411	68.0363	68.0363	68.0363
3248	77.0316	77.0316	77.0316	68.029	68.029	68.029
3249	80.8631	97.6054	100.78	68.0283	68.0283	68.0283
3250	83.0981	97.2335	100.845	68.0276	68.0276	68.0276
3251	84.4444	95.6834	99.7797	68.0269	68.0269	68.0269
3252	85.3167	95.0961	100.009	68.0262	68.0262	68.0262
3253	85.9079	94.4884	100.213	67.9775	67.9775	67.9775
3254	86.3309	93.9758	100.459	67.8731	67.8731	67.8731
3255	86.6758	93.5326	100.725	67.7459	67.7459	67.7459
3256	86.9872	93.1458	101.016	67.6099	67.6099	67.6099
3257	87.2353	92.5786	101.232	67.471	67.471	67.471
3258	87.4517	92.1651	101.338	67.3316	67.3316	67.3316
3259	87.6632	92.1837	101.259	67.1928	67.1928	67.1928
3260	88.1015	92.7281	102.279	67.0554	67.0554	67.0554
3261	88.8017	93.6985	104.043	66.9199	66.9199	66.9199
3262	88.8362	92.8968	102.552	66.7848	66.7848	66.7848
3263	88.5376	91.867	100.898	66.6503	66.6503	66.6503
3264	88.411	91.8244	100.568	66.517	66.517	66.517
3265	88.3773	91.4818	100.343	66.385	66.385	66.385
3266	88.4273	91.524	100.33	66.2542	66.2542	66.2542
3267	88.5246	91.6206	100.375	66.1248	66.1248	66.1248
3268	88.4734	91.2633	99.77	65.9962	65.9962	65.9962
3269	88.1388	90.3461	98.3236	65.8683	65.8683	65.8683
3270	87.6449	89.2733	96.7617	65.7411	65.7411	65.7411
3271	87.232	88.8247	95.85	65.6147	65.6147	65.6147
3272	86.9366	88.2436	95.3067	65.4895	65.4895	65.4895
3273	86.7036	87.9284	94.8358	65.3653	65.3653	65.3653
3274	86.4851	87.5768	94.3277	65.2421	65.2421	65.2421
3275	86.2599	87.1855	93.7802	65.12	65.12	65.12
3276	86.0284	86.7922	93.2349	64.9988	64.9988	64.9988
3277	85.8064	86.4361	92.7568	64.8786	64.8786	64.8786
3278	85.673	86.2984	92.6416	64.7596	64.7596	64.7596
3279	85.588	86.2092	92.5743	64.6418	64.6418	64.6418
3280	85.748	96.7088	88.6311	70.7759	70.7759	94.4321
3281	88.091	96.8551	90.191	73.4773	73.4773	96.0635
3282	86.4387	96.9518	91.3891	74.6831	74.6831	96.131
3283	87.1023	98.018	93.7034	75.2335	75.2335	95.5617
3284	85.0786	86.0397	87.2543	71.3564	71.3564	74.8951
3285	84.1015	84.9948	87.131	68.8017	68.8017	68.8017
3286	83.4934	84.3867	88.5229	67.64	67.64	67.64
3287	83.0849	83.9782	86.1144	67.0684	67.0684	67.0684
3288	82.7853	83.6786	85.8148	66.7472	66.7472	66.7472
3289	82.5453	83.4386	85.5748	66.5326	66.5326	66.5326



## SIMULACIONES, CÁLCULOS Y GRÁFICAS

ALSTOM

00011688

3290	82.4631	83.4099	85.9161	66.3641	66.3641	66.3641
3291	82.3615	83.315	85.866	66.2157	66.2157	66.2157
3292	82.2506	83.2109	85.7866	66.0766	66.0766	66.0766
3293	82.1358	83.1028	85.7133	65.9422	65.9422	65.9422
3294	81.9965	82.9576	85.6378	65.8104	65.8104	65.8104
3295	81.8162	82.7568	85.2313	65.6803	65.6803	65.6803
3296	81.6506	82.5912	85.0657	65.5518	65.5518	65.5518
3297	81.4934	82.4341	84.9086	65.4245	65.4245	65.4245
3298	81.3414	82.282	84.7565	65.2985	65.2985	65.2985
3299	81.1925	82.1331	84.6076	65.1737	65.1737	65.1737
3300	81.0308	81.983	84.3955	65.05	65.05	65.05
3301	80.812	81.7177	83.9575	64.9274	64.9274	64.9274
3302	80.572	81.4758	83.5238	64.8059	64.8059	64.8059
3303	80.2512	81.0856	82.7794	64.6853	64.6853	64.6853
3304	79.3466	79.4724	79.7279	64.5647	64.5647	64.5647
3305	78.9977	79.513	80.1624	64.9277	64.9277	66.8209
3306	79.3978	80.87	82.7251	65.9459	65.9459	71.3536
3307	79.6897	81.4589	83.3723	66.6581	66.6581	73.0209
3308	79.8203	81.7594	83.4933	67.1318	67.1318	73.9495
3309	79.8737	82.0043	83.557	67.509	67.509	74.7657
3310	79.8847	82.1675	83.5915	67.8162	67.8162	75.3677
3311	79.8048	81.8891	83.481	67.922	67.922	75.0889
3312	79.706	81.7532	83.3765	68.0159	68.0159	75.1108
3313	79.5989	81.6145	83.2677	68.1026	68.1026	75.1253
3314	79.4888	81.4774	83.1591	68.1842	68.1842	75.1343
3315	79.3772	81.3388	83.0491	68.2616	68.2616	75.1393
3316	79.2912	81.3838	82.9687	68.4331	68.4331	75.8182
3317	79.1982	81.2908	82.8757	68.5707	68.5707	75.7538
3318	79.1019	81.1945	82.7794	68.6934	68.6934	75.8764
3319	79.004	81.0986	82.6815	68.809	68.809	75.9921
3320	78.9056	80.9983	82.5831	68.9211	68.9211	76.1042
3321	78.8073	80.9	82.4848	69.0311	69.0311	76.2142
3322	78.7094	80.802	82.3869	69.1397	69.1397	76.3227
3323	78.612	80.7046	82.2895	69.247	69.247	76.43
3324	78.5151	80.6078	82.1926	69.3532	69.3532	76.5362
3325	78.4115	80.4671	82.0833	69.4398	69.4398	76.5508
3326	78.2902	80.2063	81.9646	69.4425	69.4425	76.1984
3327	78.1608	79.9442	81.8426	69.4024	69.4024	75.8028
3328	78.0263	79.6769	81.7155	69.3369	69.3369	75.3817
3329	77.5658	78.7264	80.1888	68.8907	68.8907	73.1537
3330	76.8605	77.4762	78.252	68.193	68.193	70.4544
3331	76.0017	76.0725	76.1616	67.3502	67.3502	67.6101
3332	78.9	90.1573	86.9408	71.8561	71.8561	90.9576
3333	80.2711	90.6931	87.7261	73.7596	73.7596	91.7573
3334	80.9475	90.731	88.4151	74.524	74.524	91.3841
3335	81.6085	91.7358	89.7501	74.784	74.784	90.4716
3336	82.0911	92.2067	90.5112	74.7967	74.7967	89.2914
3337	82.3294	92.0608	90.8673	74.6774	74.6774	87.9582
3338	82.6313	92.3078	92.068	74.4891	74.4891	86.6232
3339	83.0264	93.1481	93.364	74.2682	74.2682	85.3084
3340	83.3891	93.8889	94.4271	73.9867	73.9867	83.8543
3341	83.7042	94.6274	95.4949	73.6642	73.6642	82.3732
3342	83.8687	94.0064	95.2374	73.0036	73.0036	79.392
3343	82.385	88.6533	90.1991	71.1597	71.1597	71.3264
3344	81.687	89.512	90.6697	70.285	70.285	70.285



## SIMULACIONES, CÁLCULOS Y GRÁFICAS

ALSTOM

09011689

3345	79.3591	79.3591	79.3591	69.8964	69.8964	69.8964
3346	78.0615	78.0615	78.0615	69.722	69.722	69.722
3347	77.3364	77.3364	77.3364	69.6414	69.6414	69.6414
3348	76.9295	76.9295	76.9295	69.6019	69.6019	69.6019
3349	76.6994	76.6994	76.6994	69.5803	69.5803	69.5803
3350	76.5675	76.5675	76.5675	69.5665	69.5665	69.5665
3351	76.4902	76.4902	76.4902	69.5562	69.5562	69.5562
3352	76.4432	76.4432	76.4432	69.5475	69.5475	69.5475
3353	76.4131	76.4131	76.4131	69.5393	69.5393	69.5393
3354	76.3923	76.3923	76.3923	69.5315	69.5315	69.5315
3355	76.3767	76.3767	76.3767	69.5238	69.5238	69.5238
3356	76.3641	76.3641	76.3641	69.5162	69.5162	69.5162
3357	76.353	76.353	76.353	69.5085	69.5085	69.5085
3358	76.3428	76.3428	76.3428	69.5009	69.5009	69.5009
3359	76.3332	76.3332	76.3332	69.4933	69.4933	69.4933
3360	76.3238	76.3238	76.3238	69.4857	69.4857	69.4857
3361	76.3145	76.3145	76.3145	69.4782	69.4782	69.4782
3362	80.1471	97.1185	100.255	69.477	69.477	69.477
3363	82.3829	98.7474	100.32	69.4758	69.4758	69.4758
3364	83.7301	95.2892	99.3319	69.4746	69.4746	69.4746
3365	84.6009	94.4945	99.3344	69.4734	69.4734	69.4734
3366	85.1922	93.8549	99.5127	69.4198	69.4198	69.4198
3367	85.6175	93.3447	99.7616	69.3053	69.3053	69.3053
3368	85.9641	92.8823	100.015	69.166	69.166	69.166
3369	86.2786	92.4985	100.31	69.0171	69.0171	69.0171
3370	86.5347	91.9501	100.535	68.865	68.865	68.865
3371	86.7582	91.4865	100.668	68.7123	68.7123	68.7123
3372	86.9726	91.5101	100.594	68.5603	68.5603	68.5603
3373	87.3842	91.9867	101.467	68.4098	68.4098	68.4098
3374	88.0722	92.9467	103.225	68.2611	68.2611	68.2611
3375	88.1732	92.3081	102.027	68.1132	68.1132	68.1132
3376	87.8782	91.216	100.255	67.966	67.966	67.966
3377	87.7525	90.9758	99.927	67.8201	67.8201	67.8201
3378	87.7226	90.8365	99.7049	67.6756	67.6756	67.6756
3379	87.7738	90.8706	99.6614	67.5324	67.5324	67.5324
3380	87.8738	90.9699	99.7296	67.3907	67.3907	67.3907
3381	87.8685	90.7481	99.2937	67.2501	67.2501	67.2501
3382	87.5685	89.8542	97.8979	67.1103	67.1103	67.1103
3383	87.1049	88.8233	96.3878	66.9712	66.9712	66.9712
3384	86.6748	88.0841	95.3411	66.8331	66.8331	66.8331
3385	86.3756	87.7022	94.8026	66.6963	66.6963	66.6963
3386	86.1464	87.394	94.3446	66.5606	66.5606	66.5606
3387	85.9466	87.0951	93.8995	66.4261	66.4261	66.4261
3388	85.7405	86.7314	93.3876	66.2927	66.2927	66.2927
3389	85.528	86.3649	92.8764	66.1604	66.1604	66.1604
3390	85.3092	85.9954	92.3653	66.0293	66.0293	66.0293
3391	85.1441	85.7718	92.1027	65.8993	65.8993	65.8993
3392	85.0433	85.667	92.0192	65.7706	65.7706	65.7706
3393	84.9777	85.5975	91.9706	65.6431	65.6431	65.6431
3394	84.9316	85.5475	91.9411	65.5168	65.5168	65.5168
3395	84.894	85.5071	91.911	65.3917	65.3917	65.3917
3396	84.8599	85.4709	91.8796	65.2678	65.2678	65.2678
3397	84.828	85.4369	91.8503	65.1452	65.1452	65.1452
3398	84.7973	85.4042	91.8223	65.0236	65.0236	65.0236
3399	84.7664	85.3712	91.7895	64.9033	64.9033	64.9033



## SIMULACIONES, CÁLCULOS Y GRÁFICAS

ALSTOM

00011690

3400	84.7321	85.3348	91.7426	84.784	64.784	64.784
3401	84.6962	85.2967	91.8943	64.666	64.666	64.666
3402	84.6593	85.2579	91.8455	64.549	64.549	64.549
3403	84.6221	85.2186	91.5964	64.4331	64.4331	64.4331
3404	83.2134	83.813	85.3964	64.3161	64.3161	64.3161
3405	82.3696	82.7591	84.5425	64.2001	64.2001	64.2001
3406	81.8073	82.2069	83.9902	64.0853	64.0853	64.0853
3407	81.4192	81.8188	83.6021	63.9715	63.9715	63.9715
3408	81.1208	81.5204	83.3037	63.8588	63.8588	63.8588
3409	80.8717	81.2713	83.0546	63.7471	63.7471	63.7471
3410	80.6499	81.0495	82.8329	63.6365	63.6365	63.6365
3411	80.4436	80.8432	82.6266	63.5269	63.5269	63.5269
3412	80.2463	80.6459	82.4293	63.4183	63.4183	63.4183
3413	80.0545	80.4541	82.2375	63.3107	63.3107	63.3107
3414	79.8663	80.2659	82.0493	63.2042	63.2042	63.2042
3415	79.6807	80.0803	81.8636	63.0986	63.0986	63.0986
3416	79.497	79.8966	81.6799	62.994	62.994	62.994
3417	81.053	92.3578	84.1761	69.2948	69.2948	93.4948
3418	81.8902	93.2901	84.9345	72.4141	72.4141	96.7274
3419	82.3226	93.737	85.284	74.1535	74.1535	98.4839
3420	82.4842	93.5823	85.3546	75.1847	75.1847	99.059
3421	82.7119	93.5553	86.3216	75.7872	75.7872	98.8045
3422	83.0556	93.6782	87.6923	76.1231	76.1231	98.0489
3423	83.4752	94.0037	89.0878	76.3085	76.3085	97.0969
3424	84.4694	95.937	92.4735	76.4065	76.4065	96.0577
3425	84.8985	95.705	92.601	76.4435	76.4435	94.9644
3426	84.9843	95.0671	92.4562	76.423	76.423	93.7874
3427	85.1278	94.9954	92.8984	76.3512	76.3512	92.5502
3428	85.5299	95.8739	94.0366	76.2358	76.2358	91.2769
3429	85.6387	95.4737	93.9523	76.0637	76.0637	89.887
3430	85.8121	95.5068	94.8427	75.855	75.855	88.511
3431	86.1011	96.0215	96.0313	75.6196	75.6196	87.1557
3432	86.4463	96.7846	97.1959	75.3499	75.3499	85.7605
3433	86.7448	97.4463	98.1428	75.0262	75.0262	84.2401
3434	87.0112	98.2029	99.2777	74.6762	74.6762	82.774
3435	86.193	94.3018	95.7052	73.2723	73.2723	76.2532
3436	85.1845	92.3154	93.6336	71.9081	71.9081	71.9081
3437	84.6608	93.3018	94.2653	71.3085	71.3085	71.3085
3438	82.4355	82.4355	82.4355	71.0401	71.0401	71.0401
3439	81.1945	81.1945	81.1945	70.9183	70.9183	70.9183
3440	80.5006	80.5006	80.5006	70.8605	70.8605	70.8605
3441	80.1106	80.1106	80.1106	70.8308	70.8308	70.8308
3442	79.8895	79.8895	79.8895	70.8134	70.8134	70.8134
3443	79.7623	79.7623	79.7623	70.8013	70.8013	70.8013
3444	79.6871	79.6871	79.6871	70.7916	70.7916	70.7916
3445	79.641	79.641	79.641	70.783	70.783	70.783
3446	79.611	79.611	79.611	70.7748	70.7748	70.7748
3447	79.5899	79.5899	79.5899	70.7668	70.7668	70.7668
3448	79.5738	79.5738	79.5738	70.7589	70.7589	70.7589
3449	79.5604	79.5604	79.5604	70.751	70.751	70.751
3450	79.5486	79.5486	79.5486	70.7431	70.7431	70.7431
3451	79.5376	79.5376	79.5376	70.7353	70.7353	70.7353
3452	79.5272	79.5272	79.5272	70.7275	70.7275	70.7275
3453	79.5169	79.5169	79.5169	70.7196	70.7196	70.7196
3454	79.5069	79.5069	79.5069	70.7118	70.7118	70.7118






ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011631

3455	83.3327	98.8764	102.252	70.7102	70.7102	70.7102
3456	85.5841	98.5009	102.313	70.7086	70.7086	70.7086
3457	86.9158	97.3976	101.861	70.707	70.707	70.707
3458	87.7947	96.982	102.278	70.7054	70.7054	70.7054
3459	88.3846	96.5349	102.609	70.6478	70.6478	70.6478
3460	88.8008	96.035	102.861	70.5251	70.5251	70.5251
3461	89.1425	95.6782	103.183	70.3758	70.3758	70.3758
3462	89.4246	95.2107	103.439	70.2163	70.2163	70.2163
3463	89.6469	94.8135	103.629	70.0533	70.0533	70.0533
3464	89.8498	94.4745	103.602	69.8897	69.8897	69.8897
3465	90.081	94.5594	103.675	69.727	69.727	69.727
3466	90.6547	95.4066	105.325	69.566	69.566	69.566
3467	91.0625	95.5909	105.646	69.4064	69.4064	69.4064
3468	90.9048	94.5865	103.918	69.2475	69.2475	69.2475
3469	90.6809	93.958	102.946	69.0898	69.0898	69.0898
3470	90.5874	93.7499	102.655	68.9335	68.9335	68.9335
3471	90.5787	93.6759	102.511	68.7787	68.7787	68.7787
3472	90.6373	93.7337	102.516	68.6254	68.6254	68.6254
3473	90.7321	93.8277	102.56	68.4736	68.4736	68.4736
3474	90.5065	93.0444	101.301	68.3227	68.3227	68.3227
3475	90.0731	92.0278	99.7918	68.1727	68.1727	68.1727
3476	89.5487	90.9933	98.3171	68.0236	68.0236	68.0236
3477	89.1892	90.5488	97.7116	67.8758	67.8758	67.8758
3478	88.9178	90.1959	97.2043	67.7293	67.7293	67.7293
3479	88.6934	89.8932	96.7533	67.5841	67.5841	67.5841
3480	88.4675	89.5147	96.2237	67.4401	67.4401	67.4401
3481	88.2361	89.1268	95.6888	67.2974	67.2974	67.2974
3482	87.9991	88.7376	95.1586	67.1558	67.1558	67.1558
3483	87.7831	88.4122	94.7355	67.0155	67.0155	67.0155
3484	87.646	88.2711	94.616	66.8765	66.8765	66.8765
3485	87.5523	88.1734	94.5393	66.7389	66.7389	66.7389
3486	87.4825	88.0997	94.4861	66.6025	66.6025	66.6025
3487	87.4249	88.0387	94.4409	66.4675	66.4675	66.4675
3488	87.3716	87.9834	94.3904	66.3338	66.3338	66.3338
3489	87.321	87.9307	94.3425	66.2013	66.2013	66.2013
3490	87.2722	87.8797	94.2962	66.0701	66.0701	66.0701
3491	87.2244	87.83	94.251	65.9402	65.9402	65.9402
3492	87.1734	87.7788	94.1883	65.8115	65.8115	65.8115
3493	87.1204	87.7217	94.1229	65.684	65.684	65.684
3494	87.0864	87.6657	94.0568	65.5577	65.5577	65.5577
3495	87.0121	87.6093	93.9906	65.4326	65.4326	65.4326
3496	85.6143	85.9937	87.9072	65.3065	65.3065	65.3065
3497	84.7316	85.1312	86.9145	65.1816	65.1816	65.1816
3498	84.1559	84.5555	86.3389	65.0578	65.0578	65.0578
3499	83.7476	84.1471	85.9305	64.9352	64.9352	64.9352
3500	83.4306	83.8301	85.6135	64.8138	64.8138	64.8138
3501	83.1678	83.5643	85.3663	64.6934	64.6934	64.6934
3502	82.9721	83.3403	85.3274	64.5743	64.5743	64.5743
3503	82.8196	83.1732	85.3421	64.4564	64.4564	64.4564
3504	82.6978	83.0433	85.3993	64.3396	64.3396	64.3396
3505	84.0469	94.785	87.0803	70.4521	70.4521	94.019
3506	84.8615	96.2538	87.9201	73.6455	73.6455	97.9519
3507	85.2706	96.6838	88.2403	75.4113	75.4113	99.722
3508	85.4085	96.5133	88.2807	76.4494	76.4494	100.333
3509	85.6264	96.4593	89.301	77.03	77.03	99.9902



## SIMULACIONES, CÁLCULOS Y GRÁFICAS

ALSTOM

00011692

3510	85.958	96.5489	90.6772	77.3282	77.3282	99.122
3511	86.4692	97.1568	92.4863	77.4724	77.4724	98.0682
3512	85.3205	88.5842	89.2947	74.8189	74.8189	84.0794
3513	84.1044	85.0079	87.2292	71.408	71.408	71.408
3514	83.3354	84.2308	86.3436	69.8735	69.8735	69.8735
3515	82.8182	83.7278	85.7319	69.1336	69.1336	69.1336
3518	82.4368	83.3609	85.2581	68.7306	68.7306	68.7306
3517	82.1493	83.0744	84.9619	68.4711	68.4711	68.4711
3518	82.0029	82.9097	85.1586	68.2732	68.2732	68.2732
3519	81.8612	82.772	85.055	68.1022	68.1022	68.1022
3520	81.7232	82.6381	84.955	67.9434	67.9434	67.9434
3521	81.5883	82.5072	84.8581	67.7905	67.7905	67.7905
3522	81.4563	82.3796	84.7645	67.641	67.641	67.641
3523	81.264	82.1679	84.3929	67.4936	67.4936	67.4936
3524	81.0885	81.9924	84.2174	67.3479	67.3479	67.3479
3525	80.9227	81.8266	84.0518	67.2038	67.2038	67.2038
3526	80.7626	81.6666	83.8918	67.061	67.061	67.061
3527	80.6062	81.5101	83.7351	66.9197	66.9197	66.9197
3528	80.4522	81.3581	83.5812	66.7796	66.7796	66.7796
3529	80.3168	83.9161	84.7437	68.9425	68.9425	77.9175
3530	83.0185	94.2089	91.0077	72.628	72.628	91.6409
3531	84.0076	94.3543	91.4641	74.169	74.169	92.0302
3532	84.4618	94.1549	91.9312	74.769	74.769	91.445
3533	85.0582	95.2716	93.3255	74.9531	74.9531	90.4679
3534	85.4223	95.4612	93.8132	74.9271	74.9271	89.2383
3535	85.6263	95.3476	94.2998	74.7894	74.7894	87.9055
3536	85.9082	95.6521	95.4812	74.592	74.592	86.561
3537	86.2833	96.4724	96.7572	74.3612	74.3612	85.2382
3538	86.6078	97.1616	97.7422	74.0706	74.0706	83.7568
3539	86.8908	97.8881	98.8129	73.7425	73.7425	82.2828
3540	86.6216	96.3439	97.6224	72.8789	72.8789	78.3263
3541	85.3846	91.8524	93.3332	71.1571	71.1571	71.1571
3542	84.7655	92.8158	93.9198	70.4011	70.4011	70.4011
3543	82.4796	82.4796	82.4796	70.0646	70.0646	70.0646
3544	81.205	81.205	81.205	69.9131	69.9131	69.9131
3545	80.4924	80.4924	80.4924	69.8425	69.8425	69.8425
3546	80.092	80.092	80.092	69.8074	69.8074	69.8074
3547	79.8651	79.8651	79.8651	69.7879	69.7879	69.7879
3548	79.7346	79.7346	79.7346	69.7751	69.7751	69.7751
3549	79.6578	79.6578	79.6578	69.7653	69.7653	69.7653
3550	79.6106	79.6106	79.6106	69.7567	69.7567	69.7567
3551	79.5801	79.5801	79.5801	69.7488	69.7488	69.7488
3552	79.5587	79.5587	79.5587	69.7411	69.7411	69.7411
3553	79.5424	79.5424	79.5424	69.7335	69.7335	69.7335
3554	79.529	79.529	79.529	69.726	69.726	69.726
3555	79.5171	79.5171	79.5171	69.7185	69.7185	69.7185
3556	79.5061	79.5061	79.5061	69.711	69.711	69.711
3557	79.4956	79.4956	79.4956	69.7036	69.7036	69.7036
3558	79.4854	79.4854	79.4854	69.6961	69.6961	69.6961
3559	79.4753	79.4753	79.4753	69.6886	69.6886	69.6886
3560	83.3055	99.8826	103.085	69.6872	69.6872	69.6872
3561	85.5394	99.5097	103.149	69.6858	69.6858	69.6858
3562	86.8846	97.893	102.028	69.6843	69.6843	69.6843
3563	87.7575	97.4545	102.42	69.6829	69.6829	69.6829
3564	88.3447	96.8659	102.639	69.6286	69.6286	69.6286



3565	88.7576	96.3433	102.875	69.5129	69.5129	69.5129
3566	89.0904	95.903	103.138	69.3721	69.3721	69.3721
3567	89.3863	95.4975	103.414	69.2217	69.2217	69.2217
3568	89.6164	94.9078	103.611	69.068	69.068	69.068
3569	89.8164	94.5176	103.684	68.9138	68.9138	68.9138
3570	90.0112	94.5198	103.588	68.7602	68.7602	68.7602
3571	90.4558	95.0996	104.701	68.6082	68.6082	68.6082
3572	91.134	96.0223	106.385	68.458	68.458	68.458
3573	91.1149	95.1222	104.732	68.3085	68.3085	68.3085
3574	90.806	94.1277	103.153	68.1598	68.1598	68.1598
3575	90.6862	93.8725	102.811	68.0124	68.0124	68.0124
3576	90.6181	93.716	102.572	67.8664	67.8664	67.8664
3577	90.6551	93.7519	102.554	67.7218	67.7218	67.7218
3578	90.7382	93.8341	102.586	67.5786	67.5786	67.5786
3579	90.6483	93.4193	101.873	67.4365	67.4365	67.4365
3580	90.2852	92.4562	100.401	67.2952	67.2952	67.2952
3581	89.7884	91.3609	98.819	67.1547	67.1547	67.1547
3582	89.3513	90.7385	97.9534	67.0154	67.0154	67.0154
3583	89.0465	90.3481	97.401	66.8772	66.8772	66.8772
3584	88.8007	90.0197	96.916	66.7402	66.7402	66.7402
3585	88.5653	89.6433	96.3814	66.6044	66.6044	66.6044
3586	88.3227	89.2332	95.8137	66.4697	66.4697	66.4697
3587	88.0734	88.8203	95.2473	66.3362	66.3362	66.3362
3588	87.8457	88.4748	94.7985	66.2038	66.2038	66.2038
3589	87.7028	88.3275	94.6743	66.0727	66.0727	66.0727
3590	87.6063	88.2267	94.5961	65.9428	65.9428	65.9428
3591	87.5354	88.1516	94.5432	65.8142	65.8142	65.8142
3592	87.4764	88.0895	94.4933	65.6868	65.6868	65.6868
3593	87.7453	99.1554	90.7316	71.9936	71.9936	66.3048
3594	87.82	99.0324	90.7196	74.9941	74.9941	99.025
3595	87.8702	98.7783	91.0794	76.4808	76.4808	99.8502
3596	88.1396	98.8517	92.5197	77.2019	77.2019	99.5182
3597	88.4131	98.8681	93.5288	77.5549	77.5549	98.7445
3598	88.8073	98.4583	95.2832	77.3042	77.3042	95.8156
3599	86.2938	86.4776	86.8508	72.6302	72.6302	72.6302
3600	84.7045	84.8007	84.922	70.6491	70.6491	71.0026
3601	83.8982	84.2533	84.7007	69.9673	69.9673	71.2715
3602	83.5275	84.1415	84.9151	69.8542	69.8542	72.1092
3603	83.4041	84.2769	85.3766	70.0006	70.0006	73.2064
3604	82.624	82.6393	82.6586	69.2302	69.2302	69.2864
3605	82.1769	82.34	82.5454	68.9529	68.9529	69.5518
3606	81.9171	82.2279	82.6195	68.8955	68.8955	70.0371
3607	81.6298	81.8993	82.2389	68.7653	68.7653	69.7553
3608	81.2767	81.4351	81.6347	68.5366	68.5366	69.1185
3609	81.2951	81.9144	82.6948	68.7946	68.7946	71.0695
3610	81.2029	81.8222	82.6026	68.8603	68.8603	71.1351
3611	81.0514	81.6707	82.4511	68.845	68.845	71.1199
3612	80.8685	81.4878	82.2682	68.7959	68.7959	71.0707
3613	80.6693	81.2885	82.089	68.7328	68.7328	71.0078
3614	80.3637	80.8463	81.4543	68.5361	68.5361	70.3085
3615	79.9689	80.2723	80.6572	68.2359	68.2359	69.3578
3616	79.5145	79.6428	79.8045	67.8798	67.8798	68.3512
3617	79.1116	79.1667	79.2787	67.5339	67.5339	67.5339
3618	78.9602	79.2155	79.734	67.3043	67.3043	67.3043
3619	78.9559	79.4115	80.3364	67.125	67.125	67.125



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011694

3620	78.4415	78.4456	78.454	66.9668	66.9668	66.9668
3621	78.1135	78.1922	78.3521	66.8188	66.8188	66.8188
3622	77.8912	78.0445	78.3559	66.6758	66.6758	66.6758
3623	77.7307	77.9587	78.4216	66.5358	66.5358	66.5358
3624	77.4472	77.5751	77.8347	66.3977	66.3977	66.3977
3625	79.028	80.7307	85.5289	66.2639	66.2639	66.2639
3626	80.929	83.1009	91.0485	66.1332	66.1332	66.1332
3627	81.6432	83.2063	90.6394	66.0031	66.0031	66.0031
3628	81.9237	83.3013	90.4981	65.8742	65.8742	65.8742
3629	82.268	82.7322	87.3576	71.3271	71.3271	92.5568
3630	81.0128	82.9886	84.7115	70.2415	70.2415	77.4645
3631	79.1489	79.2267	79.3963	67.9972	67.9972	67.9972
3632	78.0275	78.1053	78.2749	66.9694	66.9694	66.9694
3633	77.3096	77.3874	77.557	66.4568	66.4568	66.4568
3634	76.8113	76.8891	77.0587	66.1629	66.1629	66.1629
3635	77.2155	78.0696	80.0708	65.9835	65.9835	65.9835
3636	77.3748	78.2206	80.2527	65.8042	65.8042	65.8042
3637	77.4022	78.2396	80.3027	65.6826	65.6826	65.6826
3638	77.3587	78.1877	80.2818	65.5292	65.5292	65.5292
3639	77.2774	78.0981	80.2233	65.4	65.4	65.4
3640	77.1499	78.0067	80.0006	65.2731	65.2731	65.2731
3641	77.018	77.8738	79.8687	65.148	65.148	65.148
3642	76.8842	77.7401	79.7349	65.0243	65.0243	65.0243
3643	76.7499	77.6057	79.6005	64.9018	64.9018	64.9018
3644	76.6156	77.4714	79.4662	64.7805	64.7805	64.7805
3645	76.5041	77.3234	79.4533	64.6604	64.6604	64.6604
3646	76.4278	77.2211	79.5454	64.5415	64.5415	64.5415
3647	76.3808	77.1647	79.6778	64.4238	64.4238	64.4238
3648	76.3684	77.1434	79.8589	64.3072	64.3072	64.3072
3649	76.3573	77.1507	80.0753	64.1919	64.1919	64.1919
3650	76.3754	77.1859	80.3185	64.0777	64.0777	64.0777
3651	76.3545	77.1694	80.3375	63.9647	63.9647	63.9647
3652	76.3607	77.199	80.5436	63.8528	63.8528	63.8528
3653	76.3884	77.2542	80.7714	63.742	63.742	63.742
3654	76.4067	77.2899	80.9183	63.6323	63.6323	63.6323
3655	76.4434	77.3539	81.1601	63.5238	63.5238	63.5238
3656	77.684	79.1731	86.5607	63.4181	63.4181	63.4181
3657	78.2884	79.6961	86.95	63.3134	63.3134	63.3134
3658	78.13	79.196	85.0051	63.2088	63.2088	63.2088
3659	77.2381	77.9608	81.3311	63.104	63.104	63.104
3660	76.8497	77.3618	80.5415	63.0001	63.0001	63.0001
3661	76.2311	76.9371	79.9223	62.8971	62.8971	62.8971
3662	75.9055	76.6127	79.4043	62.7949	62.7949	62.7949
3663	75.7068	76.4109	79.2984	62.6938	62.6938	62.6938
3664	75.5106	76.22	78.949	62.5935	62.5935	62.5935
3665	75.3169	76.0354	78.6059	62.4941	62.4941	62.4941
3666	75.125	75.8574	78.2704	62.3956	62.3956	62.3956
3667	74.9376	75.6947	77.9609	62.298	62.298	62.298
3668	74.7535	75.5524	77.6526	62.2012	62.2012	62.2012
3669	74.5997	75.3986	77.4987	62.1053	62.1053	62.1053
3670	74.4627	75.2616	77.3617	62.0103	62.0103	62.0103
3671	74.3351	75.134	77.2341	61.9163	61.9163	61.9163
3672	75.8694	85.466	80.7915	67.1099	67.1099	87.2603
3673	77.4812	88.585	84.5626	69.6362	69.6362	89.726
3674	78.6421	89.7669	86.5836	70.7295	70.7295	89.6604



## SIMULACIONES, CÁLCULOS Y GRÁFICAS

ALSTOM

00011695

3675	79.0952	89.39	86.5527	71.1893	71.1893	88.9564
3676	79.2888	88.963	86.7818	71.3499	71.3499	87.9313
3677	79.7873	90.049	88.1238	71.3661	71.3661	86.7854
3678	80.0767	90.0713	88.4502	71.285	71.285	85.4926
3679	80.2798	89.9952	89.0319	71.142	71.142	84.1568
3680	80.5864	90.3682	90.241	70.9603	70.9603	82.8299
3681	80.9911	91.2212	91.5476	70.7527	70.7527	81.5272
3682	81.34	91.9278	92.535	70.4862	70.4862	80.0581
3683	81.653	92.6974	93.6584	70.1867	70.1867	78.6199
3684	81.2861	90.6167	91.9256	69.2264	69.2264	74.0751
3685	80.1279	88.8313	88.256	67.6154	67.6154	67.6154
3686	79.5525	87.7462	88.8182	66.9084	66.9084	66.9084
3687	77.2907	77.2907	77.2907	66.5939	66.5939	66.5939
3688	76.0301	76.0301	76.0301	66.4527	66.4527	66.4527
3689	75.3258	75.3258	75.3258	66.3872	66.3872	66.3872
3690	74.9307	74.9307	74.9307	66.3549	66.3549	66.3549
3691	74.7074	74.7074	74.7074	66.3371	66.3371	66.3371
3692	74.5795	74.5795	74.5795	66.3257	66.3257	66.3257
3693	74.5046	74.5046	74.5046	66.317	66.317	66.317
3694	74.4592	74.4592	74.4592	66.3096	66.3096	66.3096
3695	74.4302	74.4302	74.4302	66.3027	66.3027	66.3027
3696	74.4103	74.4103	74.4103	66.296	66.296	66.296
3697	74.3954	74.3954	74.3954	66.2895	66.2895	66.2895
3698	74.3834	74.3834	74.3834	66.283	66.283	66.283
3699	74.3729	74.3729	74.3729	66.2765	66.2765	66.2765
3700	74.3633	74.3633	74.3633	66.27	66.27	66.27
3701	74.3542	74.3542	74.3542	66.2636	66.2636	66.2636
3702	74.3453	74.3453	74.3453	66.2571	66.2571	66.2571
3703	74.3366	74.3366	74.3366	66.2507	66.2507	66.2507
3704	78.187	94.4933	97.738	66.25	66.25	66.25
3705	80.3988	94.1141	97.7671	66.2494	66.2494	66.2494
3706	81.7469	92.6191	98.8331	66.2487	66.2487	66.2487
3707	82.6233	92.1951	97.2409	66.2481	66.2481	66.2481
3708	83.2223	91.6535	97.4992	66.2048	66.2048	66.2048
3709	83.6585	91.1542	97.759	66.1121	66.1121	66.1121
3710	84.0243	90.7738	98.0749	65.9992	65.9992	65.9992
3711	84.3488	90.381	98.3732	65.8786	65.8786	65.8786
3712	84.6108	89.8233	98.6026	65.7553	65.7553	65.7553
3713	84.8462	89.5288	98.6861	65.6315	65.6315	65.6315
3714	85.0765	89.5864	98.6258	65.5084	65.5084	65.5084
3715	85.5911	90.2612	99.9396	65.3865	65.3865	65.3865
3716	86.2399	91.0395	101.326	65.2661	65.2661	65.2661
3717	86.2226	90.1494	99.6901	65.1461	65.1461	65.1461
3718	85.9659	89.2798	98.2964	65.0267	65.0267	65.0267
3719	85.8761	89.0703	97.9995	64.9085	64.9085	64.9085
3720	85.8724	88.9698	97.8193	64.7913	64.7913	64.7913
3721	85.9493	89.0458	97.8411	64.6752	64.6752	64.6752
3722	86.0694	89.1652	97.9083	64.5603	64.5603	64.5603
3723	85.9387	88.5843	96.9322	64.4461	64.4461	64.4461
3724	85.562	87.5756	95.3979	64.3324	64.3324	64.3324
3725	85.0322	86.4806	93.8116	64.2193	64.2193	64.2193
3726	84.6827	86.038	93.1926	64.1072	64.1072	64.1072
3727	84.4229	85.8874	92.67	63.996	63.996	63.996
3728	84.2036	85.3622	92.176	63.8857	63.8857	63.8857
3729	83.9772	84.9518	91.5927	63.7763	63.7763	63.7763



3730	83.7436	84.5387	91.011	63.6678	63.8678	63.8678
3731	83.5095	84.1396	90.4584	63.5602	63.5602	63.5602
3732	83.3781	84.0033	90.3475	63.4538	63.4538	63.4538
3733	83.3027	83.9232	90.2923	63.348	63.348	63.348
3734	83.2581	83.874	90.2874	63.2434	63.2434	63.2434
3735	83.2274	83.8401	90.2449	63.1399	63.1399	63.1399
3736	83.2031	83.8133	90.2238	63.0373	63.0373	63.0373
3737	83.1824	83.7902	90.2063	62.9357	62.9357	62.9357
3738	83.1637	83.769	90.1896	62.8351	62.8351	62.8351
3739	83.1409	83.7438	90.1516	62.7354	62.7354	62.7354
3740	83.116	83.7162	90.1117	62.6367	62.6367	62.6367
3741	83.09	83.6876	90.071	62.5389	62.5389	62.5389
3742	82.7508	90.3253	85.2548	67.5585	67.5585	87.0963
3743	83.2092	94.5682	88.2924	71.314	71.314	95.5799
3744	83.4411	94.8478	86.4463	73.3387	73.3387	97.6506
3745	83.5258	94.8313	88.4492	74.5725	74.5725	98.7309
3746	83.4999	94.4633	86.367	75.3716	75.3716	99.0419
3747	83.7397	94.5141	87.7759	75.8241	75.8241	98.4663
3748	84.0402	94.5781	88.9188	76.0893	76.0893	97.6422
3749	84.622	95.4406	90.9753	76.2434	76.2434	96.8794
3750	85.5183	96.9423	93.6843	76.3253	76.3253	95.6414
3751	85.7736	96.3269	93.2861	76.3508	76.3508	94.5455
3752	85.8168	95.7046	93.2824	76.3165	76.3165	93.3455
3753	86.0487	96.0824	94.0579	76.2343	76.2343	92.1046
3754	86.363	96.5617	94.8146	76.1037	76.1037	90.7971
3755	86.4523	96.1948	94.8413	75.9201	75.9201	89.4029
3756	86.6579	96.3335	95.9448	75.7024	75.7024	88.0279
3757	86.979	97.0265	97.1684	75.4621	75.4621	86.6864
3758	87.3071	97.7473	98.2388	75.1772	75.1772	85.245
3759	87.5918	98.4332	99.2376	74.8487	74.8487	83.7419
3760	87.7542	98.7707	99.9492	74.3978	74.3978	81.8239
3761	86.5773	93.5242	95.0175	72.6578	72.6578	73.8622
3762	85.7176	93.2939	94.5109	71.576	71.576	71.576
3763	85.3077	94.3742	95.2354	71.1	71.1	71.1
3764	83.1318	83.1318	83.1318	70.886	70.886	70.886
3765	81.9183	81.9183	81.9183	70.7881	70.7881	70.7881
3766	81.2395	81.2395	81.2395	70.741	70.741	70.741
3767	80.8578	80.8578	80.8578	70.7161	70.7161	70.7161
3768	80.6412	80.6412	80.6412	70.701	70.701	70.701
3769	80.5164	80.5164	80.5164	70.6901	70.6901	70.6901
3770	80.4425	80.4425	80.4425	70.6811	70.6811	70.6811
3771	80.397	80.397	80.397	70.6729	70.6729	70.6729
3772	80.3672	80.3672	80.3672	70.665	70.665	70.665
3773	80.3462	80.3462	80.3462	70.6573	70.6573	70.6573
3774	80.33	80.33	80.33	70.6497	70.6497	70.6497
3775	80.3165	80.3165	80.3165	70.6421	70.6421	70.6421
3776	80.3046	80.3046	80.3046	70.6346	70.6346	70.6346
3777	80.2934	80.2934	80.2934	70.627	70.627	70.627
3778	80.2828	80.2828	80.2828	70.6195	70.6195	70.6195
3779	80.2723	80.2723	80.2723	70.6119	70.6119	70.6119
3780	80.2621	80.2621	80.2621	70.6044	70.6044	70.6044
3781	84.0846	98.8839	102.384	70.6025	70.6025	70.6025
3782	86.3139	98.4802	102.421	70.6007	70.6007	70.6007
3783	87.8712	97.7844	102.486	70.5988	70.5988	70.5988
3784	88.524	97.3496	102.882	70.5413	70.5413	70.5413



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011697

3785	89.0767	96.9598	103.25	70.4192	70.4192	70.4192
3786	89.4768	98.5115	103.531	70.2706	70.2706	70.2706
3787	89.8082	96.1445	103.843	70.1119	70.1119	70.1119
3788	90.0695	95.6215	104.075	69.9498	69.9498	69.9498
3789	90.2804	95.0469	104.244	69.7871	69.7871	69.7871
3790	90.4782	95.0478	104.148	69.6251	69.6251	69.6251
3791	90.808	95.3848	104.711	69.4646	69.4646	69.4646
3792	91.4376	96.2669	106.413	69.3059	69.3059	69.3059
3793	91.6337	95.9116	105.752	69.1484	69.1484	69.1484
3794	91.365	94.8199	103.957	68.9916	68.9916	68.9916
3795	91.1903	94.4326	103.398	68.8362	68.8362	68.8362
3796	91.1216	94.2533	103.135	68.6823	68.6823	68.6823
3797	91.1348	94.2318	103.051	68.5298	68.5298	68.5298
3798	91.2034	94.2996	103.067	68.3788	68.3788	68.3788
3799	91.2236	94.1909	102.811	68.2292	68.2292	68.2292
3800	90.9212	93.2807	101.387	68.0804	68.0804	68.0804
3801	90.448	92.2405	99.8676	67.9326	67.9326	67.9326
3802	89.9738	91.398	98.6832	67.7858	67.7858	67.7858
3803	89.6463	90.9939	98.1338	67.6403	67.6403	67.6403
3804	89.4005	90.8777	97.6845	67.4962	67.4962	67.4962
3805	89.2011	90.4143	97.2996	67.3533	67.3533	67.3533
3806	89.0154	90.1281	96.8988	67.2116	67.2116	67.2116
3807	88.8326	89.8323	96.4967	67.0713	67.0713	67.0713
3808	88.6547	89.553	96.1221	66.9321	66.9321	66.9321
3809	88.4821	89.2887	95.7716	66.7942	66.7942	66.7942
3810	88.3114	89.029	95.4283	66.6576	66.6576	66.6576
3811	88.1401	88.771	95.0888	66.5221	66.5221	66.5221
3812	88.0225	88.6505	94.9803	66.388	66.388	66.388
3813	87.9347	88.5603	94.9024	66.2551	66.2551	66.2551
3814	87.8634	88.4867	94.8408	66.1235	66.1235	66.1235
3815	87.8013	88.4224	94.7883	65.9931	65.9931	65.9931
3816	87.7446	88.3636	94.741	65.864	65.864	65.864
3817	87.6911	88.3079	94.6966	65.7361	65.7361	65.7361
3818	87.6401	88.2546	94.6553	65.6095	65.6095	65.6095
3819	87.5889	88.2018	94.6061	65.484	65.484	65.484
3820	87.5383	88.1493	94.5579	65.3597	65.3597	65.3597
3821	87.4887	88.0975	94.5111	65.2367	65.2367	65.2367
3822	87.4405	88.0468	94.4661	65.1148	65.1148	65.1148
3823	87.3894	87.9928	94.4043	64.994	64.994	64.994
3824	87.3347	87.9347	94.3296	64.8744	64.8744	64.8744
3825	87.1771	87.7419	93.8061	64.7558	64.7558	64.7558
3826	85.9325	87.9648	87.8949	66.9723	66.9723	76.0821
3827	85.1678	87.2075	87.13	68.0224	68.0224	77.152
3828	84.6631	86.7028	86.6253	68.5733	68.5733	77.7029
3829	84.3	86.3397	86.2622	68.912	68.912	78.0416
3830	84.0144	86.0542	85.9767	69.16	69.16	78.2896
3831	83.7715	85.8112	85.7337	69.3686	69.3686	78.4982
3832	83.5524	85.5921	85.5146	69.5595	69.5595	78.6891
3833	83.3268	85.2039	85.2992	69.6219	69.6219	78.2903
3834	83.0815	84.6314	85.0911	69.4787	69.4787	77.1441
3835	82.8369	84.0972	84.9099	69.227	69.227	75.8815
3836	82.4433	83.2633	84.0956	68.6283	68.6283	73.1623
3837	81.8132	82.0561	82.5388	67.2299	67.2299	67.2299
3838	81.7163	82.2023	83.6362	66.5616	66.5616	66.5616
3839	81.6372	82.0367	83.8201	66.2027	66.2027	66.2027



## SIMULACIONES, CÁLCULOS Y GRÁFICAS

ALSTOM

00011638

3840	81.5033	81.9029	83.6862	65.9755	65.9755	65.9755
3841	81.371	81.7497	83.6873	65.8046	65.8046	65.8046
3842	81.2167	81.5924	83.5301	65.6583	65.6583	65.6583
3843	81.0513	81.424	83.3818	65.5231	65.5231	65.5231
3844	80.866	81.2459	83.156	65.3932	65.3932	65.3932
3845	80.6802	81.0602	82.9703	65.2663	65.2663	65.2663
3846	80.495	80.8749	82.785	65.1413	65.1413	65.1413
3847	80.3105	80.6904	82.6006	65.0178	65.0178	65.0178
3848	80.1271	80.507	82.4172	64.8956	64.8956	64.8956
3849	79.9449	80.3248	82.235	64.7746	64.7746	64.7746
3850	79.7639	80.1439	82.054	64.6547	64.6547	64.6547
3851	79.5842	79.9641	81.8743	64.5359	64.5359	64.5359
3852	79.4058	79.7857	81.6959	64.4183	64.4183	64.4183
3853	80.9378	92.249	84.0581	70.708	70.708	94.9159
3854	81.7609	93.1619	84.7989	73.813	73.813	98.1261
3855	82.1859	93.6015	85.141	75.5389	75.5389	99.8491
3856	82.3398	93.4101	85.203	76.5466	76.5466	100.383
3857	82.5895	93.4183	86.2896	77.1195	77.1195	100.057
3858	82.9357	93.54	87.6241	77.4334	77.4334	99.2776
3859	83.3993	93.9922	89.1763	77.6019	77.6019	98.3119
3860	84.4178	95.9442	92.5784	77.6849	77.6849	97.2616
3861	84.7963	95.5476	92.4574	77.7079	77.7079	96.1577
3862	84.8747	94.9069	92.3374	77.6725	77.6725	94.9634
3863	85.0276	94.9316	92.8505	77.5866	77.5866	93.7134
3864	85.4102	95.7223	93.9049	77.4558	77.4558	92.4207
3865	85.5083	95.3114	93.8098	77.269	77.269	91.016
3866	85.6933	95.3837	94.7801	77.0468	77.0468	89.6303
3867	85.9927	95.941	95.9793	76.7989	76.7989	88.2685
3868	86.3369	96.6976	97.1265	76.5144	76.5144	86.8498
3869	86.6349	97.3671	98.0871	76.1778	76.1778	85.3218
3870	86.9015	98.1239	99.2224	75.8145	75.8145	83.8423
3871	85.9984	93.8522	95.2754	74.3159	74.3159	76.9069
3872	85.0041	92.2483	93.5443	73.002	73.002	73.002
3873	84.5194	93.2538	94.195	72.4241	72.4241	72.4241
3874	82.304	82.304	82.304	72.1655	72.1655	72.1655
3875	81.0687	81.0687	81.0687	72.0479	72.0479	72.0479
3876	80.3779	80.3779	80.3779	71.992	71.992	71.992
3877	79.9896	79.9896	79.9896	71.9631	71.9631	71.9631
3878	79.7695	79.7695	79.7695	71.9461	71.9461	71.9461
3879	79.6428	79.6428	79.6428	71.9343	71.9343	71.9343
3880	79.568	79.568	79.568	71.9247	71.9247	71.9247
3881	79.5221	79.5221	79.5221	71.9161	71.9161	71.9161
3882	79.4921	79.4921	79.4921	71.9079	71.9079	71.9079
3883	79.4711	79.4711	79.4711	71.9	71.9	71.9
3884	79.4551	79.4551	79.4551	71.8921	71.8921	71.8921
3885	79.4418	79.4418	79.4418	71.8843	71.8843	71.8843
3886	79.43	79.43	79.43	71.8764	71.8764	71.8764
3887	79.4191	79.4191	79.4191	71.8686	71.8686	71.8686
3888	79.4086	79.4086	79.4086	71.8608	71.8608	71.8608
3889	79.3984	79.3984	79.3984	71.853	71.853	71.853
3890	79.3884	79.3884	79.3884	71.8452	71.8452	71.8452
3891	83.2136	98.5939	101.997	71.843	71.843	71.843
3892	85.4446	98.2181	102.057	71.8407	71.8407	71.8407
3893	86.7981	97.2002	101.716	71.8384	71.8384	71.8384
3894	87.6774	96.7835	102.132	71.8362	71.8362	71.8362



00011633

3895	88.268	96.3596	102.481	71.7746	71.7746	71.7746
3896	88.6863	95.8766	102.745	71.644	71.644	71.644
3897	89.0304	95.5248	103.072	71.4853	71.4853	71.4853
3898	89.3106	95.0453	103.323	71.3157	71.3157	71.3157
3899	89.5321	94.4474	103.512	71.1424	71.1424	71.1424
3900	89.7362	94.3488	103.471	70.9686	70.9686	70.9686
3901	89.9911	94.4866	103.653	70.7956	70.7956	70.7956
3902	90.579	95.3479	105.318	70.6244	70.6244	70.6244
3903	90.9418	95.4147	105.422	70.4546	70.4546	70.4546
3904	90.7613	94.3927	103.681	70.2857	70.2857	70.2857
3905	90.5502	93.8181	102.803	70.1181	70.1181	70.1181
3906	90.464	93.6197	102.52	69.9521	69.9521	69.9521
3907	90.4619	93.5591	102.39	69.7876	69.7876	69.7876
3908	90.5246	93.6209	102.399	69.6247	69.6247	69.6247
3909	90.6142	93.6971	102.414	69.4634	69.4634	69.4634
3910	90.3394	92.7878	100.999	69.303	69.303	69.303
3911	88.9157	93.8897	93.5907	72.2274	72.2274	84.194
3912	86.3534	86.5083	86.7035	70.6618	70.6618	71.2307
3913	84.9617	85.2937	85.712	70.0822	70.0822	71.3016
3914	84.2126	84.7217	85.3632	69.933	69.933	71.803
3915	83.8198	84.506	85.3707	69.9791	69.9791	72.4996
3916	83.628	84.4913	85.5791	70.1208	70.1208	73.2918
3917	83.075	83.3671	83.96	69.3421	69.3421	69.3421
3918	82.7742	83.1919	84.0399	68.9216	68.9216	68.9216
3919	82.6174	83.1607	84.2637	68.6537	68.6537	68.6537
3920	82.5457	83.2146	84.5726	68.4512	68.4512	68.4512
3921	82.5272	83.3217	84.9346	68.2773	68.2773	68.2773
3922	81.8941	82.1088	82.5446	68.1156	68.1156	68.1156
3923	81.434	81.6487	82.0844	67.9601	67.9601	67.9601
3924	81.0685	81.2832	81.7189	67.8081	67.8081	67.8081
3925	80.7552	80.9698	81.4056	67.6583	67.6583	67.6583
3926	80.4709	80.6856	81.1214	67.5103	67.5103	67.5103
3927	80.2033	80.418	80.8537	67.3638	67.3638	67.3638
3928	79.9455	80.1802	80.596	67.2188	67.2188	67.2188
3929	79.6939	79.9085	80.3443	67.0751	67.0751	67.0751
3930	79.4463	79.661	80.0988	66.9328	66.9328	66.9328
3931	79.2019	79.4165	79.8523	66.7918	66.7918	66.7918
3932	78.9598	79.1745	79.6103	66.6521	66.6521	66.6521
3933	78.7199	78.9346	79.3704	66.5138	66.5138	66.5138
3934	78.4819	78.6966	79.1324	66.3767	66.3767	66.3767
3935	78.2458	78.4604	78.8962	66.2409	66.2409	66.2409
3936	78.0114	78.226	78.6618	66.1064	66.1064	66.1064
3937	77.7787	77.9933	78.4291	65.9731	65.9731	65.9731
3938	77.4192	77.4944	77.6472	65.8409	65.8409	65.8409
3939	77.647	78.3013	79.6296	65.7107	65.7107	65.7107
3940	77.6892	78.3435	79.6719	65.5817	65.5817	65.5817
3941	77.6315	78.2858	79.6141	65.4539	65.4539	65.4539
3942	77.52	78.1743	79.5026	65.3273	65.3273	65.3273
3943	77.4628	78.207	79.7176	65.202	65.202	65.202
3944	76.8693	77.0839	77.5197	65.0771	65.0771	65.0771
3945	76.4469	76.6616	77.0974	64.9535	64.9535	64.9535
3946	76.1182	76.3329	76.7686	64.831	64.831	64.831
3947	75.841	76.0558	76.4914	64.7096	64.7096	64.7096
3948	75.5924	75.807	76.2428	64.5893	64.5893	64.5893
3949	75.36	75.5747	76.0104	64.4702	64.4702	64.4702



00011709

3950	75.1372	75.3518	75.7876	64.3522	64.3522	64.3522
3951	74.9201	75.1348	75.5706	64.2353	64.2353	64.2353
3952	74.707	74.9217	75.3575	64.1194	64.1194	64.1194
3953	74.4987	74.7113	75.1471	64.0047	64.0047	64.0047
3954	74.2885	74.5032	74.9389	63.891	63.891	63.891
3955	74.0822	74.2969	74.7327	63.7784	63.7784	63.7784
3956	73.8776	74.0923	74.528	63.6668	63.6668	63.6668
3957	73.6746	73.8892	74.325	63.5562	63.5562	63.5562
3958	73.4731	73.6877	74.1235	63.4467	63.4467	63.4467
3959	73.273	73.4877	73.9235	63.3382	63.3382	63.3382
3960	73.1878	73.6211	74.1671	63.8362	63.6362	65.2278
3961	73.138	73.6824	74.3684	63.8357	63.8357	65.8354
3962	73.1124	73.768	74.5939	64.0016	64.0016	66.4094
3963	73.1048	73.8715	74.8374	64.1615	64.1615	66.9774
3964	73.0872	73.9305	74.9932	64.2945	64.2945	67.3922
3965	75.631	78.1552	86.4005	63.5648	63.5648	63.5648
3966	76.8914	78.5564	88.2446	63.1976	63.1976	63.1976
3967	77.0417	78.4597	85.7333	62.9842	62.9842	62.9842
3968	77.1812	78.5019	85.591	62.8364	62.8364	62.8364
3969	77.2063	78.4348	85.3493	62.717	62.717	62.717
3970	77.1507	78.2358	84.9804	62.6099	62.6099	62.6099
3971	77.0389	77.9498	84.5308	62.5085	62.5085	62.5085
3972	76.8974	77.6453	84.0731	62.41	62.41	62.41
3973	76.7638	77.3931	83.7159	62.3132	62.3132	62.3132
3974	76.7075	77.3327	83.6771	62.2177	62.2177	62.2177
3975	76.6929	77.3143	83.6789	62.1232	62.1232	62.1232
3976	76.7009	77.3187	83.702	62.0297	62.0297	62.0297
3977	76.7208	77.3353	83.736	61.9372	61.9372	61.9372
3978	76.7441	77.3567	83.7616	61.8455	61.8455	61.8455
3979	76.7691	77.38	83.7889	61.7548	61.7548	61.7548
3980	76.7952	77.4044	83.8172	61.6648	61.6648	61.6648
3981	76.8219	77.4293	83.8462	61.5758	61.5758	61.5758
3982	76.849	77.4548	83.8755	61.4876	61.4876	61.4876
3983	76.8728	77.4766	83.8898	61.4002	61.4002	61.4002
3984	76.8943	77.4962	83.9003	61.3137	61.3137	61.3137
3985	76.9143	77.5144	83.9097	61.228	61.228	61.228
3986	76.9335	77.5316	83.9183	61.1431	61.1431	61.1431
3987	77.3053	88.6824	80.3751	67.4855	67.4855	91.7735
3988	77.5049	88.9151	80.4904	70.6089	70.6089	94.9202
3989	77.5725	88.7699	80.4683	72.2769	72.2769	96.2872
3990	77.6737	88.5887	80.9641	73.2049	73.2049	96.5029
3991	77.9983	88.6881	82.4421	73.7004	73.7004	95.9192
3992	78.3372	88.7867	83.526	73.9713	73.9713	95.048
3993	79.2296	90.4576	86.8282	74.1231	74.1231	94.0621
3994	79.8737	90.9048	87.7448	74.2017	74.2017	93.0119
3995	80.0633	90.3022	87.5219	74.22	74.22	91.8857
3996	80.1472	89.8652	87.7031	74.1809	74.1809	90.6757
3997	80.5825	90.8848	88.9736	74.0989	74.0989	89.4427
3998	80.8037	90.7894	89.1669	73.9611	73.9611	88.0972
3999	80.9844	90.6963	89.7843	73.7807	73.7807	86.734
4000	81.2775	91.0835	90.9762	73.5699	73.5699	85.3864
4001	81.6889	91.9155	92.2548	73.334	73.334	84.0529
4002	82.0079	92.6115	93.2313	73.0408	73.0408	82.5592
4003	82.313	93.3788	94.3564	72.7161	72.7161	81.1006
4004	81.8807	91.0349	92.3574	71.674	71.674	76.2529



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011701

4005	80.7413	87.5093	88.9187	70.0865	70.0865	70.0865
4006	80.1763	88.4346	89.4892	69.3893	69.3893	69.3893
4007	77.9198	77.9198	77.9198	69.0791	69.0791	69.0791
4008	76.6621	76.6621	76.6621	68.9394	68.9394	68.9394
4009	75.9593	75.9593	75.9593	68.8744	68.8744	68.8744
4010	75.565	75.565	75.565	68.842	68.842	68.842
4011	75.342	75.342	75.342	68.824	68.824	68.824
4012	75.2142	75.2142	75.2142	68.8122	68.8122	68.8122
4013	75.1393	75.1393	75.1393	68.8031	68.8031	68.8031
4014	75.0939	75.0939	75.0939	68.7953	68.7953	68.7953
4015	75.0647	75.0647	75.0647	68.788	68.788	68.788
4016	75.0447	75.0447	75.0447	68.7809	68.7809	68.7809
4017	75.0297	75.0297	75.0297	68.7739	68.7739	68.7739
4018	75.0175	75.0175	75.0175	68.767	68.767	68.767
4019	75.0068	75.0068	75.0068	68.7601	68.7601	68.7601
4020	74.9971	74.9971	74.9971	68.7532	68.7532	68.7532
4021	74.9878	74.9878	74.9878	68.7463	68.7463	68.7463
4022	74.9787	74.9787	74.9787	68.7394	68.7394	68.7394
4023	74.9699	74.9699	74.9699	68.7325	68.7325	68.7325
4024	78.7996	95.0128	98.2765	68.731	68.731	68.731
4025	81.0339	94.6403	98.3403	68.7294	68.7294	68.7294
4026	82.3825	93.1984	97.4484	68.7278	68.7278	68.7278
4027	83.2597	92.7798	97.8627	68.7263	68.7263	68.7263
4028	83.8568	92.2471	98.1258	68.6747	68.6747	68.6747
4029	84.2895	91.7447	98.3823	68.5649	68.5649	68.5649
4030	84.651	91.366	98.5952	68.4313	68.4313	68.4313
4031	84.9704	90.9671	98.9935	68.2886	68.2886	68.2886
4032	85.2277	90.4047	99.218	68.1427	68.1427	68.1427
4033	85.4593	90.1335	99.2866	67.9964	67.9964	67.9964
4034	85.6856	90.167	99.2222	67.8507	67.8507	67.8507
4035	86.2116	90.8934	100.607	67.7066	67.7066	67.7066
4036	86.8271	91.5871	101.84	67.5639	67.5639	67.5639
4037	86.7909	90.682	100.192	67.4219	67.4219	67.4219
4038	86.5436	89.8488	98.8619	67.2808	67.2808	67.2808
4039	86.4512	89.6419	98.5685	67.141	67.141	67.141
4040	86.4474	89.5448	98.3933	67.0026	67.0026	67.0026
4041	86.5222	89.6188	98.4142	66.8654	66.8654	66.8654
4042	86.6392	89.735	98.4796	66.7296	66.7296	66.7296
4043	86.5291	89.2148	97.5965	66.5947	66.5947	66.5947
4044	86.1677	88.2556	96.1323	66.4607	66.4607	66.4607
4045	85.6641	87.1779	94.5694	66.3274	66.3274	66.3274
4046	85.3011	86.6761	93.868	66.1953	66.1953	66.1953
4047	85.0383	86.3282	93.3589	66.0643	66.0643	66.0643
4048	84.8281	86.0358	92.9106	65.9345	65.9345	65.9345
4049	84.6204	85.6748	92.3906	65.8057	65.8057	65.8057
4050	84.4052	85.2926	91.8514	65.6781	65.6781	65.6781
4051	84.183	84.9074	91.3132	65.5515	65.5515	65.5515
4052	83.9966	84.6251	90.9521	65.4261	65.4261	65.4261
4053	83.8887	84.5128	90.8628	65.3018	65.3018	65.3018
4054	83.8236	84.4435	90.8161	65.1788	65.1788	65.1788
4055	83.7823	84.3979	90.7928	65.0569	65.0569	65.0569
4056	83.7512	84.3638	90.7688	64.9362	64.9362	64.9362
4057	84.0257	95.4119	86.9697	71.2378	71.2378	95.5069
4058	84.0965	95.151	86.9558	74.1906	74.1906	98.0052
4059	84.2866	95.1251	87.9264	75.6116	75.6116	98.6024

2395



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011702



4060	84.5875	95.233	89.158	76.3254	76.3254	98.3501
4061	84.8773	95.2957	90.0976	76.7091	76.7091	97.7388
4062	85.599	96.5931	92.6559	76.9101	76.9101	96.8655
4063	84.0655	86.2809	87.7619	73.9643	73.9643	81.3853
4064	83.1716	85.3502	86.8623	72.7524	72.7524	80.1021
4065	82.8247	84.7872	86.3099	72.2726	72.2726	79.5522
4066	82.287	84.4983	85.9828	72.1534	72.1534	79.5665
4067	82.03	84.1404	85.7103	72.1034	72.1034	79.3209
4068	81.8061	83.7373	85.4796	72.0201	72.0201	78.8166
4069	81.8255	83.5323	85.3004	72.0062	72.0062	78.7371
4070	81.4686	83.3509	85.1449	72.02	72.02	78.6853
4071	81.3248	83.1825	85.0024	72.0438	72.0438	78.6435
4072	81.1879	83.0185	84.867	72.0686	72.0686	78.5958
4073	81.0751	83.0196	84.7479	72.1897	72.1897	79.0217
4074	80.8604	82.9048	84.6331	72.2782	72.2782	79.1102
4075	80.845	82.7894	84.5177	72.3526	72.3526	79.1847
4076	80.7298	82.6741	84.4024	72.4207	72.4207	79.2527
4077	80.6146	82.5591	84.2874	72.4857	72.4857	79.3178
4078	80.5002	82.4447	84.173	72.5492	72.5492	79.3812
4079	80.3865	82.331	84.0593	72.6116	72.6116	79.4436
4080	80.2735	82.218	83.9463	72.6732	72.6732	79.5052
4081	80.1614	82.1058	83.8341	72.7341	72.7341	79.5661
4082	80.05	81.9944	83.7227	72.7944	72.7944	79.6265
4083	79.9394	81.8838	83.6121	72.8542	72.8542	79.6862
4084	79.8298	81.774	83.5023	72.9133	72.9133	79.7454
4085	79.7205	81.665	83.3933	72.9719	72.9719	79.8038
4086	79.6123	81.5568	83.2851	73.0299	73.0299	79.862
4087	79.5048	81.4493	83.1776	73.0874	73.0874	79.9194
4088	79.3981	81.3426	83.0709	73.1443	73.1443	79.9763
4089	79.2922	81.2367	82.965	73.2007	73.2007	80.0327
4090	79.208	81.2696	82.879	73.3329	73.3329	80.4598
4091	79.1228	81.2366	82.8036	73.4514	73.4514	80.6754
4092	79.0407	81.1971	82.728	73.562	73.562	80.8685
4093	78.9503	81.1006	82.6367	73.6459	73.6459	80.9407
4094	78.8628	81.0427	82.5537	73.7359	73.7359	81.0882
4095	80.3004	82.5181	89.6097	71.9384	71.9384	71.9384
4096	81.1388	82.9699	90.6295	71.0784	71.0784	71.0784
4097	81.3562	82.755	89.9922	70.6156	70.6156	70.6156
4098	81.3986	82.6889	89.7204	70.3219	70.3219	70.3219
4099	81.3458	82.531	89.3898	70.1005	70.1005	70.1005
4100	81.6309	92.1921	86.4427	75.6086	75.6086	97.2637
4101	82.1189	92.8044	88.1324	77.9803	77.9803	98.5779
4102	83.1223	94.6941	91.3988	78.9972	78.9972	98.5189
4103	83.4596	94.1984	91.1121	79.414	79.414	97.849
4104	83.5253	93.5636	90.9879	79.5408	79.5408	96.8427
4105	83.6882	93.5607	91.4746	79.5156	79.5156	95.6653
4106	84.0596	94.3823	92.5583	79.4008	79.4008	94.3909
4107	84.1871	93.9807	92.4725	79.2104	79.2104	92.9827
4108	84.3559	94.0478	93.4241	78.9761	78.9761	91.5836
4109	84.6606	94.5997	94.6285	78.7124	78.7124	90.2027
4110	85.0143	95.3676	95.7907	78.4116	78.4116	88.7719
4111	85.3219	96.0439	96.7561	78.0577	78.0577	87.2248
4112	85.598	96.8102	97.9009	77.6771	77.6771	85.7281
4113	84.7324	92.6707	94.0873	76.1885	76.1885	78.9085
4114	83.7341	90.9475	92.2508	74.8433	74.8433	74.8433



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011703

ALSTOM

4115	83.2473	91.9509	92.8994	74.2514	74.2514	74.2514
4116	81.0312	81.0312	81.0312	73.9866	73.9866	73.9866
4117	79.7955	79.7955	79.7955	73.8661	73.8661	73.8661
4118	79.1047	79.1047	79.1047	73.8088	73.8088	73.8088
4119	78.7166	78.7166	78.7166	73.7791	73.7791	73.7791
4120	78.4967	78.4967	78.4967	73.7615	73.7615	73.7615
4121	78.3703	78.3703	78.3703	73.7492	73.7492	73.7492
4122	78.2958	78.2958	78.2958	73.7393	73.7393	73.7393
4123	78.2501	78.2501	78.2501	73.7304	73.7304	73.7304
4124	78.2206	78.2206	78.2206	73.7219	73.7219	73.7219
4125	78.1999	78.1999	78.1999	73.7136	73.7136	73.7136
4126	78.1841	78.1841	78.1841	73.7054	73.7054	73.7054
4127	78.1712	78.1712	78.1712	73.6972	73.6972	73.6972
4128	78.1597	78.1597	78.1597	73.6891	73.6891	73.6891
4129	78.1491	78.1491	78.1491	73.681	73.681	73.681
4130	78.139	78.139	78.139	73.6728	73.6728	73.6728
4131	78.1292	78.1292	78.1292	73.6647	73.6647	73.6647
4132	78.1195	78.1195	78.1195	73.6566	73.6566	73.6566
4133	81.9452	97.3796	100.774	73.6537	73.6537	73.6537
4134	84.1767	97.0042	100.835	73.6508	73.6508	73.6508
4135	85.5301	95.9591	100.458	73.6479	73.6479	73.6479
4136	86.4096	95.5426	100.874	73.6449	73.6449	73.6449
4137	87.0051	95.1235	101.23	73.5771	73.5771	73.5771
4138	87.4299	94.6422	101.497	73.4339	73.4339	73.4339
4139	87.7793	94.2883	101.821	73.2598	73.2598	73.2598
4140	88.0674	93.8191	102.081	73.0738	73.0738	73.0738
4141	88.2972	93.2295	102.278	72.8839	72.8839	72.8839
4142	88.5094	93.126	102.25	72.6933	72.6933	72.6933
4143	88.7653	93.2562	102.405	72.5036	72.5036	72.5036
4144	89.3573	94.1206	104.073	72.3157	72.3157	72.3157
4145	89.7439	94.2352	104.258	72.1295	72.1295	72.1295
4146	89.5798	93.2277	102.53	71.9443	71.9443	71.9443
4147	89.3733	92.6437	101.63	71.7606	71.7606	71.7606
4148	89.2936	92.452	101.354	71.5785	71.5785	71.5785
4149	89.2979	92.3951	101.228	71.3983	71.3983	71.3983
4150	89.3677	92.4641	101.246	71.2197	71.2197	71.2197
4151	89.4724	92.5681	101.301	71.0429	71.0429	71.0429
4152	89.2807	91.8586	100.149	70.8673	70.8673	70.8673
4153	88.8854	90.9042	98.7224	70.6929	70.6929	70.6929
4154	88.3768	89.8625	97.2303	70.5198	70.5198	70.5198
4155	88.0196	89.3964	96.5918	70.3483	70.3483	70.3483
4156	87.7564	89.0539	96.0988	70.1782	70.1782	70.1782
4157	87.5429	88.7639	95.864	70.0097	70.0097	70.0097
4158	87.3376	88.433	95.1873	69.8427	69.8427	69.8427
4159	87.1237	88.0641	94.6728	69.6771	69.6771	69.6771
4160	86.9023	87.6916	94.1582	69.513	69.513	69.513
4161	86.6743	87.3181	93.6442	69.3503	69.3503	69.3503
4162	86.5272	87.1538	93.4907	69.1891	69.1891	69.1891
4163	86.4315	87.0541	93.412	69.0295	69.0295	69.0295
4164	86.3641	86.9828	93.3611	68.8714	68.8714	68.8714
4165	86.3124	86.9273	93.3257	68.7149	68.7149	68.7149
4166	86.2664	86.879	93.2841	68.5598	68.5598	68.5598
4167	86.2233	86.8338	93.2438	68.4062	68.4062	68.4062
4168	86.1821	86.7905	93.2052	68.254	68.254	68.254
4169	86.1422	86.7484	93.168	68.1033	68.1033	68.1033





4170	86.1003	86.7044	93.1191	67.9541	67.9541	67.9541
4171	86.0558	86.6576	93.0616	67.8062	67.8062	67.8062
4172	86.0098	86.6095	93.0031	67.6598	67.6598	67.6598
4173	85.9632	86.5608	92.9441	67.5147	67.5147	67.5147
4174	85.214	85.6113	89.7414	67.37	67.37	67.37
4175	84.0576	84.4832	86.1504	67.2258	67.2258	67.2258
4176	83.3354	83.791	85.4282	67.083	67.083	67.083
4177	82.8494	83.2751	84.9422	66.9415	66.9415	66.9415
4178	82.4922	82.9179	84.5851	66.8013	66.8013	66.8013
4179	82.2015	82.6319	84.2783	66.6624	66.6624	66.6624
4180	81.9281	82.389	83.9087	66.5248	66.5248	66.5248
4181	81.6657	82.1598	83.5564	66.3885	66.3885	66.3885
4182	81.4327	81.9223	83.3354	66.2534	66.2534	66.2534
4183	81.2021	81.7124	83.0536	66.1196	66.1196	66.1196
4184	80.9713	81.5154	82.7578	65.987	65.987	65.987
4185	80.7329	81.3019	82.4323	65.8556	65.8556	65.8556
4186	80.258	80.5596	81.1629	65.7252	65.7252	65.7252
4187	81.9961	93.3032	85.1174	72.001	72.001	98.2039
4188	82.9301	94.3298	85.9757	75.0946	75.0946	99.4079
4189	83.4128	94.8263	86.3796	76.8087	76.8087	101.119
4190	83.6057	94.7431	86.4862	77.8299	77.8299	101.758
4191	83.7978	94.6707	87.2248	78.4445	78.4445	101.622
4192	84.1318	94.8044	88.6249	78.7901	78.7901	100.933
4193	84.4502	94.8746	89.6535	78.9835	78.9835	100.039
4194	84.6976	93.5234	90.9263	78.3949	78.3949	95.8135
4195	82.3823	82.7631	83.243	74.2014	74.2014	75.6001
4196	80.9846	81.317	81.7358	72.308	72.308	73.5288
4197	80.2425	80.7479	81.3846	71.5922	71.5922	73.4484
4198	79.7392	80.2446	80.8813	71.2256	71.2256	73.0818
4199	79.3662	79.8715	80.5083	71.0072	71.0072	72.8634
4200	79.3505	80.0544	81.4834	70.3799	70.3799	70.3799
4201	79.3747	80.2042	81.8882	70.0174	70.0174	70.0174
4202	79.4021	80.3272	82.2151	69.7679	69.7679	69.7679
4203	79.3532	80.2737	82.1958	69.5671	69.5671	69.5671
4204	79.2838	80.1798	82.136	69.3878	69.3878	69.3878
4205	78.8965	79.5686	80.933	69.2181	69.2181	69.2181
4206	78.6152	79.2873	80.6517	69.0535	69.0535	69.0535
4207	78.3812	79.0533	80.4177	68.892	68.892	68.892
4208	78.1734	78.8455	80.2099	68.7326	68.7326	68.7326
4209	77.9804	78.6524	80.0169	68.5749	68.5749	68.5749
4210	77.7959	78.468	79.8324	68.4188	68.4188	68.4188
4211	77.7267	78.518	80.1244	68.2644	68.2644	68.2644
4212	77.7418	78.6671	80.5524	68.1117	68.1117	68.1117
4213	77.6932	78.6131	80.5402	67.9604	67.9604	67.9604
4214	77.6111	78.5254	80.4944	67.8105	67.8105	67.8105
4215	77.5117	78.4204	80.4314	67.662	67.662	67.662
4216	77.4038	78.307	80.3598	67.515	67.515	67.515
4217	77.2923	78.19	80.2846	67.3693	67.3693	67.3693
4218	77.1393	78.0575	79.9969	67.225	67.225	67.225
4219	76.9959	77.913	79.8602	67.082	67.082	67.082
4220	76.8582	77.7744	79.7292	66.9404	66.9404	66.9404
4221	76.7167	77.6367	79.5626	66.8001	66.8001	66.8001
4222	76.5721	77.4966	79.3884	66.6611	66.6611	66.6611
4223	76.4253	81.2245	89.4187	66.5265	66.5265	66.5265
4224	80.4253	91.8944	88.8251	71.4661	71.4661	90.8403





ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls



00011705

4225	81.1089	91.7023	88.6515	73.553	73.553	91.7993
4226	81.3909	91.3064	88.8559	74.3983	74.3983	91.4776
4227	81.7466	91.7556	89.7203	74.6956	74.6956	90.6148
4228	82.1622	92.3825	90.6221	74.7338	74.7338	89.4789
4229	82.3085	92.0539	90.6593	74.6286	74.6286	88.1606
4230	82.5582	92.2366	91.807	74.4516	74.4516	88.8263
4231	82.8139	92.9425	93.083	74.2352	74.2352	85.5059
4232	83.2787	93.7038	94.1833	73.9687	73.9687	84.0875
4233	83.5967	94.4173	95.2056	73.6525	73.6525	82.5951
4234	83.8481	95.0374	96.2025	73.2721	73.2721	80.9625
4235	82.7353	89.8551	91.3351	71.5726	71.5726	73.0413
4236	81.8624	89.3754	90.8074	70.4476	70.4476	70.4476
4237	81.4455	90.4488	91.326	69.9528	69.9528	69.9528
4238	79.2668	79.2668	79.2668	69.7311	69.7311	69.7311
4239	78.0519	78.0519	78.0519	69.6302	69.6302	69.6302
4240	77.3729	77.3729	77.3729	69.5821	69.5821	69.5821
4241	76.9915	76.9915	76.9915	69.5571	69.5571	69.5571
4242	76.7756	76.7756	76.7756	69.5423	69.5423	69.5423
4243	76.6515	76.6515	76.6515	69.5319	69.5319	69.5319
4244	76.5786	76.5786	76.5786	69.5234	69.5234	69.5234
4245	76.534	76.534	76.534	69.5158	69.5158	69.5158
4246	76.5052	76.5052	76.5052	69.5085	69.5085	69.5085
4247	76.4852	76.4852	76.4852	69.5014	69.5014	69.5014
4248	76.47	76.47	76.47	69.4944	69.4944	69.4944
4249	76.4575	76.4575	76.4575	69.4875	69.4875	69.4875
4250	76.4466	76.4466	76.4466	69.4805	69.4805	69.4805
4251	76.4365	76.4365	76.4365	69.4735	69.4735	69.4735
4252	76.4268	76.4268	76.4268	69.4666	69.4666	69.4666
4253	76.4174	76.4174	76.4174	69.4597	69.4597	69.4597
4254	76.4082	76.4082	76.4082	69.4527	69.4527	69.4527
4255	76.399	76.399	76.399	69.4458	69.4458	69.4458
4256	76.3899	76.3899	76.3899	69.4388	69.4388	69.4388
4257	76.3808	76.3808	76.3808	69.4319	69.4319	69.4319
4258	76.3717	76.3717	76.3717	69.425	69.425	69.425
4259	76.3627	76.3627	76.3627	69.4181	69.4181	69.4181
4260	76.3536	76.3536	76.3536	69.4111	69.4111	69.4111
4261	76.3445	76.3445	76.3445	69.4042	69.4042	69.4042
4262	76.3355	76.3355	76.3355	69.3973	69.3973	69.3973
4263	76.3264	76.3264	76.3264	69.3904	69.3904	69.3904
4264	76.3174	76.3174	76.3174	69.3835	69.3835	69.3835
4265	76.3084	76.3084	76.3084	69.3765	69.3765	69.3765
4266	76.2993	76.2993	76.2993	69.3696	69.3696	69.3696
4267	76.2903	76.2903	76.2903	69.3627	69.3627	69.3627
4268	76.2813	76.2813	76.2813	69.3558	69.3558	69.3558
4269	76.2722	76.2722	76.2722	69.3489	69.3489	69.3489
4270	76.2632	76.2632	76.2632	69.342	69.342	69.342
4271	76.2542	76.2542	76.2542	69.3351	69.3351	69.3351
4272	76.2451	76.2451	76.2451	69.3282	69.3282	69.3282
4273	76.2361	76.2361	76.2361	69.3213	69.3213	69.3213
4274	76.2271	76.2271	76.2271	69.3144	69.3144	69.3144
4275	76.2181	76.2181	76.2181	69.3075	69.3075	69.3075
4276	76.2091	76.2091	76.2091	69.3006	69.3006	69.3006
4277	76.2001	76.2001	76.2001	69.2938	69.2938	69.2938
4278	76.191	76.191	76.191	69.2869	69.2869	69.2869
4279	76.182	76.182	76.182	69.28	69.28	69.28





ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011706

4280	76.173	76.173	76.173	69.2731	69.2731	69.2731
4281	76.164	76.164	76.164	69.2662	69.2662	69.2662
4282	76.155	76.155	76.155	69.2594	69.2594	69.2594
4283	76.146	76.146	76.146	69.2525	69.2525	69.2525
4284	76.137	76.137	76.137	69.2456	69.2456	69.2456
4285	76.128	76.128	76.128	69.2387	69.2387	69.2387
4286	76.119	76.119	76.119	69.2319	69.2319	69.2319
4287	76.1101	76.1101	76.1101	69.225	69.225	69.225
4288	76.1011	76.1011	76.1011	69.2182	69.2182	69.2182
4289	76.0921	76.0921	76.0921	69.2113	69.2113	69.2113
4290	76.0831	76.0831	76.0831	69.2044	69.2044	69.2044
4291	76.0741	76.0741	76.0741	69.1976	69.1976	69.1976
4292	76.0651	76.0651	76.0651	69.1907	69.1907	69.1907
4293	76.0562	76.0562	76.0562	69.1839	69.1839	69.1839
4294	76.0472	76.0472	76.0472	69.177	69.177	69.177
4295	76.0382	76.0382	76.0382	69.1702	69.1702	69.1702
4296	76.0293	76.0293	76.0293	69.1633	69.1633	69.1633
4297	76.0203	76.0203	76.0203	69.1565	69.1565	69.1565
4298	76.0113	76.0113	76.0113	69.1497	69.1497	69.1497
4299	76.0024	76.0024	76.0024	69.1428	69.1428	69.1428
4300	75.9934	75.9934	75.9934	69.136	69.136	69.136
4301	75.9845	75.9845	75.9845	69.1292	69.1292	69.1292
4302	75.9755	75.9755	75.9755	69.1223	69.1223	69.1223
4303	75.9665	75.9665	75.9665	69.1155	69.1155	69.1155
4304	75.9576	75.9576	75.9576	69.1087	69.1087	69.1087
4305	75.9487	75.9487	75.9487	69.1019	69.1019	69.1019
4306	75.9397	75.9397	75.9397	69.095	69.095	69.095
4307	75.9308	75.9308	75.9308	69.0882	69.0882	69.0882
4308	75.9218	75.9218	75.9218	69.0814	69.0814	69.0814
4309	75.9129	75.9129	75.9129	69.0746	69.0746	69.0746
4310	75.904	75.904	75.904	69.0678	69.0678	69.0678
4311	75.895	75.895	75.895	69.061	69.061	69.061
4312	75.8861	75.8861	75.8861	69.0542	69.0542	69.0542
4313	75.8772	75.8772	75.8772	69.0474	69.0474	69.0474
4314	75.8682	75.8682	75.8682	69.0406	69.0406	69.0406
4315	75.8593	75.8593	75.8593	69.0338	69.0338	69.0338
4316	75.8504	75.8504	75.8504	69.027	69.027	69.027
4317	75.8415	75.8415	75.8415	69.0202	69.0202	69.0202
4318	75.8326	75.8326	75.8326	69.0134	69.0134	69.0134
4319	75.8236	75.8236	75.8236	69.0066	69.0066	69.0066
4320	75.8147	75.8147	75.8147	68.9998	68.9998	68.9998
4321	75.8058	75.8058	75.8058	68.993	68.993	68.993
4322	75.7969	75.7969	75.7969	68.9862	68.9862	68.9862
4323	75.788	75.788	75.788	68.9794	68.9794	68.9794
4324	75.7791	75.7791	75.7791	68.9727	68.9727	68.9727
4325	75.7702	75.7702	75.7702	68.9659	68.9659	68.9659
4326	75.7613	75.7613	75.7613	68.9591	68.9591	68.9591
4327	75.7524	75.7524	75.7524	68.9523	68.9523	68.9523
4328	75.7435	75.7435	75.7435	68.9456	68.9456	68.9456
4329	75.7346	75.7346	75.7346	68.9388	68.9388	68.9388
4330	75.7258	75.7258	75.7258	68.932	68.932	68.932
4331	75.7169	75.7169	75.7169	68.9253	68.9253	68.9253
4332	75.708	75.708	75.708	68.9185	68.9185	68.9185
4333	75.6991	75.6991	75.6991	68.9118	68.9118	68.9118
4334	75.6902	75.6902	75.6902	68.905	68.905	68.905

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011707

4335	75.6813	75.6813	75.6813	68.8982	68.8982	68.8982
4336	75.6725	75.6725	75.6725	68.8915	68.8915	68.8915
4337	75.6636	75.6636	75.6636	68.8847	68.8847	68.8847
4338	75.6547	75.6547	75.6547	68.878	68.878	68.878
4339	75.6459	75.6459	75.6459	68.8712	68.8712	68.8712
4340	75.637	75.637	75.637	68.8645	68.8645	68.8645
4341	75.6281	75.6281	75.6281	68.8578	68.8578	68.8578
4342	75.6193	75.6193	75.6193	68.851	68.851	68.851
4343	75.6104	75.6104	75.6104	68.8443	68.8443	68.8443
4344	75.6016	75.6016	75.6016	68.8376	68.8376	68.8376
4345	75.5927	75.5927	75.5927	68.8308	68.8308	68.8308
4346	75.5839	75.5839	75.5839	68.8241	68.8241	68.8241
4347	75.575	75.575	75.575	68.8174	68.8174	68.8174
4348	75.5662	75.5662	75.5662	68.8106	68.8106	68.8106
4349	75.5573	75.5573	75.5573	68.8039	68.8039	68.8039
4350	75.5485	75.5485	75.5485	68.7972	68.7972	68.7972
4351	75.5396	75.5396	75.5396	68.7905	68.7905	68.7905
4352	75.5308	75.5308	75.5308	68.7838	68.7838	68.7838
4353	75.522	75.522	75.522	68.777	68.777	68.777
4354	75.5131	75.5131	75.5131	68.7703	68.7703	68.7703
4355	75.5043	75.5043	75.5043	68.7636	68.7636	68.7636
4356	75.4955	75.4955	75.4955	68.7569	68.7569	68.7569
4357	75.4867	75.4867	75.4867	68.7502	68.7502	68.7502
4358	75.4778	75.4778	75.4778	68.7435	68.7435	68.7435
4359	75.469	75.469	75.469	68.7368	68.7368	68.7368
4360	75.4602	75.4602	75.4602	68.7301	68.7301	68.7301
4361	75.4514	75.4514	75.4514	68.7234	68.7234	68.7234
4362	75.4426	75.4426	75.4426	68.7167	68.7167	68.7167
4363	75.4338	75.4338	75.4338	68.71	68.71	68.71
4364	75.425	75.425	75.425	68.7033	68.7033	68.7033
4365	75.4161	75.4161	75.4161	68.6966	68.6966	68.6966
4366	75.4073	75.4073	75.4073	68.69	68.69	68.69
4367	75.3985	75.3985	75.3985	68.6833	68.6833	68.6833
4368	75.3897	75.3897	75.3897	68.6766	68.6766	68.6766
4369	75.3809	75.3809	75.3809	68.6699	68.6699	68.6699
4370	75.3722	75.3722	75.3722	68.6632	68.6632	68.6632
4371	75.3634	75.3634	75.3634	68.6566	68.6566	68.6566
4372	75.3546	75.3546	75.3546	68.6499	68.6499	68.6499
4373	75.3458	75.3458	75.3458	68.6432	68.6432	68.6432
4374	75.337	75.337	75.337	68.6365	68.6365	68.6365
4375	75.3282	75.3282	75.3282	68.6299	68.6299	68.6299
4376	75.3194	75.3194	75.3194	68.6232	68.6232	68.6232
4377	75.3107	75.3107	75.3107	68.6166	68.6166	68.6166
4378	75.3019	75.3019	75.3019	68.6099	68.6099	68.6099
4379	75.2931	75.2931	75.2931	68.6032	68.6032	68.6032
4380	75.2843	75.2843	75.2843	68.5966	68.5966	68.5966
4381	75.2756	75.2756	75.2756	68.5899	68.5899	68.5899
4382	75.2668	75.2668	75.2668	68.5833	68.5833	68.5833
4383	75.258	75.258	75.258	68.5766	68.5766	68.5766
4384	75.2493	75.2493	75.2493	68.57	68.57	68.57
4385	75.2405	75.2405	75.2405	68.5633	68.5633	68.5633
4386	75.2318	75.2318	75.2318	68.5567	68.5567	68.5567
4387	75.223	75.223	75.223	68.5501	68.5501	68.5501
4388	75.2142	75.2142	75.2142	68.5434	68.5434	68.5434
4389	75.2055	75.2055	75.2055	68.5368	68.5368	68.5368

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00011708

4390	75.1967	75.1967	75.1967	68.5302	68.5302	68.5302
4391	75.188	75.188	75.188	68.5235	68.5235	68.5235
4392	75.1793	75.1793	75.1793	68.5169	68.5169	68.5169
4393	75.1705	75.1705	75.1705	68.5103	68.5103	68.5103
4394	75.1618	75.1618	75.1618	68.5036	68.5036	68.5036
4395	75.153	75.153	75.153	68.497	68.497	68.497
4396	75.1443	75.1443	75.1443	68.4904	68.4904	68.4904
4397	75.1356	75.1356	75.1356	68.4838	68.4838	68.4838
4398	75.1268	75.1268	75.1268	68.4772	68.4772	68.4772
4399	75.1181	75.1181	75.1181	68.4706	68.4706	68.4706
4400	75.1094	75.1094	75.1094	68.4639	68.4639	68.4639
4401	75.1007	75.1007	75.1007	68.4573	68.4573	68.4573
4402	75.0919	75.0919	75.0919	68.4507	68.4507	68.4507
4403	75.0832	75.0832	75.0832	68.4441	68.4441	68.4441
4404	75.0745	75.0745	75.0745	68.4375	68.4375	68.4375
4405	75.0658	75.0658	75.0658	68.4309	68.4309	68.4309
4406	75.0571	75.0571	75.0571	68.4243	68.4243	68.4243
4407	75.0484	75.0484	75.0484	68.4177	68.4177	68.4177
4408	75.0397	75.0397	75.0397	68.4111	68.4111	68.4111
4409	75.031	75.031	75.031	68.4045	68.4045	68.4045
4410	75.0223	75.0223	75.0223	68.3979	68.3979	68.3979
4411	75.0136	75.0136	75.0136	68.3914	68.3914	68.3914
4412	75.0049	75.0049	75.0049	68.3848	68.3848	68.3848
4413	74.9962	74.9962	74.9962	68.3782	68.3782	68.3782
4414	74.9875	74.9875	74.9875	68.3716	68.3716	68.3716
4415	74.9788	74.9788	74.9788	68.365	68.365	68.365
4416	74.9701	74.9701	74.9701	68.3585	68.3585	68.3585
4417	74.9614	74.9614	74.9614	68.3519	68.3519	68.3519
4418	74.9527	74.9527	74.9527	68.3453	68.3453	68.3453

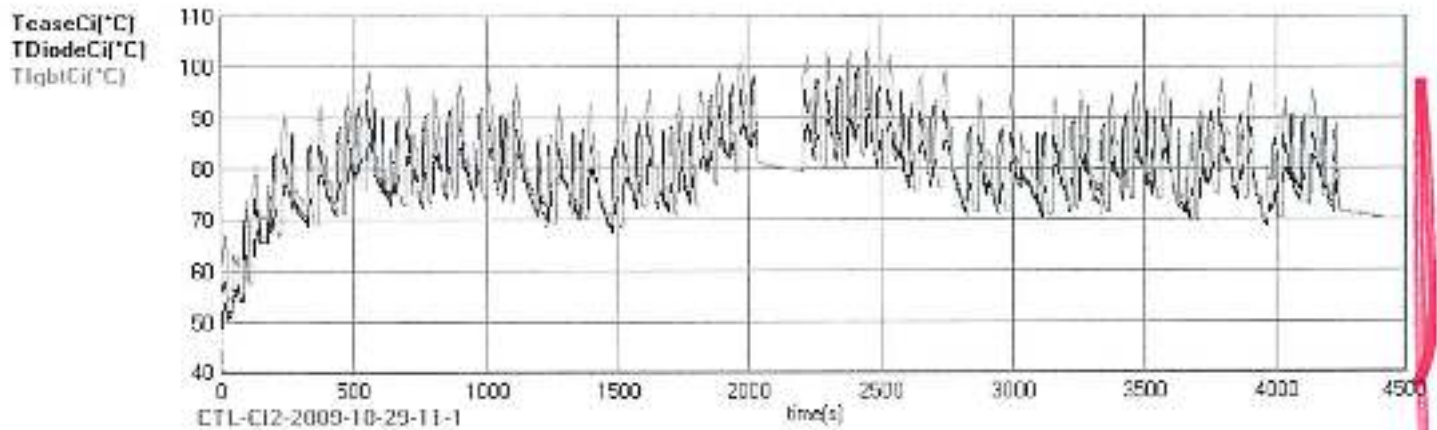




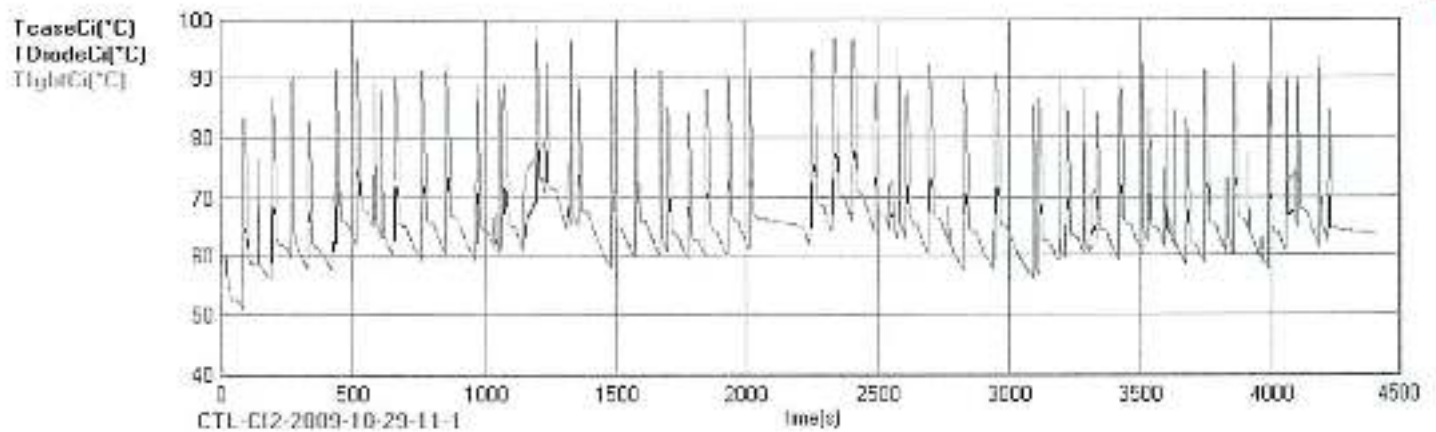
00011709

7C 4M AW2 6p/m Degraded Mode 1Mout

Inverter Temperature 1500V  
Air flow 2240m



Rheo temperature Temperature 1800V  
Air flow 2240m



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**ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS**

INVERTER TEMPERAT-EBRCL13.xls



00011710

**7C 4M AW2 6p/m<sup>2</sup> Degraded Mode 1Mout**

INV CM1200HC-66H-203\_Mitsubishi\_1\_5.6  
RHEC CM800E6C-66H-202\_Mitsubishi\_1\_5.6

time(s)	TcaseCi(°C)	TDiodeCi(°C)	TlgbtCi(°C)	TcaseCi(°C)	TDiodeCi(°C)	TlgbtCi(°C)
Maximum	91.3	100.0	104.8	79.1	79.1	98.6

time(s)	TcaseCi(°C)	TDiodeCi(°C)	TlgbtCi(°C)	TcaseCi(°C)	TDiodeCi(°C)	TlgbtCi(°C)
0	42	44.4837	44.6294	42	42	42
1	44.2511	53.8293	54.899	54.6381	54.6381	54.6381
2	46.6073	57.8837	60.2396	57.5416	57.5416	57.5416
3	48.0084	57.7776	61.0446	58.4877	58.4877	58.4877
4	48.9143	57.8483	61.8167	58.9509	58.9509	58.9509
5	49.5748	57.4373	62.457	59.2226	59.2226	59.2226
6	50.112	57.19	62.9897	59.4094	59.4094	59.4094
7	50.5923	56.9675	63.4799	59.5561	59.5561	59.5561
8	51.0036	56.582	63.8959	59.6515	59.6515	59.6515
9	51.3768	56.2429	64.2032	59.7136	59.7136	59.7136
10	51.7596	56.3198	64.2358	59.7707	59.7707	59.7707
11	52.2971	56.813	65.1121	59.9005	59.9005	59.9005
12	53.057	57.7563	66.8108	60.146	60.146	60.146
13	53.3488	57.4075	65.9831	60.2204	60.2204	60.2204
14	53.3036	56.652	64.6015	60.1343	60.1343	60.1343
15	53.3916	56.5962	64.4527	60.046	60.046	60.046
16	53.5512	56.6207	64.3899	59.9567	59.9567	59.9567
17	53.7803	56.7949	64.5292	59.8775	59.8775	59.8775
18	54.0527	57.0296	64.7404	59.809	59.809	59.809
19	53.2076	55.0135	59.7764	59.4132	59.4132	59.4132
20	51.7266	52.7995	54.3255	58.7484	58.7484	58.7484
21	50.9421	52.0151	53.5411	58.1468	58.1468	58.1468
22	50.6072	51.6173	53.5165	57.6183	57.6183	57.6183
23	50.4578	51.4663	53.4046	57.138	57.138	57.138
24	50.4755	51.4884	53.7019	56.7156	56.7156	56.7156
25	50.537	51.558	53.8533	56.3325	56.3325	56.3325
26	50.8238	51.649	54.0316	55.9844	55.9844	55.9844
27	50.8673	51.6846	53.958	55.6553	55.6553	55.6553
28	50.7319	51.7525	54.0721	55.3525	55.3525	55.3525
29	50.8067	51.8302	54.1899	55.0729	55.0729	55.0729
30	50.8754	51.8989	54.2586	54.8119	54.8119	54.8119
31	50.9406	51.9641	54.3238	54.5678	54.5678	54.5678
32	51.0037	52.0273	54.387	54.3389	54.3389	54.3389
33	51.0655	52.089	54.4487	54.1239	54.1239	54.1239
34	51.1284	52.1499	54.5096	53.9215	53.9215	53.9215
35	51.1885	52.2101	54.5698	53.7308	53.7308	53.7308
36	51.2481	52.2697	54.6294	53.5506	53.5506	53.5506
37	51.3052	52.3288	54.6885	53.3801	53.3801	53.3801
38	51.3638	52.3874	54.7471	53.2186	53.2186	53.2186
39	51.422	52.4455	54.8052	53.0654	53.0654	53.0654
40	51.4185	52.4247	54.5731	52.911	52.911	52.911
41	51.4247	52.4302	54.541	52.7626	52.7626	52.7626
42	51.4399	52.443	54.516	52.6198	52.6198	52.6198
43	51.467	52.4705	54.5353	52.4833	52.4833	52.4833
44	51.4917	52.4969	54.5186	52.3517	52.3517	52.3517

*Handwritten signature and a red mark.*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

0001711

45	53.4001	55.8625	83.1643	52.4593	52.4593	52.4593
46	54.2944	56.2654	83.1727	52.5303	52.5303	52.5303
47	54.634	56.1328	82.6614	52.5683	52.5683	52.5683
48	54.8365	56.2233	82.6192	52.5961	52.5961	52.5961
49	54.9783	56.2885	82.5781	52.6164	52.6164	52.6164
50	55.0856	56.3219	82.5094	52.6299	52.6299	52.6299
51	55.183	56.3113	82.3693	52.6363	52.6363	52.6363
52	55.2039	56.2351	82.1095	52.634	52.634	52.634
53	55.2215	56.1371	81.8307	52.6237	52.6237	52.6237
54	55.2236	56.0265	81.5437	52.6062	52.6062	52.6062
55	55.2436	55.9747	81.39	52.5848	52.5848	52.5848
56	55.3194	56.0436	81.4758	52.5647	52.5647	52.5647
57	55.4255	56.1426	81.5918	52.5459	52.5459	52.5459
58	55.5477	56.2578	81.724	52.5282	52.5282	52.5282
59	55.6782	56.3815	81.8623	52.5116	52.5116	52.5116
60	55.8102	56.5086	81.9924	52.4958	52.4958	52.4958
61	55.9428	56.6362	82.1231	52.4806	52.4806	52.4806
62	56.0756	56.7638	82.2538	52.4662	52.4662	52.4662
63	56.2075	56.8908	82.3812	52.4524	52.4524	52.4524
64	56.3349	57.0155	82.4913	52.4389	52.4389	52.4389
65	56.4595	57.1373	82.599	52.4256	52.4256	52.4256
66	56.5821	57.2572	82.7049	52.4126	52.4126	52.4126
67	56.7025	56.3382	59.2087	52.3347	52.3347	52.3347
68	56.1363	55.7422	56.7154	52.2224	52.2224	52.2224
69	54.6979	55.3038	56.277	52.1134	52.1134	52.1134
70	54.4496	55.0555	56.0287	52.0074	52.0074	52.0074
71	54.3044	54.9103	55.8835	51.9045	51.9045	51.9045
72	54.2153	54.8212	55.7944	51.8044	51.8044	51.8044
73	54.1566	54.7625	55.7357	51.7071	51.7071	51.7071
74	54.1146	54.7205	55.6937	51.6123	51.6123	51.6123
75	54.0816	54.6875	55.6607	51.5202	51.5202	51.5202
76	54.0625	54.6356	55.6891	51.431	51.431	51.431
77	54.0597	54.5869	55.7703	51.3455	51.3455	51.3455
78	54.0538	54.5725	55.7839	51.2624	51.2624	51.2624
79	54.0466	54.5568	55.7961	51.1818	51.1818	51.1818
80	54.0221	54.5577	55.7131	51.1023	51.1023	51.1023
81	54.0002	54.5358	55.6912	51.0247	51.0247	51.0247
82	53.9798	54.5154	55.6708	50.9491	50.9491	50.9491
83	55.8557	67.8125	58.2275	56.5704	56.5704	77.0845
84	56.8353	68.9094	59.1602	59.7769	59.7769	80.3701
85	57.2245	69.537	59.7021	61.7408	61.7408	82.3315
86	57.5485	69.5306	59.9694	62.9585	62.9585	83.1928
87	57.9121	69.5256	61.1771	63.6977	63.6977	83.251
88	58.3394	69.6473	62.6054	64.1331	64.1331	82.8344
89	58.823	70.0791	64.0048	64.3924	64.3924	82.2028
90	59.7395	71.7123	67.0871	64.5741	64.5741	81.4877
91	60.18	71.514	67.1453	64.6684	64.6684	80.6734
92	60.372	70.9879	67.1971	64.6885	64.6885	79.7496
93	60.6157	71.0437	67.7347	64.6587	64.6587	78.7602
94	61.0624	72.0381	68.6519	64.5985	64.5985	77.7356
95	61.2682	71.8623	68.7015	64.4768	64.4768	76.598
96	61.5233	71.8869	69.6873	64.3238	64.3238	75.4492
97	61.8821	72.3571	70.8734	64.1538	64.1538	74.313
98	62.2945	73.0621	72.0142	63.9587	63.9587	73.1315
99	62.6749	73.6728	72.9845	63.7187	63.7187	71.8357



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011712

100	63.0332	74.1924	74.0061	63.4563	63.4563	70.5547
101	62.4622	70.0715	70.9409	62.2739	62.2739	64.7184
102	61.7491	68.3511	69.6394	61.0933	61.0933	61.0933
103	61.43	69.3909	70.5249	60.4834	60.4834	60.4834
104	59.5176	59.5176	59.5176	60.0709	60.0709	60.0709
105	58.4532	58.4532	58.4532	59.812	59.812	59.812
106	57.8601	57.8601	57.8601	59.6332	59.6332	59.6332
107	57.5287	57.5287	57.5287	59.4967	59.4967	59.4967
108	57.3428	57.3428	57.3428	59.3828	59.3828	59.3828
109	57.2377	57.2377	57.2377	59.2813	59.2813	59.2813
110	57.1775	57.1775	57.1775	59.187	59.187	59.187
111	57.1424	57.1424	57.1424	59.0971	59.0971	59.0971
112	57.121	57.121	57.121	59.0102	59.0102	59.0102
113	57.1074	57.1074	57.1074	58.9255	58.9255	58.9255
114	57.0981	57.0981	57.0981	58.8427	58.8427	58.8427
115	57.0911	57.0911	57.0911	58.7615	58.7615	58.7615
116	57.0855	57.0855	57.0855	58.6817	58.6817	58.6817
117	57.0806	57.0806	57.0806	58.6034	58.6034	58.6034
118	57.0761	57.0761	57.0761	58.5263	58.5263	58.5263
119	57.0719	57.0719	57.0719	58.4505	58.4505	58.4505
120	57.0678	57.0678	57.0678	58.376	58.376	58.376
121	60.3825	75.4419	76.8428	58.4566	58.4566	58.4566
122	62.3046	74.7925	76.8425	58.5349	58.5349	58.5349
123	63.4557	73.656	76.5568	58.611	58.611	58.611
124	64.1904	73.3241	77.1377	58.6855	58.6855	58.6855
125	64.7009	72.9135	77.5912	58.7387	58.7387	58.7387
126	65.0987	72.4593	77.9724	58.7652	58.7652	58.7652
127	65.4548	72.1146	78.3407	58.7788	58.7788	58.7788
128	65.7672	71.6731	78.6588	58.7853	58.7853	58.7853
129	66.0311	71.1238	78.9256	58.7868	58.7868	58.7868
130	66.2985	70.9816	78.9154	58.7864	58.7864	58.7864
131	66.6118	71.0535	79.0485	58.7869	58.7869	58.7869
132	67.1974	71.8229	80.5734	58.7992	58.7992	58.7992
133	67.6285	72.0068	80.8644	58.8097	58.8097	58.8097
134	67.6158	71.2728	79.4945	58.8037	58.8037	58.8037
135	67.5394	70.8149	78.7173	58.7898	58.7898	58.7898
136	67.5865	70.713	78.532	58.7744	58.7744	58.7744
137	67.6557	70.6989	78.448	58.7578	58.7578	58.7578
138	67.8061	70.8136	78.5435	58.7414	58.7414	58.7414
139	67.9889	70.9652	78.6756	58.7251	58.7251	58.7251
140	68.1399	71.0041	78.6285	58.7069	58.7069	58.7069
141	68.0935	70.5432	77.8348	58.6799	58.6799	58.6799
142	67.9474	70.0198	77.0087	58.645	58.645	58.645
143	67.5576	75.7021	72.6855	62.2242	62.2242	76.4108
144	66.4784	67.6328	70.8294	60.5539	60.5539	60.5539
145	65.9123	67.1163	70.3328	59.6723	59.6723	59.6723
146	65.8036	66.8077	70.0242	59.1869	59.1869	59.1869
147	65.4622	66.6944	69.9786	58.902	58.902	58.902
148	65.3952	66.6372	69.9447	58.7181	58.7181	58.7181
149	65.4368	66.7589	70.2588	58.5881	58.5881	58.5881
150	65.4755	66.8089	70.3361	58.4844	58.4844	58.4844
151	65.5132	66.8579	70.4124	58.3947	58.3947	58.3947
152	65.5531	66.9114	70.4989	58.3126	58.3126	58.3126
153	65.5953	66.9679	70.5895	58.2349	58.2349	58.2349
154	65.5702	66.8854	70.3689	58.1575	58.1575	58.1575

*Handwritten signature*

*Handwritten mark*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011713



155	85.5611	66.8763	70.3598	58.0818	58.0818	58.0818
156	85.5607	66.8758	70.3593	58.0072	58.0072	58.0072
157	85.5649	66.88	70.3635	57.9335	57.9335	57.9335
158	85.5716	66.8868	70.3702	57.8608	57.8608	57.8608
159	85.5796	66.8948	70.3783	57.7887	57.7887	57.7887
160	85.5883	66.9035	70.387	57.7175	57.7175	57.7175
161	85.5974	66.9125	70.396	57.647	57.647	57.647
162	85.6066	66.9217	70.4052	57.5771	57.5771	57.5771
163	85.6158	66.931	70.4145	57.508	57.508	57.508
164	85.6251	66.9403	70.4237	57.4396	57.4396	57.4396
165	85.6343	66.9495	70.4329	57.3719	57.3719	57.3719
166	85.6435	66.9586	70.4421	57.3048	57.3048	57.3048
167	85.6526	66.9678	70.4512	57.2384	57.2384	57.2384
168	85.6616	66.9768	70.4603	57.1727	57.1727	57.1727
169	85.6706	66.9858	70.4693	57.1076	57.1076	57.1076
170	85.6796	66.9948	70.4782	57.0432	57.0432	57.0432
171	85.6278	68.8801	70.2122	56.9774	56.9774	56.9774
172	85.582	68.8148	70.1003	56.9117	56.9117	56.9117
173	85.5496	68.7748	70.0423	56.8464	56.8464	56.8464
174	85.5337	68.7615	70.0349	56.7818	56.7818	56.7818
175	85.5051	68.7126	89.9373	56.7173	56.7173	56.7173
176	87.0241	69.5936	76.9814	56.7022	56.7022	56.7022
177	87.7309	89.928	77.0169	56.681	56.681	56.681
178	87.9831	69.8029	76.589	56.6536	56.6536	56.6536
179	87.9838	69.4397	75.9313	56.6203	56.6203	56.6203
180	87.9813	69.3669	75.7611	56.5857	56.5857	56.5857
181	87.9731	69.2872	75.5823	56.5498	56.5498	56.5498
182	87.9577	69.199	75.3934	56.5127	56.5127	56.5127
183	87.9255	69.0772	75.1404	56.4739	56.4739	56.4739
184	87.8584	68.8821	74.7449	56.433	56.433	56.433
185	87.7654	68.6578	74.315	56.3898	56.3898	56.3898
186	87.8538	68.4149	73.8638	56.3444	56.3444	56.3444
187	67.6	68.3273	73.752	56.299	56.299	56.299
188	87.5966	68.3158	73.76	56.2543	56.2543	56.2543
189	87.6205	68.3317	73.7951	56.2101	56.2101	56.2101
190	87.6588	68.3825	73.8431	56.1666	56.1666	56.1666
191	87.7019	68.4004	73.8842	56.1235	56.1235	56.1235
192	87.7478	68.4409	73.9278	56.0809	56.0809	56.0809
193	68.256	80.5513	70.7548	61.658	61.658	82.2499
194	68.6255	80.6666	70.8722	64.724	64.724	85.1286
195	68.6991	80.4833	71.3916	66.4289	66.4289	86.3552
196	69.0332	80.444	72.979	67.3365	67.3365	88.4467
197	69.3495	80.5447	73.9637	67.8069	67.8069	88.0332
198	69.9934	81.6311	76.3281	68.0488	68.0488	85.3818
199	70.6179	82.3155	77.8784	68.1574	68.1574	84.5903
200	70.8156	81.751	77.5841	68.1691	68.1691	83.6842
201	70.8845	81.1023	77.7727	68.1055	68.1055	82.6609
202	71.2208	82.0394	78.6361	67.9999	67.9999	81.5984
203	71.4714	82.2475	78.9797	67.8429	67.8429	80.4459
204	71.6183	82.0814	79.3724	67.6405	67.6405	79.2366
205	71.8497	82.1722	80.4601	67.4106	67.4106	78.0197
206	72.1907	82.8349	81.6045	67.1666	67.1666	76.827
207	72.5118	83.4037	82.5383	66.8783	66.8783	75.4944
208	72.8073	83.89	83.4656	66.5589	66.5589	74.1404
209	72.7027	82.3913	82.701	65.852	65.852	70.8904

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011714

210	71.7215	77.5543	78.9299	64.3242	64.3242	64.3242
211	71.254	78.5704	79.7776	63.534	63.534	63.534
212	69.2687	69.2687	69.2687	63.0773	63.0773	63.0773
213	68.1626	68.1626	68.1626	62.8174	62.8174	62.8174
214	67.5451	67.5451	67.5451	62.6595	62.6595	62.6595
215	67.1991	67.1991	67.1991	62.5543	62.5543	62.5543
216	67.004	67.004	67.004	62.4767	62.4767	62.4767
217	66.8926	66.8926	66.8926	62.4134	62.4134	62.4134
218	66.8279	66.8279	66.8279	62.3578	62.3578	62.3578
219	66.789	66.789	66.789	62.3063	62.3063	62.3063
220	66.7645	66.7645	66.7645	62.2571	62.2571	62.2571
221	66.748	66.748	66.748	62.2093	62.2093	62.2093
222	66.7359	66.7359	66.7359	62.1624	62.1624	62.1624
223	66.7263	66.7263	66.7263	62.1162	62.1162	62.1162
224	66.7181	66.7181	66.7181	62.0705	62.0705	62.0705
225	66.7106	66.7106	66.7106	62.0253	62.0253	62.0253
226	66.7036	66.7036	66.7036	61.9804	61.9804	61.9804
227	66.6968	66.6968	66.6968	61.936	61.936	61.936
228	66.6901	66.6901	66.6901	61.8919	61.8919	61.8919
229	70.0132	88.292	87.3851	61.9299	61.9299	61.9299
230	71.939	85.6454	87.3886	61.9669	61.9669	61.9669
231	73.085	83.9166	86.3847	62.0029	62.0029	62.0029
232	73.8136	83.4503	86.8303	62.0385	62.0385	62.0385
233	74.3033	82.9294	87.2033	62.0466	62.0466	62.0466
234	74.6561	82.4107	87.5358	62.0199	62.0199	62.0199
235	74.9477	81.9387	87.8266	61.9761	61.9761	61.9761
236	75.214	81.5023	88.1029	61.9244	61.9244	61.9244
237	75.4238	80.9016	88.3165	61.8682	61.8682	61.8682
238	75.6128	80.441	88.3958	61.81	61.81	61.81
239	75.8166	80.339	88.2495	61.7516	61.7516	61.7516
240	76.2136	80.7524	89.1455	61.6979	61.6979	61.6979
241	76.8194	81.5394	90.6831	61.6512	61.6512	61.6512
242	76.8688	80.8353	89.3296	61.5958	61.5958	61.5958
243	76.6565	79.9886	87.9243	61.5333	61.5333	61.5333
244	76.5777	79.785	87.6104	61.4705	61.4705	61.4705
245	76.5708	79.8233	87.3815	61.4076	61.4076	61.4076
246	76.6395	79.6484	87.3792	61.3454	61.3454	61.3454
247	76.7502	79.7208	87.4275	61.2839	61.2839	61.2839
248	76.7088	79.3408	86.7787	61.2192	61.2192	61.2192
249	76.4372	78.4939	85.4701	61.1483	61.1483	61.1483
250	76.0321	77.5292	84.0563	61.0714	61.0714	61.0714
251	75.7505	77.1185	83.4883	60.9933	60.9933	60.9933
252	75.5473	76.8184	83.054	60.9144	60.9144	60.9144
253	75.3785	76.545	82.6314	60.8346	60.8346	60.8346
254	75.1941	76.2026	82.0416	60.7532	60.7532	60.7532
255	74.9979	75.852	81.4492	60.6704	60.6704	60.6704
256	74.8138	75.5456	80.9593	60.5867	60.5867	60.5867
257	74.7172	75.4395	80.8762	60.5039	60.5039	60.5039
258	74.6683	75.3813	80.8405	60.4221	60.4221	60.4221
259	74.6454	75.3494	80.8299	60.3412	60.3412	60.3412
260	74.633	75.3308	80.8149	60.2611	60.2611	60.2611
261	74.6262	75.3182	80.8058	60.1818	60.1818	60.1818
262	74.6226	75.3089	80.8	60.1033	60.1033	60.1033
263	74.6183	75.3005	80.7849	60.0255	60.0255	60.0255
264	73.1575	73.5204	73.9868	59.9176	59.9176	59.9176



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS



00011715

265	72.5245	73.1599	74.1614	59.8157	59.8157	59.8157
266	72.1412	72.6977	73.9187	59.7154	59.7154	59.7154
267	71.9019	72.4025	73.8323	59.6166	59.6166	59.6166
268	73.3371	85.6104	75.8631	65.159	65.159	85.7523
269	74.1157	86.4289	76.5924	68.2511	68.2511	88.8418
270	74.4803	86.4346	76.8967	69.9841	69.9841	90.1887
271	74.8431	86.4053	78.2801	70.9082	70.9082	90.3496
272	75.2036	88.4719	79.5923	71.3665	71.3665	89.9004
273	75.7128	87.1382	81.4044	71.5701	71.5701	89.1695
274	74.4724	76.9778	77.7541	68.7675	68.7675	75.324
275	73.5528	74.5592	76.683	65.8485	65.8485	65.8485
276	73.0068	74.0132	76.137	64.3215	64.3215	64.3215
277	72.6638	73.6702	75.794	63.4943	63.4943	63.4943
278	72.4312	73.4376	75.5614	63.0191	63.0191	63.0191
279	72.2589	73.2653	75.3891	62.7214	62.7214	62.7214
280	72.2431	73.2793	75.8154	62.5159	62.5159	62.5159
281	72.2076	73.2466	75.8224	62.3561	62.3561	62.3561
282	72.1623	73.2041	75.8196	62.22	62.22	62.22
283	72.1127	73.1578	75.8127	62.0964	62.0964	62.0964
284	72.062	73.1119	75.8049	61.9797	61.9797	61.9797
285	71.9417	72.9755	75.4798	61.8657	61.8657	61.8657
286	71.8384	72.8722	75.3765	61.7541	61.7541	61.7541
287	71.7446	72.7785	75.2827	61.6443	61.6443	61.6443
288	71.6562	72.6901	75.1943	61.5358	61.5358	61.5358
289	71.5711	72.6049	75.1091	61.4285	61.4285	61.4285
290	71.4879	72.5218	75.026	61.3222	61.3222	61.3222
291	71.4061	72.44	74.9442	61.217	61.217	61.217
292	71.3253	72.3592	74.8634	61.1128	61.1128	61.1128
293	71.2454	72.2793	74.7835	61.0095	61.0095	61.0095
294	71.1661	72.2	74.7042	60.9071	60.9071	60.9071
295	71.0874	72.1213	74.6255	60.8057	60.8057	60.8057
296	71.0094	72.0433	74.5475	60.7052	60.7052	60.7052
297	70.9319	71.9658	74.47	60.6056	60.6056	60.6056
298	70.855	71.8889	74.3931	60.507	60.507	60.507
299	70.7787	71.8126	74.3168	60.4092	60.4092	60.4092
300	70.6924	71.7238	74.1931	60.3121	60.3121	60.3121
301	70.6051	71.6351	74.0847	60.2158	60.2158	60.2158
302	70.5809	71.6248	74.2679	60.1214	60.1214	60.1214
303	70.5364	71.5803	74.2234	60.0279	60.0279	60.0279
304	70.4811	71.525	74.1681	59.9353	59.9353	59.9353
305	70.4238	71.469	74.1237	59.8435	59.8435	59.8435
306	70.3747	71.4246	74.1174	59.7528	59.7528	59.7528
307	70.2807	71.2946	73.7988	59.6619	59.6619	59.6619
308	70.1664	71.2003	73.7045	59.5718	59.5718	59.5718
309	70.0829	71.1168	73.621	59.4825	59.4825	59.4825
310	70.0056	71.0395	73.5437	59.394	59.394	59.394
311	69.9318	70.9657	73.4699	59.3063	59.3063	59.3063
312	69.8602	70.8941	73.3983	59.2194	59.2194	59.2194
313	69.79	70.8239	73.3281	59.1333	59.1333	59.1333
314	69.7208	70.7547	73.2589	59.048	59.048	59.048
315	69.6523	70.6862	73.1904	58.9634	58.9634	58.9634
316	69.5845	70.6184	73.1226	58.8796	58.8796	58.8796
317	69.5172	70.5511	73.0553	58.7966	58.7966	58.7966
318	69.4504	70.4843	72.9885	58.7143	58.7143	58.7143
319	69.3842	70.4181	72.9223	58.6327	58.6327	58.6327

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011716

320	69.3184	70.3523	72.8565	58.5519	58.5519	58.5519
321	69.2532	70.287	72.7913	58.4718	58.4718	58.4718
322	69.1884	70.2222	72.7264	58.3924	58.3924	58.3924
323	69.0432	70.0576	72.2921	58.3123	58.3123	58.3123
324	68.9018	69.9092	72.046	58.2324	58.2324	58.2324
325	68.7828	69.7671	71.8049	58.1528	58.1528	58.1528
326	68.6258	69.6342	71.5706	58.0734	58.0734	58.0734
327	68.5138	69.5225	71.4573	57.9948	57.9948	57.9948
328	70.2528	72.6012	79.8117	57.9481	57.9481	57.9481
329	70.9855	72.8227	79.6227	57.8974	57.8974	57.8974
330	71.2138	72.652	79.1191	57.8435	57.8435	57.8435
331	71.5958	82.8062	76.1633	62.6668	62.6668	80.9568
332	72.2348	83.8225	78.4191	65.0891	65.0891	82.4843
333	72.9029	84.6541	80.2089	66.2891	66.2891	82.7851
334	73.1079	84.0932	79.8681	66.8487	66.8487	82.4305
335	73.1737	83.4414	80.0536	67.0596	67.0596	81.6817
336	73.4753	84.2162	80.8513	67.087	67.087	80.752
337	73.7276	84.5301	81.2466	66.9955	66.9955	79.6691
338	73.853	84.3308	81.5471	66.8231	66.8231	78.4882
339	74.0605	84.3606	82.815	66.604	66.604	77.2791
340	74.3808	85.0026	83.7386	66.3613	66.3613	76.0877
341	74.6898	85.5652	84.6757	66.0716	66.0716	74.7613
342	74.9718	86.0433	85.5841	65.7466	65.7466	73.3988
343	74.9309	84.9243	85.152	65.1098	65.1098	70.5287
344	73.9061	79.5815	80.975	63.5387	63.5387	63.5387
345	73.4149	80.6369	81.8548	62.727	62.727	62.727
346	71.4178	71.4178	71.4178	62.2783	62.2783	62.2783
347	70.305	70.305	70.305	62.0322	62.0322	62.0322
348	69.6835	69.6835	69.6835	61.8906	61.8906	61.8906
349	69.335	69.335	69.335	61.8031	61.8031	61.8031
350	69.1382	69.1382	69.1382	61.7436	61.7436	61.7436
351	69.0257	69.0257	69.0257	61.6987	61.6987	61.6987
352	68.96	68.96	68.96	61.6614	61.6614	61.6614
353	68.9204	68.9204	68.9204	61.628	61.628	61.628
354	68.8952	68.8952	68.8952	61.5967	61.5967	61.5967
355	68.8781	68.8781	68.8781	61.5667	61.5667	61.5667
356	68.8654	68.8654	68.8654	61.5373	61.5373	61.5373
357	68.8553	68.8553	68.8553	61.5083	61.5083	61.5083
358	68.8465	68.8465	68.8465	61.4796	61.4796	61.4796
359	68.8384	68.8384	68.8384	61.4512	61.4512	61.4512
360	68.8308	68.8308	68.8308	61.4229	61.4229	61.4229
361	68.8235	68.8235	68.8235	61.3947	61.3947	61.3947
362	68.8162	68.8162	68.8162	61.3668	61.3668	61.3668
363	72.1404	88.5979	89.6458	61.3905	61.3905	61.3905
364	74.0822	87.9479	89.6135	61.4136	61.4136	61.4136
365	75.2106	86.2919	88.6969	61.4363	61.4363	61.4363
366	75.9395	85.6531	88.9704	61.4587	61.4587	61.4587
367	76.4246	85.1112	89.3259	61.4547	61.4547	61.4547
368	76.7878	84.5829	89.649	61.4168	61.4168	61.4168
369	77.0459	84.0867	89.924	61.3625	61.3625	61.3625
370	77.2979	83.635	90.188	61.3006	61.3006	61.3006
371	77.496	83.0303	90.3885	61.2346	61.2346	61.2346
372	77.6693	82.5187	90.4766	61.167	61.167	61.167
373	77.8578	82.4014	90.315	61.0992	61.0992	61.0992
374	78.2202	82.7461	91.0885	61.0343	61.0343	61.0343

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011717

375	78.8011	83.5101	92.6051	60.9743	60.9743	60.9743
376	78.8756	82.8935	91.4333	60.9096	60.9096	60.9096
377	78.6471	81.9874	89.9318	60.8403	60.8403	60.8403
378	78.5531	81.7501	89.6018	60.7712	60.7712	60.7712
379	78.5317	81.5939	89.3584	60.7022	60.7022	60.7022
380	78.5832	81.5954	89.3283	60.634	60.634	60.634
381	78.6783	81.6526	89.3817	60.5667	60.5667	60.5667
382	78.6807	81.3641	88.8594	60.4981	60.4981	60.4981
383	78.4059	80.549	87.5945	60.4259	60.4259	60.4259
384	78.016	79.6178	86.229	60.3502	60.3502	60.3502
385	77.7001	79.0911	85.4928	60.2734	60.2734	60.2734
386	77.4778	78.7785	85.055	60.1964	60.1964	60.1964
387	77.3046	78.5177	84.6729	60.1192	60.1192	60.1192
388	77.1318	78.2171	84.1763	60.0416	60.0416	60.0416
389	76.948	77.8932	83.633	59.9634	59.9634	59.9634
390	76.755	77.5626	83.087	59.8846	59.8846	59.8846
391	76.5971	77.3289	82.7454	59.8059	59.8059	59.8059
392	76.508	77.2293	82.6684	59.7281	59.7281	59.7281
393	76.4568	77.1696	82.6288	59.6511	59.6511	59.6511
394	76.4259	77.1307	82.6098	59.5749	59.5749	59.5749
395	76.4033	77.1024	82.5858	59.4994	59.4994	59.4994
396	76.385	77.0787	82.5654	59.4247	59.4247	59.4247
397	76.3892	77.0576	82.5474	59.3508	59.3508	59.3508
398	76.3544	77.0379	82.529	59.2775	59.2775	59.2775
399	76.3365	77.0172	82.4938	59.205	59.205	59.205
400	76.317	76.995	82.4573	59.1331	59.1331	59.1331
401	76.2965	76.9718	82.4203	59.0618	59.0618	59.0618
402	75.6864	76.1474	79.6643	58.983	58.983	58.983
403	74.6818	75.2832	76.2673	58.8961	58.8961	58.8961
404	74.1161	74.5928	75.9569	58.8107	58.8107	58.8107
405	73.8155	74.2259	75.9812	58.7271	58.7271	58.7271
406	73.6824	74.0744	76.2249	58.6455	58.6455	58.6455
407	73.663	74.0308	76.5585	58.5662	58.5662	58.5662
408	73.724	74.1397	77.08	58.4893	58.4893	58.4893
409	73.8474	74.2992	77.7057	58.415	58.415	58.415
410	73.8828	74.3372	77.7693	58.3414	58.3414	58.3414
411	73.8639	74.3183	77.7504	58.2685	58.2685	58.2685
412	73.8158	74.2701	77.7022	58.1962	58.1962	58.1962
413	73.7521	74.2064	77.6385	58.1246	58.1246	58.1246
414	73.6802	74.1346	77.5686	58.0536	58.0536	58.0536
415	73.6041	74.0584	77.4906	57.9833	57.9833	57.9833
416	73.5261	73.9804	77.4125	57.9136	57.9136	57.9136
417	73.4472	73.9015	77.3336	57.8445	57.8445	57.8445
418	73.2846	73.7115	76.8628	57.7749	57.7749	57.7749
419	72.9615	73.3585	76.8335	57.7033	57.7033	57.7033
420	72.5545	72.9588	74.7999	57.6299	57.6299	57.6299
421	72.1496	72.6746	73.865	57.5555	57.5555	57.5555
422	71.7401	72.5045	72.9422	58.2336	58.2336	61.4963
423	71.6819	73.27	73.4346	58.3249	59.3249	65.6838
424	71.6502	73.8287	73.3334	60.3198	60.3198	68.2132
425	71.5831	73.809	73.2647	60.926	60.926	68.9245
426	71.4932	73.7309	73.1743	61.317	61.317	69.3418
427	71.3914	73.6409	73.0721	61.5996	61.5996	69.6507
428	71.2825	73.5356	72.9631	61.8225	61.8225	69.8814
429	71.1698	73.4229	72.8504	62.0127	62.0127	70.0716

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011718

430	71.0554	73.3085	72.736	62.1857	62.1857	70.2446
431	70.9405	73.1936	72.6211	62.3493	62.3493	70.4082
432	70.7929	72.754	72.4956	62.3257	62.3257	69.6809
433	70.6292	72.2857	72.3705	62.1731	62.1731	68.7244
434	72.0589	84.1803	74.6427	66.199	66.199	86.6873
435	72.8563	85.0972	75.3994	68.5544	68.5544	89.1297
436	73.2982	85.5938	75.7965	70.0464	70.0464	90.6382
437	73.517	85.6646	75.9647	71.0382	71.0382	91.4499
438	73.6403	85.4341	76.3006	71.6813	71.6813	91.6286
439	73.9309	85.3511	77.8443	72.0287	72.0287	91.1598
440	74.2101	85.4108	78.8078	72.1917	72.1917	90.4407
441	74.8058	86.4251	81.085	72.2471	72.2471	89.6031
442	75.4084	87.1258	82.685	72.231	72.231	88.6872
443	75.575	86.5263	82.3399	72.1541	72.1541	87.6933
444	75.6119	85.8482	82.497	72.0207	72.0207	86.6007
445	75.9061	86.677	83.3068	71.8499	71.8499	85.473
446	76.1288	86.9146	83.6411	71.6331	71.6331	84.2622
447	76.2398	86.7083	83.9717	71.374	71.374	82.9957
448	76.4349	86.7491	85.0245	71.0878	71.0878	81.7211
449	76.741	87.3789	86.1341	70.7864	70.7864	80.4712
450	77.0306	87.9164	87.0421	70.4417	70.4417	79.085
451	77.2943	88.3729	87.9358	70.0658	70.0658	77.6733
452	77.1867	86.9879	87.2873	69.3346	69.3346	74.5136
453	76.1892	81.9438	83.326	67.7624	67.7624	67.7624
454	75.6812	82.9628	84.1739	66.9495	66.9495	66.9495
455	73.6847	73.6847	73.6847	66.5065	66.5065	66.5065
456	72.5718	72.5718	72.5718	66.266	66.266	66.266
457	71.9501	71.9501	71.9501	66.1299	66.1299	66.1299
458	71.6012	71.6012	71.6012	66.0479	66.0479	66.0479
459	71.4039	71.4039	71.4039	65.9939	65.9939	65.9939
460	71.2909	71.2909	71.2909	65.9543	65.9543	65.9543
461	71.2246	71.2246	71.2246	65.9222	65.9222	65.9222
462	71.1844	71.1844	71.1844	65.8941	65.8941	65.8941
463	71.1587	71.1587	71.1587	65.868	65.868	65.868
464	71.141	71.141	71.141	65.843	65.843	65.843
465	71.1277	71.1277	71.1277	65.8187	65.8187	65.8187
466	71.1169	71.1169	71.1169	65.7947	65.7947	65.7947
467	71.1075	71.1075	71.1075	65.7709	65.7709	65.7709
468	71.0989	71.0989	71.0989	65.7473	65.7473	65.7473
469	71.0907	71.0907	71.0907	65.7238	65.7238	65.7238
470	71.0828	71.0828	71.0828	65.7005	65.7005	65.7005
471	71.0749	71.0749	71.0749	65.6772	65.6772	65.6772
472	74.3975	90.7423	91.8187	65.6936	65.6936	65.6936
473	76.3225	90.0959	91.8214	65.7096	65.7096	65.7096
474	77.4677	88.3916	90.8364	65.7253	65.7253	65.7253
475	78.1948	87.859	91.2156	65.7408	65.7408	65.7408
476	78.6755	87.3239	91.576	65.719	65.719	65.719
477	79.009	86.786	91.8893	65.6494	65.6494	65.6494
478	79.2754	86.2844	92.154	65.5566	65.5566	65.5566
479	79.5138	85.8201	92.4024	65.4527	65.4527	65.4527
480	79.6954	85.1941	92.5881	65.3436	65.3436	65.3436
481	79.8543	84.6903	92.6463	65.2323	65.2323	65.2323
482	80.0278	84.5581	92.4697	65.1208	65.1208	65.1208
483	80.3875	84.9215	93.2951	65.0119	65.0119	65.0119
484	80.9595	85.6754	94.8011	64.9072	64.9072	64.9072



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls



00011719

485	80.9948	84.9825	93.4956	64.799	64.799	64.799
486	80.7521	84.0875	92.0285	64.688	64.688	64.688
487	80.8439	83.8378	91.6875	64.5776	64.5776	64.5776
488	80.6086	83.6704	91.4346	64.468	64.468	64.468
489	80.6458	83.859	91.3925	64.3594	64.3594	64.3594
490	80.7261	83.7029	91.4135	64.2521	64.2521	64.2521
491	80.731	83.5036	91.0543	64.1447	64.1447	64.1447
492	80.5024	82.7495	89.8786	64.0353	64.0353	64.0353
493	80.1447	81.8911	88.8182	63.9239	63.9239	63.9239
494	79.7918	81.2174	87.8689	63.8116	63.8116	63.8116
495	79.5497	80.8926	87.2276	63.6997	63.6997	63.6997
496	79.3664	80.6295	86.8539	63.5882	63.5882	63.5882
497	79.2122	80.3954	86.5079	63.4772	63.4772	63.4772
498	79.0445	80.1012	86.0156	63.3663	63.3663	63.3663
499	78.8671	79.8003	85.5215	63.2555	63.2555	63.2555
500	78.8819	79.4847	85.0274	63.1449	63.1449	63.1449
501	78.5175	79.2488	84.6638	63.0348	63.0348	63.0348
502	78.4178	79.1416	84.5745	62.9258	62.9258	62.9258
503	78.3534	79.07	84.5204	62.8179	62.8179	62.8179
504	78.3084	79.0179	84.4856	62.7111	62.7111	62.7111
505	78.2736	78.9766	84.4576	62.6053	62.6053	62.6053
506	78.2421	78.9404	84.4242	62.5006	62.5006	62.5006
507	78.2126	78.9063	84.3929	62.3989	62.3989	62.3989
508	78.1844	78.8736	84.3629	62.2942	62.2942	62.2942
509	78.157	78.8418	84.3338	62.1925	62.1925	62.1925
510	78.1275	78.8095	84.2926	62.0917	62.0917	62.0917
511	78.0962	78.7758	84.2488	61.9919	61.9919	61.9919
512	78.5497	90.7643	81.1018	67.4926	67.4926	88.0488
513	78.7885	91.0801	81.2919	70.5612	70.5612	91.1533
514	78.8818	91.0479	81.3324	72.3421	72.3421	92.7738
515	78.9106	90.7139	81.539	73.373	73.373	93.341
516	79.136	90.5596	83.0382	73.9017	73.9017	93.0401
517	79.3649	90.5648	83.9548	74.1433	74.1433	92.3891
518	79.9233	91.5515	86.2295	74.2257	74.2257	91.5705
519	80.4778	92.1813	87.7431	74.2114	74.2114	90.6513
520	80.6041	91.5433	87.372	74.1253	74.1253	89.6456
521	80.6024	90.8239	87.4899	73.9776	73.9776	88.5379
522	80.8668	91.6518	88.2791	73.7899	73.7899	87.3933
523	81.0489	91.8269	88.658	73.5547	73.5547	86.1629
524	81.1262	91.5905	88.8759	73.2773	73.2773	84.8786
525	81.2886	91.6094	89.8948	72.9726	72.9726	83.5867
526	81.5612	92.2038	90.9708	72.6527	72.6527	82.318
527	81.8151	92.7057	91.8386	72.2887	72.2887	80.9103
528	82.0438	93.1257	92.6987	71.8939	71.8939	79.4806
529	81.8785	91.5897	91.8934	71.1234	71.1234	76.1901
530	80.8444	86.6555	88.0424	69.5538	69.5538	69.5538
531	80.3464	87.6558	88.8638	68.7417	68.7417	68.7417
532	78.3432	78.3432	78.3432	68.3018	68.3018	68.3018
533	77.2261	77.2261	77.2261	68.0638	68.0638	68.0638
534	76.6015	76.6015	76.6015	67.9301	67.9301	67.9301
535	76.2506	76.2505	76.2505	67.8504	67.8504	67.8504
536	76.0514	76.0514	76.0514	67.7984	67.7984	67.7984
537	75.9369	75.9369	75.9369	67.7609	67.7609	67.7609
538	75.8693	75.8693	75.8693	67.7309	67.7309	67.7309
539	75.8278	75.8278	75.8278	67.7048	67.7048	67.7048



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011720

540	75.8007	75.8007	75.8007	67.6807	67.6807	67.6807
541	75.7818	75.7818	75.7818	67.6576	67.6576	67.6576
542	75.7673	75.7673	75.7673	67.6352	67.6352	67.6352
543	75.7553	75.7553	75.7553	67.6131	67.6131	67.6131
544	75.7447	75.7447	75.7447	67.5913	67.5913	67.5913
545	75.7348	75.7348	75.7348	67.5695	67.5695	67.5695
546	75.7254	75.7254	75.7254	67.5479	67.5479	67.5479
547	75.7162	75.7162	75.7162	67.5264	67.5264	67.5264
548	75.7072	75.7072	75.7072	67.5049	67.5049	67.5049
549	79.028	95.32	96.4098	67.5175	67.5175	67.5175
550	80.9515	94.6721	96.4109	67.5299	67.5299	67.5299
551	82.0952	92.9453	95.4087	67.5419	67.5419	67.5419
552	82.8213	92.4636	95.8389	67.5538	67.5538	67.5538
553	83.2929	91.9234	96.1929	67.5245	67.5245	67.5245
554	83.6063	91.3653	96.4861	67.4424	67.4424	67.4424
555	83.8471	90.8417	96.7259	67.3345	67.3345	67.3345
556	84.0567	90.3486	96.9456	67.2145	67.2145	67.2145
557	84.207	89.6891	97.0998	67.0887	67.0887	67.0887
558	84.335	89.1647	97.1197	66.9607	66.9607	66.9607
559	84.4771	89.0011	96.9118	66.8323	66.8323	66.8323
560	84.811	89.3488	97.738	66.7064	66.7064	66.7064
561	85.3544	90.0737	99.2137	66.5843	66.5843	66.5843
562	85.3455	89.3158	97.8135	66.4594	66.4594	66.4594
563	85.0731	88.4076	96.3482	66.3324	66.3324	66.3324
564	84.9359	88.1342	95.9867	66.2062	66.2062	66.2062
565	84.8722	87.943	95.7132	66.0809	66.0809	66.0809
566	84.8772	87.8946	95.6307	65.9569	65.9569	65.9569
567	84.9259	87.9082	95.6223	65.8342	65.8342	65.8342
568	84.9577	87.8367	95.4728	65.7123	65.7123	65.7123
569	84.7338	87.0887	94.3043	65.589	65.589	65.589
570	84.3686	86.2179	93.0292	65.4642	65.4642	65.4642
571	83.955	85.3983	91.8725	65.3384	65.3384	65.3384
572	82.7487	83.5502	87.0981	65.2043	65.2043	65.2043
573	81.3443	82.0447	83.1008	65.0646	65.0646	65.0646
574	80.0625	80.1869	80.2897	65.0055	65.0055	65.3666
575	79.6539	80.5324	81.2582	65.4213	65.4213	67.9716
576	79.8215	81.68	83.0488	66.2677	66.2677	71.6725
577	79.8563	81.8756	83.0671	66.8249	66.8249	72.7147
578	79.8233	82.016	83.0153	67.244	67.244	73.613
579	79.758	82.1361	82.9291	67.6007	67.6007	74.4436
580	78.7271	78.8422	78.9371	66.2663	66.2663	66.6003
581	79.0615	82.3754	82.0821	67.6273	67.6273	78.5865
582	80.5213	91.6794	85.2503	71.0304	71.0304	89.1001
583	79.9893	82.5781	83.3155	69.8438	69.8438	76.9728
584	79.6393	82.2015	82.9639	69.2684	69.2684	76.3407
585	79.3762	81.8224	82.6981	68.9478	68.9478	75.7629
586	79.1495	81.406	82.4672	68.7093	68.7093	75.1035
587	78.9457	81.0243	82.2625	68.505	68.505	74.4743
588	78.4763	79.7586	80.879	67.8823	67.8823	71.6065
589	77.6587	78.0482	78.3847	66.9458	66.9458	68.071
590	77.3117	77.8763	78.7731	66.1603	66.1603	66.1603
591	77.3641	78.3156	80.0312	65.6977	65.6977	65.6977
592	77.3607	78.2567	80.2038	65.3967	65.3967	65.3967
593	77.3024	78.1879	80.1967	65.1775	65.1775	65.1775
594	77.2354	78.104	80.2604	65.0003	65.0003	65.0003



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011721

595	77.1338	78.0024	80.1488	64.8445	64.8445	64.8445
596	77.0139	77.8825	80.0288	64.7002	64.7002	64.7002
597	76.8845	77.7531	79.8995	64.5622	64.5622	64.5622
598	76.7504	77.619	79.7654	64.428	64.428	64.428
599	76.6143	77.4829	79.6293	64.2963	64.2963	64.2963
600	76.4775	77.3461	79.4925	64.1665	64.1665	64.1665
601	76.3408	77.2094	79.3558	64.0381	64.0381	64.0381
602	76.2046	77.0732	79.2196	63.911	63.911	63.911
603	76.0691	76.9378	79.0841	63.7852	63.7852	63.7852
604	75.9372	76.8071	78.9498	63.6602	63.6602	63.6602
605	75.8051	76.6763	78.8152	63.5363	63.5363	63.5363
606	75.6784	76.5489	78.6896	63.4135	63.4135	63.4135
607	75.5428	76.4206	78.5624	63.2918	63.2918	63.2918
608	75.4123	76.2966	78.4376	63.1745	63.1745	63.1745
609	76.7507	78.1911	84.6613	63.0677	63.0677	63.0677
610	77.3048	78.6602	85.0129	62.9615	62.9615	62.9615
611	77.8775	89.1417	82.2785	67.803	67.803	66.32
612	78.4857	89.9042	84.1582	70.2031	70.2031	87.8104
613	77.3729	80.2841	80.7238	68.6934	68.6934	75.9741
614	76.3531	77.3675	79.161	68.2498	66.2498	66.2498
615	75.741	76.755	78.5575	64.96	64.96	64.96
616	75.364	76.3755	78.2403	64.2505	64.2505	64.2505
617	75.1157	76.1247	78.0519	63.8332	63.8332	63.8332
618	74.9386	75.9451	77.9346	63.5633	63.5633	63.5633
619	74.9226	75.9533	78.4135	63.3691	63.3691	63.3691
620	74.8956	75.9337	78.4989	63.2132	63.2132	63.2132
621	74.865	75.9115	78.5768	63.0771	63.0771	63.0771
622	74.8354	75.8942	78.6583	62.9518	62.9518	62.9518
623	74.8083	75.8796	78.7425	62.8324	62.8324	62.8324
624	74.7134	75.7694	78.8109	62.7161	62.7161	62.7161
625	74.634	75.6958	78.8831	62.6022	62.6022	62.6022
626	74.5493	75.611	78.9984	62.4899	62.4899	62.4899
627	74.4619	75.5237	78.9111	62.3789	62.3789	62.3789
628	74.3735	75.4353	78.8227	62.2691	62.2691	62.2691
629	74.2848	75.3466	78.734	62.1604	62.1604	62.1604
630	74.1962	75.258	78.6454	62.0526	62.0526	62.0526
631	74.108	75.1698	77.9572	61.9459	61.9459	61.9459
632	74.0119	75.0705	77.832	61.8402	61.8402	61.8402
633	73.891	74.9384	77.6112	61.7351	61.7351	61.7351
634	73.7562	74.7956	77.377	61.6307	61.6307	61.6307
635	73.545	74.5615	76.8245	61.5265	61.5265	61.5265
636	73.3455	74.3529	76.4905	61.4228	61.4228	61.4228
637	73.1531	74.1588	76.1685	61.3198	61.3198	61.3198
638	72.9654	73.9762	75.8559	61.2175	61.2175	61.2175
639	72.8082	73.8196	75.6863	61.116	61.116	61.116
640	74.522	76.8659	84.0727	61.0317	61.0317	61.0317
641	75.2206	77.0404	83.8266	60.9457	60.9457	60.9457
642	75.4208	76.8534	83.3128	60.8588	60.8588	60.8588
643	75.4862	76.829	83.1639	60.7721	60.7721	60.7721
644	75.4769	76.733	82.9478	60.6858	60.6858	60.6858
645	75.4188	76.5789	82.6552	60.5997	60.5997	60.5997
646	75.307	76.3294	82.1903	60.5136	60.5136	60.5136
647	75.1634	76.0615	81.7022	60.4276	60.4276	60.4276
648	74.9998	75.757	81.2026	60.3417	60.3417	60.3417
649	74.897	75.624	81.0493	60.2565	60.2565	60.2565



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011722

650	74.843	75.5619	81.0068	60.1721	60.1721	60.1721
651	74.8158	75.5268	80.9907	60.0886	60.0886	60.0886
652	74.8028	75.5083	80.987	60.008	60.008	60.008
653	74.7847	75.483	80.9769	59.9242	59.9242	59.9242
654	74.7895	75.4826	80.9696	59.8431	59.8431	59.8431
655	74.7858	75.4739	80.9639	59.7629	59.7629	59.7629
656	75.2464	87.5352	77.7532	65.2933	65.2933	65.8856
657	75.4766	87.6771	77.9329	68.3346	68.3346	88.8029
658	75.56	87.4073	78.0407	70.0297	70.0297	90.0939
659	75.8209	87.2947	79.5547	70.9092	70.9092	90.1573
660	76.0933	87.3241	80.5978	71.3461	71.3461	89.7221
661	76.6103	88.1278	82.5798	71.5407	71.5407	89.0252
662	77.2757	89.1038	84.6422	71.5973	71.5973	88.1838
663	77.4524	88.5091	84.2006	71.5622	71.5622	87.2396
664	77.489	87.8267	84.3564	71.4533	71.4533	86.1704
665	77.7243	88.3977	85.0443	71.2961	71.2961	85.0564
666	77.9668	88.8071	85.5012	71.0912	71.0912	83.8659
667	78.0517	88.5503	85.6598	70.8391	70.8391	82.6031
668	78.2189	88.5077	86.6912	70.5571	70.5571	81.3283
669	78.5005	89.0902	87.7784	70.2594	70.2594	80.0802
670	78.7841	89.636	88.7119	69.922	69.922	78.7171
671	79.0394	90.0949	89.5856	69.5489	69.5489	77.3026
672	79.0824	89.5121	89.6223	68.972	68.972	74.9356
673	78.071	84.1167	85.4071	67.4051	67.4051	67.8953
674	77.4727	84.5594	85.7926	66.4674	66.4674	66.4674
675	77.2156	85.6613	86.7402	65.982	65.982	65.982
676	75.3279	75.3279	75.3279	65.7151	65.7151	65.7151
677	74.2754	74.2754	74.2754	65.5688	65.5688	65.5688
678	73.6869	73.6869	73.6869	65.4847	65.4847	65.4847
679	73.3563	73.3563	73.3563	65.4328	65.4328	65.4328
680	73.169	73.169	73.169	65.3976	65.3976	65.3976
681	73.0613	73.0613	73.0613	65.371	65.371	65.371
682	72.9978	72.9978	72.9978	65.3488	65.3488	65.3488
683	72.9589	72.9589	72.9589	65.3289	65.3289	65.3289
684	72.9337	72.9337	72.9337	65.3103	65.3103	65.3103
685	72.916	72.916	72.916	65.2923	65.2923	65.2923
686	72.9026	72.9026	72.9026	65.2747	65.2747	65.2747
687	72.8916	72.8916	72.8916	65.2573	65.2573	65.2573
688	72.8818	72.8818	72.8818	65.24	65.24	65.24
689	72.8727	72.8727	72.8727	65.2228	65.2228	65.2228
690	72.8641	72.8641	72.8641	65.2057	65.2057	65.2057
691	72.8557	72.8557	72.8557	65.1888	65.1888	65.1888
692	72.8474	72.8474	72.8474	65.1715	65.1715	65.1715
693	76.15	90.292	91.9245	65.1813	65.1813	65.1813
694	78.062	89.5007	91.8155	65.1909	65.1909	65.1909
695	79.2115	89.029	92.2549	65.2003	65.2003	65.2003
696	79.9214	88.6948	92.8248	65.1741	65.1741	65.1741
697	80.3742	88.2761	93.2574	65.1022	65.1022	65.1022
698	80.6872	87.807	93.5744	65.0078	65.0078	65.0078
699	80.9613	87.3683	93.8485	64.903	64.903	64.903
700	81.1581	86.7733	94.0502	64.7932	64.7932	64.7932
701	81.3148	86.1947	94.157	64.6815	64.6815	64.6815
702	81.4823	86.0564	93.9743	64.5696	64.5696	64.5696
703	81.7932	86.3008	94.5656	64.4592	64.4592	64.4592
704	82.3333	87.0243	96.0449	64.352	64.352	64.352



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011723

705	82.4405	86.533	95.1385	64.2434	64.2434	64.2434
706	82.198	85.5747	93.549	64.1329	64.1329	64.1329
707	82.0725	85.2834	93.144	64.0231	64.0231	64.0231
708	82.0243	85.1064	92.8837	63.9141	63.9141	63.9141
709	82.0438	85.0848	92.8031	63.8062	63.8062	63.8062
710	82.1097	85.0957	92.8121	63.6994	63.6994	63.6994
711	82.1938	85.1354	92.8219	63.5936	63.5936	63.5936
712	80.1713	81.1744	83.2482	63.4723	63.4723	63.4723
713	78.9639	79.9742	81.8699	63.3517	63.3517	63.3517
714	78.2415	79.2517	81.1475	63.2322	63.2322	63.2322
715	77.7826	78.7928	80.6886	63.1138	63.1138	63.1138
716	77.4671	78.4773	80.373	62.9964	62.9964	62.9964
717	77.2298	78.24	80.1358	62.8802	62.8802	62.8802
718	77.0354	78.0457	79.9414	62.7649	62.7649	62.7649
719	76.8848	77.8751	79.7708	62.6508	62.6508	62.6508
720	76.6839	77.7006	79.3895	62.5373	62.5373	62.5373
721	76.4766	77.5289	79.148	62.4247	62.4247	62.4247
722	76.1489	77.0148	78.2379	62.312	62.312	62.312
723	75.4796	75.735	76.0958	62.197	62.197	62.197
724	75.0083	75.3196	75.5531	62.2811	62.2811	63.1382
725	77.123	79.5437	86.5859	62.1006	62.1006	62.1006
728	78.1027	80.0275	86.8977	61.9623	61.9623	61.9623
727	78.3959	79.8332	86.2991	61.8445	61.8445	61.8445
728	78.4903	79.8221	86.1418	61.738	61.738	61.738
729	78.4733	79.7006	85.8755	61.6372	61.6372	61.6372
730	78.3684	79.4442	85.3917	61.5393	61.5393	61.5393
731	78.1933	79.1002	84.78	61.4429	61.4429	61.4429
732	77.9835	78.7273	84.1518	61.3472	61.3472	61.3472
733	77.8583	78.5807	84.0124	61.2527	61.2527	61.2527
734	77.7807	78.4955	83.9504	61.1594	61.1594	61.1594
735	77.7333	78.4389	83.9159	61.0671	61.0671	61.0671
736	77.698	78.3971	83.8805	60.9758	60.9758	60.9758
737	77.8687	78.3821	83.8489	60.8854	60.8854	60.8854
738	77.6427	78.3308	83.8208	60.7958	60.7958	60.7958
739	77.618	78.3012	83.7909	60.7071	60.7071	60.7071
740	77.5905	78.2709	83.7457	60.6193	60.6193	60.6193
741	77.5616	78.2392	83.6994	60.5322	60.5322	60.5322
742	77.532	78.2068	83.6527	60.446	60.446	60.446
743	76.2885	76.8566	77.9224	60.3514	60.3514	60.3514
744	75.4235	75.9315	76.9541	60.2569	60.2569	60.2569
745	74.8709	75.3789	76.1015	60.1631	60.1631	60.1631
746	74.4884	74.9963	75.719	60.0702	60.0702	60.0702
747	74.1986	74.7066	75.4293	59.9781	59.9781	59.9781
748	73.9598	74.4678	75.1905	59.8868	59.8868	59.8868
749	73.7493	74.2573	74.9799	59.7963	59.7963	59.7963
750	73.5546	74.0628	74.7852	59.7065	59.7065	59.7065
751	73.392	73.9306	74.6968	59.6178	59.6178	59.6178
752	73.2261	73.7653	74.5324	59.5298	59.5298	59.5298
753	73.0582	73.5969	74.3631	59.4426	59.4426	59.4426
754	72.8673	73.3753	74.098	59.356	59.356	59.356
755	72.6894	73.2018	73.9308	59.2701	59.2701	59.2701
756	72.5135	73.0225	73.7466	59.185	59.185	59.185
757	72.8289	76.3978	74.5187	61.7264	61.7264	72.3759
758	74.2809	88.4536	76.8473	66.0949	66.0949	86.6206
759	75.0771	87.3553	77.5969	68.6142	68.6142	89.2072



760	75.5048	87.8061	77.9775	70.1759	70.1759	90.7521
761	75.6791	87.6316	78.0952	71.1376	71.1376	91.3402
762	75.9234	87.5092	79.2816	71.6826	71.6826	91.1753
763	76.2185	87.5127	80.527	71.9601	71.9601	90.6034
764	76.602	87.903	81.9193	72.0757	72.0757	89.83
765	77.407	89.4233	84.8858	72.0957	72.0957	88.955
766	77.6829	88.9718	84.6115	72.0459	72.0459	87.9979
767	77.7358	88.2896	84.5671	71.935	71.935	86.9416
768	77.8681	88.3339	85.0181	71.7765	71.7765	85.8253
769	78.1758	89.1306	85.7568	71.5782	71.5782	84.6594
770	78.2479	88.8231	85.6747	71.3289	71.3289	83.3942
771	78.39	88.742	86.6015	71.0496	71.0496	82.1203
772	78.6352	89.128	87.6708	70.7503	70.7503	80.8573
773	78.9263	89.7056	88.6779	70.421	70.421	79.5353
774	79.1863	90.1932	89.5325	70.0488	70.0488	78.1095
775	79.4257	90.5937	90.4351	69.654	69.654	76.6963
776	78.6747	86.0428	86.9772	68.327	68.327	70.4682
777	77.8966	84.5734	85.8532	67.1386	67.1386	67.1386
778	77.5395	85.5752	86.7007	66.5236	66.5236	66.5236
779	75.6029	75.6029	75.6029	66.1918	66.1918	66.1918
780	74.5232	74.5232	74.5232	66.0128	66.0128	66.0128
781	73.9196	73.9196	73.9196	65.9127	65.9127	65.9127
782	73.5805	73.5805	73.5805	65.8534	65.8534	65.8534
783	73.3885	73.3885	73.3885	65.8152	65.8152	65.8152
784	73.2781	73.2781	73.2781	65.7879	65.7879	65.7879
785	73.2132	73.2132	73.2132	65.7662	65.7662	65.7662
786	73.1734	73.1734	73.1734	65.7475	65.7475	65.7475
787	73.1477	73.1477	73.1477	65.7303	65.7303	65.7303
788	73.1298	73.1298	73.1298	65.7138	65.7138	65.7138
789	73.1162	73.1162	73.1162	65.6978	65.6978	65.6978
790	73.105	73.105	73.105	65.6821	65.6821	65.6821
791	73.0951	73.0951	73.0951	65.6665	65.6665	65.6665
792	73.086	73.086	73.086	65.6509	65.6509	65.6509
793	73.0773	73.0773	73.0773	65.6355	65.6355	65.6355
794	73.0688	73.0688	73.0688	65.62	65.62	65.62
795	73.0604	73.0604	73.0604	65.6047	65.6047	65.6047
796	76.3699	91.2876	92.7242	65.6127	65.6127	65.6127
797	78.2889	90.6332	92.719	65.6206	65.6206	65.6206
798	79.4338	89.5739	92.5247	65.6283	65.6283	65.6283
799	80.1647	89.2397	93.1036	65.6359	65.6359	65.6359
800	80.6433	88.8079	93.5325	65.6067	65.6067	65.6067
801	80.9727	88.2945	93.8468	65.5302	65.5302	65.5302
802	81.2396	87.8605	94.1258	65.4307	65.4307	65.4307
803	81.4497	87.311	94.3415	65.3202	65.3202	65.3202
804	81.6087	86.6548	94.5014	65.2045	65.2045	65.2045
805	81.7675	86.4337	94.3651	65.0871	65.0871	65.0871
806	81.9881	86.4399	94.4749	64.9698	64.9698	64.9698
807	82.4745	87.1104	95.9039	64.8549	64.8549	64.8549
808	82.7568	87.0796	95.8883	64.7404	64.7404	64.7404
809	82.6034	86.1885	94.3465	64.6241	64.6241	64.6241
810	82.4321	85.6852	93.5731	64.5079	64.5079	64.5079
811	82.3582	85.4704	93.2685	64.3926	64.3926	64.3926
812	82.351	85.3783	93.1206	64.2783	64.2783	64.2783
813	82.4031	85.3916	93.1096	64.1652	64.1652	64.1652
814	82.4862	85.3835	93.0504	64.0531	64.0531	64.0531



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011725

815	82.2433	84.5889	91.797	63.94	63.94	63.94
816	81.8587	83.8522	90.4172	63.8261	63.8261	63.8261
817	81.4609	82.8848	89.332	63.7118	63.7118	63.7118
818	81.181	82.5111	88.8284	63.5982	63.5982	63.5982
819	80.9832	82.2021	88.393	63.4852	63.4852	63.4852
820	80.762	81.8852	87.9038	63.3728	63.3728	63.3728
821	80.5489	81.5266	87.3174	63.2608	63.2608	63.2608
822	80.3266	81.1624	86.7309	63.1492	63.1492	63.1492
823	80.1226	80.854	86.2687	63.0382	63.0382	63.0382
824	79.9872	80.7198	86.1557	62.9284	62.9284	62.9284
825	79.9148	80.6289	86.0855	62.8196	62.8196	62.8196
826	79.8562	80.5619	86.0387	62.7119	62.7119	62.7119
827	79.8077	80.5073	85.9904	62.6052	62.6052	62.6052
828	79.7643	80.4583	85.9447	62.4996	62.4996	62.4996
829	79.7239	80.4124	85.9021	62.395	62.395	62.395
830	79.6849	80.3683	85.8595	62.2914	62.2914	62.2914
831	79.6429	80.3235	85.7997	62.1887	62.1887	62.1887
832	79.5995	80.2773	85.7388	62.087	62.087	62.087
833	79.5552	80.2303	85.6776	61.9883	61.9883	61.9883
834	78.5121	78.9044	81.0489	61.8798	61.8798	61.8798
835	77.5458	78.0538	78.7785	61.7721	61.7721	61.7721
836	76.9317	77.4397	78.1624	61.6653	61.6653	61.6653
837	76.5093	77.0173	77.7389	61.5595	61.5595	61.5595
838	76.1914	76.6994	77.4221	61.4546	61.4546	61.4546
839	75.9309	76.4389	77.1616	61.3506	61.3506	61.3506
840	75.7022	76.2101	76.9328	61.2476	61.2476	61.2476
841	75.4912	75.9992	76.7219	61.1455	61.1455	61.1455
842	75.2905	75.7986	76.5213	61.0443	61.0443	61.0443
843	75.0962	75.6042	76.3269	60.944	60.944	60.944
844	74.9058	75.4138	76.1365	60.8445	60.8445	60.8445
845	74.7182	75.2282	75.9488	60.746	60.746	60.746
846	74.5327	75.0406	75.7633	60.6483	60.6483	60.6483
847	74.3489	74.8569	75.5795	60.5515	60.5515	60.5515
848	74.2278	74.8178	75.657	60.456	60.456	60.456
849	74.3876	77.0709	76.0571	62.5347	62.5347	71.5212
850	75.8666	88.0309	78.4358	67.0861	67.0861	87.8057
851	76.6731	88.9487	79.1981	69.6936	69.6936	90.2887
852	77.1034	89.4168	79.5798	71.2986	71.2986	91.8893
853	77.2761	89.2547	79.6985	72.2814	72.2814	92.512
854	77.4933	89.1081	80.754	72.8431	72.8431	92.3993
855	77.7767	89.088	82.0323	73.1271	73.1271	91.8425
856	78.1081	89.3491	83.2441	73.242	73.242	91.0714
857	78.8772	90.8331	86.1739	73.2571	73.2571	90.1917
858	79.1942	90.5481	86.1756	73.2009	73.2009	89.2294
859	79.2539	89.87	86.0757	73.0837	73.0837	88.1717
860	79.3536	89.7615	86.456	72.917	72.917	87.0462
861	79.6728	90.6596	87.2688	72.7117	72.7117	85.8785
862	79.747	90.3541	87.1887	72.4552	72.4552	84.606
863	79.8671	90.2368	88.0058	72.1669	72.1669	83.3212
864	80.0895	90.5552	89.0575	71.8576	71.8576	82.0445
865	80.3712	91.1319	90.0739	71.5212	71.5212	80.7249
866	80.6218	91.6151	90.9121	71.1394	71.1394	79.2862
867	80.8511	92.0056	91.8047	70.7381	70.7381	77.8642
868	80.1846	87.9219	88.7569	69.4889	69.4889	72.0911
869	79.3806	85.923	87.2158	68.2352	68.2352	68.2352



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

00011726



870	78.9778	86.8991	88.0378	67.5863	67.5863	67.5863
871	77.0286	77.0286	77.0286	67.2381	67.2381	67.2381
872	75.9418	75.9418	75.9418	67.0512	67.0512	67.0512
873	75.334	75.334	75.334	66.9475	66.9475	66.9475
874	74.9925	74.9925	74.9925	66.8868	66.8868	66.8868
875	74.799	74.799	74.799	66.8483	66.8483	66.8483
876	74.6876	74.6876	74.6876	66.8213	66.8213	66.8213
877	74.6219	74.6219	74.6219	66.8003	66.8003	66.8003
878	74.5816	74.5816	74.5816	66.7823	66.7823	66.7823
879	74.5554	74.5554	74.5554	66.7659	66.7659	66.7659
880	74.537	74.537	74.537	66.7504	66.7504	66.7504
881	74.523	74.523	74.523	66.7353	66.7353	66.7353
882	74.5114	74.5114	74.5114	66.7205	66.7205	66.7205
883	74.5012	74.5012	74.5012	66.7057	66.7057	66.7057
884	74.4917	74.4917	74.4917	66.6911	66.6911	66.6911
885	74.4826	74.4826	74.4826	66.6766	66.6766	66.6766
886	74.4737	74.4737	74.4737	66.662	66.662	66.662
887	74.465	74.465	74.465	66.6475	66.6475	66.6475
888	77.7899	92.9036	94.242	66.654	66.654	66.654
889	79.6903	92.2531	94.2842	66.6604	66.6604	66.6604
890	80.8375	91.0677	93.9417	66.6666	66.6666	66.6666
891	81.5684	90.7332	94.5202	66.6727	66.6727	66.6727
892	82.0443	90.2824	94.9353	66.6395	66.6395	66.6395
893	82.3858	89.7469	95.2392	66.5557	66.5557	66.5557
894	82.6232	89.3014	95.5066	66.4472	66.4472	66.4472
895	82.8278	88.7573	95.7192	66.327	66.327	66.327
896	82.9774	88.0939	95.8718	66.2014	66.2014	66.2014
897	83.1265	87.8185	95.7536	66.0738	66.0738	66.0738
898	83.3123	87.7485	95.7192	65.9462	65.9462	65.9462
899	83.7727	88.3922	97.1179	65.8208	65.8208	65.8208
900	84.1068	88.5155	97.3999	65.6963	65.6963	65.6963
901	83.9901	87.6809	95.9321	65.5705	65.5705	65.5705
902	83.7896	87.0735	94.9813	65.4447	65.4447	65.4447
903	83.6973	86.8556	94.6822	65.3198	65.3198	65.3198
904	83.666	86.7158	94.4723	65.196	65.196	65.196
905	83.6974	86.7149	94.451	65.0734	65.0734	65.0734
906	83.7632	86.753	94.4717	64.9521	64.9521	64.9521
907	83.8472	86.8118	94.5148	64.832	64.832	64.832
908	83.8401	86.8089	94.1566	64.7125	64.7125	64.7125
909	82.3602	83.7005	87.2444	64.5848	64.5848	64.5848
910	81.5564	82.9405	86.5897	64.4586	64.4586	64.4586
911	81.0795	82.4635	86.1127	64.3336	64.3336	64.3336
912	80.7801	82.1641	85.8134	64.2097	64.2097	64.2097
913	80.5773	81.9613	85.6106	64.087	64.087	64.087
914	80.4272	81.8112	85.4605	63.9655	63.9655	63.9655
915	80.306	81.69	85.3392	63.8451	63.8451	63.8451
916	80.2007	81.5847	85.2339	63.7258	63.7258	63.7258
917	80.1043	81.4883	85.1375	63.6077	63.6077	63.6077
918	80.013	81.3971	85.0463	63.4906	63.4906	63.4906
919	79.9248	81.3089	84.9581	63.3747	63.3747	63.3747
920	79.8386	81.2228	84.8718	63.2598	63.2598	63.2598
921	79.7537	81.1377	84.7869	63.146	63.146	63.146
922	79.6697	81.0538	84.703	63.0333	63.0333	63.0333
923	79.5866	80.9706	84.6199	62.9216	62.9216	62.9216
924	79.4639	80.8064	84.3557	62.8107	62.8107	62.8107



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011727

925	79.3263	80.6359	84.1061	62.7007	62.7007	62.7007
926	79.1263	80.3476	83.6057	62.5912	62.5912	62.5912
927	78.8929	80.03	83.09	62.4822	62.4822	62.4822
928	78.6425	79.7138	82.5765	62.3738	62.3738	62.3738
929	78.4498	79.5194	82.3694	62.2663	62.2663	62.2663
930	78.2355	79.283	81.9561	62.1595	62.1595	62.1595
931	78.0086	79.0415	81.5316	62.0534	62.0534	62.0534
932	77.7732	78.793	81.1014	61.9479	61.9479	61.9479
933	77.5327	78.5399	80.6736	61.843	61.843	61.843
934	77.2441	78.2663	80.0206	61.7386	61.7386	61.7386
935	76.998	78.0496	79.6715	61.6349	61.6349	61.6349
936	76.7962	77.8478	79.4698	61.5322	61.5322	61.5322
937	76.619	77.6706	79.2926	61.4304	61.4304	61.4304
938	76.4557	77.5073	79.1293	61.3296	61.3296	61.3296
939	76.3003	77.3519	78.9739	61.2296	61.2296	61.2296
940	76.1498	77.2014	78.8234	61.1306	61.1306	61.1306
941	76.0023	77.0539	78.6759	61.0325	61.0325	61.0325
942	75.857	76.9086	78.5306	60.9352	60.9352	60.9352
943	75.7133	76.7849	78.3869	60.8389	60.8389	60.8389
944	75.571	76.6226	78.2446	60.7434	60.7434	60.7434
945	75.4298	76.4814	78.1034	60.6487	60.6487	60.6487
946	74.9961	75.6659	76.6119	60.5532	60.5532	60.5532
947	74.5824	75.1064	75.8465	60.458	60.458	60.458
948	74.1748	74.5531	75.0873	60.363	60.363	60.363
949	73.7658	73.9982	74.3266	60.2683	60.2683	60.2683
950	73.3511	73.4378	73.5603	60.1738	60.1738	60.1738
951	75.8624	78.0892	85.3624	60.0956	60.0956	60.0956
952	76.6593	78.52	85.3388	60.0165	60.0165	60.0165
953	76.9963	78.4306	84.8923	59.9388	59.9388	59.9388
954	77.1269	78.4669	84.7979	59.8574	59.8574	59.8574
955	77.1444	78.3938	84.6994	59.7784	59.7784	59.7784
956	77.0888	78.2323	84.2828	59.6988	59.6988	59.6988
957	76.9694	77.9711	83.7995	59.6214	59.6214	59.6214
958	76.8134	77.6778	83.2912	59.5432	59.5432	59.5432
959	76.6372	77.3708	82.7801	59.4652	59.4652	59.4652
960	76.5378	77.2631	82.6924	59.388	59.388	59.388
961	76.4802	77.1976	82.6462	59.3116	59.3116	59.3116
962	76.4457	77.1552	82.6227	59.236	59.236	59.236
963	76.4228	77.1254	82.6066	59.1611	59.1611	59.1611
964	76.8801	89.1705	79.3404	64.6951	64.6951	85.288
965	77.0411	89.044	79.4654	67.6722	67.6722	87.9289
966	77.2463	88.8837	80.4311	69.2558	69.2556	88.8613
967	77.531	88.8538	81.7508	70.0653	70.0653	88.8295
968	77.8388	89.0422	82.8813	70.4559	70.4559	88.3323
969	78.5944	90.5131	85.7783	70.6213	70.6213	87.6027
970	78.9457	90.3399	85.9598	70.6531	70.6531	86.7291
971	79.0181	89.6716	85.8336	70.5928	70.5928	85.7309
972	79.1062	89.4782	86.1791	70.4662	70.4662	84.6453
973	79.441	90.4476	87.0429	70.2936	70.2936	83.5133
974	79.5247	90.1517	86.9725	70.0653	70.0653	82.2691
975	79.6396	90.0203	87.7332	69.8021	69.8021	81.0083
976	79.8561	90.3036	88.7823	69.5158	69.5158	79.7517
977	80.1402	90.8885	89.8123	69.2034	69.2034	78.4625
978	80.3929	91.3776	90.6488	68.844	68.844	77.0441
979	80.624	91.7701	91.543	68.463	68.463	75.6443



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011728

980	80.0179	87.9841	88.7575	87.2926	67.2926	70.1805
981	79.1717	85.6631	86.9639	86.0187	66.0187	66.0187
982	78.7764	88.6267	87.7733	65.3597	65.3597	65.3597
983	76.8215	76.8215	76.8215	65.0078	65.0078	65.0078
984	75.7315	75.7315	75.7315	64.8198	64.8198	64.8198
985	75.1221	75.1221	75.1221	64.7165	64.7165	64.7165
986	74.7796	74.7796	74.7796	64.6569	64.6569	64.6569
987	74.5856	74.5856	74.5856	64.6198	64.6198	64.6198
988	74.474	74.474	74.474	64.5944	64.5944	64.5944
989	74.4081	74.4081	74.4081	64.5751	64.5751	64.5751
990	74.3878	74.3678	74.3678	64.5589	64.5589	64.5589
991	74.3416	74.3416	74.3416	64.5443	64.5443	64.5443
992	74.3232	74.3232	74.3232	64.5305	64.5305	64.5305
993	74.3093	74.3093	74.3093	64.5172	64.5172	64.5172
994	74.2977	74.2977	74.2977	64.5041	64.5041	64.5041
995	74.2875	74.2875	74.2875	64.4912	64.4912	64.4912
996	74.2781	74.2781	74.2781	64.4783	64.4783	64.4783
997	74.2691	74.2691	74.2691	64.4655	64.4655	64.4655
998	74.2603	74.2603	74.2603	64.4528	64.4528	64.4528
999	74.2516	74.2516	74.2516	64.44	64.44	64.44
1000	77.5838	92.8323	94.1804	64.4459	64.4459	64.4459
1001	79.4824	92.1795	94.1767	64.4517	64.4517	64.4517
1002	80.828	90.914	93.7403	64.4574	64.4574	64.4574
1003	81.3579	90.5783	94.3177	64.463	64.463	64.463
1004	81.8336	90.1172	94.7258	64.4348	64.4348	64.4348
1005	82.1546	89.5724	95.0274	64.3633	64.3633	64.3633
1006	82.4131	89.1305	95.2985	64.2707	64.2707	64.2707
1007	82.6202	88.5913	95.5107	64.1681	64.1681	64.1681
1008	82.7723	87.9311	95.6865	64.0608	64.0608	64.0608
1009	82.9212	87.6292	95.5666	63.9518	63.9518	63.9518
1010	83.0929	87.5194	95.4501	63.8427	63.8427	63.8427
1011	83.5472	88.1581	96.8487	63.7356	63.7356	63.7356
1012	83.9026	88.332	97.2346	63.6294	63.6294	63.6294
1013	83.7828	87.4643	95.7073	63.5219	63.5219	63.5219
1014	83.5831	86.858	94.7568	63.4144	63.4144	63.4144
1015	83.4883	86.622	94.4327	63.3076	63.3076	63.3076
1016	83.4636	86.497	94.2431	63.2018	63.2018	63.2018
1017	83.5014	86.4963	94.2183	63.0971	63.0971	63.0971
1018	83.5729	86.5312	94.2302	62.9935	62.9935	62.9935
1019	83.4055	85.8866	93.2035	62.8895	62.8895	62.8895
1020	83.0784	85.0577	91.9719	62.785	62.785	62.785
1021	82.6784	84.2096	90.784	62.6803	62.6803	62.6803
1022	82.3824	83.7807	90.1923	62.5761	62.5761	62.5761
1023	82.1712	83.5007	89.817	62.4727	62.4727	62.4727
1024	82.0075	83.2739	89.5028	62.37	62.37	62.37
1025	81.8678	83.0722	89.2153	62.2681	62.2681	62.2681
1026	81.7198	82.8287	88.825	62.1667	62.1667	62.1667
1027	81.5421	82.5388	88.3181	62.0659	62.0659	62.0659
1028	80.2845	80.9832	82.718	61.9597	61.9597	61.9597
1029	79.4555	80.264	81.7208	61.8543	61.8543	61.8543
1030	78.9097	79.8544	81.0148	61.7496	61.7496	61.7496
1031	77.9187	77.9223	77.9265	61.6426	61.6426	61.6426
1032	77.7819	78.877	79.485	62.3013	62.3013	65.598
1033	77.7192	79.0198	79.7182	62.7714	62.7714	68.687
1034	77.6055	78.9081	79.6045	63.0124	63.0124	66.9279



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011729

1035	77.4647	78.7653	79.4637	63.1381	63.1381	67.0536
1036	77.3098	78.8104	79.3088	63.2058	63.2058	67.1213
1037	77.0491	78.1409	78.7272	63.0986	63.0986	66.3854
1038	76.6797	77.464	77.8851	62.8253	62.8253	65.1863
1039	76.2441	76.7208	76.9767	62.4554	62.4554	63.8905
1040	75.9595	76.5398	76.8515	62.3107	62.3107	64.0579
1041	75.6352	76.0546	76.2798	62.0992	62.0992	63.3619
1042	75.2074	75.2998	75.3494	61.7314	61.7314	62.0084
1043	74.9166	75.06	75.2214	61.4355	61.4355	61.4355
1044	76.3658	77.2772	82.9643	61.2455	61.2455	61.2455
1045	77.0531	77.8279	83.301	61.104	61.104	61.104
1046	77.3901	78.1179	83.5414	60.9876	60.9876	60.9876
1047	77.5651	78.2844	83.7284	60.8841	60.8841	60.8841
1048	77.8526	78.3834	83.8278	60.7877	60.7877	60.7877
1049	77.8921	78.3952	83.8762	60.6953	60.6953	60.6953
1050	77.703	78.4004	83.8848	60.6052	60.6052	60.6052
1051	77.6985	78.3905	83.8782	60.5168	60.5168	60.5168
1052	77.6858	78.3725	83.8634	60.4296	60.4296	60.4296
1053	77.667	78.3494	83.8349	60.3434	60.3434	60.3434
1054	78.1163	90.3934	80.6374	65.8669	65.8669	86.4599
1055	78.3496	90.6643	80.8247	68.9408	68.9408	89.5312
1056	77.1885	80.7857	78.9809	67.6593	67.6593	77.8251
1057	75.8317	76.1485	76.4525	64.6238	64.6238	64.6238
1058	75.0014	75.3162	75.6222	63.0468	63.0468	63.0468
1059	74.4575	74.7723	75.0783	62.2028	62.2028	62.2028
1060	74.0695	74.3843	74.6903	61.7276	61.7276	61.7276
1061	74.1001	74.8892	75.8267	61.4398	61.4398	61.4398
1062	74.046	74.8212	75.7897	61.2458	61.2458	61.2458
1063	73.9467	74.7079	75.7074	61.0993	61.0993	61.0993
1064	73.812	74.6144	75.5224	60.9771	60.9771	60.9771
1065	73.6668	74.4692	75.3772	60.8676	60.8676	60.8676
1066	73.5168	74.3174	75.2292	60.7649	60.7649	60.7649
1067	73.368	74.1508	75.1024	60.666	60.666	60.666
1068	74.5086	84.727	78.7455	65.5605	65.5605	84.2059
1069	75.4889	87.1364	78.64	68.5927	68.5927	88.2203
1070	76.2	87.5273	80.4062	70.1252	70.1252	88.908
1071	76.7367	87.9314	81.7329	70.8727	70.8727	88.76
1072	77.8253	89.5449	84.8076	71.2102	71.2102	88.1926
1073	78.0508	89.443	85.0633	71.3232	71.3232	87.3966
1074	78.1662	88.8148	84.9825	71.2984	71.2984	86.43
1075	78.2839	88.6638	85.3634	71.1844	71.1844	85.353
1076	78.6321	89.633	86.2318	71.0125	71.0125	84.217
1077	78.7253	89.3456	86.1703	70.7796	70.7796	82.9657
1078	78.8516	89.2284	86.9615	70.5098	70.5098	81.6972
1079	79.0784	89.5334	88.0198	70.2162	70.2162	80.4345
1080	79.3688	90.1216	89.0521	69.8954	69.8954	79.1341
1081	79.6274	90.6154	89.8958	69.5278	69.5278	77.7083
1082	79.8643	91.0134	90.7959	69.1385	69.1385	76.3003
1083	79.2423	87.1246	87.9205	67.9404	67.9404	70.7237
1084	78.4089	84.9263	86.2242	66.6746	66.6746	66.6746
1085	78.0209	85.8972	87.0408	66.0196	66.0196	66.0196
1086	76.0697	76.0697	76.0697	65.6707	65.6707	65.6707
1087	74.9818	74.9818	74.9818	65.4846	65.4846	65.4846
1088	74.3737	74.3737	74.3737	65.3826	65.3826	65.3826
1089	74.032	74.032	74.032	65.3241	65.3241	65.3241



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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

09011739

1090	73.8385	73.8385	73.8385	65.2879	65.2879	65.2879
1091	73.7272	73.7272	73.7272	65.2634	65.2634	65.2634
1092	73.6617	73.6617	73.6617	65.2448	65.2448	65.2448
1093	73.6216	73.6216	73.6216	65.2294	65.2294	65.2294
1094	73.5957	73.5957	73.5957	65.2155	65.2155	65.2155
1095	73.5775	73.5775	73.5775	65.2025	65.2025	65.2025
1096	73.5638	73.5638	73.5638	65.1899	65.1899	65.1899
1097	73.5524	73.5524	73.5524	65.1776	65.1776	65.1776
1098	73.5424	73.5424	73.5424	65.1654	65.1654	65.1654
1099	73.5332	73.5332	73.5332	65.1533	65.1533	65.1533
1100	73.5244	73.5244	73.5244	65.1412	65.1412	65.1412
1101	73.5158	73.5158	73.5158	65.1291	65.1291	65.1291
1102	73.5073	73.5073	73.5073	65.1171	65.1171	65.1171
1103	76.8131	92.0318	93.3479	65.122	65.122	65.122
1104	78.7342	91.382	93.3917	65.1267	65.1267	65.1267
1105	79.8815	90.1471	92.8908	65.1314	65.1314	65.1314
1106	80.6124	89.8125	93.5693	65.136	65.136	65.136
1107	81.0902	89.3571	93.8818	65.105	65.105	65.105
1108	81.4151	88.8195	94.2681	65.0283	65.0283	65.0283
1109	81.6774	88.3788	94.5604	64.9294	64.9294	64.9294
1110	81.8889	87.8445	94.7795	64.8199	64.8199	64.8199
1111	82.0457	87.189	94.94	64.7054	64.7054	64.7054
1112	82.2003	86.9025	94.839	64.5893	64.5893	64.5893
1113	82.3828	86.6128	94.7579	64.4729	64.4729	64.4729
1114	82.4449	87.4589	96.1621	64.3585	64.3585	64.3585
1115	83.197	87.6166	96.5106	64.2449	64.2449	64.2449
1116	83.0808	86.7586	94.9985	64.1303	64.1303	64.1303
1117	82.8873	86.1611	94.0624	64.0159	64.0159	64.0159
1118	82.7986	85.9352	93.7478	63.9023	63.9023	63.9023
1119	82.7786	85.8137	93.561	63.7897	63.7897	63.7897
1120	82.8209	85.819	93.543	63.6783	63.6783	63.6783
1121	82.8968	85.8597	93.5617	63.568	63.568	63.568
1122	82.7814	85.3501	92.7372	63.4577	63.4577	63.4577
1123	82.4839	84.5447	91.5242	63.3472	63.3472	63.3472
1124	82.0846	83.8598	90.2495	63.2365	63.2365	63.2365
1125	81.7674	83.1636	89.5725	63.1263	63.1263	63.1263
1126	81.537	82.8509	89.1458	63.0169	63.0169	63.0169
1127	81.3527	82.5874	88.7726	62.9083	62.9083	62.9083
1128	81.1786	82.3134	88.35	62.8003	62.8003	62.8003
1129	80.9902	81.996	87.8307	62.693	62.693	62.693
1130	80.7904	81.6686	87.3036	62.5862	62.5862	62.5862
1131	80.5789	81.3281	86.7612	62.4801	62.4801	62.4801
1132	80.4372	81.1637	86.5903	62.3749	62.3749	62.3749
1133	80.3443	81.0625	86.509	62.2708	62.2708	62.2708
1134	80.278	80.9882	86.4542	62.1677	62.1677	62.1677
1135	80.2258	80.9287	86.4098	62.0656	62.0656	62.0656
1136	80.1788	80.8763	86.3607	61.9645	61.9645	61.9645
1137	78.9112	79.6491	80.4823	61.8583	61.8583	61.8583
1138	78.0795	78.7303	79.4651	61.7528	61.7528	61.7528
1139	77.4789	78.0379	78.8693	61.6479	61.6479	61.6479
1140	77.5954	78.0732	80.8041	61.5466	61.5466	61.5466
1141	78.4041	79.0949	84.5833	61.4503	61.4503	61.4503
1142	78.8271	79.5123	85.004	61.3548	61.3548	61.3548
1143	79.0377	79.7191	85.1995	61.2602	61.2602	61.2602
1144	79.132	79.8101	85.2731	61.1666	61.1666	61.1666



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00012731

1145	79.163	79.8376	85.2828	61.0738	81.0738	81.0738
1146	78.1053	79.9986	79.814	62.879	62.679	69.8662
1147	77.4864	79.8535	79.1708	63.7149	63.7149	71.5803
1148	77.0855	79.3143	78.7669	64.3378	64.3378	72.3431
1149	76.7962	79.0251	78.4777	64.7183	64.7183	72.7235
1150	76.568	78.7989	78.2495	64.9763	64.9763	72.9815
1151	76.3735	78.6024	78.055	65.1721	65.1721	73.1774
1152	76.1977	78.4266	77.8792	65.3361	65.3361	73.3413
1153	76.0326	78.2615	77.7141	65.4834	65.4834	73.4886
1154	75.8738	78.1027	77.5553	65.6217	65.6217	73.6269
1155	75.7189	77.9478	77.4004	65.7548	65.7548	73.7601
1156	75.5667	77.7955	77.2481	65.8848	65.8848	73.89
1157	75.4163	77.6452	77.0978	66.0125	66.0125	74.0178
1158	75.2675	77.4963	76.9489	66.1385	66.1385	74.1437
1159	75.1199	77.3488	76.8014	66.263	66.263	74.2683
1160	74.9736	77.2025	76.655	66.3862	66.3862	74.3914
1161	74.8284	77.0572	76.5098	66.5081	66.5081	74.5134
1162	74.6842	76.9131	76.3657	66.6288	66.6288	74.6341
1163	74.542	76.778	76.2233	66.7525	66.7525	74.7734
1164	74.4006	76.6368	76.0818	66.8733	66.8733	74.8949
1165	74.2598	76.4951	75.941	66.9914	66.9914	75.011
1166	74.1172	76.3301	75.7993	67.0951	67.0951	75.0648
1167	73.974	76.1652	75.6568	67.1904	67.1904	75.112
1168	73.8336	76.0253	75.5164	67.2934	67.2934	75.2161
1169	73.6982	75.9154	75.3801	67.4142	67.4142	75.3937
1170	73.5657	75.8054	75.2468	67.5426	67.5426	75.5718
1171	73.4334	75.6788	75.1143	67.6652	67.6652	75.707
1172	73.2985	75.5238	74.9801	67.7898	67.7898	75.7868
1173	73.1598	75.3435	74.8428	67.851	67.851	75.756
1174	73.0198	75.1628	74.7062	67.9176	67.9176	75.7233
1175	72.8794	74.9822	74.5694	67.9747	67.9747	75.6807
1176	72.7391	74.8016	74.4327	68.025	68.025	75.6313
1177	72.599	74.6212	74.2962	68.0698	68.0698	75.5764
1178	72.4605	74.4541	74.1602	68.1174	68.1174	75.5533
1179	72.3261	74.3198	74.0258	68.1828	68.1828	75.6188
1180	72.1945	74.1882	73.8942	68.2569	68.2569	75.6928
1181	72.0647	74.0584	73.7644	68.3349	68.3349	75.7708
1182	71.9364	73.9301	73.6361	68.4144	68.4144	75.8503
1183	71.8093	73.803	73.509	68.4943	68.4943	75.9302
1184	71.6832	73.6769	73.3829	68.574	68.574	76.0099
1185	71.5582	73.5519	73.2579	68.6532	68.6532	76.0891
1186	71.4341	73.4277	73.1338	68.7317	68.7317	76.1677
1187	71.3109	73.3045	73.0106	68.8096	68.8096	76.2456
1188	71.1886	73.1822	72.8883	68.8867	68.8867	76.3227
1189	71.0671	73.0608	72.7668	68.9631	68.9631	76.3991
1190	70.9466	72.9403	72.6453	69.0387	69.0387	76.4747
1191	70.8269	72.8206	72.5236	69.1136	69.1136	76.5496
1192	70.7081	72.7018	72.4078	69.1878	69.1878	76.6237
1193	70.5902	72.5839	72.2899	69.2612	69.2612	76.6971
1194	71.7235	82.0396	74.0687	72.6574	72.6574	91.6175
1195	72.6374	84.8379	75.1943	75.1119	75.1119	95.6578
1196	73.1493	85.4303	75.6657	76.629	76.629	97.2217
1197	73.4354	85.7494	75.9114	77.6575	77.6575	98.2482
1198	73.5524	85.6733	75.9798	78.337	78.337	98.6129
1199	73.692	85.4022	76.633	78.7708	78.7708	98.5351

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011700

1200	73.9626	85.3665	77.9629	79.0091	79.0091	98.0727
1201	74.2141	85.4275	78.7734	79.1182	79.1182	97.4222
1202	74.6844	86.1563	80.5182	79.1479	79.1479	96.6883
1203	73.7677	78.1705	77.7004	76.9877	76.9877	86.3566
1204	72.8826	75.3831	76.1607	75.2105	75.2105	81.7428
1205	72.3703	74.8708	75.6484	74.3191	74.3191	80.8514
1206	72.0605	74.5609	75.3386	73.8729	73.8729	80.4052
1207	71.8607	74.3611	75.1387	73.6501	73.6501	80.1824
1208	71.7207	74.2212	74.9988	73.5397	73.5397	80.072
1209	71.5558	73.707	74.8206	73.3043	73.3043	79.1156
1210	71.4284	73.5507	74.6955	73.1594	73.1594	78.9029
1211	71.3215	73.4148	74.5909	73.059	73.059	78.7347
1212	71.2258	73.29	74.4974	72.9801	72.9801	78.5879
1213	71.1358	73.1712	74.4099	72.9111	72.9111	78.4509
1214	71.0711	73.2472	74.3339	72.9449	72.9449	78.8147
1215	71.0032	73.1793	74.268	72.9536	72.9536	78.8233
1216	70.9338	73.1099	74.1966	72.9496	72.9496	78.8194
1217	70.8638	73.0399	74.1268	72.9394	72.9394	78.8092
1218	70.7937	72.9698	74.0565	72.9262	72.9262	78.7959
1219	70.7238	72.8999	73.9866	72.9114	72.9114	78.7812
1220	70.6542	72.8303	73.917	72.896	72.896	78.7658
1221	70.5851	72.7612	73.8479	72.8803	72.8803	78.7501
1222	70.5163	72.6925	73.7792	72.8645	72.8645	78.7343
1223	70.4481	72.6242	73.7109	72.8488	72.8488	78.7185
1224	70.3803	72.5564	73.6431	72.8331	72.8331	78.7029
1225	70.3094	72.4571	73.5745	72.801	72.801	78.6041
1226	70.2245	72.2479	73.4996	72.7038	72.7038	78.2155
1227	70.1315	72.0306	73.4166	72.5695	72.5695	77.7899
1228	69.8085	71.2319	72.2997	72.1818	72.1818	76.1009
1229	69.3017	70.1766	70.8331	71.6005	71.6005	74.0097
1230	68.6799	69.0065	69.2515	70.9005	70.9005	71.7997
1231	70.3046	78.3439	75.8671	73.7202	73.7202	87.291
1232	71.9746	83.5382	79.1263	76.0648	76.0648	92.34
1233	72.7526	83.5632	79.5419	77.1344	77.1344	92.4826
1234	73.1642	83.3951	80.1212	77.5364	77.5364	91.9128
1235	73.7157	84.6488	81.2497	77.5893	77.5893	90.9861
1236	73.9854	84.6723	81.4576	77.4356	77.4356	89.7998
1237	74.1858	84.5965	82.1557	77.1697	77.1697	88.5179
1238	74.4577	84.8647	83.2791	76.8423	76.8423	87.2022
1239	74.8016	85.5218	84.4044	76.475	76.475	85.8598
1240	75.1042	86.0632	85.2966	76.0515	76.0515	84.3666
1241	75.3804	86.5104	86.2333	75.6001	75.6001	82.8829
1242	74.9186	83.2851	83.9507	74.4542	74.4542	77.842
1243	74.0621	80.4379	81.7518	73.065	73.065	73.065
1244	73.6617	81.3986	82.558	72.3455	72.3455	72.3455
1245	71.7064	71.7064	71.7064	71.9637	71.9637	71.9637
1246	70.6188	70.6168	70.6168	71.7604	71.7604	71.7604
1247	70.0082	70.0082	70.0082	71.6493	71.6493	71.6493
1248	69.8688	69.6668	69.6668	71.5858	71.5858	71.5858
1249	69.4739	69.4739	69.4739	71.5469	71.5469	71.5469
1250	69.3636	69.3636	69.3636	71.5207	71.5207	71.5207
1251	69.299	69.299	69.299	71.5011	71.5011	71.5011
1252	69.26	69.26	69.26	71.4848	71.4848	71.4848
1253	69.2351	69.2351	69.2351	71.4704	71.4704	71.4704
1254	69.2181	69.2181	69.2181	71.4568	71.4568	71.4568

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011733

1255	69.2055	69.2055	69.2055	71.4437	71.4437	71.4437
1256	69.1953	69.1953	69.1953	71.4309	71.4309	71.4309
1257	69.1864	69.1864	69.1864	71.4182	71.4182	71.4182
1258	69.1783	69.1783	69.1783	71.4056	71.4056	71.4056
1259	69.1707	69.1707	69.1707	71.393	71.393	71.393
1260	69.1632	69.1632	69.1632	71.3805	71.3805	71.3805
1261	69.1559	69.1559	69.1559	71.3679	71.3679	71.3679
1262	72.4714	87.9573	89.2505	71.3702	71.3702	71.3702
1263	74.3925	87.3191	89.2584	71.3724	71.3724	71.3724
1264	75.5388	85.9271	88.6863	71.3744	71.3744	71.3744
1265	78.2885	85.5969	89.2399	71.3765	71.3765	71.3765
1266	78.7548	85.1365	89.6491	71.3265	71.3265	71.3265
1267	77.0976	84.6143	89.9718	71.2097	71.2097	71.2097
1268	77.3826	84.1887	90.2672	71.0603	71.0603	71.0603
1269	77.6259	83.7026	90.5159	70.8954	70.8954	70.8954
1270	77.8142	83.0819	90.7079	70.7235	70.7235	70.7235
1271	77.9938	82.7433	90.6867	70.549	70.549	70.549
1272	78.1849	82.6285	90.5274	70.3741	70.3741	70.3741
1273	78.64	83.2261	91.8142	70.201	70.201	70.201
1274	79.106	83.6426	92.6397	70.0296	70.0296	70.0296
1275	79.0597	82.8382	91.1669	69.8579	69.8579	69.8579
1276	78.872	82.1645	90.0779	69.6867	69.6867	69.6867
1277	78.7994	81.9521	89.7752	69.5169	69.5169	69.5169
1278	78.7965	81.8367	89.5871	69.3486	69.3486	69.3486
1279	78.861	81.8649	89.5925	69.182	69.182	69.182
1280	78.9616	81.9319	89.6385	69.017	69.017	69.017
1281	78.954	81.6734	89.1814	68.853	68.853	68.853
1282	78.7555	81.011	88.1467	68.6896	68.6896	68.6896
1283	78.4617	80.2944	87.0908	68.5268	68.5268	68.5268
1284	78.1302	79.5899	86.0868	68.3647	68.3647	68.3647
1285	77.9221	79.3208	85.733	68.2039	68.2039	68.2039
1286	77.7827	79.126	85.4614	68.0445	68.0445	68.0445
1287	77.6823	78.9759	85.2426	67.8865	67.8865	67.8865
1288	77.6027	78.8486	85.0494	67.7298	67.7298	67.7298
1289	77.5321	78.7303	84.8648	67.5745	67.5745	67.5745
1290	77.4505	78.5759	84.5979	67.4204	67.4204	67.4204
1291	77.3579	78.4059	84.3038	67.2676	67.2676	67.2676
1292	77.2535	78.2198	83.9928	67.1161	67.1161	67.1161
1293	77.1359	78.0144	83.6498	66.9657	66.9657	66.9657
1294	77.0049	77.7911	83.282	66.8165	66.8165	66.8165
1295	76.892	77.623	83.0387	66.6685	66.6685	66.6685
1296	76.8246	77.5491	82.9805	66.522	66.522	66.522
1297	76.7826	77.5002	82.9482	66.3769	66.3769	66.3769
1298	76.7549	77.4653	82.9308	66.2332	66.2332	66.2332
1299	76.735	77.4382	82.9191	66.0909	66.0909	66.0909
1300	76.7169	77.4149	82.8989	65.9499	65.9499	65.9499
1301	76.6998	77.3927	82.8793	65.8103	65.8103	65.8103
1302	76.6836	77.3714	82.8616	65.672	65.672	65.672
1303	76.6672	77.3505	82.841	65.535	65.535	65.535
1304	76.6475	77.3282	82.8051	65.3994	65.3994	65.3994
1305	76.6281	77.3043	82.7679	65.265	65.265	65.265
1306	76.6038	77.2795	82.7301	65.1319	65.1319	65.1319
1307	76.5809	77.2542	82.692	65	65	65
1308	75.365	75.884	77.0942	64.8643	64.8643	64.8643
1309	74.8307	75.1518	76.3553	64.7298	64.7298	64.7298



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00012734

1310	74.1583	74.6813	75.8782	64.5965	64.5965	64.5965
1311	73.795	74.4234	75.3415	64.4643	64.4643	64.4643
1312	73.2344	73.8032	73.8144	64.6957	64.6957	66.27
1313	73.254	74.4852	75.0997	65.6144	65.6144	70.8283
1314	73.2083	74.6269	74.9963	66.244	66.244	72.0967
1315	73.1377	74.7987	74.8782	66.7589	66.7589	73.3231
1316	73.0657	75.0324	74.7678	67.2526	67.2526	74.6217
1317	72.9878	75.1664	74.6711	67.6771	67.6771	75.5705
1318	72.8915	75.1168	74.5731	67.9678	67.9678	75.9651
1319	72.7464	74.6883	74.4529	67.9866	67.9866	75.2892
1320	72.582	74.2294	74.3248	67.8382	67.8382	74.3637
1321	72.4099	73.789	74.2101	67.5883	67.5883	73.3063
1322	72.1773	73.2281	73.8299	67.1814	67.1814	71.6867
1323	71.5246	71.6619	71.7405	66.0711	66.0711	66.6571
1324	71.4916	72.1012	73.0652	65.3207	65.3207	65.3207
1325	72.4949	80.6633	74.5833	69.3071	69.3071	86.1542
1326	73.6561	85.8755	76.2066	72.6887	72.6887	93.2483
1327	74.2926	86.5839	76.7964	74.6738	74.6738	95.2659
1328	74.6184	86.802	77.072	75.8991	75.8991	96.3493
1329	74.7658	86.8014	77.2859	76.6503	76.6503	96.6889
1330	75.061	86.5291	78.8137	77.03	77.03	96.2657
1331	74.5268	80.8277	78.022	75.6862	75.6862	89.0873
1332	73.1707	73.8734	74.9328	71.736	71.736	71.736
1333	72.4273	73.2139	74.3998	69.6711	69.6711	69.6711
1334	72.02	72.8904	74.2028	68.554	68.554	68.554
1335	71.7985	72.7529	74.1917	67.914	67.914	67.914
1336	71.6565	72.6541	74.1724	67.5144	67.5144	67.5144
1337	71.5623	72.4305	74.2747	67.2364	67.2364	67.2364
1338	71.4666	72.3195	74.212	67.0201	67.0201	67.0201
1338	71.3697	72.2098	74.1428	66.8356	66.8356	66.8356
1340	71.2714	72.1019	74.065	66.6677	66.6677	66.6677
1341	71.1522	72.0201	73.8855	66.5087	66.5087	66.5087
1342	71.0376	71.9055	73.7509	66.3551	66.3551	66.3551
1343	70.9259	71.7938	73.6392	66.2047	66.2047	66.2047
1344	70.8161	71.684	73.5294	66.0567	66.0567	66.0567
1345	70.7077	71.5756	73.421	65.9105	65.9105	65.9105
1346	70.5973	71.4723	73.2952	65.766	65.766	65.766
1347	70.4869	71.3668	73.1743	65.6228	65.6228	65.6228
1348	70.3971	71.2359	73.1732	65.4812	65.4812	65.4812
1349	70.3017	71.1404	73.0777	65.3408	65.3408	65.3408
1350	70.233	71.0355	73.1317	65.202	65.202	65.202
1351	70.1491	70.9539	73.0387	65.0644	65.0644	65.0644
1352	70.401	73.8456	73.6015	67.1239	67.1239	76.1971
1353	71.9008	83.1613	77.0959	70.7582	70.7582	86.5631
1354	73.335	85.3296	80.7481	72.5248	72.5248	89.4112
1355	73.9821	85.2807	80.9186	73.335	73.335	89.2983
1356	74.2446	84.8014	81.0762	73.6408	73.6408	88.6496
1357	74.5026	84.973	81.6564	73.6762	73.6762	87.7185
1358	74.8854	85.8352	82.4643	73.5597	73.5597	86.6276
1359	75.0079	85.5763	82.4319	73.3375	73.3375	85.3847
1360	75.1918	85.5381	83.4217	73.0579	73.0579	84.1071
1361	75.4719	85.9718	84.5255	72.7452	72.7452	82.8309
1362	75.7901	86.5781	85.5552	72.3953	72.3953	81.4866
1363	76.075	87.0856	86.4363	71.9997	71.9997	80.0373
1364	76.338	87.5097	87.3626	71.5803	71.5803	78.5993



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls



00011735

1365	75.5843	82.8521	83.8135	70.2072	70.2072	72.2233
1366	74.8338	81.5417	82.818	69.0193	69.0193	69.0193
1367	74.4924	82.5592	83.6812	68.4042	68.4042	68.4042
1368	72.5644	72.5644	72.5644	68.0775	68.0775	68.0775
1369	71.4898	71.4898	71.4898	67.9034	67.9034	67.9034
1370	70.8894	70.8894	70.8894	67.8083	67.8083	67.8083
1371	70.5525	70.5525	70.5525	67.7538	67.7538	67.7538
1372	70.362	70.362	70.362	67.7204	67.7204	67.7204
1373	70.2529	70.2529	70.2529	67.6978	67.6978	67.6978
1374	70.1889	70.1889	70.1889	67.6809	67.6809	67.6809
1375	70.1501	70.1501	70.1501	67.6668	67.6668	67.6668
1376	70.1253	70.1253	70.1253	67.6543	67.6543	67.6543
1377	70.1082	70.1082	70.1082	67.6425	67.6425	67.6425
1378	70.0954	70.0954	70.0954	67.6312	67.6312	67.6312
1379	70.085	70.085	70.085	67.62	67.62	67.62
1380	70.0759	70.0759	70.0759	67.609	67.609	67.609
1381	70.0676	70.0676	70.0676	67.5981	67.5981	67.5981
1382	70.0597	70.0597	70.0597	67.5871	67.5871	67.5871
1383	70.052	70.052	70.052	67.5763	67.5763	67.5763
1384	70.0444	70.0444	70.0444	67.5654	67.5654	67.5654
1385	73.3541	88.2131	89.6645	67.568	67.568	67.568
1386	75.2695	87.5568	89.6415	67.5705	67.5705	67.5705
1387	76.4182	86.5339	89.5055	67.5729	67.5729	67.5729
1388	77.1505	86.2012	90.0858	67.5752	67.5752	67.5752
1389	77.6374	85.7879	90.5325	67.5353	67.5353	67.5353
1390	77.9799	85.2857	90.8543	67.4409	67.4409	67.4409
1391	78.2637	84.8685	91.1501	67.32	67.32	67.32
1392	78.4915	84.3331	91.3826	67.1864	67.1864	67.1864
1393	78.668	83.6975	91.5628	67.0471	67.0471	67.0471
1394	78.8498	83.5091	91.4394	66.9058	66.9058	66.9058
1395	79.0979	83.5539	91.6063	66.7643	66.7643	66.7643
1396	79.6089	84.249	93.0597	66.6245	66.6245	66.6245
1397	79.8984	84.2035	92.9966	66.4854	66.4854	66.4854
1398	79.7585	83.3276	91.4717	66.3458	66.3458	66.3458
1399	79.8111	82.5612	90.7473	66.2069	66.2069	66.2069
1400	79.5574	82.6697	90.4666	66.0692	66.0692	66.0692
1401	79.574	82.6009	90.3429	65.9328	65.9328	65.9328
1402	79.647	82.6352	90.3529	65.7977	65.7977	65.7977
1403	79.7273	82.6388	90.301	65.6639	65.6639	65.6639
1404	79.5211	81.8683	89.0597	65.5301	65.5301	65.5301
1405	79.1519	80.9326	87.6874	65.3964	65.3964	65.3964
1406	78.7751	80.1956	86.638	65.2633	65.2633	65.2633
1407	78.5142	79.8394	86.1498	65.1311	65.1311	65.1311
1408	78.3138	79.5459	85.7275	65	65	65
1409	78.1249	79.2323	85.2262	64.8697	64.8697	64.8697
1410	77.9229	78.8794	84.6369	64.7404	64.7404	64.7404
1411	77.7108	78.52	84.0469	64.6118	64.6118	64.6118
1412	77.539	78.2683	83.688	64.4843	64.4843	64.4843
1413	77.4398	78.16	83.6016	64.358	64.358	64.358
1414	77.3803	78.0917	83.5548	64.233	64.233	64.233
1415	77.342	78.0451	83.5261	64.1091	64.1091	64.1091
1416	77.3122	78.0095	83.494	63.9865	63.9865	63.9865
1417	77.2873	77.9788	83.4667	63.865	63.865	63.865
1418	77.2652	77.951	83.4423	63.7447	63.7447	63.7447
1419	77.2418	77.9237	83.4066	63.6255	63.6255	63.6255



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00012736

1420	77.2163	77.8953	83.3631	63.5075	63.5075	63.5075
1421	77.1896	77.8658	83.3189	63.3906	63.3906	63.3906
1422	77.1623	77.8358	83.2748	63.2747	63.2747	63.2747
1423	75.9073	76.53	77.462	63.1551	63.1551	63.1551
1424	75.1537	75.7596	76.7328	63.0367	63.0367	63.0367
1425	74.6683	75.2742	76.2474	62.9193	62.9193	62.9193
1426	74.3289	74.9348	75.908	62.803	62.803	62.803
1427	74.0692	74.6751	75.6483	62.6878	62.6878	62.6878
1428	73.8533	74.4592	75.4324	62.5736	62.5736	62.5736
1429	73.6617	74.2676	75.2408	62.4605	62.4605	62.4605
1430	73.4838	74.0897	75.0629	62.3484	62.3484	62.3484
1431	73.3138	73.9197	74.8929	62.2373	62.2373	62.2373
1432	73.1488	73.7547	74.7278	62.1272	62.1272	62.1272
1433	72.9868	73.5927	74.5669	62.0182	62.0182	62.0182
1434	72.8293	73.4272	74.4199	61.9102	61.9102	61.9102
1435	72.6705	73.2764	74.2495	61.8031	61.8031	61.8031
1436	72.5135	73.1194	74.0925	61.697	61.697	61.697
1437	72.3582	72.9633	73.9384	61.5919	61.5919	61.5919
1438	72.204	72.8099	73.783	61.4877	61.4877	61.4877
1439	72.051	72.6589	73.6301	61.3845	61.3845	61.3845
1440	71.8992	72.5051	73.4783	61.2822	61.2822	61.2822
1441	71.7485	72.3544	73.3275	61.1809	61.1809	61.1809
1442	71.599	72.2049	73.1781	61.0805	61.0805	61.0805
1443	71.4505	72.0564	73.0295	60.981	60.981	60.981
1444	71.3031	71.909	72.8822	60.8824	60.8824	60.8824
1445	71.1568	71.7627	72.7359	60.7847	60.7847	60.7847
1446	71.0116	71.6175	72.5906	60.6879	60.6879	60.6879
1447	70.8673	71.4732	72.4464	60.592	60.592	60.592
1448	70.7242	71.3301	72.3033	60.497	60.497	60.497
1449	70.582	71.1879	72.1611	60.4028	60.4028	60.4028
1450	70.4409	71.0468	72.02	60.3095	60.3095	60.3095
1451	70.3008	70.9067	71.8799	60.217	60.217	60.217
1452	70.1617	70.7676	71.7408	60.1254	60.1254	60.1254
1453	70.0236	70.6295	71.6027	60.0346	60.0346	60.0346
1454	69.8865	70.4924	71.4656	59.9446	59.9446	59.9446
1455	69.7504	70.3563	71.3295	59.8554	59.8554	59.8554
1456	69.6152	70.2211	71.1943	59.7671	59.7671	59.7671
1457	69.4811	70.087	71.0602	59.6795	59.6795	59.6795
1458	69.3479	69.9538	70.927	59.5928	59.5928	59.5928
1459	69.2156	69.8215	70.7947	59.5068	59.5068	59.5068
1460	69.0843	69.6902	70.6634	59.4216	59.4216	59.4216
1461	68.9584	69.5214	70.524	59.3373	59.3373	59.3373
1462	68.878	69.3672	70.376	59.2538	59.2538	59.2538
1463	68.8095	69.2557	70.2654	59.1712	59.1712	59.1712
1464	68.7608	69.1742	70.18925	59.0895	59.0895	59.0895
1465	68.7302	69.1287	71.0514	59.0088	59.0088	59.0088
1466	68.7177	69.1097	71.2395	58.929	58.929	58.929
1467	68.7056	69.0976	71.3765	58.85	58.85	58.85
1468	68.6568	69.0488	71.3276	58.7718	58.7718	58.7718
1469	68.5883	68.9803	71.2591	58.6943	58.6943	58.6943
1470	68.5064	68.8985	71.1661	58.6175	58.6175	58.6175
1471	68.3741	68.7673	70.8582	58.5412	58.5412	58.5412
1472	68.2154	68.6143	70.5325	58.4655	58.4655	58.4655
1473	68.0446	68.4553	70.2034	58.3902	58.3902	58.3902
1474	67.8685	68.3043	69.8788	58.3156	58.3156	58.3156



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011737

1475	67.6918	68.1599	69.565	58.2415	58.2415	58.2415
1476	67.5172	68.0285	69.2644	58.1679	58.1679	58.1679
1477	67.3648	67.8883	69.0835	58.095	58.095	58.095
1478	68.2498	76.156	70.311	62.3638	62.3638	78.9249
1479	69.3997	81.6142	71.9519	65.9977	65.9977	86.5538
1480	70.0444	82.3347	72.5493	68.1401	68.1401	88.7322
1481	70.3885	82.5746	72.8425	69.4742	69.4742	89.927
1482	70.5612	82.3933	73.0932	70.3057	70.3057	90.3364
1483	70.8872	82.3457	74.6724	70.7496	70.7496	89.9643
1484	71.2065	82.4287	75.7376	70.9652	70.9652	89.3049
1485	71.7845	83.3305	77.8424	71.0456	71.0456	88.4932
1486	72.4669	84.2633	79.8076	71.041	71.041	87.5902
1487	72.6737	83.701	79.4268	70.9729	70.9729	86.6109
1488	72.7422	83.0519	79.615	70.8455	70.8455	85.5238
1489	73.0251	83.7259	80.3682	70.6762	70.6762	84.3972
1490	73.2924	84.1171	80.8205	70.4618	70.4618	83.1949
1491	73.4149	83.9027	81.0588	70.2031	70.2031	81.9252
1492	73.618	83.8982	82.1255	69.9151	69.9151	80.645
1493	73.9367	84.5397	83.2475	69.6121	69.6121	79.394
1494	74.2516	85.1124	84.2033	69.2678	69.2678	78.0194
1495	74.5385	85.6006	85.112	68.889	68.889	76.6009
1496	74.5674	84.8174	84.976	68.2644	68.2644	74.0038
1497	73.5606	79.4267	80.7653	66.6733	66.6733	66.9393
1498	73.0153	80.1678	81.3847	65.7742	65.7742	65.7742
1499	72.7884	81.2898	82.3624	65.3086	65.3086	65.3086
1500	70.917	70.917	70.917	65.0601	65.0601	65.0601
1501	69.874	69.874	69.874	64.9271	64.9271	64.9271
1502	69.2914	69.2914	69.2914	64.8538	64.8538	64.8538
1503	68.9645	68.9645	68.9645	64.8113	64.8113	64.8113
1504	68.7798	68.7798	68.7798	64.7848	64.7848	64.7848
1505	68.6741	68.6741	68.6741	64.7664	64.7664	64.7664
1506	68.6122	68.6122	68.6122	64.7523	64.7523	64.7523
1507	68.5747	68.5747	68.5747	64.7404	64.7404	64.7404
1508	68.5508	68.5508	68.5508	64.7297	64.7297	64.7297
1509	68.5344	68.5344	68.5344	64.7195	64.7195	64.7195
1510	68.5221	68.5221	68.5221	64.7096	64.7096	64.7096
1511	68.5123	68.5123	68.5123	64.6999	64.6999	64.6999
1512	68.5037	68.5037	68.5037	64.6903	64.6903	64.6903
1513	68.4958	68.4958	68.4958	64.6808	64.6808	64.6808
1514	68.4883	68.4883	68.4883	64.6713	64.6713	64.6713
1515	68.481	68.481	68.481	64.6618	64.6618	64.6618
1516	68.4739	68.4739	68.4739	64.6523	64.6523	64.6523
1517	71.7722	85.8083	87.4345	64.655	64.655	64.655
1518	73.5862	84.9778	87.3298	64.6577	64.6577	64.6577
1519	74.8385	84.6121	87.8754	64.6603	64.6603	64.6603
1520	75.558	84.2957	88.4605	64.6277	64.6277	64.6277
1521	76.0304	83.8965	88.9127	64.5499	64.5499	64.5499
1522	76.3792	83.4601	89.2567	64.45	64.45	64.45
1523	76.6713	83.0496	89.5589	64.3396	64.3396	64.3396
1524	76.8957	82.4776	89.788	64.2245	64.2245	64.2245
1525	77.0828	81.9502	89.9107	64.1075	64.1075	64.1075
1526	77.2807	81.8422	89.7583	63.9903	63.9903	63.9903
1527	77.6334	82.1485	90.4444	63.8741	63.8741	63.8741
1528	78.2103	82.9088	91.9601	63.7598	63.7598	63.7598
1529	78.3235	82.3853	90.9637	63.6453	63.6453	63.6453



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00012738

1530	78.0984	81.4474	89.3973	63.5305	63.5305	63.5305
1531	78.0079	81.2131	89.07	63.4166	63.4166	63.4166
1532	77.9903	81.0604	88.8299	63.3037	63.3037	63.3037
1533	78.0434	81.0581	88.7926	63.1919	63.1919	63.1919
1534	78.141	81.1181	88.829	63.0812	63.0812	63.0812
1535	78.1548	80.9099	88.4468	62.9712	62.9712	62.9712
1536	77.9252	80.13	87.225	62.8613	62.8613	62.8613
1537	77.5592	79.2352	86.9058	62.7513	62.7513	62.7513
1538	77.2324	78.6396	86.0638	62.6419	62.6419	62.6419
1539	77.0085	78.3284	84.6315	62.5333	62.5333	62.5333
1540	76.8392	78.0748	84.2611	62.4255	62.4255	62.4255
1541	76.6851	77.816	83.8468	62.3185	62.3185	62.3185
1542	76.5197	77.5181	83.3414	62.2122	62.2122	62.2122
1543	76.3444	77.212	82.8303	62.1066	62.1066	62.1066
1544	76.161	76.9005	82.3183	62.0017	62.0017	62.0017
1545	76.0555	76.7814	82.2093	61.8978	61.8978	61.8978
1546	75.9962	76.7141	82.1613	61.7949	61.7949	61.7949
1547	75.9623	76.6724	82.1385	61.693	61.693	61.693
1548	75.9415	76.6446	82.1256	61.5921	61.5921	61.5921
1549	75.9254	76.6235	82.1075	61.4921	61.4921	61.4921
1550	75.912	76.6052	82.0921	61.3932	61.3932	61.3932
1551	75.9001	76.5886	82.0783	61.2951	61.2951	61.2951
1552	75.889	76.5731	82.0655	61.198	61.198	61.198
1553	75.8753	76.5569	82.0381	61.1018	61.1018	61.1018
1554	75.8598	76.5391	82.0085	61.0066	61.0066	61.0066
1555	75.8434	76.5205	81.9782	60.9122	60.9122	60.9122
1556	75.8265	76.5014	81.9478	60.8187	60.8187	60.8187
1557	75.7091	76.3299	81.4584	60.7257	60.7257	60.7257
1558	74.6341	75.0465	76.7722	60.6301	60.6301	60.6301
1559	73.9847	74.3972	76.1218	60.5353	60.5353	60.5353
1560	73.56	73.9778	75.6883	60.4413	60.4413	60.4413
1561	73.2832	73.6817	75.3675	60.3482	60.3482	60.3482
1562	73.0362	73.4554	75.1364	60.256	60.256	60.256
1563	72.8479	73.2675	74.9461	60.1646	60.1646	60.1646
1564	72.6815	73.1011	74.7797	60.074	60.074	60.074
1565	72.5275	72.9471	74.6257	59.9843	59.9843	59.9843
1566	72.3806	72.8002	74.4788	59.8954	59.8954	59.8954
1567	72.2381	72.6577	74.3363	59.8072	59.8072	59.8072
1568	72.0984	72.518	74.1968	59.7199	59.7199	59.7199
1569	72.4128	77.186	74.1848	62.8009	62.8009	75.3905
1570	73.6939	85.8654	76.2538	66.9264	66.9264	87.4658
1571	74.3968	86.6819	76.908	69.3144	69.3144	89.9069
1572	74.7635	86.9884	77.2238	70.7787	70.7787	91.2731
1573	74.9077	86.7737	77.326	71.6802	71.6802	91.7851
1574	75.2059	86.6928	78.8959	72.1505	72.1505	91.4272
1575	75.505	86.741	79.9934	72.3726	72.3726	90.7706
1576	76.0298	87.5333	81.9593	72.4492	72.4492	89.9499
1577	76.7151	88.5556	84.0916	72.4366	72.4366	89.0377
1578	76.9025	87.9683	83.6517	72.3596	72.3596	88.0515
1579	76.9466	87.2959	83.8121	72.2226	72.2226	86.9551
1580	77.1818	87.8434	84.4927	72.0429	72.0429	85.8185
1581	77.4326	88.2789	84.9694	71.819	71.819	84.6101
1582	77.5203	88.02	85.1149	71.5498	71.5498	83.3283
1583	77.6906	87.9828	86.1489	71.2512	71.2512	82.0384
1584	77.9744	88.559	87.2394	70.9369	70.9369	80.7729

2432



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls



00011739

1585	78.2624	89.1105	88.1809	70.5832	70.5832	79.3953
1586	78.5218	89.5747	89.0574	70.1935	70.1935	77.9636
1587	78.5869	89.087	89.1783	69.6177	69.6177	75.6693
1588	77.5901	83.7063	84.9776	68.05	68.05	68.6283
1589	76.9833	84.0482	85.2839	67.09	67.09	67.09
1590	76.7216	85.1454	86.2269	66.5928	66.5928	66.5928
1591	74.8317	74.8317	74.8317	66.3281	66.3281	66.3281
1592	73.7781	73.7781	73.7781	66.1868	66.1868	66.1868
1593	73.189	73.189	73.189	66.1092	66.1092	66.1092
1594	72.8582	72.8582	72.8582	66.0645	66.0645	66.0645
1595	72.6708	72.6708	72.6708	66.0368	66.0368	66.0368
1596	72.5631	72.5631	72.5631	66.0178	66.0178	66.0178
1597	72.4996	72.4996	72.4996	66.0034	66.0034	66.0034
1598	72.4609	72.4609	72.4609	65.9913	65.9913	65.9913
1599	72.4357	72.4357	72.4357	65.9805	65.9805	65.9805
1600	72.4182	72.4182	72.4182	65.9702	65.9702	65.9702
1601	72.4049	72.4049	72.4049	65.9603	65.9603	65.9603
1602	72.394	72.394	72.394	65.9506	65.9506	65.9506
1603	72.3844	72.3844	72.3844	65.941	65.941	65.941
1604	72.3754	72.3754	72.3754	65.9314	65.9314	65.9314
1605	72.3669	72.3669	72.3669	65.9219	65.9219	65.9219
1606	72.3587	72.3587	72.3587	65.9123	65.9123	65.9123
1607	72.3505	72.3505	72.3505	65.9028	65.9028	65.9028
1608	75.6536	89.837	91.459	65.9049	65.9049	65.9049
1609	77.566	89.0625	91.3628	65.9069	65.9069	65.9069
1610	78.7156	88.6503	91.7615	65.9088	65.9088	65.9088
1611	79.4263	88.2137	92.33	65.8725	65.8725	65.8725
1612	79.8813	87.7971	92.7647	65.787	65.787	65.787
1613	80.2067	87.3277	93.0837	65.6776	65.6776	65.6776
1614	80.4736	86.8919	93.3607	65.5568	65.5568	65.5568
1615	80.6743	86.3025	93.5684	65.4308	65.4308	65.4308
1616	80.8341	85.7188	93.6819	65.3029	65.3029	65.3029
1617	81.0048	85.5834	93.502	65.1747	65.1747	65.1747
1618	81.3163	85.6221	94.0795	65.0474	65.0474	65.0474
1619	81.8609	86.552	95.5725	64.9221	64.9221	64.9221
1620	81.9663	86.0475	94.643	64.7968	64.7968	64.7968
1621	81.7184	85.0874	93.019	64.6713	64.6713	64.6713
1622	81.5987	84.7998	92.6542	64.5469	64.5469	64.5469
1623	81.5534	84.6151	92.3794	64.4235	64.4235	64.4235
1624	81.5822	84.5943	92.3271	64.3013	64.3013	64.3013
1625	81.6551	84.6294	92.3384	64.1804	64.1804	64.1804
1626	81.615	84.317	91.8111	64.0601	64.0601	64.0601
1627	81.3379	83.4788	90.5225	63.9401	63.9401	63.9401
1628	80.9249	82.5219	89.1293	63.8201	63.8201	63.8201
1629	80.5867	81.9741	88.3707	63.7009	63.7009	63.7009
1630	80.3399	81.6329	87.8989	63.5826	63.5826	63.5826
1631	79.067	79.7872	82.5262	63.4615	63.4615	63.4615
1632	77.4065	77.4185	77.4276	63.347	63.347	63.3837
1633	76.3947	76.4077	76.4167	63.2298	63.2298	63.2665
1634	75.7375	75.7505	75.7596	63.1118	63.1118	63.1486
1635	75.2729	75.2859	75.295	62.9941	62.9941	63.0308
1636	74.9135	74.9265	74.9356	62.8769	62.8769	62.9136
1637	74.612	74.625	74.6341	62.7606	62.7606	62.7973
1638	74.3427	74.3557	74.3648	62.6452	62.6452	62.6819
1639	74.0915	74.1045	74.1136	62.5308	62.5308	62.5675



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011740

1640	73.851	73.884	73.8731	62.4174	62.4174	62.4541
1641	73.6169	73.6299	73.639	62.305	62.305	62.3417
1642	73.3872	73.4002	73.4093	62.1936	62.1936	62.2303
1643	73.1805	73.1735	73.1828	62.0832	62.0832	62.12
1644	72.9362	72.9492	72.9583	61.9739	61.9739	62.0106
1645	72.7139	72.7269	72.736	61.8655	61.8655	61.9022
1646	72.4935	72.5065	72.5156	61.7581	61.7581	61.7948
1647	72.4437	72.7886	73.0302	61.8693	61.8693	62.8448
1648	72.2058	72.312	72.3863	61.7301	61.7301	62.0303
1649	72.0258	72.1749	72.3709	61.543	61.543	61.543
1650	72.0128	72.4303	72.9791	61.398	61.398	61.398
1651	72.1007	72.7865	73.6882	61.275	61.275	61.275
1652	73.5637	74.6881	80.7085	61.1682	61.1682	61.1682
1653	74.2756	75.2621	81.0667	61.0671	61.0671	61.0671
1654	74.5793	75.4345	81.0334	60.9693	60.9693	60.9693
1655	74.6638	75.3973	80.8069	60.8733	60.8733	60.8733
1656	74.7109	75.4368	80.8651	60.779	60.779	60.779
1657	74.7381	75.4561	80.9032	60.6859	60.6859	60.6859
1658	74.7546	75.4651	80.9303	60.5938	60.5938	60.5938
1659	74.765	75.4686	80.9493	60.5027	60.5027	60.5027
1660	74.7696	75.4681	80.9519	60.4126	60.4126	60.4126
1661	74.7711	75.4647	80.9514	60.3233	60.3233	60.3233
1662	74.771	75.4598	80.9494	60.2349	60.2349	60.2349
1663	74.7702	75.4543	80.9487	60.1473	60.1473	60.1473
1664	74.7655	75.447	80.9276	60.0606	60.0606	60.0606
1665	74.7585	75.4376	80.9053	59.9747	59.9747	59.9747
1666	74.7501	75.4267	80.882	59.8896	59.8896	59.8896
1667	73.8673	77.2065	75.5526	62.3027	62.3027	72.5088
1668	74.6981	86.9365	77.2422	66.7282	66.7282	87.3016
1669	75.1506	87.4482	77.6463	69.2557	69.2557	89.8474
1670	75.3609	87.468	77.8021	70.7491	70.7491	91.1173
1671	75.5158	87.2469	78.3853	71.6093	71.6093	91.4201
1672	75.8095	87.1752	79.8971	72.0413	72.0413	90.9859
1673	74.649	76.5479	77.8304	68.9295	68.9295	75.314
1674	73.8464	74.6082	76.9876	65.9015	65.9015	65.9015
1675	73.385	74.1412	76.6201	64.3232	64.3232	64.3232
1676	73.1103	73.8611	76.4394	63.4736	63.4736	63.4736
1677	72.9237	73.6734	76.2872	62.9907	62.9907	62.9907
1678	72.8514	73.6037	76.4864	62.6927	62.6927	62.6927
1679	72.7795	73.5326	76.4425	62.488	62.488	62.488
1680	72.7086	73.4625	76.3994	62.3308	62.3308	62.3308
1681	72.6389	73.3936	76.3577	62.1979	62.1979	62.1979
1682	72.5708	73.3263	76.3174	62.0777	62.0777	62.0777
1683	72.4578	73.2098	76.0838	61.9643	61.9643	61.9643
1684	72.3565	73.1084	75.9824	61.8549	61.8549	61.8549
1685	72.2617	73.0136	75.8876	61.7479	61.7479	61.7479
1686	72.1707	72.9227	75.7967	61.6426	61.6426	61.6426
1687	72.0821	72.8341	75.7081	61.5387	61.5387	61.5387
1688	71.9951	72.7471	75.621	61.436	61.436	61.436
1689	71.9092	72.6612	75.5351	61.3342	61.3342	61.3342
1690	71.8242	72.5762	75.4501	61.2335	61.2335	61.2335
1691	71.7399	72.4919	75.3659	61.1338	61.1338	61.1338
1692	71.6564	72.4084	75.2823	61.035	61.035	61.035
1693	71.5557	72.306	75.1248	60.937	60.937	60.937
1694	71.4311	72.181	74.8798	60.8399	60.8399	60.8399



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011741

1695	71.7238	76.4015	75.1052	63.4926	63.4926	74.5962
1696	73.179	84.5996	78.8579	68.8614	66.8614	84.4659
1697	74.4435	86.3087	81.8401	68.492	68.492	85.1222
1698	74.9374	85.9743	81.6889	69.2302	69.2302	84.881
1699	75.1457	85.4174	82.0249	69.4933	69.4933	84.1207
1700	75.5306	86.3074	82.9361	69.5078	69.5078	83.1228
1701	75.7922	86.5558	83.2955	69.3717	69.3717	81.9414
1702	75.9403	86.389	83.7539	69.1463	69.1463	80.6741
1703	76.1663	86.5181	84.85	68.8733	68.8733	79.3959
1704	76.4931	87.1718	85.993	68.574	68.574	78.1327
1705	76.783	87.7028	86.8784	68.2235	68.2235	76.7147
1706	77.0474	88.1506	87.7897	67.8438	67.8438	75.2964
1707	76.7614	85.8604	86.3288	66.9452	66.9452	71.2475
1708	75.8202	81.9699	83.3095	65.4931	65.4931	66.4931
1709	75.3724	82.8832	84.0683	64.742	64.742	64.742
1710	73.3944	73.3944	73.3944	64.347	64.347	64.347
1711	72.292	72.292	72.292	64.1388	64.1388	64.1388
1712	71.676	71.676	71.676	64.0272	64.0272	64.0272
1713	71.3303	71.3303	71.3303	63.9654	63.9654	63.9654
1714	71.1349	71.1349	71.1349	63.9293	63.9293	63.9293
1715	71.0229	71.0229	71.0229	63.9065	63.9065	63.9065
1716	70.9573	70.9573	70.9573	63.8906	63.8906	63.8906
1717	70.9174	70.9174	70.9174	63.8782	63.8782	63.8782
1718	70.8919	70.8919	70.8919	63.8676	63.8676	63.8676
1719	70.8744	70.8744	70.8744	63.858	63.858	63.858
1720	70.8612	70.8612	70.8612	63.8489	63.8489	63.8489
1721	70.8506	70.8506	70.8506	63.8401	63.8401	63.8401
1722	70.8413	70.8413	70.8413	63.8313	63.8313	63.8313
1723	70.8327	70.8327	70.8327	63.8227	63.8227	63.8227
1724	70.8246	70.8246	70.8246	63.8141	63.8141	63.8141
1725	70.8167	70.8167	70.8167	63.8055	63.8055	63.8055
1726	70.809	70.809	70.809	63.797	63.797	63.797
1727	74.1277	90.0389	91.2248	63.7992	63.7992	63.7992
1728	76.0507	89.402	91.2341	63.8014	63.8014	63.8014
1729	77.1954	87.7594	90.3488	63.8035	63.8035	63.8035
1730	77.924	87.4278	90.9212	63.8056	63.8056	63.8056
1731	78.4064	86.9312	91.3039	63.7747	63.7747	63.7747
1732	78.7416	86.4016	91.6191	63.7013	63.7013	63.7013
1733	79.0126	85.9317	91.8925	63.6073	63.6073	63.6073
1734	79.251	85.4626	92.1404	63.5035	63.5035	63.5035
1735	79.4316	84.9339	92.3247	63.3951	63.3951	63.3951
1736	79.5953	84.3957	92.3465	63.2851	63.2851	63.2851
1737	79.7724	84.2672	92.1737	63.1749	63.1749	63.1749
1738	80.1676	84.723	93.1848	63.0657	63.0657	63.0657
1739	80.7123	85.3819	94.496	62.9581	62.9581	62.9581
1740	80.7016	84.6015	93.0372	62.8501	62.8501	62.8501
1741	80.4738	83.7906	91.7197	62.7421	62.7421	62.7421
1742	80.3741	83.549	91.3864	62.6351	62.6351	62.6351
1743	80.3453	83.3907	91.1444	62.5289	62.5289	62.5289
1744	80.3912	83.3976	91.1268	62.4238	62.4238	62.4238
1745	80.4772	83.4465	91.1525	62.3197	62.3197	62.3197
1746	80.4168	83.0617	90.5099	62.2162	62.2162	62.2162
1747	80.1465	82.2597	89.2812	62.1127	62.1127	62.1127
1748	79.761	81.3694	87.9858	62.0094	62.0094	62.0094
1749	79.4452	80.8454	87.2598	61.9066	61.9066	61.9066



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011742

1750	77.8984	78.7518	80.6429	61.8005	61.8005	61.8005
1751	77.0531	77.8351	80.0485	61.8955	61.6955	61.6955
1752	76.5502	77.322	79.8193	61.5915	61.5915	61.5915
1753	76.2344	76.9959	79.3773	61.4886	61.4886	61.4886
1754	76.0133	76.7726	79.1949	61.3886	61.3886	61.3886
1755	75.8104	76.5802	78.8941	61.2855	61.2855	61.2855
1756	75.6409	76.4106	78.7246	61.1854	61.1854	61.1854
1757	75.4898	76.2596	78.5735	61.0862	61.0862	61.0862
1758	75.3491	76.1189	78.4328	60.9879	60.9879	60.9879
1759	75.2146	75.9843	78.2983	60.8905	60.8905	60.8905
1760	75.0837	75.8535	78.1674	60.794	60.794	60.794
1761	74.9456	75.7209	77.9895	60.6984	60.6984	60.6984
1762	74.8015	75.5834	77.7976	60.6036	60.6036	60.6036
1763	74.6498	75.4434	77.5807	60.5096	60.5096	60.5096
1764	74.4962	75.3038	77.3754	60.4165	60.4165	60.4165
1765	74.3674	75.1611	77.2989	60.3243	60.3243	60.3243
1766	74.2303	75.0347	77.1218	60.2329	60.2329	60.2329
1767	74.0886	74.9036	76.9401	60.1423	60.1423	60.1423
1768	73.9477	74.7697	76.7733	60.0525	60.0525	60.0525
1769	73.7895	74.657	76.5036	59.9635	59.9635	59.9635
1770	73.6451	74.513	76.3584	59.8753	59.8753	59.8753
1771	73.5088	74.3767	76.2221	59.7879	59.7879	59.7879
1772	73.3772	74.2461	76.0905	59.7013	59.7013	59.7013
1773	73.2487	74.1165	75.9619	59.6155	59.6155	59.6155
1774	73.1221	73.99	75.8354	59.5305	59.5305	59.5305
1775	73.8058	79.9436	77.4124	62.7478	62.7478	75.8012
1776	75.2633	86.7005	80.9904	65.8818	65.8818	83.4665
1777	78.5198	88.4138	83.9398	67.4161	67.4161	84.0801
1778	77.0126	88.1201	83.7956	68.1291	68.1291	83.87
1779	77.2131	87.5951	84.0739	68.4035	68.4035	83.1785
1780	77.5174	88.1547	84.8083	68.4442	68.4442	82.2538
1781	77.8177	88.8752	85.3591	68.3457	68.3457	81.1867
1782	77.9246	88.4319	85.4971	68.1539	68.1539	79.9587
1783	78.1042	88.401	86.5432	67.9091	67.9091	78.7184
1784	78.3901	88.968	87.6383	67.6362	67.6362	77.492
1785	78.6798	89.5231	88.5863	67.3189	67.3189	76.1528
1786	78.9389	89.9885	89.4608	66.9622	66.9622	74.7532
1787	79.0254	89.8156	89.6826	66.439	66.439	72.6031
1788	78.0401	84.2463	85.4934	64.9144	64.9144	65.6051
1789	77.417	84.454	85.6929	63.9578	63.9578	63.9578
1790	77.1462	85.5422	86.6268	63.4626	63.4626	63.4626
1791	75.2517	75.2517	75.2517	63.2001	63.2001	63.2001
1792	74.1954	74.1954	74.1954	63.0607	63.0607	63.0607
1793	73.6049	73.6049	73.6049	62.9847	62.9847	62.9847
1794	73.2731	73.2731	73.2731	62.9416	62.9416	62.9416
1795	73.0852	73.0852	73.0852	62.9154	62.9154	62.9154
1796	72.9771	72.9771	72.9771	62.8979	62.8979	62.8979
1797	72.9135	72.9135	72.9135	62.885	62.885	62.885
1798	72.8745	72.8745	72.8745	62.8744	62.8744	62.8744
1799	72.8492	72.8492	72.8492	62.865	62.865	62.865
1800	72.8316	72.8316	72.8316	62.8562	62.8562	62.8562
1801	72.8182	72.8182	72.8182	62.8478	62.8478	62.8478
1802	72.8071	72.8071	72.8071	62.8395	62.8395	62.8395
1803	72.7974	72.7974	72.7974	62.8313	62.8313	62.8313
1804	72.7883	72.7883	72.7883	62.8232	62.8232	62.8232



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011743

1805	72.7797	72.7797	72.7797	62.8151	62.8151	62.8151
1806	72.7713	72.7713	72.7713	62.807	62.807	62.807
1807	72.7631	72.7631	72.7631	62.799	62.799	62.799
1808	78.0666	90.3027	91.9114	62.8012	62.8012	62.8012
1809	77.9793	89.5495	91.8312	62.8033	62.8033	62.8033
1810	79.1285	88.9852	92.1776	62.8054	62.8054	62.8054
1811	79.8383	88.6436	92.7424	62.7771	62.7771	62.7771
1812	80.2932	88.233	93.1836	62.7097	62.7097	62.7097
1813	80.6151	87.7508	93.4919	62.6232	62.6232	62.6232
1814	80.8787	87.3114	93.7656	62.5276	62.5276	62.5276
1815	81.0772	86.7221	93.9692	62.4279	62.4279	62.4279
1816	81.2344	86.1289	94.0915	62.3267	62.3267	62.3267
1817	81.4016	85.9879	93.9076	62.2252	62.2252	62.2252
1818	81.6978	86.1959	94.4213	62.1245	62.1245	62.1245
1819	82.2233	86.901	95.8666	62.0254	62.0254	62.0254
1820	82.3854	86.5582	95.2344	61.9265	61.9265	61.9265
1821	82.1889	85.6718	93.7398	61.8273	61.8273	61.8273
1822	82.0436	85.2853	93.1659	61.7288	61.7288	61.7288
1823	81.9854	85.0992	92.8971	61.6311	61.6311	61.6311
1824	81.9906	85.0211	92.7654	61.5344	61.5344	61.5344
1825	82.049	85.0441	92.7661	61.4386	61.4386	61.4386
1826	82.1359	85.0971	92.796	61.3437	61.3437	61.3437
1827	82.0233	84.582	91.961	61.2492	61.2492	61.2492
1828	81.7358	83.7982	90.7791	61.1547	61.1547	61.1547
1829	81.3473	82.9297	89.5252	61.0604	61.0604	61.0604
1830	81.0347	82.4309	88.8397	60.9667	60.9667	60.9667
1831	80.8067	82.1171	88.4072	60.8736	60.8736	60.8736
1832	80.6236	81.8516	88.0274	60.7813	60.7813	60.7813
1833	80.4513	81.5772	87.6	60.6897	60.6897	60.6897
1834	80.2732	81.2811	87.1193	60.5987	60.5987	60.5987
1835	80.0943	80.9944	86.6637	60.5083	60.5083	60.5083
1836	79.9178	80.72	86.2361	60.4186	60.4186	60.4186
1837	79.7597	80.4923	85.9043	60.3296	60.3296	60.3296
1838	79.6574	80.3848	85.8091	60.2415	60.2415	60.2415
1839	79.5852	80.3082	85.7433	60.1542	60.1542	60.1542
1840	79.5295	80.2482	85.6935	60.0678	60.0678	60.0678
1841	79.483	80.1976	85.6528	59.9822	59.9822	59.9822
1842	79.4419	80.1522	85.6178	59.8974	59.8974	59.8974
1843	79.4044	80.1099	85.5871	59.8135	59.8135	59.8135
1844	79.3801	81.7938	82.1894	65.2398	65.2398	85.5295
1845	80.0434	91.8819	83.2249	68.0421	68.0421	87.6499
1846	80.3864	91.6763	84.6265	69.4435	69.4435	88.1528
1847	80.7409	92.0214	85.9962	70.1153	70.1153	87.8952
1848	81.5421	93.5579	89.0197	70.4085	70.4085	87.2682
1849	81.7997	93.0799	88.7213	70.4958	70.4958	86.4376
1850	81.8308	92.3779	88.6641	70.4569	70.4569	85.4527
1851	81.9421	92.416	89.0988	70.3371	70.3371	84.3746
1852	82.2203	93.1706	89.7994	70.16	70.16	83.2291
1853	82.263	92.8337	89.6879	69.9242	69.9242	81.9774
1854	82.3787	92.7288	90.6009	69.6539	69.6539	80.712
1855	82.5974	93.0939	91.6425	69.3614	69.3614	79.4572
1856	82.8601	93.6435	92.6185	69.0371	69.0371	78.139
1857	83.0918	94.1006	93.4458	68.6689	68.6689	76.7178
1858	83.303	94.473	94.3203	68.2782	68.2782	75.3084
1859	82.5108	89.8289	90.7753	68.9465	68.9465	69.0228

*Handwritten signature*

*Handwritten mark*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011744

1860	81.7168	88.4098	89.6877	65.7732	65.7732	65.7732
1861	81.3504	89.4023	90.5259	65.166	65.166	65.166
1862	79.408	79.408	79.408	64.8457	64.8457	64.8457
1863	78.3245	78.3245	78.3245	64.6762	64.6762	64.6762
1864	77.7184	77.7184	77.7184	64.5846	64.5846	64.5846
1865	77.3776	77.3776	77.3776	64.5333	64.5333	64.5333
1866	77.1841	77.1841	77.1841	64.5028	64.5028	64.5028
1867	77.0724	77.0724	77.0724	64.4829	64.4829	64.4829
1868	77.0063	77.0063	77.0063	64.4687	64.4687	64.4687
1869	76.9655	76.9655	76.9655	64.4572	64.4572	64.4572
1870	76.9388	76.9388	76.9388	64.4473	64.4473	64.4473
1871	76.9198	76.9198	76.9198	64.4381	64.4381	64.4381
1872	76.9052	76.9052	76.9052	64.4294	64.4294	64.4294
1873	76.893	76.893	76.893	64.4208	64.4208	64.4208
1874	76.8821	76.8821	76.8821	64.4124	64.4124	64.4124
1875	76.872	76.872	76.872	64.404	64.404	64.404
1876	76.8623	76.8623	76.8623	64.3956	64.3956	64.3956
1877	76.8528	76.8528	76.8528	64.3873	64.3873	64.3873
1878	76.8435	76.8435	76.8435	64.379	64.379	64.379
1879	80.1516	95.0388	96.4831	64.3806	64.3806	64.3806
1880	82.0675	94.3833	96.4767	64.3821	64.3821	64.3821
1881	83.214	93.3428	96.3048	64.3836	64.3836	64.3836
1882	83.9437	93.0061	96.8807	64.385	64.385	64.385
1883	84.4146	92.5689	97.3036	64.3523	64.3523	64.3523
1884	84.7277	92.0413	97.602	64.2755	64.2755	64.2755
1885	84.9729	91.5835	97.8572	64.1773	64.1773	64.1773
1886	85.1591	91.0108	98.051	64.0688	64.0688	64.0688
1887	85.2909	90.3294	98.1857	63.9557	63.9557	63.9557
1888	85.4265	90.0891	98.0199	63.841	63.841	63.841
1889	85.5249	90.0789	98.1229	63.7261	63.7261	63.7261
1890	86.0875	90.7256	99.528	63.6125	63.6125	63.6125
1891	86.337	90.6507	99.4512	63.4985	63.4985	63.4985
1892	86.1545	89.7316	97.8827	63.3883	63.3883	63.3883
1893	85.9598	89.213	97.1009	63.2736	63.2736	63.2736
1894	85.8607	88.9791	96.7799	63.1619	63.1619	63.1619
1895	85.8299	88.8605	96.8049	63.0512	63.0512	63.0512
1896	85.8564	88.8509	96.5726	62.9417	62.9417	62.9417
1897	85.9135	88.8743	96.5749	62.8331	62.8331	62.8331
1898	85.7751	88.3388	95.722	62.7251	62.7251	62.7251
1899	85.4741	87.5851	94.5689	62.6173	62.6173	62.6173
1900	85.0872	86.7361	93.3851	62.5099	62.5099	62.5099
1901	84.7487	86.1664	92.6077	62.4032	62.4032	62.4032
1902	84.504	85.8538	92.1984	62.2973	62.2973	62.2973
1903	84.3143	85.5978	91.8506	62.1923	62.1923	62.1923
1904	84.1522	85.3717	91.5358	62.0882	62.0882	62.0882
1905	83.9917	85.1269	91.1643	61.9849	61.9849	61.9849
1906	83.8191	84.8523	90.7301	61.8823	61.8823	61.8823
1907	83.6381	84.5719	90.294	61.7806	61.7806	61.7806
1908	83.4508	84.2876	89.8575	61.6796	61.6796	61.6796
1909	83.2583	84.0005	89.4226	61.5795	61.5795	61.5795
1910	83.1209	83.8493	89.2714	61.4802	61.4802	61.4802
1911	83.0195	83.742	89.1782	61.3819	61.3819	61.3819
1912	82.9379	83.6547	89.1047	61.2846	61.2846	61.2846
1913	82.8675	83.5786	89.0422	61.1882	61.1882	61.1882
1914	82.8034	83.5091	88.9859	61.0927	61.0927	61.0927



ANEXO 1E      INVERTER TEMPERAT-EBRCL13.xls  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

**ALSTOM**

00011745

1915	82.7414	83.4429	88.9248	60.9982	60.9982	60.9982
1916	82.5801	83.378	88.8621	60.9045	60.9045	60.9045
1917	82.6194	83.3139	88.8	60.8118	60.8118	60.8118
1918	82.5594	83.2504	88.7386	60.7199	60.7199	60.7199
1919	82.4999	83.1876	88.6778	60.6289	60.6289	60.6289
1920	82.441	83.1254	88.6177	60.5388	60.5388	60.5388
1921	82.3806	83.0629	88.5481	60.4495	60.4495	60.4495
1922	82.319	82.9996	88.4757	60.3611	60.3611	60.3611
1923	82.2588	82.9357	88.403	60.2735	60.2735	60.2735
1924	82.1948	82.8719	88.3305	60.1867	60.1867	60.1867
1925	82.1325	82.8082	88.2586	60.1007	60.1007	60.1007
1926	82.5615	94.7384	85.1264	65.6025	65.6025	88.1313
1927	82.7764	95.0599	85.2896	68.685	68.685	89.2776
1928	82.8509	95.0717	85.3105	70.4969	70.4969	90.9869
1929	82.8228	94.6684	85.3097	71.5602	71.5602	91.6204
1930	83.0098	94.4633	86.8115	72.1019	72.1019	91.3057
1931	83.2158	94.4275	87.7793	72.3493	72.3493	90.6448
1932	83.7312	95.3311	89.9516	72.4316	72.4316	89.8119
1933	84.2786	96.0057	91.5831	72.4158	72.4158	88.8835
1934	84.384	95.3408	91.1481	72.3318	72.3318	87.8781
1935	84.3591	94.6008	91.2433	72.1858	72.1888	86.7759
1936	84.5884	95.3543	91.985	72.0044	72.0044	85.6346
1937	84.7506	95.5392	92.264	71.7734	71.7734	84.41
1938	84.799	95.2691	92.5245	71.5003	71.5003	83.1293
1939	84.9316	95.2434	93.5154	71.1989	71.1989	81.8394
1940	85.176	95.8096	94.5632	70.8814	70.8814	80.5733
1941	85.4054	96.2894	95.4125	70.5202	70.5202	79.1714
1942	85.609	96.6864	96.2454	70.1271	70.1271	77.7424
1943	85.4501	95.2839	95.5545	69.3901	69.3901	74.6098
1944	84.3835	90.1413	91.5254	67.8096	67.8096	67.8096
1945	83.8675	91.1369	92.3512	66.992	66.992	66.992
1946	81.8545	81.8545	81.8545	66.5629	66.5629	66.5629
1947	80.7316	80.7316	80.7316	66.3372	66.3372	66.3372
1948	80.1033	80.1033	80.1033	66.2166	66.2166	66.2166
1949	79.7498	79.7498	79.7498	66.1501	66.1501	66.1501
1950	79.5491	79.5491	79.5491	66.1116	66.1116	66.1116
1951	79.4331	79.4331	79.4331	66.0875	66.0875	66.0875
1952	79.3643	79.3643	79.3643	66.071	66.071	66.071
1953	79.3218	79.3218	79.3218	66.0582	66.0582	66.0582
1954	79.2937	79.2937	79.2937	66.0475	66.0475	66.0475
1955	79.2738	79.2738	79.2738	66.0378	66.0378	66.0378
1956	79.2584	79.2584	79.2584	66.0287	66.0287	66.0287
1957	79.2454	79.2454	79.2454	66.0198	66.0198	66.0198
1958	79.2339	79.2339	79.2339	66.0111	66.0111	66.0111
1959	79.2231	79.2231	79.2231	66.0025	66.0025	66.0025
1960	79.2128	79.2128	79.2128	65.9939	65.9939	65.9939
1961	79.2027	79.2027	79.2027	65.9853	65.9853	65.9853
1962	79.1927	79.1927	79.1927	65.9767	65.9767	65.9767
1963	82.5133	98.8772	99.9488	65.9777	65.9777	65.9777
1964	84.4362	98.2287	99.9494	65.9786	65.9786	65.9786
1965	85.5794	96.53	98.9581	65.9795	65.9795	65.9795
1966	86.3043	95.9764	99.3262	65.9803	65.9803	65.9803
1967	86.7686	95.4235	99.6592	65.943	65.943	65.943
1968	87.0666	94.8501	99.947	65.8567	65.8567	65.8567
1969	87.2872	94.3014	100.166	65.7466	65.7466	65.7466





1970	87.4745	93.7881	100.363	65.6252	65.8252	65.6252
1971	87.6028	93.1075	100.495	65.4986	65.4986	65.4986
1972	87.7065	92.545	100.501	65.37	65.37	65.37
1973	87.8244	92.3601	100.272	65.2412	65.2412	65.2412
1974	88.1169	92.6436	100.987	65.1134	65.1134	65.1134
1975	88.6172	93.3208	102.392	64.9872	64.9872	64.9872
1976	88.6582	92.74	101.336	64.8612	64.8612	64.8612
1977	88.3873	91.8069	99.8189	64.7353	64.7353	64.7353
1978	88.211	91.4454	99.3212	64.6105	64.6105	64.6105
1979	88.1181	91.2334	99.0323	64.4887	64.4867	64.4867
1980	88.0833	91.1181	98.8651	64.3641	64.3641	64.3641
1981	88.0993	91.1036	98.8314	64.2427	64.2427	64.2427
1982	88.1424	91.1187	98.829	64.1225	64.1225	64.1225
1983	88.1743	91.0807	98.7389	64.0034	64.0034	64.0034
1984	88.0213	90.5547	97.9135	63.8848	63.8848	63.8848
1985	87.7704	89.9556	97.0349	63.7669	63.7669	63.7669
1986	87.4825	89.3114	96.1208	63.6497	63.6497	63.6497
1987	87.1207	88.6481	95.1959	63.5331	63.5331	63.5331
1988	86.8688	88.2723	94.708	63.4174	63.4174	63.4174
1989	86.6592	88.0202	94.3803	63.3027	63.3027	63.3027
1990	86.4989	87.8051	94.0922	63.189	63.189	63.189
1991	86.3529	87.6101	93.8264	63.0762	63.0762	63.0762
1992	86.2183	87.4262	93.574	62.9645	62.9645	62.9645
1993	86.0765	87.2161	93.2604	62.8537	62.8537	62.8537
1994	85.9241	86.9872	92.9116	62.7438	62.7438	62.7438
1995	85.765	86.7541	92.5626	62.6348	62.6348	62.6348
1996	85.6017	86.5194	92.2183	62.5267	62.5267	62.5267
1997	85.4348	86.2829	91.8708	62.4196	62.4196	62.4196
1998	85.2639	86.0424	91.5215	62.3133	62.3133	62.3133
1999	85.1059	85.8382	91.2508	62.2079	62.2079	62.2079
2000	84.9856	85.7135	91.1366	62.1036	62.1036	62.1036
2001	84.8859	85.6095	91.0431	62.0002	62.0002	62.0002
2002	84.798	85.5173	90.9611	61.8978	61.8978	61.8978
2003	84.7167	85.4319	90.8856	61.7965	61.7965	61.7965
2004	84.6394	85.3506	90.8141	61.696	61.696	61.696
2005	84.5649	85.2718	90.7456	61.5966	61.5966	61.5966
2006	84.4918	85.1946	90.6757	61.4981	61.4981	61.4981
2007	84.4187	85.1179	90.6012	61.4005	61.4005	61.4005
2008	84.346	85.0415	90.5271	61.3039	61.3039	61.3039
2009	84.2742	84.9655	90.4535	61.2082	61.2082	61.2082
2010	84.6897	96.956	87.1794	66.7207	66.7207	87.3131
2011	84.8364	97.0551	87.2957	69.7507	69.7507	90.2384
2012	84.8406	96.7073	87.2564	71.4394	71.4394	91.5459
2013	85.0277	96.5208	88.6967	72.307	72.307	91.5973
2014	85.2357	96.4773	89.7065	72.7302	72.7302	91.1521
2015	85.6828	97.1425	91.5203	72.9076	72.9076	90.4382
2016	86.2902	98.1583	93.6891	72.9447	72.9447	88.5782
2017	86.4159	97.5119	93.1879	72.8914	72.8914	88.6164
2018	86.3908	96.7671	93.2526	72.7653	72.7653	87.5325
2019	86.5444	97.1822	93.8352	72.5891	72.5891	86.399
2020	86.7346	97.5945	94.277	72.3659	72.3659	85.1932
2021	86.7513	97.2808	94.3146	72.0953	72.0953	83.9106
2022	86.853	97.1526	95.2805	71.7945	71.7945	82.6171
2023	87.067	97.6401	96.3033	71.4768	71.4768	81.3467
2024	87.2907	98.1304	97.1884	71.1207	71.1207	79.9706

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

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2025	87.486	98.5331	97.9979	70.7275	70.7275	78.5339
2026	87.5269	98.1835	98.2327	70.1854	70.1854	76.4323
2027	86.4901	92.7627	93.992	68.6363	68.6363	69.4098
2028	85.8096	92.828	94.0672	67.6411	67.6411	67.6411
2029	85.5059	93.8812	94.9682	67.1255	67.1255	67.1255
2030	83.5924	83.5924	83.5924	66.8526	66.8526	66.8526
2031	82.5247	82.5247	82.5247	66.7075	66.7075	66.7075
2032	81.9267	81.9267	81.9267	66.6285	66.6285	66.6285
2033	81.5899	81.5899	81.5899	66.5835	66.5835	66.5835
2034	81.3982	81.3982	81.3982	66.5562	66.5562	66.5562
2035	81.2871	81.2871	81.2871	66.5379	66.5379	66.5379
2036	81.2207	81.2207	81.2207	66.5244	66.5244	66.5244
2037	81.1793	81.1793	81.1793	66.5132	66.5132	66.5132
2038	81.1517	81.1517	81.1517	66.5034	66.5034	66.5034
2039	81.1318	81.1318	81.1318	66.4941	66.4941	66.4941
2040	81.1161	81.1161	81.1161	66.4852	66.4852	66.4852
2041	81.1028	81.1028	81.1028	66.4765	66.4765	66.4765
2042	81.0909	81.0909	81.0909	66.4679	66.4679	66.4679
2043	81.0797	81.0797	81.0797	66.4594	66.4594	66.4594
2044	81.0689	81.0689	81.0689	66.4508	66.4508	66.4508
2045	81.0583	81.0583	81.0583	66.4423	66.4423	66.4423
2046	81.0479	81.0479	81.0479	66.4338	66.4338	66.4338
2047	81.0375	81.0375	81.0375	66.4253	66.4253	66.4253
2048	81.0271	81.0271	81.0271	66.4168	66.4168	66.4168
2049	81.0168	81.0168	81.0168	66.4083	66.4083	66.4083
2050	81.0065	81.0065	81.0065	66.3998	66.3998	66.3998
2051	80.9963	80.9963	80.9963	66.3914	66.3914	66.3914
2052	80.986	80.986	80.986	66.3829	66.3829	66.3829
2053	80.9757	80.9757	80.9757	66.3744	66.3744	66.3744
2054	80.9654	80.9654	80.9654	66.366	66.366	66.366
2055	80.9552	80.9552	80.9552	66.3575	66.3575	66.3575
2056	80.9449	80.9449	80.9449	66.3491	66.3491	66.3491
2057	80.9346	80.9346	80.9346	66.3407	66.3407	66.3407
2058	80.9244	80.9244	80.9244	66.3322	66.3322	66.3322
2059	80.9141	80.9141	80.9141	66.3238	66.3238	66.3238
2060	80.9039	80.9039	80.9039	66.3154	66.3154	66.3154
2061	80.8936	80.8936	80.8936	66.307	66.307	66.307
2062	80.8834	80.8834	80.8834	66.2985	66.2985	66.2985
2063	80.8731	80.8731	80.8731	66.2901	66.2901	66.2901
2064	80.8629	80.8629	80.8629	66.2817	66.2817	66.2817
2065	80.8527	80.8527	80.8527	66.2733	66.2733	66.2733
2066	80.8424	80.8424	80.8424	66.2649	66.2649	66.2649
2067	80.8322	80.8322	80.8322	66.2566	66.2566	66.2566
2068	80.822	80.822	80.822	66.2482	66.2482	66.2482
2069	80.8117	80.8117	80.8117	66.2398	66.2398	66.2398
2070	80.8015	80.8015	80.8015	66.2314	66.2314	66.2314
2071	80.7913	80.7913	80.7913	66.2231	66.2231	66.2231
2072	80.7811	80.7811	80.7811	66.2147	66.2147	66.2147
2073	80.7708	80.7708	80.7708	66.2063	66.2063	66.2063
2074	80.7606	80.7606	80.7606	66.198	66.198	66.198
2075	80.7504	80.7504	80.7504	66.1897	66.1897	66.1897
2076	80.7402	80.7402	80.7402	66.1813	66.1813	66.1813
2077	80.73	80.73	80.73	66.173	66.173	66.173
2078	80.7198	80.7198	80.7198	66.1647	66.1647	66.1647
2079	80.7096	80.7096	80.7096	66.1563	66.1563	66.1563





2080	80.6994	80.6994	80.6994	66.148	66.148	66.148
2081	80.6892	80.6892	80.6892	66.1397	66.1397	66.1397
2082	80.679	80.679	80.679	66.1314	66.1314	66.1314
2083	80.6688	80.6688	80.6688	66.1231	66.1231	66.1231
2084	80.6586	80.6586	80.6586	66.1148	66.1148	66.1148
2085	80.6484	80.6484	80.6484	66.1065	66.1065	66.1065
2086	80.6383	80.6383	80.6383	66.0982	66.0982	66.0982
2087	80.6281	80.6281	80.6281	66.0899	66.0899	66.0899
2088	80.6179	80.6179	80.6179	66.0817	66.0817	66.0817
2089	80.6077	80.6077	80.6077	66.0734	66.0734	66.0734
2090	80.5976	80.5976	80.5976	66.0651	66.0651	66.0651
2091	80.5874	80.5874	80.5874	66.0569	66.0569	66.0569
2092	80.5772	80.5772	80.5772	66.0486	66.0486	66.0486
2093	80.5671	80.5671	80.5671	66.0404	66.0404	66.0404
2094	80.5569	80.5569	80.5569	66.0321	66.0321	66.0321
2095	80.5467	80.5467	80.5467	66.0239	66.0239	66.0239
2096	80.5366	80.5366	80.5366	66.0156	66.0156	66.0156
2097	80.5264	80.5264	80.5264	66.0074	66.0074	66.0074
2098	80.5163	80.5163	80.5163	65.9992	65.9992	65.9992
2099	80.5061	80.5061	80.5061	65.991	65.991	65.991
2100	80.496	80.496	80.496	65.9827	65.9827	65.9827
2101	80.4858	80.4858	80.4858	65.9745	65.9745	65.9745
2102	80.4757	80.4757	80.4757	65.9663	65.9663	65.9663
2103	80.4656	80.4656	80.4656	65.9581	65.9581	65.9581
2104	80.4554	80.4554	80.4554	65.9499	65.9499	65.9499
2105	80.4453	80.4453	80.4453	65.9417	65.9417	65.9417
2106	80.4352	80.4352	80.4352	65.9336	65.9336	65.9336
2107	80.4251	80.4251	80.4251	65.9254	65.9254	65.9254
2108	80.4149	80.4149	80.4149	65.9172	65.9172	65.9172
2109	80.4048	80.4048	80.4048	65.909	65.909	65.909
2110	80.3947	80.3947	80.3947	65.9009	65.9009	65.9009
2111	80.3846	80.3846	80.3846	65.8927	65.8927	65.8927
2112	80.3745	80.3745	80.3745	65.8846	65.8846	65.8846
2113	80.3643	80.3643	80.3643	65.8764	65.8764	65.8764
2114	80.3542	80.3542	80.3542	65.8683	65.8683	65.8683
2115	80.3441	80.3441	80.3441	65.8601	65.8601	65.8601
2116	80.334	80.334	80.334	65.852	65.852	65.852
2117	80.3239	80.3239	80.3239	65.8439	65.8439	65.8439
2118	80.3138	80.3138	80.3138	65.8357	65.8357	65.8357
2119	80.3037	80.3037	80.3037	65.8276	65.8276	65.8276
2120	80.2937	80.2937	80.2937	65.8195	65.8195	65.8195
2121	80.2836	80.2836	80.2836	65.8114	65.8114	65.8114
2122	80.2735	80.2735	80.2735	65.8033	65.8033	65.8033
2123	80.2634	80.2634	80.2634	65.7952	65.7952	65.7952
2124	80.2533	80.2533	80.2533	65.7871	65.7871	65.7871
2125	80.2432	80.2432	80.2432	65.779	65.779	65.779
2126	80.2332	80.2332	80.2332	65.7709	65.7709	65.7709
2127	80.2231	80.2231	80.2231	65.7628	65.7628	65.7628
2128	80.213	80.213	80.213	65.7548	65.7548	65.7548
2129	80.2029	80.2029	80.2029	65.7467	65.7467	65.7467
2130	80.1929	80.1929	80.1929	65.7386	65.7386	65.7386
2131	80.1828	80.1828	80.1828	65.7306	65.7306	65.7306
2132	80.1728	80.1728	80.1728	65.7225	65.7225	65.7225
2133	80.1627	80.1627	80.1627	65.7145	65.7145	65.7145
2134	80.1526	80.1526	80.1526	65.7064	65.7064	65.7064



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2135	80.1426	80.1426	80.1426	65.6984	65.6984	65.6984
2136	80.1325	80.1325	80.1325	65.6904	65.6904	65.6904
2137	80.1225	80.1225	80.1225	65.6823	65.6823	65.6823
2138	80.1125	80.1125	80.1125	65.6743	65.6743	65.6743
2139	80.1024	80.1024	80.1024	65.6663	65.6663	65.6663
2140	80.0924	80.0924	80.0924	65.6583	65.6583	65.6583
2141	80.0823	80.0823	80.0823	65.6503	65.6503	65.6503
2142	80.0723	80.0723	80.0723	65.6422	65.6422	65.6422
2143	80.0623	80.0623	80.0623	65.6342	65.6342	65.6342
2144	80.0522	80.0522	80.0522	65.6262	65.6262	65.6262
2145	80.0422	80.0422	80.0422	65.6183	65.6183	65.6183
2146	80.0322	80.0322	80.0322	65.6103	65.6103	65.6103
2147	80.0222	80.0222	80.0222	65.6023	65.6023	65.6023
2148	80.0122	80.0122	80.0122	65.5943	65.5943	65.5943
2149	80.0021	80.0021	80.0021	65.5863	65.5863	65.5863
2150	79.9921	79.9921	79.9921	65.5784	65.5784	65.5784
2151	79.9821	79.9821	79.9821	65.5704	65.5704	65.5704
2152	79.9721	79.9721	79.9721	65.5624	65.5624	65.5624
2153	79.9621	79.9621	79.9621	65.5545	65.5545	65.5545
2154	79.9521	79.9521	79.9521	65.5465	65.5465	65.5465
2155	79.9421	79.9421	79.9421	65.5386	65.5386	65.5386
2156	79.9321	79.9321	79.9321	65.5307	65.5307	65.5307
2157	79.9221	79.9221	79.9221	65.5227	65.5227	65.5227
2158	79.9121	79.9121	79.9121	65.5148	65.5148	65.5148
2159	79.9021	79.9021	79.9021	65.5069	65.5069	65.5069
2160	79.8922	79.8922	79.8922	65.499	65.499	65.499
2161	79.8822	79.8822	79.8822	65.491	65.491	65.491
2162	79.8722	79.8722	79.8722	65.4831	65.4831	65.4831
2163	79.8622	79.8622	79.8622	65.4752	65.4752	65.4752
2164	79.8522	79.8522	79.8522	65.4673	65.4673	65.4673
2165	79.8423	79.8423	79.8423	65.4594	65.4594	65.4594
2166	79.8323	79.8323	79.8323	65.4515	65.4515	65.4515
2167	79.8223	79.8223	79.8223	65.4436	65.4436	65.4436
2168	79.8124	79.8124	79.8124	65.4358	65.4358	65.4358
2169	79.8024	79.8024	79.8024	65.4279	65.4279	65.4279
2170	79.7924	79.7924	79.7924	65.42	65.42	65.42
2171	79.7825	79.7825	79.7825	65.4121	65.4121	65.4121
2172	79.7725	79.7725	79.7725	65.4043	65.4043	65.4043
2173	79.7626	79.7626	79.7626	65.3964	65.3964	65.3964
2174	79.7526	79.7526	79.7526	65.3886	65.3886	65.3886
2175	79.7427	79.7427	79.7427	65.3807	65.3807	65.3807
2176	79.7327	79.7327	79.7327	65.3729	65.3729	65.3729
2177	79.7228	79.7228	79.7228	65.365	65.365	65.365
2178	79.7129	79.7129	79.7129	65.3572	65.3572	65.3572
2179	79.7029	79.7029	79.7029	65.3494	65.3494	65.3494
2180	79.693	79.693	79.693	65.3415	65.3415	65.3415
2181	79.6831	79.6831	79.6831	65.3337	65.3337	65.3337
2182	79.6731	79.6731	79.6731	65.3259	65.3259	65.3259
2183	79.6632	79.6632	79.6632	65.3181	65.3181	65.3181
2184	79.6533	79.6533	79.6533	65.3103	65.3103	65.3103
2185	79.6434	79.6434	79.6434	65.3025	65.3025	65.3025
2186	79.6334	79.6334	79.6334	65.2947	65.2947	65.2947
2187	79.6235	79.6235	79.6235	65.2869	65.2869	65.2869
2188	79.6136	79.6136	79.6136	65.2791	65.2791	65.2791
2189	79.6037	79.6037	79.6037	65.2713	65.2713	65.2713



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2190	79.5938	79.5938	79.5938	65.2635	65.2635	65.2635
2191	79.5839	79.5839	79.5839	65.2558	65.2558	65.2558
2192	79.574	79.574	79.574	65.248	65.248	65.248
2193	79.5641	79.5641	79.5641	65.2402	65.2402	65.2402
2194	79.5542	79.5542	79.5542	65.2325	65.2325	65.2325
2195	79.5443	79.5443	79.5443	65.2247	65.2247	65.2247
2196	79.5344	79.5344	79.5344	65.217	65.217	65.217
2197	79.5245	79.5245	79.5245	65.2092	65.2092	65.2092
2198	79.5146	79.5146	79.5146	65.2015	65.2015	65.2015
2199	79.5048	79.5048	79.5048	65.1937	65.1937	65.1937
2200	79.4949	79.4949	79.4949	65.186	65.186	65.186
2201	79.485	79.485	79.485	65.1783	65.1783	65.1783
2202	79.4751	79.4751	79.4751	65.1705	65.1705	65.1705
2203	79.4652	79.4652	79.4652	65.1628	65.1628	65.1628
2204	79.4554	79.4554	79.4554	65.1551	65.1551	65.1551
2205	79.4455	79.4455	79.4455	65.1474	65.1474	65.1474
2206	79.4356	79.4356	79.4356	65.1397	65.1397	65.1397
2207	79.4258	79.4258	79.4258	65.132	65.132	65.132
2208	79.4159	79.4159	79.4159	65.1243	65.1243	65.1243
2209	79.4061	79.4061	79.4061	65.1166	65.1166	65.1166
2210	82.7082	96.9833	98.5822	65.1173	65.1173	65.1173
2211	84.6196	96.2442	98.5122	65.118	65.118	65.118
2212	85.7689	95.6398	98.8185	65.1186	65.1186	65.1186
2213	86.4649	95.2882	99.3754	65.0818	65.0818	65.0818
2214	86.8882	94.8351	99.7724	64.997	64.997	64.997
2215	87.1727	94.3189	100.049	64.8887	64.8887	64.8887
2216	87.3947	93.8381	100.281	64.7693	64.7693	64.7693
2217	87.5499	93.2071	100.442	64.6448	64.6448	64.6448
2218	87.6619	92.5611	100.524	64.5185	64.5185	64.5185
2219	87.7836	92.3735	100.294	64.3918	64.3918	64.3918
2220	88.0345	92.5325	100.758	64.266	64.266	64.266
2221	88.5209	93.2025	102.184	64.1417	64.1417	64.1417
2222	88.8137	92.7453	101.385	64.0179	64.0179	64.0179
2223	88.3423	91.7543	99.7598	63.8942	63.8942	63.8942
2224	88.1654	91.3835	99.2488	63.7715	63.7715	63.7715
2225	88.0678	91.15	98.8274	63.6499	63.6499	63.6499
2226	88.0411	91.0594	98.7961	63.5294	63.5294	63.5294
2227	88.0628	91.0434	98.7583	63.4101	63.4101	63.4101
2228	88.0312	90.8387	98.4175	63.2918	63.2918	63.2918
2229	87.7455	90.0005	97.1358	63.1739	63.1739	63.1739
2230	87.3175	89.0416	96.7509	63.0565	63.0565	63.0565
2231	86.9056	88.3193	94.7523	62.9397	62.9397	62.9397
2232	86.599	87.9179	94.2196	62.8239	62.8239	62.8239
2233	86.3453	87.5686	93.7378	62.709	62.709	62.709
2234	86.0812	87.1742	93.1299	62.5949	62.5949	62.5949
2235	85.8168	86.7337	92.4293	62.4817	62.4817	62.4817
2236	85.5236	86.2711	91.7014	62.3693	62.3693	62.3693
2237	85.325	86.0484	91.4823	62.2579	62.2579	62.2579
2238	85.1878	85.8968	91.3814	62.1476	62.1476	62.1476
2239	85.0831	85.7848	91.2663	62.0384	62.0384	62.0384
2240	84.9931	85.6868	91.1734	61.9303	61.9303	61.9303
2241	84.9113	85.5974	91.0888	61.8231	61.8231	61.8231
2242	84.8302	85.5111	90.9889	61.717	61.717	61.717
2243	84.7477	85.4246	90.8813	61.6119	61.6119	61.6119
2244	83.9008	84.315	87.238	61.5059	61.5059	61.5059



*Handwritten signature in blue ink.*

*Handwritten mark in red ink.*





2245	83.0974	85.218	84.7858	63.2465	63.2485	70.9967
2246	82.571	84.8926	84.2593	64.182	64.182	71.9347
2247	82.2015	84.38	83.8848	64.7478	64.7478	72.6412
2248	81.9174	84.1397	83.5991	65.1192	65.1192	73.1098
2249	81.6765	83.9107	83.3578	65.3751	65.3751	73.392
2250	82.6682	92.8797	84.9994	68.7079	68.7079	87.5751
2251	83.4819	95.676	86.041	71.1718	71.1718	91.713
2252	83.9064	96.1848	86.4259	72.7103	72.7103	93.3032
2253	84.1106	96.4212	86.5906	73.765	73.765	94.3558
2254	84.1546	96.2123	86.5878	74.4855	74.4855	94.8008
2255	84.1904	95.9415	86.9941	74.9711	74.9711	94.825
2256	84.3751	95.8002	88.2722	75.2481	75.2481	94.3899
2257	84.5557	95.7818	89.0747	75.3841	75.3841	93.7403
2258	84.9558	96.4234	90.7772	75.427	75.427	92.9724
2259	85.6027	97.5417	93.0592	75.4034	75.4034	92.1203
2260	85.7578	96.9708	92.6248	75.3237	75.3237	91.1862
2261	85.7368	96.254	92.5751	75.1872	75.1872	90.143
2262	85.8142	96.2951	92.9767	75.0026	75.0026	89.0303
2263	86.0604	97.0142	93.6409	74.774	74.774	87.8525
2264	86.0746	96.6519	93.5022	74.4913	74.4913	86.5624
2265	86.1584	96.5118	94.3648	74.1743	74.1743	85.2512
2266	86.3483	96.8356	95.377	73.8346	73.8346	83.9471
2267	86.5817	97.3608	96.3299	73.4642	73.4642	82.5853
2268	86.7866	97.7924	97.1286	73.0498	73.0498	81.1172
2269	86.9711	98.1382	97.9764	72.6134	72.6134	79.6621
2270	86.1729	93.5684	94.4953	71.2567	71.2557	73.4312
2271	85.3505	92.0188	93.2996	70.0369	70.0369	70.0369
2272	84.9679	92.9951	94.1216	69.4066	69.4056	69.4056
2273	83.0164	83.0164	83.0164	69.0732	69.0732	69.0732
2274	81.9276	81.9276	81.9276	68.8975	68.8975	68.8975
2275	81.318	81.318	81.318	68.8026	68.8026	68.8026
2276	80.9748	80.9748	80.9748	68.7495	68.7495	68.7495
2277	80.7796	80.7796	80.7796	68.7179	68.7179	68.7179
2278	80.6666	80.6666	80.6666	68.6975	68.6975	68.6975
2279	80.5993	80.5993	80.5993	68.6828	68.6828	68.6828
2280	80.5574	80.5574	80.5574	68.6711	68.6711	68.6711
2281	80.5297	80.5297	80.5297	68.661	68.661	68.661
2282	80.5097	80.5097	80.5097	68.6516	68.6516	68.6516
2283	80.4941	80.4941	80.4941	68.6427	68.6427	68.6427
2284	80.481	80.481	80.481	68.6339	68.6339	68.6339
2285	80.4691	80.4691	80.4691	68.6253	68.6253	68.6253
2286	80.4581	80.4581	80.4581	68.6168	68.6168	68.6168
2287	80.4474	80.4474	80.4474	68.6082	68.6082	68.6082
2288	80.437	80.437	80.437	68.5997	68.5997	68.5997
2289	80.4267	80.4267	80.4267	68.5912	68.5912	68.5912
2290	83.7343	98.6681	100.101	68.5909	68.5909	68.5909
2291	85.8495	98.0119	100.094	68.5905	68.5905	68.5905
2292	86.7944	96.9412	99.8863	68.59	68.59	68.59
2293	87.5233	96.605	100.463	68.5895	68.5895	68.5895
2294	87.9889	96.1848	100.885	68.543	68.543	68.543
2295	88.2853	95.6115	101.159	68.4373	68.4373	68.4373
2296	88.5103	95.1358	101.396	68.3027	68.3027	68.3027
2297	88.6742	94.5406	101.566	68.1543	68.1543	68.1543
2298	88.7834	93.8399	101.68	67.9998	67.9998	67.9998
2299	88.8937	93.5619	101.493	67.8429	67.8429	67.8429





2300	89.0619	93.5125	101.543	87.8859	67.6859	67.6859
2301	89.4966	94.1314	102.92	87.5301	67.5301	67.5301
2302	89.7324	94.0801	102.873	87.3752	67.3752	67.3752
2303	89.5304	93.1191	101.28	87.2206	67.2206	67.2206
2304	89.3082	92.5806	100.448	67.067	67.067	67.067
2305	89.1814	92.2923	100.088	66.9148	66.9148	66.9148
2306	89.1276	92.1525	99.8934	66.764	66.764	66.764
2307	89.1314	92.1159	99.8314	66.6146	66.6146	66.6146
2308	89.0931	91.9114	99.4989	66.4665	66.4665	66.4665
2309	88.7679	90.9725	98.0673	66.319	66.319	66.319
2310	88.2759	89.8789	96.491	66.1722	66.1722	66.1722
2311	87.8829	89.2431	95.6299	66.0265	66.0265	66.0265
2312	87.5443	88.8205	95.0631	65.8819	65.8819	65.8819
2313	87.2679	88.4305	94.5107	65.7386	65.7386	65.7386
2314	86.9788	87.9721	93.7874	65.5963	65.5963	65.5963
2315	86.679	87.5061	93.0811	65.4551	65.4551	65.4551
2316	86.4193	87.1488	92.5685	65.3152	65.3152	65.3152
2317	86.2446	86.9635	92.4054	65.1766	65.1766	65.1766
2318	86.1185	86.8252	92.2946	65.0393	65.0393	65.0393
2319	86.0117	86.7122	92.1847	64.9033	64.9033	64.9033
2320	85.9181	86.6118	92.0984	64.7686	64.7686	64.7686
2321	85.8309	86.518	92.0086	64.6353	64.6353	64.6353
2322	85.7451	86.4271	91.9111	64.5031	64.5031	64.5031
2323	85.6575	86.3361	91.8021	64.3723	64.3723	64.3723
2324	85.5691	86.2444	91.6928	64.2426	64.2426	64.2426
2325	84.3867	85.8508	86.1606	65.515	65.515	71.5229
2326	83.6481	85.1164	85.421	66.1787	66.1787	72.2
2327	83.1512	84.6242	84.9233	66.5366	66.5366	72.5711
2328	82.7859	84.2609	84.5576	66.739	66.739	72.7793
2329	82.4924	83.9674	84.2641	66.8618	66.8618	72.9021
2330	82.2385	83.7135	84.0102	66.9443	66.9443	72.9845
2331	82.0069	83.4819	83.7788	67.0063	67.0063	73.0466
2332	81.7879	83.263	83.5596	67.0579	67.0579	73.0982
2333	81.5766	83.0516	83.3483	67.1041	67.1041	73.1444
2334	82.9586	95.0893	85.5393	71.3142	71.3142	91.8093
2335	83.6942	95.9472	86.2333	73.7323	73.7323	94.3164
2336	84.0667	96.3643	86.5626	75.2229	75.2229	95.8146
2337	84.2133	96.3587	86.6607	76.1839	76.1839	96.5931
2338	84.2537	96.0651	86.855	76.7952	76.7952	96.7809
2339	84.4545	95.9101	88.2489	77.1087	77.1087	96.3172
2340	84.658	95.8862	89.1705	77.2372	77.2372	95.8023
2341	85.1016	96.6094	91.0438	77.2498	77.2498	94.7454
2342	85.7132	97.5622	93.0967	77.1849	77.1849	93.796
2343	85.8331	96.914	92.5928	77.0591	77.0591	92.7663
2344	85.8092	96.1716	92.6733	76.874	76.874	91.6226
2345	85.9725	96.623	93.2743	76.6462	76.6462	90.4373
2346	86.162	97.0146	93.7014	76.3748	76.3748	89.1823
2347	86.1845	96.6899	93.7646	76.0585	76.0585	87.8545
2348	86.2912	96.5867	94.7355	75.7132	75.7132	86.5185
2349	86.5111	97.0905	95.7631	75.3521	75.3521	85.2035
2350	86.7382	97.5824	96.6472	74.9525	74.9525	83.7818
2351	86.9369	97.9872	97.4617	74.5169	74.5169	82.3035
2352	86.9597	97.5309	97.6031	73.9126	73.9126	80.0529
2353	85.9137	92.1009	93.3532	72.3109	72.3109	72.9779
2354	85.2497	92.2926	93.5308	71.3037	71.3037	71.3037



*Handwritten signature*







2355	84.9553	93.3571	94.4411	70.7815	70.7815	70.7815
2356	83.0467	83.0467	83.0467	70.5054	70.5054	70.5054
2357	81.9816	81.9816	81.9816	70.3586	70.3586	70.3586
2358	81.3853	81.3853	81.3853	70.2785	70.2785	70.2785
2359	81.0494	81.0494	81.0494	70.2329	70.2329	70.2329
2360	80.8583	80.8583	80.8583	70.2051	70.2051	70.2051
2361	80.7475	80.7475	80.7475	70.1865	70.1865	70.1865
2362	80.6815	80.6815	80.6815	70.1726	70.1726	70.1726
2363	80.6402	80.6402	80.6402	70.1612	70.1612	70.1612
2364	80.6128	80.6128	80.6128	70.151	70.151	70.151
2365	80.5931	80.5931	80.5931	70.1415	70.1415	70.1415
2366	80.5776	80.5776	80.5776	70.1324	70.1324	70.1324
2367	80.5645	80.5645	80.5645	70.1234	70.1234	70.1234
2368	80.5526	80.5526	80.5526	70.1146	70.1146	70.1146
2369	80.5416	80.5416	80.5416	70.1057	70.1057	70.1057
2370	80.5309	80.5309	80.5309	70.097	70.097	70.097
2371	80.5205	80.5205	80.5205	70.0882	70.0882	70.0882
2372	80.5102	80.5102	80.5102	70.0794	70.0794	70.0794
2373	83.8115	98.0365	99.648	70.0785	70.0785	70.0785
2374	85.7222	97.2768	99.5624	70.0775	70.0775	70.0775
2375	86.8694	96.7214	99.9178	70.0765	70.0765	70.0765
2376	87.5636	96.3651	100.468	70.0258	70.0258	70.0258
2377	87.9828	95.9128	100.867	69.9112	69.9112	69.9112
2378	88.2619	95.3944	101.139	69.7653	69.7653	69.7653
2379	88.4775	94.9071	101.364	69.6047	69.6047	69.6047
2380	88.6248	94.2661	101.517	69.4374	69.4374	69.4374
2381	88.729	93.6187	101.582	69.2676	69.2676	69.2676
2382	88.8437	93.4276	101.347	69.0974	69.0974	69.0974
2383	89.0928	93.5944	101.835	68.9281	68.9281	68.9281
2384	89.5751	94.2603	103.257	68.7607	68.7607	68.7607
2385	89.6491	93.766	102.393	68.594	68.594	68.594
2386	89.3637	92.7608	100.753	68.4279	68.4279	68.4279
2387	89.1816	92.3937	100.255	68.2632	68.2632	68.2632
2388	89.0763	92.1467	99.9165	68.1	68.1	68.1
2389	89.046	92.0578	99.7905	67.9384	67.9384	67.9384
2390	89.063	92.0334	99.7399	67.7783	67.7783	67.7783
2391	88.8961	91.4636	98.8498	67.6192	67.6192	67.6192
2392	88.4769	90.398	97.2655	67.4609	67.4609	67.4609
2393	87.9772	89.4047	95.857	67.3035	67.3035	67.3035
2394	87.6053	88.9171	95.2091	67.1474	67.1474	67.1474
2395	87.2982	88.4942	94.6257	66.9926	66.9926	66.9926
2396	86.9787	87.9828	93.815	66.8389	66.8389	66.8389
2397	86.6457	87.4575	92.9886	66.6864	66.6864	66.6864
2398	86.3796	87.1063	92.5324	66.5353	66.5353	66.5353
2399	86.2026	86.9177	92.3717	66.3856	66.3856	66.3856
2400	86.0741	86.7784	92.2585	66.2374	66.2374	66.2374
2401	85.9675	86.6848	92.1493	66.0905	66.0905	66.0905
2402	85.873	86.5639	92.0522	65.9451	65.9451	65.9451
2403	85.7852	86.4702	91.9621	65.8011	65.8011	65.8011
2404	85.6979	86.3794	91.8602	65.6584	65.6584	65.6584
2405	86.0928	98.3379	88.6346	71.1196	71.1196	91.6979
2406	86.2733	98.5713	88.7697	74.1389	74.1389	94.7306
2407	86.3057	98.4342	88.7503	75.8601	75.8601	96.2514
2408	86.2947	98.0807	88.9812	76.8393	76.8393	96.7695
2409	86.4635	97.8908	90.3529	77.3326	77.3326	96.4794



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

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2410	86.6347	97.8479	91.1937	77.5483	77.5483	95.8489
2411	87.0805	98.6286	93.1447	77.6061	77.6061	95.0511
2412	87.6493	99.4745	95.0134	77.5681	77.5681	94.1512
2413	87.7477	98.8302	94.5087	77.4627	77.4627	93.1717
2414	87.709	98.093	94.5694	77.2944	77.2944	92.0719
2415	87.8418	98.4587	95.116	77.0787	77.0787	90.9168
2416	88.0303	98.9054	95.5788	76.8163	76.8163	89.8844
2417	88.033	98.5515	95.5691	76.5037	76.5037	88.3618
2418	88.1228	98.4302	96.5135	76.1596	76.1596	87.0241
2419	88.3229	98.8822	97.5247	75.7974	75.7974	85.7081
2420	88.539	99.3685	98.4116	75.3981	75.3981	84.2935
2421	88.7262	99.7664	99.2095	74.9608	74.9608	82.811
2422	88.807	99.6522	99.8506	74.4194	74.4194	80.9019
2423	87.7904	94.2516	95.43	72.8528	72.8528	73.8618
2424	87.073	94.0309	95.2788	71.7858	71.7858	71.7858
2425	86.7487	95.0656	96.1591	71.2327	71.2327	71.2327
2426	84.8246	84.8246	84.8246	70.9407	70.9407	70.9407
2427	83.7507	83.7507	83.7507	70.7858	70.7858	70.7858
2428	83.1493	83.1493	83.1493	70.7013	70.7013	70.7013
2429	82.8104	82.8104	82.8104	70.6535	70.6535	70.6535
2430	82.6174	82.6174	82.6174	70.6245	70.6245	70.6245
2431	82.5054	82.5054	82.5054	70.6053	70.6053	70.6053
2432	82.4384	82.4384	82.4384	70.5911	70.5911	70.5911
2433	82.3965	82.3965	82.3965	70.5795	70.5795	70.5795
2434	82.3685	82.3685	82.3685	70.5693	70.5693	70.5693
2435	82.3482	82.3482	82.3482	70.5597	70.5597	70.5597
2436	82.3322	82.3322	82.3322	70.5506	70.5506	70.5506
2437	82.3186	82.3186	82.3186	70.5416	70.5416	70.5416
2438	82.3063	82.3063	82.3063	70.5327	70.5327	70.5327
2439	82.2947	82.2947	82.2947	70.5238	70.5238	70.5238
2440	82.2836	82.2836	82.2836	70.515	70.515	70.515
2441	82.2727	82.2727	82.2727	70.5062	70.5062	70.5062
2442	82.262	82.262	82.262	70.4975	70.4975	70.4975
2443	85.5843	99.95	101.521	70.4963	70.4963	70.4963
2444	87.4758	99.2549	101.484	70.4951	70.4951	70.4951
2445	88.6226	98.5434	101.683	70.4938	70.4938	70.4938
2446	89.3141	98.1749	102.225	70.442	70.442	70.442
2447	89.7265	97.7169	102.618	70.3251	70.3251	70.3251
2448	89.9947	97.1763	102.876	70.1765	70.1765	70.1765
2449	90.1971	96.6707	103.083	70.0128	70.0128	70.0128
2450	90.3343	96.0265	103.226	69.8423	69.8423	69.8423
2451	90.4259	95.3384	103.304	69.6692	69.6692	69.6692
2452	90.5274	95.1304	103.053	69.4958	69.4958	69.4958
2453	90.7461	95.2362	103.429	69.3233	69.3233	69.3233
2454	91.2066	95.8794	104.829	69.1525	69.1525	69.1525
2455	91.3041	95.4683	104.137	68.9827	68.9827	68.9827
2456	91.0264	94.4679	102.499	68.8135	68.8135	68.8135
2457	90.8249	94.0617	101.923	68.6457	68.6457	68.6457
2458	90.7069	93.8041	101.591	68.4795	68.4795	68.4795
2459	90.666	93.881	101.422	68.3147	68.3147	68.3147
2460	90.6557	93.645	101.363	68.1516	68.1516	68.1516
2461	90.6827	93.6382	101.335	67.9901	67.9901	67.9901
2462	90.4608	92.9294	100.236	67.8295	67.8295	67.8295
2463	90.0773	92.0377	98.9367	67.6698	67.6698	67.6698
2464	89.602	91.0743	97.5814	67.5111	67.5111	67.5111

*Handwritten signature*

*Handwritten mark*

2448





2465	89.1228	90.3982	96.4035	67.3534	67.3534	67.3534
2466	87.5867	88.4626	90.2891	67.1945	67.1945	67.1945
2467	88.6502	87.5416	89.3129	67.0369	67.0369	67.0369
2468	86.036	86.9489	88.6832	66.8809	66.8809	66.8809
2469	85.5989	86.5372	88.1927	66.7263	66.7263	66.7263
2470	85.2583	86.2221	87.8186	66.5731	66.5731	66.5731
2471	84.931	85.8805	87.3121	66.4213	66.4213	66.4213
2472	84.6971	85.6721	87.2427	66.271	66.271	66.271
2473	84.4683	85.4687	86.9805	66.122	66.122	66.122
2474	84.0772	84.8357	85.9793	65.9741	65.9741	65.9741
2475	83.7071	84.3895	85.4183	65.8275	65.8275	65.8275
2476	83.4964	84.3156	85.5507	65.6824	65.6824	65.6824
2477	82.8718	83.1088	83.4666	65.5377	65.5377	65.5377
2478	82.4108	82.648	83.0057	65.3944	65.3944	65.3944
2479	82.0398	82.277	82.6348	65.2525	65.2525	65.2525
2480	81.7184	81.9557	82.3134	65.1118	65.1118	65.1118
2481	81.4248	81.6621	82.0198	64.9725	64.9725	64.9725
2482	81.2416	81.8129	82.1727	64.8348	64.8346	64.8346
2483	81.2071	81.8301	82.7693	64.6984	64.6984	64.6984
2484	81.2637	82.1383	83.4569	64.5639	64.5639	64.5639
2485	80.8894	81.3195	81.9679	64.43	64.43	64.43
2486	80.8593	81.2042	82.0258	64.2975	64.2975	64.2975
2487	80.5128	81.1723	82.187	64.1664	64.1664	64.1664
2488	80.4162	81.1908	82.3586	64.0365	64.0366	64.0366
2489	80.9841	81.8182	85.6044	63.9098	63.9098	63.9098
2490	82.3253	93.8385	86.575	68.7958	68.7958	87.5193
2491	83.2082	94.4443	88.3295	71.2158	71.2158	89.0513
2492	84.2576	96.2105	91.5404	72.3806	72.3806	89.3214
2493	84.7123	96.0688	91.8974	72.8954	72.8954	88.9292
2494	84.8276	95.4483	91.8486	73.0594	73.0594	88.1536
2495	84.9365	95.3401	92.0354	73.0276	73.0276	87.1632
2496	85.2448	96.2341	92.8397	72.883	72.883	86.0564
2497	85.2948	95.9044	92.7355	72.651	72.651	84.8085
2498	85.3822	95.7533	93.5153	72.3686	72.3686	83.5294
2499	85.5684	96.032	94.5311	72.0554	72.0554	82.2485
2500	85.8132	96.5723	95.512	71.7102	71.7102	80.9208
2501	86.0259	97.0181	96.3119	71.3172	71.3172	79.4706
2502	86.217	97.3705	97.1663	70.9014	70.9014	78.0362
2503	85.5197	93.2855	94.1128	69.6515	69.6515	72.2894
2504	84.6635	91.217	92.5108	68.3877	68.3877	68.3877
2505	84.2622	92.1746	93.3141	67.7334	67.7334	67.7334
2506	82.3023	82.3023	82.3023	67.3897	67.3897	67.3897
2507	81.2088	81.2088	81.2088	67.2085	67.2085	67.2085
2508	80.5968	80.5968	80.5968	67.1111	67.1111	67.1111
2509	80.2523	80.2523	80.2523	67.0571	67.0571	67.0571
2510	80.0565	80.0565	80.0565	67.0255	67.0255	67.0255
2511	79.9432	79.9432	79.9432	67.0054	67.0054	67.0054
2512	79.8759	79.8759	79.8759	66.9913	66.9913	66.9913
2513	79.834	79.834	79.834	66.9803	66.9803	66.9803
2514	79.8063	79.8063	79.8063	66.9708	66.9708	66.9708
2515	79.7865	79.7865	79.7865	66.9622	66.9622	66.9622
2516	79.7711	79.7711	79.7711	66.954	66.954	66.954
2517	79.7581	79.7581	79.7581	66.946	66.946	66.946
2518	79.7465	79.7465	79.7465	66.9382	66.9382	66.9382
2519	79.7356	79.7356	79.7356	66.9304	66.9304	66.9304

*Handwritten signature*

*Handwritten mark*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011756

2520	79.7251	79.7251	79.7251	66.9226	66.9226	66.9226
2521	79.7149	79.7149	79.7149	66.9149	66.9149	66.9149
2522	79.7048	79.7048	79.7048	66.9072	66.9072	66.9072
2523	83.0146	98.1666	99.5433	66.9068	66.9068	66.9068
2524	84.9311	97.5107	99.5375	66.9065	66.9065	66.9065
2525	88.0759	96.3142	99.1825	66.906	66.906	66.906
2526	88.8044	95.9762	99.7572	66.9056	66.9056	66.9056
2527	87.2693	95.5131	100.18	66.8638	66.8638	66.8638
2528	87.5875	94.9531	100.441	66.7687	66.7687	66.7687
2529	87.7953	94.4756	100.679	66.6477	66.6477	66.6477
2530	87.9866	93.891	100.857	66.5143	66.5143	66.5143
2531	88.0811	93.1819	100.976	66.3753	66.3753	66.3753
2532	88.1953	92.8787	100.812	66.2343	66.2343	66.2343
2533	88.3514	92.7913	100.777	66.093	66.093	66.093
2534	88.7805	93.4044	102.148	65.9529	65.9529	65.9529
2535	89.0544	93.4244	102.275	65.8137	65.8137	65.8137
2536	88.8895	92.4873	100.674	65.6747	65.6747	65.6747
2537	88.6453	91.9017	99.7917	65.5366	65.5366	65.5366
2538	88.5193	91.8323	99.4296	65.3998	65.3998	65.3998
2539	88.4675	91.4923	99.233	65.2641	65.2641	65.2641
2540	88.4749	91.4578	99.1723	65.1298	65.1298	65.1298
2541	88.4155	91.1873	98.7375	64.9966	64.9966	64.9966
2542	88.0679	90.2036	97.2433	64.8639	64.8639	64.8639
2543	87.5546	89.0718	95.6149	64.7318	64.7318	64.7318
2544	86.2113	87.0038	90.4598	64.5986	64.5986	64.5986
2545	85.2085	87.0451	88.438	65.7038	65.7038	71.0427
2546	84.5845	86.4212	87.8141	66.2694	66.2694	71.6083
2547	84.1667	86.0033	87.3962	66.564	66.564	71.9028
2548	83.8611	85.6977	87.0907	66.7222	66.7222	72.0611
2549	83.6171	85.4537	86.8466	66.8118	66.8118	72.1507
2550	83.4069	85.2436	86.6385	66.8669	66.8669	72.2058
2551	83.2157	85.0523	86.4453	66.9045	66.9045	72.2434
2552	83.0354	84.872	86.2649	66.9333	66.9333	72.2722
2553	82.8615	84.6981	86.091	66.9575	66.9575	72.2964
2554	82.8918	84.5282	85.9211	66.9793	66.9793	72.3182
2555	82.5244	84.361	85.754	66.9998	66.9998	72.3387
2556	82.3593	84.1959	85.5889	67.0196	67.0196	72.3585
2557	82.2025	84.14	85.4216	67.1144	67.1144	72.7577
2558	82.0458	84.0059	85.2627	67.1929	67.1929	72.9041
2559	81.8863	83.8142	85.1065	67.2229	67.2229	72.837
2560	81.7242	83.5986	84.9499	67.2111	67.2111	72.6639
2561	81.5611	83.382	84.7923	67.1756	67.1756	72.4671
2562	82.5292	83.851	90.1569	65.9426	65.9426	65.9426
2563	82.9727	84.1951	90.3832	65.2577	65.2577	65.2577
2564	83.1076	84.1935	90.1539	64.8488	64.8488	64.8488
2565	83.0827	83.9977	89.7218	64.5791	64.5791	64.5791
2566	82.9201	83.712	89.2119	64.3797	64.3797	64.3797
2567	82.7796	83.5084	88.9295	64.2163	64.2163	64.2163
2568	82.6796	83.3999	88.8415	64.0716	64.0716	64.0716
2569	82.6021	83.314	88.7758	63.937	63.937	63.937
2570	82.5368	83.2408	88.7212	63.808	63.808	63.808
2571	82.4753	83.1737	88.6575	63.6824	63.6824	63.6824
2572	82.4181	83.109	88.5961	63.5591	63.5591	63.5591
2573	82.3583	83.046	88.5363	63.4375	63.4375	63.4375
2574	82.3007	82.9838	88.4726	63.3173	63.3173	63.3173

*Handwritten signature and red mark*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011757



2575	82.2401	82.9204	88.395	63.1985	63.1985	63.1985
2576	82.1782	82.8557	88.3161	63.0808	63.0808	63.0808
2577	82.1155	82.7904	88.2369	62.9642	62.9642	62.9642
2578	82.548	94.8782	85.1289	68.4243	68.4243	88.9191
2579	82.7731	95.0334	85.3097	71.4804	71.4804	92.0697
2580	82.8713	95.1737	85.3614	73.2979	73.2979	93.8693
2581	82.8625	94.9433	85.2994	74.4088	74.4088	94.7488
2582	82.8851	94.6067	85.7875	75.0618	75.0618	94.8514
2583	82.1293	87.7722	85.1402	73.5689	73.5689	86.5243
2584	81.01	81.9075	83.5814	69.6758	69.6758	69.6758
2585	80.3316	81.1892	82.9561	67.6484	67.6484	67.6484
2586	79.8934	80.7113	82.571	66.5591	66.5591	66.5591
2587	79.5901	80.388	82.3288	65.9416	65.9416	65.9416
2588	79.4078	80.1462	82.4128	65.562	65.562	65.562
2589	79.2476	79.9814	82.3026	65.3024	65.3024	65.3024
2590	79.0951	79.8265	82.177	65.1039	65.1039	65.1039
2591	78.9475	79.6766	82.0564	64.9366	64.9366	64.9366
2592	78.8036	79.5303	81.9394	64.7856	64.7856	64.7856
2593	78.6289	79.3854	81.8519	64.6435	64.6435	64.6435
2594	78.4637	79.2002	81.4867	64.5064	64.5064	64.5064
2595	78.3041	79.0405	81.327	64.3724	64.3724	64.3724
2596	78.148	78.8845	81.171	64.2407	64.2407	64.2407
2597	77.9944	78.7308	81.0173	64.1106	64.1106	64.1106
2598	77.8425	78.579	80.8655	63.982	63.982	63.982
2599	77.6922	78.4287	80.7152	63.8548	63.8548	63.8548
2600	77.5431	78.2796	80.5661	63.7287	63.7287	63.7287
2601	77.3953	78.1317	80.4182	63.6039	63.6039	63.6039
2602	77.2485	77.985	80.2715	63.4803	63.4803	63.4803
2603	77.1029	77.8394	80.1258	63.3578	63.3578	63.3578
2604	76.9583	77.6948	79.9813	63.2365	63.2365	63.2365
2605	76.8147	77.5512	79.8377	63.1164	63.1164	63.1164
2606	76.6722	77.4087	79.6952	62.9973	62.9973	62.9973
2607	76.5232	77.264	79.514	62.8793	62.8793	62.8793
2608	76.366	77.1156	79.3035	62.7625	62.7625	62.7625
2609	76.2041	76.9626	79.0883	62.6467	62.6467	62.6467
2610	77.6483	88.8958	82.1011	67.4575	67.4575	85.904
2611	78.7812	90.2777	84.6894	69.8269	69.8269	87.3365
2612	79.7848	91.609	87.1481	70.9568	70.9568	87.5387
2613	80.1329	91.1675	86.8848	71.4455	71.4455	87.0934
2614	80.2509	90.5544	87.1248	71.5861	71.5861	86.2561
2615	80.5423	91.2577	87.8974	71.541	71.541	85.2418
2616	80.7797	91.5936	88.3034	71.3795	71.3795	84.0839
2617	80.8675	91.3512	88.5371	71.1406	71.1406	82.8338
2618	81.0296	91.3206	89.5814	70.8557	70.8557	81.5575
2619	81.3022	91.9149	90.6374	70.5469	70.5469	80.3
2620	81.5853	92.434	91.5348	70.1919	70.1919	78.9115
2621	81.8001	92.8671	92.3938	69.8011	69.8011	77.4822
2622	81.7429	91.86	92.0544	69.1326	69.1326	74.7059
2623	80.6641	86.3972	87.7717	67.5124	67.5124	67.6124
2624	80.1007	87.2843	88.5066	66.6332	66.6332	66.6332
2625	78.0632	78.0832	78.0632	66.1738	66.1738	66.1738
2626	76.9272	76.9272	76.9272	65.9331	65.9331	65.9331
2627	76.292	76.292	76.292	65.8053	65.8053	65.8053
2628	75.9352	75.9352	75.9352	65.7358	65.7358	65.7358
2629	75.733	75.733	75.733	65.6964	65.6964	65.6964

*[Handwritten signature]*

*[Handwritten mark]*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011753



2630	75.6167	75.6167	75.6167	65.6726	65.6726	65.6726
2631	75.5482	75.5482	75.5482	65.6568	65.6568	65.6568
2632	75.5062	75.5062	75.5062	65.6451	65.6451	65.6451
2633	75.4789	75.4789	75.4789	65.6356	65.6356	65.6356
2634	75.4599	75.4599	75.4599	65.6272	65.6272	65.6272
2635	75.4454	75.4454	75.4454	65.6193	65.6193	65.6193
2636	75.4334	75.4334	75.4334	65.6118	65.6118	65.6118
2637	75.4228	75.4228	75.4228	65.6044	65.6044	65.6044
2638	75.4131	75.4131	75.4131	65.5971	65.5971	65.5971
2639	75.4037	75.4037	75.4037	65.5898	65.5898	65.5898
2640	75.3946	75.3946	75.3946	65.5826	65.5826	65.5826
2641	75.3856	75.3856	75.3856	65.5754	65.5754	65.5754
2642	78.7087	95.2387	98.2684	65.5752	65.5752	65.5752
2643	80.6335	94.5921	96.2709	65.5751	65.5751	65.5751
2644	81.7788	92.9614	95.3409	65.5748	65.5748	65.5748
2645	82.5046	92.2483	95.5399	65.5746	65.5746	65.5746
2646	82.9773	91.6935	95.8854	65.5363	65.5363	65.5363
2647	83.2908	91.1305	96.1725	65.4492	65.4492	65.4492
2648	83.5307	90.5904	96.4086	65.3382	65.3382	65.3382
2649	83.7408	90.0977	96.6287	65.216	65.216	65.216
2650	83.8963	89.4536	96.7887	65.0886	65.0886	65.0886
2651	84.0245	88.8826	96.8417	64.9593	64.9593	64.9593
2652	84.1678	88.7201	96.6349	64.8297	64.8297	64.8297
2653	84.477	88.9978	97.3167	64.7009	64.7009	64.7009
2654	85.0084	89.7125	98.7865	64.5737	64.5737	64.5737
2655	85.0544	89.0935	97.6519	64.4467	64.4467	64.4467
2656	84.7811	88.1256	96.0726	64.3201	64.3201	64.3201
2657	84.6426	87.8435	95.6976	64.1947	64.1947	64.1947
2658	84.5771	87.6424	95.4089	64.0703	64.0703	64.0703
2659	84.5841	87.597	95.3303	63.9472	63.9472	63.9472
2660	84.6355	87.6102	95.3194	63.8252	63.8252	63.8252
2661	84.574	87.276	94.7701	63.7041	63.7041	63.7041
2662	84.2719	86.4057	93.4438	63.5836	63.5836	63.5836
2663	83.832	85.4156	92.012	63.4636	63.4636	63.4636
2664	83.4755	84.8614	91.2558	63.3445	63.3445	63.3445
2665	83.2092	84.5008	90.7647	63.2264	63.2264	63.2264
2666	82.9898	84.1893	90.3257	63.1093	63.1093	63.1093
2667	82.7623	83.8165	89.7272	62.9931	62.9931	62.9931
2668	82.5238	83.4299	89.1085	62.8778	62.8778	62.8778
2669	82.2767	83.0382	88.4905	62.7634	62.7634	62.7634
2670	82.1027	82.8292	88.2559	62.6501	62.6501	62.6501
2671	81.9874	82.7049	88.1532	62.5378	62.5378	62.5378
2672	81.9043	82.613	88.0824	62.4266	62.4266	62.4266
2673	81.8372	82.5386	88.0206	62.3165	62.3165	62.3165
2674	81.7771	82.4728	87.9582	62.2075	62.2075	62.2075
2675	81.7212	82.4112	87.9	62.0995	62.0995	62.0995
2676	81.6677	82.3522	87.8444	61.9925	61.9925	61.9925
2677	81.6119	82.2931	87.772	61.8865	61.8865	61.8865
2678	81.5545	82.2327	87.6964	61.7815	61.7815	61.7815
2679	81.4963	82.1716	87.6206	61.6776	61.6776	61.6776
2680	80.7412	81.1691	84.3234	61.5731	61.5731	61.5731
2681	79.3305	79.4252	79.5599	61.4677	61.4677	61.4677
2682	78.4078	78.4429	78.4928	61.3631	61.3631	61.3631
2683	77.7818	77.8024	77.8317	61.2595	61.2595	61.2595
2684	77.317	77.323	77.3317	61.1568	61.1568	61.1568

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011753



2685	77.1099	77.3292	77.6413	61.0554	61.0554	61.0554
2686	77.0722	77.5319	78.1859	60.9553	60.9553	60.9553
2687	77.0905	77.7162	78.641	60.8564	60.8564	60.8564
2688	77.0229	77.6157	78.621	60.7585	60.7585	60.7585
2689	76.91	77.4698	78.5557	60.6614	60.6614	60.6614
2690	76.7751	77.3081	78.4723	60.5653	60.5653	60.5653
2691	76.6236	77.1471	78.3423	60.4701	60.4701	60.4701
2692	76.4663	76.9755	78.2182	60.3758	60.3758	60.3758
2693	76.3079	76.8006	78.0979	60.2824	60.2824	60.2824
2694	76.1523	76.6302	77.9886	60.1899	60.1899	60.1899
2695	77.655	89.7789	80.238	65.6746	65.6746	86.1648
2696	78.4725	90.7261	81.0114	68.7556	68.7556	89.34
2697	78.9041	91.2054	81.3954	70.5997	70.5997	91.1912
2698	79.0881	91.1726	81.5256	71.7378	71.7378	92.0819
2699	79.225	90.9486	82.1209	72.4171	72.4171	92.2109
2700	79.4913	90.8625	83.5819	72.7659	72.7659	91.7337
2701	79.7336	90.8946	84.4539	72.9147	72.9147	90.9963
2702	80.3823	92.1387	87.0899	72.9458	72.9458	90.1326
2703	80.8483	92.4198	88.0064	72.8996	72.8996	89.1842
2704	80.9474	91.7667	87.7355	72.7922	72.7922	88.1506
2705	80.9592	91.174	87.903	72.6299	72.6299	87.0288
2706	81.2631	92.1637	88.7704	72.4288	72.4288	85.8711
2707	81.3976	92.1117	88.8807	72.1788	72.1788	84.6159
2708	81.4842	91.9131	89.3794	71.8912	71.8912	83.3252
2709	81.6627	92.0377	90.4043	71.5782	71.5782	82.0324
2710	81.9413	92.6353	91.4794	71.2466	71.2466	80.7487
2711	82.1846	93.115	92.3064	70.8671	70.8671	79.3103
2712	82.4066	93.5147	93.1723	70.461	70.461	77.8762
2713	82.046	91.0187	91.5212	69.5075	69.5075	73.6521
2714	81.0869	87.2663	88.6025	68.0572	68.0572	68.0572
2715	80.6285	88.1668	89.3488	67.3066	67.3066	67.3066
2716	78.8435	78.6435	78.6435	66.9136	66.9136	66.9136
2717	77.5366	77.5366	77.5366	66.7071	66.7071	66.7071
2718	76.9175	76.9175	76.9175	66.597	66.597	66.597
2719	76.5695	76.5695	76.5695	66.5365	66.5365	66.5365
2720	76.3721	76.3721	76.3721	66.5017	66.5017	66.5017
2721	76.2585	76.2585	76.2585	66.4802	66.4802	66.4802
2722	76.1913	76.1913	76.1913	66.4656	66.4656	66.4656
2723	76.15	76.15	76.15	66.4545	66.4545	66.4545
2724	76.1231	76.1231	76.1231	66.4452	66.4452	66.4452
2725	76.1041	76.1041	76.1041	66.4368	66.4368	66.4368
2726	76.0896	76.0896	76.0896	66.429	66.429	66.429
2727	76.0775	76.0775	76.0775	66.4214	66.4214	66.4214
2728	76.0668	76.0668	76.0668	66.4139	66.4139	66.4139
2729	76.0569	76.0569	76.0569	66.4065	66.4065	66.4065
2730	76.0474	76.0474	76.0474	66.3991	66.3991	66.3991
2731	76.0381	76.0381	76.0381	66.3918	66.3918	66.3918
2732	76.029	76.029	76.029	66.3845	66.3845	66.3845
2733	79.346	95.2048	96.4039	66.384	66.384	66.384
2734	81.2671	94.5546	96.4028	66.3834	66.3834	66.3834
2735	82.4106	92.9423	95.5591	66.3829	66.3829	66.3829
2736	83.1389	92.6042	96.134	66.3823	66.3823	66.3823
2737	83.6103	92.094	96.507	66.3417	66.3417	66.3417
2738	83.9225	91.5348	96.799	66.2497	66.2497	66.2497
2739	84.1653	91.0415	97.0458	66.1326	66.1326	66.1326

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2740	84.3688	90.5264	97.2584	86.0037	68.0037	68.0037
2741	84.5135	89.8588	97.4068	85.8693	65.8693	65.8693
2742	84.6439	89.4221	97.3697	85.733	65.733	65.733
2743	84.7885	89.259	97.1622	85.5983	65.5983	65.5983
2744	85.1672	89.736	98.2529	85.4606	65.4606	65.4606
2745	85.6374	90.2492	99.3128	85.3283	65.3283	65.3283
2746	85.5704	89.4171	97.8059	85.1922	65.1922	65.1922
2747	85.32	88.6262	96.5484	85.0587	65.0587	65.0587
2748	85.1921	88.3571	96.188	84.9264	64.9264	64.9264
2749	85.1352	88.1776	95.9295	84.7953	64.7953	64.7953
2750	85.1501	88.1537	95.8811	84.6654	64.6654	64.6654
2751	85.2038	88.1703	95.8744	84.5368	64.5368	64.5368
2752	85.0821	87.6748	95.0811	84.4091	64.4091	64.4091
2753	84.7552	86.8037	93.7733	84.282	64.282	64.282
2754	84.3123	85.8382	92.3883	84.1556	64.1556	64.1556
2755	83.978	85.359	91.7468	84.0302	64.0302	64.0302
2756	83.7264	85.0193	91.2852	83.9058	63.9058	63.9058
2757	83.5182	84.7261	90.8741	83.7825	63.7825	63.7825
2758	83.307	84.3881	90.3409	83.6602	63.6602	63.6602
2759	83.0849	84.0304	89.7706	83.5389	63.5389	63.5389
2760	82.8542	83.6669	89.1994	83.4186	63.4186	63.4186
2761	82.6524	83.3827	88.8001	83.2993	63.2993	63.2993
2762	82.5199	83.2415	88.6798	83.1811	63.1811	63.1811
2763	82.4256	83.1385	88.5977	83.0641	63.0641	63.0641
2764	82.3525	83.0566	88.537	82.9482	62.9482	62.9482
2765	82.2876	82.9856	88.4896	82.8335	62.8335	62.8335
2766	82.2275	82.9194	88.4071	82.7198	62.7198	62.7198
2767	82.1704	82.8561	88.3475	82.6072	62.6072	62.6072
2768	82.1117	82.7931	88.2734	82.4956	62.4956	62.4956
2769	82.0608	82.7289	88.1917	82.3852	62.3852	62.3852
2770	81.9887	82.6635	88.1096	82.2757	62.2757	62.2757
2771	80.819	82.0277	82.6716	83.3529	63.3529	68.4903
2772	79.8436	80.5248	80.9149	83.3952	63.3952	66.3028
2773	78.9078	78.98	79.0213	82.8018	62.8018	63.1099
2774	78.67	79.235	80.0388	82.383	62.383	62.383
2775	78.5204	79.0767	80.1711	82.119	62.119	62.119
2776	78.38	78.8716	80.1726	81.9332	61.9332	61.9332
2777	78.2359	78.7033	80.1122	81.7872	61.7872	61.7872
2778	78.0724	78.5398	79.9486	81.6616	61.6616	61.6616
2779	77.899	78.3663	79.7752	81.5469	61.5469	61.5469
2780	77.7208	78.1881	79.597	81.438	61.438	61.438
2781	77.5406	78.0079	79.4168	81.3325	61.3325	61.3325
2782	77.3599	77.8272	79.2361	81.2293	61.2293	61.2293
2783	77.1795	77.6468	79.0557	81.1276	61.1276	61.1276
2784	76.9999	77.4673	78.8761	81.0272	61.0272	61.0272
2785	76.8214	77.2887	78.6976	80.9278	60.9278	60.9278
2786	76.6439	77.1113	78.5201	80.8295	60.8295	60.8295
2787	76.4677	76.935	78.3439	80.7321	60.7321	60.7321
2788	76.2927	76.76	78.1689	80.6356	60.6356	60.6356
2789	76.1189	76.5862	77.9951	80.54	60.54	60.54
2790	75.9463	76.4137	77.8225	80.4454	60.4454	60.4454
2791	75.775	76.2424	77.6512	80.3516	60.3516	60.3516
2792	75.6049	76.0723	77.4811	80.2587	60.2587	60.2587
2793	75.4361	75.9034	77.3123	80.1666	60.1666	60.1666
2794	75.2684	75.7358	77.1446	80.0754	60.0754	60.0754

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011761



2795	75.102	75.5693	76.9782	59.985	59.985	59.985
2796	74.9368	75.4041	76.813	59.8955	59.8955	59.8955
2797	74.7727	75.24	76.6489	59.8068	59.8068	59.8068
2798	74.6098	75.0772	76.485	59.719	59.719	59.719
2799	74.4481	74.9155	76.3243	59.6319	59.6319	59.6319
2800	74.2876	74.7549	76.1638	59.5457	59.5457	59.5457
2801	74.1282	74.5955	76.0044	59.4602	59.4602	59.4602
2802	73.97	74.4373	75.8462	59.3756	59.3756	59.3756
2803	73.8162	74.2797	75.7068	59.2917	59.2917	59.2917
2804	73.6589	74.1262	75.5351	59.2086	59.2086	59.2086
2805	73.5033	73.9707	75.3795	59.1263	59.1263	59.1263
2806	73.3497	73.8165	75.2277	59.0447	59.0447	59.0447
2807	73.1967	73.664	75.073	58.9639	58.9639	58.9639
2808	73.0449	73.5122	74.9211	58.8839	58.8839	58.8839
2809	72.8944	73.3617	74.7708	58.8045	58.8045	58.8045
2810	72.7449	73.2123	74.6211	58.726	58.726	58.726
2811	72.5966	73.064	74.4728	58.6481	58.6481	58.6481
2812	72.4494	72.9167	74.3256	58.571	58.571	58.571
2813	72.3032	72.7706	74.1794	58.4945	58.4945	58.4945
2814	72.1658	72.6244	74.0751	58.4188	58.4188	58.4188
2815	72.0355	72.4836	73.9844	58.3438	58.3438	58.3438
2816	71.9109	72.3501	73.9025	58.2696	58.2696	58.2696
2817	71.7909	72.222	73.8267	58.196	58.196	58.196
2818	71.6745	72.0974	73.7543	58.1231	58.1231	58.1231
2819	71.5609	71.9758	73.6849	58.051	58.051	58.051
2820	71.4445	71.8564	73.5896	57.9795	57.9795	57.9795
2821	71.3222	71.734	73.4673	57.9086	57.9086	57.9086
2822	71.197	71.6089	73.3421	57.8385	57.8385	57.8385
2823	71.0708	71.4826	73.2159	57.7689	57.7689	57.7689
2824	70.9444	71.3562	73.0895	57.7	57.7	57.7
2825	70.8183	71.2302	72.9634	57.6318	57.6318	57.6318
2826	70.6928	71.1047	72.8379	57.5642	57.5642	57.5642
2827	72.1607	84.2931	74.7408	63.0753	63.0753	63.5716
2828	72.9771	85.2435	75.5114	66.1825	66.1825	66.7762
2829	73.4242	85.7301	75.91	68.0487	68.0487	68.6399
2830	73.8265	85.6626	76.0562	69.1929	69.1929	69.485
2831	73.8319	85.4985	76.9189	69.8628	69.8628	69.5322
2832	74.1372	85.4742	78.3136	70.2103	70.2103	69.0338
2833	74.4388	85.5989	79.3306	70.3651	70.3651	68.2956
2834	75.2012	87.078	82.2586	70.4078	70.4078	67.4414
2835	75.8127	87.0621	82.8635	70.3756	70.3756	66.5047
2836	75.7213	86.4167	82.5298	70.2819	70.2819	65.4761
2837	75.8182	86.1504	82.8584	70.136	70.136	64.3712
2838	76.1877	87.2056	83.7913	69.9512	69.9512	63.2298
2839	76.3054	86.9546	83.7622	69.715	69.715	61.9783
2840	76.4366	86.8296	84.4797	69.4447	69.4447	60.7089
2841	76.6682	87.0983	85.5472	69.1512	69.1512	59.4431
2842	76.9762	87.7107	86.8142	68.8335	68.8335	58.1545
2843	77.2522	88.223	87.4739	68.4886	68.4886	56.7306
2844	77.5064	88.643	88.3865	68.0808	68.0808	55.3219
2845	76.9886	85.2112	85.9156	66.9675	66.9675	54.1756
2846	76.1331	82.545	83.8549	65.6512	65.6512	53.6512
2847	75.733	83.5039	84.6594	64.9701	64.9701	53.9701
2848	73.7771	73.7771	73.7771	64.6134	64.6134	64.6134
2849	72.6869	72.6869	72.6869	64.4261	64.4261	64.4261

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011702

2850	72.0777	72.0777	72.0777	64.3261	64.3261	64.3261
2851	71.7358	71.7358	71.7358	64.2713	64.2713	64.2713
2852	71.5423	71.5423	71.5423	64.2398	64.2398	64.2398
2853	71.4314	71.4314	71.4314	64.2204	64.2204	64.2204
2854	71.3664	71.3664	71.3664	64.2071	64.2071	64.2071
2855	71.3268	71.3268	71.3268	64.1971	64.1971	64.1971
2856	71.3014	71.3014	71.3014	64.1887	64.1887	64.1887
2857	71.2838	71.2838	71.2838	64.1812	64.1812	64.1812
2858	71.2706	71.2706	71.2706	64.1742	64.1742	64.1742
2859	71.2599	71.2599	71.2599	64.1673	64.1673	64.1673
2860	71.2505	71.2505	71.2505	64.1606	64.1606	64.1606
2861	71.2418	71.2418	71.2418	64.154	64.154	64.154
2862	71.2336	71.2336	71.2336	64.1474	64.1474	64.1474
2863	71.2256	71.2256	71.2256	64.1408	64.1408	64.1408
2864	71.2178	71.2178	71.2178	64.1342	64.1342	64.1342
2865	74.5321	89.951	91.2611	64.1341	64.1341	64.1341
2866	76.4522	89.2997	91.259	64.134	64.134	64.134
2867	77.5982	87.9468	90.7198	64.1339	64.1339	64.1339
2868	78.3274	87.6066	91.2915	64.1337	64.1337	64.1337
2869	78.8095	87.1441	91.7027	64.0992	64.0992	64.0992
2870	79.1432	86.6066	92.0182	64.0205	64.0205	64.0205
2871	79.4171	86.1731	92.2994	63.9203	63.9203	63.9203
2872	79.6459	85.6651	92.5367	63.8098	63.8098	63.8098
2873	79.82	85.0292	92.716	63.6947	63.6947	63.6947
2874	79.9876	84.7135	92.6535	63.5778	63.5778	63.5778
2875	80.165	84.5844	92.4783	63.4608	63.4608	63.4608
2876	80.6286	85.2289	93.8752	63.3447	63.3447	63.3447
2877	81.0391	85.5145	94.4576	63.2295	63.2295	63.2295
2878	80.9576	84.6808	92.9608	63.1145	63.1145	63.1145
2879	80.7694	84.0509	91.9572	63.0001	63.0001	63.0001
2880	80.6916	83.8398	91.6599	62.8867	62.8867	62.8867
2881	80.6809	83.7207	91.4708	62.7743	62.7743	62.7743
2882	80.735	83.7384	91.4657	62.663	62.663	62.663
2883	80.8238	83.7935	91.4997	62.5528	62.5528	62.5528
2884	80.7942	83.4959	90.9897	62.4434	62.4434	62.4434
2885	80.5549	82.7508	89.8388	62.3346	62.3346	62.3346
2886	80.1914	81.8899	88.5786	62.2262	62.2262	62.2262
2887	79.8528	81.2695	87.7068	62.1186	62.1186	62.1186
2888	78.2698	79.149	80.9588	62.0093	62.0093	62.0093
2889	77.3612	78.1999	80.1372	61.9011	61.9011	61.9011
2890	76.8019	77.6406	79.5779	61.7939	61.7939	61.7939
2891	76.4325	77.2712	79.2085	61.6876	61.6876	61.6876
2892	76.1687	77.0027	78.956	61.5824	61.5824	61.5824
2893	75.9457	76.8136	78.659	61.4781	61.4781	61.4781
2894	75.7695	76.6273	78.4727	61.3748	61.3748	61.3748
2895	75.5936	76.4615	78.3069	61.2725	61.2725	61.2725
2896	75.4399	76.3064	78.1563	61.1711	61.1711	61.1711
2897	75.2953	76.1559	78.0242	61.0706	61.0706	61.0706
2898	75.1661	76.0109	77.8976	60.9711	60.9711	60.9711
2899	74.9988	75.897	77.6469	60.8725	60.8725	60.8725
2900	74.8488	75.7515	77.4894	60.7748	60.7748	60.7748
2901	74.7033	75.6113	77.3399	60.6781	60.6781	60.6781
2902	74.5607	75.474	77.1872	60.5822	60.5822	60.5822
2903	75.4108	76.4897	81.7201	60.4891	60.4891	60.4891
2904	76.1834	77.4467	83.6714	60.3975	60.3975	60.3975

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011703

2905	76.5605	77.7281	83.8318	60.3067	60.3067	60.3067
2906	76.6683	77.7136	83.6103	60.2166	60.2166	60.2166
2907	76.6482	77.5645	83.2692	60.1272	60.1272	60.1272
2908	76.5604	77.3403	82.837	60.0385	60.0385	60.0385
2909	76.4558	77.1852	82.6048	59.9505	59.9505	59.9505
2910	76.4008	77.1223	82.561	59.8634	59.8634	59.8634
2911	76.3677	77.0814	82.5388	59.7771	59.7771	59.7771
2912	76.3464	77.0529	82.5278	59.6917	59.6917	59.6917
2913	76.3293	77.0306	82.5127	59.6071	59.6071	59.6071
2914	76.3137	77.0107	82.4953	59.5233	59.5233	59.5233
2915	76.2987	76.992	82.4788	59.4403	59.4403	59.4403
2916	76.284	76.9741	82.4629	59.358	59.358	59.358
2917	76.2694	76.9587	82.4472	59.2766	59.2766	59.2766
2918	76.2548	76.9397	82.4316	59.1959	59.1959	59.1959
2919	76.2394	76.9226	82.4124	59.1161	59.1161	59.1161
2920	76.2227	76.9047	82.3885	59.0369	59.0369	59.0369
2921	76.2051	76.8859	82.3626	58.9585	58.9585	58.9585
2922	76.187	76.8662	82.335	58.8809	58.8809	58.8809
2923	76.1684	76.8459	82.3056	58.804	58.804	58.804
2924	76.1494	76.8249	82.2744	58.7278	58.7278	58.7278
2925	76.1301	76.8034	82.2417	58.6523	58.6523	58.6523
2926	74.9152	75.4388	76.634	58.5753	58.5753	58.5753
2927	74.1839	74.7075	75.9027	58.499	58.499	58.499
2928	73.7154	74.239	75.4341	58.4234	58.4234	58.4234
2929	73.3962	73.907	75.1444	58.3485	58.3485	58.3485
2930	73.1536	73.6624	74.9064	58.2743	58.2743	58.2743
2931	72.9584	73.4564	74.7294	58.2007	58.2007	58.2007
2932	72.7801	73.2803	74.5528	58.1279	58.1279	58.1279
2933	72.6105	73.1214	74.3585	58.0557	58.0557	58.0557
2934	72.4484	72.9848	74.1776	57.9842	57.9842	57.9842
2935	72.2902	72.8064	74.0259	57.9134	57.9134	57.9134
2936	72.138	72.6537	73.8749	57.8432	57.8432	57.8432
2937	71.9844	72.508	73.7032	57.7736	57.7736	57.7736
2938	71.8108	72.4008	73.4128	57.7046	57.7046	57.7046
2939	71.2107	71.3056	71.3598	57.7289	57.7289	58.1333
2940	71.3076	72.4204	73.0578	58.7174	58.7174	63.4676
2941	71.3469	72.7906	73.1271	59.5368	59.5368	65.4751
2942	71.336	73.1029	73.0587	60.2327	60.2327	67.0952
2943	71.305	73.3787	72.9976	60.8439	60.8439	68.4778
2944	71.2474	73.4507	72.9297	61.3077	61.3077	69.2562
2945	71.1681	73.4212	72.8487	61.6498	61.6498	69.7088
2946	71.0412	73.0221	72.742	61.734	61.734	69.1383
2947	72.4559	84.6243	75.0238	65.6749	65.6749	86.1975
2948	73.2407	85.5142	75.7663	67.9805	67.9805	88.6737
2949	73.6724	85.9811	76.1547	69.4394	69.4394	90.0304
2950	73.8588	85.912	76.2996	70.3769	70.3769	90.6767
2951	74.0511	85.7507	77.0272	70.9591	70.9591	90.7006
2952	74.35	85.713	78.446	71.271	71.271	90.2046
2953	74.6266	85.7804	79.3689	71.4087	71.4087	89.4603
2954	75.3329	87.1195	82.1177	71.4374	71.4374	88.584
2955	75.8115	87.3477	82.941	71.3957	71.3957	87.6387
2956	75.9398	88.7253	82.7333	71.296	71.296	86.6105
2957	76.0014	88.2496	82.9726	71.1429	71.1429	85.4952
2958	76.3498	87.2853	83.8857	70.9515	70.9515	84.345
2959	76.5038	87.1969	83.9794	70.7106	70.7106	83.0938

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011704

2960	76.6284	87.046	84.5701	70.4337	70.4337	81.8143
2961	78.8475	87.239	85.6337	70.1318	70.1318	80.533
2962	77.1585	87.854	86.7288	69.8101	69.8101	79.2533
2963	77.4353	88.3788	87.5894	69.4409	69.4409	77.8254
2964	77.6898	88.8078	88.4932	69.0462	69.0462	76.406
2965	77.3016	86.0317	86.5994	68.0467	68.0467	71.8884
2966	76.3932	82.6478	83.9755	66.644	66.644	66.644
2967	75.9636	83.5772	84.7506	65.9181	65.9181	65.9181
2968	73.9939	73.9939	73.9939	65.5383	65.5383	65.5383
2969	72.896	72.896	72.896	65.339	65.339	65.339
2970	72.2825	72.2825	72.2825	65.2328	65.2328	65.2328
2971	71.9381	71.9381	71.9381	65.1748	65.1748	65.1748
2972	71.7433	71.7433	71.7433	65.1415	65.1415	65.1415
2973	71.6316	71.6316	71.6316	65.1211	65.1211	65.1211
2974	71.5661	71.5661	71.5661	65.1073	65.1073	65.1073
2975	71.5262	71.5262	71.5262	65.097	65.097	65.097
2976	71.5006	71.5006	71.5006	65.0884	65.0884	65.0884
2977	71.483	71.483	71.483	65.0807	65.0807	65.0807
2978	71.4697	71.4697	71.4697	65.0735	65.0735	65.0735
2979	71.4589	71.4589	71.4589	65.0665	65.0665	65.0665
2980	71.4494	71.4494	71.4494	65.0597	65.0597	65.0597
2981	71.4407	71.4407	71.4407	65.0529	65.0529	65.0529
2982	71.4324	71.4324	71.4324	65.0462	65.0462	65.0462
2983	71.4244	71.4244	71.4244	65.0395	65.0395	65.0395
2984	71.4165	71.4165	71.4165	65.0328	65.0328	65.0328
2985	74.7334	90.4499	91.6849	65.0323	65.0323	65.0323
2986	76.655	89.8001	91.6842	65.0318	65.0318	65.0318
2987	77.8001	88.2726	90.9399	65.0313	65.0313	65.0313
2988	78.5287	87.9317	91.5111	65.0308	65.0308	65.0308
2989	79.0101	87.4455	91.9056	64.9936	64.9936	64.9936
2990	79.3427	86.9069	92.2181	64.9093	64.9093	64.9093
2991	79.6129	86.4502	92.4939	64.8021	64.8021	64.8021
2992	79.8437	85.9583	92.7335	64.6839	64.6839	64.6839
2993	80.0179	85.3182	92.9115	64.5608	64.5608	64.5608
2994	80.1812	84.9425	92.8876	64.4358	64.4358	64.4358
2995	80.356	84.816	92.7174	64.3106	64.3106	64.3106
2996	80.764	85.3303	93.8365	64.1862	64.1862	64.1862
2997	81.3021	85.9808	95.1014	64.0632	64.0632	64.0632
2998	81.3219	85.2986	93.802	63.9404	63.9404	63.9404
2999	81.0812	84.4349	92.3889	63.8181	63.8181	63.8181
3000	80.976	84.2036	92.0751	63.6969	63.6969	63.6969
3001	80.947	84.0631	91.8624	63.5768	63.5768	63.5768
3002	80.9699	84.006	91.7538	63.4578	63.4578	63.4578
3003	81.0403	84.0484	91.7754	63.34	63.34	63.34
3004	81.1359	84.1143	91.826	63.2233	63.2233	63.2233
3005	81.2392	84.1828	91.8708	63.1077	63.1077	63.1077
3006	79.6624	80.9224	84.2733	62.9901	62.9901	62.9901
3007	78.8046	80.1028	83.5446	62.8737	62.8737	62.8737
3008	78.3025	79.6005	83.0426	62.7584	62.7584	62.7584
3009	77.9936	79.2916	82.7336	62.6441	62.6441	62.6441
3010	77.7897	79.0877	82.5297	62.531	62.531	62.531
3011	77.6431	78.9411	82.3831	62.4189	62.4189	62.4189
3012	77.5278	78.8258	82.2678	62.3079	62.3079	62.3079
3013	77.4297	78.7277	82.1697	62.1979	62.1979	62.1979
3014	77.3412	78.6392	82.0812	62.0889	62.0889	62.0889



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011765

ALSTOM

3015	77.2582	78.5562	81.9982	61.981	61.981	61.981
3016	77.1784	78.4784	81.9184	61.8741	61.8741	61.8741
3017	77.1006	78.3985	81.8406	61.7682	61.7682	61.7682
3018	77.0241	78.3221	81.7641	61.6633	61.6633	61.6633
3019	76.9486	78.2466	81.6886	61.5594	61.5594	61.5594
3020	76.8738	78.1718	81.6138	61.4565	61.4565	61.4565
3021	76.7998	78.0977	81.5398	61.3546	61.3546	61.3546
3022	76.7263	78.0242	81.4663	61.2536	61.2536	61.2536
3023	76.6534	77.9513	81.3934	61.1535	61.1535	61.1535
3024	76.5047	77.723	80.9739	61.0543	61.0543	61.0543
3025	76.374	77.5784	80.7956	60.956	60.956	60.956
3026	76.2525	77.4429	80.6267	60.8586	60.8586	60.8586
3027	76.1358	77.3123	80.4631	60.762	60.762	60.762
3028	76.0215	77.1843	80.3035	60.6664	60.6664	60.6664
3029	77.4382	79.8869	87.1793	60.5744	60.5744	60.5744
3030	78.0487	80.1273	87.1211	60.483	60.483	60.483
3031	78.223	79.9441	86.6511	60.3921	60.3921	60.3921
3032	78.1896	79.6349	86.1116	60.3018	60.3018	60.3018
3033	78.1422	79.5275	85.9212	60.2123	60.2123	60.2123
3034	78.0861	79.4134	85.7269	60.1236	60.1236	60.1236
3035	78.0243	79.2956	85.5314	60.0356	60.0356	60.0356
3036	77.9585	79.1757	85.3365	59.9484	59.9484	59.9484
3037	77.8798	79.0273	85.0839	59.862	59.862	59.862
3038	77.7824	78.8437	84.7854	59.7763	59.7763	59.7763
3039	77.673	78.6503	84.4404	59.6913	59.6913	59.6913
3040	77.5558	78.4509	84.1126	59.607	59.607	59.607
3041	77.4322	78.2475	83.784	59.5234	59.5234	59.5234
3042	77.3041	78.0414	83.4558	59.4405	59.4405	59.4405
3043	77.2235	77.9526	83.3729	59.3584	59.3584	59.3584
3044	77.1712	77.8955	83.3274	59.277	59.277	59.277
3045	77.1345	77.854	83.2974	59.1965	59.1965	59.1965
3046	77.1064	77.8213	83.2758	59.1167	59.1167	59.1167
3047	77.0832	77.7936	83.2591	59.0377	59.0377	59.0377
3048	77.0629	77.7689	83.245	58.9595	58.9595	58.9595
3049	77.0431	77.7456	83.2269	58.882	58.882	58.882
3050	77.023	77.7225	83.2057	58.8052	58.8052	58.8052
3051	77.0028	77.6995	83.1843	58.7292	58.7292	58.7292
3052	76.9828	77.6768	83.1632	58.6539	58.6539	58.6539
3053	76.9629	77.654	83.1422	58.5793	58.5793	58.5793
3054	76.9431	77.6318	83.1214	58.5054	58.5054	58.5054
3055	76.9236	77.6095	83.1008	58.4322	58.4322	58.4322
3056	76.904	77.5874	83.0786	58.3598	58.3598	58.3598
3057	76.8826	77.5647	83.0486	58.288	58.288	58.288
3058	76.8604	77.5411	83.018	58.2169	58.2169	58.2169
3059	76.8377	77.5172	82.9874	58.1464	58.1464	58.1464
3060	76.8149	77.4932	82.9569	58.0767	58.0767	58.0767
3061	76.7921	77.4692	82.9267	58.0076	58.0076	58.0076
3062	76.7693	77.4452	82.8966	57.9391	57.9391	57.9391
3063	76.7467	77.4215	82.8676	57.8713	57.8713	57.8713
3064	76.7241	77.3979	82.8387	57.8042	57.8042	57.8042
3065	76.7016	77.3744	82.8101	57.7376	57.7376	57.7376
3066	76.6657	76.52	79.9522	57.6706	57.6706	57.6706
3067	75.6997	76.1593	79.6649	57.6043	57.6043	57.6043
3068	75.461	75.9208	79.4299	57.5386	57.5386	57.5386
3069	75.2904	75.7502	79.2584	57.4735	57.4735	57.4735

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011706



3070	75.1479	75.6056	79.082	57.409	57.409	57.409
3071	75.0244	75.4806	78.9388	57.345	57.345	57.345
3072	74.9148	75.3706	78.8226	57.2817	57.2817	57.2817
3073	74.8136	75.2691	78.7171	57.219	57.219	57.219
3074	74.7235	75.1803	78.6462	57.1568	57.1568	57.1568
3075	74.6363	75.0934	78.5641	57.0953	57.0953	57.0953
3076	74.5509	75.0084	78.4838	57.0343	57.0343	57.0343
3077	74.4616	74.9181	78.3802	56.9739	56.9739	56.9739
3078	74.3741	74.8306	78.2928	56.914	56.914	56.914
3079	74.2879	74.7444	78.2066	56.8548	56.8548	56.8548
3080	74.2027	74.6592	78.1213	56.796	56.796	56.796
3081	74.1183	74.5748	78.0369	56.7378	56.7378	56.7378
3082	74.0346	74.4911	77.9532	56.6802	56.6802	56.6802
3083	73.9515	74.408	77.8702	56.6231	56.6231	56.6231
3084	73.8691	74.3258	77.7878	56.5665	56.5665	56.5665
3085	73.7873	74.2438	77.706	56.5105	56.5105	56.5105
3086	73.7061	74.1626	77.6248	56.455	56.455	56.455
3087	73.6255	74.082	77.5442	56.4	56.4	56.4
3088	73.5455	74.002	77.4641	56.3455	56.3455	56.3455
3089	73.4758	73.9031	76.9619	56.2913	56.2913	56.2913
3090	73.4158	73.8561	76.3753	56.2375	56.2375	56.2375
3091	72.8835	73.2813	75.7755	56.184	56.184	56.184
3092	72.6064	72.9984	75.2526	56.1309	56.1309	56.1309
3093	73.8654	86.0022	76.444	61.8589	61.8569	82.1564
3094	74.5628	86.8313	77.0946	64.7773	64.7773	85.3709
3095	73.5882	76.8102	75.3245	63.4162	63.4162	73.1328
3096	72.7601	73.325	74.7028	60.4767	60.4767	60.4767
3097	72.2475	72.8124	74.1901	58.9672	58.9672	58.9672
3098	71.917	72.4658	73.9074	58.1764	58.1764	58.1764
3099	71.6982	72.2233	73.7885	57.7469	57.7469	57.7469
3100	71.524	72.0458	73.6361	57.4992	57.4992	57.4992
3101	71.3749	71.8932	73.509	57.3432	57.3432	57.3432
3102	71.2405	71.7551	73.399	57.2334	57.2334	57.2334
3103	71.0856	71.6166	73.1385	57.1472	57.1472	57.1472
3104	70.9278	71.4776	72.9156	57.0731	57.0731	57.0731
3105	70.7688	71.3398	72.6932	57.0054	57.0054	57.0054
3106	70.6093	71.2036	72.472	56.941	56.941	56.941
3107	70.451	71.0739	72.2566	56.8788	56.8788	56.8788
3108	70.2932	70.9447	72.0416	56.8177	56.8177	56.8177
3109	70.1285	70.8551	71.7741	56.7576	56.7576	56.7576
3110	71.8355	83.9488	74.1121	62.3066	62.3066	82.8973
3111	72.4061	84.3855	74.8266	65.291	65.291	85.5224
3112	72.9605	84.5766	76.217	66.878	66.878	86.4369
3113	73.4405	84.753	77.6921	67.6964	67.6964	86.4171
3114	73.8875	85.122	79.004	68.0986	68.0986	85.9361
3115	74.7282	86.6726	81.9895	68.2756	68.2756	85.2249
3116	75.1114	86.4802	82.1066	68.32	68.32	84.3683
3117	75.2183	85.8536	82.0369	68.2729	68.2729	83.3865
3118	75.3463	85.7343	82.4324	68.1594	68.1594	82.3167
3119	75.7057	86.704	83.3043	67.9976	67.9976	81.1951
3120	75.8148	86.4334	83.2592	67.7803	67.7803	79.9619
3121	75.9603	86.3364	84.0729	67.528	67.528	78.7123
3122	76.207	86.663	85.1507	67.2523	67.2523	77.4678
3123	76.5173	87.2709	86.2023	66.949	66.949	76.1847
3124	76.7961	87.7845	87.0664	66.5989	66.5989	74.7764

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2460



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011707



3125	77.0531	88.2028	87.9857	66.2267	66.2267	73.3858
3126	76.448	84.3178	85.1171	65.0455	65.0455	67.813
3127	75.6313	82.1528	83.45	63.7975	63.7975	63.7975
3128	75.2529	83.1331	84.2763	63.1519	63.1519	63.1519
3129	73.3073	73.3073	73.3073	62.8141	62.8141	62.8141
3130	72.2229	72.2229	72.2229	62.6368	62.6368	62.6368
3131	71.6169	71.6169	71.6169	62.5425	62.5425	62.5425
3132	71.2768	71.2768	71.2768	62.4909	62.4909	62.4909
3133	71.0845	71.0845	71.0845	62.4614	62.4614	62.4614
3134	70.9742	70.9742	70.9742	62.4434	62.4434	62.4434
3135	70.9096	70.9096	70.9096	62.4312	62.4312	62.4312
3136	70.8703	70.8703	70.8703	62.4221	62.4221	62.4221
3137	70.8451	70.8451	70.8451	62.4146	62.4146	62.4146
3138	70.8277	70.8277	70.8277	62.4079	62.4079	62.4079
3139	70.8147	70.8147	70.8147	62.4016	62.4016	62.4016
3140	70.8041	70.8041	70.8041	62.3955	62.3955	62.3955
3141	70.7948	70.7948	70.7948	62.3895	62.3895	62.3895
3142	70.7863	70.7863	70.7863	62.3836	62.3836	62.3836
3143	70.7782	70.7782	70.7782	62.3777	62.3777	62.3777
3144	70.7703	70.7703	70.7703	62.3719	62.3719	62.3719
3145	70.7626	70.7626	70.7626	62.366	62.366	62.366
3146	74.0752	89.2871	90.6495	62.3661	62.3661	62.3661
3147	75.9944	88.6349	90.6464	62.3662	62.3662	62.3662
3148	77.141	87.4036	90.2499	62.3662	62.3662	62.3662
3149	77.8719	87.069	90.8284	62.3662	62.3662	62.3662
3150	78.3548	86.6192	91.2463	62.3364	62.3364	62.3364
3151	78.6915	86.0939	91.5646	62.2682	62.2682	62.2682
3152	78.9692	85.6685	91.8522	62.1814	62.1814	62.1814
3153	79.1977	85.1509	92.0883	62.0858	62.0858	62.0858
3154	79.3726	84.5135	92.2668	61.986	61.986	61.986
3155	79.5458	84.2471	92.1835	61.8849	61.8849	61.8849
3156	79.7479	84.1785	92.1261	61.7835	61.7835	61.7835
3157	80.23	84.845	93.5521	61.683	61.683	61.683
3158	80.5964	85.0091	93.897	61.5832	61.5832	61.5832
3159	80.4951	84.164	92.3959	61.4835	61.4835	61.4835
3160	80.322	83.5933	91.4931	61.3844	61.3844	61.3844
3161	80.2531	83.3887	91.2006	61.2862	61.2862	61.2862
3162	80.2521	83.2881	91.0359	61.1888	61.1888	61.1888
3163	80.3129	83.3128	91.0379	61.0924	61.0924	61.0924
3164	80.4069	83.3725	91.0781	60.9969	60.9969	60.9969
3165	80.3408	82.9676	90.4013	60.9021	60.9021	60.9021
3166	80.0872	82.22	89.2572	60.8077	60.8077	60.8077
3167	79.7247	81.3772	88.0291	60.7137	60.7137	60.7137
3168	79.4077	80.8196	87.2503	60.6204	60.6204	60.6204
3169	79.1876	80.5197	86.8398	60.5279	60.5279	60.5279
3170	79.0189	80.2738	86.487	60.4362	60.4362	60.4362
3171	78.873	80.0467	86.1445	60.3453	60.3453	60.3453
3172	78.7132	79.7646	85.6707	60.2551	60.2551	60.2551
3173	78.5435	79.4755	85.1947	60.1656	60.1656	60.1656
3174	78.3681	79.1816	84.7185	60.0768	60.0768	60.0768
3175	78.2051	78.9367	84.3509	59.9888	59.9888	59.9888
3176	78.1082	78.8323	84.2645	59.9016	59.9016	59.9016
3177	76.9217	77.5734	78.8775	59.8132	59.8132	59.8132
3178	76.1982	76.8583	78.1328	59.7257	59.7257	59.7257
3179	76.8603	77.5768	83.0277	59.641	59.641	59.641

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2100



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011768

ALSTOM

3180	77.2116	77.9206	83.3893	59.5571	59.5571	59.5571
3181	77.3936	78.0962	83.5774	59.474	59.474	59.474
3182	77.4818	78.1796	83.6638	59.3917	59.3917	59.3917
3183	77.5194	78.2124	83.6994	59.3102	59.3102	59.3102
3184	77.5296	78.218	83.7078	59.2295	59.2295	59.2295
3185	77.5252	78.209	83.7016	59.1495	59.1495	59.1495
3186	77.5093	78.1907	83.671	59.0703	59.0703	59.0703
3187	77.9718	90.1903	80.5226	64.5879	64.5879	85.1469
3188	78.2169	90.5095	80.7191	67.6721	67.6721	88.2641
3189	78.3133	90.4679	80.7622	69.465	69.465	89.8841
3190	78.352	90.1485	81.0033	70.5091	70.5091	90.4622
3191	78.4012	76.6551	78.791	66.088	66.088	66.8529
3192	75.8011	76.5244	78.2403	63.6511	63.6511	63.6511
3193	75.425	76.125	77.9431	62.377	62.377	62.377
3194	75.1717	75.8579	77.7651	61.6875	61.6875	61.6875
3195	74.9872	75.6598	77.658	61.2921	61.2921	61.2921
3196	74.8689	75.5205	77.7297	61.0451	61.0451	61.0451
3197	74.768	75.4151	77.7234	60.873	60.873	60.873
3198	74.6797	75.3222	77.7351	60.739	60.739	60.739
3199	74.5844	75.2268	77.6735	60.6247	60.6247	60.6247
3200	74.4487	75.0946	77.4301	60.5205	60.5205	60.5205
3201	74.318	74.9639	77.2894	60.422	60.422	60.422
3202	74.1904	74.8363	77.1718	60.3267	60.3267	60.3267
3203	74.0167	74.6762	76.8017	60.2333	60.2333	60.2333
3204	73.8111	74.5041	76.3671	60.1414	60.1414	60.1414
3205	73.5954	74.351	75.9484	60.0505	60.0505	60.0505
3206	73.3844	74.2553	75.5647	59.9605	59.9605	59.9605
3207	72.9615	73.5725	74.2599	59.871	59.871	59.871
3208	72.4976	72.9736	73.2292	60.1134	60.1134	61.5464
3209	72.3687	73.284	73.7756	60.5178	60.5178	63.2735
3210	72.4333	73.788	74.5155	61.0227	61.0227	65.101
3211	72.2506	73.274	73.8236	61.06	61.06	64.1409
3212	71.771	72.1354	72.3311	60.6198	60.6198	61.7168
3213	71.4594	71.7887	72.1592	60.1172	60.1172	60.1172
3214	71.6136	72.5784	73.6983	59.8224	59.8224	59.8224
3215	71.6385	72.5916	73.735	59.632	59.632	59.632
3216	73.2788	84.8993	77.1912	64.6354	64.6354	83.7672
3217	74.2875	85.4872	78.5878	67.1416	67.1416	85.3669
3218	75.2792	86.9034	81.5733	68.375	68.375	85.7248
3219	76.088	87.7998	83.36	68.9518	68.9518	85.4013
3220	76.3647	87.3133	83.1309	69.1778	69.1778	84.7106
3221	76.4579	86.689	83.3439	69.2012	69.2012	83.7742
3222	76.7823	87.5583	84.1872	69.111	69.111	82.7271
3223	77.0154	87.7985	84.5266	68.9375	68.9375	81.5592
3224	77.1307	87.5977	84.8689	68.7039	68.7039	80.3183
3225	77.3257	87.6422	85.9213	68.4329	68.4329	79.0594
3226	77.6289	88.2671	87.0278	68.1406	68.1406	77.8185
3227	77.9133	88.8008	87.9291	67.8017	67.8017	76.4372
3228	78.1713	89.2511	88.8175	67.4299	67.4299	75.0301
3229	78.0495	87.8156	86.1087	66.6983	66.6983	71.8373
3230	77.0308	82.822	84.2023	65.1444	65.1444	65.1444
3231	76.542	83.8336	85.0435	64.3406	64.3406	64.3406
3232	74.5447	74.5447	74.5447	63.9211	63.9211	63.9211
3233	73.4313	73.4313	73.4313	63.7016	63.7016	63.7016
3234	72.8092	72.8092	72.8092	63.5853	63.5853	63.5853

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011700



3235	72.46	72.46	72.46	63.5223	63.5223	63.5223
3236	72.2624	72.2624	72.2624	63.4869	63.4869	63.4869
3237	72.1491	72.1491	72.1491	63.4657	63.4657	63.4657
3238	72.0827	72.0827	72.0827	63.4518	63.4518	63.4518
3239	72.0422	72.0422	72.0422	63.4417	63.4417	63.4417
3240	72.0162	72.0162	72.0162	63.4336	63.4336	63.4336
3241	71.9983	71.9983	71.9983	63.4265	63.4265	63.4265
3242	71.9848	71.9848	71.9848	63.4199	63.4199	63.4199
3243	71.9738	71.9738	71.9738	63.4135	63.4135	63.4135
3244	71.9642	71.9642	71.9642	63.4074	63.4074	63.4074
3245	71.9553	71.9553	71.9553	63.4013	63.4013	63.4013
3246	71.9469	71.9469	71.9469	63.3952	63.3952	63.3952
3247	71.9387	71.9387	71.9387	63.3892	63.3892	63.3892
3248	71.9307	71.9307	71.9307	63.3831	63.3831	63.3831
3249	75.2528	91.5788	92.66	63.3829	63.3829	63.3829
3250	77.1733	90.9275	92.6275	63.3826	63.3826	63.3826
3251	78.3199	89.2175	91.669	63.3822	63.3822	63.3822
3252	79.0478	88.7042	92.0675	63.3818	63.3818	63.3818
3253	79.5274	88.1694	92.4277	63.3491	63.3491	63.3491
3254	79.8575	87.6281	92.7376	63.2748	63.2748	63.2748
3255	80.1194	87.1232	92.9981	63.1801	63.1801	63.1801
3256	80.3526	86.6538	93.2413	63.0759	63.0759	63.0759
3257	80.5284	86.0212	93.4211	62.9672	62.9672	62.9672
3258	80.6816	85.5154	93.4711	62.857	62.857	62.857
3259	80.8495	85.3775	93.2887	62.7466	62.7466	62.7466
3260	81.2054	85.7407	94.1199	62.6367	62.6367	62.6367
3261	81.7726	86.4898	95.6206	62.5282	62.5282	62.5282
3262	81.7968	85.7769	94.2833	62.4199	62.4199	62.4199
3263	81.5487	84.8815	92.8209	62.3119	62.3119	62.3119
3264	81.4345	84.6244	92.4714	62.205	62.205	62.205
3265	81.3927	84.4485	92.2088	62.0989	62.0989	62.0989
3266	81.4257	84.4362	92.168	61.9939	61.9939	61.9939
3267	81.5014	84.4745	92.1828	61.89	61.89	61.89
3268	81.4587	84.1525	91.6401	61.7867	61.7867	61.7867
3269	81.1674	83.3331	90.3808	61.684	61.684	61.684
3270	80.7874	82.4068	89.0318	61.5818	61.5818	61.5818
3271	80.4528	81.8501	88.2605	61.4804	61.4804	61.4804
3272	80.2129	81.5218	87.8096	61.3798	61.3798	61.3798
3273	80.0235	81.2474	87.4175	61.28	61.28	61.28
3274	79.8412	80.9497	86.9453	61.1811	61.1811	61.1811
3275	79.6477	80.6212	86.4056	61.083	61.083	61.083
3276	79.4457	80.2879	85.8686	60.9856	60.9856	60.9856
3277	79.2506	79.9832	85.395	60.8891	60.8891	60.8891
3278	79.1322	79.8668	85.2879	60.7934	60.7934	60.7934
3279	79.0567	79.7726	85.2224	60.6987	60.6987	60.6987
3280	79.371	91.2273	81.8219	66.0476	66.0476	88.1312
3281	79.7479	91.2232	83.4788	68.754	68.754	88.0053
3282	80.0727	91.2991	84.5917	70.0982	70.0982	88.457
3283	80.6128	92.1425	86.6213	70.743	70.743	88.211
3284	78.8002	79.9077	80.7398	67.3797	67.3797	70.4307
3285	77.9385	78.9528	80.7464	64.9714	64.9714	64.9714
3286	77.404	78.4183	80.2119	63.7054	63.7054	63.7054
3287	77.0475	78.0618	79.8553	63.0138	63.0138	63.0138
3288	76.7879	77.8022	79.5958	62.6113	62.6113	62.6113
3289	76.5814	77.5958	79.3893	62.3545	62.3545	62.3545



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls



00011770

3290	76.5158	77.5285	79.7395	62.1717	62.1717	62.1717
3291	76.4327	77.4482	79.6968	62.0264	62.0264	62.0264
3292	76.3413	77.3595	79.6457	61.9005	61.9005	61.9005
3293	76.2463	77.2673	79.5912	61.7848	61.7848	61.7848
3294	76.1294	77.1479	79.439	61.6747	61.6747	61.6747
3295	75.9758	76.9881	79.1827	61.5879	61.5879	61.5879
3296	75.8353	76.8456	79.0222	61.4633	61.4633	61.4633
3297	75.7023	76.7126	78.8892	61.3601	61.3601	61.3601
3298	75.5738	76.584	78.7806	61.2583	61.2583	61.2583
3299	75.4481	76.4583	78.6349	61.1575	61.1575	61.1575
3300	75.3106	76.3176	78.4487	61.0578	61.0578	61.0578
3301	75.1228	76.1321	78.0448	60.9589	60.9589	60.9589
3302	74.9155	75.9501	77.6483	60.8609	60.8609	60.8609
3303	74.6397	75.608	76.9757	60.7636	60.7636	60.7636
3304	73.8632	74.0092	74.2155	60.6863	60.6863	60.6863
3305	73.5568	74.1495	74.5942	60.9477	60.9477	62.5797
3306	73.8831	75.5783	76.8467	61.7667	61.7667	66.4289
3307	74.1235	76.1472	77.3985	62.4001	62.4001	67.9126
3308	74.2318	76.4374	77.4923	62.8557	62.8557	68.7944
3309	74.2782	76.6782	77.5433	63.2245	63.2245	69.5712
3310	74.2902	76.837	77.5743	63.5221	63.5221	70.1402
3311	74.2197	76.5749	77.4789	63.6289	63.6289	69.8929
3312	74.1329	76.4523	77.3875	63.7071	63.7071	69.9048
3313	74.0391	76.3285	77.293	63.7694	63.7694	69.9
3314	73.9429	76.2013	77.1991	63.8223	63.8223	69.885
3315	73.8455	76.075	77.104	63.8691	63.8691	69.8639
3316	73.7723	76.1356	77.0327	63.9995	63.9995	70.2783
3317	73.6927	76.056	76.953	64.1046	64.1046	70.3835
3318	73.6098	75.9731	76.8701	64.1968	64.1968	70.4757
3319	73.5254	75.8887	76.7868	64.282	64.282	70.5609
3320	73.4406	75.8039	76.7009	64.3634	64.3634	70.6423
3321	73.3557	75.719	76.616	64.4425	64.4425	70.7214
3322	73.2711	75.6344	76.5315	64.5201	64.5201	70.7989
3323	73.187	75.5503	76.4473	64.5965	64.5965	70.8754
3324	73.1033	75.4666	76.3637	64.672	64.672	70.9509
3325	73.0133	75.3408	76.269	64.7299	64.7299	70.9426
3326	72.9063	75.0872	76.1687	64.7116	64.7116	70.5925
3327	72.7914	74.8303	76.0652	64.6497	64.6497	70.1977
3328	72.6716	74.5684	75.9568	64.5806	64.5806	69.7758
3329	72.2798	73.8146	74.6161	64.1779	64.1779	67.8533
3330	71.684	72.392	72.9233	63.5834	63.5834	65.5331
3331	70.96	71.0414	71.1024	62.8579	62.8579	63.082
3332	73.4584	85.2128	80.7851	66.7141	66.7141	83.214
3333	74.6494	85.6554	81.406	68.5912	68.5912	84.2008
3334	75.2426	85.5405	82.1174	69.4442	69.4442	84.1067
3335	75.8052	86.5155	83.1561	69.7674	69.7674	83.4752
3336	76.2077	87.0255	83.733	69.7984	69.7984	82.513
3337	76.3973	86.883	84.0589	69.6822	69.6822	81.3647
3338	76.6284	86.9167	85.1534	69.4349	69.4349	80.1449
3339	76.9526	87.5625	86.2809	69.1612	69.1612	78.9225
3340	77.2586	88.1253	87.223	68.8303	68.8303	77.5589
3341	77.5306	88.5963	88.1185	68.4575	68.4575	76.1472
3342	77.5172	87.6717	87.856	67.8129	67.8129	73.433
3343	76.4764	82.247	83.8114	66.2119	66.2119	68.3586
3344	75.9313	83.1033	84.3289	65.3348	65.3348	65.3348



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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011771

3345	73.9046	73.9046	73.9046	64.8774	64.8774	64.8774
3346	72.7751	72.7751	72.7751	64.6382	64.6382	64.6382
3347	72.144	72.144	72.144	64.5117	64.5117	64.5117
3348	71.7899	71.7899	71.7899	64.4434	64.4434	64.4434
3349	71.5898	71.5898	71.5898	64.4052	64.4052	64.4052
3350	71.4751	71.4751	71.4751	64.3824	64.3824	64.3824
3351	71.4079	71.4079	71.4079	64.3677	64.3677	64.3677
3352	71.3672	71.3672	71.3672	64.3571	64.3571	64.3571
3353	71.3411	71.3411	71.3411	64.3486	64.3486	64.3486
3354	71.3232	71.3232	71.3232	64.3412	64.3412	64.3412
3355	71.3098	71.3098	71.3098	64.3344	64.3344	64.3344
3356	71.2989	71.2989	71.2989	64.3279	64.3279	64.3279
3357	71.2895	71.2895	71.2895	64.3216	64.3216	64.3216
3358	71.2808	71.2808	71.2808	64.3153	64.3153	64.3153
3359	71.2725	71.2725	71.2725	64.3091	64.3091	64.3091
3360	71.2645	71.2645	71.2645	64.3029	64.3029	64.3029
3361	71.2567	71.2567	71.2567	64.2968	64.2968	64.2968
3362	74.581	91.133	92.1571	64.2961	64.2961	64.2961
3363	76.507	90.4876	92.1608	64.2955	64.2955	64.2955
3364	77.6535	88.0688	91.2386	64.2948	64.2948	64.2948
3365	78.3795	88.1298	91.4129	64.2941	64.2941	64.2941
3366	78.8591	87.5777	91.7612	64.2587	64.2587	64.2587
3367	79.1914	87.0386	92.0733	64.1787	64.1787	64.1787
3368	79.4548	86.5204	92.3326	64.0769	64.0769	64.0769
3369	79.6909	86.0538	92.5787	63.9647	63.9647	63.9647
3370	79.8742	85.4383	92.7665	63.8479	63.8479	63.8479
3371	80.0302	84.8909	92.8504	63.7294	63.7294	63.7294
3372	80.2016	84.7565	92.6717	63.6106	63.6106	63.6106
3373	80.5367	85.0559	93.3683	63.4924	63.4924	63.4924
3374	81.0948	85.7973	94.865	63.3756	63.3756	63.3756
3375	81.1738	85.2193	93.7834	63.2592	63.2592	63.2592
3376	80.9282	84.274	92.2218	63.1432	63.1432	63.1432
3377	80.8174	84.0195	91.8744	63.0282	63.0282	63.0282
3378	80.7795	83.8467	91.6145	62.9143	62.9143	62.9143
3379	80.8133	83.8274	91.5613	62.8014	62.8014	62.8014
3380	80.8914	83.8681	91.5787	62.6896	62.6896	62.6896
3381	80.8864	83.6436	91.182	62.5788	62.5788	62.5788
3382	80.8435	82.8605	89.9654	62.4685	62.4685	62.4685
3383	80.2686	81.9697	88.6605	62.3588	62.3588	62.3588
3384	79.9207	81.3352	87.7695	62.2499	62.2499	62.2499
3385	79.8784	81.0076	87.3234	62.142	62.142	62.142
3386	79.4926	80.7401	86.9428	62.035	62.035	62.035
3387	79.3285	80.4832	86.5511	61.9289	61.9289	61.9289
3388	79.1529	80.1796	86.047	61.8236	61.8236	61.8236
3389	78.9686	79.8701	85.5418	61.7193	61.7193	61.7193
3390	78.7768	79.556	85.0361	61.6158	61.6158	61.6158
3391	78.6311	79.3601	84.7806	61.5132	61.5132	61.5132
3392	78.5412	79.2627	84.7015	61.4116	61.4116	61.4116
3393	78.482	79.196	84.6527	61.311	61.311	61.311
3394	78.4395	79.1464	84.6206	61.2113	61.2113	61.2113
3395	78.4047	79.1057	84.5879	61.1126	61.1126	61.1126
3396	78.3728	79.069	84.5541	61.0149	61.0149	61.0149
3397	78.3427	79.0343	84.5222	60.918	60.918	60.918
3398	78.3139	79.0009	84.4915	60.8221	60.8221	60.8221
3399	78.2848	78.9678	84.4568	60.7271	60.7271	60.7271

*[Handwritten signature]*

*[Handwritten mark]*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

09011772

ALSTOM

3400	78.2531	78.9337	84.41	60.6331	60.6331	60.6331
3401	78.22	78.8983	84.3622	60.5398	60.5398	60.5398
3402	78.1863	78.8622	84.3141	60.4475	60.4475	60.4475
3403	78.1522	78.8258	84.2659	60.3561	60.3561	60.3561
3404	76.9767	77.422	78.9362	60.2636	60.2636	60.2636
3405	76.2631	76.7085	78.2227	60.172	60.172	60.172
3406	75.8007	76.246	77.7602	60.0813	60.0813	60.0813
3407	75.4749	75.9202	77.4344	59.9914	59.9914	59.9914
3408	75.2238	75.6691	77.1833	59.9023	59.9023	59.9023
3409	75.0138	75.4591	76.9733	59.8141	59.8141	59.8141
3410	74.8266	75.2719	76.7861	59.7267	59.7267	59.7267
3411	74.6522	75.0875	76.6117	59.6401	59.6401	59.6401
3412	74.4854	74.9307	76.4449	59.5543	59.5543	59.5543
3413	74.3231	74.7684	76.2826	59.4693	59.4693	59.4693
3414	74.1639	74.6092	76.1234	59.3851	59.3851	59.3851
3415	74.0088	74.4521	75.9663	59.3016	59.3016	59.3016
3416	73.8514	74.2967	75.8109	59.219	59.219	59.219
3417	75.3335	87.4791	77.9091	64.7179	64.7179	85.2238
3418	76.1451	88.4161	78.6739	67.8084	67.8084	88.4018
3419	76.5793	88.8894	79.0598	69.6589	69.6589	90.2498
3420	76.7585	88.7579	79.1822	70.7752	70.7752	91.028
3421	76.969	88.5978	80.183	71.4093	71.4093	90.996
3422	77.2558	88.5717	81.4975	71.7284	71.7284	90.4629
3423	77.5861	88.8188	82.6972	71.86	71.86	89.6997
3424	78.3586	90.3101	85.6416	71.8812	71.8812	88.8216
3425	78.6832	90.0377	85.6668	71.8287	71.8287	87.8602
3426	78.7483	89.3651	85.5691	71.7149	71.7149	86.8059
3427	78.8515	89.257	85.952	71.5512	71.5512	85.6841
3428	79.1756	90.1638	86.7701	71.3475	71.3475	84.518
3429	79.2541	89.8626	86.6944	71.0931	71.0931	83.2476
3430	79.3774	89.7479	87.5129	70.8066	70.8066	81.9646
3431	79.6029	90.0674	88.5679	70.4985	70.4985	80.6688
3432	79.8882	90.648	89.5886	70.1627	70.1627	79.3703
3433	80.1423	91.1349	90.4301	69.7813	69.7813	77.9318
3434	80.375	91.5289	91.3261	69.3782	69.3782	76.51
3435	79.7161	87.4695	88.3002	68.139	68.139	70.7613
3436	78.8931	85.4505	86.7438	66.8875	66.8875	66.8875
3437	78.5108	86.4271	87.5662	66.2397	66.2397	66.2397
3438	76.5622	76.5622	76.5622	65.9005	65.9005	65.9005
3439	75.4756	75.4756	75.4756	65.7223	65.7223	65.7223
3440	74.8681	74.8681	74.8681	65.6272	65.6272	65.6272
3441	74.5268	74.5268	74.5268	65.575	65.575	65.575
3442	74.3333	74.3333	74.3333	65.5449	65.5449	65.5449
3443	74.2221	74.2221	74.2221	65.5263	65.5263	65.5263
3444	74.1566	74.1566	74.1566	65.5135	65.5135	65.5135
3445	74.1164	74.1164	74.1164	65.5039	65.5039	65.5039
3446	74.0903	74.0903	74.0903	65.4958	65.4958	65.4958
3447	74.072	74.072	74.072	65.4885	65.4885	65.4885
3448	74.0582	74.0582	74.0582	65.4816	65.4816	65.4816
3449	74.0467	74.0467	74.0467	65.475	65.475	65.475
3450	74.0366	74.0366	74.0366	65.4684	65.4684	65.4684
3451	74.0272	74.0272	74.0272	65.462	65.462	65.462
3452	74.0182	74.0182	74.0182	65.4555	65.4555	65.4555
3453	74.0095	74.0095	74.0095	65.4491	65.4491	65.4491
3454	74.0009	74.0009	74.0009	65.4427	65.4427	65.4427



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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011773

ALSTOM

3455	77.3121	92.4558	93.8354	65.4417	65.4417	65.4417
3456	79.2301	91.8024	93.8311	65.4406	65.4406	65.4406
3457	80.3761	90.6102	93.4808	65.4396	65.4396	65.4396
3458	81.1062	90.275	94.0586	65.4385	65.4385	65.4385
3459	81.5845	89.8314	94.4819	65.3998	65.3998	65.3998
3460	81.907	89.2907	94.7803	65.313	65.313	65.313
3461	82.1664	88.8471	95.0497	65.2025	65.2025	65.2025
3462	82.3735	88.3051	95.2641	65.0809	65.0809	65.0809
3463	82.5262	87.6456	95.4206	64.9542	64.9542	64.9542
3464	82.6782	87.3714	95.3066	64.8257	64.8257	64.8257
3465	82.8661	87.3016	95.2695	64.6969	64.6969	64.6969
3466	83.3307	87.9505	96.6777	64.569	64.569	64.569
3467	83.6588	88.0501	96.9191	64.442	64.442	64.442
3468	83.5259	87.173	95.3858	64.3154	64.3154	64.3154
3469	83.3352	86.6012	94.4975	64.1896	64.1896	64.1896
3470	83.2461	86.3733	94.1798	64.0649	64.0649	64.0649
3471	83.2271	86.2586	94.0035	63.9414	63.9414	63.9414
3472	83.2668	86.2619	93.9827	63.8191	63.8191	63.8191
3473	83.343	86.2997	93.9977	63.6979	63.6979	63.6979
3474	83.1592	85.6055	92.8945	63.5775	63.5775	63.5775
3475	82.8076	84.7235	91.5868	63.4578	63.4578	63.4578
3476	82.3825	83.8335	90.3182	63.3388	63.3388	63.3388
3477	82.0905	83.4537	89.8168	63.2208	63.2208	63.2208
3478	81.8697	83.1486	89.395	63.1039	63.1039	63.1039
3479	81.6867	82.8848	89.0191	62.988	62.988	62.988
3480	81.4959	82.5683	88.5073	62.873	62.873	62.873
3481	81.2962	82.2415	87.9815	62.7591	62.7591	62.7591
3482	81.0894	81.9111	87.4576	62.646	62.646	62.646
3483	80.8997	81.6314	87.0454	62.534	62.534	62.534
3484	80.7786	81.5026	86.9351	62.423	62.423	62.423
3485	80.6951	81.4116	86.8821	62.3131	62.3131	62.3131
3486	80.6322	81.3415	86.8096	62.2042	62.2042	62.2042
3487	80.5801	81.2829	86.764	62.0964	62.0964	62.0964
3488	80.5317	81.2297	86.7137	61.9896	61.9896	61.9896
3489	80.4857	81.1789	86.6658	61.8838	61.8838	61.8838
3490	80.4411	81.1297	86.6194	61.7791	61.7791	61.7791
3491	80.3976	81.0817	86.5741	61.6753	61.6753	61.6753
3492	80.3514	81.0329	86.5137	61.5725	61.5725	61.5725
3493	80.3037	80.9828	86.4511	61.4707	61.4707	61.4707
3494	80.2552	80.9319	86.388	61.3698	61.3698	61.3698
3495	80.2064	80.8808	86.325	61.2699	61.2699	61.2699
3496	79.0403	79.4664	81.1029	61.1692	61.1692	61.1692
3497	78.3019	78.7472	80.2614	61.0694	61.0694	61.0694
3498	77.8193	78.2646	79.7788	60.9704	60.9704	60.9704
3499	77.4761	77.9214	79.4356	60.8725	60.8725	60.8725
3500	77.209	77.8543	79.1685	60.7754	60.7754	60.7754
3501	76.9873	77.4297	78.9613	60.6792	60.6792	60.6792
3502	76.8226	77.238	78.9437	60.584	60.584	60.584
3503	76.6948	77.0966	78.9729	60.4897	60.4897	60.4897
3504	76.5931	76.9877	79.0359	60.3964	60.3964	60.3964
3505	77.8896	89.4323	80.3916	65.7262	65.7262	65.7408
3506	76.6844	90.9429	81.2215	68.8734	68.8734	89.4615
3507	79.1001	91.4063	81.5854	70.7489	70.7489	91.34
3508	79.2602	91.2661	81.685	71.8749	71.8749	92.1348
3509	79.4617	91.0701	82.7438	72.4925	72.4925	92.0348

*Handwritten signature*

*Red arrow pointing to the right*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011774

ALSTOM

3510	79.7346	91.0258	84.0525	72.779	72.779	91.4095
3511	80.135	91.4893	85.6136	72.8729	72.8729	90.5604
3512	79.0676	82.5681	82.614	70.4166	70.4166	78.5975
3513	77.9825	78.9929	80.8844	67.28	67.28	67.28
3514	77.2998	78.3188	80.0871	65.6408	65.6408	65.6408
3515	76.8439	77.889	79.5403	64.7545	64.7545	64.7545
3516	76.5105	77.5816	79.1159	64.247	64.247	64.247
3517	76.2811	77.3341	78.8601	63.9303	63.9303	63.9303
3518	76.1369	77.146	79.0894	63.7103	63.7103	63.7103
3519	76.0173	77.0249	78.9873	63.5392	63.5392	63.5392
3520	75.9012	76.9072	78.9087	63.3934	63.3934	63.3934
3521	75.7879	76.7923	78.8329	63.2609	63.2609	63.2609
3522	75.6773	76.6805	78.76	63.1355	63.1355	63.1355
3523	75.5127	76.5229	78.4187	63.0143	63.0143	63.0143
3524	75.3631	76.3733	78.2691	62.8957	62.8957	62.8957
3525	75.2221	76.2323	78.1281	62.7789	62.7789	62.7789
3526	75.0862	76.0964	77.9922	62.6637	62.6637	62.6637
3527	74.9535	75.9637	77.8595	62.5497	62.5497	62.5497
3528	74.823	75.8332	77.7289	62.4368	62.4368	62.4368
3529	75.1336	78.4868	78.6263	64.2172	64.2172	72.1399
3530	77.0266	88.7204	84.264	67.5807	67.5807	84.0091
3531	77.8854	88.8079	84.856	69.1956	69.1956	84.5935
3532	78.2856	88.4833	85.1772	69.9065	69.9065	84.4348
3533	78.7884	89.6015	86.2237	70.1526	70.1526	83.7189
3534	79.0885	89.8491	86.5905	70.1383	70.1383	82.6998
3535	79.2459	89.6998	87.0379	69.9773	69.9773	81.5299
3536	79.4613	89.7982	88.1077	69.736	69.736	80.3025
3537	79.7689	90.4276	89.2188	69.4513	69.4513	79.0691
3538	80.043	90.9455	90.0958	69.1075	69.1075	77.676
3539	80.2882	91.3781	90.9763	68.7271	68.7271	76.2628
3540	80.0813	89.5728	89.9356	67.9189	67.9189	72.7111
3541	79.0814	85.0158	86.3799	66.401	66.401	66.401
3542	78.8019	85.9794	87.1796	65.6157	65.6157	65.6157
3543	76.608	76.608	76.608	65.2058	65.2058	65.2058
3544	75.4964	75.4964	75.4964	64.9912	64.9912	64.9912
3545	74.875	74.875	74.875	64.8774	64.8774	64.8774
3546	74.5259	74.5259	74.5259	64.8157	64.8157	64.8157
3547	74.3282	74.3282	74.3282	64.7808	64.7808	64.7808
3548	74.2146	74.2146	74.2146	64.7599	64.7599	64.7599
3549	74.1477	74.1477	74.1477	64.7461	64.7461	64.7461
3550	74.1067	74.1067	74.1067	64.736	64.736	64.736
3551	74.0803	74.0803	74.0803	64.7278	64.7278	64.7278
3552	74.0818	74.0618	74.0618	64.7206	64.7206	64.7206
3553	74.0478	74.0478	74.0478	64.7139	64.7139	64.7139
3554	74.0362	74.0362	74.0362	64.7075	64.7075	64.7075
3555	74.0261	74.0261	74.0261	64.7012	64.7012	64.7012
3556	74.0167	74.0167	74.0167	64.695	64.695	64.695
3557	74.0077	74.0077	74.0077	64.6888	64.6888	64.6888
3558	73.999	73.999	73.999	64.6827	64.6827	64.6827
3559	73.9904	73.9904	73.9904	64.6766	64.6766	64.6766
3560	77.3105	93.4737	94.596	64.6757	64.6757	64.6757
3561	79.2338	92.8255	94.5959	64.6748	64.6748	64.6748
3562	80.3771	91.0472	93.5581	64.6738	64.6738	64.6738
3563	81.1044	90.693	94.114	64.6728	64.6728	64.6728
3564	81.5799	90.1667	94.4789	64.6363	64.6363	64.6363

*Handwritten signature and initials in blue and red ink.*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011775

ALSTOM

3585	81.903	89.6247	94.7884	64.5541	64.5541	64.5541
3586	82.1539	89.1132	95.0332	64.4498	64.4496	64.4496
3587	82.3734	88.6272	95.2628	64.3345	64.3345	64.3345
3588	82.5335	87.9748	95.4264	64.2147	64.2147	64.2147
3589	82.6742	87.4886	95.4414	64.093	64.093	64.093
3570	82.8287	87.3374	95.2458	63.9711	63.9711	63.9711
3571	83.1888	87.7359	96.1631	63.85	63.85	63.85
3572	83.7376	88.4451	97.5929	63.73	63.73	63.73
3573	83.7178	87.8509	96.118	63.6105	63.6105	63.6105
3574	83.4601	86.7836	94.717	63.4914	63.4914	63.4914
3575	83.3345	86.5157	94.3571	63.3735	63.3735	63.3735
3576	83.2805	86.328	94.083	63.2566	63.2566	63.2566
3577	83.3029	86.311	94.0413	63.1408	63.1408	63.1408
3578	83.3667	86.3375	94.0444	63.0261	63.0261	63.0261
3579	83.2823	85.9508	93.4099	62.9123	62.9123	62.9123
3580	82.9975	85.1092	92.1296	62.7992	62.7992	62.7992
3581	82.5784	84.165	90.764	62.6866	62.6866	62.6866
3582	82.2399	83.6315	90.034	62.575	62.575	62.575
3583	81.9919	83.2951	89.5752	62.4643	62.4643	62.4643
3584	81.7916	83.0095	89.1712	62.3546	62.3546	62.3546
3585	81.5944	82.6918	88.6701	62.2458	62.2458	62.2458
3586	81.3859	82.3472	88.1124	62.138	62.138	62.138
3587	81.1687	81.9972	87.5545	62.0309	62.0309	62.0309
3588	80.9689	81.7005	87.1149	61.9249	61.9249	61.9249
3589	80.8427	81.568	87.0002	61.8198	61.8198	61.8198
3590	80.7566	81.4719	86.9255	61.7157	61.7157	61.7157
3591	80.8927	81.4002	86.8727	61.6127	61.6127	61.6127
3592	80.6392	81.3403	86.8225	61.5106	61.5106	61.5106
3593	81.0531	93.3515	83.5481	67.016	67.016	67.6076
3594	81.2251	93.3378	83.6672	70.0027	70.0027	90.3769
3595	81.3264	93.0806	84.1198	71.6223	71.6223	91.4829
3596	81.5751	92.9637	85.5921	72.4462	72.4462	91.4872
3597	81.8007	92.9793	86.4686	72.8349	72.8349	90.9907
3598	82.0793	92.2409	87.9944	72.6071	72.6071	88.8299
3599	79.861	80.0744	80.3757	68.5074	68.5074	68.5074
3600	78.4632	78.5739	78.6589	66.4533	66.4533	66.7581
3601	77.7498	78.1582	78.4646	65.5511	65.5511	66.6755
3602	77.4169	78.123	78.6527	65.2396	65.2396	67.1838
3603	77.2995	78.3033	79.0583	65.237	65.237	68.0009
3604	76.636	76.6536	76.6688	64.583	64.583	64.6315
3605	76.2542	76.4417	78.5824	64.3006	64.3006	64.8169
3606	76.0307	76.3882	76.6584	64.212	64.212	65.1962
3607	75.785	76.0949	76.3275	64.0893	64.0893	64.9428
3608	75.4844	75.6666	75.8033	63.8969	63.8969	64.3986
3609	75.4956	76.2079	76.7423	64.0844	64.0844	66.0456
3610	75.4142	76.1265	76.6609	64.146	64.146	66.1072
3611	75.2832	75.9955	76.5299	64.1445	64.1445	66.1058
3612	75.1259	75.8382	76.3726	64.1118	64.1118	66.073
3613	74.955	75.6673	76.2017	64.0636	64.0636	66.0248
3614	74.695	75.2499	75.6863	63.9077	63.9077	65.4357
3615	74.3585	74.7098	74.9733	63.6622	63.6622	64.6294
3616	73.9753	74.1229	74.2337	63.364	63.364	63.7704
3617	73.6349	73.6989	73.7892	63.0678	63.0678	63.0678
3618	73.5086	73.8048	74.2236	62.8615	62.8615	62.8615
3619	73.5078	74.0365	74.7834	62.7011	62.7011	62.7011

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls



00011776

3620	73.0882	73.073	73.0798	62.5838	62.5636	62.5636
3621	72.7884	72.8799	73.009	62.4385	62.4385	62.4385
3622	72.5993	72.7774	73.0288	62.3202	62.3202	62.3202
3623	72.4833	72.7279	73.1017	62.2058	62.2058	62.2058
3624	72.2214	72.3698	72.5795	62.0938	62.0938	62.0938
3625	73.5783	75.2417	79.5854	61.986	61.986	61.986
3628	75.1526	77.2662	84.288	61.8808	61.8808	61.8808
3627	75.7507	77.3105	83.8879	61.7764	61.7764	61.7764
3628	75.9887	77.3705	83.7593	61.6729	61.6729	61.6729
3629	76.4079	87.5939	81.0507	66.4115	66.4115	84.5988
3630	75.2879	77.5065	78.6055	65.6742	65.6742	71.9898
3631	73.687	73.7752	73.9154	63.8581	63.8581	63.8581
3632	72.7245	72.8128	72.953	62.8915	62.8915	62.8915
3633	72.109	72.1972	72.3374	62.3522	62.3522	62.3522
3634	71.8823	71.7705	71.9107	62.0281	62.0281	62.0281
3635	72.0281	72.9936	74.6664	61.8136	61.8136	61.8136
3636	72.1649	73.1198	74.8249	61.6541	61.6541	61.6541
3637	72.1889	73.1333	74.8706	61.5227	61.5227	61.5227
3638	72.1523	73.0862	74.8557	61.406	61.406	61.406
3639	72.0836	73.0069	74.8086	61.2971	61.2971	61.2971
3640	71.975	72.9426	74.609	61.1925	61.1925	61.1925
3641	71.8628	72.8304	74.4968	61.0906	61.0906	61.0906
3642	71.7489	72.7165	74.383	60.9906	60.9906	60.9906
3643	71.6348	72.6022	74.2686	60.8919	60.8919	60.8919
3644	71.5204	72.488	74.1544	60.7943	60.7943	60.7943
3645	71.4259	72.3476	74.1542	60.6978	60.6978	60.6978
3646	71.3824	72.2487	74.2522	60.6023	60.6023	60.6023
3647	71.3247	72.1884	74.3819	60.5078	60.5078	60.5078
3648	71.3086	72.1578	74.5519	60.4142	60.4142	60.4142
3649	71.3108	72.1549	74.7538	60.3217	60.3217	60.3217
3650	71.3295	72.1823	74.9807	60.2301	60.2301	60.2301
3651	71.3139	72.1706	75.0019	60.1393	60.1393	60.1393
3652	71.3215	72.1981	75.1918	60.0495	60.0495	60.0495
3653	71.3472	72.2445	75.3935	59.9608	59.9608	59.9608
3654	71.3645	72.2753	75.5241	59.8726	59.8726	59.8726
3655	71.397	72.3294	75.7372	59.7856	59.7856	59.7856
3656	72.4051	73.9159	80.4539	59.7008	59.7008	59.7008
3657	72.9219	74.3347	80.7667	59.6168	59.6168	59.6168
3658	72.7953	73.8731	79.077	59.533	59.533	59.533
3659	72.049	72.8087	75.8478	59.4489	59.4489	59.4489
3660	71.5574	72.3094	75.1827	59.3655	59.3655	59.3655
3661	71.2049	71.9548	74.6498	59.2828	59.2828	59.2828
3662	70.9293	71.6837	74.1958	59.2008	59.2008	59.2008
3663	70.7616	71.5113	74.115	59.1196	59.1196	59.1196
3664	70.5953	71.3529	73.8062	59.0391	59.0391	59.0391
3665	70.4302	71.2016	73.5022	58.9593	58.9593	58.9593
3666	70.2665	71.0576	73.2076	58.8802	58.8802	58.8802
3667	70.1068	70.9275	72.936	58.8018	58.8018	58.8018
3668	69.9498	70.8176	72.663	58.7241	58.7241	58.7241
3669	69.8189	70.6868	72.5322	58.6472	58.6472	58.6472
3670	69.7024	70.5703	72.4157	58.5709	58.5709	58.5709
3671	69.5941	70.462	72.3074	58.4954	58.4954	58.4954
3672	70.9948	81.2652	75.4887	62.9971	62.9971	80.3296
3673	72.3795	84.0645	78.8242	65.4884	65.4884	82.7781
3674	73.3485	84.9862	80.5603	66.6957	66.6957	83.0582

*Handwritten signature and initials*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011777



3675	73.7302	84.5951	80.5104	67.2375	67.2375	82.6584
3676	73.8968	84.0748	80.8102	67.4217	67.4217	81.8721
3677	74.3089	85.1788	81.7909	67.4155	67.4155	80.9006
3678	74.5413	85.2696	82.0302	67.285	67.285	79.7602
3679	74.6957	85.1312	82.5633	67.0782	67.0782	78.5439
3680	74.9312	85.2972	83.6504	66.8265	66.8265	77.3072
3681	75.2652	85.9534	84.7888	66.5477	66.5477	76.0763
3682	75.5604	86.4854	85.8687	66.216	66.216	74.8838
3683	75.8314	86.9368	86.5832	65.8549	65.8549	73.2928
3684	75.5451	84.6148	85.091	64.9683	64.9683	69.2338
3685	74.8126	80.762	82.1017	63.5349	63.5349	63.5349
3686	74.1699	81.6782	82.8636	62.7936	62.7936	62.7936
3687	72.1948	72.1948	72.1948	62.4069	62.4069	62.4069
3688	71.0941	71.0941	71.0941	62.2046	62.2046	62.2046
3689	70.4792	70.4792	70.4792	62.0976	62.0976	62.0976
3690	70.1344	70.1344	70.1344	62.0398	62.0398	62.0398
3691	69.9395	69.9395	69.9395	62.0073	62.0073	62.0073
3692	69.8279	69.8279	69.8279	61.988	61.988	61.988
3693	69.7627	69.7627	69.7627	61.9755	61.9755	61.9755
3694	69.7233	69.7233	69.7233	61.9664	61.9664	61.9664
3695	69.6981	69.6981	69.6981	61.9592	61.9592	61.9592
3696	69.6809	69.6809	69.6809	61.9529	61.9529	61.9529
3697	69.668	69.668	69.668	61.947	61.947	61.947
3698	69.6577	69.6577	69.6577	61.9415	61.9415	61.9415
3699	69.6487	69.6487	69.6487	61.936	61.936	61.936
3700	69.6405	69.6405	69.6405	61.9306	61.9306	61.9306
3701	69.6327	69.6327	69.6327	61.9253	61.9253	61.9253
3702	69.6251	69.6251	69.6251	61.92	61.92	61.92
3703	69.6176	69.6176	69.6176	61.9146	61.9146	61.9146
3704	72.9368	88.8524	90.0372	61.9144	61.9144	61.9144
3705	74.8599	88.2042	90.038	61.9141	61.9141	61.9141
3706	76.0049	86.5603	89.1569	61.9138	61.9138	61.9138
3707	76.7338	86.2196	89.7283	61.9134	61.9134	61.9134
3708	77.2184	85.7214	90.1155	61.8845	61.8845	61.8845
3709	77.5608	85.1989	90.4443	61.8187	61.8187	61.8187
3710	77.8385	84.7302	90.7188	61.7351	61.7351	61.7351
3711	78.0826	84.2584	90.9724	61.6429	61.6429	61.6429
3712	78.2698	83.833	91.1631	61.5489	61.5489	61.5489
3713	78.4429	83.2278	91.1764	61.4494	61.4494	61.4494
3714	78.6288	83.1081	91.0123	61.3517	61.3517	61.3517
3715	79.0469	83.6117	92.1119	61.2547	61.2547	61.2547
3716	79.6728	84.2024	93.2816	61.1587	61.1587	61.1587
3717	79.5555	83.4181	91.8208	61.0628	61.0628	61.0628
3718	79.3444	82.6532	90.5772	60.9674	60.9674	60.9674
3719	79.2571	82.4234	90.2552	60.8729	60.8729	60.8729
3720	79.2412	82.2836	90.0353	60.7791	60.7791	60.7791
3721	79.2978	82.3005	90.0274	60.6863	60.6863	60.6863
3722	79.3934	82.358	90.081	60.5944	60.5944	60.5944
3723	79.2874	81.8318	89.1995	60.503	60.503	60.503
3724	78.9749	80.9536	87.8672	60.4121	60.4121	60.4121
3725	78.5549	80.0098	86.5	60.3216	60.3216	60.3216
3726	78.2723	79.631	86.9879	60.2319	60.2319	60.2319
3727	78.0621	79.327	85.554	60.1429	60.1429	60.1429
3728	77.883	79.0469	85.1266	60.0547	60.0547	60.0547
3729	77.8904	78.7038	84.5506	59.9671	59.9671	59.9671



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011778



3730	77.4875	78.3551	83.9737	59.8803	59.8803	59.8803
3731	77.282	78.0152	83.4255	59.7941	59.7941	59.7941
3732	77.1653	77.8895	83.3215	59.7088	59.7088	59.7088
3733	77.097	77.8125	83.2657	59.6243	59.6243	59.6243
3734	77.0554	77.7622	83.2362	59.5406	59.5406	59.5406
3735	77.0258	77.726	83.2087	59.4577	59.4577	59.4577
3736	77.0017	77.6962	83.1824	59.3756	59.3756	59.3756
3737	76.9809	77.6698	83.1593	59.2943	59.2943	59.2943
3738	76.9617	77.6453	83.1371	59.2138	59.2138	59.2138
3739	76.9394	77.62	83.0965	59.134	59.134	59.134
3740	76.9153	77.5931	83.0545	59.055	59.055	59.055
3741	76.8904	77.5653	83.0121	58.9767	58.9767	58.9767
3742	76.7281	84.8904	78.8159	63.3216	63.3216	80.1624
3743	77.2487	89.4642	79.8005	66.9076	66.9076	87.4844
3744	77.5294	89.8188	80.0355	69.0203	69.0203	89.6125
3745	77.6566	89.8616	80.1137	70.3408	70.3408	90.8139
3746	77.6889	89.5302	80.103	71.1746	71.1746	91.2693
3747	77.8802	89.3754	81.5422	71.6207	71.6207	90.9158
3748	78.124	89.3703	82.5807	71.8396	71.8396	90.2808
3749	78.5764	90.0317	84.36	71.9207	71.9207	89.4819
3750	79.2897	91.1711	86.6957	71.9146	71.9146	88.5873
3751	79.4562	90.59	86.2589	71.8446	71.8446	87.6141
3752	79.4809	89.8944	86.3364	71.7148	71.7148	86.5318
3753	79.6647	90.2661	86.9261	71.5397	71.5397	85.3994
3754	79.916	90.7947	87.4654	71.3209	71.3209	84.2013
3755	79.9753	90.4957	87.4934	71.0551	71.0551	82.9223
3756	80.1225	90.4331	88.5048	70.7599	70.7599	81.6344
3757	80.3794	90.9357	89.5737	70.447	70.447	80.3665
3758	80.653	91.4803	90.5201	70.0974	70.0974	79.0028
3759	80.8972	91.9359	91.3744	69.7094	69.7094	77.569
3760	81.0449	91.9306	91.9181	69.2267	69.2267	75.7598
3761	80.0904	86.5921	87.7597	67.7151	67.7151	68.7747
3762	79.4092	86.3546	87.6039	66.6761	66.6761	66.6761
3763	79.1058	87.4102	88.5052	66.1379	66.1379	66.1379
3764	77.1945	77.1945	77.1945	65.8558	65.8558	65.8558
3765	76.1287	76.1287	76.1287	65.7069	65.7069	65.7069
3766	75.5326	75.5326	75.5326	65.627	65.627	65.627
3767	75.1975	75.1975	75.1975	65.5828	65.5828	65.5828
3768	75.0075	75.0075	75.0075	65.557	65.557	65.557
3769	74.8981	74.8981	74.8981	65.5407	65.5407	65.5407
3770	74.8335	74.8335	74.8335	65.5292	65.5292	65.5292
3771	74.7937	74.7937	74.7937	65.5203	65.5203	65.5203
3772	74.7678	74.7678	74.7678	65.5127	65.5127	65.5127
3773	74.7496	74.7496	74.7496	65.5058	65.5058	65.5058
3774	74.7356	74.7356	74.7356	65.4992	65.4992	65.4992
3775	74.724	74.724	74.724	65.4928	65.4928	65.4928
3776	74.7137	74.7137	74.7137	65.4865	65.4865	65.4865
3777	74.7042	74.7042	74.7042	65.4803	65.4803	65.4803
3778	74.6951	74.6951	74.6951	65.474	65.474	65.474
3779	74.6862	74.6862	74.6862	65.4678	65.4678	65.4678
3780	74.6774	74.6774	74.6774	65.4616	65.4616	65.4616
3781	77.9819	92.3914	93.9583	65.4604	65.4604	65.4604
3782	79.8957	91.708	93.9285	65.4591	65.4591	65.4591
3783	81.0438	90.9724	94.1034	65.4577	65.4577	65.4577
3784	81.7507	90.6195	94.6622	65.4189	65.4189	65.4189





3785	82.1963	90.1948	95.088	66.3318	65.3318	65.3318
3786	82.5054	89.8883	95.3816	65.221	65.221	65.221
3787	82.7558	89.236	95.6421	65.0992	65.0992	65.0992
3788	82.944	88.6437	95.8358	64.9723	64.9723	64.9723
3789	83.087	88.0023	95.9879	64.8435	64.8435	64.8435
3790	83.2403	87.8462	95.7687	64.7144	64.7144	64.7144
3791	83.5083	87.9967	96.1823	64.5859	64.5859	64.5859
3792	84.0181	88.6902	97.6325	64.4587	64.4587	64.4587
3793	84.1735	88.3447	97.0195	64.3323	64.3323	64.3323
3794	83.9499	87.3977	95.4348	64.2064	64.2064	64.2064
3795	83.7972	87.0227	94.8927	64.0815	64.0815	64.0815
3796	83.727	86.8161	94.598	63.9578	63.9578	63.9578
3797	83.7275	86.7478	94.4857	63.8353	63.8353	63.8353
3798	83.778	86.7605	94.4747	63.7139	63.7139	63.7139
3799	83.792	86.629	94.2315	63.5936	63.5936	63.5936
3800	83.6458	85.83	92.9885	63.474	63.474	63.474
3801	83.1618	84.9302	91.6751	63.3552	63.3552	63.3552
3802	82.7768	84.2087	90.6623	63.2372	63.2372	63.2372
3803	82.5103	83.8611	90.2069	63.1203	63.1203	63.1203
3804	82.3097	83.5878	89.833	63.0044	63.0044	63.0044
3805	82.1466	83.3585	89.512	62.8895	62.8895	62.8895
3806	81.9909	83.1185	89.1389	62.7757	62.7757	62.7757
3807	81.8339	82.8677	88.7463	62.6628	62.6628	62.6628
3808	81.6791	82.6305	88.3802	62.5509	62.5509	62.5509
3809	81.5279	82.4048	88.0378	62.4401	62.4401	62.4401
3810	81.3776	82.1823	87.7022	62.3302	62.3302	62.3302
3811	81.2266	81.9608	87.3705	62.2212	62.2212	62.2212
3812	81.1224	81.8517	87.2714	62.1134	62.1134	62.1134
3813	81.0441	81.7692	87.1993	62.0065	62.0065	62.0065
3814	80.9803	81.7011	87.1415	61.9007	61.9007	61.9007
3815	80.9246	81.6412	87.0917	61.7958	61.7958	61.7958
3816	80.8735	81.586	87.0484	61.692	61.692	61.692
3817	80.8252	81.5338	87.0037	61.5892	61.5892	61.5892
3818	80.779	81.4833	86.9635	61.4873	61.4873	61.4873
3819	80.7327	81.4333	86.9157	61.3864	61.3864	61.3864
3820	80.6867	81.3831	86.8681	61.2865	61.2865	61.2865
3821	80.6416	81.3331	86.821	61.1875	61.1875	61.1875
3822	80.5975	81.2834	86.7747	61.0895	61.0895	61.0895
3823	80.5511	81.2326	86.7132	60.9924	60.9924	60.9924
3824	80.5016	81.1793	86.64	60.8962	60.8962	60.8962
3825	80.3692	81.0016	86.192	60.8008	60.8008	60.8008
3826	79.3354	81.5806	81.0163	62.6268	62.6268	70.6682
3827	78.6991	80.9522	80.3797	63.6185	63.6185	71.6774
3828	78.278	80.5311	79.9586	64.1862	64.1862	72.2451
3829	77.9741	80.2272	79.6547	64.5401	64.5401	72.599
3830	77.7344	79.9874	79.415	64.7861	64.7861	72.845
3831	77.53	79.783	79.2106	64.9771	64.9771	73.036
3832	77.3453	79.5983	79.0258	65.1399	65.1399	73.1988
3833	77.1515	79.2283	78.8438	65.1799	65.1799	72.8216
3834	76.9354	78.652	78.6666	65.024	65.024	71.7447
3835	76.7176	78.116	78.5118	64.7541	64.7541	70.538
3836	76.376	77.2894	77.8128	64.2001	64.2001	68.0991
3837	75.846	76.1131	76.4932	63.0229	63.0229	63.0229
3838	75.7703	76.296	77.4842	62.379	62.379	62.379
3839	75.7048	76.1501	77.6643	62.0033	62.0033	62.0033

*Handwritten signature*





ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011780

ALSTOM

3840	75.5931	76.0384	77.5526	61.7628	61.7628	61.7628
3841	75.4822	75.9078	77.5481	61.5907	61.5907	61.5907
3842	75.3523	75.7749	77.4341	61.4535	61.4535	61.4535
3843	75.2126	75.6323	77.3105	61.3342	61.3342	61.3342
3844	75.0556	75.4822	77.1156	61.2245	61.2245	61.2245
3845	74.8983	75.3249	76.9582	61.1199	61.1199	61.1199
3846	74.7412	75.1679	76.8012	61.0185	61.0185	61.0185
3847	74.5849	75.0115	76.6449	60.9191	60.9191	60.9191
3848	74.4295	74.8561	76.4894	60.8211	60.8211	60.8211
3849	74.275	74.7016	76.336	60.7244	60.7244	60.7244
3850	74.1216	74.5482	76.1816	60.6286	60.6286	60.6286
3851	73.9693	74.3959	76.0292	60.5339	60.5339	60.5339
3852	73.816	74.2446	75.878	60.44	60.44	60.44
3853	75.2793	67.4333	77.8521	65.9294	65.9294	66.4414
3854	76.0787	68.3526	78.6038	69.0077	69.0077	69.601
3855	76.5082	68.8194	78.9831	70.8466	70.8466	91.4373
3856	76.6778	68.6498	79.0971	71.9422	71.9422	92.1657
3857	76.9054	68.5058	80.2143	72.5496	72.5496	92.0744
3858	77.1932	68.4938	81.4821	72.8482	72.8482	91.5183
3859	77.5572	68.8396	82.8176	72.9642	72.9642	90.7421
3860	78.3483	90.3465	85.7725	72.9721	72.9721	89.8539
3861	78.6327	89.9386	85.5768	72.9071	72.9071	88.8814
3862	78.6846	89.2583	85.5134	72.7806	72.7806	87.812
3863	78.8037	89.2522	85.9396	72.6047	72.6047	86.6776
3864	79.1114	90.0757	86.6962	72.3878	72.3878	85.4947
3865	79.1806	89.7853	86.6112	72.1207	72.1207	84.2116
3866	79.3126	89.6699	87.5023	71.8228	71.8228	82.9185
3867	79.5476	90.0322	88.5629	71.504	71.504	81.6349
3868	79.8324	90.6071	89.5695	71.1556	71.1556	80.2968
3869	80.0862	91.089	90.4157	70.7632	70.7632	78.8499
3870	80.3191	91.4832	91.3119	70.3488	70.3488	77.4188
3871	79.5902	87.0688	87.9734	69.0338	69.0338	71.3131
3872	78.7955	85.4383	86.7219	67.8187	67.8187	67.8187
3873	78.4294	86.4309	87.5603	67.1895	67.1895	67.1895
3874	76.4882	76.4882	76.4882	66.8602	66.8602	66.8602
3875	75.4058	75.4058	75.4058	66.687	66.687	66.687
3876	74.8006	74.8006	74.8006	66.5945	66.5945	66.5945
3877	74.4606	74.4606	74.4606	66.5437	66.5437	66.5437
3878	74.2679	74.2679	74.2679	66.5143	66.5143	66.5143
3879	74.1571	74.1571	74.1571	66.4961	66.4961	66.4961
3880	74.0917	74.0917	74.0917	66.4836	66.4836	66.4836
3881	74.0517	74.0517	74.0517	66.474	66.474	66.474
3882	74.0257	74.0257	74.0257	66.466	66.466	66.466
3883	74.0075	74.0075	74.0075	66.4588	66.4588	66.4588
3884	73.9937	73.9937	73.9937	66.4519	66.4519	66.4519
3885	73.9822	73.9822	73.9822	66.4453	66.4453	66.4453
3886	73.9721	73.9721	73.9721	66.4388	66.4388	66.4388
3887	73.9628	73.9628	73.9628	66.4324	66.4324	66.4324
3888	73.9538	73.9538	73.9538	66.426	66.426	66.426
3889	73.9451	73.9451	73.9451	66.4196	66.4196	66.4196
3890	73.9365	73.9365	73.9365	66.4132	66.4132	66.4132
3891	77.2463	92.2289	93.6492	66.4116	66.4116	66.4116
3892	79.1636	91.5746	93.644	66.41	66.41	66.41
3893	80.3104	90.4788	93.4069	66.4084	66.4084	66.4084
3894	81.0407	90.1426	93.9834	66.4067	66.4067	66.4067

*Handwritten signature*

*Handwritten mark*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011781

3895	81.5174	89.704	94.4071	66.3651	66.3651	66.3651
3896	81.8423	89.1819	94.7182	66.2722	66.2722	66.2722
3897	82.104	88.7427	94.99	66.1542	66.1542	66.1542
3898	82.3094	88.1912	95.2011	66.0243	66.0243	66.0243
3899	82.4611	87.5297	95.3568	65.889	65.889	65.889
3900	82.6153	87.2893	95.2217	65.7518	65.7518	65.7518
3901	82.8223	87.2695	95.2852	65.6143	65.6143	65.6143
3902	83.2983	87.9296	96.7041	65.4778	65.4778	65.4778
3903	83.5896	87.9321	96.7581	65.342	65.342	65.342
3904	83.438	87.0409	95.2146	65.2068	65.2068	65.2068
3905	83.2571	86.5141	94.4046	65.0726	65.0726	65.0726
3906	83.1735	86.2923	94.0933	64.9395	64.9395	64.9395
3907	83.1601	86.1891	93.9324	64.8077	64.8077	64.8077
3908	83.2051	85.1954	93.9144	64.6772	64.6772	64.6772
3909	83.2753	86.2174	93.9042	64.5479	64.5479	64.5479
3910	83.0514	85.4164	92.6401	64.4193	64.4193	64.4193
3911	81.9182	87.194	86.1984	66.8874	66.8874	77.4435
3912	79.7484	79.9265	80.0602	65.7364	65.7364	86.2269
3913	78.5691	78.9509	79.2374	65.2301	65.2301	66.2614
3914	77.9325	78.5181	78.9573	65.0561	65.0561	66.8683
3915	77.5969	78.3861	78.9782	65.0575	65.0575	67.2305
3916	77.4309	78.4238	79.1687	65.1553	65.1553	67.8891
3917	76.9682	77.3072	77.786	64.5473	64.5473	64.5473
3918	76.7176	77.2023	77.887	64.1792	64.1792	64.1792
3919	76.5881	77.2186	78.1092	63.9322	63.9322	63.9322
3920	76.5303	77.3066	78.403	63.7468	63.7468	63.7468
3921	76.5174	77.4395	78.7418	63.5928	63.5928	63.5928
3922	76.9762	76.2253	76.5772	63.4546	63.4546	63.4546
3923	76.5833	75.8324	76.1843	63.3252	63.3252	63.3252
3924	76.2716	75.5207	75.8725	63.2007	63.2007	63.2007
3925	76.0045	75.2537	75.6055	63.0793	63.0793	63.0793
3926	74.7625	75.0116	75.3635	62.96	62.96	62.96
3927	74.5347	74.7838	75.1357	62.8422	62.8422	62.8422
3928	74.3153	74.5644	74.9163	62.7258	62.7258	62.7258
3929	74.1011	74.3502	74.7021	62.6106	62.6106	62.6106
3930	73.8905	74.1396	74.4915	62.4965	62.4965	62.4965
3931	73.6825	73.9316	74.2835	62.3835	62.3835	62.3835
3932	73.4766	73.7257	74.0776	62.2716	62.2716	62.2716
3933	73.2724	73.5216	73.8734	62.1607	62.1607	62.1607
3934	73.0699	73.3191	73.6709	62.0509	62.0509	62.0509
3935	72.869	73.1181	73.47	61.9421	61.9421	61.9421
3936	72.6696	72.9187	73.2706	61.8343	61.8343	61.8343
3937	72.4716	72.7207	73.0726	61.7275	61.7275	61.7275
3938	72.1647	72.252	72.3753	61.6216	61.6216	61.6216
3939	72.3622	73.1216	74.1941	61.5173	61.5173	61.5173
3940	72.4004	73.1598	74.2323	61.4139	61.4139	61.4139
3941	72.3527	73.112	74.1846	61.3115	61.3115	61.3115
3942	72.2588	73.0181	74.0907	61.2101	61.2101	61.2101
3943	72.2115	73.0751	74.2949	61.1098	61.1098	61.1098
3944	71.7034	71.8525	72.3044	61.0097	61.0097	61.0097
3945	71.3424	71.5915	71.9434	60.9106	60.9106	60.9106
3946	71.0618	71.3109	71.6628	60.8125	60.8125	60.8125
3947	70.8254	71.0745	71.4264	60.7152	60.7152	60.7152
3948	70.6136	70.8627	71.2146	60.6188	60.6188	60.6188
3949	70.4158	70.6649	71.0168	60.5234	60.5234	60.5234



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011732

3950	70.2261	70.4752	70.8271	60.4288	60.4288	60.4288
3951	70.0414	70.2905	70.6424	60.3351	60.3351	60.3351
3952	69.86	70.1091	70.461	60.2423	60.2423	60.2423
3953	69.681	69.9301	70.282	60.1503	60.1503	60.1503
3954	69.5039	69.753	70.1049	60.0592	60.0592	60.0592
3955	69.3284	69.5775	69.9293	59.9689	59.9689	59.9689
3956	69.1543	69.4034	69.7552	59.8795	59.8795	59.8795
3957	68.9815	69.2306	69.5825	59.7909	59.7909	59.7909
3958	68.81	69.0592	69.411	59.7031	59.7031	59.7031
3959	68.6398	68.889	69.2408	59.6161	59.6161	59.6161
3960	68.5618	69.0602	69.4341	59.8474	59.8474	61.2197
3961	68.5152	69.1413	69.6111	60.0223	60.0223	61.7464
3962	68.4897	69.2437	69.8093	60.1741	60.1741	62.2499
3963	68.4799	69.3616	70.0231	60.3193	60.3193	62.747
3964	68.4619	69.4318	70.1595	60.4412	60.4412	63.1118
3965	70.5857	73.0197	80.2987	59.8841	59.8841	59.8841
3966	71.4807	73.315	80.1128	59.5641	59.5641	59.5641
3967	71.7853	73.2089	79.6556	59.3634	59.3634	59.3634
3968	71.9105	73.2335	79.5409	59.2231	59.2231	59.2231
3969	71.9383	73.166	79.3416	59.1135	59.1135	59.1135
3970	71.8933	72.9964	78.9836	59.0196	59.0196	59.0196
3971	71.7955	72.7572	78.5229	58.934	58.934	58.934
3972	71.6697	72.499	78.0574	58.8527	58.8527	58.8527
3973	71.5498	72.2816	77.8952	58.774	58.774	58.774
3974	71.497	72.2212	77.8534	58.697	58.697	58.697
3975	71.4807	72.1977	77.8471	58.6212	58.6212	58.6212
3976	71.4838	72.1942	77.8597	58.5463	58.5463	58.5463
3977	71.4975	72.2017	77.682	58.4724	58.4724	58.4724
3978	71.5141	72.2142	77.697	58.3991	58.3991	58.3991
3979	71.5324	72.2285	77.7137	58.3266	58.3266	58.3266
3980	71.5516	72.2437	77.7313	58.2548	58.2548	58.2548
3981	71.5713	72.2595	77.7494	58.1837	58.1837	58.1837
3982	71.5913	72.2756	77.7679	58.1133	58.1133	58.1133
3983	71.6087	72.2906	77.7735	58.0435	58.0435	58.0435
3984	71.6242	72.304	77.7759	57.9744	57.9744	57.9744
3985	71.6386	72.3183	77.7774	57.906	57.906	57.906
3986	71.6522	72.3279	77.7785	57.8382	57.8382	57.8382
3987	72.152	84.391	74.6958	63.3718	63.3718	83.9457
3988	72.4339	84.7326	74.9285	66.4648	66.4648	87.0564
3989	72.56	84.6579	74.9997	68.2481	68.2481	88.6064
3990	72.6818	84.4106	75.5605	69.2638	69.2638	89.0689
3991	72.9643	84.3347	77.0374	69.7903	69.7903	88.7548
3992	73.2379	84.3956	77.9682	70.0377	70.0377	88.1057
3993	73.9351	85.7044	80.6677	70.1291	70.1291	87.2974
3994	74.4323	85.9874	81.5771	70.1251	70.1251	86.3903
3995	74.572	85.375	81.3626	70.0507	70.0507	85.3888
3996	74.6345	84.8639	81.5903	69.9171	69.9171	84.2957
3997	74.9869	85.902	82.5081	69.7421	69.7421	83.164
3998	75.1595	85.8855	82.6394	69.5165	69.5165	81.932
3999	75.2919	85.7163	83.2055	69.253	69.253	80.8659
4000	75.5169	85.8988	84.2756	68.9638	68.9638	79.3978
4001	75.8387	86.5361	85.3891	68.6548	68.6548	78.1341
4002	76.1256	87.061	86.2598	68.2978	68.2978	76.7184
4003	76.3899	87.5024	87.1707	67.9144	67.9144	75.3079
4004	76.0496	84.9291	85.4566	66.9615	66.9615	70.9897

*[Handwritten signature]*

*[Handwritten mark]*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011733

ALSTOM

4005	75.133	81.3413	82.6743	65.5434	65.5434	65.5434
4006	74.699	82.2662	83.4449	64.8096	64.8096	64.8096
4007	72.7277	72.7277	72.7277	64.4267	64.4267	64.4267
4008	71.6291	71.6291	71.6291	64.2263	64.2263	64.2263
4009	71.0154	71.0154	71.0154	64.12	64.12	64.12
4010	70.671	70.671	70.671	64.0624	64.0624	64.0624
4011	70.4764	70.4764	70.4764	64.03	64.03	64.03
4012	70.3649	70.3649	70.3649	64.0104	64.0104	64.0104
4013	70.2997	70.2997	70.2997	63.9976	63.9976	63.9976
4014	70.2601	70.2601	70.2601	63.9883	63.9883	63.9883
4015	70.2348	70.2348	70.2348	63.9807	63.9807	63.9807
4016	70.2175	70.2175	70.2175	63.9741	63.9741	63.9741
4017	70.2045	70.2045	70.2045	63.9679	63.9679	63.9679
4018	70.194	70.194	70.194	63.962	63.962	63.962
4019	70.1849	70.1849	70.1849	63.9562	63.9562	63.9562
4020	70.1765	70.1765	70.1765	63.9505	63.9505	63.9505
4021	70.1686	70.1686	70.1686	63.9448	63.9448	63.9448
4022	70.1609	70.1609	70.1609	63.9391	63.9391	63.9391
4023	70.1533	70.1533	70.1533	63.9335	63.9335	63.9335
4024	73.4713	89.2755	90.4884	63.9324	63.9324	63.9324
4025	75.3937	88.6265	90.4885	63.9314	63.9314	63.9314
4026	76.5389	87.0479	89.8841	63.9303	63.9303	63.9303
4027	77.2678	86.7072	90.2555	63.9292	63.9292	63.9292
4028	77.7515	86.2167	90.6477	63.8944	63.8944	63.8944
4029	78.0916	85.692	90.9743	63.8162	63.8162	63.8162
4030	78.3673	85.2285	91.248	63.7169	63.7169	63.7169
4031	78.6066	84.747	91.4963	63.6075	63.6075	63.6075
4032	78.7896	84.1176	91.683	63.4935	63.4935	63.4935
4033	78.9803	83.732	91.6786	63.3779	63.3779	63.3779
4034	79.1433	83.6093	91.5116	63.262	63.262	63.262
4035	79.5704	84.1431	92.6761	63.1469	63.1469	63.1469
4036	80.069	84.8638	93.7123	63.0328	63.0328	63.0328
4037	80.0361	83.8673	92.2424	62.919	62.919	62.919
4038	79.829	83.1321	91.0523	62.8059	62.8059	62.8059
4038	79.7426	82.9046	90.7337	62.6938	62.6938	62.6938
4040	79.7268	82.7684	90.5197	62.5827	62.5827	62.5827
4041	79.7816	82.7844	90.5114	62.4727	62.4727	62.4727
4042	79.8745	82.8402	90.5439	62.3637	62.3637	62.3637
4043	79.7851	82.3659	89.7828	62.2555	62.2555	62.2555
4044	79.4928	81.53	88.4906	62.148	62.148	62.148
4045	79.0859	80.6008	87.1423	62.041	62.041	62.041
4046	78.7922	80.1713	86.5564	61.935	61.935	61.935
4047	78.5794	79.8706	86.1339	61.8299	61.8299	61.8299
4048	78.4091	79.6152	85.7608	61.7258	61.7258	61.7258
4049	78.2344	79.3126	85.2808	61.6225	61.6225	61.6225
4050	78.0486	78.9912	84.727	61.52	61.52	61.52
4051	77.8542	78.6645	84.1931	61.4184	61.4184	61.4184
4052	77.6899	78.4203	83.8374	61.3177	61.3177	61.3177
4053	77.5935	78.3157	83.7526	61.218	61.218	61.218
4054	77.5342	78.2484	83.7047	61.1192	61.1192	61.1192
4055	77.4955	78.2018	83.6772	61.0214	61.0214	61.0214
4056	77.4657	78.1657	83.6486	60.9245	60.9245	60.9245
4057	77.8855	90.1706	80.3556	66.4243	66.4243	66.9832
4058	78.0519	90.0081	80.4686	69.3685	69.3685	69.5731
4059	78.2655	89.8848	81.5111	70.9232	70.9232	90.4892



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011734

ALSTOM

4060	78.5379	89.8721	82.7227	71.7341	71.7341	90.546
4061	78.7782	89.9269	83.5363	72.1468	72.1468	90.1768
4062	79.3432	90.8995	85.7665	72.3254	72.3254	89.5062
4063	77.9526	80.4345	81.2283	69.6283	69.6283	78.1262
4064	77.1444	79.5906	80.4154	68.2875	68.2875	74.7197
4065	76.652	79.0634	79.9186	67.6271	67.6271	73.9949
4066	76.3506	78.8285	79.6258	67.3547	67.3547	73.8453
4067	76.122	78.5025	79.3846	67.202	67.202	73.5126
4068	75.9226	78.1197	79.1837	67.0539	67.0539	72.9728
4069	75.763	77.9339	79.0262	66.9848	66.9848	72.8423
4070	75.6251	77.7698	78.8904	66.9542	66.9542	72.7503
4071	75.4992	77.6177	78.7668	66.9419	66.9419	72.6764
4072	75.3796	77.4691	78.6494	66.936	66.936	72.6027
4073	75.2828	77.4941	78.5428	67.0199	67.0199	72.9721
4074	75.184	77.3953	78.444	67.0823	67.0823	73.0344
4075	75.0845	77.2958	78.3445	67.1335	67.1335	73.0857
4076	74.9849	77.1962	78.2449	67.179	67.179	73.1312
4077	74.8856	77.0968	78.1456	67.2215	67.2215	73.1736
4078	74.7867	76.998	78.0467	67.2622	67.2622	73.2143
4079	74.6885	76.8997	77.9485	67.3018	67.3018	73.254
4080	74.5908	76.8021	77.8508	67.3407	67.3407	73.2929
4081	74.4939	76.7052	77.7539	67.3791	67.3791	73.3313
4082	74.3976	76.6089	77.6576	67.4171	67.4171	73.3692
4083	74.302	76.5133	77.562	67.4546	67.4546	73.4067
4084	74.2071	76.4184	77.4671	67.4917	67.4917	73.4439
4085	74.1129	76.3241	77.3729	67.5285	67.5285	73.4806
4086	74.0193	76.2306	77.2793	67.5649	67.5649	73.517
4087	73.9264	76.1377	77.1864	67.601	67.601	73.5531
4088	73.8342	76.0455	77.0942	67.6367	67.6367	73.5888
4089	73.7427	75.9539	77.0027	67.672	67.672	73.6242
4090	73.6697	76.0051	76.9265	67.7757	67.7757	74.003
4091	73.5995	75.9833	76.8626	67.8718	67.8718	74.1883
4092	73.5304	75.9552	76.7987	67.9618	67.9618	74.3543
4093	73.4533	75.8722	76.7208	68.0276	68.0276	74.4094
4094	73.3788	75.8264	76.65	68.0972	68.0972	74.5318
4095	74.584	76.7341	83.0408	66.6463	66.6463	66.6463
4096	75.2818	77.0854	83.8585	65.85	65.85	65.85
4097	75.4688	76.8726	83.2919	65.3829	65.3829	65.3829
4098	75.5094	76.801	83.0649	65.0818	65.0818	65.0818
4099	75.47	76.6545	82.769	64.8647	64.8647	64.8647
4100	75.8449	87.1102	80.2426	69.6367	69.6367	88.1583
4101	76.3028	87.656	81.7778	72.0096	72.0096	89.6986
4102	77.1239	89.1569	84.6533	73.1589	73.1589	89.9952
4103	77.3997	88.6954	84.3355	73.6668	73.6668	89.6291
4104	77.4552	88.0357	84.2829	73.8287	73.8287	88.8691
4105	77.5742	88.0091	84.6988	73.7942	73.7942	87.886
4106	77.8939	88.8662	85.4819	73.8428	73.8428	86.7707
4107	77.9738	88.5864	85.4076	73.4026	73.4026	85.5146
4108	78.1111	88.4728	86.2829	73.112	73.112	84.2283
4109	78.3514	88.8293	87.35	72.7906	72.7906	82.9412
4110	78.6449	89.4146	88.3699	72.4355	72.4355	81.5987
4111	78.9074	89.9068	89.223	72.0336	72.0336	80.1414
4112	79.1488	90.3095	90.1278	71.6087	71.6087	78.6979
4113	78.4515	88.0211	86.9013	70.3041	70.3041	72.697
4114	77.8542	84.2685	85.5554	69.0662	69.0662	69.0662

Handwritten signature or initials in blue ink.

Handwritten mark or signature in red ink.



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011705

4115	77.2863	85.2598	86.3922	68.425	68.425	68.425
4116	75.3448	75.3448	75.3448	68.0895	68.0895	68.0895
4117	74.2624	74.2624	74.2624	67.9131	67.9131	67.9131
4118	73.6574	73.6574	73.6574	67.8188	67.8188	67.8188
4119	73.3176	73.3176	73.3176	67.7669	67.7669	67.7669
4120	73.1251	73.1251	73.1251	67.7369	67.7369	67.7369
4121	73.0146	73.0146	73.0146	67.7183	67.7183	67.7183
4122	72.9495	72.9495	72.9495	67.7055	67.7055	67.7055
4123	72.9098	72.9098	72.9098	67.6957	67.6957	67.6957
4124	72.8841	72.8841	72.8841	67.6874	67.6874	67.6874
4125	72.8662	72.8662	72.8662	67.68	67.68	67.68
4126	72.8526	72.8526	72.8526	67.673	67.673	67.673
4127	72.8415	72.8415	72.8415	67.6662	67.6662	67.6662
4128	72.8317	72.8317	72.8317	67.6595	67.6595	67.6595
4129	72.8226	72.8226	72.8226	67.6528	67.6528	67.6528
4130	72.814	72.814	72.814	67.6462	67.6462	67.6462
4131	72.8056	72.8056	72.8056	67.6397	67.6397	67.6397
4132	72.7973	72.7973	72.7973	67.6331	67.6331	67.6331
4133	76.1079	91.1438	92.5506	67.631	67.631	67.631
4134	78.0256	90.4901	92.546	67.6289	67.6289	67.6289
4135	79.1722	89.3615	92.2703	67.6268	67.6268	67.6268
4136	79.9029	89.0269	92.8488	67.6247	67.6247	67.6247
4137	80.3819	88.5866	93.2721	67.5795	67.5795	67.5795
4138	80.7114	88.0656	93.5851	67.4789	67.4789	67.4789
4139	80.9792	87.6326	93.8651	67.3512	67.3512	67.3512
4140	81.1923	87.0898	94.0831	67.2106	67.2106	67.2106
4141	81.3521	86.4375	94.2468	67.0643	67.0643	67.0643
4142	81.5134	86.1937	94.1271	66.9158	66.9158	66.9158
4143	81.7221	86.1654	94.1652	66.7871	66.7871	66.7871
4144	82.2022	88.8297	95.5885	66.6192	66.6192	66.6192
4145	82.5137	88.8723	95.7125	66.4723	66.4723	66.4723
4146	82.3761	85.9935	94.1801	66.3261	66.3261	66.3261
4147	82.1998	85.4599	93.3524	66.1809	66.1809	66.1809
4148	82.1223	85.2444	93.0477	66.037	66.037	66.037
4149	82.1147	85.1449	92.8891	65.8945	65.8945	65.8945
4150	82.166	85.1587	92.8792	65.7533	65.7533	65.7533
4151	82.249	85.2065	92.905	65.6134	65.6134	65.6134
4152	82.093	84.5758	91.8941	65.4746	65.4746	65.4746
4153	81.7727	83.747	90.6571	65.3367	65.3367	65.3367
4154	81.361	82.8505	89.3714	65.1998	65.1998	65.1998
4155	81.0715	82.4524	88.8401	65.0641	65.0641	65.0641
4156	80.8578	82.1567	88.4308	64.9296	64.9296	64.9296
4157	80.6841	81.904	88.0687	64.7963	64.7963	64.7963
4158	80.5127	81.6242	87.6245	64.6642	64.6642	64.6642
4159	80.3291	81.3147	87.1179	64.5332	64.5332	64.5332
4160	80.1363	80.9992	86.6102	64.4033	64.4033	64.4033
4161	79.9363	80.6794	86.103	64.2746	64.2746	64.2746
4162	79.8064	80.5332	85.959	64.1471	64.1471	64.1471
4163	79.7212	80.4406	85.8843	64.0208	64.0208	64.0208
4164	79.6605	80.3727	85.8338	63.8957	63.8957	63.8957
4165	79.6135	80.3185	85.7968	63.7719	63.7719	63.7719
4166	79.5714	80.2713	85.7542	63.6491	63.6491	63.6491
4167	79.5319	80.227	85.7128	63.5276	63.5276	63.5276
4168	79.4941	80.1843	85.673	63.4072	63.4072	63.4072
4169	79.4573	80.1428	85.6344	63.288	63.288	63.288

*Handwritten signature*

*Handwritten mark*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011736



4170	79.419	80.1012	85.5858	63.1699	63.1699	63.1699
4171	79.3785	80.0582	85.5299	63.0529	63.0529	63.0529
4172	79.3369	80.0142	85.4733	62.937	62.937	62.937
4173	79.2948	79.9698	85.4165	62.8222	62.8222	62.8222
4174	78.8794	79.1443	82.7156	62.7077	62.7077	62.7077
4175	77.7085	78.1759	79.5847	62.5936	62.5936	62.5936
4176	77.1015	77.5689	78.9777	62.4804	62.4804	62.4804
4177	76.6925	77.1598	78.5687	62.3684	62.3684	62.3684
4178	76.3914	76.8587	78.2676	62.2574	62.2574	62.2574
4179	76.1459	76.6172	78.0072	62.1474	62.1474	62.1474
4180	75.9144	76.4148	77.6867	62.0384	62.0384	62.0384
4181	75.6921	76.2288	77.3807	61.9305	61.9305	61.9305
4182	75.4947	76.0266	77.1945	61.8235	61.8235	61.8235
4183	75.2993	75.8544	76.9518	61.7175	61.7175	61.7175
4184	75.1037	75.6992	76.6979	61.6125	61.6125	61.6125
4185	74.9018	75.5276	76.4178	61.5085	61.5085	61.5085
4186	74.4955	74.8294	75.3045	61.4051	61.4051	61.4051
4187	76.1352	88.2838	78.7098	66.8541	66.8841	87.3923
4188	77.0298	89.3	79.5583	69.954	69.954	90.5474
4189	77.5068	89.8144	79.9905	71.7841	71.7841	92.3752
4190	77.7133	89.7517	80.1433	72.8939	72.8939	93.1885
4191	77.8967	89.5826	80.9187	73.5421	73.5421	93.2538
4192	78.1791	89.5354	82.2957	73.8747	73.8747	92.7797
4193	78.4319	89.5855	83.1751	74.0186	74.0186	92.0692
4194	78.5774	87.8639	84.2863	73.4271	73.4271	88.5608
4195	76.5235	76.9614	77.29	69.67	69.67	70.8759
4196	75.2887	75.671	75.9577	67.6945	67.6945	68.747
4197	74.6306	75.2118	75.6479	66.7749	66.7749	68.3752
4198	74.1875	74.7687	75.2047	66.267	66.267	67.8673
4199	73.8615	74.4427	74.8788	65.9664	65.9664	67.5667
4200	73.8529	74.6698	75.8237	65.4006	65.4006	65.4006
4201	73.877	74.8397	76.1935	65.0496	65.0496	65.0496
4202	73.9032	74.9761	76.5026	64.8071	64.8071	64.8071
4203	73.8635	74.9282	76.4914	64.6198	64.6198	64.6198
4204	73.7888	74.8453	76.4452	64.4608	64.4608	64.4608
4205	73.4748	74.2548	75.3565	64.3163	64.3163	64.3163
4206	73.2348	74.0148	75.1185	64.1799	64.1799	64.1799
4207	73.0354	73.8153	74.917	64.0481	64.0481	64.0481
4208	72.8584	73.6384	74.7401	63.9193	63.9193	63.9193
4209	72.6941	73.4741	74.5758	63.7925	63.7925	63.7925
4210	72.5373	73.3172	74.4189	63.6673	63.6673	63.6673
4211	72.4793	73.3976	74.6948	63.5436	63.5436	63.5436
4212	72.4938	73.5873	75.091	63.4214	63.4214	63.4214
4213	72.4538	73.5172	75.0859	63.3003	63.3003	63.3003
4214	72.385	73.4384	75.052	63.1806	63.1806	63.1806
4215	72.3013	73.3448	75.0034	63.0617	63.0617	63.0617
4216	72.2105	73.2439	74.9475	62.9441	62.9441	62.9441
4217	72.1165	73.1399	74.8885	62.8277	62.8277	62.8277
4218	71.9862	73.0467	74.6285	62.7123	62.7123	62.7123
4219	71.8643	72.923	74.5131	62.5979	62.5979	62.5979
4220	71.7475	72.8043	74.4027	62.4847	62.4847	62.4847
4221	71.6272	72.691	74.2583	62.3725	62.3725	62.3725
4222	71.5043	72.5782	74.1069	62.2613	62.2613	62.2613
4223	73.3172	75.6941	82.9272	62.1538	62.1538	62.1538
4224	74.7724	86.7135	82.2306	66.4335	66.4335	83.1531

*Handwritten signature and initials in blue and red ink.*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011797

ALSTOM

4225	75.3931	86.5523	82.2145	68.5212	68.5212	84.3323
4226	75.6437	86.0879	82.4941	69.481	69.481	84.3393
4227	75.9515	86.5237	83.1889	69.8588	69.8588	83.7592
4228	76.2978	87.1937	83.8548	69.9243	69.9243	82.8478
4229	76.4126	86.942	83.894	69.8065	69.8065	81.7159
4230	76.6007	86.9203	84.9463	69.5915	69.5915	80.5081
4231	76.8881	87.4308	86.0483	69.3238	69.3238	79.2836
4232	77.1935	88.0108	87.0359	69.0035	69.0035	77.9537
4233	77.4664	88.4982	87.9154	68.635	68.635	76.5379
4234	77.6885	88.7605	88.6979	68.2115	68.2115	74.9771
4235	78.788	83.476	84.5934	66.7379	66.7379	68.03
4236	76.0963	82.984	84.2398	65.6683	65.6683	65.6683
4237	75.7874	84.0341	85.1356	65.1144	65.1144	65.1144
4238	73.8744	73.8744	73.8744	64.8244	64.8244	64.8244
4239	72.808	72.808	72.808	64.6719	64.6719	64.6719
4240	72.212	72.212	72.212	64.5905	64.5905	64.5905
4241	71.8773	71.8773	71.8773	64.5456	64.5456	64.5456
4242	71.688	71.688	71.688	64.5198	64.5198	64.5198
4243	71.5793	71.5793	71.5793	64.5036	64.5036	64.5036
4244	71.5154	71.5154	71.5154	64.4926	64.4926	64.4926
4245	71.4765	71.4765	71.4765	64.4841	64.4841	64.4841
4246	71.4515	71.4515	71.4515	64.477	64.477	64.477
4247	71.4341	71.4341	71.4341	64.4706	64.4706	64.4706
4248	71.421	71.421	71.421	64.4645	64.4645	64.4645
4249	71.4103	71.4103	71.4103	64.4587	64.4587	64.4587
4250	71.4009	71.4009	71.4009	64.4529	64.4529	64.4529
4251	71.3922	71.3922	71.3922	64.4472	64.4472	64.4472
4252	71.384	71.384	71.384	64.4415	64.4415	64.4415
4253	71.3759	71.3759	71.3759	64.4358	64.4358	64.4358
4254	71.368	71.368	71.368	64.4302	64.4302	64.4302
4255	71.3602	71.3602	71.3602	64.4245	64.4245	64.4245
4256	71.3524	71.3524	71.3524	64.4188	64.4188	64.4188
4257	71.3447	71.3447	71.3447	64.4132	64.4132	64.4132
4258	71.3369	71.3369	71.3369	64.4075	64.4075	64.4075
4259	71.3292	71.3292	71.3292	64.4019	64.4019	64.4019
4260	71.3214	71.3214	71.3214	64.3962	64.3962	64.3962
4261	71.3137	71.3137	71.3137	64.3906	64.3906	64.3906
4262	71.306	71.306	71.306	64.3849	64.3849	64.3849
4263	71.2983	71.2983	71.2983	64.3793	64.3793	64.3793
4264	71.2906	71.2906	71.2906	64.3737	64.3737	64.3737
4265	71.2828	71.2828	71.2828	64.368	64.368	64.368
4266	71.2751	71.2751	71.2751	64.3624	64.3624	64.3624
4267	71.2674	71.2674	71.2674	64.3567	64.3567	64.3567
4268	71.2597	71.2597	71.2597	64.3511	64.3511	64.3511
4269	71.252	71.252	71.252	64.3455	64.3455	64.3455
4270	71.2443	71.2443	71.2443	64.3399	64.3399	64.3399
4271	71.2366	71.2366	71.2366	64.3342	64.3342	64.3342
4272	71.2289	71.2289	71.2289	64.3286	64.3286	64.3286
4273	71.2212	71.2212	71.2212	64.323	64.323	64.323
4274	71.2135	71.2135	71.2135	64.3174	64.3174	64.3174
4275	71.2058	71.2058	71.2058	64.3117	64.3117	64.3117
4276	71.1981	71.1981	71.1981	64.3061	64.3061	64.3061
4277	71.1904	71.1904	71.1904	64.3005	64.3005	64.3005
4278	71.1827	71.1827	71.1827	64.2949	64.2949	64.2949
4279	71.175	71.175	71.175	64.2893	64.2893	64.2893



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011738



4280	71.1673	71.1673	71.1673	64.2837	64.2837	64.2837
4281	71.1598	71.1598	71.1598	64.2781	64.2781	64.2781
4282	71.152	71.152	71.152	64.2724	64.2724	64.2724
4283	71.1443	71.1443	71.1443	64.2668	64.2668	64.2668
4284	71.1366	71.1366	71.1366	64.2612	64.2612	64.2612
4285	71.1289	71.1289	71.1289	64.2556	64.2556	64.2556
4286	71.1212	71.1212	71.1212	64.25	64.25	64.25
4287	71.1136	71.1136	71.1136	64.2444	64.2444	64.2444
4288	71.1059	71.1059	71.1059	64.2388	64.2388	64.2388
4289	71.0982	71.0982	71.0982	64.2333	64.2333	64.2333
4290	71.0906	71.0906	71.0906	64.2277	64.2277	64.2277
4291	71.0829	71.0829	71.0829	64.2221	64.2221	64.2221
4292	71.0752	71.0752	71.0752	64.2165	64.2165	64.2165
4293	71.0676	71.0676	71.0676	64.2109	64.2109	64.2109
4294	71.0599	71.0599	71.0599	64.2053	64.2053	64.2053
4295	71.0523	71.0523	71.0523	64.1997	64.1997	64.1997
4296	71.0446	71.0446	71.0446	64.1942	64.1942	64.1942
4297	71.037	71.037	71.037	64.1886	64.1886	64.1886
4298	71.0293	71.0293	71.0293	64.183	64.183	64.183
4299	71.0217	71.0217	71.0217	64.1774	64.1774	64.1774
4300	71.014	71.014	71.014	64.1719	64.1719	64.1719
4301	71.0064	71.0064	71.0064	64.1663	64.1663	64.1663
4302	70.9987	70.9987	70.9987	64.1607	64.1607	64.1607
4303	70.9911	70.9911	70.9911	64.1552	64.1552	64.1552
4304	70.9835	70.9835	70.9835	64.1496	64.1496	64.1496
4305	70.9758	70.9758	70.9758	64.144	64.144	64.144
4306	70.9682	70.9682	70.9682	64.1385	64.1385	64.1385
4307	70.9605	70.9605	70.9605	64.1329	64.1329	64.1329
4308	70.9529	70.9529	70.9529	64.1273	64.1273	64.1273
4309	70.9453	70.9453	70.9453	64.1218	64.1218	64.1218
4310	70.9377	70.9377	70.9377	64.1162	64.1162	64.1162
4311	70.93	70.93	70.93	64.1107	64.1107	64.1107
4312	70.9224	70.9224	70.9224	64.1051	64.1051	64.1051
4313	70.9148	70.9148	70.9148	64.0996	64.0996	64.0996
4314	70.9072	70.9072	70.9072	64.094	64.094	64.094
4315	70.8996	70.8996	70.8996	64.0885	64.0885	64.0885
4316	70.892	70.892	70.892	64.083	64.083	64.083
4317	70.8843	70.8843	70.8843	64.0774	64.0774	64.0774
4318	70.8767	70.8767	70.8767	64.0719	64.0719	64.0719
4319	70.8691	70.8691	70.8691	64.0663	64.0663	64.0663
4320	70.8615	70.8615	70.8615	64.0608	64.0608	64.0608
4321	70.8539	70.8539	70.8539	64.0553	64.0553	64.0553
4322	70.8463	70.8463	70.8463	64.0497	64.0497	64.0497
4323	70.8387	70.8387	70.8387	64.0442	64.0442	64.0442
4324	70.8311	70.8311	70.8311	64.0387	64.0387	64.0387
4325	70.8235	70.8235	70.8235	64.0332	64.0332	64.0332
4326	70.8159	70.8159	70.8159	64.0276	64.0276	64.0276
4327	70.8083	70.8083	70.8083	64.0221	64.0221	64.0221
4328	70.8007	70.8007	70.8007	64.0166	64.0166	64.0166
4329	70.7932	70.7932	70.7932	64.0111	64.0111	64.0111
4330	70.7856	70.7856	70.7856	64.0056	64.0056	64.0056
4331	70.778	70.778	70.778	64	64	64
4332	70.7704	70.7704	70.7704	63.9945	63.9945	63.9945
4333	70.7628	70.7628	70.7628	63.989	63.989	63.989
4334	70.7552	70.7552	70.7552	63.9835	63.9835	63.9835



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011789

ALSTOM

4335	70.7477	70.7477	70.7477	63.978	63.978	63.978
4336	70.7401	70.7401	70.7401	63.9725	63.9725	63.9725
4337	70.7325	70.7325	70.7325	63.967	63.967	63.967
4338	70.725	70.725	70.725	63.9615	63.9615	63.9615
4339	70.7174	70.7174	70.7174	63.956	63.956	63.956
4340	70.7098	70.7098	70.7098	63.9505	63.9505	63.9505
4341	70.7023	70.7023	70.7023	63.945	63.945	63.945
4342	70.6947	70.6947	70.6947	63.9395	63.9395	63.9395
4343	70.6871	70.6871	70.6871	63.934	63.934	63.934
4344	70.6796	70.6796	70.6796	63.9285	63.9285	63.9285
4345	70.672	70.672	70.672	63.923	63.923	63.923
4346	70.6645	70.6645	70.6645	63.9175	63.9175	63.9175
4347	70.6569	70.6569	70.6569	63.912	63.912	63.912
4348	70.6494	70.6494	70.6494	63.9065	63.9065	63.9065
4349	70.6418	70.6418	70.6418	63.9011	63.9011	63.9011
4350	70.6343	70.6343	70.6343	63.8955	63.8955	63.8955
4351	70.6267	70.6267	70.6267	63.8901	63.8901	63.8901
4352	70.6192	70.6192	70.6192	63.8845	63.8845	63.8845
4353	70.6116	70.6116	70.6116	63.8792	63.8792	63.8792
4354	70.6041	70.6041	70.6041	63.8737	63.8737	63.8737
4355	70.5966	70.5966	70.5966	63.8682	63.8682	63.8682
4356	70.589	70.589	70.589	63.8628	63.8628	63.8628
4357	70.5815	70.5815	70.5815	63.8573	63.8573	63.8573
4358	70.574	70.574	70.574	63.8518	63.8518	63.8518
4359	70.5664	70.5664	70.5664	63.8464	63.8464	63.8464
4360	70.5589	70.5589	70.5589	63.8409	63.8409	63.8409
4361	70.5514	70.5514	70.5514	63.8354	63.8354	63.8354
4362	70.5439	70.5439	70.5439	63.83	63.83	63.83
4363	70.5363	70.5363	70.5363	63.8245	63.8245	63.8245
4364	70.5288	70.5288	70.5288	63.8191	63.8191	63.8191
4365	70.5213	70.5213	70.5213	63.8136	63.8136	63.8136
4366	70.5138	70.5138	70.5138	63.8082	63.8082	63.8082
4367	70.5063	70.5063	70.5063	63.8027	63.8027	63.8027
4368	70.4988	70.4988	70.4988	63.7973	63.7973	63.7973
4369	70.4913	70.4913	70.4913	63.7918	63.7918	63.7918
4370	70.4838	70.4838	70.4838	63.7864	63.7864	63.7864
4371	70.4763	70.4763	70.4763	63.7809	63.7809	63.7809
4372	70.4688	70.4688	70.4688	63.7755	63.7755	63.7755
4373	70.4613	70.4613	70.4613	63.7701	63.7701	63.7701
4374	70.4538	70.4538	70.4538	63.7646	63.7646	63.7646
4375	70.4463	70.4463	70.4463	63.7592	63.7592	63.7592
4376	70.4388	70.4388	70.4388	63.7538	63.7538	63.7538
4377	70.4313	70.4313	70.4313	63.7483	63.7483	63.7483
4378	70.4238	70.4238	70.4238	63.7429	63.7429	63.7429
4379	70.4163	70.4163	70.4163	63.7375	63.7375	63.7375
4380	70.4088	70.4088	70.4088	63.7321	63.7321	63.7321
4381	70.4013	70.4013	70.4013	63.7266	63.7266	63.7266
4382	70.3938	70.3938	70.3938	63.7212	63.7212	63.7212
4383	70.3864	70.3864	70.3864	63.7158	63.7158	63.7158
4384	70.3789	70.3789	70.3789	63.7104	63.7104	63.7104
4385	70.3714	70.3714	70.3714	63.705	63.705	63.705
4386	70.3639	70.3639	70.3639	63.6995	63.6995	63.6995
4387	70.3565	70.3565	70.3565	63.6941	63.6941	63.6941
4388	70.349	70.349	70.349	63.6887	63.6887	63.6887
4389	70.3415	70.3415	70.3415	63.6833	63.6833	63.6833

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011790



4390	70.334	70.334	70.334	63.6779	63.6779	63.6779
4391	70.3266	70.3266	70.3266	63.6725	63.6725	63.6725
4392	70.3191	70.3191	70.3191	63.6671	63.6671	63.6671
4393	70.3117	70.3117	70.3117	63.6617	63.6617	63.6617
4394	70.3042	70.3042	70.3042	63.6563	63.6563	63.6563
4395	70.2967	70.2967	70.2967	63.6509	63.6509	63.6509
4396	70.2893	70.2893	70.2893	63.6455	63.6455	63.6455
4397	70.2818	70.2818	70.2818	63.6401	63.6401	63.6401
4398	70.2744	70.2744	70.2744	63.6347	63.6347	63.6347
4399	70.2669	70.2669	70.2669	63.6293	63.6293	63.6293
4400	70.2595	70.2595	70.2595	63.6239	63.6239	63.6239
4401	70.252	70.252	70.252	63.6185	63.6185	63.6185
4402	70.2446	70.2446	70.2446	63.6131	63.6131	63.6131
4403	70.2372	70.2372	70.2372	63.6078	63.6078	63.6078
4404	70.2297	70.2297	70.2297	63.6024	63.6024	63.6024
4405	70.2223	70.2223	70.2223	63.597	63.597	63.597
4406	70.2148	70.2148	70.2148	63.5916	63.5916	63.5916
4407	70.2074	70.2074	70.2074	63.5862	63.5862	63.5862
4408	70.2	70.2	70.2	63.5809	63.5809	63.5809
4409	70.1926	70.1926	70.1926	63.5755	63.5755	63.5755
4410	70.1851	70.1851	70.1851	63.5701	63.5701	63.5701
4411	70.1777	70.1777	70.1777	63.5648	63.5648	63.5648
4412	70.1703	70.1703	70.1703	63.5594	63.5594	63.5594
4413	70.1629	70.1629	70.1629	63.554	63.554	63.554
4414	70.1554	70.1554	70.1554	63.5487	63.5487	63.5487
4415	70.148	70.148	70.148	63.5433	63.5433	63.5433
4416	70.1406	70.1406	70.1406	63.5379	63.5379	63.5379
4417	70.1332	70.1332	70.1332	63.5326	63.5326	63.5326
4418	70.1258	70.1258	70.1258	63.5272	63.5272	63.5272

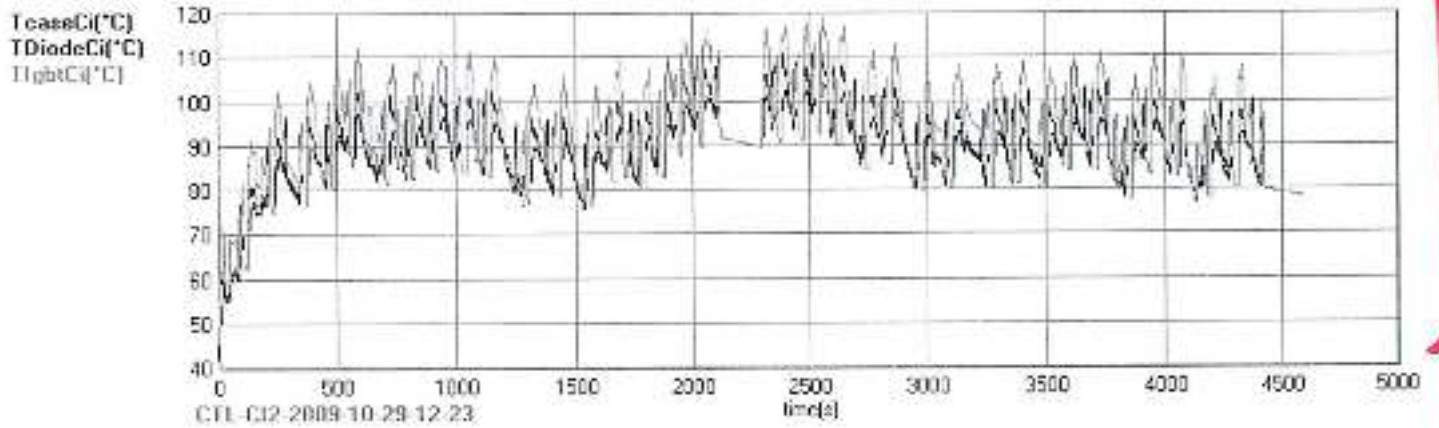




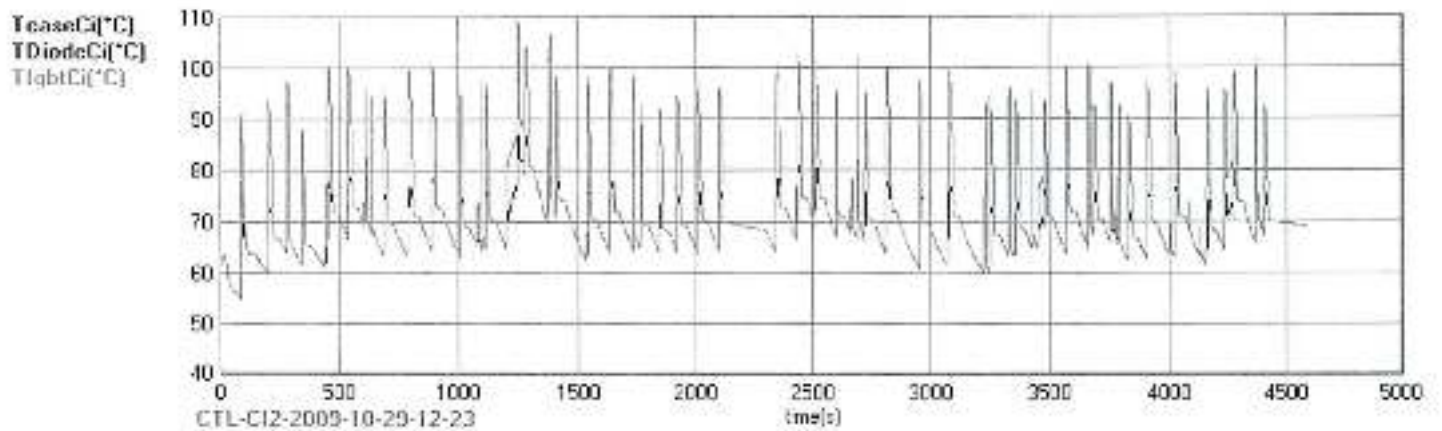
00011791

Inverter Temperature 1500V  
Air flow 2240m

7C 3M AW2 6p/m Degraded Mode 2Mout



Rheo temperature Temperature 1800V  
Air flow 2240m





7C 3M AW2 6p/m² Degraded Mode 2Mout

INV FZ1200R33KF2C\_Eupec\_1\_5.6

RHEO FD800R33KF2C\_Eupec\_1\_5.6

time(s)	TcaseCj(°C)	TDiodeCj(°C)	TigbtCj(°C)	TcaseCj(°C)	TDiodeCj(°C)	TigbtCj(°C)
Maximum	104.0	111.7	118.9	87.0	87.0	109.9

time(s)	TcaseCj(°C)	TDiodeCj(°C)	TigbtCj(°C)	TcaseCj(°C)	TDiodeCj(°C)	TigbtCj(°C)
0	42	45.4422	45.8639	42	42	42
1	44.4335	54.2418	55.838	55.6619	55.6619	55.6619
2	47.2526	59.916	63.7739	59.5644	59.5644	59.5644
3	48.9354	59.5548	63.9305	60.8575	60.8575	60.8575
4	49.998	59.6486	64.644	61.5143	61.5143	61.5143
5	50.7588	59.4922	65.0996	61.9198	61.9198	61.9198
6	51.383	59.4127	65.5841	62.1971	62.1971	62.1971
7	51.9345	59.2678	66.0044	62.403	62.403	62.403
8	52.4806	59.2629	66.5083	62.5747	62.5747	62.5747
9	52.9735	59.2562	67.0063	62.7242	62.7242	62.7242
10	53.4544	59.1542	67.4867	62.8442	62.8442	62.8442
11	53.9051	58.9939	67.8919	62.9368	62.9368	62.9368
12	54.3447	59.0475	68.2151	63.0125	63.0125	63.0125
13	54.784	59.3434	68.4382	63.0782	63.0782	63.0782
14	55.2865	59.7874	68.9893	63.1819	63.1819	63.1819
15	56.029	60.7333	70.5122	63.336	63.336	63.336
16	56.9082	61.8096	72.1896	63.5811	63.5811	63.5811
17	57.2486	61.5056	71.3286	63.6786	63.6786	63.6786
18	57.2874	60.9284	70.2247	63.6567	63.6567	63.6567
19	57.309	60.8086	69.6175	63.5833	63.5833	63.5833
20	57.4865	60.681	69.6254	63.5101	63.5101	63.5101
21	57.6961	60.8294	69.7125	63.4373	63.4373	63.4373
22	57.9782	61.0753	69.9095	63.3688	63.3688	63.3688
23	58.2894	61.396	70.1912	63.3072	63.3072	63.3072
24	58.6409	61.7369	70.4944	63.2516	63.2516	63.2516
25	58.944	61.9606	70.6218	63.1904	63.1904	63.1904
26	58.7899	61.7118	60.1931	62.5957	62.5957	62.5957
27	56.7419	66.7582	59.5964	62.0717	62.0717	62.0717
28	56.2544	66.2935	59.2455	61.5933	61.5933	61.5933
29	55.0632	66.1299	59.1903	61.156	61.156	61.156
30	54.9365	65.9681	58.8797	60.7373	60.7373	60.7373
31	54.9209	65.9654	58.939	60.3497	60.3497	60.3497
32	54.9601	66.0155	59.0319	59.9893	59.9893	59.9893
33	55.0132	66.0687	59.085	59.6507	59.6507	59.6507
34	55.0736	66.1291	59.1454	59.332	59.332	59.332
35	55.1378	66.1932	59.2095	59.0316	59.0316	59.0316
36	55.2037	66.2592	59.2755	58.7478	58.7478	58.7478
37	55.2704	66.3259	59.3422	58.4794	58.4794	58.4794
38	55.3373	66.3927	59.4091	58.2251	58.2251	58.2251
39	55.404	66.4595	59.4758	57.9838	57.9838	57.9838
40	55.4705	66.526	59.5423	57.7546	57.7546	57.7546
41	55.5366	66.5921	59.6084	57.5366	57.5366	57.5366
42	55.6023	66.6578	59.6741	57.3289	57.3289	57.3289
43	55.6624	66.6636	59.6816	57.1173	57.1173	57.1173
44	55.5465	66.527	59.2042	56.9129	56.9129	56.9129



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011733

45	55.5427	56.513	59.1404	56.7154	56.7154	56.7154
46	55.558	56.5262	59.1426	56.5261	56.5261	56.5261
47	55.5693	56.5278	59.0944	56.3426	56.3426	56.3426
48	57.7716	60.3053	68.5587	56.4207	56.4207	56.4207
49	58.8723	61.021	68.949	56.4693	56.4693	56.4693
50	59.3689	61.1441	68.7566	56.4907	56.4907	56.4907
51	59.5519	61.0011	68.3336	56.4896	56.4896	56.4896
52	59.7015	61.0974	68.329	56.4832	56.4832	56.4832
53	59.8312	61.1754	68.309	56.472	56.472	56.472
54	59.9482	61.2423	68.2811	56.4564	56.4564	56.4564
55	60.0561	61.3012	68.2471	56.4368	56.4368	56.4368
56	60.1565	61.3531	68.2071	56.4134	56.4134	56.4134
57	60.2346	61.3348	68.0937	56.3849	56.3849	56.3849
58	60.2982	61.2965	67.9616	56.3516	56.3516	56.3516
59	60.3458	61.2478	67.8206	56.3137	56.3137	56.3137
60	60.3846	61.1875	67.667	56.2715	56.2715	56.2715
61	60.4131	61.1156	67.5006	56.225	56.225	56.225
62	60.4508	61.0803	67.402	56.1762	56.1762	56.1762
63	60.5384	61.166	67.5022	56.1295	56.1295	56.1295
64	60.6531	61.2766	67.6299	56.0847	56.0847	56.0847
65	60.7824	61.4027	67.7725	56.0417	56.0417	56.0417
66	60.9198	61.5368	67.9233	56.0006	56.0006	56.0006
67	61.0605	61.6747	68.0761	55.9611	55.9611	55.9611
68	61.2005	61.8129	68.2184	55.9229	55.9229	55.9229
69	61.3396	61.9502	68.3598	55.8861	55.8861	55.8861
70	61.478	62.0868	68.5003	55.8505	55.8505	55.8505
71	61.6155	62.2227	68.6401	55.8162	55.8162	55.8162
72	61.7523	62.3578	68.7791	55.7829	55.7829	55.7829
73	61.8846	62.4883	68.9009	55.7505	55.7505	55.7505
74	62.0139	62.6157	69.0196	55.7188	55.7188	55.7188
75	62.1411	62.7411	69.1364	55.6878	55.6878	55.6878
76	62.2666	62.8649	69.2517	55.6576	55.6576	55.6576
77	62.3908	62.9874	69.3658	55.628	55.628	55.628
78	61.0588	61.5794	62.8907	55.4946	55.4946	55.4946
79	60.3142	60.8347	62.146	55.3646	55.3646	55.3646
80	59.8882	60.4087	61.72	55.2378	55.2378	55.2378
81	59.6794	60.1245	61.7053	55.1172	55.1172	55.1172
82	59.5546	59.9906	61.6115	55.0001	55.0001	55.0001
83	59.4757	59.9028	61.5638	54.8863	54.8863	54.8863
84	59.3942	59.8462	61.3993	54.7738	54.7738	54.7738
85	59.3308	59.7827	61.3358	54.6641	54.6641	54.6641
86	59.2772	59.7292	61.2822	54.5568	54.5568	54.5568
87	61.0139	72.3023	64.149	60.963	60.963	85.1431
88	62.0174	73.406	65.0786	64.1907	64.1907	88.4927
89	62.6071	74.0182	65.5873	66.0387	66.0387	90.3498
90	62.9328	74.1181	65.8255	67.2046	67.2046	91.1984
91	63.2273	74.1198	66.533	67.9672	67.9672	91.2518
92	63.7008	74.3902	68.1449	68.4549	68.4549	90.6729
93	64.1657	74.5939	69.3497	68.7842	68.7842	89.8693
94	65.1663	75.385	72.5412	69.0557	69.0557	89.006
95	65.9243	76.9645	73.8003	69.266	69.266	88.0859
96	66.2197	76.4651	73.8774	69.4035	69.4035	87.0767
97	66.4039	76.1193	73.956	69.478	69.478	85.9781
98	66.9384	77.236	75.3266	69.5271	69.5271	84.8753
99	67.2604	77.2253	75.6264	69.5138	69.5138	83.6537



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011734

100	67.5388	77.2485	76.3366	69.4555	69.4555	82.4125
101	67.9282	77.733	77.823	69.3718	69.3718	81.193
102	68.416	78.8634	78.9985	69.2694	69.2694	79.9938
103	68.8505	79.453	80.0711	69.1096	69.1096	78.6331
104	69.2504	80.3141	81.2901	68.9179	68.9179	77.307
105	68.9179	78.0891	79.4104	67.9769	67.9769	72.5819
106	67.8479	74.6097	76.0205	66.4094	66.4094	66.4094
107	67.323	75.575	76.6311	65.7112	65.7112	65.7112
108	65.0903	65.0903	65.0903	65.2895	65.2895	65.2895
109	63.8473	63.8473	63.8473	65.0363	65.0363	65.0363
110	63.1542	63.1542	63.1542	64.8583	64.8583	64.8583
111	62.7668	62.7668	62.7668	64.7142	64.7142	64.7142
112	62.5491	62.5491	62.5491	64.5861	64.5861	64.5861
113	62.4258	62.4258	62.4258	64.4662	64.4662	64.4662
114	62.3549	62.3549	62.3549	64.351	64.351	64.351
115	62.3131	62.3131	62.3131	64.2388	64.2388	64.2388
116	62.2875	62.2875	62.2875	64.129	64.129	64.129
117	62.2709	62.2709	62.2709	64.0213	64.0213	64.0213
118	62.2593	62.2593	62.2593	63.9154	63.9154	63.9154
119	62.2505	62.2505	62.2505	63.8114	63.8114	63.8114
120	62.2433	62.2433	62.2433	63.709	63.709	63.709
121	62.2369	62.2369	62.2369	63.6083	63.6083	63.6083
122	62.2309	62.2309	62.2309	63.5092	63.5092	63.5092
123	62.2253	62.2253	62.2253	63.4117	63.4117	63.4117
124	62.2198	62.2198	62.2198	63.3157	63.3157	63.3157
125	62.0535	62.4032	65.6439	63.3936	63.3936	63.3936
126	68.2931	62.4511	66.0588	63.4699	63.4699	63.4699
127	69.646	61.4488	65.4507	63.5444	63.5444	63.5444
128	70.5175	60.8295	65.4018	63.6179	63.6179	63.6179
129	71.127	60.4704	65.6623	63.6905	63.6905	63.6905
130	71.5987	60.1041	65.8895	63.7324	63.7324	63.7324
131	72.0011	79.8098	66.1608	63.7391	63.7391	63.7391
132	72.3695	79.527	66.4275	63.731	63.731	63.731
133	72.7323	79.3732	66.778	63.7175	63.7175	63.7175
134	73.0889	79.2041	67.1167	63.7021	63.7021	63.7021
135	73.4089	78.914	67.4124	63.6848	63.6848	63.6848
136	73.7075	78.603	67.6867	63.6665	63.6665	63.6665
137	74.0043	78.6617	67.8061	63.6478	63.6478	63.6478
138	74.302	78.8166	67.8885	63.629	63.629	63.629
139	74.7432	79.3043	68.6827	63.616	63.616	63.616
140	75.3834	80.1403	90.0734	63.6132	63.6132	63.6132
141	76.0132	80.7927	91.0822	63.6152	63.6152	63.6152
142	76.1897	80.343	90.0944	63.6033	63.6033	63.6033
143	76.0819	79.7059	88.9878	63.5789	63.5789	63.5789
144	75.9854	79.2942	68.31	63.5479	63.5479	63.5479
145	76.022	79.2593	88.2211	63.5162	63.5162	63.5162
146	76.1305	79.302	88.2139	63.4838	63.4838	63.4838
147	76.2782	79.3906	88.2578	63.4508	63.4508	63.4508
148	76.4607	79.5579	88.3936	63.4178	63.4178	63.4178
149	76.6863	79.7631	88.5731	63.385	63.385	63.385
150	76.8835	79.9799	88.7669	63.3525	63.3525	63.3525
151	77.1062	80.2023	88.9678	63.3201	63.3201	63.3201
152	77.3312	80.427	89.1715	63.288	63.288	63.288
153	77.5252	80.5688	89.2529	63.255	63.255	63.255
154	76.2642	78.0535	83.1384	63.1688	63.1688	63.1688

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2488



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011705



155	75.2928	76.8358	81.156	63.0723	63.0723	63.0723
156	74.7854	76.3444	80.7038	62.9775	62.9775	62.9775
157	74.8532	76.3392	81.0177	62.8886	62.8886	62.8886
158	74.8125	76.3165	81.0426	62.8013	62.8013	62.8013
159	74.8241	76.3475	81.1249	62.7157	62.7157	62.7157
160	74.8684	76.4144	81.2512	62.6318	62.6318	62.6318
161	74.7319	76.5004	81.3966	62.5496	62.5496	62.5496
162	74.8676	76.3337	80.9599	62.4643	62.4643	62.4643
163	74.8419	76.308	80.9342	62.3798	62.3798	62.3798
164	74.8371	76.3032	80.9294	62.2961	62.2961	62.2961
165	74.8435	76.3096	80.9359	62.2133	62.2133	62.2133
166	74.8561	76.3222	80.9484	62.1314	62.1314	62.1314
167	74.8718	76.3379	80.9642	62.0502	62.0502	62.0502
168	74.8892	76.3553	80.9816	61.9699	61.9699	61.9699
169	74.7075	76.3735	80.9998	61.8903	61.8903	61.8903
170	74.7261	76.3922	81.0185	61.8115	61.8115	61.8115
171	74.7449	76.411	81.0373	61.7335	61.7335	61.7335
172	74.7637	76.4298	81.0561	61.6563	61.6563	61.6563
173	74.7825	76.4486	81.0749	61.5798	61.5798	61.5798
174	74.8012	76.4673	81.0935	61.5041	61.5041	61.5041
175	74.8197	76.4858	81.1121	61.4292	61.4292	61.4292
176	74.8382	76.5043	81.1306	61.3549	61.3549	61.3549
177	74.8565	76.5226	81.1489	61.2814	61.2814	61.2814
178	74.8747	76.5408	81.1671	61.2087	61.2087	61.2087
179	74.767	76.3184	80.659	61.1326	61.1326	61.1326
180	74.6917	76.2264	80.5256	61.0568	61.0568	61.0568
181	74.6837	76.21	80.5377	60.9821	60.9821	60.9821
182	74.6137	76.1273	80.371	60.9071	60.9071	60.9071
183	74.9953	76.7895	82.136	60.8453	60.8453	60.8453
184	76.3369	78.9117	87.1998	60.818	60.818	60.818
185	76.9896	79.304	87.3722	60.7862	60.7862	60.7862
186	77.2505	79.2902	87.1261	60.7497	60.7497	60.7497
187	77.2817	79.0332	86.6256	60.7083	60.7083	60.7083
188	77.1721	78.8252	86.9851	60.6619	60.6619	60.6619
189	77.1096	78.5128	86.7583	60.6146	60.6146	60.6146
190	77.0878	78.419	86.5659	60.5664	60.5664	60.5664
191	77.0323	78.3294	86.3737	60.5171	60.5171	60.5171
192	76.9954	78.2362	85.174	60.4667	60.4667	60.4667
193	76.9492	78.1211	84.9473	60.4152	60.4152	60.4152
194	76.8764	77.9237	84.6329	60.362	60.362	60.362
195	76.7863	77.7113	84.3066	60.3071	60.3071	60.3071
196	76.684	77.4891	83.9707	60.2507	60.2507	60.2507
197	76.5724	77.2598	83.6308	60.1928	60.1928	60.1928
198	76.4915	77.1202	83.4462	60.1346	60.1346	60.1346
199	76.4629	77.0894	83.4313	60.0771	60.0771	60.0771
200	76.4629	77.0852	83.4446	60.0203	60.0203	60.0203
201	76.4784	77.0976	83.4733	59.9641	59.9641	59.9641
202	76.8054	86.1632	79.7421	66.327	66.327	90.5572
203	76.9225	87.9275	79.7692	69.3355	69.3355	93.0823
204	77.2305	86.0259	81.1374	70.7778	70.7778	93.5337
205	77.6041	86.1657	82.4148	71.5059	71.5059	93.1628
206	76.199	86.9432	84.3823	71.9055	71.9055	92.4318
207	78.1997	90.8825	87.4134	72.1527	72.1527	91.5481
208	79.5317	90.1452	87.086	72.2963	72.2963	90.5651
209	79.6266	89.5558	87.091	72.3596	72.3596	89.4618



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011736

210	79.8788	89.8764	87.8362	72.3706	72.3706	88.312
211	80.254	90.483	88.7183	72.3349	72.3349	87.103
212	80.38	90.1225	88.7185	72.2386	72.2386	85.7911
213	80.8248	90.3026	89.858	72.1102	72.1102	84.5064
214	80.8829	91.0044	91.1141	71.9612	71.9612	83.2531
215	81.3574	91.777	92.2493	71.7708	71.7708	81.9129
216	81.8871	92.4983	93.2793	71.5328	71.5328	80.4969
217	81.9773	93.2451	94.4041	71.2588	71.2588	79.0672
218	80.8932	88.0915	89.5653	69.6164	69.6164	71.2051
219	80.0142	87.4985	88.7373	68.4913	68.4913	68.4913
220	79.5941	88.5888	89.4527	67.992	67.992	67.992
221	77.4138	77.4138	77.4138	67.7155	67.7155	67.7155
222	76.1985	76.1985	76.1985	67.5594	67.5594	67.5594
223	75.5194	75.5194	75.5194	67.4563	67.4563	67.4563
224	75.1382	75.1382	75.1382	67.3767	67.3767	67.3767
225	74.9226	74.9226	74.9226	67.3076	67.3076	67.3076
226	74.799	74.799	74.799	67.2434	67.2434	67.2434
227	74.7264	74.7264	74.7264	67.1817	67.1817	67.1817
228	74.6823	74.6823	74.6823	67.1213	67.1213	67.1213
229	74.654	74.654	74.654	67.0618	67.0618	67.0618
230	74.6344	74.6344	74.6344	67.0029	67.0029	67.0029
231	74.6197	74.6197	74.6197	66.9445	66.9445	66.9445
232	74.6078	74.6078	74.6078	66.8867	66.8867	66.8867
233	74.5973	74.5973	74.5973	66.8294	66.8294	66.8294
234	74.5877	74.5877	74.5877	66.7725	66.7725	66.7725
235	74.5785	74.5785	74.5785	66.7161	66.7161	66.7161
236	74.5696	74.5696	74.5696	66.6602	66.6602	66.6602
237	74.5608	74.5608	74.5608	66.6046	66.6046	66.6046
238	78.3869	93.674	97.0926	66.64	66.64	66.64
239	80.6207	93.716	97.5016	66.6749	66.6749	66.6749
240	81.9712	92.7824	97.0354	66.7092	66.7092	66.7092
241	82.8466	92.6926	97.5662	66.7435	66.7435	66.7435
242	83.4581	92.3388	97.8325	66.7776	66.7776	66.7776
243	83.907	92.0746	98.1342	66.7744	66.7744	66.7744
244	84.2568	91.728	98.3528	66.7279	66.7279	66.7279
245	84.5665	91.4771	98.6229	66.6639	66.6639	66.6639
246	84.8552	91.2406	98.8909	66.5933	66.5933	66.5933
247	85.1165	90.9359	99.1325	66.5203	66.5203	66.5203
248	85.3453	90.5648	99.337	66.4465	66.4465	66.4465
249	85.5592	90.2904	99.4724	66.3726	66.3726	66.3726
250	85.7741	90.3619	99.4711	66.2993	66.2993	66.2993
251	86.0002	90.4607	99.5236	66.227	66.227	66.227
252	86.49	91.1542	100.815	66.1615	66.1615	66.1615
253	87.1342	92.0003	102.254	66.1026	66.1026	66.1026
254	87.3667	91.7512	101.683	66.0391	66.0391	66.0391
255	87.2464	91.0041	100.4	65.9684	65.9684	65.9684
256	87.0265	90.3422	99.3531	65.8931	65.8931	65.8931
257	86.9555	90.1833	99.1379	65.818	65.818	65.818
258	86.9642	90.1074	98.9979	65.7431	65.7431	65.7431
259	87.0278	90.125	98.9522	65.6687	65.6687	65.6687
260	87.136	90.2326	99.0281	65.5951	65.5951	65.5951
261	87.288	90.3639	99.1187	65.5224	65.5224	65.5224
262	87.31	90.2371	98.8228	65.4482	65.4482	65.4482
263	87.0936	89.5176	97.6781	65.3684	65.3684	65.3684
264	86.7247	88.653	96.3948	65.2831	65.2831	65.2831



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011707

265	86.2672	87.7185	95.0549	65.1925	65.1925	65.1925
266	85.9628	87.3377	94.5295	65.1012	65.1012	65.1012
267	85.7393	87.0398	94.0306	65.0095	65.0095	65.0095
268	85.5576	86.7856	93.6991	64.9171	64.9171	64.9171
269	85.3834	86.501	93.2763	64.8241	64.8241	64.8241
270	85.1972	86.1859	92.8013	64.73	64.73	64.73
271	85.0012	86.8239	92.3221	64.635	64.635	64.635
272	84.7969	86.4763	91.8398	64.539	64.539	64.539
273	84.645	86.2729	91.603	64.4435	64.4435	64.4435
274	84.5522	86.1764	91.526	64.3489	64.3489	64.3489
275	84.4919	85.1125	91.4811	64.2554	64.2554	64.2554
276	84.4495	85.0666	91.4536	64.1629	64.1629	64.1629
277	84.4162	85.0303	91.432	64.0714	64.0714	64.0714
278	84.3855	84.9977	91.4035	63.9807	63.9807	63.9807
279	84.3562	84.9668	91.3763	63.891	63.891	63.891
280	84.3277	84.9368	91.3497	63.8021	63.8021	63.8021
281	83.3245	83.718	86.9236	63.6946	63.6946	63.6946
282	83.9896	95.3908	86.9374	70.0399	70.0399	94.3295
283	84.2598	95.2836	87.1112	73.0141	73.0141	96.7866
284	84.6241	95.4176	88.5426	74.4116	74.4116	97.1574
285	85.0098	95.5538	89.8707	75.0815	75.0815	96.6613
286	85.6574	96.5021	92.0772	75.421	75.421	95.8254
287	84.2018	86.1121	87.8831	72.2434	72.2434	78.9903
288	83.2422	84.2279	86.9302	69.2277	69.2277	69.2277
289	82.6573	83.643	86.3453	67.8731	67.8731	67.8731
290	82.2761	83.2618	85.9641	67.2218	67.2218	67.2218
291	82.0059	82.9916	85.6938	66.8688	66.8688	66.8688
292	81.7962	82.7819	85.4842	66.6427	66.6427	66.6427
293	81.8205	82.9384	86.1728	66.4748	66.4748	66.4748
294	81.8023	82.9392	86.2201	66.3309	66.3309	66.3309
295	81.7626	82.9184	86.2458	66.1981	66.1981	66.1981
296	81.7127	82.8874	86.2613	66.0708	66.0708	66.0708
297	81.6586	82.8523	86.2727	65.9467	65.9467	65.9467
298	81.4862	82.5875	85.7809	65.8227	65.8227	65.8227
299	81.3422	82.4435	85.6369	65.7	65.7	65.7
300	81.214	82.3153	85.5086	65.5786	65.5786	65.5786
301	81.0947	82.1959	85.3893	65.4583	65.4583	65.4583
302	80.9806	82.0818	85.2752	65.3392	65.3392	65.3392
303	80.8696	81.9709	85.1642	65.2211	65.2211	65.2211
304	80.7607	81.862	85.0554	65.1041	65.1041	65.1041
305	80.6533	81.7546	84.948	64.9882	64.9882	64.9882
306	80.5471	81.6483	84.8417	64.8733	64.8733	64.8733
307	80.4418	81.543	84.7364	64.7594	64.7594	64.7594
308	80.3373	81.4386	84.632	64.6466	64.6466	64.6466
309	80.2337	81.335	84.5284	64.5347	64.5347	64.5347
310	80.1309	81.2322	84.4255	64.4239	64.4239	64.4239
311	80.0288	81.1301	84.3235	64.3141	64.3141	64.3141
312	79.9275	81.0287	84.2221	64.2052	64.2052	64.2052
313	79.8094	80.8985	84.0471	64.0971	64.0971	64.0971
314	79.69	80.7732	83.8985	63.9897	63.9897	63.9897
315	79.6753	80.8429	84.1991	63.885	63.885	63.885
316	79.6265	80.7941	84.1503	63.7813	63.7813	63.7813
317	79.5595	80.727	84.0833	63.6784	63.6784	63.6784
318	79.4904	80.6651	84.0388	63.5767	63.5767	63.5767
319	79.4333	80.6269	84.0472	63.4762	63.4762	63.4762

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011708

320	79.2667	80.368	83.5614	63.3749	63.3749	63.3749
321	79.1332	80.2344	83.4278	63.2745	63.2745	63.2745
322	79.0179	80.1191	83.3125	63.175	63.175	63.175
323	78.9127	80.014	83.2074	63.0764	63.0764	63.0764
324	78.8134	79.9147	83.108	62.9787	62.9787	62.9787
325	78.7176	79.8188	83.0122	62.8818	62.8818	62.8818
326	78.6239	79.7252	82.9186	62.7858	62.7858	62.7858
327	78.5317	79.633	82.8264	62.6907	62.6907	62.6907
328	78.4407	79.5419	82.7353	62.5964	62.5964	62.5964
329	78.3505	79.4518	82.6451	62.5029	62.5029	62.5029
330	78.2611	79.3624	82.5558	62.4103	62.4103	62.4103
331	78.1724	79.2737	82.4671	62.3185	62.3185	62.3185
332	78.0844	79.1857	82.3791	62.2276	62.2276	62.2276
333	77.9971	79.0983	82.2917	62.1374	62.1374	62.1374
334	77.9104	79.0116	82.205	62.048	62.048	62.048
335	77.8243	78.9255	82.1189	61.9594	61.9594	61.9594
336	77.6052	78.8199	81.4818	61.8694	61.8694	61.8694
337	77.394	78.3813	81.0911	61.7794	61.7794	61.7794
338	77.1862	78.1479	80.7311	61.6894	61.6894	61.6894
339	76.9797	77.9181	80.3811	61.5995	61.5995	61.5995
340	77.1142	78.243	81.5044	61.5153	61.5153	61.5153
341	79.0257	81.4907	89.686	61.4627	61.4627	61.4627
342	79.8819	81.9383	89.7847	61.4065	61.4065	61.4065
343	80.1549	81.8038	89.3096	61.347	61.347	61.347
344	80.0583	81.3885	88.3038	61.2834	61.2834	61.2834
345	80.8118	91.8305	87.6722	66.5299	66.5299	86.7248
346	81.5996	92.8301	89.6191	68.8144	68.8144	87.8802
347	81.8269	92.2157	89.2816	69.8127	69.8127	87.7447
348	81.8799	91.6187	89.3483	70.2311	70.2311	86.9894
349	82.2346	92.4029	90.437	70.3896	70.3896	85.9936
350	82.5163	92.5952	90.9248	70.4031	70.4031	84.8139
351	82.6832	92.3871	91.2621	70.3278	70.3278	83.5417
352	82.9183	92.6237	92.4131	70.2037	70.2037	82.2675
353	83.2879	93.4404	93.6829	70.053	70.053	81.0252
354	83.6289	94.1525	94.7077	69.8469	69.8469	79.6372
355	83.9312	94.886	95.7779	69.6008	69.6008	78.238
356	83.8003	93.8757	95.127	68.9271	68.9271	74.9145
357	82.5317	88.7841	90.3162	67.1825	67.1825	67.1825
358	81.8958	89.8167	90.9516	66.3867	66.3867	66.3867
359	79.6017	79.6017	79.6017	66.0122	66.0122	66.0122
360	78.3229	78.3229	78.3229	65.8273	65.8273	65.8273
361	77.6082	77.6082	77.6082	65.7255	65.7255	65.7255
362	77.2071	77.2071	77.2071	65.6601	65.6601	65.6601
363	76.9801	76.9801	76.9801	65.6108	65.6108	65.6108
364	76.8499	76.8499	76.8499	65.5687	65.5687	65.5687
365	76.7735	76.7735	76.7735	65.5297	65.5297	65.5297
366	76.727	76.727	76.727	65.4923	65.4923	65.4923
367	76.6971	76.6971	76.6971	65.4557	65.4557	65.4557
368	76.6765	76.6765	76.6765	65.4195	65.4195	65.4195
369	76.6609	76.6609	76.6609	65.3835	65.3835	65.3835
370	76.6482	76.6482	76.6482	65.3479	65.3479	65.3479
371	76.6371	76.6371	76.6371	65.3124	65.3124	65.3124
372	76.6269	76.6269	76.6269	65.277	65.277	65.277
373	76.6172	76.6172	76.6172	65.2419	65.2419	65.2419
374	76.6077	76.6077	76.6077	65.207	65.207	65.207

*[Handwritten signature]*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011739

375	76.5984	76.5984	76.5984	65.1722	65.1722	65.1722
376	80.4304	97.2671	100.426	65.1949	65.1949	65.1949
377	82.8674	97.3124	100.838	65.2174	65.2174	65.2174
378	84.0178	96.4233	100.324	65.2396	65.2396	65.2396
379	84.8825	95.4113	99.8463	65.2616	65.2616	65.2616
380	85.4861	95.0447	100.099	65.2836	65.2836	65.2836
381	85.9296	94.5968	100.258	65.2715	65.2715	65.2715
382	86.2671	94.2306	100.456	65.2195	65.2195	65.2195
383	86.55	93.8231	100.611	65.1514	65.1514	65.1514
384	86.8199	93.5771	100.871	65.0772	65.0772	65.0772
385	87.0805	93.3138	101.112	65.0012	65.0012	65.0012
386	87.3094	92.9501	101.318	64.9246	64.9246	64.9246
387	87.5133	92.5442	101.498	64.8482	64.8482	64.8482
388	87.7106	92.3999	101.561	64.7724	64.7724	64.7724
389	87.9096	92.4554	101.543	64.6973	64.6973	64.6973
390	88.1992	92.7195	101.958	64.6244	64.6244	64.6244
391	88.7199	93.4435	103.279	64.5562	64.5562	64.5562
392	89.3265	94.1822	104.517	64.4918	64.4918	64.4918
393	89.3992	93.5957	103.367	64.4229	64.4229	64.4229
394	89.1879	92.772	102.02	64.3498	64.3498	64.3498
395	88.9973	92.2881	101.29	64.2753	64.2753	64.2753
396	88.9358	92.1411	101.078	64.2013	64.2013	64.2013
397	88.9435	92.0668	100.942	64.1277	64.1277	64.1277
398	89.0065	92.1036	100.932	64.0548	64.0548	64.0548
399	89.1078	92.2043	100.993	63.9827	63.9827	63.9827
400	89.2294	92.3253	101.075	63.9114	63.9114	63.9114
401	89.2364	92.1262	100.68	63.8393	63.8393	63.8393
402	89.0195	91.4494	99.6149	63.764	63.764	63.764
403	88.6731	90.6551	98.4423	63.6857	63.6857	63.6857
404	88.2482	89.7938	97.2122	63.6046	63.6046	63.6046
405	87.9246	89.3252	96.5655	63.5228	63.5228	63.5228
406	87.6936	89.0282	96.1437	63.441	63.441	63.441
407	87.5105	88.7802	95.7728	63.3592	63.3592	63.3592
408	87.3515	88.5581	95.431	63.2773	63.2773	63.2773
409	87.1861	88.277	95.0271	63.1952	63.1952	63.1952
410	87.0091	87.97	94.596	63.1128	63.1128	63.1128
411	86.8231	87.6565	94.1646	63.0301	63.0301	63.0301
412	86.6295	87.3378	93.7283	62.9472	62.9472	62.9472
413	86.4588	87.0879	93.4118	62.8644	62.8644	62.8644
414	86.3494	86.975	93.3169	62.7825	62.7825	62.7825
415	86.2736	86.8958	93.2553	62.7014	62.7014	62.7014
416	86.2163	86.8353	93.2121	62.6212	62.6212	62.6212
417	86.1695	86.7853	93.1791	62.5418	62.5418	62.5418
418	86.1269	86.7403	93.1435	62.4631	62.4631	62.4631
419	86.0858	86.6972	93.1044	62.3853	62.3853	62.3853
420	86.0452	86.655	93.0684	62.3082	62.3082	62.3082
421	86.0056	86.6137	93.029	62.2318	62.2318	62.2318
422	85.9665	86.5729	92.9919	62.1562	62.1562	62.1562
423	85.9288	86.5318	92.9514	62.0813	62.0813	62.0813
424	85.8848	86.4886	92.902	62.0071	62.0071	62.0071
425	85.8418	86.4448	92.8531	61.9335	61.9335	61.9335
426	85.7987	86.4007	92.8054	61.8607	61.8607	61.8607
427	85.7557	86.3571	92.7592	61.7885	61.7885	61.7885
428	85.713	86.3141	92.7145	61.717	61.717	61.717
429	85.6707	86.2715	92.6702	61.6461	61.6461	61.6461

*Handwritten signature*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011300

ALSTOM

430	85.8287	86.2292	92.8282	61.5759	61.5759	61.5759
431	85.587	86.1872	92.5826	61.5063	61.5063	61.5063
432	85.5458	86.1454	92.5393	61.4374	61.4374	61.4374
433	85.5045	86.104	92.4963	61.3692	61.3692	61.3692
434	85.4636	86.0628	92.4536	61.3015	61.3015	61.3015
435	85.423	86.0219	92.4112	61.2345	61.2345	61.2345
436	85.3827	85.9812	92.3691	61.1681	61.1681	61.1681
437	85.3425	85.9406	92.3264	61.1023	61.1023	61.1023
438	85.3022	85.8996	92.2816	61.0371	61.0371	61.0371
439	85.2617	85.8579	92.2342	60.9725	60.9725	60.9725
440	83.556	83.9367	84.6932	60.8873	60.8873	60.8873
441	82.8638	84.1945	84.9399	62.5559	62.5559	69.4092
442	82.5108	84.5708	84.4725	63.9545	63.9545	73.138
443	82.2923	84.8356	84.2502	65.0022	65.0022	75.4302
444	82.0977	84.6687	84.0569	65.6099	65.6099	76.0766
445	81.9168	84.4916	83.8753	66.0306	66.0306	76.5362
446	81.7435	84.3314	83.7024	66.3697	66.3697	76.9071
447	81.5732	84.1611	83.5321	66.665	66.665	77.2024
448	81.405	83.9929	83.3639	66.9403	66.9403	77.4777
449	81.2386	83.8284	83.1974	67.2056	67.2056	77.7431
450	81.0486	83.4662	83.0041	67.3552	67.3552	77.4751
451	80.8111	82.7873	82.775	67.254	67.254	76.2146
452	81.2812	87.3073	83.5535	69.5254	69.5254	86.7544
453	82.4053	93.7315	85.5128	72.698	72.698	96.924
454	83.0148	94.4168	86.0474	74.4928	74.4928	98.8057
455	83.3226	94.7382	86.2772	75.6774	75.6774	99.9875
456	83.4121	94.4927	86.2781	76.4718	76.4718	100.322
457	83.6109	94.4476	87.2619	76.9767	76.9767	99.9576
458	83.9302	94.547	88.583	77.281	77.281	99.1797
459	84.3437	94.8882	89.9964	77.4641	77.4641	98.2331
460	85.3289	96.8056	93.3626	77.5778	77.5778	97.2149
461	85.7393	96.5399	93.4347	77.6328	77.6328	96.1433
462	85.8237	95.8923	93.2852	77.6288	77.6288	94.9826
463	85.9526	95.8258	93.731	77.5741	77.5741	93.7623
464	86.3449	96.6838	94.8501	77.4785	77.4785	92.508
465	86.4462	96.2726	94.7606	77.324	77.324	91.1343
466	86.6151	96.3077	95.6551	77.1341	77.1341	89.7786
467	86.8995	96.8251	96.8377	76.9191	76.9191	88.4451
468	87.2385	97.5819	97.9935	76.6704	76.6704	87.0701
469	87.531	98.2371	98.9369	76.3681	76.3681	85.5716
470	87.7916	98.9879	100.068	76.0396	76.0396	84.1269
471	86.9549	95.0256	96.432	74.6341	74.6341	77.5566
472	85.9272	93.092	94.4069	73.2807	73.2807	73.2807
473	85.4238	94.0788	95.0389	72.6843	72.6843	72.6843
474	83.1984	83.1984	83.1984	72.3955	72.3955	72.3955
475	81.9574	81.9574	81.9574	72.2518	72.2518	72.2518
476	81.2633	81.2633	81.2633	72.1717	72.1717	72.1717
477	80.8732	80.8732	80.8732	72.1195	72.1195	72.1195
478	80.6519	80.6519	80.6519	72.0795	72.0795	72.0795
479	80.5244	80.5244	80.5244	72.045	72.045	72.045
480	80.4491	80.4491	80.4491	72.0129	72.0129	72.0129
481	80.4028	80.4028	80.4028	71.982	71.982	71.982
482	80.3726	80.3726	80.3726	71.9515	71.9515	71.9515
483	80.3513	80.3513	80.3513	71.9214	71.9214	71.9214
484	80.335	80.335	80.335	71.8915	71.8915	71.8915



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls



00011301

485	80.3214	80.3214	80.3214	71.8617	71.8617	71.8617
486	80.3094	80.3094	80.3094	71.8321	71.8321	71.8321
487	80.2982	80.2982	80.2982	71.8025	71.8025	71.8025
488	80.2876	80.2876	80.2876	71.7731	71.7731	71.7731
489	80.2771	80.2771	80.2771	71.7438	71.7438	71.7438
490	80.2669	80.2669	80.2669	71.7145	71.7145	71.7145
491	84.0934	99.8504	103.19	71.7293	71.7293	71.7293
492	86.3222	99.8855	103.566	71.7438	71.7438	71.7438
493	87.6708	98.7398	102.865	71.7582	71.7582	71.7582
494	88.5437	98.5967	103.337	71.7725	71.7725	71.7725
495	89.151	98.2326	103.592	71.7869	71.7869	71.7869
496	89.5886	97.9056	103.844	71.7476	71.7476	71.7476
497	89.9135	97.5339	104.038	71.646	71.646	71.646
498	90.1857	97.2025	104.24	71.5189	71.5189	71.5189
499	90.436	96.9373	104.48	71.3823	71.3823	71.3823
500	90.6678	96.818	104.689	71.2424	71.2424	71.2424
501	90.8615	96.2018	104.858	71.1018	71.1018	71.1018
502	91.0355	95.7975	104.995	70.9617	70.9617	70.9617
503	91.2107	95.8293	104.954	70.8227	70.8227	70.8227
504	91.3865	95.8617	104.914	70.685	70.685	70.685
505	91.7837	96.4039	105.936	70.5512	70.5512	70.5512
506	92.356	97.1772	107.299	70.4217	70.4217	70.4217
507	92.6753	97.2124	107.275	70.2925	70.2925	70.2925
508	92.5896	96.5001	106.027	70.1808	70.1808	70.1808
509	92.2973	95.6382	104.678	70.0268	70.0268	70.0268
510	92.1713	95.4277	104.404	69.894	69.894	69.894
511	92.1351	95.3114	104.227	69.7622	69.7622	69.7622
512	92.1472	95.2476	104.106	69.6315	69.6315	69.6315
513	92.2093	95.3063	104.126	69.5021	69.5021	69.5021
514	92.2993	95.3957	104.179	69.3741	69.3741	69.3741
515	92.4039	95.4998	104.249	69.2474	69.2474	69.2474
516	92.4241	95.3684	103.969	69.1211	69.1211	69.1211
517	92.2371	94.7738	103.029	68.9933	68.9933	68.9933
518	91.9315	94.0724	101.994	68.8643	68.8643	68.8643
519	91.5555	93.3127	100.91	68.734	68.734	68.734
520	91.1667	92.6092	99.9291	68.6029	68.6029	68.6029
521	90.8999	92.2848	99.4954	68.4725	68.4725	68.4725
522	90.6977	92.0264	99.1305	68.3428	68.3428	68.3428
523	90.5292	91.8031	98.8034	68.2138	68.2138	68.2138
524	90.3775	91.5979	98.4972	68.0855	68.0855	68.0855
525	90.2249	91.366	98.1837	67.9579	67.9579	67.9579
526	90.0586	91.0904	97.7851	67.8307	67.8307	67.8307
527	89.8832	90.8076	97.4012	67.704	67.704	67.704
528	89.7007	90.5195	97.014	67.5779	67.5779	67.5779
529	89.5121	90.2274	96.6247	67.4523	67.4523	67.4523
530	89.329	89.9589	96.2786	67.3273	67.3273	67.3273
531	89.2023	89.8294	96.164	67.2035	67.2035	67.2035
532	89.1066	89.7309	96.08	67.081	67.081	67.081
533	89.0281	89.6497	96.0131	66.9596	66.9596	66.9596
534	88.9593	89.5782	95.9558	66.8395	66.8395	66.8395
535	88.8962	89.5126	95.9039	66.7205	66.7205	66.7205
536	88.8358	89.4499	95.8516	66.6026	66.6026	66.6026
537	89.0943	100.507	92.0644	72.9216	72.9216	97.2322
538	89.1455	100.279	92.025	75.9037	75.9037	99.8268
539	89.2591	100.121	92.7559	77.3479	77.3479	100.464



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00611302

ALSTOM

540	89.5312	100.177	94.0998	78.0452	78.0452	100.073
541	89.8389	100.287	95.2464	78.3877	78.3877	99.2734
542	90.7502	102.14	98.5559	78.5823	78.5823	98.3079
543	91.1958	102.076	98.9511	78.6387	78.6387	97.2519
544	91.2675	101.394	98.7277	78.6412	78.6412	96.1005
545	91.3308	101.152	99.0341	78.585	78.585	94.8766
546	91.7134	102.098	100.236	78.4866	78.4866	93.8257
547	91.7927	101.665	100.124	78.328	78.328	92.2477
548	91.9081	101.606	100.868	78.1314	78.1314	90.8797
549	92.1407	102.026	101.998	77.9082	77.9082	89.5322
550	92.4444	102.756	103.142	77.6546	77.6546	88.1621
551	92.701	103.368	104.037	77.3454	77.3454	86.652
552	92.9254	104.078	105.122	77.0095	77.0095	85.1971
553	92.1745	100.611	101.989	75.7171	75.7171	79.1982
554	91.0707	98.1016	99.4484	74.2764	74.2764	74.2764
555	90.5243	99.0455	100.037	73.6417	73.6417	73.6417
556	88.2753	88.2753	88.2753	73.3395	73.3395	73.3395
557	87.0206	87.0206	87.0206	73.1918	73.1918	73.1918
558	86.3183	86.3183	86.3183	73.1117	73.1117	73.1117
559	85.923	85.923	85.923	73.0613	73.0613	73.0613
560	85.6982	85.6982	85.6982	73.024	73.024	73.024
561	85.5683	85.5683	85.5683	72.9924	72.9924	72.9924
562	85.491	85.491	85.491	72.9633	72.9633	72.9633
563	85.4429	85.4429	85.4429	72.9354	72.9354	72.9354
564	85.4112	85.4112	85.4112	72.908	72.908	72.908
565	85.3884	85.3884	85.3884	72.881	72.881	72.881
566	85.3707	85.3707	85.3707	72.8541	72.8541	72.8541
567	85.3558	85.3558	85.3558	72.8273	72.8273	72.8273
568	85.3425	85.3425	85.3425	72.8007	72.8007	72.8007
569	85.33	85.33	85.33	72.7741	72.7741	72.7741
570	85.318	85.318	85.318	72.7476	72.7476	72.7476
571	85.3062	85.3062	85.3062	72.7211	72.7211	72.7211
572	85.2946	85.2946	85.2946	72.6948	72.6948	72.6948
573	89.1208	105.074	108.381	72.7061	72.7061	72.7061
574	91.3483	106.108	108.754	72.7172	72.7172	72.7172
575	92.6962	104.009	108.093	72.7283	72.7283	72.7283
576	93.5864	103.706	108.391	72.7393	72.7393	72.7393
577	94.1716	103.34	108.644	72.7503	72.7503	72.7503
578	94.5954	102.978	108.866	72.7056	72.7056	72.7056
579	94.9038	102.594	109.048	72.5959	72.5959	72.5959
580	95.1449	102.208	109.2	72.4598	72.4598	72.4598
581	95.3631	101.907	109.403	72.3136	72.3136	72.3136
582	95.5625	101.588	109.586	72.1641	72.1641	72.1641
583	95.7236	101.119	109.723	72.0139	72.0139	72.0139
584	95.8644	100.664	109.843	71.8643	71.8643	71.8643
585	96.0043	100.636	109.767	71.7158	71.7158	71.7158
586	96.1452	100.633	109.692	71.5687	71.5687	71.5687
587	96.4846	101.087	110.567	71.425	71.425	71.425
588	97.0102	101.815	111.888	71.2853	71.2853	71.2853
589	97.356	101.974	112.106	71.1468	71.1468	71.1468
590	97.2834	101.295	110.908	71.0064	71.0064	71.0064
591	96.9908	100.442	109.576	70.8645	70.8645	70.8645
592	96.7975	100.076	109.068	70.7232	70.7232	70.7232
593	96.7112	99.9119	108.846	70.5831	70.5831	70.5831
594	96.6824	99.8058	108.888	70.4442	70.4442	70.4442

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011303



595	96.6985	99.7957	108.63	70.3067	70.3067	70.3067
596	96.7488	99.8455	108.643	70.1705	70.1705	70.1705
597	96.8175	99.9138	108.676	70.0358	70.0358	70.0358
598	96.8958	99.9914	108.72	69.9024	69.9024	69.9024
599	96.7177	99.3833	107.748	69.788	69.768	69.768
600	96.3751	98.5922	106.578	69.6323	69.6323	69.6323
601	95.9233	97.6834	105.283	69.4955	69.4955	69.4955
602	95.4643	96.8924	104.185	69.358	69.358	69.358
603	93.6694	94.3758	97.197	69.2076	69.2076	69.2076
604	92.7295	94.7611	96.2295	70.9484	70.9464	78.3312
605	92.15	94.4086	95.6211	71.9177	71.9177	79.988
606	91.778	94.2934	95.2477	72.5766	72.5766	81.3268
607	90.5136	90.7851	91.3045	70.6873	70.6873	70.6873
608	90.8305	91.8234	95.577	69.8077	69.8077	69.8077
609	92.2389	102.667	97.4316	74.9008	74.9006	95.9722
610	91.6344	94.4084	95.4001	74.17	74.17	83.2416
611	91.2274	93.9994	94.893	73.9485	73.9485	83.0201
612	90.899	93.4987	94.6412	73.8432	73.8432	82.5398
613	90.5944	92.9167	94.299	73.7189	73.7189	81.8115
614	90.3123	92.3931	94.0126	73.5732	73.5732	81.0562
615	89.9689	91.4573	93.5419	73.1074	73.1074	78.826
616	88.9082	89.3513	89.9712	71.8976	71.8976	73.598
617	88.5194	89.198	90.6589	70.8923	70.8923	70.8923
618	88.4324	89.2493	91.3977	70.3755	70.3755	70.3755
619	88.3621	89.1476	91.6079	70.066	70.066	70.066
620	88.2524	89.0358	91.5741	69.8448	69.8448	69.8448
621	88.1555	88.9408	91.6744	69.6623	69.6623	69.6623
622	88.0148	88.8001	91.5337	69.4967	69.4967	69.4967
623	87.8509	88.6362	91.3699	69.3391	69.3391	69.3391
624	87.6752	88.4605	91.1941	69.1857	69.1857	69.1857
625	87.4938	88.2789	91.0125	69.0348	69.0348	69.0348
626	87.3094	88.0948	90.8284	68.8857	68.8857	68.8857
627	87.1245	87.9099	90.6435	68.7382	68.7382	68.7382
628	86.9398	87.7252	90.4588	68.5921	68.5921	68.5921
629	86.7559	87.5412	90.2748	68.4474	68.4474	68.4474
630	86.5729	87.3582	90.0918	68.3039	68.3039	68.3039
631	86.3265	87.1107	89.913	68.1613	68.1613	68.1613
632	86.0962	86.8816	89.7446	68.0198	68.0198	68.0198
633	85.8748	86.6613	89.5849	67.8794	67.8794	67.8794
634	85.6582	86.4458	89.43	67.7403	67.7403	67.7403
635	85.1361	87.1728	91.6391	67.6084	67.6084	67.6084
636	87.3059	88.7548	96.0866	67.4861	67.4861	67.4861
637	87.8897	89.2791	96.4982	67.3645	67.3645	67.3645
638	87.1135	91.0842	90.6412	70.3258	70.3258	82.3157
639	88.2011	95.9586	94.3962	74.042	74.042	94.5532
640	87.3676	90.8891	91.4533	73.0396	73.0396	82.7249
641	86.2815	87.1952	89.4955	70.2331	70.2331	70.2331
642	85.613	86.5277	88.8378	68.9641	68.9641	68.9641
643	85.193	86.1185	88.5027	68.3463	68.3463	68.3463
644	84.9121	85.8499	88.31	68.0049	68.0049	68.0049
645	84.7087	85.6609	88.1948	67.7814	67.7814	67.7814
646	84.7442	85.8306	88.9582	67.6101	67.6101	67.6101
647	84.7507	85.8793	89.1399	67.4614	67.4614	67.4614
648	84.7459	85.9236	89.3049	67.3231	67.3231	67.3231
649	84.7393	85.9658	89.471	67.1902	67.1902	67.1902

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011004



650	84.7364	86.0144	89.6443	67.0608	67.0606	67.0606
651	84.6181	85.8343	89.3106	66.9322	66.9322	66.9322
652	84.5261	85.7662	89.3019	66.8055	66.8055	66.8055
653	84.4244	85.6645	89.2003	66.6801	66.6801	66.6801
654	84.3178	85.558	89.0937	66.5558	66.5558	66.5558
655	84.209	85.4491	88.9849	66.4327	66.4327	66.4327
656	84.0993	85.3394	88.8752	66.3108	66.3108	66.3108
657	83.9895	85.2296	88.7653	66.19	66.19	66.19
658	83.88	85.1201	88.6558	66.0702	66.0702	66.0702
659	83.7575	84.9851	88.4897	65.9515	65.9515	65.9515
660	83.5934	84.7763	88.1702	65.8334	65.8334	65.8334
661	83.4057	84.5445	87.83	65.7161	65.7161	65.7161
662	83.0945	84.1198	87.0128	65.5984	65.5984	65.5984
663	82.8035	83.7936	86.5171	65.4813	65.4813	65.4813
664	82.5224	83.4799	86.0415	65.3648	65.3648	65.3648
665	82.246	83.1736	85.5808	65.2489	65.2489	65.2489
666	81.9739	82.8819	85.1308	65.1335	65.1335	65.1335
667	84.0172	86.5136	94.7354	65.0382	65.0382	65.0382
668	84.9205	86.9919	94.8546	64.9417	64.9417	64.9417
669	85.193	86.8427	94.349	64.844	64.844	64.844
670	85.2136	86.6328	93.9084	64.7461	64.7461	64.7461
671	85.1798	86.5352	93.89	64.6486	64.6486	64.6486
672	85.1148	86.408	93.4451	64.5515	64.5515	64.5515
673	85.0311	86.2638	93.186	64.455	64.455	64.455
674	84.9286	86.0812	92.8894	64.3588	64.3588	64.3588
675	84.7988	85.8271	92.5185	64.2629	64.2629	64.2629
676	84.6514	85.5578	92.1346	64.1674	64.1674	64.1674
677	84.4918	85.2787	91.7431	64.0721	64.0721	64.0721
678	84.3232	84.9927	91.3469	63.9772	63.9772	63.9772
679	84.1972	84.8253	91.1539	63.8829	63.8829	63.8829
680	84.1189	84.7439	91.0893	63.7896	63.7896	63.7896
681	84.0669	84.6886	91.0507	63.6973	63.6973	63.6973
682	84.0295	84.6482	91.0264	63.6058	63.6058	63.6058
683	84.0002	84.616	91.0101	63.5152	63.5152	63.5152
684	83.974	84.5875	90.9905	63.4255	63.4255	63.4255
685	84.2072	95.4137	87.1053	69.6912	69.6912	93.714
686	84.3602	95.2652	87.5894	72.5825	72.5825	95.9344
687	84.6947	95.4025	89.087	73.9247	73.9247	96.2223
688	85.016	95.4651	90.1498	74.567	74.567	95.7356
689	85.8219	96.9689	93.0137	74.8916	74.8916	94.9289
690	86.4839	97.5932	94.412	75.0566	75.0566	93.9657
691	86.6483	96.9467	94.1049	75.1233	75.1233	92.8922
692	86.6573	96.3245	94.1401	75.1146	75.1146	91.7101
693	87.029	97.2782	95.3476	75.0585	75.0585	90.5024
694	87.2372	97.2448	95.6191	74.9445	74.9445	89.1859
695	87.3662	97.0613	96.0895	74.7845	74.7845	87.8378
696	87.6047	97.3723	97.2246	74.5933	74.5933	86.5054
697	87.9514	98.166	98.4715	74.38	74.38	85.2004
698	88.2493	98.8223	99.4168	74.1099	74.1099	83.7333
699	88.5123	99.5353	100.48	73.8059	73.8059	82.2879
700	88.1559	97.8657	98.9607	72.895	72.895	78.0177
701	86.936	93.5333	94.9833	71.2316	71.2316	71.2316
702	86.3259	94.454	96.5395	70.5003	70.5003	70.5003
703	84.0443	84.0443	84.0443	70.1611	70.1611	70.1611
704	82.772	82.772	82.772	70.0006	70.0006	70.0006

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705	82.0604	82.0604	82.0604	69.9182	69.9182	69.9182
706	81.6604	81.6604	81.6604	69.8702	69.8702	69.8702
707	81.4336	81.4336	81.4336	69.8371	69.8371	69.8371
708	81.303	81.303	81.303	69.8107	69.8107	69.8107
709	81.2258	81.2258	81.2258	69.7871	69.7871	69.7871
710	81.1784	81.1784	81.1784	69.7649	69.7649	69.7649
711	81.1474	81.1474	81.1474	69.7432	69.7432	69.7432
712	81.1256	81.1256	81.1256	69.7219	69.7219	69.7219
713	81.109	81.109	81.109	69.7007	69.7007	69.7007
714	81.0951	81.0951	81.0951	69.6796	69.6796	69.6796
715	81.0828	81.0828	81.0828	69.6586	69.6586	69.6586
716	81.0715	81.0715	81.0715	69.6376	69.6376	69.6376
717	81.0606	81.0606	81.0606	69.6167	69.6167	69.6167
718	81.0499	81.0499	81.0499	69.5958	69.5958	69.5958
719	81.0395	81.0395	81.0395	69.575	69.575	69.575
720	84.869	101.401	104.611	69.5842	69.5842	69.5842
721	87.0981	101.436	104.978	69.5932	69.5932	69.5932
722	88.449	100.477	104.442	69.6022	69.6022	69.6022
723	89.3163	99.7108	104.232	69.6111	69.6111	69.6111
724	89.9223	99.3512	104.493	69.62	69.62	69.62
725	90.3651	98.9186	104.657	69.5818	69.5818	69.5818
726	90.6748	98.5414	104.845	69.4887	69.4887	69.4887
727	90.9358	98.1385	104.995	69.3732	69.3732	69.3732
728	91.1781	97.8588	105.222	69.2492	69.2492	69.2492
729	91.4112	97.5723	105.441	69.1224	69.1224	69.1224
730	91.6063	97.1621	105.612	68.9951	68.9951	68.9951
731	91.7777	96.7239	105.759	68.8683	68.8683	68.8683
732	91.9454	96.6146	105.766	68.7425	68.7425	68.7425
733	92.1144	96.6403	105.718	68.6178	68.6178	68.6178
734	92.4114	96.9601	106.282	68.4954	68.4954	68.4954
735	92.9244	97.676	107.594	68.3762	68.3762	68.3762
736	93.424	98.1851	108.439	68.2592	68.2592	68.2592
737	93.4282	97.5349	107.231	68.1407	68.1407	68.1407
738	93.1867	96.7291	106.941	68.0209	68.0209	68.0209
739	92.9904	96.2825	106.286	67.9014	67.9014	67.9014
740	92.9152	96.1302	106.075	67.7829	67.7829	67.7829
741	92.9053	96.0472	104.937	67.6654	67.6654	67.6654
742	92.8391	96.0364	104.879	67.549	67.549	67.549
743	93.0111	96.1079	104.916	67.4339	67.4339	67.4339
744	93.1039	96.1998	104.974	67.3199	67.3199	67.3199
745	93.2069	96.3027	105.043	67.207	67.207	67.207
746	92.1075	94.0974	99.9744	67.0883	67.0883	67.0883
747	90.139	91.0668	93.4908	66.9565	66.9565	66.9565
748	88.5773	89.9081	92.3321	66.8279	66.8279	66.8279
749	88.2602	89.191	91.615	66.7004	66.7004	66.7004
750	87.7831	88.714	91.1379	66.5741	66.5741	66.5741
751	87.3469	88.2434	90.3912	66.4483	66.4483	66.4483
752	86.9883	87.8967	89.9127	66.3233	66.3233	66.3233
753	86.5121	87.2833	88.7874	66.1981	66.1981	66.1981
754	85.5039	85.5524	85.6507	66.0691	66.0691	66.0691
755	85.134	85.5226	86.3111	65.9437	65.9437	65.9437
756	87.6339	90.0804	98.26	65.8401	65.8401	65.8401
757	88.7208	90.6817	98.4142	65.7354	65.7354	65.7354
758	89.0328	90.4836	97.8188	65.6295	65.6295	65.6295
759	89.1297	90.4999	97.8826	65.5241	65.5241	65.5241



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011306



760	89.1056	90.3948	97.4241	65.4192	65.4192	65.4192
761	89.0115	90.2196	97.0953	65.3147	65.3147	65.3147
762	88.8545	89.9129	96.6325	65.2105	65.2105	65.2105
763	88.6568	89.5545	96.1231	65.1065	65.1065	65.1065
764	88.4362	89.1808	95.6055	65.0029	65.0029	65.0029
765	88.2237	88.8531	95.1751	64.8998	64.8998	64.8998
766	88.0867	88.7123	95.0548	64.7978	64.7976	64.7976
767	87.991	88.6128	94.9749	64.6965	64.6955	64.6955
768	87.9178	88.5362	94.9167	64.5964	64.5964	64.5964
769	87.8572	88.4722	94.8702	64.4972	64.4972	64.4972
770	87.8009	88.4138	94.8181	64.399	64.399	64.399
771	87.7468	88.3578	94.7663	64.3018	64.3018	64.3018
772	87.6941	88.3034	94.716	64.2055	64.2055	64.2055
773	87.6426	88.25	94.6667	64.1101	64.1101	64.1101
774	87.5919	88.1976	94.6183	64.0156	64.0156	64.0156
775	87.5388	88.1424	94.566	63.922	63.922	63.922
776	87.4834	88.0854	94.4899	63.8293	63.8293	63.8293
777	87.4273	88.0274	94.423	63.7374	63.7374	63.7374
778	87.3708	87.9691	94.3559	63.6464	63.6464	63.6464
779	87.3142	87.9108	94.2889	63.5562	63.5562	63.5562
780	85.783	86.3551	87.516	63.4563	63.4563	63.4563
781	84.8484	85.4205	86.5813	63.3572	63.3572	63.3572
782	84.2381	84.8102	85.971	63.259	63.259	63.259
783	83.8062	84.3736	85.5483	63.1617	63.1617	63.1617
784	83.4702	84.0376	85.2123	63.0651	63.0651	63.0651
785	83.185	83.7571	84.918	62.9695	62.9695	62.9695
786	82.9303	83.5014	84.6651	62.8746	62.8746	62.8746
787	82.6922	83.2639	84.426	62.7806	62.7806	62.7806
788	82.4679	83.0297	84.2201	62.6874	62.6874	62.6874
789	84.0893	95.3696	87.2303	69.0013	69.0013	93.1716
790	84.9563	96.3272	88.0306	72.1368	72.1368	96.4173
791	85.4	96.8086	88.3947	73.9038	73.9038	98.2153
792	85.5833	96.836	88.4933	75.0167	75.0167	99.1029
793	85.6589	96.5903	88.7245	75.743	75.743	99.2387
794	85.6531	96.6923	90.2078	76.1659	76.1659	98.6181
795	86.2568	96.7424	91.2859	76.4154	76.4154	97.7436
796	86.9627	97.9779	93.816	76.567	76.567	96.7644
797	87.7069	98.9395	95.726	76.6533	76.6533	95.7217
798	87.89	98.2736	95.3487	76.6823	76.6823	94.6156
799	87.8995	97.6397	95.3678	76.6527	76.6527	93.4137
800	88.2098	98.3782	96.41	76.5808	76.5808	92.1879
801	88.4492	98.5292	96.8581	76.457	76.457	90.8707
802	88.5531	98.2771	97.1498	76.2851	76.2851	89.5016
803	88.7654	98.4698	98.2581	76.0806	76.0806	88.1469
804	89.0928	99.2442	98.4857	75.8557	75.8557	86.8304
805	89.3921	99.9149	100.469	75.5787	75.5787	85.3718
806	89.653	100.607	101.498	75.2632	75.2632	83.9029
807	89.4842	99.5691	100.82	74.5275	74.5275	80.5295
808	88.1829	94.4296	95.9631	72.7248	72.7248	72.7248
809	87.5283	95.4457	96.5814	71.9326	71.9326	71.9326
810	85.2231	85.2231	85.2231	71.5687	71.5687	71.5687
811	83.9375	83.9375	83.9375	71.3985	71.3985	71.3985
812	83.2184	83.2184	83.2184	71.313	71.313	71.313
813	82.8141	82.8141	82.8141	71.2647	71.2647	71.2647
814	82.5848	82.5848	82.5848	71.2326	71.2326	71.2326

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011007

815	82.4526	82.4526	82.4526	71.2078	71.2076	71.2076
816	82.3745	82.3745	82.3745	71.1858	71.1858	71.1858
817	82.3263	82.3263	82.3263	71.1654	71.1654	71.1654
818	82.2949	82.2949	82.2949	71.1456	71.1456	71.1456
819	82.2727	82.2727	82.2727	71.1261	71.1261	71.1261
820	82.2556	82.2556	82.2556	71.1068	71.1068	71.1068
821	82.2414	82.2414	82.2414	71.0876	71.0876	71.0876
822	82.2289	82.2289	82.2289	71.0684	71.0684	71.0684
823	82.2172	82.2172	82.2172	71.0493	71.0493	71.0493
824	82.2059	82.2059	82.2059	71.0302	71.0302	71.0302
825	82.195	82.195	82.195	71.0111	71.0111	71.0111
826	82.1842	82.1842	82.1842	70.9921	70.9921	70.9921
827	88.0147	102.857	106.015	70.9992	70.9992	70.9992
828	88.2438	102.891	106.379	71.0061	71.0061	71.0061
829	89.5854	102.007	105.907	71.0131	71.0131	71.0131
830	90.4601	100.991	105.425	71.0199	71.0199	71.0199
831	91.063	100.624	105.677	71.0268	71.0268	71.0268
832	91.4933	100.155	105.814	70.9822	70.9822	70.9822
833	91.8103	99.7829	105.008	70.8777	70.8777	70.8777
834	92.0614	99.3357	106.123	70.7488	70.7488	70.7488
835	92.2945	99.0487	106.341	70.6105	70.6105	70.6105
836	92.5187	98.7532	106.55	70.4693	70.4693	70.4693
837	92.7108	98.3542	106.721	70.3274	70.3274	70.3274
838	92.8764	97.9087	106.881	70.1862	70.1862	70.1862
839	93.0354	97.725	106.886	70.0459	70.0459	70.0459
840	93.1963	97.7424	106.83	69.907	69.907	69.907
841	93.4472	97.9671	107.204	69.77	69.77	69.77
842	93.93	98.653	108.487	69.6362	69.6362	69.6362
843	94.4899	99.3565	109.692	69.5052	69.5052	69.5052
844	94.5344	98.729	108.499	69.3731	69.3731	69.3731
845	94.2832	97.8613	107.104	69.24	69.24	69.24
846	94.057	97.3463	106.347	69.1072	69.1072	69.1072
847	93.9595	97.1626	106.098	68.9756	68.9756	68.9756
848	93.931	97.0516	105.925	68.8451	68.8451	68.8451
849	93.9591	97.0561	105.883	68.7159	68.7159	68.7159
850	94.0252	97.1217	105.908	68.588	68.588	68.588
851	94.1118	97.2077	105.955	68.4615	68.4615	68.4615
852	94.0638	96.9206	105.447	68.3352	68.3352	68.3352
853	93.7911	96.1728	104.298	68.2083	68.2083	68.2083
854	93.3874	95.3054	103.038	68.0809	68.0809	68.0809
855	92.9055	94.3729	101.725	67.9529	67.9529	67.9529
856	92.5684	93.9523	101.166	67.8257	67.8257	67.8257
857	92.309	93.627	100.711	67.6992	67.6992	67.6992
858	92.0943	93.346	100.304	67.5736	67.5736	67.5736
859	91.8991	93.0808	99.9163	67.4488	67.4488	67.4488
860	91.6905	92.7368	99.4447	67.3247	67.3247	67.3247
861	91.4719	92.3849	98.9679	67.2012	67.2012	67.2012
862	91.2452	92.0277	98.4879	67.0783	67.0783	67.0783
863	91.0115	91.6658	98.0057	66.9561	66.9561	66.9561
864	90.8382	91.4857	97.7991	66.835	66.835	66.835
865	90.7133	91.3373	97.6881	66.7151	66.7151	66.7151
866	90.6151	91.2357	97.6045	66.5963	66.5963	66.5963
867	90.5319	91.1491	97.5356	66.4787	66.4787	66.4787
868	90.4566	91.0708	97.4723	66.3623	66.3623	66.3623
869	90.3835	90.9957	97.4016	66.2469	66.2469	66.2469

Handwritten mark resembling a stylized 'S' or '5' with a vertical line extending downwards.

Handwritten signature or initials.



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

0001008



870	90.3118	90.9223	97.3322	66.1327	66.1327	66.1327
871	90.2413	90.85	97.264	66.0195	66.0195	66.0195
872	90.1718	90.7787	97.1967	65.9074	65.9074	65.9074
873	90.1024	90.7075	97.1272	65.7964	65.7964	65.7964
874	90.0302	90.6334	97.0439	65.6864	65.6864	65.6864
875	89.9565	90.5579	96.9593	65.5775	65.5775	65.5775
876	89.8823	90.4818	96.8744	65.4695	65.4695	65.4695
877	89.808	90.4057	96.7895	65.3626	65.3626	65.3626
878	89.7337	90.3297	96.7049	65.2567	65.2567	65.2567
879	88.1855	88.7576	89.9185	65.1423	65.1423	65.1423
880	87.2338	87.8059	88.9668	65.029	65.029	65.029
881	86.6065	87.1786	88.3394	64.9166	64.9166	64.9166
882	86.1558	86.7279	87.8858	64.8053	64.8053	64.8053
883	85.8018	86.3739	87.5347	64.6949	64.6949	64.6949
884	85.501	86.0731	87.2339	64.5855	64.5855	64.5855
885	85.2347	85.7941	86.992	64.4771	64.4771	64.4771
886	86.3621	95.1528	89.0609	69.9512	69.9512	91.1535
887	87.392	98.7432	90.4808	73.4756	73.4756	97.7322
888	87.9183	99.3243	90.928	75.4048	75.4048	99.7169
889	88.1488	99.4686	91.0758	76.6033	76.6033	100.781
890	88.1764	99.1452	91.0138	77.3891	77.3891	101.088
891	88.4321	99.2091	92.4523	77.8338	77.8338	100.49
892	88.7288	99.2671	93.606	78.0936	78.0936	99.6486
893	89.2997	100.127	95.674	78.2447	78.2447	98.6707
894	90.1834	101.572	98.3174	78.3266	78.3266	97.6228
895	90.3837	100.92	97.8797	78.3519	78.3519	96.5208
896	90.3961	100.268	97.8616	78.3173	78.3173	95.3156
897	90.6082	100.658	98.6399	78.2371	78.2371	94.0765
898	90.8842	101.068	99.3316	78.1092	78.1092	92.7693
899	90.9454	100.682	99.3612	77.9283	77.9283	91.3784
900	91.121	100.794	100.432	77.7143	77.7143	90.0087
901	91.4127	101.474	101.624	77.479	77.479	88.6743
902	91.7075	102.159	102.656	77.1984	77.1984	87.2342
903	91.9596	102.814	103.629	76.873	76.873	85.7383
904	92.0535	102.961	104.148	76.3937	76.3937	83.8529
905	90.8233	97.6811	99.1629	74.6344	74.6344	75.672
906	89.9623	97.5786	98.786	73.5831	73.5831	73.5831
907	89.5511	98.6576	99.5102	73.1196	73.1196	73.1196
908	87.3738	87.3738	87.3738	72.901	72.901	72.901
909	86.1589	86.1589	86.1589	72.7949	72.7949	72.7949
910	85.4789	85.4789	85.4789	72.7382	72.7382	72.7382
911	85.0961	85.0961	85.0961	72.7031	72.7031	72.7031
912	84.8783	84.8783	84.8783	72.6775	72.6775	72.6775
913	84.7524	84.7524	84.7524	72.656	72.656	72.656
914	84.8774	84.6774	84.8774	72.6364	72.6364	72.6364
915	84.6308	84.6308	84.6308	72.6175	72.6175	72.6175
916	84.5999	84.5999	84.5999	72.5991	72.5991	72.5991
917	84.5777	84.5777	84.5777	72.5808	72.5808	72.5808
918	84.5604	84.5604	84.5604	72.5627	72.5627	72.5627
919	84.5458	84.5458	84.5458	72.5446	72.5446	72.5446
920	84.5327	84.5327	84.5327	72.5265	72.5265	72.5265
921	84.5205	84.5205	84.5205	72.5085	72.5085	72.5085
922	84.5087	84.5087	84.5087	72.4905	72.4905	72.4905
923	84.4972	84.4972	84.4972	72.4726	72.4726	72.4726
924	84.4858	84.4858	84.4858	72.4546	72.4546	72.4546



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011009

925	88.3011	103.391	108.8	72.46	72.46	72.46
926	90.5348	103.438	107.254	72.4652	72.4652	72.4652
927	91.8856	102.611	108.919	72.4705	72.4705	72.4705
928	92.7587	102.515	107.443	72.4757	72.4757	72.4757
929	93.3355	102.145	107.691	72.4253	72.4253	72.4253
930	93.723	101.836	107.947	72.3101	72.3101	72.3101
931	94.0052	101.415	108.089	72.1685	72.1685	72.1685
932	94.2475	101.112	108.302	72.0168	72.0168	72.0168
933	94.4688	100.81	108.505	71.8617	71.8617	71.8617
934	94.6587	100.424	108.672	71.7061	71.7061	71.7061
935	94.8175	99.973	108.807	71.5512	71.5512	71.5512
936	94.9537	99.6822	108.858	71.3973	71.3973	71.3973
937	95.1112	99.6869	108.79	71.2449	71.2449	71.2449
938	95.2877	99.7613	108.863	71.0941	71.0941	71.0941
939	95.7108	100.381	110.058	70.9464	70.9464	70.9464
940	96.274	101.134	111.371	70.8017	70.8017	70.8017
941	96.4801	100.935	110.928	70.6572	70.6572	70.6572
942	96.3622	100.268	109.791	70.5124	70.5124	70.5124
943	96.0972	99.5357	108.659	70.3675	70.3675	70.3675
944	95.9328	99.225	108.228	70.2236	70.2236	70.2236
945	95.8706	99.1035	108.062	70.081	70.081	70.081
946	95.8642	99.0437	107.962	69.9397	69.9397	69.9397
947	95.8887	99.0205	107.902	69.7997	69.7997	69.7997
948	95.8332	99.0307	107.882	69.6611	69.6611	69.6611
949	95.9999	99.097	107.927	69.5238	69.5238	69.5238
950	96.0781	99.1749	107.986	69.3879	69.3879	69.3879
951	96.1623	99.2589	108.051	69.2534	69.2534	69.2534
952	96.2495	99.3459	108.12	69.1202	69.1202	69.1202
953	96.3382	99.4343	108.191	68.9883	68.9883	68.9883
954	96.4274	99.5231	108.263	68.8578	68.8578	68.8578
955	96.4868	99.5331	108.22	68.7284	68.7284	68.7284
956	96.435	99.2825	107.8	68.5996	68.5996	68.5996
957	95.0423	96.8178	101.732	68.4638	68.4638	68.4638
958	94.2411	96.0167	100.931	68.3294	68.3294	68.3294
959	93.7617	95.5373	100.452	68.1962	68.1962	68.1962
960	93.4571	95.2327	100.147	68.0642	68.0642	68.0642
961	93.2477	95.0232	99.9379	67.9335	67.9335	67.9335
962	93.0902	94.8657	99.7803	67.8041	67.8041	67.8041
963	92.9611	94.7366	99.6513	67.6758	67.6758	67.6758
964	92.7753	94.4859	99.2294	67.5483	67.5483	67.5483
965	92.5761	94.2404	98.862	67.4218	67.4218	67.4218
966	92.2667	93.7925	98.0683	67.2955	67.2955	67.2955
967	91.9039	93.3045	97.2518	67.1696	67.1696	67.1696
968	91.6158	92.7999	96.4454	67.0442	67.0442	67.0442
969	91.226	92.5025	96.1288	66.9198	66.9198	66.9198
970	90.902	92.0858	95.4919	66.7961	66.7961	66.7961
971	90.5582	91.6571	94.8445	66.6729	66.6729	66.6729
972	90.2045	91.248	94.2074	66.5504	66.5504	66.5504
973	89.8444	90.8353	93.5625	66.4285	66.4285	66.4285
974	89.3982	90.3077	92.5705	66.3068	66.3068	66.3068
975	89.0064	89.9052	91.9869	66.1858	66.1858	66.1858
976	88.6956	89.5943	91.678	66.066	66.066	66.066
977	88.4293	89.3281	91.4097	65.9472	65.9472	65.9472
978	88.1879	89.0867	91.1883	65.8295	65.8295	65.8295
979	87.9607	88.8594	90.9411	65.7129	65.7129	65.7129

*Handwritten signature and initials in blue ink.*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011310



980	87.7418	88.6406	90.7223	85.5973	65.5973	65.5973
981	87.5283	88.4271	90.5087	85.4828	65.4828	65.4828
982	87.3182	88.217	90.2987	85.3682	65.3682	65.3682
983	87.1107	88.0096	90.0912	85.2567	65.2567	65.2567
984	86.9064	87.8042	89.8858	85.1453	65.1453	65.1453
985	86.7018	87.6006	89.6823	85.0348	65.0348	65.0348
986	86.3233	87.1023	88.6631	84.9243	64.9243	64.9243
987	85.8629	86.4742	87.7145	84.8139	64.8139	64.8139
988	85.3505	85.794	86.6939	84.7036	64.7036	64.7036
989	84.8023	85.078	85.6375	84.5934	64.5934	64.5934
990	84.227	84.335	84.5541	84.4833	64.4833	64.4833
991	86.9359	89.505	97.7883	64.392	64.392	64.392
992	88.1634	90.2625	98.1485	64.2999	64.2999	64.2999
993	88.5808	90.2244	97.7256	64.2073	64.2073	64.2073
994	88.6665	90.0803	97.3458	64.1147	64.1147	64.1147
995	88.6527	89.999	97.1365	64.0226	64.0226	64.0226
996	88.5836	89.8646	96.8786	63.9311	63.9311	63.9311
997	88.4834	89.7014	96.5959	63.8401	63.8401	63.8401
998	88.3519	89.4691	96.244	63.7496	63.7496	63.7496
999	88.1922	89.1825	95.8362	63.6595	63.6595	63.6595
1000	88.0154	88.8827	95.4226	63.5699	63.5699	63.5699
1001	87.8284	88.5776	95.0066	63.4807	63.4807	63.4807
1002	87.6339	88.2679	94.5886	63.392	63.392	63.392
1003	87.505	88.1322	94.4658	63.3041	63.3041	63.3041
1004	87.4143	88.0384	94.3887	63.2171	63.2171	63.2171
1005	87.3449	87.9658	94.3325	63.1309	63.1309	63.1309
1006	87.514	98.4696	90.4294	69.2894	69.2894	69.2894
1007	87.8514	98.6141	91.9602	72.0256	72.0256	94.604
1008	88.1867	98.7038	93.1209	73.2723	73.2723	94.7384
1009	88.8283	99.7302	95.3944	73.8606	73.8606	94.1954
1010	89.8524	100.991	97.7534	74.1468	74.1468	93.3521
1011	89.8541	100.323	97.3071	74.2778	74.2778	92.3552
1012	89.8678	99.6842	97.3354	74.3064	74.3064	91.2092
1013	90.1191	100.215	98.218	74.273	74.273	90.0195
1014	90.3788	100.523	98.8102	74.1825	74.1825	88.7449
1015	90.4547	100.186	98.9427	74.0374	74.0374	87.3944
1016	90.6402	100.308	100.024	73.8571	73.8571	86.0583
1017	90.9439	101.041	101.227	73.6558	73.6558	84.7631
1018	91.2378	101.717	102.238	73.4057	73.4057	83.3447
1019	91.4904	102.384	103.23	73.1128	73.1128	81.8882
1020	91.4784	102.056	103.268	72.5598	72.5598	79.3175
1021	90.1835	96.6933	98.2204	70.7798	70.7798	71.3159
1022	89.3922	97.1287	98.3076	69.8493	69.8493	69.8493
1023	89.0199	98.2466	99.0706	69.4392	69.4392	69.4392
1024	86.8635	86.8635	86.8635	69.246	69.246	69.246
1025	85.6604	85.6604	85.6604	69.1525	69.1525	69.1525
1026	84.9869	84.9869	84.9869	69.1027	69.1027	69.1027
1027	84.6078	84.6078	84.6078	69.072	69.072	69.072
1028	84.3922	84.3922	84.3922	69.0497	69.0497	69.0497
1029	84.2674	84.2674	84.2674	69.031	69.031	69.031
1030	84.1932	84.1932	84.1932	69.014	69.014	69.014
1031	84.147	84.147	84.147	68.9977	68.9977	68.9977
1032	84.1164	84.1164	84.1164	68.9818	68.9818	68.9818
1033	84.0945	84.0945	84.0945	68.966	68.966	68.966
1034	84.0774	84.0774	84.0774	68.9503	68.9503	68.9503

*Handwritten signature*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011311

1035	84.063	84.063	84.063	68.9346	68.9346	68.9346
1036	84.05	84.05	84.05	68.919	68.919	68.919
1037	84.0379	84.0379	84.0379	68.9033	68.9033	68.9033
1038	84.0263	84.0263	84.0263	68.8878	68.8878	68.8878
1039	84.0149	84.0149	84.0149	68.8722	68.8722	68.8722
1040	84.0036	84.0036	84.0036	68.8567	68.8567	68.8567
1041	87.8257	102.742	106.223	68.8618	68.8618	68.8618
1042	90.0561	102.781	106.628	68.8669	68.8669	68.8669
1043	91.4063	102.054	106.411	68.872	68.872	68.872
1044	92.2792	101.958	106.935	68.8771	68.8771	68.8771
1045	92.8571	101.611	107.202	68.8374	68.8374	68.8374
1046	93.2442	101.294	107.449	68.7458	68.7458	68.7458
1047	93.5301	100.883	107.604	68.6328	68.6328	68.6328
1048	93.7756	100.593	107.824	68.5118	68.5118	68.5118
1049	94.0019	100.301	108.036	68.3882	68.3882	68.3882
1050	94.1933	99.9095	108.205	68.2641	68.2641	68.2641
1051	94.3555	99.465	108.346	68.1405	68.1405	68.1405
1052	94.5051	99.2121	108.382	68.0178	68.0178	68.0178
1053	94.656	99.2196	108.316	67.8962	67.8962	67.8962
1054	94.8641	99.3591	108.524	67.7761	67.7761	67.7761
1055	95.3173	100.016	109.778	67.6587	67.6587	67.6587
1056	95.9152	100.815	111.169	67.5438	67.5438	67.5438
1057	95.9894	100.285	110.103	67.4284	67.4284	67.4284
1058	95.757	99.4151	108.728	67.3122	67.3122	67.3122
1059	95.4976	98.7997	107.81	67.1962	67.1962	67.1962
1060	95.378	98.5949	107.541	67.0812	67.0812	67.0812
1061	95.3336	98.4894	107.354	66.9672	66.9672	66.9672
1062	95.3432	98.4404	107.277	66.8543	66.8543	66.8543
1063	95.3945	98.4912	107.291	66.7425	66.7425	66.7425
1064	95.4678	98.564	107.331	66.6319	66.6319	66.6319
1065	95.5529	98.6485	107.386	66.5224	66.5224	66.5224
1066	95.5043	98.3711	106.906	66.4133	66.4133	66.4133
1067	95.3195	97.8653	106.129	66.3042	66.3042	66.3042
1068	95.0672	97.3203	105.337	66.1953	66.1953	66.1953
1069	94.7659	96.7221	104.487	66.0865	66.0865	66.0865
1070	94.4269	96.0838	103.596	65.9778	65.9778	65.9778
1071	94.1008	95.5383	102.849	65.8695	65.8695	65.8695
1072	93.8638	95.2507	102.485	65.7619	65.7619	65.7619
1073	93.67	95.0026	102.114	65.6552	65.6552	65.6552
1074	93.4937	94.7687	101.771	65.5492	65.5492	65.5492
1075	93.3211	94.5351	101.422	65.4438	65.4438	65.4438
1076	93.1282	94.2289	100.988	65.3391	65.3391	65.3391
1077	92.3924	93.1606	98.1798	65.2323	65.2323	65.2323
1078	91.2078	92.7803	94.081	66.6408	66.6408	72.6028
1079	90.4665	92.0389	93.3396	67.2881	67.2881	73.2502
1080	89.9662	91.5386	92.8393	67.8129	67.8129	73.5749
1081	89.585	91.1319	92.4231	67.7756	67.7756	73.6397
1082	89.0505	90.2193	91.195	67.5263	67.5263	71.9589
1083	88.4214	89.212	89.872	67.0742	67.0742	70.0714
1084	87.9682	88.7736	89.446	66.8886	66.8886	69.942
1085	87.4944	88.1216	88.8452	66.6299	66.6299	69.0076
1086	86.9822	87.3948	87.7393	66.2919	66.2919	67.8562
1087	86.3321	86.3445	86.3626	65.7128	65.7128	65.7128
1088	87.1689	87.8244	91.7665	65.408	65.408	65.408
1089	88.3135	89.118	95.5951	65.2207	65.2207	65.2207



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011312



1090	88.8312	89.5101	95.873	65.0816	65.0816	65.0816
1091	89.0545	89.6828	96.0111	64.9636	64.9636	64.9636
1092	89.1488	89.7736	96.12	64.8551	64.8551	64.8551
1093	89.1737	89.7951	96.1594	64.7512	64.7512	64.7512
1094	89.1613	89.7794	96.1615	64.6498	64.6498	64.6498
1095	89.1293	89.744	96.1436	64.5501	64.5501	64.5501
1096	89.084	89.6967	96.1014	64.4515	64.4515	64.4515
1097	89.0316	89.6425	96.0514	64.354	64.354	64.354
1098	88.9756	89.5847	95.9977	64.2575	64.2575	64.2575
1099	89.2469	100.652	92.2605	70.5964	70.5964	94.9088
1100	89.3406	100.686	92.2743	73.679	73.679	97.8928
1101	87.8638	89.673	90.0446	70.9562	70.9562	78.6389
1102	86.4574	86.8319	87.3821	67.9192	67.9192	67.9192
1103	85.5721	85.9465	86.4967	66.5662	66.5662	66.5662
1104	84.9702	85.3447	85.8949	65.9263	65.9263	65.9263
1105	84.8474	85.5224	86.8215	65.5903	65.5903	65.5903
1106	84.6835	85.3441	86.6831	65.3827	65.3827	65.3827
1107	84.4993	85.1473	86.5263	65.2301	65.2301	65.2301
1108	84.3051	84.9406	86.3585	65.1014	65.1014	65.1014
1109	84.0825	84.7603	86.0525	64.9832	64.9832	64.9832
1110	83.8624	84.5401	85.8323	64.87	64.87	64.87
1111	83.646	84.3174	85.6258	64.7596	64.7596	64.7596
1112	83.4254	84.1146	85.3777	64.6509	64.6509	64.6509
1113	84.8325	95.8566	87.684	70.8345	70.8345	94.6074
1114	85.7847	96.5948	89.6003	73.6064	73.6064	96.4426
1115	86.487	97.0666	91.2462	74.8679	74.8679	96.6037
1116	87.1938	97.8814	93.2126	75.4554	75.4554	96.0502
1117	88.2818	99.8122	96.5275	75.7346	75.7346	95.1877
1118	88.6307	99.2853	96.2159	75.8584	75.8584	94.1802
1119	88.6971	98.6543	96.1609	75.8814	75.8814	93.034
1120	88.8859	98.8613	96.8114	75.8384	75.8384	91.824
1121	89.2155	99.4648	97.6858	75.7421	75.7421	90.5538
1122	89.2781	99.0236	97.5847	75.5869	75.5869	89.1776
1123	89.4593	99.1403	98.6629	75.3978	75.3978	87.8312
1124	89.7522	99.7596	99.855	75.185	75.185	86.5114
1125	90.0662	100.473	100.938	74.9307	74.9307	85.1106
1126	90.3349	101.131	101.9	74.628	74.628	83.6274
1127	90.5737	101.86	103.007	74.2974	74.2974	82.1806
1128	89.4671	96.7937	98.2577	72.6576	72.6576	74.4426
1129	88.5221	95.9594	97.2094	71.4835	71.4835	71.4835
1130	88.0643	96.9916	97.8871	70.9667	70.9667	70.9667
1131	85.8624	85.8624	85.8624	70.7277	70.7277	70.7277
1132	84.634	84.634	84.634	70.6146	70.6146	70.6146
1133	83.9467	83.9467	83.9467	70.5566	70.5566	70.5566
1134	83.56	83.56	83.56	70.5228	70.5228	70.5228
1135	83.3403	83.3403	83.3403	70.4995	70.4995	70.4995
1136	83.2134	83.2134	83.2134	70.4809	70.4809	70.4809
1137	83.1381	83.1381	83.1381	70.4643	70.4643	70.4643
1138	83.0914	83.0914	83.0914	70.4487	70.4487	70.4487
1139	83.0607	83.0607	83.0607	70.4334	70.4334	70.4334
1140	83.0388	83.0388	83.0388	70.4184	70.4184	70.4184
1141	83.0219	83.0219	83.0219	70.4034	70.4034	70.4034
1142	83.0077	83.0077	83.0077	70.3885	70.3885	70.3885
1143	82.995	82.995	82.995	70.3736	70.3736	70.3736
1144	82.9831	82.9831	82.9831	70.3587	70.3587	70.3587



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011313

1145	82.9717	82.9717	82.9717	70.3439	70.3439	70.3439
1146	82.9606	82.9606	82.9606	70.3291	70.3291	70.3291
1147	82.9496	82.9496	82.9496	70.3143	70.3143	70.3143
1148	88.7859	102.119	105.481	70.3182	70.3182	70.3182
1149	89.0009	102.165	105.939	70.3221	70.3221	70.3221
1150	90.3506	101.192	105.426	70.326	70.326	70.326
1151	91.2245	101.101	105.955	70.3299	70.3299	70.3299
1152	91.8342	100.745	106.22	70.3338	70.3338	70.3338
1153	92.2665	100.456	106.498	70.2884	70.2884	70.2884
1154	92.5798	100.073	106.68	70.1857	70.1857	70.1857
1155	92.8389	99.7818	106.891	70.0597	70.0597	70.0597
1156	93.0764	99.4782	107.113	69.9247	69.9247	69.9247
1157	93.2836	99.1222	107.3	69.7867	69.7867	69.7867
1158	93.4564	98.6851	107.449	69.6482	69.6482	69.6482
1159	93.613	98.3488	107.533	69.5102	69.5102	69.5102
1160	93.7705	98.3631	107.475	69.3733	69.3733	69.3733
1161	93.9291	98.3817	107.422	69.2377	69.2377	69.2377
1162	94.3538	99.0088	108.843	69.1046	69.1046	69.1046
1163	94.9339	99.7888	110.01	68.9742	68.9742	68.9742
1164	95.1453	99.5744	109.545	68.844	68.844	68.844
1165	94.9948	98.8063	108.248	68.7135	68.7135	68.7135
1166	94.708	98.0349	107.064	68.5831	68.5831	68.5831
1167	94.5774	97.8218	106.789	68.4537	68.4537	68.4537
1168	94.5311	97.6973	106.605	68.3256	68.3256	68.3256
1169	94.5322	97.6297	106.483	68.1986	68.1986	68.1986
1170	94.5815	97.6784	106.495	68.0729	68.0729	68.0729
1171	94.8565	97.7529	106.534	67.9484	67.9484	67.9484
1172	94.7454	97.8413	106.588	67.8252	67.8252	67.8252
1173	94.7328	97.6498	106.227	67.7027	67.7027	67.7027
1174	94.5178	97.024	105.254	67.5802	67.5802	67.5802
1175	94.1878	96.2974	104.192	67.4578	67.4578	67.4578
1176	93.7864	95.5033	103.072	67.3355	67.3355	67.3355
1177	93.3906	94.8255	102.131	67.2135	67.2135	67.2135
1178	93.11	94.4848	101.876	67.0924	67.0924	67.0924
1179	92.8865	94.2026	101.279	66.9722	66.9722	66.9722
1180	92.896	93.9493	100.911	66.8528	66.8528	66.8528
1181	92.5166	93.7096	100.557	66.7344	66.7344	66.7344
1182	92.3197	93.3855	100.112	66.6167	66.6167	66.6167
1183	92.1103	93.05	99.6581	66.4998	66.4998	66.4998
1184	91.8915	92.7076	99.1994	66.3836	66.3836	66.3836
1185	91.6653	92.36	98.7378	66.2681	66.2681	66.2681
1186	91.4687	92.0975	98.4231	66.1536	66.1536	66.1536
1187	91.3289	91.9542	98.2879	66.0402	66.0402	66.0402
1188	91.2204	91.8423	98.2038	65.9279	65.9279	65.9279
1189	91.1294	91.748	98.1271	65.8167	65.8167	65.8167
1190	91.0484	91.6638	98.0602	65.7065	65.7065	65.7065
1191	90.9711	91.5841	97.9881	65.5974	65.5974	65.5974
1192	90.8954	91.5064	97.915	65.4894	65.4894	65.4894
1193	90.8212	91.4301	97.8436	65.3823	65.3823	65.3823
1194	90.7484	91.3551	97.7736	65.2763	65.2763	65.2763
1195	90.6743	91.2785	97.6938	65.1713	65.1713	65.1713
1196	90.5969	91.1984	97.6004	65.0673	65.0673	65.0673
1197	90.5177	91.1163	97.5046	64.9643	64.9643	64.9643
1198	89.5946	89.9698	93.831	64.8582	64.8582	64.8582
1199	88.899	91.2545	90.6572	67.4389	67.4389	77.897



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011314



1200	88.1165	90.672	90.0747	68.6714	68.6714	79.1295
1201	87.7045	90.2601	89.6627	69.3323	69.3323	79.7904
1202	87.3857	89.9413	89.3439	69.7499	69.7499	80.208
1203	87.1182	89.6737	89.0764	70.0634	70.0634	80.5215
1204	86.8791	89.4346	88.8373	70.3314	70.3314	80.7895
1205	86.6561	89.2116	88.6143	70.5789	70.5789	81.037
1206	86.4425	88.9981	88.4007	70.8164	70.8164	81.2745
1207	86.2347	88.7903	88.1929	71.0484	71.0484	81.5055
1208	86.0307	88.5863	87.9889	71.2769	71.2769	81.735
1209	85.8294	88.385	87.7876	71.5025	71.5025	81.9606
1210	85.6303	88.1858	87.5885	71.7257	71.7257	82.1838
1211	85.4329	87.9884	87.3911	71.9466	71.9466	82.4047
1212	85.2383	87.802	87.1967	72.1706	72.1706	82.6487
1213	85.0451	87.6103	87.0035	72.3909	72.3909	82.8728
1214	84.8529	87.4181	86.8113	72.6074	72.6074	83.0892
1215	84.6827	87.2336	86.6212	72.8248	72.8248	83.3205
1216	84.4641	86.9701	86.4213	72.9962	72.9962	83.333
1217	84.2702	86.7752	86.2274	73.1849	73.1849	83.5191
1218	84.0799	86.5863	86.0371	73.3813	73.3813	83.7189
1219	83.9005	86.465	85.8588	73.6168	73.6168	84.0966
1220	83.7207	86.2927	85.6792	73.8374	73.8374	84.336
1221	83.5412	86.1209	85.4999	74.0513	74.0513	84.5686
1222	83.3554	85.8923	85.3132	74.2291	74.2291	84.8416
1223	83.164	85.6433	85.1207	74.3788	74.3788	84.6499
1224	82.9698	85.3908	84.9253	74.5123	74.5123	84.8405
1225	82.7741	85.1368	84.7284	74.635	74.635	84.6204
1226	82.5788	84.8861	84.5341	74.7493	74.7493	84.5898
1227	82.3842	84.6369	84.3409	74.8561	74.8561	84.5514
1228	82.1943	84.4231	84.1516	74.9773	74.9773	84.8093
1229	82.0103	84.2392	83.9677	75.1189	75.1189	84.7509
1230	81.8303	84.0591	83.7876	75.2682	75.2682	84.9002
1231	81.6529	83.8817	83.6102	75.42	75.42	85.0519
1232	81.4775	83.7064	83.4349	75.5718	75.5718	85.2038
1233	81.3039	83.5327	83.2612	75.7229	75.7229	85.3549
1234	81.1316	83.3605	83.0889	75.8728	75.8728	85.5048
1235	80.9608	83.1896	82.9181	76.0213	76.0213	85.6533
1236	80.7912	83.02	82.7485	76.1685	76.1685	85.8004
1237	80.6229	82.8517	82.5802	76.3142	76.3142	85.9462
1238	80.4558	82.6846	82.4131	76.4585	76.4585	86.0905
1239	80.2899	82.5188	82.2472	76.6014	76.6014	86.2334
1240	80.1253	82.3541	82.0826	76.7429	76.7429	86.3748
1241	79.9618	82.1906	81.9191	76.883	76.883	86.5149
1242	79.7995	82.0283	81.7588	77.0217	77.0217	86.6537
1243	79.6383	81.8672	81.5956	77.1591	77.1591	86.7911
1244	81.0511	92.3354	84.1892	81.2256	81.2256	105.401
1245	81.8162	93.1886	84.8894	83.3509	83.3509	107.633
1246	82.2192	93.6262	85.2233	84.6318	84.6318	108.944
1247	82.4094	93.7504	85.3419	85.5152	85.5152	109.722
1248	82.4463	93.4834	85.3012	86.1378	86.1378	109.929
1249	82.625	93.4655	86.2529	86.536	86.536	109.537
1250	82.9215	93.5802	87.4544	86.7846	86.7846	108.867
1251	83.2108	93.649	88.3745	86.9359	86.9359	108.052
1252	83.9196	94.9623	90.8451	87.0306	87.0306	107.194
1253	82.5049	85.1867	86.2922	84.1648	84.1648	92.4579
1254	81.8933	84.3751	85.4806	82.9763	82.9763	91.2694



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011315



1255	81.2091	83.8909	84.9984	82.4969	82.4969	90.79
1256	80.9027	83.5846	84.6901	82.3174	82.3174	90.6105
1257	80.6932	83.375	84.4805	82.2645	82.2645	90.5576
1258	80.4325	82.6026	84.122	82.0147	82.0147	89.3478
1259	80.2329	82.3535	83.9147	81.8877	81.8877	89.1249
1260	80.0862	82.1373	83.7404	81.8106	81.8106	88.9519
1261	79.9181	81.9422	83.5868	81.7527	81.7527	88.798
1262	79.7842	81.7722	83.4568	81.7009	81.7009	88.6493
1263	79.6974	81.674	83.3878	81.7782	81.7782	89.124
1264	79.6037	81.7803	83.2941	81.8146	81.8146	89.1604
1265	79.5086	81.6832	83.1971	81.8338	81.8338	89.1795
1266	79.4081	81.5847	83.0985	81.8455	81.8455	89.1912
1267	79.3091	81.4856	82.9995	81.854	81.854	89.1998
1268	79.2101	81.3867	82.9005	81.8612	81.8612	89.2069
1269	79.1115	81.2881	82.8019	81.8677	81.8677	89.2134
1270	79.0134	81.19	82.7038	81.8739	81.8739	89.2196
1271	78.9159	81.0925	82.6064	81.8799	81.8799	89.2256
1272	78.8191	80.9957	82.5095	81.8857	81.8857	89.2315
1273	78.7229	80.8995	82.4134	81.8915	81.8915	89.2372
1274	78.6274	80.804	82.3179	81.8972	81.8972	89.2429
1275	78.5314	80.5817	82.1855	81.8491	81.8491	88.9887
1276	78.3806	80.2852	82.0621	81.7203	81.7203	88.4449
1277	78.2448	79.9945	81.943	81.5491	81.5491	87.8579
1278	77.9981	79.4751	81.3551	81.2323	81.2323	86.6555
1279	77.3534	78.1947	79.2655	80.4676	80.4676	83.5668
1280	76.4683	76.6739	76.9355	79.468	79.468	80.2229
1281	79.3423	90.8796	87.5308	83.8674	83.8674	103.431
1282	80.7468	91.5529	88.4462	85.6974	85.6974	104.215
1283	81.3813	91.4469	88.8442	86.3861	86.3861	103.742
1284	81.8253	91.7062	89.615	86.5625	86.5625	102.735
1285	82.3897	92.7103	90.8864	86.4969	86.4969	101.478
1286	82.5925	92.3879	90.8955	86.2914	86.2914	100.028
1287	82.8466	92.5345	91.9536	86.0186	86.0186	98.5767
1288	83.1958	93.1605	93.2126	85.7079	85.7079	97.1387
1289	83.5727	93.9511	94.3905	85.3545	85.3545	95.6361
1290	83.8974	94.6565	95.3972	84.9488	84.9488	94.0316
1291	84.1878	95.4414	96.564	84.5159	84.5159	92.4727
1292	83.2089	90.7706	92.2164	82.851	82.851	84.9954
1293	82.2695	89.6274	90.8963	81.5545	81.5545	81.5545
1294	81.8156	90.6661	91.5797	80.9828	80.9828	80.9828
1295	79.617	79.617	79.617	80.7197	80.7197	80.7197
1296	78.3912	78.3912	78.3912	80.5954	80.5954	80.5954
1297	77.7061	77.7061	77.7061	80.5319	80.5319	80.5319
1298	77.3213	77.3213	77.3213	80.495	80.495	80.495
1299	77.1034	77.1034	77.1034	80.4698	80.4698	80.4698
1300	76.9782	76.9782	76.9782	80.4496	80.4496	80.4496
1301	76.9046	76.9046	76.9046	80.4318	80.4318	80.4318
1302	76.8596	76.8596	76.8596	80.4149	80.4149	80.4149
1303	76.8306	76.8306	76.8306	80.3985	80.3985	80.3985
1304	76.8104	76.8104	76.8104	80.3822	80.3822	80.3822
1305	76.795	76.795	76.795	80.3661	80.3661	80.3661
1306	76.7825	76.7825	76.7825	80.35	80.35	80.35
1307	76.7714	76.7714	76.7714	80.334	80.334	80.334
1308	76.7612	76.7612	76.7612	80.3179	80.3179	80.3179
1309	76.7514	76.7514	76.7514	80.3019	80.3019	80.3019



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011216

1310	76.742	76.742	76.742	80.2859	80.2859	80.2859
1311	76.7326	76.7326	76.7326	80.27	80.27	80.27
1312	80.5589	96.0408	99.4268	80.2704	80.2704	80.2704
1313	82.7927	96.1021	99.8518	80.2708	80.2708	80.2708
1314	84.1413	95.0566	99.243	80.2712	80.2712	80.2712
1315	85.014	94.972	99.7708	80.2716	80.2716	80.2716
1316	85.6225	94.6229	100.034	80.2719	80.2719	80.2719
1317	86.0675	94.3331	100.313	80.1921	80.1921	80.1921
1318	86.408	93.983	100.523	80.0189	80.0189	80.0189
1319	86.701	93.6876	100.754	79.8077	79.8077	79.8077
1320	86.9759	93.4478	101.017	79.5818	79.5818	79.5818
1321	87.2276	93.1489	101.248	79.351	79.351	79.351
1322	87.4444	92.7587	101.44	79.1194	79.1194	79.1194
1323	87.6439	92.4033	101.597	78.8888	78.8888	78.8888
1324	87.8429	92.455	101.576	78.6599	78.6599	78.6599
1325	88.0426	92.5112	101.56	78.433	78.433	78.433
1326	88.4786	93.1065	102.667	78.2092	78.2092	78.2092
1327	89.0819	93.9141	104.068	77.9887	77.9887	77.9887
1328	89.392	93.8867	103.913	77.7698	77.7698	77.7698
1329	89.3099	93.1763	102.685	77.5515	77.5515	77.5515
1330	89.0521	92.3879	101.424	77.3341	77.3341	77.3341
1331	88.9564	92.2114	101.187	77.1187	77.1187	77.1187
1332	88.9489	92.1295	101.048	76.9053	76.9053	76.9053
1333	88.9891	92.101	100.968	76.6939	76.6939	76.6939
1334	89.0726	92.1697	101	76.4845	76.4845	76.4845
1335	89.1838	92.2805	101.08	76.2772	76.2772	76.2772
1336	89.3094	92.4057	101.177	76.0719	76.0719	76.0719
1337	89.4423	92.5381	101.285	75.8685	75.8685	75.8685
1338	89.558	92.62	101.32	75.6671	75.6671	75.6671
1339	89.5305	92.3415	100.829	75.467	75.467	75.467
1340	89.4338	92.0223	100.322	75.2683	75.2683	75.2683
1341	89.3009	91.6815	99.8055	75.071	75.071	75.071
1342	89.1375	91.3042	99.2475	74.8751	74.8751	74.8751
1343	88.9525	90.9089	98.6745	74.6805	74.6805	74.6805
1344	88.7527	90.5054	98.0987	74.4873	74.4873	74.4873
1345	88.5369	90.0839	97.5035	74.2954	74.2954	74.2954
1346	88.3539	89.7866	97.0878	74.105	74.105	74.105
1347	88.2239	89.6179	96.8457	73.9163	73.9163	73.9163
1348	88.1188	89.4716	96.6215	73.7292	73.7292	73.7292
1349	88.0235	89.3338	96.4027	73.5438	73.5438	73.5438
1350	87.9292	89.1942	96.1778	73.3599	73.3599	73.3599
1351	87.8306	89.0477	95.9406	73.1776	73.1776	73.1776
1352	87.715	88.8523	95.646	72.9968	72.9968	72.9968
1353	87.5726	88.5926	95.2761	72.8175	72.8175	72.8175
1354	87.4097	88.3091	94.8793	72.6395	72.6395	72.6395
1355	87.2333	88.0143	94.4733	72.4629	72.4629	72.4629
1356	87.0489	87.7115	94.061	72.2878	72.2878	72.2878
1357	86.9053	87.5333	93.8626	72.1141	72.1141	72.1141
1358	86.8097	87.4346	93.7806	71.9422	71.9422	71.9422
1359	86.7395	87.3613	93.7235	71.7719	71.7719	71.7719
1360	86.6833	87.3021	93.6802	71.6032	71.6032	71.6032
1361	86.6351	87.2509	93.6447	71.4362	71.4362	71.4362
1362	86.59	87.2036	93.6094	71.2707	71.2707	71.2707
1363	86.5456	87.1576	93.5641	71.1069	71.1069	71.1069
1364	86.5019	87.1122	93.5225	70.9445	70.9445	70.9445





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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011817



1365	86.4587	87.0674	93.4814	70.7837	70.7837	70.7837
1366	86.4161	87.0232	93.4408	70.6245	70.6245	70.6245
1367	86.3741	86.9798	93.4009	70.4688	70.4688	70.4688
1368	86.3289	86.9324	93.3444	70.3105	70.3105	70.3105
1369	86.2818	86.8832	93.285	70.1557	70.1557	70.1557
1370	86.2336	86.8328	93.2236	70.0024	70.0024	70.0024
1371	86.1849	86.7817	93.161	69.8505	69.8505	69.8505
1372	84.9153	87.0084	86.8762	72.0726	72.0728	81.3439
1373	84.194	86.6821	86.1509	73.3689	73.3689	83.6617
1374	83.7282	86.2754	85.6863	74.0645	74.0845	84.5021
1375	83.3517	85.6026	85.3084	74.2739	74.2739	83.9647
1376	83.0121	84.8556	84.9876	74.1657	74.1657	82.7345
1377	82.7038	84.1828	84.7266	73.8946	73.8946	81.3215
1378	82.4284	83.5992	84.5315	73.5374	73.5374	79.8387
1379	81.748	82.1586	82.5754	72.3834	72.3834	74.6542
1380	81.5519	82.1099	83.312	71.2667	71.2667	71.2667
1381	82.2714	88.5007	84.5865	75.2707	75.2707	92.7836
1382	83.5266	94.8645	86.6252	79.0658	79.0658	103.306
1383	84.1888	95.5931	87.2082	81.0806	81.0806	105.393
1384	84.5116	95.8742	87.4496	82.2987	82.2987	106.535
1385	84.8022	95.6159	87.4511	83.0626	83.0626	106.821
1386	84.8581	95.6613	88.7183	83.4888	83.4888	106.288
1387	85.1714	95.7684	89.8806	83.7426	83.7426	105.555
1388	83.4877	84.3242	85.9276	78.4234	78.4234	78.4234
1389	82.5644	83.4811	85.2473	76.0579	76.0579	76.0579
1390	81.9871	82.894	84.6856	74.9428	74.9428	74.9428
1391	81.5982	82.4952	84.3123	74.3578	74.3578	74.3578
1392	81.3122	82.1994	84.0419	73.9981	73.9981	73.9981
1393	81.1448	81.9022	84.1654	73.7349	73.7349	73.7349
1394	80.9937	81.741	84.0657	73.5136	73.5136	73.5136
1395	80.8521	81.5898	83.9714	73.3111	73.3111	73.3111
1396	80.7127	81.444	83.8837	73.1175	73.1175	73.1175
1397	80.5364	81.2915	83.5701	72.9285	72.9285	72.9285
1398	80.3897	81.1248	83.4034	72.7426	72.7426	72.7426
1399	80.2087	80.9638	83.2423	72.5589	72.5589	72.5589
1400	80.0513	80.8083	83.0849	72.3771	72.3771	72.3771
1401	79.8963	80.6514	82.9299	72.1971	72.1971	72.1971
1402	79.7432	80.4982	82.7768	72.0189	72.0189	72.0189
1403	79.5818	80.3444	82.5784	71.8422	71.8422	71.8422
1404	79.4608	80.1962	82.5918	71.6673	71.6673	71.6673
1405	79.329	80.0644	82.4599	71.4941	71.4941	71.4941
1406	79.2202	79.9429	82.4615	71.3226	71.3226	71.3226
1407	79.1193	79.8347	82.4455	71.1527	71.1527	71.1527
1408	78.9268	79.6818	81.9604	70.9841	70.9841	70.9841
1409	80.5661	90.9745	85.8153	76.3374	76.3374	97.3226
1410	82.2028	93.5087	89.8003	78.6149	78.6149	98.4593
1411	83.149	94.091	90.9509	79.562	79.562	98.2551
1412	83.5046	93.8711	90.964	79.9175	79.9175	97.4483
1413	83.7217	93.5122	91.3816	79.9938	79.9938	96.3453
1414	84.2216	94.5981	92.723	79.9339	79.9339	95.126
1415	84.4019	94.2948	92.7411	79.7767	79.7767	93.7453
1416	84.5856	94.2862	93.5122	79.5645	79.5645	92.3553
1417	84.877	94.747	94.703	79.3184	79.3184	90.9805
1418	85.2402	95.5397	95.9162	79.0402	79.0402	89.5887
1419	85.5526	96.2071	96.8666	78.7054	78.7054	88.053



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls



00011818

1420	85.8307	96.9663	97.9977	78.3427	78.3427	86.5884
1421	85.1787	93.7538	95.1211	77.0741	77.0741	80.7878
1422	84.096	91.0761	92.435	75.5908	75.5908	75.5908
1423	83.5623	92.0326	93.0367	74.9383	74.9383	74.9383
1424	81.3214	81.3214	81.3214	74.6415	74.6415	74.6415
1425	80.072	80.072	80.072	74.5039	74.5039	74.5039
1426	79.3735	79.3735	79.3735	74.4359	74.4359	74.4359
1427	78.9811	78.9811	78.9811	74.3985	74.3985	74.3985
1428	78.7588	78.7588	78.7588	74.3743	74.3743	74.3743
1429	78.631	78.631	78.631	74.3561	74.3561	74.3561
1430	78.5557	78.5557	78.5557	74.3404	74.3404	74.3404
1431	78.5096	78.5096	78.5096	74.3259	74.3259	74.3259
1432	78.4797	78.4797	78.4797	74.3118	74.3118	74.3118
1433	78.4588	78.4588	78.4588	74.298	74.298	74.298
1434	78.443	78.443	78.443	74.2843	74.2843	74.2843
1435	78.4299	78.4299	78.4299	74.2706	74.2706	74.2706
1436	78.4184	78.4184	78.4184	74.257	74.257	74.257
1437	78.4077	78.4077	78.4077	74.2434	74.2434	74.2434
1438	78.3975	78.3975	78.3975	74.2298	74.2298	74.2298
1439	78.3876	78.3876	78.3876	74.2162	74.2162	74.2162
1440	78.3778	78.3778	78.3778	74.2026	74.2026	74.2026
1441	82.2059	98.2346	101.529	74.204	74.204	74.204
1442	84.4405	98.2775	101.939	74.2054	74.2054	74.2054
1443	85.7884	97.1937	101.282	74.2067	74.2067	74.2067
1444	86.6587	96.8314	101.495	74.208	74.208	74.208
1445	87.2649	96.4666	101.749	74.2093	74.2093	74.2093
1446	87.705	96.1084	101.977	74.1488	74.1488	74.1488
1447	88.0402	95.7545	102.189	74.0163	74.0163	74.0163
1448	88.3217	95.4095	102.384	73.8544	73.8544	73.8544
1449	88.582	95.1433	102.623	73.6812	73.6812	73.6812
1450	88.8275	94.8536	102.852	73.5043	73.5043	73.5043
1451	89.0356	94.4514	103.035	73.3268	73.3268	73.3268
1452	89.2238	94.0341	103.203	73.1499	73.1499	73.1499
1453	89.411	94.0498	103.182	72.9744	72.9744	72.9744
1454	89.5987	94.0917	103.153	72.8005	72.8005	72.8005
1455	89.9757	94.5712	104.031	72.6289	72.6289	72.6289
1456	90.543	95.341	105.395	72.4601	72.4601	72.4601
1457	90.9342	95.5412	105.663	72.2927	72.2927	72.2927
1458	90.8872	94.8528	104.427	72.1257	72.1257	72.1257
1459	90.6072	93.9757	103.039	71.959	71.959	71.959
1460	90.4797	93.7381	102.716	71.7937	71.7937	71.7937
1461	90.4469	93.6205	102.534	71.63	71.63	71.63
1462	90.4666	93.564	102.417	71.4678	71.4678	71.4678
1463	90.5396	93.6385	102.448	71.3072	71.3072	71.3072
1464	90.6413	93.7376	102.509	71.1481	71.1481	71.1481
1465	90.7583	93.854	102.587	70.9906	70.9906	70.9906
1466	90.6199	93.2828	101.645	70.8337	70.8337	70.8337
1467	90.2986	92.4797	100.435	70.6772	70.6772	70.6772
1468	89.8674	91.5757	99.1316	70.5211	70.5211	70.5211
1469	89.4614	90.8815	98.1589	70.3658	70.3658	70.3658
1470	89.1762	90.5242	97.6648	70.2117	70.2117	70.2117
1471	88.9547	90.2323	97.2396	70.0589	70.0589	70.0589
1472	88.7658	89.9748	96.8523	69.9072	69.9072	69.9072
1473	88.5738	89.6587	96.4031	69.7567	69.7567	69.7567
1474	88.3711	89.3149	95.9288	69.6074	69.6074	69.6074



1475	88.1595	88.9649	95.4468	69.4591	69.4591	69.4591
1476	87.9402	88.81	94.9643	69.3119	69.3119	69.3119
1477	87.7758	88.4035	94.7348	69.166	69.166	69.166
1478	87.6661	88.2901	94.6408	69.0215	69.0215	69.0215
1479	87.5864	88.2058	94.5764	68.8784	68.8784	68.8784
1480	87.5233	88.1402	94.5283	68.7367	68.7367	68.7367
1481	87.4687	88.0826	94.4846	68.5963	68.5963	68.5963
1482	87.4165	88.0285	94.4348	68.4573	68.4573	68.4573
1483	87.3659	87.9761	94.3886	68.3196	68.3196	68.3196
1484	87.3165	87.9249	94.3394	68.1832	68.1832	68.1832
1485	87.2678	87.8746	94.293	68.0482	68.0482	68.0482
1486	87.219	87.824	94.2433	67.9143	67.9143	67.9143
1487	87.1674	87.7706	94.1809	67.7818	67.7818	67.7818
1488	87.1143	87.7157	94.1174	67.6505	67.6505	67.6505
1489	87.0606	87.6602	94.0533	67.5204	67.5204	67.5204
1490	87.0067	87.6046	93.9892	67.3916	67.3916	67.3916
1491	86.9527	87.5489	93.9252	67.264	67.264	67.264
1492	85.4442	85.9648	87.2761	67.1321	67.1321	67.1321
1493	84.5242	85.0447	86.356	67.0014	67.0014	67.0014
1494	83.924	84.4446	85.7559	66.8719	66.8719	66.8719
1495	83.5015	84.0132	85.3504	66.7436	66.7436	66.7436
1496	83.1694	83.6899	85.0012	66.6164	66.6164	66.6164
1497	82.8903	83.4108	84.7221	66.4904	66.4904	66.4904
1498	82.641	83.1604	84.475	66.3656	66.3656	66.3656
1499	82.4078	82.9283	84.2397	66.2419	66.2419	66.2419
1500	82.1845	82.705	84.0163	66.1193	66.1193	66.1193
1501	81.9671	82.4877	83.7989	65.9978	65.9978	65.9978
1502	81.7538	82.2743	83.5856	65.8774	65.8774	65.8774
1503	81.5432	82.0638	83.375	65.7582	65.7582	65.7582
1504	81.3349	81.8554	83.1667	65.64	65.64	65.64
1505	81.1285	81.649	82.9603	65.5229	65.5229	65.5229
1506	80.9238	81.4443	82.7556	65.4068	65.4068	65.4068
1507	80.7206	81.2411	82.5524	65.2918	65.2918	65.2918
1508	80.519	81.0395	82.3508	65.1778	65.1778	65.1778
1509	80.3188	80.8394	82.1506	65.0649	65.0649	65.0649
1510	80.1201	80.6407	81.952	64.953	64.953	64.953
1511	79.9229	80.4434	81.7547	64.8421	64.8421	64.8421
1512	79.7271	80.2476	81.5589	64.7322	64.7322	64.7322
1513	79.5327	80.0532	81.3645	64.6233	64.6233	64.6233
1514	79.3397	79.8602	81.1715	64.5154	64.5154	64.5154
1515	79.1481	79.6686	80.9799	64.4085	64.4085	64.4085
1516	78.9578	79.4783	80.7896	64.3025	64.3025	64.3025
1517	78.769	79.2895	80.6008	64.1975	64.1975	64.1975
1518	78.5814	79.102	80.4133	64.0934	64.0934	64.0934
1519	78.3953	78.9158	80.2271	63.9903	63.9903	63.9903
1520	78.2105	78.731	80.0423	63.8881	63.8881	63.8881
1521	78.027	78.5475	79.8588	63.7869	63.7869	63.7869
1522	77.8593	78.3605	79.6757	63.6866	63.6866	63.6866
1523	77.7387	78.1583	79.4825	63.5874	63.5874	63.5874
1524	77.658	78.0257	80.0158	63.4893	63.4893	63.4893
1525	77.6138	77.9617	80.2448	63.3924	63.3924	63.3924
1526	77.6044	77.9466	80.5386	63.2966	63.2966	63.2966
1527	77.6281	77.9747	80.8505	63.2021	63.2021	63.2021
1528	77.6795	78.0359	81.2416	63.1088	63.1088	63.1088
1529	77.6542	78.0107	81.2163	63.0163	63.0163	63.0163



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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011820

1530	77.5877	77.9442	81.1499	62.9247	62.9247	62.9247
1531	77.4993	77.8557	81.0614	62.8339	62.8339	62.8339
1532	77.3316	77.6811	80.657	62.7438	62.7438	62.7438
1533	77.1048	77.4479	80.1786	62.6541	62.6541	62.6541
1534	76.8478	77.1903	79.6682	62.565	62.565	62.565
1535	76.5776	76.9275	79.1495	62.4764	62.4764	62.4764
1536	76.3055	76.6747	78.6545	62.3884	62.3884	62.3884
1537	76.0362	76.4471	78.1801	62.301	62.301	62.301
1538	75.7951	76.2337	77.8432	62.2144	62.2144	62.2144
1539	75.7596	77.723	77.7242	64.4167	64.4167	73.3418
1540	77.2781	88.6077	80.383	69.5994	69.5994	93.8295
1541	78.1035	89.5069	81.1283	72.2486	72.2486	96.5612
1542	78.5367	89.9172	81.4793	73.7864	73.7864	98.0476
1543	78.7053	89.7311	81.5572	74.7278	74.7278	98.5031
1544	79.0151	89.8217	82.852	75.2734	75.2734	98.0909
1545	79.3908	89.9675	84.1582	75.5914	75.5914	97.3144
1546	79.945	90.8345	85.9887	75.7791	75.7791	96.3718
1547	80.9761	92.5135	89.2271	75.8882	75.8882	95.3504
1548	81.3196	91.9843	88.9125	75.9381	75.9381	94.273
1549	81.4061	91.3734	88.8597	75.9285	75.9285	93.0995
1550	81.6211	91.5847	89.5296	75.87	75.87	91.8789
1551	81.999	92.2581	90.4746	75.7654	75.7654	90.605
1552	82.1051	91.8525	90.3892	75.6046	75.6046	89.2252
1553	82.3328	92.0155	91.5123	75.4107	75.4107	87.8752
1554	82.6726	92.6679	92.751	75.1925	75.1925	86.5485
1555	83.0381	93.4369	93.8926	74.9339	74.9339	85.1464
1556	83.3578	94.1403	94.8991	74.6258	74.6258	83.6554
1557	83.6471	94.9198	96.0571	74.29	74.29	82.2035
1558	82.6274	90.0642	91.5197	72.6824	72.6824	74.6358
1559	81.7058	89.1027	90.3624	71.481	71.481	71.481
1560	81.2619	90.149	91.0539	70.9525	70.9525	70.9525
1561	79.0687	79.0687	79.0687	70.7114	70.7114	70.7114
1562	77.846	77.846	77.846	70.5991	70.5991	70.5991
1563	77.1626	77.1626	77.1626	70.5432	70.5432	70.5432
1564	76.7788	76.7788	76.7788	70.5121	70.5121	70.5121
1565	76.5616	76.5616	76.5616	70.4918	70.4918	70.4918
1566	76.4369	76.4369	76.4369	70.4762	70.4762	70.4762
1567	76.3636	76.3636	76.3636	70.4627	70.4627	70.4627
1568	76.3188	76.3188	76.3188	70.4501	70.4501	70.4501
1569	76.2899	76.2899	76.2899	70.4379	70.4379	70.4379
1570	76.2699	76.2699	76.2699	70.4259	70.4259	70.4259
1571	76.2547	76.2547	76.2547	70.414	70.414	70.414
1572	76.2423	76.2423	76.2423	70.4022	70.4022	70.4022
1573	76.2314	76.2314	76.2314	70.3903	70.3903	70.3903
1574	76.2213	76.2213	76.2213	70.3785	70.3785	70.3785
1575	76.2117	76.2117	76.2117	70.3667	70.3667	70.3667
1576	76.2024	76.2024	76.2024	70.3549	70.3549	70.3549
1577	76.1932	76.1932	76.1932	70.3431	70.3431	70.3431
1578	80.0193	95.4348	98.832	70.345	70.345	70.345
1579	82.253	95.4769	99.2409	70.3468	70.3468	70.3468
1580	83.6023	94.4704	98.697	70.3486	70.3486	70.3486
1581	84.4756	94.3747	99.2111	70.3504	70.3504	70.3504
1582	85.0869	94.0241	99.4815	70.3523	70.3523	70.3523
1583	85.5325	93.741	99.7674	70.3035	70.3035	70.3035
1584	85.8753	93.3872	99.9788	70.1958	70.1958	70.1958





1585	88.1728	93.1086	100.224	70.0642	70.0642	70.0642
1586	86.4514	92.8673	100.488	69.9233	69.9233	69.9233
1587	86.7043	92.5603	100.723	69.7793	69.7793	69.7793
1588	86.9231	92.1684	100.916	69.6348	69.6348	69.6348
1589	87.1256	91.8653	101.052	69.4909	69.4909	69.4909
1590	87.3292	91.9255	101.039	69.3481	69.3481	69.3481
1591	87.5328	91.9855	101.026	69.2066	69.2066	69.2066
1592	88.0003	92.6526	102.279	69.0673	69.0673	69.0673
1593	88.6268	93.4811	103.7	68.9304	68.9304	68.9304
1594	88.8812	93.3039	103.268	68.7941	68.7941	68.7941
1595	88.7684	92.583	101.991	68.6579	68.6579	68.6579
1596	88.5298	91.8519	100.878	68.5221	68.5221	68.5221
1597	88.4444	91.6804	100.641	68.3875	68.3875	68.3875
1598	88.4414	91.5951	100.494	68.2542	68.2542	68.2542
1599	88.49	91.5874	100.432	68.1221	68.1221	68.1221
1600	88.5851	91.6819	100.487	67.9914	67.9914	67.9914
1601	88.706	91.8012	100.568	67.8619	67.8619	67.8619
1602	88.8379	91.9335	100.664	67.7337	67.7337	67.7337
1603	88.7233	91.4012	99.7764	67.6059	67.6059	67.6059
1604	88.4514	90.8972	98.7073	67.4784	67.4784	67.4784
1605	88.0898	89.92	97.5789	67.3513	67.3513	67.3513
1606	87.6855	89.1362	96.4686	67.2246	67.2246	67.2246
1607	87.4181	88.8057	96.0214	67.0989	67.0989	67.0989
1608	87.2223	88.5482	95.6472	66.9743	66.9743	66.9743
1609	87.0636	88.3295	95.3147	66.8506	66.8506	66.8506
1610	86.9226	88.1292	95.0021	66.7279	66.7279	66.7279
1611	86.7731	87.8719	94.6294	66.6061	66.6061	66.6061
1612	86.6112	87.5881	94.2312	66.4853	66.4853	66.4853
1613	86.4411	87.3001	93.8323	66.3653	66.3653	66.3653
1614	86.2651	87.0102	93.4354	66.2463	66.2463	66.2463
1615	86.0849	86.7204	93.0425	66.1281	66.1281	66.1281
1616	85.9675	86.595	92.9272	66.0111	66.0111	66.0111
1617	85.8876	86.5122	92.8595	65.8951	65.8951	65.8951
1618	85.8282	86.45	92.8119	65.7803	65.7803	65.7803
1619	85.7802	86.3994	92.7752	65.6666	65.6666	65.6666
1620	85.7386	86.3563	92.7447	65.554	65.554	65.554
1621	85.7005	86.3148	92.716	65.4425	65.4425	65.4425
1622	85.6624	86.2753	92.6797	65.332	65.332	65.332
1623	85.6245	86.236	92.6436	65.2226	65.2226	65.2226
1624	85.5869	86.197	92.6078	65.1142	65.1142	65.1142
1625	85.5497	86.1585	92.5723	65.0069	65.0069	65.0069
1626	85.5129	86.1204	92.5372	64.9005	64.9005	64.9005
1627	85.4766	86.0827	92.5025	64.7952	64.7952	64.7952
1628	85.4394	86.0441	92.4624	64.6909	64.6909	64.6909
1629	85.4002	86.0035	92.415	64.5875	64.5875	64.5875
1630	85.36	85.962	92.3667	64.4852	64.4852	64.4852
1631	85.3194	85.92	92.3181	64.3838	64.3838	64.3838
1632	85.2786	85.8779	92.2696	64.2833	64.2833	64.2833
1633	85.2378	85.8358	92.2211	64.1838	64.1838	64.1838
1634	85.1971	85.7939	92.1729	64.0853	64.0853	64.0853
1635	84.604	85.0399	89.652	63.9857	63.9857	63.9857
1636	84.5103	92.2746	87.0462	69.0795	69.0795	88.8902
1637	85.0634	96.4129	88.1535	72.7952	72.7952	97.0496
1638	85.3395	96.7459	88.3498	74.8064	74.8064	99.1184
1639	85.4386	96.7344	88.3595	76.0311	76.0311	100.176



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011822

1640	85.4347	96.3845	88.3862	76.8095	76.8095	100.405
1641	85.69	96.4441	89.852	77.2424	77.2424	99.7741
1642	85.9831	96.4871	90.9585	77.4877	77.4877	98.8922
1643	86.8485	97.6068	93.3585	77.6265	77.6265	97.8929
1644	87.4314	98.7113	95.4928	77.6972	77.6972	96.8312
1645	87.8279	98.0565	95.0817	77.7132	77.7132	95.7173
1646	87.8456	97.4243	95.1132	77.6702	77.6702	94.5005
1647	87.9346	98.0672	96.0858	77.5834	77.5834	93.258
1648	88.1917	98.302	96.8119	77.446	77.446	91.8317
1649	88.2902	98.018	96.8341	77.2595	77.2595	90.5442
1650	88.4972	98.1735	97.9382	77.0391	77.0391	89.1691
1651	88.8217	98.9445	99.1624	76.7989	76.7989	87.8375
1652	89.1269	99.6287	100.157	76.5083	76.5083	86.3722
1653	89.3921	100.317	101.186	76.1772	76.1772	84.8828
1654	89.3068	99.6318	100.884	75.5047	75.5047	81.8737
1655	87.9775	94.233	95.7798	73.6491	73.6491	73.7965
1656	87.2498	95.0793	96.236	72.7715	72.7715	72.7715
1657	84.9046	84.9046	84.9046	72.3777	72.3777	72.3777
1658	83.5968	83.5968	83.5968	72.1987	72.1987	72.1987
1659	82.8655	82.8655	82.8655	72.1136	72.1136	72.1136
1660	82.4544	82.4544	82.4544	72.0696	72.0696	72.0696
1661	82.2213	82.2213	82.2213	72.0437	72.0437	72.0437
1662	82.0871	82.0871	82.0871	72.0257	72.0257	72.0257
1663	82.0079	82.0079	82.0079	72.0111	72.0111	72.0111
1664	81.9592	81.9592	81.9592	71.998	71.998	71.998
1665	81.9275	81.9275	81.9275	71.9856	71.9856	71.9856
1666	81.9052	81.9052	81.9052	71.9735	71.9735	71.9735
1667	81.8881	81.8881	81.8881	71.9616	71.9616	71.9616
1668	81.874	81.874	81.874	71.9497	71.9497	71.9497
1669	81.8614	81.8614	81.8614	71.9378	71.9378	71.9378
1670	81.8498	81.8498	81.8498	71.926	71.926	71.926
1671	81.8387	81.8387	81.8387	71.9142	71.9142	71.9142
1672	81.8278	81.8278	81.8278	71.9023	71.9023	71.9023
1673	81.8172	81.8172	81.8172	71.8905	71.8905	71.8905
1674	85.6483	102.619	105.756	71.8916	71.8916	71.8916
1675	87.8843	102.684	106.167	71.8927	71.8927	71.8927
1676	89.2336	101.806	105.679	71.8937	71.8937	71.8937
1677	90.096	100.684	105.081	71.8947	71.8947	71.8947
1678	90.6977	100.316	105.332	71.8957	71.8957	71.8957
1679	91.1302	99.8401	105.467	71.8417	71.8417	71.8417
1680	91.4473	99.4609	105.652	71.7238	71.7238	71.7238
1681	91.6891	99.0089	105.765	71.5797	71.5797	71.5797
1682	91.9349	98.7242	105.987	71.4255	71.4255	71.4255
1683	92.1605	98.4264	106.194	71.2681	71.2681	71.2681
1684	92.356	98.0364	106.368	71.1101	71.1101	71.1101
1685	92.5249	97.5926	106.511	70.9528	70.9528	70.9528
1686	92.6861	97.3832	106.548	70.7966	70.7966	70.7966
1687	92.8492	97.4015	106.493	70.6419	70.6419	70.6419
1688	93.0952	97.6095	106.83	70.4888	70.4888	70.4888
1689	93.5818	98.3036	108.134	70.3382	70.3382	70.3382
1690	94.1486	98.9911	109.315	70.1897	70.1897	70.1897
1691	94.1711	98.3323	108.073	70.0414	70.0414	70.0414
1692	93.9023	97.4275	106.625	69.8934	69.8934	69.8934
1693	93.694	96.9761	105.972	69.7464	69.7464	69.7464
1694	93.6076	96.8045	105.736	69.6008	69.6008	69.6008



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011823

ALSTOM

1695	93.5962	96.7016	105.571	69.4565	69.4565	69.4565
1696	93.621	96.718	105.542	69.3136	69.3136	69.3136
1697	93.6919	96.7883	105.573	69.1721	69.1721	69.1721
1698	93.7821	96.8779	105.623	69.032	69.032	69.032
1699	93.7135	96.5311	105.024	68.8927	68.8927	68.8927
1700	93.4244	95.7589	103.844	68.7538	68.7538	68.7538
1701	93.0085	94.8744	102.563	68.6154	68.6154	68.6154
1702	92.536	93.9828	101.311	68.4774	68.4774	68.4774
1703	92.2081	93.5844	100.779	68.3405	68.3405	68.3405
1704	91.9568	93.2645	100.329	68.2047	68.2047	68.2047
1706	91.7453	92.9861	99.9238	68.0701	68.0701	68.0701
1706	89.2404	89.2568	89.2723	67.9434	67.9434	68.0002
1707	87.7366	87.753	87.7685	67.8107	67.8107	67.8675
1708	86.7769	86.7933	86.8088	67.6761	67.6761	67.733
1709	86.1133	86.1297	86.1452	67.5416	67.5416	67.5984
1710	85.6113	85.6277	85.6433	67.4077	67.4077	67.4645
1711	85.198	85.2144	85.2299	67.2747	67.2747	67.3316
1712	84.8338	84.8502	84.8657	67.1429	67.1429	67.1998
1713	84.4973	84.5137	84.5292	67.0123	67.0123	67.0691
1714	84.1767	84.1931	84.2086	66.8828	66.8828	66.9396
1715	83.8658	83.8822	83.8977	66.7544	66.7544	66.8113
1716	83.5612	83.5776	83.5931	66.6273	66.6273	66.6841
1717	83.3608	83.498	83.713	66.4871	66.4871	66.4871
1718	83.158	83.3856	83.6013	66.3564	66.3564	67.3457
1719	82.8438	82.9269	83.0568	66.3278	66.3278	66.3278
1720	82.8163	83.2386	83.8994	66.1606	66.1606	66.1606
1721	82.96	83.7216	84.9133	66.0205	66.0205	66.0205
1722	84.6556	85.8275	92.6538	65.8977	65.8977	65.8977
1723	85.4939	86.5387	93.2456	65.7803	65.7803	65.7803
1724	85.8666	86.7905	93.3837	65.6856	65.6656	65.6656
1725	85.9867	86.7958	93.281	65.5525	65.5525	65.5525
1726	85.9687	86.8672	93.0486	65.4407	65.4407	65.4407
1727	85.9	86.5292	92.8525	65.3299	65.3299	65.3299
1728	85.8466	86.4727	92.8119	65.2203	65.2203	65.2203
1729	85.8018	86.425	92.7797	65.1117	65.1117	65.1117
1730	85.782	86.3824	92.7523	65.0042	65.0042	65.0042
1731	85.7254	86.3428	92.7279	64.8977	64.8977	64.8977
1732	85.6907	86.3054	92.7052	64.7922	64.7922	64.7922
1733	85.6548	86.2678	92.6719	64.6878	64.6878	64.6878
1734	85.6184	86.2298	92.6375	64.5843	64.5843	64.5843
1735	85.5818	86.1918	92.6029	64.4819	64.4819	64.4819
1736	85.5454	86.1539	92.5684	64.3804	64.3804	64.3804
1737	85.5094	86.1163	92.5342	64.2798	64.2798	64.2798
1738	85.4736	86.0791	92.5003	64.1802	64.1802	64.1802
1739	85.7803	97.1692	88.8415	70.5127	70.5127	94.815
1740	85.9159	97.3273	88.8942	73.6202	73.6202	97.9312
1741	85.9181	97.0818	88.8038	75.2614	75.2614	99.2283
1742	85.9893	96.8531	89.4109	76.1497	76.1497	99.3324
1743	86.2601	96.9181	90.7948	76.6123	76.6123	98.6918
1744	84.4016	85.2133	86.2039	72.1175	72.1175	75.1231
1745	83.8181	84.5252	87.5762	69.4319	69.4319	69.4319
1746	83.4787	84.1895	87.3817	68.2193	68.2193	68.2193
1747	83.2713	83.9925	87.3226	67.6307	67.6307	67.6307
1748	83.1087	83.8329	87.1985	67.3066	67.3066	67.3066
1749	83.096	83.8541	87.6585	67.0957	67.0957	67.0957










1806	89.7382	96.8918	103.794	88.8347	68.8347	68.8347
1808	89.9871	96.628	104.03	88.7043	68.7043	68.7043
1807	90.228	96.348	104.256	88.5711	68.5711	68.5711
1808	90.4299	95.9438	104.435	88.4374	68.4374	68.4374
1809	90.6083	95.5111	104.588	88.3042	68.3042	68.3042
1810	90.7844	95.4435	104.589	68.172	68.172	68.172
1811	90.962	95.4777	104.55	68.041	68.041	68.041
1812	91.2864	95.8496	105.214	67.9117	67.9117	67.9117
1813	91.8188	96.5848	106.545	67.7845	67.7845	67.7845
1814	92.2874	97.0005	107.213	67.6588	67.6588	67.6588
1815	92.2769	96.3411	105.999	67.5332	67.5332	67.5332
1816	92.0125	95.4746	104.818	67.4078	67.4078	67.4078
1817	91.8437	95.1189	104.106	67.2834	67.2834	67.2834
1818	91.7847	94.9743	103.9	67.16	67.16	67.16
1819	91.785	94.8955	103.761	67.0379	67.0379	67.0379
1820	91.8387	94.8357	103.759	66.9169	66.9169	66.9169
1821	91.9254	95.0219	103.808	66.7971	66.7971	66.7971
1822	92.0296	95.1255	103.877	66.6785	66.6785	66.6785
1823	92.0585	95.0153	103.626	66.5608	66.5608	66.5608
1824	91.8743	94.4174	102.679	66.4435	66.4435	66.4435
1825	91.5837	93.7513	101.695	66.3266	66.3266	66.3266
1826	91.2448	93.0738	100.731	66.2102	66.2102	66.2102
1827	90.8811	92.3915	99.7802	66.0944	66.0944	66.0944
1828	90.8147	92.0296	99.2989	65.9795	65.9795	65.9795
1829	90.4251	91.7942	98.9748	65.8655	65.8655	65.8655
1830	88.8755	89.5808	92.5206	65.7482	65.7482	65.7482
1831	87.9519	88.6572	91.597	65.632	65.632	65.632
1832	87.3683	88.0736	91.0134	65.5169	65.5169	65.5169
1833	86.9698	87.675	90.8148	65.4028	65.4028	65.4028
1834	86.8721	87.3774	90.3172	65.2898	65.2898	65.2898
1835	86.4171	87.1216	90.0186	65.1778	65.1778	65.1778
1836	86.1774	86.8837	89.7025	65.0668	65.0668	65.0668
1837	85.9459	86.6548	89.3979	64.9567	64.9567	64.9567
1838	85.7059	86.4208	89.0368	64.8475	64.8475	64.8475
1839	85.5162	86.2263	88.9382	64.7395	64.7395	64.7395
1840	85.3127	86.0252	88.6505	64.6323	64.6323	64.6323
1841	85.1028	85.8221	88.3806	64.5261	64.5261	64.5261
1842	84.8923	85.6186	88.1149	64.4208	64.4208	64.4208
1843	84.6877	85.4147	87.8784	64.3165	64.3165	64.3165
1844	84.4536	85.2087	87.4873	64.213	64.213	64.213
1845	84.2429	84.998	87.2765	64.1105	64.1105	64.1105
1846	84.0454	84.8005	87.0791	64.0089	64.0089	64.0089
1847	83.8557	84.6108	86.8894	63.9082	63.9082	63.9082
1848	83.6708	84.4259	86.7045	63.8084	63.8084	63.8084
1849	84.0667	88.2283	87.6852	66.8892	66.8892	79.2063
1850	85.5808	96.1213	91.2236	70.6568	70.6568	91.4305
1851	87.1724	98.6686	95.2558	72.2895	72.2895	91.9029
1852	87.8768	98.6421	95.5455	72.9952	72.9952	91.4602
1853	88.1169	98.1522	95.579	73.2771	73.2771	90.5709
1854	88.348	98.2558	96.1764	73.3542	73.3542	89.4736
1855	88.7578	99.0624	97.2501	73.3218	73.3218	88.2703
1856	88.8588	98.6485	97.1595	73.2051	73.2051	86.9285
1857	89.0389	98.7268	98.1455	73.0427	73.0427	85.6012
1858	89.3263	99.286	99.3331	72.8503	72.8503	84.2931
1859	89.6505	100.021	100.455	72.8186	72.8186	82.9261



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011826

1860	89.9287	100.67	101.399	72.3345	72.3345	81.4523
1861	90.1707	101.405	102.512	72.023	72.023	80.0248
1862	89.2127	96.9708	98.4014	70.5431	70.5431	72.9877
1863	88.2134	95.4927	96.7803	69.2844	69.2844	69.2844
1864	87.7256	96.4951	97.428	68.7312	68.7312	68.7312
1865	85.5079	85.5079	85.5079	68.4807	68.4807	68.4807
1866	84.2709	84.2709	84.2709	68.3653	68.3653	68.3653
1867	83.5788	83.5788	83.5788	68.3092	68.3092	68.3092
1868	83.1895	83.1895	83.1895	68.2789	68.2789	68.2789
1869	82.9684	82.9684	82.9684	68.26	68.26	68.26
1870	82.8407	82.8407	82.8407	68.246	68.246	68.246
1871	82.7651	82.7651	82.7651	68.2342	68.2342	68.2342
1872	82.7183	82.7183	82.7183	68.2234	68.2234	68.2234
1873	82.6875	82.6875	82.6875	68.213	68.213	68.213
1874	82.6656	82.6656	82.6656	68.2028	68.2028	68.2028
1875	82.6487	82.6487	82.6487	68.1926	68.1926	68.1926
1876	82.6346	82.6346	82.6346	68.1825	68.1825	68.1825
1877	82.622	82.622	82.622	68.1725	68.1725	68.1725
1878	82.6102	82.6102	82.6102	68.1624	68.1624	68.1624
1879	82.5989	82.5989	82.5989	68.1524	68.1524	68.1524
1880	82.5879	82.5879	82.5879	68.1423	68.1423	68.1423
1881	82.577	82.577	82.577	68.1323	68.1323	68.1323
1882	88.4022	101.991	105.359	68.1337	68.1337	68.1337
1883	88.6346	102.032	105.767	68.1351	68.1351	68.1351
1884	88.9812	100.926	105.093	68.1365	68.1365	68.1365
1885	90.8533	100.832	105.62	68.1379	68.1379	68.1379
1886	91.4598	100.467	105.874	68.1393	68.1393	68.1393
1887	91.8929	100.156	106.138	68.0969	68.0969	68.0969
1888	92.2079	99.7748	106.322	68.0037	68.0037	68.0037
1889	92.4684	99.4452	106.521	67.8897	67.8897	67.8897
1890	92.7061	99.1631	106.744	67.7678	67.7678	67.7678
1891	92.9189	98.8222	106.938	67.6432	67.6432	67.6432
1892	93.0987	98.3931	107.094	67.5181	67.5181	67.5181
1893	93.2562	98.0125	107.204	67.3936	67.3936	67.3936
1894	93.4152	98.0268	107.148	67.27	67.27	67.27
1895	93.5747	98.0473	107.098	67.1475	67.1475	67.1475
1896	93.8503	98.5862	108.086	67.0268	67.0268	67.0268
1897	94.4902	99.2973	109.378	66.908	66.908	66.908
1898	94.8515	99.4746	109.611	66.7904	66.7904	66.7904
1899	94.8026	98.8314	108.459	66.6729	66.6729	66.6729
1900	94.5367	98.0141	107.171	66.5556	66.5556	66.5556
1901	94.3536	97.6367	106.633	66.4392	66.4392	66.4392
1902	94.2809	97.4873	106.426	66.3239	66.3239	66.3239
1903	94.2677	97.4009	106.284	66.2096	66.2096	66.2096
1904	94.2982	97.3954	106.234	66.0965	66.0965	66.0965
1905	94.364	97.4807	106.284	65.9844	65.9844	65.9844
1906	94.4487	97.5449	106.314	65.8735	65.8735	65.8735
1907	94.5434	97.6391	106.374	65.7636	65.7636	65.7636
1908	94.4344	97.1864	106.624	65.6543	65.6543	65.6543
1909	94.1507	96.4726	104.547	65.5452	65.5452	65.5452
1910	93.7737	96.6915	103.424	65.4365	65.4365	65.4365
1911	93.3534	94.9016	102.322	65.3282	65.3282	65.3282
1912	93.0273	94.4424	101.71	65.2206	65.2206	65.2206
1913	92.7952	94.1617	101.338	65.114	65.114	65.114
1914	92.8182	93.9393	101.033	65.0082	65.0082	65.0082



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011827



1915	92.4684	93.753	100.774	64.9034	64.9034	64.9034
1916	92.3404	93.5913	100.548	64.7994	64.7994	64.7994
1917	92.2258	93.4478	100.35	64.6964	64.6964	64.6964
1918	92.1205	93.3172	100.171	64.5943	64.5943	64.5943
1919	92.0122	93.1813	99.9661	64.4931	64.4931	64.4931
1920	91.8992	92.9958	99.7513	64.3927	64.3927	64.3927
1921	91.7786	92.8167	99.5173	64.2932	64.2932	64.2932
1922	91.6474	92.6194	99.2579	64.1946	64.1946	64.1946
1923	91.5038	92.4021	98.9712	64.0967	64.0967	64.0967
1924	91.6045	102.469	96.0837	70.1057	70.1057	93.2377
1925	91.8701	102.507	96.4655	72.7346	72.7346	94.721
1926	92.2151	102.731	97.7949	73.8974	73.8974	94.7011
1927	93.1576	104.633	101.188	74.4206	74.4206	94.059
1928	93.5164	104.307	101.204	74.6526	74.6526	93.1497
1929	93.549	103.605	101.012	74.7313	74.7313	92.0691
1930	93.6304	103.511	101.419	74.7193	74.7193	90.8929
1931	93.9557	104.298	102.468	74.6466	74.6466	89.6805
1932	94.011	103.831	102.323	74.5092	74.5092	88.3039
1933	94.1264	103.82	103.18	74.3329	74.3329	86.9627
1934	94.361	104.292	104.311	74.129	74.129	85.6411
1935	94.6461	104.994	105.409	73.8893	73.8893	84.2736
1936	94.8852	105.598	106.302	73.5955	73.5955	82.7847
1937	95.0928	106.295	107.379	73.2749	73.2749	81.3479
1938	94.1861	102.205	103.615	71.8699	71.8699	74.7129
1939	93.1252	100.309	101.619	70.5449	70.5449	70.5449
1940	92.6025	101.277	102.232	69.9625	69.9625	69.9625
1941	90.3655	90.3655	90.3655	69.6993	69.6993	69.6993
1942	89.1172	89.1172	89.1172	69.5784	69.5784	69.5784
1943	88.4182	88.4182	88.4182	69.5197	69.5197	69.5197
1944	88.0245	88.0245	88.0245	69.4883	69.4883	69.4883
1945	87.8004	87.8004	87.8004	69.4688	69.4688	69.4688
1946	87.8705	87.6705	87.8705	69.4545	69.4545	69.4545
1947	87.593	87.593	87.593	69.4425	69.4425	69.4425
1948	87.5446	87.5446	87.5446	69.4316	69.4316	69.4316
1949	87.5124	87.5124	87.5124	69.421	69.421	69.421
1950	87.4892	87.4892	87.4892	69.4107	69.4107	69.4107
1951	87.471	87.471	87.471	69.4005	69.4005	69.4005
1952	87.4555	87.4555	87.4555	69.3903	69.3903	69.3903
1953	87.4416	87.4416	87.4416	69.3801	69.3801	69.3801
1954	87.4286	87.4286	87.4286	69.37	69.37	69.37
1955	87.416	87.416	87.416	69.3598	69.3598	69.3598
1956	87.4037	87.4037	87.4037	69.3497	69.3497	69.3497
1957	87.3916	87.3916	87.3916	69.3396	69.3396	69.3396
1958	91.2161	106.945	110.29	69.3405	69.3405	69.3405
1959	93.4476	106.985	110.696	69.3413	69.3413	69.3413
1960	94.7924	105.827	109.957	69.3421	69.3421	69.3421
1961	95.6615	105.699	110.447	69.343	69.343	69.343
1962	96.2668	105.336	110.703	69.3438	69.3438	69.3438
1963	96.6926	105.008	110.955	69.2976	69.2976	69.2976
1964	96.9855	104.597	111.108	69.1965	69.1965	69.1965
1965	97.2173	104.227	111.271	69.0731	69.0731	69.0731
1966	97.4238	103.914	111.463	68.9411	68.9411	68.9411
1967	97.6064	103.549	111.627	68.8062	68.8062	68.8062
1968	97.7526	103.087	111.751	68.6709	68.6709	68.6709
1969	97.8777	102.636	111.835	68.5361	68.5361	68.5361



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011828



1970	98.0041	102.621	111.745	68.4023	68.4023	68.4023
1971	98.1311	102.605	111.656	68.2697	68.2697	68.2697
1972	98.484	103.107	112.648	68.139	68.139	68.139
1973	99.0121	103.838	113.972	68.0103	68.0103	68.0103
1974	99.2724	103.795	113.846	67.8826	67.8826	67.8826
1975	99.1363	103.039	112.559	67.7552	67.7552	67.7552
1976	98.7996	102.141	111.182	67.6281	67.6281	67.6281
1977	98.6291	101.889	110.867	67.5022	67.5022	67.5022
1978	98.5489	101.732	110.653	67.3774	67.3774	67.3774
1979	98.5177	101.63	110.496	67.2538	67.2538	67.2538
1980	98.5314	101.628	110.457	67.1314	67.1314	67.1314
1981	98.574	101.671	110.467	67.0102	67.0102	67.0102
1982	98.6321	101.728	110.494	66.8901	66.8901	66.8901
1983	98.6983	101.794	110.531	66.7713	66.7713	66.7713
1984	98.6294	101.496	110.031	66.6532	66.6532	66.6532
1985	98.4227	100.967	109.23	66.5358	66.5358	66.5358
1986	98.1367	100.37	108.369	66.4189	66.4189	66.4189
1987	97.8032	99.7337	107.477	66.3027	66.3027	66.3027
1988	97.4393	99.0764	106.572	66.1871	66.1871	66.1871
1989	97.1007	98.538	105.848	66.0722	66.0722	66.0722
1990	96.8536	98.2468	105.473	65.9583	65.9583	65.9583
1991	96.655	98.0053	105.15	65.8454	65.8454	65.8454
1992	96.4819	97.7902	104.856	65.7335	65.7335	65.7335
1993	96.3217	97.5891	104.577	65.6225	65.6225	65.6225
1994	96.1675	97.3951	104.308	65.5125	65.5125	65.5125
1995	96.0146	97.1999	104.039	65.4035	65.4035	65.4035
1996	95.8482	96.952	103.714	65.2953	65.2953	65.2953
1997	95.673	96.6967	103.384	65.188	65.188	65.188
1998	95.4915	96.4388	103.05	65.0816	65.0816	65.0816
1999	95.3053	96.1736	102.715	64.9761	64.9761	64.9761
2000	95.1159	95.9102	102.382	64.8715	64.8715	64.8715
2001	94.924	95.6461	102.05	64.7677	64.7677	64.7677
2002	94.7294	95.3806	101.718	64.6648	64.6648	64.6648
2003	94.5641	95.193	101.518	64.5628	64.5628	64.5628
2004	94.4282	95.0552	101.39	64.4618	64.4618	64.4618
2005	94.3088	94.9339	101.279	64.3618	64.3618	64.3618
2006	94.1989	94.8221	101.177	64.2627	64.2627	64.2627
2007	94.0945	94.7159	101.081	64.1646	64.1646	64.1646
2008	93.9937	94.6132	100.988	64.0674	64.0674	64.0674
2009	93.8952	94.5129	100.897	63.9711	63.9711	63.9711
2010	93.7983	94.4143	100.807	63.8758	63.8758	63.8758
2011	93.7025	94.3169	100.718	63.7813	63.7813	63.7813
2012	93.6064	94.2198	100.623	63.6878	63.6878	63.6878
2013	93.8248	105.24	96.7842	70.0282	70.0282	94.3385
2014	93.6274	104.898	96.6909	73.0084	73.0084	96.8454
2015	93.9697	104.789	97.7183	74.4242	74.4242	97.3185
2016	94.2182	104.803	98.9518	75.1029	75.1029	96.8624
2017	94.6569	105.343	100.873	75.4369	75.4369	96.0334
2018	95.5752	107.1	103.816	75.6039	75.6039	95.0496
2019	95.8071	106.452	103.385	75.6774	75.6774	93.9865
2020	95.789	106.741	103.253	75.6788	75.6788	92.822
2021	95.9111	106.886	103.839	75.6263	75.6263	91.608
2022	96.1805	106.427	104.652	75.5251	75.5251	90.3369
2023	96.1877	106.932	104.493	75.3673	75.3673	88.9602
2024	96.3161	106.997	105.517	75.176	75.176	87.6131

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls



00011829

2025	96.5577	106.564	106.657	74.9604	74.9604	86.2903
2026	96.8221	107.228	107.692	74.7032	74.7032	84.8871
2027	97.0417	107.836	108.604	74.3973	74.3973	83.4005
2028	97.2321	108.516	109.683	74.0635	74.0635	81.9506
2029	96.0822	103.423	104.886	72.4279	72.4279	74.2342
2030	95.0987	102.531	103.782	71.251	71.251	71.251
2031	94.6188	103.541	104.438	70.7333	70.7333	70.7333
2032	92.4039	92.4039	92.4039	70.4986	70.4986	70.4986
2033	91.1675	91.1675	91.1675	70.3901	70.3901	70.3901
2034	90.475	90.475	90.475	70.3369	70.3369	70.3369
2035	90.0846	90.0846	90.0846	70.3079	70.3079	70.3079
2036	89.8621	89.8621	89.8621	70.2895	70.2895	70.2895
2037	89.7329	89.7329	89.7329	70.2757	70.2757	70.2757
2038	89.6556	89.6556	89.6556	70.264	70.264	70.264
2039	89.607	89.607	89.607	70.2531	70.2531	70.2531
2040	89.5745	89.5745	89.5745	70.2427	70.2427	70.2427
2041	89.5508	89.5508	89.5508	70.2324	70.2324	70.2324
2042	89.5321	89.5321	89.5321	70.2222	70.2222	70.2222
2043	89.5161	89.5161	89.5161	70.2121	70.2121	70.2121
2044	89.5017	89.5017	89.5017	70.2019	70.2019	70.2019
2045	89.4881	89.4881	89.4881	70.1918	70.1918	70.1918
2046	89.475	89.475	89.475	70.1817	70.1817	70.1817
2047	89.4622	89.4622	89.4622	70.1716	70.1716	70.1716
2048	89.4495	89.4495	89.4495	70.1615	70.1615	70.1615
2049	93.272	108.836	112.042	70.1619	70.1619	70.1619
2050	95.4981	108.668	112.419	70.1623	70.1623	70.1623
2051	96.8459	107.691	111.922	70.1627	70.1627	70.1627
2052	97.718	107.598	112.45	70.1631	70.1631	70.1631
2053	98.3259	107.24	112.712	70.1635	70.1635	70.1635
2054	98.745	106.937	112.977	70.1145	70.1145	70.1145
2055	99.0299	106.525	113.13	70.0082	70.0082	70.0082
2056	99.2535	106.177	113.305	69.8785	69.8785	69.8785
2057	99.4491	105.853	113.485	69.7398	69.7398	69.7398
2058	99.6135	105.454	113.63	69.598	69.598	69.598
2059	99.7424	104.976	113.735	69.4558	69.4558	69.4558
2060	99.8544	104.594	113.78	69.3141	69.3141	69.3141
2061	99.9673	104.568	113.684	69.1735	69.1735	69.1735
2062	100.08	104.545	113.591	69.0342	69.0342	69.0342
2063	100.419	105.041	114.581	68.8967	68.8967	68.8967
2064	100.91	105.718	115.801	68.7613	68.7613	68.7613
2065	101.234	105.879	116.033	68.6272	68.6272	68.6272
2066	101.165	105.249	114.924	68.4935	68.4935	68.4935
2067	100.896	104.476	113.721	68.3803	68.3803	68.3803
2068	100.643	103.952	112.969	68.2281	68.2281	68.2281
2069	100.517	103.762	112.729	68.097	68.097	68.097
2070	100.459	103.646	112.569	67.9973	67.9973	67.9973
2071	100.439	103.573	112.456	67.8387	67.8387	67.8387
2072	100.445	103.542	112.392	67.7113	67.7113	67.7113
2073	100.476	103.573	112.399	67.5852	67.5852	67.5852
2074	100.52	103.617	112.421	67.4604	67.4604	67.4604
2075	100.572	103.668	112.451	67.3367	67.3367	67.3367
2076	100.627	103.724	112.486	67.2143	67.2143	67.2143
2077	100.685	103.781	112.523	67.093	67.093	67.093
2078	100.7	103.725	112.393	66.9728	66.9728	66.9728
2079	100.586	103.369	111.833	66.8535	66.8535	66.8535

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2135	91.6656	91.6656	91.6656	69.9035	69.9035	69.9035
2136	91.6519	91.6519	91.6519	69.8936	69.8936	69.8936
2137	91.6385	91.6385	91.6385	69.8838	69.8838	69.8838
2138	91.6253	91.6253	91.6253	69.8741	69.8741	69.8741
2139	91.6121	91.6121	91.6121	69.8643	69.8643	69.8643
2140	91.599	91.599	91.599	69.8545	69.8545	69.8545
2141	91.5859	91.5859	91.5859	69.8447	69.8447	69.8447
2142	91.5728	91.5728	91.5728	69.8349	69.8349	69.8349
2143	91.5597	91.5597	91.5597	69.8252	69.8252	69.8252
2144	91.5466	91.5466	91.5466	69.8154	69.8154	69.8154
2145	91.5336	91.5336	91.5336	69.8057	69.8057	69.8057
2146	91.5205	91.5205	91.5205	69.7959	69.7959	69.7959
2147	91.5075	91.5075	91.5075	69.7862	69.7862	69.7862
2148	91.4944	91.4944	91.4944	69.7765	69.7765	69.7765
2149	91.4814	91.4814	91.4814	69.7668	69.7668	69.7668
2150	91.4684	91.4684	91.4684	69.757	69.757	69.757
2151	91.4553	91.4553	91.4553	69.7473	69.7473	69.7473
2152	91.4423	91.4423	91.4423	69.7376	69.7376	69.7376
2153	91.4293	91.4293	91.4293	69.7279	69.7279	69.7279
2154	91.4163	91.4163	91.4163	69.7182	69.7182	69.7182
2155	91.4032	91.4032	91.4032	69.7085	69.7085	69.7085
2156	91.3902	91.3902	91.3902	69.6989	69.6989	69.6989
2157	91.3772	91.3772	91.3772	69.6892	69.6892	69.6892
2158	91.3642	91.3642	91.3642	69.6795	69.6795	69.6795
2159	91.3512	91.3512	91.3512	69.6699	69.6699	69.6699
2160	91.3382	91.3382	91.3382	69.6602	69.6602	69.6602
2161	91.3252	91.3252	91.3252	69.6506	69.6506	69.6506
2162	91.3122	91.3122	91.3122	69.6409	69.6409	69.6409
2163	91.2992	91.2992	91.2992	69.6313	69.6313	69.6313
2164	91.2862	91.2862	91.2862	69.6217	69.6217	69.6217
2165	91.2732	91.2732	91.2732	69.612	69.612	69.612
2166	91.2603	91.2603	91.2603	69.6024	69.6024	69.6024
2167	91.2473	91.2473	91.2473	69.5928	69.5928	69.5928
2168	91.2343	91.2343	91.2343	69.5832	69.5832	69.5832
2169	91.2213	91.2213	91.2213	69.5736	69.5736	69.5736
2170	91.2084	91.2084	91.2084	69.564	69.564	69.564
2171	91.1954	91.1954	91.1954	69.5544	69.5544	69.5544
2172	91.1824	91.1824	91.1824	69.5448	69.5448	69.5448
2173	91.1695	91.1695	91.1695	69.5353	69.5353	69.5353
2174	91.1565	91.1565	91.1565	69.5257	69.5257	69.5257
2175	91.1436	91.1436	91.1436	69.5161	69.5161	69.5161
2176	91.1306	91.1306	91.1306	69.5066	69.5066	69.5066
2177	91.1177	91.1177	91.1177	69.497	69.497	69.497
2178	91.1047	91.1047	91.1047	69.4875	69.4875	69.4875
2179	91.0918	91.0918	91.0918	69.4779	69.4779	69.4779
2180	91.0789	91.0789	91.0789	69.4684	69.4684	69.4684
2181	91.0659	91.0659	91.0659	69.4589	69.4589	69.4589
2182	91.053	91.053	91.053	69.4494	69.4494	69.4494
2183	91.0401	91.0401	91.0401	69.4399	69.4399	69.4399
2184	91.0272	91.0272	91.0272	69.4303	69.4303	69.4303
2185	91.0142	91.0142	91.0142	69.4208	69.4208	69.4208
2186	91.0013	91.0013	91.0013	69.4113	69.4113	69.4113
2187	90.9884	90.9884	90.9884	69.4019	69.4019	69.4019
2188	90.9755	90.9755	90.9755	69.3924	69.3924	69.3924
2189	90.9626	90.9626	90.9626	69.3829	69.3829	69.3829

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011832



2190	90.9497	90.9497	90.9497	69.3734	69.3734	69.3734
2191	90.9368	90.9368	90.9368	69.364	69.364	69.364
2192	90.9239	90.9239	90.9239	69.3545	69.3545	69.3545
2193	90.911	90.911	90.911	69.345	69.345	69.345
2194	90.8981	90.8981	90.8981	69.3356	69.3356	69.3356
2195	90.8853	90.8853	90.8853	69.3262	69.3262	69.3262
2196	90.8724	90.8724	90.8724	69.3167	69.3167	69.3167
2197	90.8595	90.8595	90.8595	69.3073	69.3073	69.3073
2198	90.8466	90.8466	90.8466	69.2979	69.2979	69.2979
2199	90.8338	90.8338	90.8338	69.2884	69.2884	69.2884
2200	90.8209	90.8209	90.8209	69.279	69.279	69.279
2201	90.808	90.808	90.808	69.2696	69.2696	69.2696
2202	90.7952	90.7952	90.7952	69.2602	69.2602	69.2602
2203	90.7823	90.7823	90.7823	69.2508	69.2508	69.2508
2204	90.7695	90.7695	90.7695	69.2414	69.2414	69.2414
2205	90.7566	90.7566	90.7566	69.2321	69.2321	69.2321
2206	90.7438	90.7438	90.7438	69.2227	69.2227	69.2227
2207	90.7309	90.7309	90.7309	69.2133	69.2133	69.2133
2208	90.7181	90.7181	90.7181	69.2039	69.2039	69.2039
2209	90.7053	90.7053	90.7053	69.1946	69.1946	69.1946
2210	90.6924	90.6924	90.6924	69.1852	69.1852	69.1852
2211	90.6796	90.6796	90.6796	69.1759	69.1759	69.1759
2212	90.6668	90.6668	90.6668	69.1665	69.1665	69.1665
2213	90.654	90.654	90.654	69.1572	69.1572	69.1572
2214	90.6411	90.6411	90.6411	69.1479	69.1479	69.1479
2215	90.6283	90.6283	90.6283	69.1385	69.1385	69.1385
2216	90.6155	90.6155	90.6155	69.1292	69.1292	69.1292
2217	90.6027	90.6027	90.6027	69.1199	69.1199	69.1199
2218	90.5899	90.5899	90.5899	69.1106	69.1106	69.1106
2219	90.5771	90.5771	90.5771	69.1013	69.1013	69.1013
2220	90.5643	90.5643	90.5643	69.092	69.092	69.092
2221	90.5515	90.5515	90.5515	69.0827	69.0827	69.0827
2222	90.5387	90.5387	90.5387	69.0734	69.0734	69.0734
2223	90.5259	90.5259	90.5259	69.0642	69.0642	69.0642
2224	90.5131	90.5131	90.5131	69.0549	69.0549	69.0549
2225	90.5004	90.5004	90.5004	69.0456	69.0456	69.0456
2226	90.4876	90.4876	90.4876	69.0363	69.0363	69.0363
2227	90.4748	90.4748	90.4748	69.0271	69.0271	69.0271
2228	90.462	90.462	90.462	69.0178	69.0178	69.0178
2229	90.4493	90.4493	90.4493	69.0086	69.0086	69.0086
2230	90.4365	90.4365	90.4365	68.9994	68.9994	68.9994
2231	90.4237	90.4237	90.4237	68.9901	68.9901	68.9901
2232	90.411	90.411	90.411	68.9809	68.9809	68.9809
2233	90.3982	90.3982	90.3982	68.9717	68.9717	68.9717
2234	90.3855	90.3855	90.3855	68.9625	68.9625	68.9625
2235	90.3727	90.3727	90.3727	68.9533	68.9533	68.9533
2236	90.36	90.36	90.36	68.944	68.944	68.944
2237	90.3472	90.3472	90.3472	68.9348	68.9348	68.9348
2238	90.3345	90.3345	90.3345	68.9257	68.9257	68.9257
2239	90.3218	90.3218	90.3218	68.9165	68.9165	68.9165
2240	90.309	90.309	90.309	68.9073	68.9073	68.9073
2241	90.2963	90.2963	90.2963	68.8981	68.8981	68.8981
2242	90.2836	90.2836	90.2836	68.8889	68.8889	68.8889
2243	90.2709	90.2709	90.2709	68.8798	68.8798	68.8798
2244	90.2581	90.2581	90.2581	68.8706	68.8706	68.8706



00011833



2245	90.2454	90.2454	90.2454	68.8615	68.8615	68.8615
2246	90.2327	90.2327	90.2327	68.8523	68.8523	68.8523
2247	90.22	90.22	90.22	68.8432	68.8432	68.8432
2248	90.2073	90.2073	90.2073	68.834	68.834	68.834
2249	90.1946	90.1946	90.1946	68.8249	68.8249	68.8249
2250	90.1819	90.1819	90.1819	68.8158	68.8158	68.8158
2251	90.1692	90.1692	90.1692	68.8067	68.8067	68.8067
2252	90.1565	90.1565	90.1565	68.7975	68.7975	68.7975
2253	90.1438	90.1438	90.1438	68.7884	68.7884	68.7884
2254	90.1312	90.1312	90.1312	68.7793	68.7793	68.7793
2255	90.1185	90.1185	90.1185	68.7702	68.7702	68.7702
2256	90.1058	90.1058	90.1058	68.7611	68.7611	68.7611
2257	90.0931	90.0931	90.0931	68.752	68.752	68.752
2258	90.0805	90.0805	90.0805	68.743	68.743	68.743
2259	90.0678	90.0678	90.0678	68.7339	68.7339	68.7339
2260	90.0551	90.0551	90.0551	68.7248	68.7248	68.7248
2261	90.0425	90.0425	90.0425	68.7158	68.7158	68.7158
2262	90.0298	90.0298	90.0298	68.7067	68.7067	68.7067
2263	90.0171	90.0171	90.0171	68.6976	68.6976	68.6976
2264	90.0045	90.0045	90.0045	68.6886	68.6886	68.6886
2265	89.9918	89.9918	89.9918	68.6795	68.6795	68.6795
2266	89.9792	89.9792	89.9792	68.6705	68.6705	68.6705
2267	89.9666	89.9666	89.9666	68.6615	68.6615	68.6615
2268	89.9539	89.9539	89.9539	68.6524	68.6524	68.6524
2269	89.9413	89.9413	89.9413	68.6434	68.6434	68.6434
2270	89.9287	89.9287	89.9287	68.6344	68.6344	68.6344
2271	89.916	89.916	89.916	68.6254	68.6254	68.6254
2272	89.9034	89.9034	89.9034	68.6164	68.6164	68.6164
2273	89.8908	89.8908	89.8908	68.6074	68.6074	68.6074
2274	89.8782	89.8782	89.8782	68.5984	68.5984	68.5984
2275	89.8656	89.8656	89.8656	68.5894	68.5894	68.5894
2276	89.8529	89.8529	89.8529	68.5804	68.5804	68.5804
2277	89.8403	89.8403	89.8403	68.5715	68.5715	68.5715
2278	89.8277	89.8277	89.8277	68.5625	68.5625	68.5625
2279	89.8151	89.8151	89.8151	68.5535	68.5535	68.5535
2280	89.8025	89.8025	89.8025	68.5446	68.5446	68.5446
2281	89.7899	89.7899	89.7899	68.5356	68.5356	68.5356
2282	89.7774	89.7774	89.7774	68.5266	68.5266	68.5266
2283	89.7648	89.7648	89.7648	68.5177	68.5177	68.5177
2284	89.7522	89.7522	89.7522	68.5088	68.5088	68.5088
2285	89.7396	89.7396	89.7396	68.4998	68.4998	68.4998
2286	89.727	89.727	89.727	68.4909	68.4909	68.4909
2287	89.7144	89.7144	89.7144	68.482	68.482	68.482
2288	89.7019	89.7019	89.7019	68.4731	68.4731	68.4731
2289	89.6893	89.6893	89.6893	68.4641	68.4641	68.4641
2290	89.6767	89.6767	89.6767	68.4552	68.4552	68.4552
2291	89.6642	89.6642	89.6642	68.4463	68.4463	68.4463
2292	89.6516	89.6516	89.6516	68.4374	68.4374	68.4374
2293	89.6391	89.6391	89.6391	68.4285	68.4285	68.4285
2294	89.6265	89.6265	89.6265	68.4197	68.4197	68.4197
2295	89.614	89.614	89.614	68.4108	68.4108	68.4108
2296	89.6014	89.6014	89.6014	68.4019	68.4019	68.4019
2297	89.5889	89.5889	89.5889	68.393	68.393	68.393
2298	89.5763	89.5763	89.5763	68.3842	68.3842	68.3842
2299	89.5638	89.5638	89.5638	68.3753	68.3753	68.3753



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011834

2300	89.5513	89.5513	89.5513	68.3664	68.3664	68.3664
2301	89.5388	89.5388	89.5388	68.3576	68.3576	68.3576
2302	93.3598	108.361	111.827	68.3581	68.3581	68.3581
2303	95.589	108.398	112.231	68.3586	68.3586	68.3586
2304	96.9373	107.622	111.956	68.359	68.359	68.359
2305	97.8099	107.53	112.484	68.3595	68.3595	68.3595
2306	98.3758	107.156	112.726	68.3138	68.3138	68.3138
2307	98.7382	106.815	112.948	68.2145	68.2145	68.2145
2308	98.9928	106.373	113.071	68.0933	68.0933	68.0933
2309	99.2045	106.047	113.258	67.9636	67.9636	67.9636
2310	99.3925	105.71	113.426	67.8311	67.8311	67.8311
2311	99.5474	105.287	113.56	67.6982	67.6982	67.6982
2312	99.8712	104.801	113.66	67.5659	67.5659	67.5659
2313	99.7831	104.496	113.688	67.4345	67.4345	67.4345
2314	99.8963	104.465	113.565	67.3043	67.3043	67.3043
2315	100.056	104.544	113.685	67.1754	67.1754	67.1754
2316	100.468	105.157	114.896	67.0485	67.0485	67.0485
2317	101.023	105.915	116.246	66.9234	66.9234	66.9234
2318	101.082	105.382	115.242	66.7987	66.7987	66.7987
2319	100.825	104.506	113.836	66.6745	66.6745	66.6745
2320	100.524	103.829	112.843	66.551	66.551	66.551
2321	100.366	103.586	112.534	66.4286	66.4286	66.4286
2322	100.284	103.422	112.31	66.3073	66.3073	66.3073
2323	100.256	103.353	112.19	66.1872	66.1872	66.1872
2324	100.271	103.368	112.166	66.0683	66.0683	66.0683
2325	100.31	103.406	112.166	65.9505	65.9505	65.9505
2326	100.317	103.342	112.01	65.8338	65.8338	65.8338
2327	100.053	102.591	110.848	65.7175	65.7175	65.7175
2328	99.6212	101.665	109.505	65.6017	65.6017	65.6017
2329	99.0777	100.621	108.037	65.4862	65.4862	65.4862
2330	98.6431	100.03	107.243	65.3716	65.3716	65.3716
2331	98.3006	99.6043	106.661	65.2579	65.2579	65.2579
2332	98.0025	99.2215	106.118	65.145	65.145	65.145
2333	97.7001	98.7646	105.49	65.033	65.033	65.033
2334	97.3767	98.2502	104.795	64.9218	64.9218	64.9218
2335	97.0359	97.7182	104.084	64.8114	64.8114	64.8114
2336	96.771	97.3974	103.735	64.7019	64.7019	64.7019
2337	96.5803	97.2016	103.566	64.5936	64.5936	64.5936
2338	96.4307	97.0469	103.439	64.4862	64.4862	64.4862
2339	96.3007	96.9133	103.318	64.3799	64.3799	64.3799
2340	96.1803	96.7901	103.202	64.2746	64.2746	64.2746
2341	96.0656	96.6726	103.09	64.1704	64.1704	64.1704
2342	95.952	96.5563	102.972	64.0671	64.0671	64.0671
2343	95.8358	96.4372	102.839	63.9647	63.9647	63.9647
2344	95.7184	96.3169	102.706	63.8634	63.8634	63.8634
2345	94.4304	94.7735	97.3611	63.7602	63.7602	63.7602
2346	93.6317	96.2023	95.5902	66.3549	66.3549	76.8498
2347	94.6078	105.906	97.7358	71.3025	71.3025	95.4943
2348	95.0925	106.48	98.1545	73.848	73.848	98.1489
2349	95.2994	106.708	98.2936	75.348	75.348	99.6595
2350	95.3357	106.641	98.259	76.3563	76.3563	100.514
2351	95.2478	106.254	98.0947	77.0782	77.0782	100.826
2352	95.3484	106.171	99.0877	77.5469	77.5469	100.45
2353	95.553	106.181	100.174	77.8575	77.8575	99.8052
2354	95.7676	106.179	101.081	78.0618	78.0618	98.992

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011835

ALSTOM

2355	96.5414	107.808	104.039	78.1942	78.1942	98.0864
2356	97.0444	108.1	104.932	78.2687	78.2687	97.1091
2357	97.1045	107.391	104.563	78.2862	78.2862	96.0432
2358	97.0212	106.689	104.491	78.244	78.244	94.8734
2359	97.2942	107.512	105.567	78.1555	78.1555	93.662
2360	97.4441	107.487	105.839	78.009	78.009	92.3334
2361	97.4895	107.209	106.149	77.8118	77.8118	90.9476
2362	97.5452	107.381	107.201	77.5795	77.5795	89.5696
2363	97.9135	108.096	108.389	77.3244	77.3244	88.2228
2364	98.1443	108.692	109.266	77.0143	77.0143	86.7236
2365	98.339	109.327	110.244	76.6679	76.6679	85.2297
2366	98.0109	107.812	109.084	75.8119	75.8119	81.3793
2367	96.699	103.119	104.611	74.0593	74.0593	74.0593
2368	96.037	104.059	105.169	73.2893	73.2893	73.2893
2369	93.7262	93.7262	93.7262	72.9447	72.9447	72.9447
2370	92.4365	92.4365	92.4365	72.7883	72.7883	72.7883
2371	91.7141	91.7141	91.7141	72.7143	72.7143	72.7143
2372	91.307	91.307	91.307	72.6764	72.6764	72.6764
2373	91.0751	91.0751	91.0751	72.6542	72.6542	72.6542
2374	90.9405	90.9405	90.9405	72.639	72.639	72.639
2375	90.86	90.86	90.86	72.6268	72.6268	72.6268
2376	90.8096	90.8096	90.8096	72.6159	72.6159	72.6159
2377	90.7758	90.7758	90.7758	72.6057	72.6057	72.6057
2378	90.7514	90.7514	90.7514	72.5956	72.5956	72.5956
2379	90.7321	90.7321	90.7321	72.5857	72.5857	72.5857
2380	90.7157	90.7157	90.7157	72.5759	72.5759	72.5759
2381	90.7009	90.7009	90.7009	72.566	72.566	72.566
2382	90.6869	90.6869	90.6869	72.5562	72.5562	72.5562
2383	90.6735	90.6735	90.6735	72.5464	72.5464	72.5464
2384	90.6603	90.6603	90.6603	72.5366	72.5366	72.5366
2385	90.6473	90.6473	90.6473	72.5268	72.5268	72.5268
2386	94.4749	111.164	114.348	72.5261	72.5261	72.5261
2387	96.7079	111.205	114.756	72.5253	72.5253	72.5253
2388	98.0542	110.277	114.208	72.5245	72.5245	72.5245
2389	98.9158	109.378	113.854	72.5237	72.5237	72.5237
2390	99.5165	109.01	114.106	72.5229	72.5229	72.5229
2391	99.9299	108.543	114.241	72.4636	72.4636	72.4636
2392	100.207	108.124	114.387	72.3362	72.3362	72.3362
2393	100.413	107.651	114.474	72.1811	72.1811	72.1811
2394	100.595	107.312	114.64	72.0152	72.0152	72.0152
2395	100.764	106.962	114.794	71.8458	71.8458	71.8458
2396	100.896	106.495	114.903	71.6759	71.6759	71.6759
2397	101.003	105.993	114.986	71.5066	71.5066	71.5066
2398	101.105	105.784	114.94	71.3385	71.3385	71.3385
2399	101.208	105.744	114.827	71.172	71.172	71.172
2400	101.42	105.954	115.234	71.0072	71.0072	71.0072
2401	101.857	106.594	116.47	70.8447	70.8447	70.8447
2402	102.329	107.134	117.425	70.6841	70.6841	70.6841
2403	102.279	106.416	116.135	70.5242	70.5242	70.5242
2404	101.948	105.455	114.638	70.3651	70.3651	70.3651
2405	101.687	104.962	113.952	70.2072	70.2072	70.2072
2406	101.544	104.729	113.651	70.0507	70.0507	70.0507
2407	101.465	104.562	113.418	69.8958	69.8958	69.8958
2408	101.448	104.545	113.355	69.7423	69.7423	69.7423
2409	101.466	104.563	113.329	69.5903	69.5903	69.5903



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EDRCL13.xls

ALSTOM

00011836

2410	101.466	104.502	113.179	69.4397	69.4397	69.4397
2411	101.159	103.648	111.863	69.2899	69.2899	69.2899
2412	100.871	102.621	110.381	69.1407	69.1407	69.1407
2413	100.088	101.536	108.865	68.9922	68.9922	68.9922
2414	99.6642	101.029	108.203	68.845	68.845	68.845
2415	99.3245	100.608	107.628	68.699	68.699	68.699
2416	99.028	100.232	107.101	68.5542	68.5542	68.5542
2417	98.7277	99.7784	106.491	68.4106	68.4106	68.4106
2418	98.4175	99.3038	105.861	68.2681	68.2681	68.2681
2419	98.0986	98.8229	105.229	68.1267	68.1267	68.1267
2420	97.8145	98.443	104.77	67.9866	67.9866	67.9866
2421	97.6085	98.2325	104.583	67.8478	67.8478	67.8478
2422	97.4454	98.0652	104.438	67.7103	67.7103	67.7103
2423	97.3064	97.9219	104.317	67.5741	67.5741	67.5741
2424	97.1779	97.7907	104.195	67.4393	67.4393	67.4393
2425	97.0548	97.6652	104.075	67.3067	67.3067	67.3067
2426	96.9351	97.5432	103.959	67.1734	67.1734	67.1734
2427	96.8178	97.4236	103.844	67.0424	67.0424	67.0424
2428	96.6979	97.3013	103.713	66.9126	66.9126	66.9126
2429	96.5762	97.1771	103.576	66.784	66.784	66.784
2430	96.4538	97.0523	103.44	66.6567	66.6567	66.6567
2431	96.3313	96.9275	103.304	66.5305	66.5305	66.5305
2432	94.9253	96.4611	96.9375	68.3497	68.3497	75.9879
2433	94.0396	95.5755	96.0519	68.1925	68.1925	76.8107
2434	93.437	94.9729	95.4493	68.6216	68.6216	77.2398
2435	94.6427	105.932	97.7774	74.3278	74.3278	98.5085
2436	95.2505	106.633	98.3164	76.7569	76.7569	101.051
2437	95.5215	106.931	98.5138	78.1944	78.1944	102.506
2438	95.5822	106.847	98.4951	79.1457	79.1457	103.248
2439	95.5337	106.482	98.4951	79.7985	79.7985	103.386
2440	95.7155	106.48	99.8123	80.1777	80.1777	102.787
2441	95.9368	106.467	100.838	80.3984	80.3984	101.917
2442	96.4458	107.28	102.84	80.5197	80.5197	100.936
2443	97.2489	108.864	106.408	80.5725	80.5725	99.8765
2444	97.4152	107.962	104.919	80.5685	80.5685	98.7515
2445	97.3734	107.253	104.839	80.5034	80.5034	97.5163
2446	97.5278	107.57	105.549	80.3912	80.3912	96.245
2447	97.7559	107.948	106.206	80.2308	80.2308	94.9062
2448	97.7653	107.503	106.17	80.0178	80.0178	93.4824
2449	97.8904	107.566	107.19	79.7716	79.7716	92.0805
2450	98.132	108.185	108.333	79.5034	79.5034	90.7119
2451	98.379	108.828	109.319	79.1904	79.1904	89.2413
2452	98.5834	109.432	110.242	78.8325	78.8325	87.7118
2453	98.647	109.606	110.788	78.3377	78.3377	85.675
2454	97.3797	104.269	105.766	76.5603	76.5603	77.6759
2455	96.4721	104.07	105.282	75.4784	75.4784	75.4784
2456	96.0343	105.122	105.979	74.9989	74.9989	74.9989
2457	93.8415	93.8415	93.8415	74.7821	74.7821	74.7821
2458	92.8174	92.6174	92.6174	74.6815	74.6815	74.6815
2459	91.9314	91.9314	91.9314	74.6317	74.6317	74.6317
2460	91.5445	91.5445	91.5445	74.6042	74.6042	74.6042
2461	91.3238	91.3238	91.3238	74.5864	74.5864	74.5864
2462	91.1954	91.1954	91.1954	74.5729	74.5729	74.5729
2463	91.1183	91.1183	91.1183	74.5612	74.5612	74.5612
2464	91.0697	91.0697	91.0697	74.5504	74.5504	74.5504



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011837

2465	91.037	91.037	91.037	74.5399	74.5399	74.5399
2466	91.0131	91.0131	91.0131	74.5296	74.5296	74.5296
2467	90.9941	90.9941	90.9941	74.5194	74.5194	74.5194
2468	90.9778	90.9778	90.9778	74.5092	74.5092	74.5092
2469	90.963	90.963	90.963	74.4991	74.4991	74.4991
2470	90.949	90.949	90.949	74.4889	74.4889	74.4889
2471	90.9355	90.9355	90.9355	74.4787	74.4787	74.4787
2472	90.9223	90.9223	90.9223	74.4686	74.4686	74.4686
2473	90.9092	90.9092	90.9092	74.4585	74.4585	74.4585
2474	94.7303	109.851	113.297	74.457	74.457	74.457
2475	96.9559	109.853	113.677	74.4556	74.4556	74.4556
2476	98.3048	109.043	113.343	74.4541	74.4541	74.4541
2477	99.1773	108.95	113.871	74.4526	74.4526	74.4526
2478	99.7404	108.559	114.097	74.387	74.387	74.387
2479	100.097	108.211	114.314	74.2467	74.2467	74.2467
2480	100.344	107.762	114.43	74.076	74.076	74.076
2481	100.546	107.417	114.601	73.8935	73.8935	73.8935
2482	100.725	107.072	114.761	73.7071	73.7071	73.7071
2483	100.872	106.645	114.866	73.5201	73.5201	73.5201
2484	100.987	106.15	114.977	73.3339	73.3339	73.3339
2485	101.089	105.81	114.986	73.149	73.149	73.149
2486	101.193	105.77	114.873	72.9858	72.9858	72.9858
2487	101.329	105.805	114.913	72.7843	72.7843	72.7843
2488	101.721	106.4	116.107	72.6052	72.6052	72.6052
2489	102.264	107.146	117.446	72.4284	72.4284	72.4284
2490	102.335	106.655	116.532	72.2527	72.2527	72.2527
2491	102.055	105.736	115.058	72.0778	72.0778	72.0778
2492	101.755	105.053	114.06	71.9042	71.9042	71.9042
2493	101.585	104.788	113.724	71.7321	71.7321	71.7321
2494	101.49	104.6	113.466	71.5617	71.5617	71.5617
2495	101.461	104.558	113.372	71.393	71.393	71.393
2496	101.472	104.568	113.336	71.2258	71.2258	71.2258
2497	101.441	104.429	113.057	71.0602	71.0602	71.0602
2498	101.075	103.453	111.574	70.8953	70.8953	70.8953
2499	100.507	102.269	109.87	70.7311	70.7311	70.7311
2500	99.9463	101.35	108.598	70.568	70.568	70.568
2501	99.5198	100.827	107.89	70.4063	70.4063	70.4063
2502	99.1635	100.376	107.281	70.2459	70.2459	70.2459
2503	98.8173	99.8583	106.562	70.0868	70.0868	70.0868
2504	98.4704	99.3281	105.869	69.929	69.929	69.929
2505	98.125	98.8119	105.182	69.7724	69.7724	69.7724
2506	97.8498	98.4772	104.81	69.6173	69.6173	69.6173
2507	97.648	98.2713	104.625	69.4636	69.4636	69.4636
2508	97.4862	98.1058	104.48	69.3114	69.3114	69.3114
2509	97.3464	97.9625	104.355	69.1606	69.1606	69.1606
2510	97.2171	97.8307	104.233	69.0113	69.0113	69.0113
2511	97.0928	97.7044	104.111	68.8634	68.8634	68.8634
2512	97.2419	108.507	100.155	75.0922	75.0922	99.1954
2513	97.2401	108.185	100.224	77.9731	77.9731	101.541
2514	97.4441	108.203	101.573	79.2935	79.2935	101.854
2515	97.6679	108.192	102.586	79.9135	79.9135	101.406
2516	98.1764	109.019	104.592	80.2091	80.2091	100.615
2517	98.9722	110.401	107.141	80.3443	80.3443	99.6661
2518	99.1392	109.729	106.676	80.3869	80.3869	98.625
2519	99.0888	109.019	106.553	80.3538	80.3538	97.4585





2520	99.1911	109.176	107.13	80.2637	80.2637	96.2305
2521	99.4348	109.681	107.905	80.1213	80.1213	94.9301
2522	99.4173	109.163	107.72	79.9191	79.9191	93.5147
2523	99.5219	109.203	108.721	79.681	79.681	92.1205
2524	99.74	109.745	109.838	79.418	79.418	90.7503
2525	99.9815	110.388	110.85	79.1134	79.1134	89.3
2526	100.178	110.971	111.738	78.7601	78.7601	87.7656
2527	100.346	111.63	112.775	78.3794	78.3794	86.2687
2528	99.1766	106.525	107.988	76.7006	76.7006	78.5193
2529	98.175	105.604	106.856	75.4906	75.4906	75.4906
2530	97.8848	106.804	107.501	74.9579	74.9579	74.9579
2531	95.4635	95.4635	95.4635	74.7171	74.7171	74.7171
2532	94.2234	94.2234	94.2234	74.6061	74.6061	74.6061
2533	93.5284	93.5284	93.5284	74.5518	74.5518	74.5518
2534	93.1363	93.1363	93.1363	74.5224	74.5224	74.5224
2535	92.9125	92.9125	92.9125	74.5039	74.5039	74.5039
2536	92.7822	92.7822	92.7822	74.4901	74.4901	74.4901
2537	92.7039	92.7039	92.7039	74.4784	74.4784	74.4784
2538	92.6545	92.6545	92.6545	74.4677	74.4677	74.4677
2539	92.6211	92.6211	92.6211	74.4573	74.4573	74.4573
2540	92.5966	92.5966	92.5966	74.4472	74.4472	74.4472
2541	92.5771	92.5771	92.5771	74.4371	74.4371	74.4371
2542	92.5603	92.5603	92.5603	74.427	74.427	74.427
2543	92.5451	92.5451	92.5451	74.417	74.417	74.417
2544	92.5307	92.5307	92.5307	74.407	74.407	74.407
2545	92.5168	92.5168	92.5168	74.397	74.397	74.397
2546	92.5032	92.5032	92.5032	74.387	74.387	74.387
2547	92.4897	92.4897	92.4897	74.377	74.377	74.377
2548	96.3113	111.68	115.085	74.3755	74.3755	74.3755
2549	98.5406	111.717	115.489	74.3739	74.3739	74.3739
2550	99.8859	110.733	114.963	74.3723	74.3723	74.3723
2551	100.755	110.633	115.483	74.3707	74.3707	74.3707
2552	101.362	110.279	115.749	74.3692	74.3692	74.3692
2553	101.775	109.969	116.007	74.3039	74.3039	74.3039
2554	102.047	109.544	116.148	74.1646	74.1646	74.1646
2555	102.253	109.178	116.305	73.9951	73.9951	73.9951
2556	102.43	108.837	116.499	73.8138	73.8138	73.8138
2557	102.575	108.416	116.591	73.6287	73.6287	73.6287
2558	102.683	107.915	116.675	73.443	73.443	73.443
2559	102.774	107.511	116.695	73.258	73.258	73.258
2560	102.869	107.459	116.571	73.0744	73.0744	73.0744
2561	102.96	107.413	116.454	72.8924	72.8924	72.8924
2562	103.322	107.979	117.618	72.7127	72.7127	72.7127
2563	103.842	108.7	118.932	72.5353	72.5353	72.5353
2564	103.98	108.397	118.356	72.3592	72.3592	72.3592
2565	103.774	107.597	117.049	72.184	72.184	72.184
2566	103.423	108.755	115.789	72.0099	72.0099	72.0099
2567	103.231	106.482	115.455	71.8374	71.8374	71.8374
2568	103.123	108.298	115.213	71.6665	71.6665	71.6665
2569	103.062	106.165	115.025	71.4973	71.4973	71.4973
2570	103.047	106.144	114.997	71.3296	71.3296	71.3296
2571	103.03	106.157	114.943	71.1636	71.1636	71.1636
2572	103.088	106.184	114.936	70.9992	70.9992	70.9992
2573	103.049	106.022	114.647	70.8363	70.8363	70.8363
2574	102.791	105.348	113.621	70.6743	70.6743	70.6743

2532



00011839



2575	102.406	104.566	112.484	70.5134	70.5134	70.5134
2576	101.943	103.69	111.279	70.3535	70.3535	70.3535
2577	101.473	102.91	110.22	70.1947	70.1947	70.1947
2578	101.124	102.498	109.889	70.0373	70.0373	70.0373
2579	99.2205	100.097	101.967	69.8778	69.8778	69.8778
2580	98.0486	98.9608	100.734	69.7197	69.7197	69.7197
2581	97.2931	98.167	100.044	69.5631	69.5631	69.5631
2582	96.7471	97.6505	99.451	69.408	69.408	69.408
2583	96.1872	96.9589	98.4381	69.254	69.254	69.254
2584	95.8809	96.7995	98.561	69.1018	69.1018	69.1018
2585	95.0279	95.3181	95.8744	68.9497	68.9497	68.9497
2586	94.4098	94.7	95.2563	68.7991	68.7991	68.7991
2587	93.8202	94.2104	94.7668	68.6498	68.6498	68.6498
2588	93.5015	93.7917	94.3481	68.5019	68.5019	68.5019
2589	93.1223	93.4125	93.9689	68.3554	68.3554	68.3554
2590	92.7783	93.0828	93.6664	68.2103	68.2103	68.2103
2591	92.7172	93.3295	94.5032	68.0671	68.0671	68.0671
2592	92.8244	93.743	95.5044	67.9258	67.9258	67.9258
2593	92.3535	92.8113	93.6888	67.785	67.785	67.785
2594	92.0846	92.6828	93.8297	67.6457	67.6457	67.6457
2595	91.933	92.6717	94.0878	67.508	67.508	67.508
2596	91.8527	92.7319	94.4173	67.3718	67.3718	67.3718
2597	91.7318	92.6408	94.427	67.237	67.237	67.237
2598	93.1853	94.503	101.586	67.107	67.107	67.107
2599	94.1658	104.653	99.1904	72.588	72.588	93.9226
2600	95.2063	106.217	102.047	74.9451	74.9451	95.1491
2601	98.1092	107.347	104.134	75.956	75.956	95.031
2602	98.3492	106.736	103.806	76.3703	76.3703	94.3103
2603	98.3615	106.106	103.83	76.4978	76.4978	93.2655
2604	96.843	106.807	104.839	76.4847	76.4847	92.098
2605	96.8418	106.925	105.252	76.379	76.379	90.7997
2606	98.8946	106.619	105.486	76.2082	76.2082	89.4314
2607	97.0519	106.752	106.541	75.9967	75.9967	88.0685
2608	97.322	107.471	107.71	75.7614	75.7614	86.7424
2609	97.5841	108.085	108.638	75.4726	75.4726	85.2728
2610	97.7872	108.718	109.807	75.1444	75.1444	83.7906
2611	97.5484	107.657	108.905	74.4053	74.4053	80.443
2612	96.1998	102.432	103.969	72.5942	72.5942	72.5942
2613	95.518	103.427	104.565	71.7989	71.7989	71.7989
2614	93.1968	93.1968	93.1968	71.4438	71.4438	71.4438
2615	91.9014	91.9014	91.9014	71.2833	71.2833	71.2833
2616	91.1759	91.1759	91.1759	71.208	71.208	71.208
2617	90.7672	90.7672	90.7672	71.1699	71.1699	71.1699
2618	90.5344	90.5344	90.5344	71.1482	71.1482	71.1482
2619	90.3994	90.3994	90.3994	71.1336	71.1336	71.1336
2620	90.3187	90.3187	90.3187	71.1222	71.1222	71.1222
2621	90.2683	90.2683	90.2683	71.1121	71.1121	71.1121
2622	90.2346	90.2346	90.2346	71.1026	71.1026	71.1026
2623	90.2102	90.2102	90.2102	71.0934	71.0934	71.0934
2624	90.1911	90.1911	90.1911	71.0843	71.0843	71.0843
2625	90.1748	90.1748	90.1748	71.0753	71.0753	71.0753
2626	90.1601	90.1601	90.1601	71.0663	71.0663	71.0663
2627	90.1463	90.1463	90.1463	71.0573	71.0573	71.0573
2628	90.133	90.133	90.133	71.0483	71.0483	71.0483
2629	90.12	90.12	90.12	71.0393	71.0393	71.0393



*Handwritten signature in blue ink.*

*Handwritten signature in red ink.*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011840

ALSTOM

2630	90.1071	90.1071	90.1071	71.0303	71.0303	71.0303
2631	93.9358	110.79	113.948	71.0295	71.0295	71.0295
2632	98.1891	110.832	114.355	71.0288	71.0288	71.0288
2633	97.5159	109.943	113.841	71.0279	71.0279	71.0279
2634	98.3765	108.912	113.341	71.0271	71.0271	71.0271
2635	98.9766	108.543	113.592	71.0263	71.0263	71.0263
2636	99.3906	108.057	113.712	70.972	70.972	70.972
2637	99.6702	107.639	113.88	70.8554	70.8554	70.8554
2638	99.8777	107.153	113.939	70.7135	70.7135	70.7135
2639	100.062	106.813	114.108	70.5617	70.5617	70.5617
2640	100.234	106.458	114.265	70.4087	70.4087	70.4087
2641	100.372	105.987	114.38	70.2512	70.2512	70.2512
2642	100.483	105.488	114.467	70.0983	70.0983	70.0983
2643	100.589	105.273	114.431	69.9426	69.9426	69.9426
2644	100.696	105.237	114.323	69.7902	69.7902	69.7902
2645	100.903	105.431	114.691	69.6395	69.6395	69.6395
2646	101.342	106.076	115.941	69.4907	69.4907	69.4907
2647	101.822	106.628	116.92	69.3438	69.3438	69.3438
2648	101.773	105.901	115.613	69.1975	69.1975	69.1975
2649	101.44	104.931	114.1	69.0519	69.0519	69.0519
2650	101.186	104.458	113.443	68.9074	68.9074	68.9074
2651	101.048	104.224	113.139	68.7643	68.7643	68.7643
2652	100.975	104.072	112.922	68.6225	68.6225	68.6225
2653	100.984	104.061	112.864	68.4821	68.4821	68.4821
2654	100.987	104.083	112.84	68.3431	68.3431	68.3431
2655	100.907	103.804	112.384	68.2051	68.2051	68.2051
2656	100.551	102.897	110.992	68.0678	68.0678	68.0678
2657	100.036	101.848	109.491	67.9312	67.9312	67.9312
2658	99.5002	100.928	108.221	67.7953	67.7953	67.7953
2659	98.8309	97.1265	97.4894	67.935	67.935	68.0318
2660	96.161	97.9501	99.7037	69.3403	69.3403	75.935
2661	95.6921	97.4811	99.2348	69.9833	69.9833	76.578
2662	95.333	97.122	98.8757	70.3032	70.3032	76.8979
2663	95.0341	96.8232	98.5768	70.4861	70.4861	77.0808
2664	94.7887	96.5577	98.3114	70.6105	70.6105	77.2052
2665	94.5222	96.3112	98.0649	70.7097	70.7097	77.3044
2666	94.2866	96.0757	97.8293	70.7979	70.7979	77.3928
2667	94.0578	95.8488	97.6005	70.8808	70.8808	77.4755
2668	93.8333	95.6223	97.376	70.9612	70.9612	77.5559
2669	93.6201	95.548	97.1335	71.1833	71.1833	78.2344
2670	93.4074	95.3502	96.9189	71.3142	71.3142	78.4303
2671	93.1891	95.0619	96.7132	71.3725	71.3725	78.2594
2672	92.97	94.7767	96.5087	71.3867	71.3867	78.0432
2673	92.5857	93.287	95.8219	69.7388	69.7388	69.7388
2674	93.712	95.0005	102.028	68.9607	68.9607	68.9607
2675	94.241	95.4588	102.347	68.5503	68.5503	68.5503
2676	94.4182	95.5142	102.269	68.296	68.296	68.296
2677	94.3962	95.3524	101.978	68.1084	68.1084	68.1084
2678	94.2663	95.0902	101.59	67.9497	67.9497	67.9497
2679	94.0777	94.776	101.157	67.8039	67.8039	67.8039
2680	93.8913	94.5201	100.846	67.6642	67.6642	67.6642
2681	93.749	94.3744	100.718	67.528	67.528	67.528
2682	93.6311	94.2531	100.614	67.3939	67.3939	67.3939
2683	93.527	94.1458	100.524	67.2615	67.2615	67.2615
2684	93.431	94.0465	100.442	67.1305	67.1305	67.1305



*Handwritten signature or initials in blue ink.*

*Red handwritten mark or signature.*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011841

2685	93.3377	93.951	100.354	67.0008	67.0008	67.0008
2686	93.2453	93.8568	100.264	66.8724	66.8724	66.8724
2687	93.1538	93.7636	100.175	66.7452	66.7452	66.7452
2688	93.0633	93.6713	100.087	66.6192	66.6192	66.6192
2689	92.9736	93.5799	99.9993	66.4945	66.4945	66.4945
2690	92.8829	93.4874	99.9042	66.3709	66.3709	66.3709
2691	93.1383	104.514	96.2091	72.6747	72.6747	96.961
2692	93.2252	104.634	96.2164	75.7607	75.7607	100.072
2693	93.1885	104.428	96.096	77.4073	77.4073	101.475
2694	93.1337	104.058	96.2457	78.3336	78.3336	101.788
2695	93.1917	103.343	97.2331	78.6536	78.6536	100.461
2696	91.6377	92.4438	94.4289	73.3921	73.3921	73.3921
2697	90.7076	91.4824	93.5822	71.077	71.077	71.077
2698	90.1192	90.8672	93.081	70.0091	70.0091	70.0091
2699	89.7221	90.4538	92.7816	69.4698	69.4698	69.4698
2700	89.4947	90.1967	92.8923	69.155	69.155	69.155
2701	89.3296	90.0316	92.9197	68.9361	68.9361	68.9361
2702	89.1616	89.865	92.7941	68.7584	68.7584	68.7584
2703	88.9936	89.6991	92.6687	68.5991	68.5991	68.5991
2704	88.827	89.5347	92.5446	68.4483	68.4483	68.4483
2705	88.6592	89.3012	92.1462	68.3018	68.3018	68.3018
2706	88.3864	89.0884	91.9335	68.1579	68.1579	68.1579
2707	88.1825	88.8844	91.7295	68.0159	68.0159	68.0159
2708	87.9839	88.6859	91.531	67.8754	67.8754	67.8754
2709	87.789	88.4909	91.336	67.7364	67.7364	67.7364
2710	87.5966	88.2985	91.1436	67.5987	67.5987	67.5987
2711	87.4062	88.1081	90.9532	67.4623	67.4623	67.4623
2712	87.2175	87.9194	90.7645	67.3271	67.3271	67.3271
2713	87.0303	87.7323	90.5773	67.1933	67.1933	67.1933
2714	86.8446	87.5466	90.3917	67.0607	67.0607	67.0607
2715	86.6603	87.3623	90.2074	66.9293	66.9293	66.9293
2716	86.4774	87.1792	90.0244	66.7991	66.7991	66.7991
2717	86.2958	86.9977	89.8426	66.6702	66.6702	66.6702
2718	86.1155	86.8174	89.6625	66.5425	66.5425	66.5425
2719	85.926	86.628	89.435	66.4159	66.4159	66.4159
2720	85.7168	86.4186	89.133	66.2905	66.2905	66.2905
2721	85.4974	86.2025	88.8264	66.1662	66.1662	66.1662
2722	86.9472	97.5291	91.6996	71.769	71.769	93.515
2723	88.0715	98.7792	94.1418	74.1776	74.1776	94.7481
2724	89.3523	100.841	97.5685	75.211	75.211	94.6102
2725	89.7934	100.386	97.3317	75.6396	75.6396	93.8811
2726	89.9142	99.8147	97.3792	75.7784	75.7784	92.8286
2727	90.1707	100.202	98.1766	75.774	75.774	91.6487
2728	90.4853	100.683	98.9364	75.8825	75.8825	90.3711
2729	90.6628	100.302	98.9602	75.5226	75.5226	88.9962
2730	90.7483	100.423	100.042	75.3234	75.3234	87.6408
2731	91.0454	101.098	101.238	75.0995	75.0995	86.3166
2732	91.3465	101.79	102.282	74.8295	74.8295	84.8893
2733	91.6032	102.448	103.255	74.5135	74.5135	83.4011
2734	91.7282	102.717	103.897	74.0698	74.0698	81.4535
2735	90.5173	97.4365	98.932	72.3386	72.3386	73.5006
2736	89.6417	97.2282	98.4427	71.274	71.274	71.274
2737	89.2225	96.2992	98.1589	70.8056	70.8056	70.8056
2738	87.0409	87.0409	87.0409	70.5938	70.5938	70.5938
2739	85.8238	85.8238	85.8238	70.4963	70.4963	70.4963

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2740	85.1425	85.1425	85.1425	70.4488	70.4488	70.4488
2741	84.759	84.759	84.759	70.4231	70.4231	70.4231
2742	84.541	84.541	84.541	70.407	70.407	70.407
2743	84.4149	84.4149	84.4149	70.3951	70.3951	70.3951
2744	84.3398	84.3398	84.3398	70.3851	70.3851	70.3851
2745	84.2932	84.2932	84.2932	70.3758	70.3758	70.3758
2746	84.2623	84.2623	84.2623	70.3669	70.3669	70.3669
2747	84.2403	84.2403	84.2403	70.3582	70.3582	70.3582
2748	84.223	84.223	84.223	70.3495	70.3495	70.3495
2749	84.2085	84.2085	84.2085	70.3409	70.3409	70.3409
2750	84.1955	84.1955	84.1955	70.3323	70.3323	70.3323
2751	84.1834	84.1834	84.1834	70.3237	70.3237	70.3237
2752	84.1717	84.1717	84.1717	70.3151	70.3151	70.3151
2753	84.1603	84.1603	84.1603	70.3065	70.3065	70.3065
2754	84.149	84.149	84.149	70.2979	70.2979	70.2979
2755	87.9719	103.109	106.552	70.2971	70.2971	70.2971
2756	90.1993	103.143	106.933	70.2963	70.2963	70.2963
2757	91.5499	102.295	106.591	70.2955	70.2955	70.2955
2758	92.4227	102.199	107.114	70.2947	70.2947	70.2947
2759	92.9999	101.823	107.358	70.2426	70.2426	70.2426
2760	93.3861	101.508	107.604	70.1307	70.1307	70.1307
2761	93.6739	101.105	107.759	69.9945	69.9945	69.9945
2762	93.9156	100.785	107.955	69.8488	69.8488	69.8488
2763	94.1388	100.489	108.174	69.7	69.7	69.7
2764	94.332	100.109	108.346	69.5508	69.5508	69.5508
2765	94.4936	99.6613	108.484	69.4022	69.4022	69.4022
2766	94.6422	99.3636	108.541	69.2546	69.2546	69.2546
2767	94.792	99.37	108.474	69.1084	69.1084	69.1084
2768	94.9719	99.4464	108.551	68.9635	68.9635	68.9635
2769	95.4082	100.086	109.788	68.8206	68.8206	68.8206
2770	95.9952	100.875	111.169	68.6797	68.6797	68.6797
2771	96.1252	100.465	110.359	68.5395	68.5395	68.5395
2772	95.9208	99.6364	108.997	68.4	68.4	68.4
2773	95.8475	98.9571	107.974	68.2614	68.2614	68.2614
2774	95.5195	98.742	107.693	68.124	68.124	68.124
2775	95.4695	98.6084	107.496	67.988	67.988	67.988
2776	95.4748	98.572	107.408	67.8532	67.8532	67.8532
2777	95.5237	98.6203	107.415	67.7198	67.7198	67.7198
2778	95.596	98.692	107.447	67.5876	67.5876	67.5876
2779	95.5898	98.5357	107.137	67.4566	67.4566	67.4566
2780	95.3312	97.791	105.982	67.3262	67.3262	67.3262
2781	94.9254	96.9088	104.697	67.1965	67.1965	67.1965
2782	94.4298	95.9464	103.34	67.0675	67.0675	67.0675
2783	94.0553	95.4464	102.669	66.9396	66.9396	66.9396
2784	93.7718	95.0923	102.181	66.8127	66.8127	66.8127
2785	93.5359	94.7876	101.746	66.6869	66.6869	66.6869
2786	93.3213	94.4974	101.328	66.5622	66.5622	66.5622
2787	93.0942	94.1293	100.827	66.4384	66.4384	66.4384
2788	92.8574	93.7542	100.322	66.3157	66.3157	66.3157
2789	92.6126	93.3738	99.8141	66.194	66.194	66.194
2790	92.3622	92.9925	99.3101	66.0733	66.0733	66.0733
2791	92.1908	92.8174	99.1544	65.9537	65.9537	65.9537
2792	92.0927	92.6857	99.0418	65.8353	65.8353	65.8353
2793	91.9587	92.5781	98.953	65.7181	65.7181	65.7181
2794	91.8683	92.4842	98.8776	65.6019	65.6019	65.6019



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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011843

2795	91.7837	92.3971	98.8004	65.4868	65.4868	65.4868
2796	91.7013	92.3128	98.7204	65.3729	65.3729	65.3729
2797	91.6205	92.23	98.642	65.26	65.26	65.26
2798	91.5409	92.1486	98.5648	65.1482	65.1482	65.1482
2799	91.4623	92.0682	98.4886	65.0375	65.0375	65.0375
2800	91.3815	91.9854	98.3993	64.9278	64.9278	64.9278
2801	91.2988	91.9007	98.3051	64.8192	64.8192	64.8192
2802	91.2152	91.8152	98.2102	64.7115	64.7115	64.7115
2803	91.1314	91.7296	98.1156	64.6049	64.6049	64.6049
2804	91.0477	91.6442	98.0216	64.4993	64.4993	64.4993
2805	89.5126	90.0254	91.3593	64.3918	64.3918	64.3918
2806	88.5821	89.0645	90.5043	64.2853	64.2853	64.2853
2807	87.982	88.4361	89.9814	64.1799	64.1799	64.1799
2808	87.5569	87.9956	89.605	64.0754	64.0754	64.0754
2809	87.2184	87.856	89.2645	63.9719	63.9719	63.9719
2810	86.9499	87.3565	89.1087	63.8695	63.8695	63.8695
2811	86.7178	87.1077	88.9525	63.768	63.768	63.768
2812	88.2162	99.4918	91.3607	70.0625	70.0625	94.227
2813	89.0031	100.371	92.0797	73.1802	73.1802	97.4569
2814	89.3902	100.799	92.3855	74.9308	74.9308	99.2424
2815	89.5292	100.78	92.4385	76.0267	76.0267	100.111
2816	89.5716	100.5	92.6523	76.7333	76.7333	100.216
2817	89.8364	100.572	94.1116	77.1354	77.1354	99.5676
2818	90.1085	100.591	95.1466	77.3647	77.3647	98.6732
2819	90.7969	101.83	97.6961	77.4943	77.4943	97.6712
2820	91.5007	102.713	99.5114	77.5571	77.5571	96.6039
2821	91.6528	102.031	99.1077	77.5651	77.5651	95.4786
2822	91.6328	101.381	99.1014	77.5148	77.5148	94.2544
2823	91.9232	102.101	100.139	77.4213	77.4213	93.007
2824	92.1308	102.202	100.536	77.2758	77.2758	91.6672
2825	92.2104	101.933	100.823	77.0831	77.0831	90.2786
2826	92.3987	102.111	101.908	76.8578	76.8578	88.9041
2827	92.7014	102.859	103.112	76.6111	76.6111	87.5654
2828	92.9735	103.503	104.062	76.3117	76.3117	86.0829
2829	93.2078	104.17	105.068	75.9745	75.9745	84.5938
2830	92.9881	102.999	104.255	75.1952	75.1952	81.0836
2831	91.6771	97.969	99.4917	73.4008	73.4008	73.4008
2832	91.0164	98.9611	100.09	72.6127	72.6127	72.6127
2833	88.7074	88.7074	88.7074	72.261	72.261	72.261
2834	87.4192	87.4192	87.4192	72.102	72.102	72.102
2835	86.6983	86.6983	86.6983	72.0274	72.0274	72.0274
2836	86.2926	86.2926	86.2926	71.9898	71.9898	71.9898
2837	86.0621	86.0621	86.0621	71.9683	71.9683	71.9683
2838	85.9288	85.9288	85.9288	71.9539	71.9539	71.9539
2839	85.8497	85.8497	85.8497	71.9426	71.9426	71.9426
2840	85.8006	85.8006	85.8006	71.9326	71.9326	71.9326
2841	85.7682	85.7682	85.7682	71.9233	71.9233	71.9233
2842	85.745	85.745	85.745	71.9142	71.9142	71.9142
2843	85.7271	85.7271	85.7271	71.9052	71.9052	71.9052
2844	85.712	85.712	85.712	71.8963	71.8963	71.8963
2845	85.6985	85.6985	85.6985	71.8874	71.8874	71.8874
2846	85.6858	85.6858	85.6858	71.8785	71.8785	71.8785
2847	85.6737	85.6737	85.6737	71.8696	71.8696	71.8696
2848	85.6619	85.6619	85.6619	71.8608	71.8608	71.8608
2849	85.6502	85.6502	85.6502	71.8519	71.8519	71.8519

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2850	89.4796	106.281	109.446	71.8506	71.8506	71.8506
2851	91.7142	106.324	109.856	71.8493	71.8493	71.8493
2852	93.0621	105.424	109.333	71.848	71.848	71.848
2853	93.9247	104.438	108.883	71.8466	71.8466	71.8466
2854	94.526	104.069	109.133	71.8453	71.8453	71.8453
2855	94.9489	103.598	109.287	71.7881	71.7881	71.7881
2856	95.2481	103.2	109.435	71.6658	71.6658	71.6658
2857	95.4809	102.746	109.542	71.517	71.517	71.517
2858	95.6945	102.443	109.745	71.358	71.358	71.358
2859	95.8956	102.121	109.927	71.1956	71.1956	71.1956
2860	96.0634	101.696	110.073	71.0326	71.0326	71.0326
2861	96.205	101.226	110.189	70.8703	70.8703	70.8703
2862	96.3404	101.027	110.187	70.7092	70.7092	70.7092
2863	96.4776	101.021	110.108	70.5495	70.5495	70.5495
2864	96.71	101.234	110.482	70.3915	70.3915	70.3915
2865	97.1722	101.899	111.744	70.2355	70.2355	70.2355
2866	97.7091	102.554	112.879	70.0814	70.0814	70.0814
2867	97.7168	101.903	111.666	69.9281	69.9281	69.9281
2868	97.4435	101.019	110.259	69.7756	69.7756	69.7756
2869	97.1968	100.487	109.488	69.6243	69.6243	69.6243
2870	97.0783	100.284	109.221	69.4744	69.4744	69.4744
2871	97.0288	100.153	109.03	69.3259	69.3259	69.3259
2872	97.0339	100.131	108.961	69.1788	69.1788	69.1788
2873	97.0774	100.174	108.965	69.0331	69.0331	69.0331
2874	97.1416	100.238	108.991	68.8889	68.8889	68.8889
2875	97.1324	100.089	108.7	68.7459	68.7459	68.7459
2876	96.889	99.3958	107.826	68.6037	68.6037	68.6037
2877	96.5119	98.5819	106.443	68.4624	68.4624	68.4624
2878	96.0557	97.7022	105.206	68.3219	68.3219	68.3219
2879	95.6494	97.0681	104.343	68.1825	68.1825	68.1825
2880	95.3514	96.7063	103.86	68.0444	68.0444	68.0444
2881	95.1101	96.4024	103.438	67.9074	67.9074	67.9074
2882	94.8984	96.1258	103.042	67.7716	67.7716	67.7716
2883	94.6844	95.8207	102.614	67.637	67.637	67.637
2884	94.4547	95.4534	102.117	67.5035	67.5035	67.5035
2885	94.21	95.0993	101.602	67.371	67.371	67.371
2886	93.9516	94.6696	101.069	67.2397	67.2397	67.2397
2887	93.7189	94.3457	100.671	67.1096	67.1096	67.1096
2888	93.5504	94.175	100.522	66.9806	66.9806	66.9806
2889	93.4216	94.0421	100.411	66.8529	66.8529	66.8529
2890	93.314	93.9304	100.321	66.7265	66.7265	66.7265
2891	93.2183	93.8296	100.233	66.6012	66.6012	66.6012
2892	93.1226	93.7336	100.142	66.4772	66.4772	66.4772
2893	93.0314	93.6403	100.054	66.3543	66.3543	66.3543
2894	92.9419	93.5488	99.9669	66.2325	66.2325	66.2325
2895	92.8525	93.4573	99.8759	66.112	66.112	66.112
2896	92.7602	93.3632	99.7723	65.9926	65.9926	65.9926
2897	92.6669	93.268	99.6684	65.8743	65.8743	65.8743
2898	92.5733	93.1728	99.5651	65.7571	65.7571	65.7571
2899	92.4799	93.0778	99.4628	65.641	65.641	65.641
2900	92.3869	92.9834	99.3613	65.526	65.526	65.526
2901	90.9525	91.3309	93.2607	65.4096	65.4096	65.4096
2902	90.0611	90.4395	92.3593	65.2942	65.2942	65.2942
2903	89.4651	89.8435	91.7633	65.1798	65.1798	65.1798
2904	89.0301	89.4085	91.3283	65.0666	65.0666	65.0666

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2905	88.8832	89.0818	90.9814	64.9544	64.9544	64.9544
2906	88.3849	88.7633	90.6831	64.8432	64.8432	64.8432
2907	88.1137	88.4922	90.4119	64.733	64.733	64.733
2908	87.8581	88.2365	90.1583	64.6239	64.6239	64.6239
2909	87.6116	87.9901	89.9098	64.5158	64.5158	64.5158
2910	87.3709	87.7494	89.6692	64.4087	64.4087	64.4087
2911	87.1341	87.5126	89.4324	64.3026	64.3026	64.3026
2912	86.9002	87.2786	89.1984	64.1974	64.1974	64.1974
2913	86.6688	87.047	88.9688	64.0932	64.0932	64.0932
2914	86.439	86.8175	88.7373	63.99	63.99	63.99
2915	86.2113	86.5897	88.5095	63.8878	63.8878	63.8878
2916	85.9853	86.3637	88.2835	63.7865	63.7865	63.7865
2917	85.7609	86.1394	88.0592	63.6861	63.6861	63.6861
2918	85.5383	85.9167	87.8365	63.5867	63.5867	63.5867
2919	85.3172	85.6956	87.6154	63.4882	63.4882	63.4882
2920	85.0977	85.4762	87.396	63.3905	63.3905	63.3905
2921	84.8799	85.2583	87.1781	63.2938	63.2938	63.2938
2922	84.6636	85.042	86.9618	63.198	63.198	63.198
2923	84.4488	84.8273	86.747	63.1031	63.1031	63.1031
2924	84.2356	84.6141	86.5338	63.009	63.009	63.009
2925	84.0298	84.4042	86.3507	62.9159	62.9159	62.9159
2926	83.8232	84.1975	86.1439	62.8236	62.8236	62.8236
2927	83.6109	83.9893	85.9091	62.7321	62.7321	62.7321
2928	83.4027	83.7805	85.7046	62.6415	62.6415	62.6415
2929	83.1958	83.5741	85.4949	62.5517	62.5517	62.5517
2930	82.9908	83.3692	85.289	62.4627	62.4627	62.4627
2931	82.7876	83.1661	85.0859	62.3746	62.3746	62.3746
2932	82.5861	82.9646	84.8844	62.2872	62.2872	62.2872
2933	82.3862	82.7646	84.6844	62.2007	62.2007	62.2007
2934	82.1878	82.5662	84.486	62.115	62.115	62.115
2935	81.9908	82.3692	84.289	62.03	62.03	62.03
2936	81.805	82.1767	84.1408	61.9459	61.9459	61.9459
2937	81.6338	81.9867	84.0343	61.8625	61.8625	61.8625
2938	81.4729	81.8307	83.9408	61.78	61.78	61.78
2939	81.3194	81.672	83.8546	61.6983	61.6983	61.6983
2940	81.1723	81.521	83.7776	61.6173	61.6173	61.6173
2941	81.0315	81.3778	83.7102	61.5372	61.5372	61.5372
2942	80.8898	81.2344	83.62	61.4578	61.4578	61.4578
2943	80.7348	81.0794	83.465	61.3791	61.3791	61.3791
2944	80.5731	80.9177	83.3033	61.3011	61.3011	61.3011
2945	80.4084	80.753	83.1386	61.2239	61.2239	61.2239
2946	80.2428	80.5872	82.9727	61.1474	61.1474	61.1474
2947	80.0767	80.4213	82.8069	61.0716	61.0716	61.0716
2948	79.9114	80.2559	82.6415	60.9965	60.9965	60.9965
2949	81.3431	92.6215	84.4855	67.3177	67.3177	91.4856
2950	82.1164	93.489	85.1894	70.4821	70.4821	94.7447
2951	82.5173	93.9268	85.5072	72.2368	72.2368	96.5482
2952	82.6809	93.901	85.5825	73.3455	73.3455	97.387
2953	82.7929	93.7019	85.9972	74.0525	74.0525	97.4263
2954	83.1144	93.8244	87.5005	74.4823	74.4823	98.7694
2955	83.4337	93.8644	88.5617	74.7027	74.7027	99.8735
2956	84.2464	95.3953	91.443	74.8472	74.8472	94.8823
2957	84.9152	96.0226	92.8419	74.9276	74.9276	93.8343
2958	85.0887	95.3858	92.5454	74.9522	74.9522	92.7186
2959	85.1088	94.7772	92.5934	74.9196	74.9196	91.5126

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*[Handwritten mark]*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011046



2960	85.4816	95.742	93.812	74.8449	74.8449	90.2864
2961	85.7097	95.7179	94.0906	74.716	74.716	88.9554
2962	85.8497	95.5647	94.575	74.5426	74.5426	87.5933
2963	86.0996	95.8663	95.7227	74.3377	74.3377	86.2487
2964	86.4571	96.6726	96.9791	74.1103	74.1103	84.9284
2965	86.7856	97.3393	97.9344	73.826	73.826	83.4469
2966	87.039	98.063	99.0083	73.5077	73.5077	81.9873
2967	86.6903	96.1914	97.4871	72.5834	72.5834	77.6928
2968	85.4796	92.0821	93.5309	70.9196	70.9196	70.9196
2969	84.8747	93.006	94.0908	70.189	70.189	70.189
2970	82.5962	82.5962	82.5962	69.863	69.863	69.863
2971	81.3258	81.3258	81.3258	69.7158	69.7158	69.7158
2972	80.6154	80.6154	80.6154	69.6468	69.6468	69.6468
2973	80.2163	80.2163	80.2163	69.612	69.612	69.612
2974	79.9901	79.9901	79.9901	69.5923	69.5923	69.5923
2975	79.86	79.86	79.86	69.5791	69.5791	69.5791
2976	79.7833	79.7833	79.7833	69.5687	69.5687	69.5687
2977	79.7363	79.7363	79.7363	69.5597	69.5597	69.5597
2978	79.7057	79.7057	79.7057	69.5512	69.5512	69.5512
2979	79.6843	79.6843	79.6843	69.5429	69.5429	69.5429
2980	79.668	79.668	79.668	69.5347	69.5347	69.5347
2981	79.6546	79.6546	79.6546	69.5266	69.5266	69.5266
2982	79.6427	79.6427	79.6427	69.5186	69.5186	69.5186
2983	79.6317	79.6317	79.6317	69.5105	69.5105	69.5105
2984	79.6212	79.6212	79.6212	69.5024	69.5024	69.5024
2985	79.6109	79.6109	79.6109	69.4944	69.4944	69.4944
2986	79.6008	79.6008	79.6008	69.4863	69.4863	69.4863
2987	83.4208	99.9439	103.098	69.4855	69.4855	69.4855
2988	85.6604	99.996	103.574	69.4846	69.4846	69.4846
2989	87.0114	99.0341	102.999	69.4837	69.4837	69.4837
2990	87.879	98.2715	102.794	69.4829	69.4829	69.4829
2991	88.4836	97.9056	103.047	69.482	69.482	69.482
2992	88.9226	97.4914	103.232	69.4323	69.4323	69.4323
2993	89.2478	97.113	103.418	69.3257	69.3257	69.3257
2994	89.5166	96.7183	103.576	69.1958	69.1958	69.1958
2995	89.7678	96.4474	103.812	69.0571	69.0571	69.0571
2996	90.0104	96.1703	104.04	68.9153	68.9153	68.9153
2997	90.215	95.7696	104.22	68.7731	68.7731	68.7731
2998	90.3862	95.3411	104.377	68.6315	68.6315	68.6315
2999	90.5737	95.2427	104.393	68.4909	68.4909	68.4909
3000	90.7626	95.2782	104.356	68.3516	68.3516	68.3516
3001	91.0599	95.6091	104.932	68.2138	68.2138	68.2138
3002	91.5829	96.335	106.254	68.0778	68.0778	68.0778
3003	92.091	96.8507	107.103	67.9433	67.9433	67.9433
3004	92.1158	96.2472	105.963	67.8095	67.8095	67.8095
3005	91.8903	95.4497	104.676	67.6764	67.6764	67.6764
3006	91.6972	94.9907	103.995	67.5443	67.5443	67.5443
3007	91.6276	94.8427	103.788	67.4135	67.4135	67.4135
3008	91.6255	94.7691	103.66	67.2839	67.2839	67.2839
3009	91.6671	94.7644	103.609	67.1555	67.1555	67.1555
3010	91.7475	94.8443	103.653	67.0284	67.0284	67.0284
3011	91.8488	94.9451	103.718	66.9025	66.9025	66.9025
3012	91.9611	95.0569	103.796	66.7778	66.7778	66.7778
3013	91.9059	94.7168	103.204	66.654	66.654	66.654
3014	91.6709	94.0672	102.204	66.5309	66.5309	66.5309

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011047

ALSTOM

3015	91.3411	93.3501	101.16	66.4086	66.4086	66.4086
3016	90.954	92.5874	100.08	66.2871	66.2871	66.2871
3017	90.614	92.0381	99.3229	66.1664	66.1664	66.1664
3018	90.3755	91.7432	98.9214	66.0468	66.0468	66.0468
3019	88.8383	89.3934	91.8719	65.9254	65.9254	65.9254
3020	87.6044	88.3595	90.635	65.8051	65.8051	65.8051
3021	86.9526	87.7077	89.9862	65.6859	65.6859	65.6859
3022	86.5118	87.2645	89.5574	65.5679	65.5679	65.5679
3023	86.1883	86.937	89.2533	65.4509	65.4509	65.4509
3024	85.8936	86.6752	88.8363	65.335	65.335	65.335
3025	85.6415	86.4277	88.5726	65.2202	65.2202	65.2202
3026	85.4129	86.2037	88.3324	65.1064	65.1064	65.1064
3027	85.1977	85.9931	88.1056	64.9937	64.9937	64.9937
3028	84.9901	85.7902	87.8864	64.882	64.882	64.882
3029	84.819	87.7022	94.7905	64.7743	64.7743	64.7743
3030	87.0822	88.3443	95.3223	64.6676	64.6676	64.6676
3031	87.4062	88.6118	95.4829	64.5617	64.5617	64.5617
3032	87.5088	88.6118	95.3734	64.4568	64.4568	64.4568
3033	87.4838	88.4706	95.1229	64.3527	64.3527	64.3527
3034	87.3867	88.2585	94.8028	64.2494	64.2494	64.2494
3035	87.2476	88.0058	94.4432	64.1471	64.1471	64.1471
3036	87.0828	87.7285	94.0604	64.0455	64.0455	64.0455
3037	86.9642	87.5918	93.9232	63.9449	63.9449	63.9449
3038	86.8802	87.5051	93.8514	63.8453	63.8453	63.8453
3039	86.815	87.4373	93.797	63.7466	63.7466	63.7466
3040	86.7599	87.3799	93.7515	63.6489	63.6489	63.6489
3041	86.7101	87.3281	93.7101	63.5521	63.5521	63.5521
3042	86.6629	87.2794	93.67	63.4562	63.4562	63.4562
3043	86.617	87.2321	93.6298	63.3613	63.3613	63.3613
3044	86.5711	87.1853	93.5866	63.2672	63.2672	63.2672
3045	86.5246	87.1384	93.5408	63.1741	63.1741	63.1741
3046	86.4781	87.0913	93.4949	63.0818	63.0818	63.0818
3047	86.4318	87.0445	93.4493	62.9904	62.9904	62.9904
3048	86.3861	86.998	93.4046	62.8998	62.8998	62.8998
3049	86.3411	86.9521	93.3607	62.8101	62.8101	62.8101
3050	86.297	86.9069	93.318	62.7213	62.7213	62.7213
3051	86.2538	86.8625	93.2765	62.6333	62.6333	62.6333
3052	86.2116	86.8189	93.236	62.5462	62.5462	62.5462
3053	86.1704	86.7762	93.1968	62.4599	62.4599	62.4599
3054	86.1272	86.7312	93.146	62.3744	62.3744	62.3744
3055	86.0822	86.6846	93.0912	62.2897	62.2897	62.2897
3056	86.0364	86.6371	93.0357	62.2058	62.2058	62.2058
3057	85.9902	86.5894	92.9802	62.1227	62.1227	62.1227
3058	85.944	86.5416	92.9248	62.0404	62.0404	62.0404
3059	85.8978	86.4939	92.8697	61.9588	61.9588	61.9588
3060	84.4585	84.8837	86.5533	61.8755	61.8755	61.8755
3061	83.5761	84.009	85.644	61.7929	61.7929	61.7929
3062	83.0044	83.4352	85.0796	61.7111	61.7111	61.7111
3063	82.6008	83.0311	84.6779	61.6301	61.6301	61.6301
3064	82.2814	82.72	84.3295	61.5498	61.5498	61.5498
3065	81.9721	82.4753	83.8377	61.4701	61.4701	61.4701
3066	81.2049	81.3197	81.4383	61.5519	61.5519	62.1889
3067	81.3078	82.4365	83.425	62.9558	62.9558	69.0915
3068	81.3016	82.7949	83.3218	83.9694	83.9694	71.4443
3069	81.2603	83.1818	83.2286	64.8415	64.8415	73.642

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011848

ALSTOM

3070	81.2109	83.5488	83.1654	65.6247	65.6247	75.5463
3071	81.1335	83.6548	83.091	66.2186	66.2186	76.5928
3072	81.026	83.6139	82.9848	66.664	66.664	77.2015
3073	80.8404	83.0518	82.7982	66.7564	66.7564	76.3422
3074	82.232	93.5545	85.3419	70.8797	70.8797	95.1013
3075	82.9772	94.3751	86.0159	73.0784	73.0784	97.3915
3076	83.3597	94.7736	86.3241	74.4346	74.4346	98.7451
3077	83.5008	94.6427	86.3824	75.3264	75.3264	99.2607
3078	83.6552	94.535	87.0398	75.9152	75.9152	99.1304
3079	83.9743	94.6547	88.4452	76.2701	76.2701	98.4484
3080	84.2886	94.713	89.4915	76.4784	76.4784	97.534
3081	85.1644	96.416	92.6234	76.5947	76.5947	96.505
3082	85.7546	96.76	93.6101	76.6506	76.6506	95.4311
3083	85.8997	96.1191	93.3596	76.6514	76.6514	94.2864
3084	86.9532	95.8879	93.533	76.597	76.597	93.0589
3085	86.3542	96.6722	94.7716	76.5003	76.5003	91.8081
3086	86.5231	96.4705	94.8815	76.348	76.348	90.4439
3087	86.6658	96.3728	95.4979	76.1541	76.1541	89.0672
3088	86.9216	96.744	96.6519	75.9308	75.9308	87.709
3089	87.2705	97.532	97.8782	75.6817	75.6817	86.3588
3090	87.5683	98.1545	98.814	75.3758	75.3758	84.8519
3091	87.8326	98.9157	99.9066	75.0394	75.0394	83.3845
3092	87.3122	96.3229	97.6565	73.9393	73.9393	78.2988
3093	86.1612	92.9818	94.3786	72.3763	72.3763	72.3763
3094	85.5892	93.9	94.9421	71.6896	71.6896	71.6896
3095	83.3278	83.3278	83.3278	71.3827	71.3827	71.3827
3096	82.0668	82.0668	82.0668	71.2437	71.2437	71.2437
3097	81.3616	81.3616	81.3616	71.1782	71.1782	71.1782
3098	80.9652	80.9652	80.9652	71.1448	71.1448	71.1448
3099	80.7405	80.7405	80.7405	71.1255	71.1255	71.1255
3100	80.6111	80.6111	80.6111	71.1123	71.1123	71.1123
3101	80.5347	80.5347	80.5347	71.1019	71.1019	71.1019
3102	80.4877	80.4877	80.4877	71.0926	71.0926	71.0926
3103	80.4572	80.4572	80.4572	71.0839	71.0839	71.0839
3104	80.4357	80.4357	80.4357	71.0754	71.0754	71.0754
3105	80.4192	80.4192	80.4192	71.067	71.067	71.067
3106	80.4056	80.4056	80.4056	71.0587	71.0587	71.0587
3107	80.3935	80.3935	80.3935	71.0503	71.0503	71.0503
3108	80.3823	80.3823	80.3823	71.042	71.042	71.042
3109	80.3716	80.3716	80.3716	71.0337	71.0337	71.0337
3110	80.3612	80.3612	80.3612	71.0254	71.0254	71.0254
3111	80.3509	80.3509	80.3509	71.0171	71.0171	71.0171
3112	84.17	100.429	103.63	71.0157	71.0157	71.0157
3113	86.4086	100.48	104.102	71.0143	71.0143	71.0143
3114	87.7587	99.4544	103.474	71.0129	71.0129	71.0129
3115	88.628	98.904	103.501	71.0115	71.0115	71.0115
3116	89.2333	98.5386	103.765	71.0101	71.0101	71.0101
3117	89.6691	98.1471	103.955	70.9552	70.9552	70.9552
3118	89.9927	97.7739	104.147	70.8381	70.8381	70.8381
3119	90.2625	97.4083	104.327	70.6956	70.6956	70.6956
3120	90.5097	97.1257	104.552	70.5433	70.5433	70.5433
3121	90.7454	96.8386	104.772	70.3878	70.3878	70.3878
3122	90.9421	96.4231	104.945	70.2318	70.2318	70.2318
3123	91.1165	95.988	105.095	70.0763	70.0763	70.0763
3124	91.2894	95.9499	105.095	69.9221	69.9221	69.9221



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011849

ALSTOM

3125	91.4631	95.992	105.071	69.7691	69.7691	69.7691
3126	91.732	96.2561	105.506	69.6178	69.6178	69.6178
3127	92.1979	96.9009	106.676	69.4683	69.4683	69.4683
3128	92.7753	97.6515	107.935	69.3207	69.3207	69.3207
3129	92.9837	97.4445	107.442	69.1742	69.1742	69.1742
3130	92.9028	96.8571	106.421	69.0285	69.0285	69.0285
3131	92.8734	96.1647	105.333	68.8838	68.8838	68.8838
3132	92.5134	95.8122	104.82	68.7403	68.7403	68.7403
3133	92.4642	95.7014	104.663	68.5982	68.5982	68.5982
3134	92.4752	95.656	104.575	68.4574	68.4574	68.4574
3135	92.519	95.6483	104.528	68.3179	68.3179	68.3179
3136	92.5862	95.6836	104.532	68.1798	68.1798	68.1798
3137	92.6761	95.7732	104.599	68.043	68.043	68.043
3138	92.778	95.8747	104.68	67.9075	67.9075	67.9075
3139	92.8861	95.9825	104.767	67.7733	67.7733	67.7733
3140	92.9972	96.0933	104.858	67.6405	67.6405	67.6405
3141	93.1096	96.2054	104.951	67.5089	67.5089	67.5089
3142	93.218	96.3085	105.029	67.3786	67.3786	67.3786
3143	93.1896	96.0506	104.58	67.2493	67.2493	67.2493
3144	91.6586	93.2977	97.8558	67.1185	67.1185	67.1185
3145	90.7854	92.4245	96.9825	66.9889	66.9889	66.9889
3146	90.2692	91.9083	96.4564	66.8505	66.8505	66.8505
3147	89.947	91.5881	96.1442	66.7333	66.7333	66.7333
3148	89.7303	91.3694	95.9275	66.6074	66.6074	66.6074
3149	89.5712	91.2103	95.7883	66.4826	66.4826	66.4826
3150	89.4435	91.0826	95.6407	66.359	66.359	66.359
3151	89.3332	90.9723	95.5304	66.2366	66.2366	66.2366
3152	89.2326	90.8718	95.4298	66.1154	66.1154	66.1154
3153	89.1377	90.7788	95.3348	65.9952	65.9952	65.9952
3154	88.919	90.4422	94.7112	65.876	65.876	65.876
3155	88.7309	90.2334	94.4482	65.7579	65.7579	65.7579
3156	88.5584	90.0403	94.2008	65.6409	65.6409	65.6409
3157	88.3936	89.8547	93.961	65.5249	65.5249	65.5249
3158	88.232	89.6725	93.7245	65.41	65.41	65.41
3159	89.7843	92.5035	100.913	65.2991	65.2991	65.2991
3160	90.512	92.9719	101.163	65.1891	65.1891	65.1891
3161	90.7883	92.9967	100.975	65.0798	65.0798	65.0798
3162	90.816	92.7804	100.553	64.9713	64.9713	64.9713
3163	90.7051	92.4329	100.005	64.8636	64.8636	64.8636
3164	90.5154	92.0137	99.3921	64.7567	64.7567	64.7567
3165	90.3604	91.7855	99.0723	64.6508	64.6508	64.6508
3166	90.2424	91.6329	98.8541	64.5458	64.5458	64.5458
3167	90.1437	91.5004	98.6578	64.4417	64.4417	64.4417
3168	90.0544	91.3783	98.4734	64.3386	64.3386	64.3386
3169	89.9696	91.2614	98.2958	64.2364	64.2364	64.2364
3170	89.8862	91.1489	98.1221	64.1351	64.1351	64.1351
3171	89.803	91.0332	97.9508	64.0347	64.0347	64.0347
3172	89.719	90.9196	97.781	63.9353	63.9353	63.9353
3173	89.6263	90.7746	97.5788	63.8367	63.8367	63.8367
3174	89.5244	90.6117	97.3585	63.739	63.739	63.739
3175	89.4163	90.4438	97.1344	63.6422	63.6422	63.6422
3176	89.3037	90.2726	96.908	63.5462	63.5462	63.5462
3177	89.1876	90.0988	96.6801	63.4511	63.4511	63.4511
3178	89.0685	89.9232	96.4514	63.3568	63.3568	63.3568
3179	88.9466	89.7459	96.222	63.2634	63.2634	63.2634

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011850



3180	88.8223	89.5672	95.9922	63.1708	63.1708	63.1708
3181	88.8956	89.3871	95.782	63.079	63.079	63.079
3182	88.5667	89.2059	95.5315	62.988	62.988	62.988
3183	88.4637	89.0928	95.4165	62.8978	62.8978	62.8978
3184	88.3805	89.0082	95.3394	62.8086	62.8086	62.8086
3185	88.3084	88.9347	95.2732	62.7202	62.7202	62.7202
3186	88.2426	88.8675	95.2133	62.6326	62.6326	62.6326
3187	88.1805	88.8041	95.157	62.5458	62.5458	62.5458
3188	88.1207	88.743	95.1029	62.4599	62.4599	62.4599
3189	88.0625	88.6835	95.0503	62.3748	62.3748	62.3748
3190	88.0054	88.6251	94.9987	62.2905	62.2905	62.2905
3191	87.9492	88.5676	94.9478	62.207	62.207	62.207
3192	87.8937	88.5109	94.8973	62.1243	62.1243	62.1243
3193	87.8388	88.4548	94.8473	62.0424	62.0424	62.0424
3194	87.7843	88.3993	94.7975	61.9613	61.9613	61.9613
3195	87.7299	88.3441	94.7455	61.8809	61.8809	61.8809
3196	87.6751	88.2887	94.6914	61.8013	61.8013	61.8013
3197	87.6203	88.2335	94.6373	61.7225	61.7225	61.7225
3198	87.5658	88.1784	94.5834	61.6444	61.6444	61.6444
3199	87.5116	88.1237	94.5298	61.5671	61.5671	61.5671
3200	87.4577	88.0693	94.4768	61.4904	61.4904	61.4904
3201	87.4042	88.0154	94.4237	61.4145	61.4145	61.4145
3202	87.3512	87.9619	94.3712	61.3394	61.3394	61.3394
3203	87.2985	87.9088	94.3191	61.2649	61.2649	61.2649
3204	87.2463	87.8561	94.2674	61.1911	61.1911	61.1911
3205	87.1945	87.8039	94.2162	61.1181	61.1181	61.1181
3206	87.1432	87.7522	94.1654	61.0457	61.0457	61.0457
3207	87.0923	87.7008	94.1151	60.9741	60.9741	60.9741
3208	87.0418	87.65	94.0651	60.9031	60.9031	60.9031
3209	86.9918	87.5995	94.0158	60.8327	60.8327	60.8327
3210	86.9421	87.5495	93.9665	60.7631	60.7631	60.7631
3211	86.8929	87.4998	93.9177	60.6941	60.6941	60.6941
3212	86.8441	87.4508	93.8694	60.6257	60.6257	60.6257
3213	86.7956	87.4018	93.8215	60.5581	60.5581	60.5581
3214	86.7476	87.3534	93.7739	60.491	60.491	60.491
3215	86.7	87.3054	93.7268	60.4246	60.4246	60.4246
3216	86.652	87.257	93.6764	60.3588	60.3588	60.3588
3217	86.6038	87.2085	93.626	60.2936	60.2936	60.2936
3218	86.5558	87.16	93.5756	60.2291	60.2291	60.2291
3219	86.5079	87.1118	93.5255	60.1652	60.1652	60.1652
3220	86.4603	87.0638	93.4757	60.1018	60.1018	60.1018
3221	86.4129	87.0161	93.4262	60.0391	60.0391	60.0391
3222	86.3659	86.9688	93.3771	59.9769	59.9769	59.9769
3223	86.3191	86.9215	93.3282	59.9154	59.9154	59.9154
3224	86.2726	86.8747	93.2795	59.8544	59.8544	59.8544
3225	86.2263	86.8278	93.2301	59.794	59.794	59.794
3226	86.1801	86.7809	93.1798	59.7342	59.7342	59.7342
3227	86.1338	86.7338	93.1286	59.675	59.675	59.675
3228	86.0876	86.6868	93.0766	59.6163	59.6163	59.6163
3229	86.3982	97.7569	89.4781	65.9792	65.9792	90.2471
3230	86.4513	97.3669	89.3841	68.9747	68.9747	92.723
3231	84.9071	85.3661	87.2693	64.3963	64.3963	64.3963
3232	83.9779	84.4369	86.34	62.4168	62.4168	62.4168
3233	83.399	83.8449	85.8253	61.5371	61.5371	61.5371
3234	83.0028	83.4437	85.4581	61.1232	61.1232	61.1232

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011851



3235	82.7409	83.1649	85.3551	60.9066	60.9066	60.9066
3236	82.5217	82.9423	85.1683	60.774	60.774	60.774
3237	82.3285	82.7463	85.0136	60.6772	60.6772	60.6772
3238	82.1127	82.5403	84.693	60.596	60.596	60.596
3239	81.8835	82.3224	84.3573	60.5216	60.5216	60.5216
3240	81.6481	82.105	84.0205	60.4505	60.4505	60.4505
3241	81.4093	81.8654	83.6822	60.3811	60.3811	60.3811
3242	81.1707	81.675	83.3517	60.3128	60.3128	60.3128
3243	80.9321	81.4646	83.0223	60.2453	60.2453	60.2453
3244	80.6815	81.2766	82.6226	60.1784	60.1784	60.1784
3245	82.2011	93.6115	85.1953	66.5478	66.5476	90.8588
3246	82.969	94.1845	85.8594	69.6112	69.6112	93.6464
3247	83.403	94.3146	86.5904	71.1639	71.1639	94.5524
3248	83.8948	94.6139	88.2548	71.9513	71.9513	94.2984
3249	84.3012	94.7647	89.3928	72.3892	72.3692	93.5958
3250	85.1207	96.2143	92.1764	72.6052	72.6052	92.7072
3251	85.8508	97.0159	93.821	72.7399	72.7399	91.7211
3252	86.0451	96.3882	93.5007	72.8034	72.8034	90.6532
3253	86.0662	95.7615	93.5355	72.8019	72.8019	89.4816
3254	86.4197	96.6261	94.6768	72.7539	72.7539	88.2827
3255	86.6556	96.7029	95.051	72.651	72.651	86.9831
3256	86.7817	96.5015	95.4389	72.5007	72.5007	85.8393
3257	87.016	96.7506	96.5894	72.3176	72.3176	84.3102
3258	87.3616	97.5432	97.8152	72.1122	72.1122	83.0132
3259	87.6691	98.2158	98.7894	71.8519	71.8519	81.564
3260	87.9395	98.9263	99.8428	71.5549	71.5549	80.1194
3261	87.6897	97.5	98.7718	70.7513	70.7513	76.3335
3262	86.4337	92.8477	94.3413	69.0309	69.0309	69.0309
3263	85.804	93.822	94.9338	68.2757	68.2757	68.2757
3264	83.5123	83.5123	83.5123	67.9396	67.9396	67.9396
3265	82.2344	82.2344	82.2344	67.7885	67.7885	67.7885
3266	81.5198	81.5198	81.5198	67.7182	67.7182	67.7182
3267	81.1182	81.1182	81.1182	67.6834	67.6834	67.6834
3268	80.8905	80.8905	80.8905	67.6641	67.6641	67.6641
3269	80.7595	80.7595	80.7595	67.6515	67.6515	67.6515
3270	80.6822	80.6822	80.6822	67.642	67.642	67.642
3271	80.6347	80.6347	80.6347	67.6337	67.6337	67.6337
3272	80.6038	80.6038	80.6038	67.6261	67.6261	67.6261
3273	80.5821	80.5821	80.5821	67.6186	67.6186	67.6186
3274	80.5655	80.5655	80.5655	67.6113	67.6113	67.6113
3275	80.5518	80.5518	80.5518	67.6041	67.6041	67.6041
3276	80.5397	80.5397	80.5397	67.5968	67.5968	67.5968
3277	80.5284	80.5284	80.5284	67.5896	67.5896	67.5896
3278	80.5177	80.5177	80.5177	67.5824	67.5824	67.5824
3279	80.5072	80.5072	80.5072	67.5752	67.5752	67.5752
3280	80.4969	80.4969	80.4969	67.568	67.568	67.568
3281	84.3272	101.021	104.204	67.5673	67.5673	67.5673
3282	86.5629	101.065	104.615	67.5667	67.5667	67.5667
3283	87.9118	100.141	104.071	67.566	67.566	67.566
3284	88.7761	99.2403	103.715	67.5654	67.5654	67.5654
3285	89.3794	98.8749	103.969	67.5647	67.5647	67.5647
3286	89.8131	98.4281	104.125	67.5211	67.5211	67.5211
3287	90.1351	98.0532	104.315	67.4277	67.4277	67.4277
3288	90.3978	97.637	104.458	67.314	67.314	67.314
3289	90.6428	97.3519	104.688	67.1924	67.1924	67.1924

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011052

ALSTOM

3290	90.879	97.0784	104.909	67.0681	67.0681	67.0681
3291	91.08	96.6809	105.087	66.9435	66.9435	66.9435
3292	91.2564	96.2476	105.239	66.8194	66.8194	66.8194
3293	91.4274	96.1073	105.263	66.6962	66.6962	66.6962
3294	91.6	96.1366	105.22	66.5741	66.5741	66.5741
3295	91.8805	96.414	105.691	66.4533	66.4533	66.4533
3296	92.3843	97.1201	106.992	66.3341	66.3341	66.3341
3297	92.9331	97.7517	108.055	66.2164	66.2164	66.2164
3298	92.9667	97.135	106.882	66.0992	66.0992	66.0992
3299	92.7397	96.3276	105.579	65.9826	65.9826	65.9826
3300	92.529	95.8265	104.834	65.8668	65.8668	65.8668
3301	92.4472	95.6681	104.614	65.7521	65.7521	65.7521
3302	92.435	95.5797	104.471	65.6385	65.6385	65.6385
3303	92.4683	95.5656	104.41	65.526	65.526	65.526
3304	92.5415	95.6384	104.447	65.4146	65.4146	65.4146
3305	92.6362	95.7325	104.507	65.3042	65.3042	65.3042
3306	92.7422	95.838	104.58	65.195	65.195	65.195
3307	92.7174	95.5884	104.127	65.0865	65.0865	65.0865
3308	92.5122	94.9916	103.199	64.9787	64.9787	64.9787
3309	92.2032	94.3027	102.189	64.8716	64.8716	64.8716
3310	91.8321	93.5631	101.138	64.7651	64.7651	64.7651
3311	91.4581	92.8988	100.215	64.6593	64.6593	64.6593
3312	91.2003	92.5856	99.7971	64.5545	64.5545	64.5545
3313	91.0041	92.3354	99.4446	64.4506	64.4506	64.4506
3314	90.8395	92.1178	99.1265	64.3475	64.3475	64.3475
3315	90.689	91.9138	98.8211	64.2454	64.2454	64.2454
3316	90.5368	91.6862	98.4913	64.1442	64.1442	64.1442
3317	90.3691	91.4067	98.1067	64.0438	64.0438	64.0438
3318	90.1901	91.1169	97.7129	63.9442	63.9442	63.9442
3319	90.0024	90.8201	97.3134	63.8455	63.8455	63.8455
3320	89.8079	90.5184	96.9112	63.7476	63.7476	63.7476
3321	89.6236	90.2534	96.5744	63.6505	63.6505	63.6505
3322	89.4958	90.1225	96.4588	63.5544	63.5544	63.5544
3323	89.3986	90.0224	96.3738	63.4592	63.4592	63.4592
3324	89.3185	89.9399	96.3058	63.3649	63.3649	63.3649
3325	89.2482	89.8665	96.2473	63.2715	63.2715	63.2715
3326	89.1835	89.7991	96.1942	63.179	63.179	63.179
3327	89.1208	89.7344	96.1372	63.0874	63.0874	63.0874
3328	89.0583	89.6704	96.0766	62.9966	62.9966	62.9966
3329	89.3004	100.698	92.2472	69.3322	69.3322	93.6164
3330	89.3278	100.358	92.1809	72.3031	72.3031	96.0843
3331	88.4783	93.6788	91.1808	71.5751	71.5751	86.5602
3332	87.3865	88.0249	90.1889	67.6118	67.6118	67.6118
3333	86.7231	87.3471	89.6157	65.8728	65.8728	65.8728
3334	86.3076	88.9137	89.3417	65.0754	65.0754	65.0754
3335	86.0266	88.6266	89.1877	64.6769	64.6769	64.6769
3336	85.8719	88.4681	89.3367	64.448	64.448	64.448
3337	85.7482	88.3499	89.356	64.2912	64.2912	64.2912
3338	85.6487	88.2582	89.4143	64.1657	64.1657	64.1657
3339	85.5494	88.1638	89.4236	64.0539	64.0539	64.0539
3340	85.3744	85.9812	89.0823	63.9484	63.9484	63.9484
3341	85.2038	85.8105	88.9117	63.8461	63.8461	63.8461
3342	85.036	85.6428	88.7439	63.7457	63.7457	63.7457
3343	84.823	85.4218	88.5721	63.6466	63.6466	63.6466
3344	84.5221	85.1219	87.6859	63.5484	63.5484	63.5484

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011853



3345	84.187	84.8221	87.0065	63.451	63.451	63.451
3346	83.8486	84.5589	86.3737	63.3544	63.3544	63.3544
3347	83.5288	84.3808	85.8188	63.2587	63.2587	63.2587
3348	82.6381	82.7914	82.9193	63.3107	63.3107	63.8918
3349	82.4944	83.4097	84.1739	64.0258	64.0258	67.4959
3350	82.6467	84.1022	85.3172	64.8628	64.8628	70.3806
3351	82.7171	84.2853	85.592	65.3776	65.3776	71.3225
3352	82.19	82.9531	83.5901	64.8769	64.8769	67.7698
3353	81.3792	81.432	81.5097	63.9282	63.9282	63.9282
3354	81.4836	82.3791	83.7196	63.4726	63.4726	63.4726
3355	81.4579	82.3326	83.7197	63.2257	63.2257	63.2257
3356	83.0841	93.8953	86.893	69.0955	69.0955	91.9376
3357	84.1586	94.7401	88.9125	71.6758	71.6758	93.4197
3358	85.0647	95.7408	91.0525	72.8296	72.8296	93.4394
3359	86.2828	97.8323	94.5428	73.3561	73.3561	92.8338
3360	86.7098	97.3865	94.3117	73.5926	73.5926	91.9431
3361	86.8213	96.7976	94.2847	73.6722	73.6722	90.8594
3362	87.0258	96.9814	94.9229	73.6608	73.6608	89.6856
3363	87.3869	97.653	95.8651	73.5857	73.5857	88.4421
3364	87.4864	97.22	95.7538	73.4467	73.4467	87.0838
3365	87.6584	97.342	96.8255	73.2712	73.2712	86.7516
3366	87.9606	97.9496	98.0265	73.0694	73.0694	84.4404
3367	88.2899	98.6837	99.1355	72.8267	72.8267	83.0558
3368	88.5729	99.3486	100.102	72.5336	72.5336	81.5786
3369	88.8252	100.091	101.223	72.2127	72.2127	80.1416
3370	87.7873	95.2802	96.7313	70.6402	70.6402	72.6793
3371	86.83	94.2054	95.471	69.4381	69.4381	69.4381
3372	86.3657	95.2323	96.1421	68.9098	68.9098	68.9098
3373	84.1607	84.1607	84.1607	68.6729	68.6729	68.6729
3374	82.9309	82.9309	82.9309	68.5651	68.5651	68.5651
3375	82.2429	82.2429	82.2429	68.5138	68.5138	68.5138
3376	81.856	81.856	81.856	68.4872	68.4872	68.4872
3377	81.6364	81.6364	81.6364	68.4715	68.4715	68.4715
3378	81.5098	81.5098	81.5098	68.4604	68.4604	68.4604
3379	81.4348	81.4348	81.4348	68.4515	68.4515	68.4515
3380	81.3886	81.3886	81.3886	68.4434	68.4434	68.4434
3381	81.3583	81.3583	81.3583	68.4358	68.4358	68.4358
3382	81.3368	81.3368	81.3368	68.4283	68.4283	68.4283
3383	81.3203	81.3203	81.3203	68.4209	68.4209	68.4209
3384	81.3065	81.3065	81.3065	68.4136	68.4136	68.4136
3385	81.2943	81.2943	81.2943	68.4063	68.4063	68.4063
3386	81.2829	81.2829	81.2829	68.3989	68.3989	68.3989
3387	81.2719	81.2719	81.2719	68.3916	68.3916	68.3916
3388	81.2613	81.2613	81.2613	68.3843	68.3843	68.3843
3389	81.2507	81.2507	81.2507	68.377	68.377	68.377
3390	85.0677	100.51	103.856	68.376	68.376	68.376
3391	87.3034	100.558	104.316	68.3751	68.3751	68.3751
3392	88.653	99.5345	103.743	68.3741	68.3741	68.3741
3393	89.5259	99.4384	104.266	68.3731	68.3731	68.3731
3394	90.1363	99.0889	104.536	68.3721	68.3721	68.3721
3395	90.5721	98.7901	104.809	68.3259	68.3259	68.3259
3396	90.8929	98.4144	104.998	68.2269	68.2269	68.2269
3397	91.1619	98.1048	105.214	68.1065	68.1065	68.1065
3398	91.4086	97.8317	105.445	67.9778	67.9778	67.9778
3399	91.6282	97.4918	105.646	67.8463	67.8463	67.8463





3400	91.8132	97.0668	105.807	67.7143	67.7143	67.7143
3401	91.9812	96.7228	106.91	67.5829	67.5829	67.5829
3402	92.1502	96.7484	105.863	67.4525	67.4525	67.4525
3403	92.3193	96.774	105.815	67.3232	67.3232	67.3232
3404	92.7487	97.3982	107.018	67.1956	67.1956	67.1956
3405	93.3389	98.1904	108.401	67.0696	67.0696	67.0696
3406	93.5668	97.9984	107.971	66.9445	66.9445	66.9445
3407	93.4242	97.2272	106.862	66.8201	66.8201	66.8201
3408	93.1502	96.4735	105.5	66.6964	66.6964	66.6964
3409	93.0305	96.2676	105.229	66.5738	66.5738	66.5738
3410	92.9939	96.1488	105.048	66.4524	66.4524	66.4524
3411	93.0091	96.1065	104.951	66.3322	66.3322	66.3322
3412	93.0713	96.1681	104.974	66.2131	66.2131	66.2131
3413	93.1587	96.2549	105.022	66.0952	66.0952	66.0952
3414	93.2594	96.3551	105.088	65.9784	65.9784	65.9784
3415	93.1123	95.7891	104.163	65.8623	65.8623	65.8623
3416	92.8041	95.0416	103.045	65.7469	65.7469	65.7469
3417	92.4029	94.2159	101.86	65.6322	65.6322	65.6322
3418	91.9686	93.4138	100.739	65.5183	65.5183	65.5183
3419	91.6695	93.0511	100.256	65.4053	65.4053	65.4053
3420	91.4419	92.7817	99.8489	65.2933	65.2933	65.2933
3421	91.2522	92.5123	99.4865	65.1823	65.1823	65.1823
3422	91.082	92.2845	99.1496	65.0723	65.0723	65.0723
3423	90.9042	91.999	98.7529	64.9631	64.9631	64.9631
3424	90.7188	91.6954	98.34	64.855	64.855	64.855
3425	90.7894	101.625	94.4469	70.8101	70.8101	93.7853
3426	91.0182	101.629	95.6919	73.4174	73.4174	95.2855
3427	91.3953	101.987	97.1703	74.5696	74.5696	95.2805
3428	90.7971	96.5267	96.837	73.3776	73.3776	86.8084
3429	89.3495	90.2631	92.5634	69.6365	69.6365	69.6365
3430	88.473	89.3867	91.8869	67.9797	67.9797	67.9797
3431	87.9069	88.8206	91.1209	67.2054	67.2054	67.2054
3432	87.5098	88.4235	90.7238	66.8051	66.8051	66.8051
3433	87.2051	88.1187	90.419	66.5636	66.5636	66.5636
3434	87.1282	88.1345	90.9361	66.3903	66.3903	66.3903
3435	87.026	88.0429	90.8954	66.2465	66.2465	66.2465
3436	86.9116	87.939	90.8424	66.1158	66.1158	66.1158
3437	86.7926	87.8319	90.7846	65.9913	65.9913	65.9913
3438	86.673	87.7247	90.7261	65.8701	65.8701	65.8701
3439	86.4525	87.453	90.2267	65.7507	65.7507	65.7507
3440	86.2586	87.2571	90.0307	65.6329	65.6329	65.6329
3441	86.0745	87.075	89.8487	65.5164	65.5164	65.5164
3442	85.9005	86.901	89.6747	65.401	65.401	65.401
3443	85.7314	86.7319	89.5056	65.2867	65.2867	65.2867
3444	85.5655	86.5661	89.3397	65.1735	65.1735	65.1735
3445	85.318	86.2711	88.8102	65.0612	65.0612	65.0612
3446	85.0144	85.9252	88.1997	64.9498	64.9498	64.9498
3447	84.6976	85.6057	87.6229	64.8393	64.8393	64.8393
3448	84.0305	84.5423	85.581	64.7292	64.7292	64.7292
3449	83.3687	83.7503	84.2385	64.9785	64.9785	66.3869
3450	83.8004	85.5025	87.5037	66.2662	66.2662	72.4471
3451	83.9899	85.8529	87.6759	66.9798	66.9798	73.5927
3452	84.0681	86.1813	87.7471	67.5056	67.5056	74.7323
3453	84.1057	86.5252	87.8338	67.9578	67.9578	75.774
3454	84.135	86.8725	87.9409	68.3838	68.3838	76.768

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*[Handwritten mark]*





3455	84.1608	87.1948	88.0658	88.7881	68.7881	77.6575
3456	83.9951	86.4302	87.7262	88.7978	68.7978	76.6427
3457	83.8386	86.2243	87.5621	88.8618	68.8618	76.6108
3458	83.6874	86.0227	87.4023	88.946	68.946	76.5992
3459	83.5375	85.8233	87.2448	89.0362	69.0362	76.5935
3460	83.3887	85.625	87.0884	89.1262	69.1262	76.5877
3461	83.2982	85.775	87.0349	89.3597	69.3597	77.2873
3462	83.1943	85.6711	86.931	89.5411	69.5411	77.4687
3463	83.0836	85.5504	86.8203	89.6997	69.6997	77.6273
3464	82.9696	85.4464	86.7063	89.8478	69.8478	77.7755
3465	82.8542	85.331	86.5909	89.9908	69.9908	77.9184
3466	82.7384	85.2152	86.4751	70.1308	70.1308	78.0584
3467	82.6228	85.0996	86.3595	70.2687	70.2687	78.1963
3468	82.5076	84.9845	86.2443	70.4051	70.4051	78.3327
3469	82.3931	84.87	86.1298	70.54	70.54	78.4677
3470	82.2387	84.5116	85.944	70.5708	70.5708	78.1032
3471	82.0532	84.0836	85.7212	70.5297	70.5297	77.5918
3472	81.874	83.7273	85.5611	70.4475	70.4475	77.0344
3473	81.6975	83.3737	85.4036	70.3382	70.3382	76.4498
3474	81.1434	82.2282	83.8089	89.7875	69.7875	73.7706
3475	80.2398	80.5981	81.0541	68.8717	68.8717	70.1872
3476	83.003	94.5412	91.2545	73.1972	73.1972	92.6504
3477	84.2905	95.0017	91.9253	75.0441	75.0441	93.446
3478	84.8689	94.8869	92.3314	75.7979	75.7979	93.0604
3479	85.3001	95.2147	93.1382	76.0605	76.0605	92.1664
3480	85.8224	96.1231	94.3134	76.0887	76.0887	91.0274
3481	85.9939	95.7803	94.2935	75.9801	75.9801	89.6951
3482	86.2233	95.9108	95.3345	75.8034	75.8034	88.356
3483	86.5464	96.5077	96.5563	75.5876	75.5876	87.0266
3484	86.8986	97.2704	97.7045	75.3281	75.3281	85.6321
3485	87.1989	97.9441	98.6741	75.0145	75.0145	84.1291
3486	87.465	98.7003	99.8088	74.6729	74.6729	82.6713
3487	86.5238	94.2703	95.7017	73.1607	73.1607	75.5875
3488	85.5416	92.8251	94.1117	71.8856	71.8856	71.8956
3489	85.0635	93.8373	94.7691	71.3249	71.3249	71.3249
3490	82.8516	82.8516	82.8516	71.0737	71.0737	71.0737
3491	81.8181	81.6181	81.6181	70.9593	70.9593	70.9593
3492	80.9282	80.9282	80.9282	70.9048	70.9048	70.9048
3493	80.5405	80.5405	80.5405	70.8765	70.8765	70.8765
3494	80.3205	80.3205	80.3205	70.8597	70.8597	70.8597
3495	80.1939	80.1939	80.1939	70.8479	70.8479	70.8479
3496	80.119	80.119	80.119	70.8384	70.8384	70.8384
3497	80.073	80.073	80.073	70.8298	70.8298	70.8298
3498	80.043	80.043	80.043	70.8216	70.8216	70.8216
3499	80.0218	80.0218	80.0218	70.8136	70.8136	70.8136
3500	80.0057	80.0057	80.0057	70.8057	70.8057	70.8057
3501	79.9922	79.9922	79.9922	70.7978	70.7978	70.7978
3502	79.9803	79.9803	79.9803	70.79	70.79	70.79
3503	79.9692	79.9692	79.9692	70.7822	70.7822	70.7822
3504	79.9586	79.9586	79.9586	70.7743	70.7743	70.7743
3505	79.9483	79.9483	79.9483	70.7665	70.7665	70.7665
3506	79.9381	79.9381	79.9381	70.7587	70.7587	70.7587
3507	83.764	99.3464	102.718	70.757	70.757	70.757
3508	85.9971	99.3878	103.124	70.7553	70.7553	70.7553
3509	87.3444	98.2863	102.458	70.7536	70.7536	70.7536





3510	88.2173	98.1933	102.983	70.7519	70.7519	70.7519
3511	88.8244	97.8289	103.238	70.7502	70.7502	70.7502
3512	89.2628	97.5243	103.508	70.6959	70.6959	70.6959
3513	89.5893	97.1543	103.703	70.5806	70.5806	70.5806
3514	89.8647	96.8401	103.917	70.4402	70.4402	70.4402
3515	90.119	96.5745	104.157	70.2903	70.2903	70.2903
3516	90.3491	96.2507	104.368	70.1371	70.1371	70.1371
3517	90.544	95.8356	104.539	69.9834	69.9834	69.9834
3518	90.7206	95.4712	104.663	69.8303	69.8303	69.8303
3519	90.8984	95.5056	104.625	69.6784	69.6784	69.6784
3520	91.0765	95.5403	104.586	69.5278	69.5278	69.5278
3521	91.4981	96.1349	105.716	69.379	69.379	69.379
3522	92.0872	96.9262	107.101	69.232	69.232	69.232
3523	92.3575	96.8299	106.837	69.0862	69.0862	69.0862
3524	92.2415	96.0823	105.55	68.9412	68.9412	68.9412
3525	91.9673	95.2962	104.327	68.7972	68.7972	68.7972
3526	91.8516	95.0945	104.06	68.6545	68.6545	68.6545
3527	91.8212	94.9625	103.887	68.5132	68.5132	68.5132
3528	91.8416	94.939	103.788	68.3732	68.3732	68.3732
3529	91.9102	95.0071	103.817	68.2345	68.2345	68.2345
3530	92.0048	95.1011	103.874	68.0972	68.0972	68.0972
3531	92.1131	95.2088	103.946	67.9612	67.9612	67.9612
3532	92.0367	94.8171	103.279	67.8262	67.8262	67.8262
3533	91.7861	94.1475	102.255	67.6921	67.6921	67.6921
3534	91.4369	93.3953	101.163	67.5589	67.5589	67.5589
3535	91.03	92.601	100.041	67.4267	67.4267	67.4267
3536	90.7036	92.1161	99.379	67.2955	67.2955	67.2955
3537	90.4697	91.8238	98.9762	67.1654	67.1654	67.1654
3538	90.2841	91.5813	98.6257	67.0366	67.0366	67.0366
3539	90.1234	91.3649	98.3041	66.9088	66.9088	66.9088
3540	89.9729	91.155	97.9909	66.7823	66.7823	66.7823
3541	89.8079	90.8761	97.6049	66.6568	66.6568	66.6568
3542	89.6326	90.589	97.2128	66.5323	66.5323	66.5323
3543	89.4496	90.2963	96.8169	66.409	66.409	66.409
3544	89.2601	89.9991	96.4186	66.2867	66.2867	66.2867
3545	89.065	89.8984	96.0186	66.1655	66.1655	66.1655
3546	88.9308	89.5583	95.8905	66.0454	66.0454	66.0454
3547	88.8321	89.4567	95.8041	65.9265	65.9265	65.9265
3548	88.7531	89.3749	95.7371	65.8087	65.8087	65.8087
3549	88.6851	89.3041	95.681	65.6921	65.6921	65.6921
3550	88.6235	89.2398	95.6311	65.5765	65.5765	65.5765
3551	88.5649	89.1789	95.5808	65.4621	65.4621	65.4621
3552	88.5065	89.1189	95.5243	65.3487	65.3487	65.3487
3553	88.4484	89.0594	95.4681	65.2364	65.2364	65.2364
3554	88.3909	89.0004	95.4124	65.1252	65.1252	65.1252
3555	88.3339	88.942	95.3573	65.0151	65.0151	65.0151
3556	88.2774	88.8841	95.3026	64.9059	64.9059	64.9059
3557	88.2213	88.8265	95.2471	64.7979	64.7979	64.7979
3558	88.1626	88.7664	95.1796	64.6908	64.6908	64.6908
3559	88.1028	88.7051	95.1111	64.5848	64.5848	64.5848
3560	88.0425	88.6434	95.0423	64.4797	64.4797	64.4797
3561	87.9821	88.5815	94.9735	64.3757	64.3757	64.3757
3562	87.9218	88.5198	94.9049	64.2726	64.2726	64.2726
3563	87.8616	88.4583	94.8367	64.1705	64.1705	64.1705
3564	86.4956	86.856	88.9299	64.0673	64.0673	64.0673



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011857



3565	85.858	86.0183	88.0922	63.9651	63.9651	63.9651
3566	85.1076	85.4679	87.5418	63.8638	63.8638	63.8638
3567	86.3868	97.6863	89.5138	70.1659	70.1659	94.3594
3568	87.0586	98.4577	90.1082	73.2892	73.2892	97.6027
3569	87.3851	98.7986	90.3518	75.032	75.032	99.3426
3570	87.4767	98.5978	90.353	76.0751	76.0751	99.9809
3571	87.6283	98.4841	91.1609	76.6949	76.6949	99.78
3572	87.9225	98.5616	92.5114	77.0424	77.0424	99.0408
3573	88.2601	98.7287	93.7199	77.2357	77.2357	98.0965
3574	89.1916	100.597	97.0441	77.3397	77.3397	97.063
3575	89.6348	100.5	97.3788	77.3825	77.3825	95.9759
3576	89.713	99.8291	97.1734	77.368	77.368	94.8077
3577	89.7925	99.6229	97.5097	77.301	77.301	93.5735
3578	90.1809	100.56	98.6994	77.1917	77.1917	92.3112
3579	90.2682	100.132	98.5968	77.0246	77.0246	90.924
3580	90.3974	100.095	99.3718	76.82	76.82	89.5491
3581	90.6433	100.536	100.516	76.5882	76.5882	88.1941
3582	90.9574	101.275	101.666	76.3243	76.3243	86.8119
3583	91.2245	101.897	102.571	76.0048	76.0048	85.2914
3584	91.4593	102.62	103.67	75.6588	75.6588	83.8278
3585	90.8982	99.0347	100.448	74.3424	74.3424	77.7201
3586	89.6093	96.665	98.0059	72.9209	72.9209	72.9209
3587	89.0725	97.6185	98.8046	72.296	72.296	72.296
3588	86.8289	86.8289	86.8289	72.0166	72.0166	72.0166
3589	85.5773	85.5773	85.5773	71.8898	71.8898	71.8898
3590	84.8769	84.8769	84.8769	71.8298	71.8298	71.8298
3591	84.4828	84.4828	84.4828	71.799	71.799	71.799
3592	84.2589	84.2589	84.2589	71.781	71.781	71.781
3593	84.1296	84.1296	84.1296	71.7687	71.7687	71.7687
3594	84.0528	84.0528	84.0528	71.7588	71.7588	71.7588
3595	84.0052	84.0052	84.0052	71.7499	71.7499	71.7499
3596	83.9739	83.9739	83.9739	71.7415	71.7415	71.7415
3597	83.9516	83.9516	83.9516	71.7334	71.7334	71.7334
3598	83.9343	83.9343	83.9343	71.7253	71.7253	71.7253
3599	83.9197	83.9197	83.9197	71.7173	71.7173	71.7173
3600	83.9068	83.9068	83.9068	71.7093	71.7093	71.7093
3601	83.8946	83.8946	83.8946	71.7013	71.7013	71.7013
3602	83.883	83.883	83.883	71.6933	71.6933	71.6933
3603	83.8716	83.8716	83.8716	71.6853	71.6853	71.6853
3604	83.8604	83.8604	83.8604	71.6774	71.6774	71.6774
3605	87.6866	103.604	106.917	71.6754	71.6754	71.6754
3606	89.9195	103.646	107.325	71.6733	71.6733	71.6733
3607	91.2657	102.533	106.625	71.6713	71.6713	71.6713
3608	92.1344	102.256	106.95	71.6693	71.6693	71.6693
3609	92.7399	101.892	107.206	71.6673	71.6673	71.6673
3610	93.1697	101.538	107.435	71.6101	71.6101	71.6101
3611	93.4813	101.16	107.623	71.4887	71.4887	71.4887
3612	93.7307	100.786	107.786	71.341	71.341	71.341
3613	93.9581	100.493	107.998	71.1833	71.1833	71.1833
3614	94.1663	100.161	108.189	71.0222	71.0222	71.0222
3615	94.3369	99.7217	108.336	70.8606	70.8606	70.8606
3616	94.4874	99.2668	108.465	70.6996	70.6996	70.6996
3617	94.8373	99.2864	108.396	70.5398	70.5398	70.5398
3618	94.788	99.2737	108.331	70.3814	70.3814	70.3814
3619	95.1417	99.7475	109.237	70.2248	70.2248	70.2248



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011358



3620	95.8801	100.488	110.572	70.07	70.07	70.07
3621	96.0069	100.58	110.673	69.9167	69.9167	69.9167
3622	95.9087	99.843	109.39	69.7643	69.7643	69.7643
3623	95.5864	98.9288	107.97	69.6129	69.6129	69.6129
3624	95.4327	98.688	107.663	69.4628	69.4628	69.4628
3625	95.37	98.5424	107.465	69.3142	69.3142	69.3142
3626	95.3576	98.4551	107.309	69.167	69.167	69.167
3627	95.3971	98.494	107.309	69.0212	69.0212	69.0212
3628	95.4645	98.5608	107.338	68.8768	68.8768	68.8768
3629	95.5467	98.6425	107.384	68.7337	68.7337	68.7337
3630	95.4886	98.2878	106.782	68.5918	68.5918	68.5918
3631	95.2022	97.5939	105.727	68.4509	68.4509	68.4509
3632	94.8291	96.8094	104.595	68.311	68.311	68.311
3633	94.3942	95.9787	103.43	68.172	68.172	68.172
3634	94.035	95.4487	102.714	68.0341	68.0341	68.0341
3635	93.7722	95.1272	102.281	67.8975	67.8975	67.8975
3636	93.5302	94.8581	101.904	67.7621	67.7621	67.7621
3637	93.3743	94.6166	101.557	67.6279	67.6279	67.6279
3638	93.1998	94.3832	101.22	67.4949	67.4949	67.4949
3639	93.0114	94.081	100.811	67.3631	67.3631	67.3631
3640	92.8132	93.7713	100.397	67.2324	67.2324	67.2324
3641	92.6076	93.4563	99.9789	67.1029	67.1029	67.1029
3642	92.3956	93.1367	99.5581	66.9745	66.9745	66.9745
3643	92.1781	92.8136	99.1358	66.8472	66.8472	66.8472
3644	92.0204	92.648	98.9799	66.7211	66.7211	66.7211
3645	91.8989	92.5236	98.8709	66.5962	66.5962	66.5962
3646	91.7974	92.4193	98.7812	66.4725	66.4725	66.4725
3647	91.7073	92.3264	98.703	66.3499	66.3499	66.3499
3648	91.6239	92.2402	98.6312	66.2286	66.2286	66.2286
3649	91.5436	92.1577	98.5695	66.1084	66.1084	66.1084
3650	91.4638	92.0763	98.4815	65.9893	65.9893	65.9893
3651	91.3844	91.9955	98.4041	65.8714	65.8714	65.8714
3652	91.3058	91.9153	98.3273	65.7546	65.7546	65.7546
3653	91.2278	91.8359	98.2511	65.6389	65.6389	65.6389
3654	91.1505	91.7572	98.1757	65.5243	65.5243	65.5243
3655	91.0737	91.679	98.0997	65.4108	65.4108	65.4108
3656	90.9946	91.5984	98.0118	65.2983	65.2983	65.2983
3657	90.9144	91.5165	97.923	65.187	65.187	65.187
3658	90.834	91.435	97.8345	65.0766	65.0766	65.0766
3659	90.7537	91.3534	97.747	64.9674	64.9674	64.9674
3660	90.6738	91.2724	97.6605	64.8591	64.8591	64.8591
3661	90.598	102.266	94.0783	71.1552	71.1552	95.3597
3662	91.0749	102.476	94.1109	74.268	74.268	98.581
3663	91.0832	102.475	94.0294	75.9931	75.9931	100.274
3664	90.9734	101.979	93.8202	76.9874	76.9874	100.735
3665	91.1337	101.913	95.1375	77.5078	77.5078	100.179
3666	91.3818	101.903	96.3075	77.7732	77.7732	99.2588
3667	91.9747	102.884	98.5805	77.9117	77.9117	98.2372
3668	89.7898	90.5963	91.6239	73.7057	73.7057	76.6684
3669	88.8956	89.8181	92.1992	71.1415	71.1415	71.1415
3670	88.2713	89.1771	91.4058	69.9699	69.9699	69.9699
3671	87.7974	88.6963	90.7772	69.3881	69.3881	69.3881
3672	87.4243	88.3393	90.3095	69.0566	69.0566	69.0566
3673	87.1274	88.0424	90.0126	68.8319	68.8319	68.8319
3674	87.0179	87.9573	90.4259	68.6533	68.6533	68.6533





3675	86.8899	87.8384	90.3533	68.4949	68.4949	68.4949
3676	86.7536	87.711	90.2723	68.3459	68.3459	68.3459
3677	86.6141	87.5806	90.1882	68.2017	68.2017	68.2017
3678	86.4518	87.4152	90.0066	68.0602	68.0602	68.0602
3679	86.2223	87.1531	89.5771	67.9205	67.9205	67.9205
3680	86.0146	86.9454	89.3694	67.7824	67.7824	67.7824
3681	85.8192	86.75	89.174	67.6457	67.6457	67.6457
3682	85.6312	86.562	88.986	67.5103	67.5103	67.5103
3683	85.4477	86.3785	88.8025	67.3782	67.3762	67.3762
3684	85.2673	86.1981	88.6221	67.2433	67.2433	67.2433
3685	87.2088	97.0182	94.3876	71.782	71.782	89.6656
3686	88.5926	99.5559	96.4106	74.2066	74.2066	92.9272
3687	89.1822	99.3439	96.6213	75.208	75.208	92.7661
3688	89.4656	99.2428	97.1064	75.5776	75.5776	91.9553
3689	89.9924	100.356	98.4749	75.6612	75.6612	90.8795
3690	90.1793	100.084	98.523	75.5851	75.5851	89.582
3691	90.3412	100.043	99.2463	75.4267	75.4267	88.2453
3692	90.6005	100.457	100.405	75.2221	75.2221	86.9111
3693	90.9301	101.218	101.59	74.981	74.981	85.5803
3694	91.2055	101.851	102.503	74.6805	74.6805	84.0593
3695	91.4454	102.568	103.59	74.3502	74.3502	82.6048
3696	90.7895	99.4703	100.829	73.1494	73.1494	77.0046
3697	89.6628	96.6042	97.9723	71.6663	71.6663	71.6663
3698	89.1039	97.5355	98.5488	71.0146	71.0146	71.0146
3699	86.8487	86.8487	86.8487	70.7237	70.7237	70.7237
3700	85.5906	85.5906	85.5906	70.5922	70.5922	70.5922
3701	84.8866	84.8866	84.8866	70.5303	70.5303	70.5303
3702	84.4906	84.4906	84.4906	70.499	70.499	70.499
3703	84.2656	84.2656	84.2656	70.481	70.481	70.481
3704	84.1356	84.1356	84.1356	70.4689	70.4689	70.4689
3705	84.0585	84.0585	84.0585	70.4594	70.4594	70.4594
3706	84.0108	84.0108	84.0108	70.4509	70.4509	70.4509
3707	83.9793	83.9793	83.9793	70.443	70.443	70.443
3708	83.9569	83.9569	83.9569	70.4352	70.4352	70.4352
3709	83.9396	83.9396	83.9396	70.4276	70.4276	70.4276
3710	83.925	83.925	83.925	70.42	70.42	70.42
3711	83.912	83.912	83.912	70.4125	70.4125	70.4125
3712	83.8999	83.8999	83.8999	70.4049	70.4049	70.4049
3713	83.8883	83.8883	83.8883	70.3973	70.3973	70.3973
3714	83.8769	83.8769	83.8769	70.3898	70.3898	70.3898
3715	83.8657	83.8657	83.8657	70.3823	70.3823	70.3823
3716	87.6926	103.778	107.063	70.3805	70.3805	70.3805
3717	89.9259	103.82	107.472	70.3788	70.3788	70.3788
3718	91.2725	102.748	106.805	70.377	70.377	70.377
3719	92.1409	102.339	106.986	70.3752	70.3752	70.3752
3720	92.7454	101.972	107.239	70.3735	70.3735	70.3735
3721	93.1743	101.596	107.449	70.3205	70.3205	70.3205
3722	93.4854	101.218	107.638	70.208	70.208	70.208
3723	93.7334	100.828	107.79	70.0712	70.0712	70.0712
3724	93.9598	100.535	108.001	69.925	69.925	69.925
3725	94.1701	100.212	108.195	69.7757	69.7757	69.7757
3726	94.3419	99.7735	108.342	69.6259	69.6259	69.6259
3727	94.493	99.319	108.473	69.4767	69.4767	69.4767
3728	94.6422	99.2823	108.418	69.3286	69.3286	69.3286
3729	94.7925	99.2893	108.352	69.1818	69.1818	69.1818



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011860



3730	95.1254	99.7155	109.159	69.0366	69.0366	69.0366
3731	95.6515	100.444	110.483	68.8933	68.8933	68.8933
3732	98.0201	100.644	110.781	68.7512	68.7512	68.7512
3733	95.9441	99.9258	109.513	68.61	68.61	68.61
3734	95.6328	99.0183	108.096	68.4697	68.4697	68.4697
3735	95.464	98.7259	107.706	68.3306	68.3306	68.3306
3736	95.3931	98.5716	107.489	68.1929	68.1929	68.1929
3737	95.3747	98.4737	107.331	68.0564	68.0564	68.0564
3738	95.4104	98.5073	107.324	67.9213	67.9213	67.9213
3739	95.4758	98.5721	107.351	67.7874	67.7874	67.7874
3740	95.557	98.6528	107.394	67.6548	67.6548	67.6548
3741	95.4719	98.2802	106.766	67.5233	67.5233	67.5233
3742	95.1802	97.5528	105.862	67.3926	67.3926	67.3926
3743	94.7954	96.7256	104.469	67.2628	67.2628	67.2628
3744	94.3327	95.8435	103.233	67.1339	67.1339	67.1339
3745	93.9857	95.3833	102.618	67.006	67.006	67.006
3746	93.7244	95.0588	102.174	66.8793	66.8793	66.8793
3747	93.508	94.7808	101.779	66.7537	66.7537	66.7537
3748	93.3145	94.5273	101.412	66.6292	66.6292	66.6292
3749	93.1175	94.2283	100.997	66.5058	66.5058	66.5058
3750	92.9087	93.896	100.549	66.3835	66.3835	66.3835
3751	92.691	93.5572	100.096	66.2622	66.2622	66.2622
3752	92.4661	93.2135	99.6408	66.1419	66.1419	66.1419
3753	92.235	92.8658	99.1835	66.0227	66.0227	66.0227
3754	92.0733	92.7004	99.0346	65.9046	65.9046	65.9046
3755	92.2442	103.158	95.4216	71.9669	71.9669	95.3643
3756	92.5675	103.286	96.9279	74.6377	74.6377	96.9842
3757	92.8564	103.317	97.9574	75.8286	75.8286	97.0472
3758	93.5448	104.59	100.476	76.3881	76.3881	96.549
3759	90.9602	91.2162	91.7356	71.6531	71.6531	71.6531
3760	89.2718	89.3909	89.5425	69.6797	69.6797	70.117
3761	88.4613	88.9255	89.5163	69.0954	69.0954	70.7999
3762	88.1414	88.9807	89.9808	69.1239	69.1239	72.0955
3763	88.1021	89.2565	90.7258	69.4364	69.4364	73.6751
3764	87.1581	87.1732	87.1925	68.5041	68.5041	68.5597
3765	86.6438	86.8559	87.1259	68.2156	68.2156	68.9945
3766	86.3714	86.7805	87.3012	68.214	68.214	69.7162
3767	86.0636	86.427	86.8894	68.1211	68.1211	69.455
3768	85.862	85.8772	86.1511	67.891	67.891	68.6811
3769	85.752	86.5777	87.6287	68.3029	68.3029	71.3347
3770	85.893	86.5187	87.5696	68.4588	68.4588	71.4906
3771	85.5538	86.3795	87.4305	68.5064	68.5064	71.5382
3772	85.372	86.1977	87.2487	68.5085	68.5085	71.5403
3773	85.1678	85.9935	87.0445	68.4914	68.4914	71.5232
3774	84.8252	85.4749	86.3018	68.3016	68.3016	70.687
3775	84.3581	84.7716	85.298	67.9702	67.9702	69.4886
3776	83.8149	83.9923	84.2181	67.5625	67.5625	68.2139
3777	83.3258	83.3923	83.5273	67.1612	67.1612	67.1612
3778	83.1767	83.5106	84.1882	66.9172	66.9172	68.9172
3779	83.2261	83.8275	85.0478	66.7406	66.7406	68.7406
3780	82.5893	82.6021	82.608	66.5922	66.5922	68.5922
3781	82.2201	82.3226	82.5307	66.457	66.457	66.457
3782	81.9811	82.1833	82.5936	66.328	66.328	66.328
3783	81.824	82.1259	82.7385	66.2024	66.2024	68.2024
3784	81.5087	81.6839	82.0396	66.0787	66.0787	68.0787



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011861



3785	83.4285	85.3927	91.3378	65.9598	65.9598	65.9598
3786	85.1888	87.488	95.5432	65.8432	65.8432	65.8432
3787	85.9062	87.7434	95.4082	65.7274	65.7274	65.7274
3788	86.0802	87.5234	94.8445	65.6124	65.6124	65.6124
3789	86.2885	96.7696	91.3294	71.0995	71.0995	92.4037
3790	85.1247	88.159	88.9323	70.643	70.643	80.2688
3791	83.1613	83.2656	83.4901	68.094	68.094	68.094
3792	81.9746	82.0789	82.3034	66.9445	66.9445	66.9445
3793	81.2101	81.3144	81.5389	66.3877	66.3877	66.3877
3794	80.6753	80.7796	81.0041	66.0822	66.0822	66.0822
3795	81.0379	81.8683	83.9548	65.8849	65.8849	65.8849
3796	81.1648	81.9846	84.1121	65.7335	65.7335	65.7335
3797	81.1879	81.9818	84.1533	65.6022	65.6022	65.6022
3798	81.105	81.913	84.1285	65.48	65.48	65.48
3799	81.0072	81.8094	84.0689	65.3623	65.3623	65.3623
3800	80.8445	81.6764	83.7579	65.247	65.247	65.247
3801	80.6824	81.5143	83.5957	65.1334	65.1334	65.1334
3802	80.5211	81.353	83.4344	65.0211	65.0211	65.0211
3803	80.3608	81.1927	83.2741	64.91	64.91	64.91
3804	80.2015	81.0334	83.1149	64.8	64.8	64.8
3805	80.0782	80.8819	83.1303	64.691	64.691	64.691
3806	80.0089	80.7929	83.3034	64.5832	64.5832	64.5832
3807	79.9821	80.7885	83.5516	64.4765	64.4765	64.4765
3808	79.9902	80.7919	83.8514	64.371	64.371	64.371
3809	80.0315	80.869	84.2086	64.2665	64.2665	64.2665
3810	80.1035	80.9857	84.6085	64.1632	64.1632	64.1632
3811	80.1167	81.0077	84.6871	64.0609	64.0609	64.0609
3812	80.1706	81.1076	85.0522	63.9596	63.9596	63.9596
3813	80.2566	81.2464	85.4587	63.8595	63.8595	63.8595
3814	80.3368	81.3833	85.7585	63.7604	63.7604	63.7604
3815	80.3327	81.3485	85.8921	63.6622	63.6622	63.6622
3816	81.4083	83.0311	90.5147	63.5665	63.5665	63.5665
3817	81.916	83.3646	90.6958	63.4716	63.4716	63.4716
3818	82.1874	83.6049	90.8774	63.3776	63.3776	63.3776
3819	82.3291	83.7159	90.9302	63.2844	63.2844	63.2844
3820	81.5915	82.5018	87.3619	63.1909	63.1909	63.1909
3821	80.7265	81.4651	84.9854	63.0977	63.0977	63.0977
3822	80.1235	80.8401	84.094	63.0051	63.0051	63.0051
3823	79.785	80.5104	83.8894	62.9135	62.9135	62.9135
3824	79.482	80.1932	83.359	62.8227	62.8227	62.8227
3825	79.2002	79.9056	82.8533	62.7326	62.7326	62.7326
3826	78.9334	79.6426	82.3764	62.6433	62.6433	62.6433
3827	78.6775	79.3999	81.9223	62.5547	62.5547	62.5547
3828	78.4226	79.1776	81.4562	62.4668	62.4668	62.4668
3829	78.2205	78.9755	81.2541	62.3798	62.3798	62.3798
3830	78.0475	78.8025	81.0811	62.2936	62.2936	62.2936
3831	77.8907	78.6458	80.9243	62.2082	62.2082	62.2082
3832	79.5223	89.9943	84.5892	67.7162	67.7162	88.9806
3833	80.9366	91.9222	87.7164	70.1364	70.1364	90.3696
3834	82.1053	93.3422	90.1296	71.1921	71.1921	90.2862
3835	82.5318	92.9108	89.9868	71.6443	71.6443	89.5587
3836	82.6881	92.4096	90.1569	71.8086	71.8086	88.5358
3837	83.1108	93.3001	91.3434	71.8326	71.8326	87.3952
3838	83.4077	93.4643	91.8079	71.7633	71.7633	88.1212
3839	83.5721	93.2929	92.215	71.6303	71.6303	84.7873





3840	83.8373	93.5686	93.3801	71.4578	71.4578	83.4632
3841	84.2103	94.388	94.6561	71.2608	71.2608	82.1713
3842	84.5439	95.0883	95.6598	71.0082	71.0082	80.7285
3843	84.8389	95.8228	96.7371	70.7186	70.7186	79.2896
3844	84.6199	94.4526	95.7227	69.9297	69.9297	75.5461
3845	83.3785	89.7789	91.2758	68.2095	68.2095	68.2095
3846	82.7573	90.7671	91.8808	67.4546	67.4546	67.4546
3847	80.4707	80.4707	80.4707	67.1193	67.1193	67.1193
3848	79.196	79.196	79.196	66.9688	66.9688	66.9688
3849	78.4836	78.4836	78.4836	66.8993	66.8993	66.8993
3850	78.0835	78.0835	78.0835	66.8653	66.8653	66.8653
3851	77.8571	77.8571	77.8571	66.8467	66.8467	66.8467
3852	77.7271	77.7271	77.7271	66.8349	66.8349	66.8349
3853	77.6507	77.6507	77.6507	66.8261	66.8261	66.8261
3854	77.6041	77.6041	77.6041	66.8186	66.8186	66.8186
3855	77.574	77.574	77.574	66.8117	66.8117	66.8117
3856	77.5531	77.5531	77.5531	66.805	66.805	66.805
3857	77.5374	77.5374	77.5374	66.7984	66.7984	66.7984
3858	77.5245	77.5245	77.5245	66.7919	66.7919	66.7919
3859	77.5131	77.5131	77.5131	66.7854	66.7854	66.7854
3860	77.5027	77.5027	77.5027	66.7789	66.7789	66.7789
3861	77.4927	77.4927	77.4927	66.7724	66.7724	66.7724
3862	77.483	77.483	77.483	66.766	66.766	66.766
3863	77.4735	77.4735	77.4735	66.7595	66.7595	66.7595
3864	81.3047	98.0107	101.192	66.7586	66.7586	66.7586
3865	83.5412	98.0554	101.603	66.7577	66.7577	66.7577
3866	84.891	97.1348	101.063	66.7568	66.7568	66.7568
3867	85.7565	96.2277	100.7	66.7559	66.7559	66.7559
3868	86.362	95.8675	100.96	66.755	66.755	66.755
3869	86.801	95.4197	101.113	66.7136	66.7136	66.7136
3870	87.1358	95.0576	101.316	66.6253	66.6253	66.6253
3871	87.4151	94.6571	101.475	66.5178	66.5178	66.5178
3872	87.6788	94.4008	101.724	66.4029	66.4029	66.4029
3873	87.9348	94.1371	101.965	66.2855	66.2855	66.2855
3874	88.1569	93.7628	102.166	66.1678	66.1678	66.1678
3875	88.3538	93.3484	102.337	66.0505	66.0505	66.0505
3876	88.5454	93.2261	102.382	65.9341	65.9341	65.9341
3877	88.7385	93.2758	102.359	65.8187	65.8187	65.8187
3878	89.0383	93.5708	102.845	65.7045	65.7045	65.7045
3879	89.5627	94.2984	104.169	65.5919	65.5919	65.5919
3880	90.1287	94.9409	105.239	65.4805	65.4805	65.4805
3881	90.1741	94.3251	104.057	65.3697	65.3697	65.3697
3882	89.9417	93.4761	102.681	65.2595	65.2595	65.2595
3883	89.7611	93.0432	102.039	65.1501	65.1501	65.1501
3884	89.7019	92.8975	101.828	65.0418	65.0418	65.0418
3885	89.7078	92.8203	101.688	64.9345	64.9345	64.9345
3886	89.771	92.868	101.69	64.8282	64.8282	64.8282
3887	89.87	92.9664	101.748	64.723	64.723	64.723
3888	89.988	93.0838	101.826	64.6187	64.6187	64.6187
3889	89.9223	92.6997	101.159	64.5152	64.5152	64.5152
3890	89.6455	91.9392	99.9897	64.4123	64.4123	64.4123
3891	89.245	91.0665	98.7179	64.31	64.31	64.31
3892	88.8112	90.2503	97.5636	64.2083	64.2083	64.2083
3893	88.5154	89.8836	97.0623	64.1074	64.1074	64.1074
3894	88.2925	89.5914	96.6392	64.0075	64.0075	64.0075



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011863

ALSTOM

3895	88.1074	89.3388	96.2588	63.9084	63.9084	63.9084
3896	87.9309	89.0666	95.8588	63.8102	63.8102	63.8102
3897	87.7421	88.7394	95.4016	63.7127	63.7127	63.7127
3898	87.5437	88.4052	94.9398	63.6161	63.6161	63.6161
3899	87.3372	88.0656	94.475	63.5203	63.5203	63.5203
3900	87.1452	87.7746	94.0967	63.4253	63.4253	63.4253
3901	87.0223	87.6481	93.9893	63.3312	63.3312	63.3312
3902	86.9374	87.5596	93.9196	63.238	63.238	63.238
3903	86.8735	87.4922	93.8706	63.1457	63.1457	63.1457
3904	86.8214	87.4367	93.8332	63.0542	63.0542	63.0542
3905	86.7734	87.3864	93.7905	62.9637	62.9637	62.9637
3906	86.7273	87.3384	93.7468	62.874	62.874	62.874
3907	86.6824	87.2916	93.7043	62.7852	62.7852	62.7852
3908	86.6384	87.2458	93.6626	62.6972	62.6972	62.6972
3909	86.615	98.3232	89.912	69.0431	69.0431	93.3547
3910	87.0066	98.2763	89.8209	72.104	72.104	96.2133
3911	87.0075	97.9514	89.9956	73.6717	73.6717	97.2355
3912	87.2518	98.0066	91.4097	74.4594	74.4594	96.9947
3913	87.5311	98.0427	92.485	74.8743	74.8743	98.3117
3914	88.153	99.0673	94.7507	75.1015	75.1015	95.4213
3915	88.9578	100.292	97.0556	75.224	75.224	94.4242
3916	89.1524	99.6148	96.6076	75.2759	75.2759	93.3526
3917	89.1853	98.9888	96.632	75.2614	75.2614	92.169
3918	89.4168	99.5109	97.6127	75.1977	75.1977	90.9485
3919	89.6807	99.8249	98.1135	75.0825	75.0825	89.6488
3920	89.7601	99.4921	98.2448	74.9159	74.9159	88.2771
3921	89.9498	99.6183	99.33	74.7149	74.7149	86.9203
3922	90.2578	100.353	100.538	74.4928	74.4928	85.6041
3923	90.5567	101.035	101.554	74.222	74.222	84.1654
3924	90.8143	101.707	102.55	73.9085	73.9085	82.6879
3925	90.8102	101.404	102.616	73.3406	73.3406	80.1212
3926	89.525	98.0498	97.5758	71.549	71.549	72.1079
3927	88.7344	96.4654	97.6455	70.6049	70.6049	70.6049
3928	88.3625	97.5937	98.409	70.1893	70.1893	70.1893
3929	86.2065	86.2065	86.2065	70.002	70.002	70.002
3930	85.0036	85.0036	85.0036	69.916	69.916	69.916
3931	84.3304	84.3304	84.3304	69.8743	69.8743	69.8743
3932	83.9514	83.9514	83.9514	69.852	69.852	69.852
3933	83.736	83.736	83.736	69.8382	69.8382	69.8382
3934	83.6115	83.6115	83.6115	69.828	69.828	69.828
3935	83.5374	83.5374	83.5374	69.8196	69.8196	69.8196
3936	83.4914	83.4914	83.4914	69.8118	69.8118	69.8118
3937	83.461	83.461	83.461	69.8043	69.8043	69.8043
3938	83.4392	83.4392	83.4392	69.797	69.797	69.797
3939	83.4223	83.4223	83.4223	69.7897	69.7897	69.7897
3940	83.408	83.408	83.408	69.7825	69.7825	69.7825
3941	83.3953	83.3953	83.3953	69.7753	69.7753	69.7753
3942	83.3833	83.3833	83.3833	69.7681	69.7681	69.7681
3943	83.3719	83.3719	83.3719	69.7609	69.7609	69.7609
3944	83.3606	83.3606	83.3606	69.7537	69.7537	69.7537
3945	83.3496	83.3496	83.3496	69.7465	69.7465	69.7465
3946	87.1718	102.096	105.575	69.7448	69.7448	69.7448
3947	89.4024	102.135	105.981	69.743	69.743	69.743
3948	90.7527	101.404	105.759	69.7413	69.7413	69.7413
3949	91.6258	101.308	106.283	69.7395	69.7395	69.7395





3950	92.205	100.961	106.55	69.6884	69.6884	69.6884
3951	92.5975	100.857	106.811	69.58	69.58	69.58
3952	92.8861	100.242	106.96	69.4481	69.4481	69.4481
3953	93.1367	99.9606	107.19	69.3071	69.3071	69.3071
3954	93.3658	99.8653	107.399	69.1632	69.1632	69.1632
3955	93.5614	99.2798	107.573	69.0188	69.0188	69.0188
3956	93.7279	98.8396	107.718	68.8749	68.8749	68.8749
3957	93.8828	98.5936	107.762	68.7322	68.7322	68.7322
3958	94.0377	98.6018	107.899	68.5907	68.5907	68.5907
3959	94.249	98.7433	107.906	68.4505	68.4505	68.4505
3960	94.7059	99.4037	109.163	68.3121	68.3121	68.3121
3961	95.3078	100.207	110.559	68.1754	68.1754	68.1754
3962	95.3883	99.8661	109.507	68.0395	68.0395	68.0395
3963	95.1614	98.8217	108.135	67.9045	67.9045	67.9045
3964	94.9058	98.2083	107.219	67.7704	67.7704	67.7704
3965	94.7902	98.0074	106.954	67.6376	67.6376	67.6376
3966	94.7498	97.8857	106.771	67.5061	67.5061	67.5061
3967	94.7836	97.8608	106.896	67.3758	67.3758	67.3758
3968	94.8192	97.9158	106.713	67.2468	67.2468	67.2468
3969	94.8971	97.9932	106.754	67.119	67.119	67.119
3970	94.9863	98.0811	106.809	66.9925	66.9925	66.9925
3971	94.8447	97.5504	105.949	66.8668	66.8668	66.8668
3972	94.5849	96.9345	105.032	66.7421	66.7421	66.7421
3973	94.2887	96.2946	104.119	66.6182	66.6182	66.6182
3974	93.9303	95.6644	103.242	66.4953	66.4953	66.4953
3975	93.5892	95.0629	102.421	66.3734	66.3734	66.3734
3976	93.3517	94.7717	102.049	66.2525	66.2525	66.2525
3977	93.1816	94.5696	101.788	66.1328	66.1328	66.1328
3978	93.0489	94.4074	101.568	66.0142	66.0142	66.0142
3979	92.9357	94.2655	101.372	65.8966	65.8966	65.8966
3980	92.8325	94.1343	101.188	65.7802	65.7802	65.7802
3981	92.7341	94.0086	101.01	65.6648	65.6648	65.6648
3982	92.6377	93.8856	100.837	65.5505	65.5505	65.5505
3983	92.5418	93.7638	100.666	65.4372	65.4372	65.4372
3984	92.4456	93.6423	100.497	65.325	65.325	65.325
3985	92.3411	93.4905	100.296	65.2138	65.2138	65.2138
3986	92.2295	93.3269	100.083	65.1036	65.1036	65.1036
3987	92.1134	93.1604	99.8693	64.9944	64.9944	64.9944
3988	91.9868	92.9725	99.6238	64.8862	64.8862	64.8862
3989	91.8428	92.7509	99.3294	64.779	64.779	64.779
3990	91.6772	92.4916	98.982	64.6726	64.6726	64.6726
3991	91.4871	92.1917	98.5787	64.5673	64.5673	64.5673
3992	91.3049	91.9337	98.2589	64.4628	64.4628	64.4628
3993	91.1744	91.7992	98.1458	64.3594	64.3594	64.3594
3994	91.0736	91.6938	98.0643	64.2569	64.2569	64.2569
3995	90.9904	91.6057	98.0024	64.1554	64.1554	64.1554
3996	90.9132	91.5253	97.9315	64.0549	64.0549	64.0549
3997	90.839	91.4483	97.8609	63.9554	63.9554	63.9554
3998	90.7669	91.3734	97.7923	63.8568	63.8568	63.8568
3999	90.6924	91.296	97.7083	63.7591	63.7591	63.7591
4000	90.6144	91.2151	97.613	63.6623	63.6623	63.6623
4001	90.5348	91.1325	97.5163	63.5665	63.5665	63.5665
4002	89.3021	91.89	91.261	66.178	66.178	76.7155
4003	88.5365	91.1244	90.4953	67.4309	67.4309	77.9684
4004	87.994	90.3717	89.9487	67.972	67.972	77.9942



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011865



4005	87.5385	89.4219	89.5103	87.9889	67.9889	76.6762
4008	87.1464	88.602	89.1736	67.7552	67.7552	75.1033
4007	86.8097	87.9029	88.9399	67.3866	67.3866	73.382
4008	86.0216	86.2435	86.6843	65.7567	65.7567	65.7567
4009	85.8682	86.318	87.8791	65.006	65.006	65.006
4010	85.7874	88.1477	88.2216	64.8278	64.8278	64.8278
4011	85.6441	88.0044	88.0783	64.4075	64.4075	64.4075
4012	85.5115	88.8605	88.109	64.2548	64.2548	64.2548
4013	85.3512	88.6993	87.9753	64.1311	64.1311	64.1311
4014	85.1771	88.5243	87.8278	64.0203	64.0203	64.0203
4015	84.9723	88.3215	87.5618	63.9155	63.9155	63.9155
4016	84.7675	88.1167	87.357	63.8137	63.8137	63.8137
4017	84.5634	87.9126	87.1528	63.7138	63.7138	63.7138
4018	84.3602	87.7096	86.9497	63.6151	63.6151	63.6151
4019	84.1584	87.5076	86.7479	63.5176	63.5176	63.5176
4020	83.9578	87.3071	86.5473	63.421	63.421	63.421
4021	83.7586	87.1079	86.3481	63.3253	63.3253	63.3253
4022	83.5608	86.9101	86.1503	63.2306	63.2306	63.2306
4023	83.3645	86.7137	85.954	63.1367	63.1367	63.1367
4024	84.8	96.1051	87.9228	69.4476	69.4476	93.6481
4025	85.5597	96.9598	88.6035	72.5768	72.5768	96.8901
4026	85.9383	97.3528	88.899	74.3261	74.3261	98.6364
4027	86.0585	97.1537	88.9282	75.3659	75.3659	99.2362
4028	86.2549	97.0967	89.8723	75.9767	75.9767	98.987
4029	86.5681	97.1901	91.2058	76.3221	76.3221	98.2439
4030	86.98	97.4889	92.5736	76.5179	76.5179	97.3056
4031	87.9253	99.3878	95.9228	76.6263	76.6263	96.2806
4032	88.3313	99.1452	96.0367	76.674	76.674	95.2016
4033	88.4026	98.4811	95.8639	76.6635	76.6635	94.0351
4034	88.5091	98.3732	96.2747	76.6009	76.6009	92.8067
4035	88.8882	99.2348	97.3963	76.4946	76.4946	91.5427
4036	88.9741	98.8083	97.2915	76.3311	76.3311	90.1599
4037	89.1224	98.816	98.1488	76.1312	76.1312	88.7933
4038	89.3865	99.3053	99.311	75.9046	75.9046	87.4472
4039	89.708	100.046	100.453	75.6438	75.6438	86.0616
4040	89.9831	100.682	101.376	75.3284	75.3284	84.5488
4041	90.2262	101.415	102.488	74.9867	74.9867	83.091
4042	89.3927	97.5252	98.9268	73.599	73.599	76.6159
4043	88.3435	95.4857	96.806	72.2352	72.2352	72.2352
4044	87.8279	96.4603	97.4258	71.6356	71.6356	71.6356
4045	85.5956	85.5956	85.5956	71.3677	71.3677	71.3677
4046	84.3505	84.3505	84.3505	71.2463	71.2463	71.2463
4047	83.6538	83.6538	83.6538	71.1889	71.1889	71.1889
4048	83.262	83.262	83.262	71.1596	71.1596	71.1596
4049	83.0395	83.0395	83.0395	71.1426	71.1426	71.1426
4050	82.911	82.911	82.911	71.1309	71.1309	71.1309
4051	82.8349	82.8349	82.8349	71.1216	71.1216	71.1216
4052	82.7878	82.7878	82.7878	71.1133	71.1133	71.1133
4053	82.7569	82.7569	82.7569	71.1055	71.1055	71.1055
4054	82.735	82.735	82.735	71.0979	71.0979	71.0979
4055	82.718	82.718	82.718	71.0903	71.0903	71.0903
4056	82.7038	82.7038	82.7038	71.0828	71.0828	71.0828
4057	82.6912	82.6912	82.6912	71.0754	71.0754	71.0754
4058	82.6794	82.6794	82.6794	71.0679	71.0679	71.0679
4059	82.6681	82.6681	82.6681	71.0604	71.0604	71.0604



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011866

ALSTOM

4060	82.657	82.657	82.657	71.053	71.053	71.053
4061	82.6461	82.6461	82.6461	71.0455	71.0455	71.0455
4062	86.4721	102.262	105.597	71.0434	71.0434	71.0434
4063	88.7051	102.304	106.005	71.0412	71.0412	71.0412
4064	90.0512	101.161	105.279	71.039	71.039	71.039
4065	90.9212	100.986	105.716	71.0369	71.0369	71.0369
4066	91.5275	100.624	105.974	71.0347	71.0347	71.0347
4067	91.9601	100.288	106.217	70.9793	70.9793	70.9793
4068	92.2748	99.9055	106.401	70.862	70.862	70.862
4069	92.533	99.5577	106.587	70.7195	70.7195	70.7195
4070	92.7702	99.2775	106.812	70.5672	70.5672	70.5672
4071	92.985	98.9449	107.007	70.4116	70.4116	70.4116
4072	93.1827	98.5122	107.16	70.2555	70.2555	70.2555
4073	93.3203	98.0845	107.283	70.1001	70.1001	70.1001
4074	93.4792	98.1	107.226	69.9458	69.9458	69.9458
4075	93.6386	98.1161	107.169	69.7928	69.7928	69.7928
4076	94.0163	98.8339	108.158	69.6416	69.6416	69.6416
4077	94.5722	99.3921	109.51	69.4921	69.4921	69.4921
4078	94.8756	99.4104	109.471	69.344	69.344	69.344
4079	94.7688	98.6675	108.164	69.1968	69.1968	69.1968
4080	94.463	97.8001	108.837	69.0506	69.0506	69.0506
4081	94.3216	97.5711	108.542	68.9057	68.9057	68.9057
4082	94.2686	97.4338	108.341	68.7622	68.7622	68.7622
4083	94.2676	97.365	108.214	68.6201	68.6201	68.6201
4084	94.3171	97.4139	108.221	68.4793	68.4793	68.4793
4085	94.3937	97.4899	108.257	68.3399	68.3399	68.3399
4086	94.4819	97.5727	108.297	68.2018	68.2018	68.2018
4087	91.3437	91.8052	92.3927	68.4921	68.4921	70.1859
4088	89.6822	90.3798	91.2679	68.7882	68.7882	71.3499
4089	88.8318	89.7656	90.9541	69.1037	69.1037	72.5324
4090	88.4314	89.6013	91.0904	69.4445	69.4445	73.7401
4091	87.6424	88.046	88.8649	68.4971	68.4971	68.4971
4092	87.2447	87.816	88.9754	68.0173	68.0173	68.0173
4093	87.0685	87.8076	89.3074	67.7361	67.7361	67.7361
4094	87.0216	87.9285	89.7687	67.5397	67.5397	67.5397
4095	86.926	87.8483	89.768	67.3799	67.3799	67.3799
4096	86.1812	86.4679	87.0497	67.2355	67.2355	67.2355
4097	85.6509	85.9376	86.5194	67.0987	67.0987	67.0987
4098	85.2378	85.5245	86.1063	66.9657	66.9657	66.9657
4099	84.8891	85.1758	85.7576	66.8351	66.8351	66.8351
4100	84.5764	84.8631	85.4448	66.7062	66.7062	66.7062
4101	84.2839	84.5706	85.1524	66.5786	66.5786	66.5786
4102	84.0034	84.2901	84.8719	66.4524	66.4524	66.4524
4103	83.7302	84.0169	84.5987	66.3273	66.3273	66.3273
4104	83.4619	83.7486	84.3304	66.2035	66.2035	66.2035
4105	83.1971	83.4838	84.0655	66.0808	66.0808	66.0808
4106	82.935	83.2217	83.8036	65.9592	65.9592	65.9592
4107	82.6753	82.962	83.5437	65.8388	65.8388	65.8388
4108	82.4176	82.7044	83.2861	65.7194	65.7194	65.7194
4109	82.162	82.4487	83.0305	65.6012	65.6012	65.6012
4110	81.9083	82.195	82.7768	65.4841	65.4841	65.4841
4111	81.6565	81.9432	82.525	65.3681	65.3681	65.3681
4112	81.2286	81.3223	81.5125	65.2529	65.2529	65.2529
4113	81.5934	82.4674	84.2407	65.1398	65.1398	65.1398
4114	81.7089	82.5829	84.3562	65.0277	65.0277	65.0277



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011867



4115	81.6898	82.5637	84.337	64.9167	64.9167	64.9167
4116	81.5982	82.4721	84.2454	64.8067	64.8067	64.8067
4117	81.5214	82.4462	84.3488	64.6978	64.6978	64.6978
4118	80.8078	81.0945	81.6763	64.5891	64.5891	64.5891
4119	80.3119	80.5987	81.1804	64.4814	64.4814	64.4814
4120	79.935	80.2217	80.8035	64.3747	64.3747	64.3747
4121	79.8233	79.91	80.4918	64.269	64.269	64.269
4122	79.3477	79.6344	80.2162	64.1643	64.1643	64.1643
4123	79.0925	79.3793	79.961	64.0605	64.0605	64.0605
4124	78.8492	79.1358	79.7177	63.9577	63.9577	63.9577
4125	78.613	78.8997	79.4815	63.8559	63.8559	63.8559
4126	78.3815	78.6682	79.2499	63.755	63.755	63.755
4127	78.1532	78.4399	79.0216	63.6551	63.6551	63.6551
4128	77.9274	78.2141	78.7959	63.556	63.556	63.556
4129	77.7037	77.9904	78.5722	63.4579	63.4579	63.4579
4130	77.4818	77.7686	78.3503	63.3607	63.3607	63.3607
4131	77.2617	77.5485	78.1302	63.2644	63.2644	63.2644
4132	77.0433	77.33	77.9118	63.169	63.169	63.169
4133	76.8265	77.1132	77.695	63.0744	63.0744	63.0744
4134	76.7725	77.3621	78.1125	63.5323	63.5323	65.6972
4135	76.7618	77.4996	78.4386	63.8529	63.8529	66.5616
4136	76.7812	77.667	78.7946	64.1259	64.1259	67.3786
4137	76.8232	77.8571	79.1732	64.3893	64.3893	68.1858
4138	76.851	77.9877	79.4345	64.6165	64.6165	68.7902
4139	79.1932	81.6971	89.9252	63.6798	63.6798	63.6798
4140	80.2254	82.2244	90.0259	63.2318	63.2318	63.2318
4141	80.5394	82.0487	89.4364	62.9908	62.9908	62.9908
4142	80.6468	82.0331	89.247	62.8379	62.8379	62.8379
4143	80.6653	81.9802	89.0581	62.7227	62.7227	62.7227
4144	80.6365	81.8842	88.8348	62.6239	62.6239	62.6239
4145	80.5801	81.7575	88.5889	62.5325	62.5325	62.5325
4146	80.49	81.5426	88.2568	62.4446	62.4446	62.4446
4147	80.3816	81.3165	87.9201	62.3586	62.3586	62.3586
4148	80.2637	81.0879	87.5874	62.2739	62.2739	62.2739
4149	80.1418	80.8635	87.2668	62.19	62.19	62.19
4150	80.0212	80.6514	86.9692	62.107	62.107	62.107
4151	79.9581	80.5259	86.9164	62.0248	62.0248	62.0248
4152	79.9261	80.5516	86.8942	61.9434	61.9434	61.9434
4153	79.9111	80.5344	86.8889	61.8628	61.8628	61.8628
4154	79.9056	80.5267	86.8928	61.7829	61.7829	61.7829
4155	79.9054	80.5243	86.9021	61.7039	61.7039	61.7039
4156	79.9084	80.525	86.9147	61.6255	61.6255	61.6255
4157	79.9132	80.5276	86.9285	61.548	61.548	61.548
4158	79.9171	80.5302	86.934	61.4711	61.4711	61.4711
4159	79.9205	80.5324	86.9391	61.395	61.395	61.395
4160	79.9238	80.5344	86.9439	61.3196	61.3196	61.3196
4161	79.927	80.5364	86.9487	61.2449	61.2449	61.2449
4162	79.9304	80.5385	86.9537	61.171	61.171	61.171
4163	80.2529	91.6822	83.2431	67.5306	67.5306	91.842
4164	80.3809	91.5989	83.282	70.5857	70.5857	94.6243
4165	80.4857	91.3919	83.7072	72.1201	72.1201	95.4787
4166	80.81	91.5146	85.2115	72.8845	72.8845	95.168
4167	81.139	91.5831	86.2858	73.2802	73.2802	94.4222
4168	81.9822	93.1574	89.2461	73.4958	73.4958	93.4989
4169	82.8468	93.729	90.5545	73.6123	73.6123	92.4865



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011868



4170	82.8298	93.1081	90.2868	73.6581	73.6581	91.3907
4171	82.8755	92.5606	90.3841	73.6408	73.6408	90.2007
4172	83.2799	93.5472	91.6244	73.5785	73.5785	88.9869
4173	83.5032	93.4966	91.8786	73.4605	73.4605	87.6647
4174	83.861	93.3741	92.412	73.2979	73.2979	86.3154
4175	83.9294	93.7089	93.5784	73.104	73.104	84.9816
4176	84.3042	94.5303	94.853	72.8868	72.8868	83.6731
4177	84.826	95.21	95.8132	72.6119	72.6119	82.1982
4178	84.9136	95.9517	96.9079	72.3037	72.3037	80.7512
4179	84.5402	93.9241	95.2289	71.3521	71.3521	76.2823
4180	83.3564	90.0303	91.4621	69.7228	69.7228	69.7228
4181	82.7665	90.9407	92.0153	69.0075	69.0075	69.0075
4182	80.4964	80.4964	80.4964	68.6895	68.6895	68.6895
4183	79.2308	79.2308	79.2308	68.5465	68.5465	68.5465
4184	78.5234	78.5234	78.5234	68.4802	68.4802	68.4802
4185	78.1262	78.1262	78.1262	68.4474	68.4474	68.4474
4186	77.9013	77.9013	77.9013	68.4293	68.4293	68.4293
4187	77.7721	77.7721	77.7721	68.4176	68.4176	68.4176
4188	77.6962	77.6962	77.6962	68.4088	68.4088	68.4088
4189	77.6499	77.6499	77.6499	68.4011	68.4011	68.4011
4190	77.6199	77.6199	77.6199	68.394	68.394	68.394
4191	77.5991	77.5991	77.5991	68.3872	68.3872	68.3872
4192	77.5834	77.5834	77.5834	68.3805	68.3805	68.3805
4193	77.5705	77.5705	77.5705	68.3738	68.3738	68.3738
4194	77.5592	77.5592	77.5592	68.3671	68.3671	68.3671
4195	77.5487	77.5487	77.5487	68.3604	68.3604	68.3604
4196	77.5388	77.5388	77.5388	68.3538	68.3538	68.3538
4197	77.5291	77.5291	77.5291	68.3471	68.3471	68.3471
4198	77.5195	77.5195	77.5195	68.3405	68.3405	68.3405
4199	81.3497	97.814	101.036	68.3389	68.3389	68.3389
4200	83.5856	97.8581	101.447	68.3374	68.3374	68.3374
4201	84.9348	96.8793	100.858	68.3359	68.3359	68.3359
4202	85.8014	96.1641	100.704	68.3343	68.3343	68.3343
4203	86.4082	95.8072	100.958	68.3328	68.3328	68.3328
4204	86.848	95.3899	101.146	68.286	68.286	68.286
4205	87.1857	95.0383	101.36	68.1866	68.1866	68.1866
4206	87.4659	94.6505	101.525	68.0658	68.0658	68.0658
4207	87.7301	94.3947	101.774	67.9366	67.9366	67.9366
4208	87.9883	94.1313	102.015	67.8047	67.8047	67.8047
4209	88.204	93.741	102.209	67.6723	67.6723	67.6723
4210	88.3989	93.3262	102.379	67.5405	67.5405	67.5405
4211	88.5907	93.2555	102.404	67.4097	67.4097	67.4097
4212	88.7838	93.3053	102.381	67.28	67.28	67.28
4213	89.113	93.668	103.009	67.1517	67.1517	67.1517
4214	89.6546	94.4125	104.349	67.0249	67.0249	67.0249
4215	90.1608	94.901	105.137	66.8996	66.8996	66.8996
4216	90.1773	94.2868	103.946	66.7749	66.7749	66.7749
4217	89.9343	93.4197	102.583	66.651	66.651	66.651
4218	89.7724	93.0491	102.041	66.5281	66.5281	66.5281
4219	89.724	92.9166	101.845	66.4064	66.4064	66.4064
4220	89.7365	92.8489	101.716	66.2859	66.2859	66.2859
4221	89.8029	92.8	101.724	66.1665	66.1665	66.1665
4222	89.9033	92.9998	101.785	66.0482	66.0482	66.0482
4223	90.0218	93.1176	101.865	65.9311	65.9311	65.9311
4224	90.0225	92.9092	101.461	65.815	65.815	65.815





ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011069

4225	89.8066	92.2452	100.418	85.9996	65.6996	65.6996
4226	89.4663	91.4703	99.276	85.5849	65.5849	65.5849
4227	89.0519	90.6343	98.0838	85.4711	65.4711	65.4711
4228	88.7182	90.1269	97.3829	85.3581	65.3581	65.3581
4229	88.4817	89.827	96.9626	85.2462	65.2462	65.2462
4230	88.2964	89.5798	96.5981	85.1353	65.1353	65.1353
4231	88.1371	89.3601	96.2842	85.0253	65.0253	65.0253
4232	87.9798	89.1122	95.9013	84.9163	64.9163	64.9163
4233	87.8098	88.8183	95.491	84.8082	64.8082	64.8082
4234	87.6293	88.5144	95.0712	84.7011	64.7011	64.7011
4235	87.4358	88.1923	94.6282	84.5948	64.5948	64.5948
4236	87.2331	87.8632	94.1817	84.4895	64.4895	64.4895
4237	87.1048	87.7309	94.0703	84.3852	64.3852	64.3852
4238	87.338	98.2292	90.6515	70.4279	70.4279	93.7056
4239	87.6853	98.3998	92.0583	73.1235	73.1235	95.4506
4240	87.9883	98.4747	93.0142	74.3673	74.3673	95.6945
4241	88.5975	99.4958	95.1541	74.9775	74.9775	95.3169
4242	87.5927	91.9477	92.028	73.0435	73.0435	83.9859
4243	88.6196	89.2309	90.3834	71.6409	71.6409	79.8185
4244	86.02	88.5776	89.7891	71.1056	71.1056	79.1899
4245	85.6841	88.3617	89.4567	71.0202	71.0202	79.3391
4246	85.3735	87.8867	89.1158	70.9842	70.9842	78.9824
4247	85.147	87.6175	88.8827	71.024	71.024	78.9395
4248	84.9061	87.0872	88.5972	70.9692	70.9692	78.3238
4249	84.7034	86.8398	88.3877	70.986	70.986	78.2538
4250	84.5215	86.6131	88.1988	71.0309	71.0309	78.2119
4251	84.3501	86.3936	88.02	71.0836	71.0836	78.1714
4252	84.1894	86.2045	87.859	71.1442	71.1442	78.1654
4253	84.0822	86.3189	87.7819	71.3383	71.3383	78.8004
4254	83.9639	86.2006	87.6636	71.4822	71.4822	78.9444
4255	83.84	86.0766	87.5397	71.6044	71.6044	79.0665
4256	83.7134	85.95	87.4131	71.7168	71.7168	79.1789
4257	83.5858	85.8225	87.2855	71.8245	71.8245	79.2868
4258	83.4582	85.6948	87.1578	71.9296	71.9296	79.3917
4259	83.3308	85.5675	87.0305	72.033	72.033	79.4952
4260	83.2041	85.4408	86.9038	72.1352	72.1352	79.5973
4261	83.0782	85.3148	86.7778	72.2363	72.2363	79.6984
4262	82.953	85.1896	86.6527	72.3364	72.3364	79.7985
4263	82.8287	85.0653	86.5284	72.4355	72.4355	79.8976
4264	82.7053	84.9419	86.405	72.5336	72.5336	79.9957
4265	82.5827	84.8194	86.2824	72.6308	72.6308	80.0929
4266	82.4611	84.6977	86.1607	72.727	72.727	80.1892
4267	82.3403	84.5769	86.0399	72.8224	72.8224	80.2845
4268	82.2203	84.4569	85.92	72.9168	72.9168	80.3789
4269	82.137	84.5532	85.8643	73.1008	73.1008	80.9109
4270	82.054	84.54	85.7921	73.2737	73.2737	81.219
4271	81.9703	84.5161	85.7176	73.4388	73.4388	81.5001
4272	81.8746	84.4164	85.6213	73.5703	73.5703	81.6239
4273	81.7816	84.3839	85.5356	73.7087	73.7087	81.8389
4274	82.2466	83.8933	88.5618	71.7516	71.7516	71.7516
4275	83.5802	86.7353	93.6688	70.8328	70.8328	70.8328
4276	83.9916	85.658	92.8941	70.3531	70.3531	70.3531
4277	84.1041	85.487	92.8937	70.06	70.06	70.06
4278	84.1035	85.403	92.4518	69.8467	69.8467	69.8467
4279	84.2685	94.9174	88.8292	75.4717	75.4717	97.5114



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011870



4280	84.4918	94.9016	89.7372	77.91	77.91	98.9011
4281	85.3049	96.5483	92.7429	78.9717	78.9717	98.892
4282	85.8825	96.9369	93.7692	79.4237	79.4237	98.262
4283	86.0164	96.2856	93.4753	79.5856	79.5856	97.3113
4284	86.0228	95.7019	93.5228	79.5895	79.5895	96.161
4285	86.3941	96.6535	94.7274	79.505	79.505	94.9288
4286	86.599	96.5947	94.9746	79.3456	79.3456	93.5658
4287	86.7284	96.4423	95.4673	79.134	79.134	92.1671
4288	86.9719	96.7473	96.6075	78.8879	78.8879	90.7809
4289	87.3235	97.5459	97.8593	78.6177	78.6177	89.4191
4290	87.8243	98.2034	98.8029	78.2897	78.2897	87.8922
4291	87.8907	98.9222	99.8733	77.9285	77.9285	86.391
4292	87.5145	96.9533	98.2539	76.9418	76.9418	81.956
4293	86.3072	92.9477	94.3874	75.2638	75.2638	75.2638
4294	85.704	93.858	94.9374	74.5263	74.5263	74.5263
4295	83.4262	83.4262	83.4262	74.1978	74.1978	74.1978
4296	82.1561	82.1561	82.1561	74.0495	74.0495	74.0495
4297	81.4458	81.4458	81.4458	73.9801	73.9801	73.9801
4298	81.0466	81.0466	81.0466	73.9452	73.9452	73.9452
4299	80.8202	80.8202	80.8202	73.9254	73.9254	73.9254
4300	80.69	80.69	80.69	73.9122	73.9122	73.9122
4301	80.6131	80.6131	80.6131	73.9019	73.9019	73.9019
4302	80.5658	80.5658	80.5658	73.8928	73.8928	73.8928
4303	80.5351	80.5351	80.5351	73.8844	73.8844	73.8844
4304	80.5135	80.5135	80.5135	73.8761	73.8761	73.8761
4305	80.497	80.497	80.497	73.868	73.868	73.868
4306	80.4833	80.4833	80.4833	73.8599	73.8599	73.8599
4307	80.4712	80.4712	80.4712	73.8519	73.8519	73.8519
4308	80.46	80.46	80.46	73.8439	73.8439	73.8439
4309	80.4492	80.4492	80.4492	73.8358	73.8358	73.8358
4310	80.4388	80.4388	80.4388	73.8278	73.8278	73.8278
4311	80.4285	80.4285	80.4285	73.8198	73.8198	73.8198
4312	84.2481	100.738	103.898	73.8168	73.8168	73.8168
4313	86.4874	100.79	104.373	73.8137	73.8137	73.8137
4314	87.8382	99.8193	103.791	73.8107	73.8107	73.8107
4315	88.7057	99.0834	103.615	73.8076	73.8076	73.8076
4316	89.3103	98.7174	103.869	73.8046	73.8046	73.8046
4317	89.7451	98.2964	104.045	73.7398	73.7398	73.7398
4318	90.0879	97.9224	104.236	73.6031	73.6031	73.6031
4319	90.3328	97.5245	104.392	73.437	73.437	73.437
4320	90.5794	97.251	104.623	73.2596	73.2596	73.2596
4321	90.8167	96.9687	104.846	73.0785	73.0785	73.0785
4322	91.016	96.5629	105.023	72.8967	72.8967	72.8967
4323	91.1911	96.1266	105.172	72.7157	72.7157	72.7157
4324	91.3628	96.0296	105.179	72.5361	72.5361	72.5361
4325	91.5361	96.0595	105.136	72.358	72.358	72.358
4326	91.8419	96.3941	105.727	72.1816	72.1816	72.1816
4327	92.3617	97.1168	107.045	72.0073	72.0073	72.0073
4328	92.8559	97.6058	107.85	71.8349	71.8349	71.8349
4329	92.8581	98.9577	108.646	71.6636	71.6636	71.6636
4330	92.6001	96.0982	105.272	71.4935	71.4935	71.4935
4331	92.4155	95.6948	104.688	71.3249	71.3249	71.3249
4332	92.3469	95.5443	104.476	71.1578	71.1578	71.1578
4333	92.341	95.4621	104.336	70.9924	70.9924	70.9924
4334	92.386	95.4831	104.314	70.8285	70.8285	70.8285







4335	92.466	95.5626	104.357	70.6662	70.6662	70.6662
4336	92.5647	95.6608	104.42	70.5055	70.5055	70.5055
4337	92.6594	95.7322	104.441	70.3462	70.3462	70.3462
4338	92.5102	95.1648	103.52	70.1882	70.1882	70.1882
4339	92.2235	94.4745	102.489	70.0314	70.0314	70.0314
4340	91.8565	93.7166	101.401	69.8758	69.8758	69.8758
4341	91.4401	92.921	100.285	69.7214	69.7214	69.7214
4342	91.1458	92.5449	99.7826	69.5683	69.5683	69.5683
4343	90.9279	92.2698	99.3991	69.4166	69.4166	69.4166
4344	90.75	92.0382	99.0599	69.2664	69.2664	69.2664
4345	90.5923	91.8242	98.745	69.1174	69.1174	69.1174
4346	90.4393	91.6034	98.4223	68.9698	68.9698	68.9698
4347	90.2724	91.3251	98.0393	68.8236	68.8236	68.8236
4348	90.0955	91.039	97.6506	68.6786	68.6786	68.6786
4349	89.9101	90.7448	97.2541	68.5349	68.5349	68.5349
4350	89.7167	90.4425	96.8486	68.3926	68.3926	68.3926
4351	89.5242	90.1542	96.4733	68.2514	68.2514	68.2514
4352	89.3921	90.0191	96.354	68.1117	68.1117	68.1117
4353	89.2932	89.9172	96.2677	67.9732	67.9732	67.9732
4354	89.2127	89.8338	96.1997	67.8361	67.8361	67.8361
4355	89.1427	89.761	96.142	67.7003	67.7003	67.7003
4356	89.0788	89.6942	96.0901	67.5657	67.5657	67.5657
4357	89.0167	89.6301	96.0332	67.4325	67.4325	67.4325
4358	88.955	89.5669	95.9736	67.3005	67.3005	67.3005
4359	88.8939	89.5042	95.9144	67.1697	67.1697	67.1697
4360	88.8333	89.4421	95.8557	67.0403	67.0403	67.0403
4361	88.7733	89.3807	95.7977	66.912	66.912	66.912
4362	88.714	89.3199	95.7402	66.7849	66.7849	66.7849
4363	88.653	89.2574	95.6735	66.6591	66.6591	66.6591
4364	88.5903	89.1931	95.6016	66.5344	66.5344	66.5344
4365	88.5267	89.128	95.5288	66.411	66.411	66.411
4366	88.4628	89.0625	95.4555	66.2887	66.2887	66.2887
4367	88.3989	88.9968	95.3817	66.1675	66.1675	66.1675
4368	88.335	88.9313	95.3084	66.0475	66.0475	66.0475
4369	86.8223	87.3277	88.6831	65.9268	65.9268	65.9268
4370	85.8785	86.4291	87.6527	65.8071	65.8071	65.8071
4371	85.0849	85.4897	86.294	65.6884	65.6884	65.6884
4372	86.5485	97.8493	89.6745	71.9735	71.9735	96.1686
4373	87.3201	98.7187	90.3718	75.0795	75.0795	99.393
4374	87.7011	99.1135	90.6738	76.8053	76.8053	101.116
4375	87.8292	98.9931	90.7165	77.8477	77.8477	101.812
4376	87.9473	98.8346	91.2853	78.49	78.49	101.746
4377	88.2366	98.9283	92.675	78.8565	78.8565	101.084
4378	88.5169	98.9603	93.6657	79.0664	79.0664	100.205
4379	89.2351	100.315	96.2565	79.205	79.205	99.3233
4380	88.7889	87.3011	87.9531	74.7682	74.7682	76.6489
4381	85.3009	85.7493	86.3201	72.7723	72.7723	74.4189
4382	84.5395	85.2132	86.0708	72.0755	72.0755	74.5494
4383	84.0192	84.693	85.5505	71.734	71.734	74.2079
4384	83.6305	84.3043	85.1618	71.5432	71.5432	74.0171
4385	83.6825	84.6098	86.4915	70.7871	70.7871	70.7871
4388	83.6344	84.5559	86.4809	70.3748	70.3748	70.3748
4387	83.5328	84.4482	86.4157	70.1089	70.1089	70.1089
4388	83.4033	84.3125	86.3226	69.9058	69.9058	69.9058
4389	83.2597	84.1627	86.2154	69.73	69.73	69.73

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4390	83.0368	83.9373	85.7588	69.5667	69.5667	69.5667
4391	82.8367	83.7344	85.5559	69.4094	69.4094	69.4094
4392	82.6437	83.5414	85.3629	69.2555	69.2555	69.2555
4393	82.4567	83.3544	85.1759	69.1039	69.1039	69.1039
4394	82.2736	83.1712	84.9928	68.9541	68.9541	68.9541
4395	82.0931	82.9908	84.8123	68.8058	68.8058	68.8058
4396	81.948	82.8715	84.7827	68.659	68.659	68.659
4397	81.8015	82.7174	84.6809	68.5136	68.5136	68.5136
4398	81.6553	82.5637	84.5794	68.3696	68.3696	68.3696
4399	81.5105	82.4113	84.4792	68.227	68.227	68.227
4400	81.3678	82.2617	84.3821	68.0857	68.0857	68.0857
4401	81.2355	82.1358	84.3149	67.9458	67.9458	67.9458
4402	81.1104	82.0171	84.2548	67.8072	67.8072	67.8072
4403	80.9169	81.8226	83.8568	67.6699	67.6699	67.6699
4404	80.7408	81.6451	83.689	67.5338	67.5338	67.5338
4405	80.5747	81.4778	83.5312	67.399	67.399	67.399
4406	80.4065	81.314	83.3355	67.2655	67.2655	67.2655
4407	80.2351	81.1488	83.1277	67.1332	67.1332	67.1332
4408	82.4333	84.979	93.2424	67.0051	67.0051	67.0051
4409	84.0637	95.6018	92.315	71.9752	71.9752	91.438
4410	84.7197	95.3848	92.3129	74.0807	74.0807	92.4162
4411	84.9632	94.9308	92.4267	74.94	74.94	92.1116
4412	85.2507	95.2141	93.1588	75.2478	75.2478	91.2574
4413	85.8561	95.9154	94.1317	75.2968	75.2968	90.1371
4414	85.7649	95.5118	94.0498	75.1999	75.1999	88.8209
4415	85.9819	95.6848	95.1609	75.0319	75.0319	87.497
4416	86.3038	96.2988	96.3817	74.8231	74.8231	86.1797
4417	86.6478	97.0449	97.5024	74.5667	74.5667	84.7797
4418	86.944	97.7262	98.4848	74.258	74.258	83.2882
4419	87.2089	98.4813	99.6183	73.9203	73.9203	81.8344
4420	86.165	93.6041	95.0593	72.3139	72.3139	74.2707
4421	85.224	92.6201	93.8799	71.113	71.113	71.113
4422	84.7688	93.6552	94.5602	70.5849	70.5849	70.5849
4423	82.569	82.569	82.589	70.3487	70.3487	70.3487
4424	81.3422	81.3422	81.3422	70.2414	70.2414	70.2414
4425	80.6561	80.6561	80.6561	70.1905	70.1905	70.1905
4426	80.2705	80.2705	80.2705	70.1643	70.1643	70.1643
4427	80.0518	80.0518	80.0518	70.1489	70.1489	70.1489
4428	79.9258	79.9258	79.9258	70.1382	70.1382	70.1382
4429	79.8514	79.8514	79.8514	70.1296	70.1296	70.1296
4430	79.8057	79.8057	79.8057	70.122	70.122	70.122
4431	79.7758	79.7758	79.7758	70.1147	70.1147	70.1147
4432	79.7548	79.7548	79.7548	70.1076	70.1076	70.1076
4433	79.7387	79.7387	79.7387	70.1005	70.1005	70.1005
4434	79.7254	79.7254	79.7254	70.0936	70.0936	70.0936
4435	79.7135	79.7135	79.7135	70.0866	70.0866	70.0866
4436	79.7025	79.7025	79.7025	70.0796	70.0796	70.0796
4437	79.692	79.692	79.692	70.0727	70.0727	70.0727
4438	79.6818	79.6818	79.6818	70.0657	70.0657	70.0657
4439	79.6717	79.6717	79.6717	70.0587	70.0587	70.0587
4440	79.6616	79.6616	79.6616	70.0518	70.0518	70.0518
4441	79.6517	79.6517	79.6517	70.0448	70.0448	70.0448
4442	79.6417	79.6417	79.6417	70.0379	70.0379	70.0379
4443	79.6318	79.6318	79.6318	70.0309	70.0309	70.0309
4444	79.6218	79.6218	79.6218	70.024	70.024	70.024

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011073



4445	79.6119	79.6119	79.6119	70.0171	70.0171	70.0171
4446	79.602	79.602	79.602	70.0101	70.0101	70.0101
4447	79.5921	79.5921	79.5921	70.0032	70.0032	70.0032
4448	79.5822	79.5822	79.5822	69.9963	69.9963	69.9963
4449	79.5723	79.5723	79.5723	69.9893	69.9893	69.9893
4450	79.5624	79.5624	79.5624	69.9824	69.9824	69.9824
4451	79.5525	79.5525	79.5525	69.9755	69.9755	69.9755
4452	79.5426	79.5426	79.5426	69.9686	69.9686	69.9686
4453	79.5327	79.5327	79.5327	69.9616	69.9616	69.9616
4454	79.5228	79.5228	79.5228	69.9547	69.9547	69.9547
4455	79.5129	79.5129	79.5129	69.9478	69.9478	69.9478
4456	79.5031	79.5031	79.5031	69.9409	69.9409	69.9409
4457	79.4932	79.4932	79.4932	69.934	69.934	69.934
4458	79.4833	79.4833	79.4833	69.9271	69.9271	69.9271
4459	79.4734	79.4734	79.4734	69.9202	69.9202	69.9202
4460	79.4636	79.4636	79.4636	69.9132	69.9132	69.9132
4461	79.4537	79.4537	79.4537	69.9063	69.9063	69.9063
4462	79.4438	79.4438	79.4438	69.8994	69.8994	69.8994
4463	79.434	79.434	79.434	69.8925	69.8925	69.8925
4464	79.4241	79.4241	79.4241	69.8856	69.8856	69.8856
4465	79.4142	79.4142	79.4142	69.8788	69.8788	69.8788
4466	79.4044	79.4044	79.4044	69.8719	69.8719	69.8719
4467	79.3945	79.3945	79.3945	69.865	69.865	69.865
4468	79.3847	79.3847	79.3847	69.8581	69.8581	69.8581
4469	79.3748	79.3748	79.3748	69.8512	69.8512	69.8512
4470	79.365	79.365	79.365	69.8443	69.8443	69.8443
4471	79.3551	79.3551	79.3551	69.8374	69.8374	69.8374
4472	79.3453	79.3453	79.3453	69.8306	69.8306	69.8306
4473	79.3354	79.3354	79.3354	69.8237	69.8237	69.8237
4474	79.3256	79.3256	79.3256	69.8168	69.8168	69.8168
4475	79.3158	79.3158	79.3158	69.8099	69.8099	69.8099
4476	79.3059	79.3059	79.3059	69.8031	69.8031	69.8031
4477	79.2961	79.2961	79.2961	69.7962	69.7962	69.7962
4478	79.2863	79.2863	79.2863	69.7893	69.7893	69.7893
4479	79.2765	79.2765	79.2765	69.7825	69.7825	69.7825
4480	79.2666	79.2666	79.2666	69.7756	69.7756	69.7756
4481	79.2568	79.2568	79.2568	69.7688	69.7688	69.7688
4482	79.247	79.247	79.247	69.7619	69.7619	69.7619
4483	79.2372	79.2372	79.2372	69.7551	69.7551	69.7551
4484	79.2274	79.2274	79.2274	69.7482	69.7482	69.7482
4485	79.2176	79.2176	79.2176	69.7414	69.7414	69.7414
4486	79.2078	79.2078	79.2078	69.7345	69.7345	69.7345
4487	79.198	79.198	79.198	69.7277	69.7277	69.7277
4488	79.1882	79.1882	79.1882	69.7208	69.7208	69.7208
4489	79.1784	79.1784	79.1784	69.714	69.714	69.714
4490	79.1686	79.1686	79.1686	69.7071	69.7071	69.7071
4491	79.1588	79.1588	79.1588	69.7003	69.7003	69.7003
4492	79.149	79.149	79.149	69.6935	69.6935	69.6935
4493	79.1392	79.1392	79.1392	69.6867	69.6867	69.6867
4494	79.1294	79.1294	79.1294	69.6798	69.6798	69.6798
4495	79.1196	79.1196	79.1196	69.673	69.673	69.673
4496	79.1099	79.1099	79.1099	69.6662	69.6662	69.6662
4497	79.1001	79.1001	79.1001	69.6594	69.6594	69.6594
4498	79.0903	79.0903	79.0903	69.6525	69.6525	69.6525
4499	79.0805	79.0805	79.0805	69.6457	69.6457	69.6457



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011874



4500	79.0708	79.0708	79.0708	69.6389	69.6389	69.6389
4501	79.081	79.081	79.081	69.6321	69.6321	69.6321
4502	79.0512	79.0512	79.0512	69.6253	69.6253	69.6253
4503	79.0415	79.0415	79.0415	69.6185	69.6185	69.6185
4504	79.0317	79.0317	79.0317	69.6117	69.6117	69.6117
4505	79.022	79.022	79.022	69.6049	69.6049	69.6049
4506	79.0122	79.0122	79.0122	69.5981	69.5981	69.5981
4507	79.0025	79.0025	79.0025	69.5913	69.5913	69.5913
4508	78.9927	78.9927	78.9927	69.5845	69.5845	69.5845
4509	78.983	78.983	78.983	69.5777	69.5777	69.5777
4510	78.9732	78.9732	78.9732	69.5709	69.5709	69.5709
4511	78.9635	78.9635	78.9635	69.5641	69.5641	69.5641
4512	78.9537	78.9537	78.9537	69.5573	69.5573	69.5573
4513	78.944	78.944	78.944	69.5505	69.5505	69.5505
4514	78.9343	78.9343	78.9343	69.5437	69.5437	69.5437
4515	78.9245	78.9245	78.9245	69.537	69.537	69.537
4516	78.9148	78.9148	78.9148	69.5302	69.5302	69.5302
4517	78.9051	78.9051	78.9051	69.5234	69.5234	69.5234
4518	78.8954	78.8954	78.8954	69.5166	69.5166	69.5166
4519	78.8856	78.8856	78.8856	69.5099	69.5099	69.5099
4520	78.8759	78.8759	78.8759	69.5031	69.5031	69.5031
4521	78.8662	78.8662	78.8662	69.4963	69.4963	69.4963
4522	78.8565	78.8565	78.8565	69.4896	69.4896	69.4896
4523	78.8468	78.8468	78.8468	69.4828	69.4828	69.4828
4524	78.8371	78.8371	78.8371	69.476	69.476	69.476
4525	78.8274	78.8274	78.8274	69.4693	69.4693	69.4693
4526	78.8177	78.8177	78.8177	69.4625	69.4625	69.4625
4527	78.808	78.808	78.808	69.4558	69.4558	69.4558
4528	78.7983	78.7983	78.7983	69.449	69.449	69.449
4529	78.7886	78.7886	78.7886	69.4423	69.4423	69.4423
4530	78.7789	78.7789	78.7789	69.4355	69.4355	69.4355
4531	78.7692	78.7692	78.7692	69.4288	69.4288	69.4288
4532	78.7595	78.7595	78.7595	69.422	69.422	69.422
4533	78.7498	78.7498	78.7498	69.4153	69.4153	69.4153
4534	78.7401	78.7401	78.7401	69.4085	69.4085	69.4085
4535	78.7305	78.7305	78.7305	69.4018	69.4018	69.4018
4536	78.7208	78.7208	78.7208	69.3951	69.3951	69.3951
4537	78.7111	78.7111	78.7111	69.3883	69.3883	69.3883
4538	78.7014	78.7014	78.7014	69.3816	69.3816	69.3816
4539	78.6918	78.6918	78.6918	69.3749	69.3749	69.3749
4540	78.6821	78.6821	78.6821	69.3682	69.3682	69.3682
4541	78.6724	78.6724	78.6724	69.3614	69.3614	69.3614
4542	78.6628	78.6628	78.6628	69.3547	69.3547	69.3547
4543	78.6531	78.6531	78.6531	69.348	69.348	69.348
4544	78.6435	78.6435	78.6435	69.3413	69.3413	69.3413
4545	78.6338	78.6338	78.6338	69.3346	69.3346	69.3346
4546	78.6241	78.6241	78.6241	69.3279	69.3279	69.3279
4547	78.6145	78.6145	78.6145	69.3211	69.3211	69.3211
4548	78.6048	78.6048	78.6048	69.3144	69.3144	69.3144
4549	78.5952	78.5952	78.5952	69.3077	69.3077	69.3077
4550	78.5856	78.5856	78.5856	69.301	69.301	69.301
4551	78.5759	78.5759	78.5759	69.2943	69.2943	69.2943
4552	78.5663	78.5663	78.5663	69.2876	69.2876	69.2876
4553	78.5567	78.5567	78.5567	69.2809	69.2809	69.2809
4554	78.547	78.547	78.547	69.2742	69.2742	69.2742

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011375

ALSTOM

4555	78.5374	78.5374	78.5374	69.2675	69.2675	69.2675
4556	78.5278	78.5278	78.5278	69.2608	69.2608	69.2608
4557	78.5181	78.5181	78.5181	69.2542	69.2542	69.2542
4558	78.5085	78.5085	78.5085	69.2475	69.2475	69.2475
4559	78.4989	78.4989	78.4989	69.2408	69.2408	69.2408
4560	78.4893	78.4893	78.4893	69.2341	69.2341	69.2341
4561	78.4797	78.4797	78.4797	69.2274	69.2274	69.2274
4562	78.4701	78.4701	78.4701	69.2208	69.2208	69.2208
4563	78.4605	78.4605	78.4605	69.2141	69.2141	69.2141
4564	78.4509	78.4509	78.4509	69.2074	69.2074	69.2074
4565	78.4412	78.4412	78.4412	69.2007	69.2007	69.2007
4566	78.4316	78.4316	78.4316	69.1941	69.1941	69.1941
4567	78.422	78.422	78.422	69.1874	69.1874	69.1874
4568	78.4125	78.4125	78.4125	69.1807	69.1807	69.1807
4569	78.4029	78.4029	78.4029	69.1741	69.1741	69.1741
4570	78.3933	78.3933	78.3933	69.1674	69.1674	69.1674
4571	78.3837	78.3837	78.3837	69.1608	69.1608	69.1608
4572	78.3741	78.3741	78.3741	69.1541	69.1541	69.1541
4573	78.3645	78.3645	78.3645	69.1475	69.1475	69.1475
4574	78.3549	78.3549	78.3549	69.1408	69.1408	69.1408
4575	78.3454	78.3454	78.3454	69.1342	69.1342	69.1342
4576	78.3358	78.3358	78.3358	69.1275	69.1275	69.1275
4577	78.3262	78.3262	78.3262	69.1209	69.1209	69.1209
4578	78.3166	78.3166	78.3166	69.1142	69.1142	69.1142
4579	78.3071	78.3071	78.3071	69.1076	69.1076	69.1076
4580	78.2975	78.2975	78.2975	69.1009	69.1009	69.1009
4581	78.2879	78.2879	78.2879	69.0943	69.0943	69.0943
4582	78.2784	78.2784	78.2784	69.0877	69.0877	69.0877
4583	78.2688	78.2688	78.2688	69.081	69.081	69.081
4584	78.2593	78.2593	78.2593	69.0744	69.0744	69.0744
4585	78.2497	78.2497	78.2497	69.0678	69.0678	69.0678
4586	78.2402	78.2402	78.2402	69.0612	69.0612	69.0612
4587	78.2306	78.2306	78.2306	69.0545	69.0545	69.0545
4588	78.2211	78.2211	78.2211	69.0479	69.0479	69.0479
4589	78.2115	78.2115	78.2115	69.0413	69.0413	69.0413
4590	78.202	78.202	78.202	69.0347	69.0347	69.0347
4591	78.1924	78.1924	78.1924	69.0281	69.0281	69.0281
4592	78.1829	78.1829	78.1829	69.0215	69.0215	69.0215
4593	78.1734	78.1734	78.1734	69.0148	69.0148	69.0148
4594	78.1638	78.1638	78.1638	69.0082	69.0082	69.0082
4595	78.1543	78.1543	78.1543	69.0016	69.0016	69.0016
4596	78.1448	78.1448	78.1448	68.995	68.995	68.995
4597	78.1353	78.1353	78.1353	68.9884	68.9884	68.9884
4598	78.1257	78.1257	78.1257	68.9818	68.9818	68.9818
4599	78.1162	78.1162	78.1162	68.9752	68.9752	68.9752
4600	78.1067	78.1067	78.1067	68.9686	68.9686	68.9686
4601	78.0972	78.0972	78.0972	68.962	68.962	68.962
4602	78.0877	78.0877	78.0877	68.9555	68.9555	68.9555
4603	78.0782	78.0782	78.0782	68.9489	68.9489	68.9489

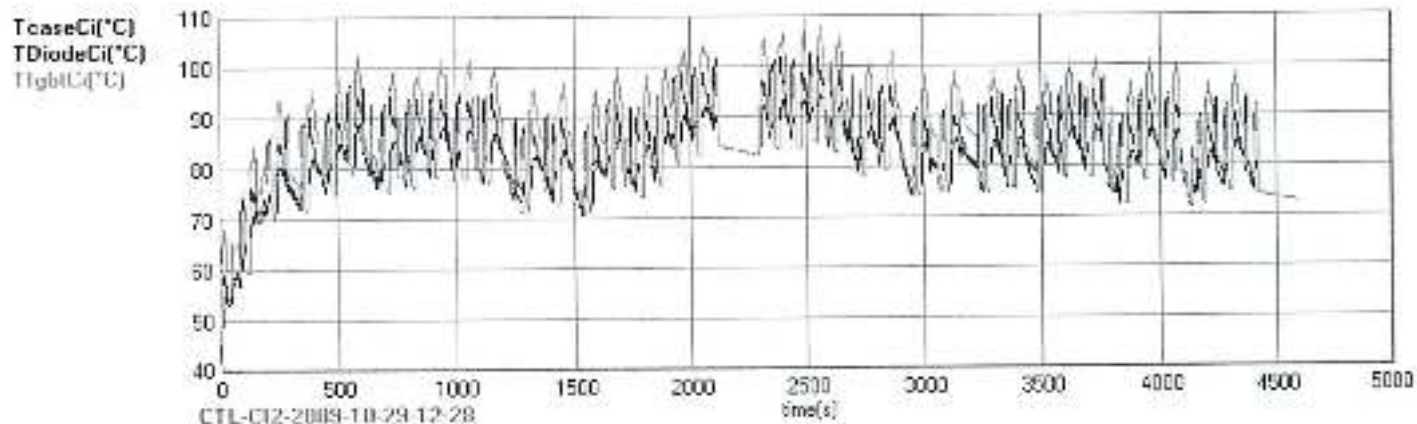




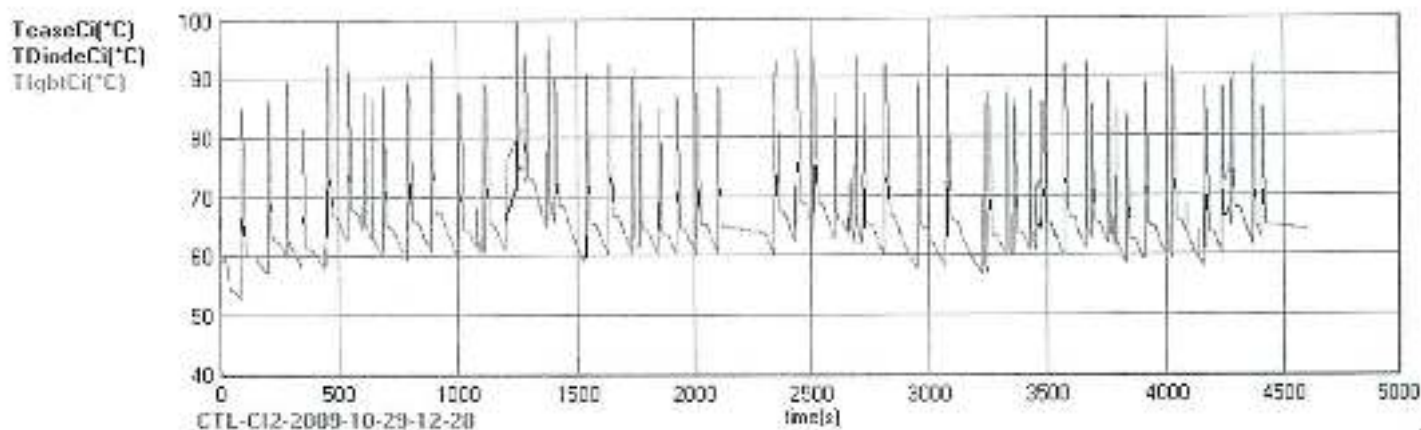
Inverter Temperature 1500V  
Air flow 2240m

7C 3M AW2 6p/m<sup>2</sup>

Degraded Mode 2Mout



Rheo temperature Temperature 1800V  
Air flow 2240m







00011877

7C 3M AW2 6p/m<sup>2</sup> Degraded Mode 2Mout

INV CM1200HC-66H-203\_Mitsubishi\_1\_5.6  
RHEO CM800E6C-66H-202\_Mitsubishi\_1\_5.6

time(s)	TcaseCi(°C)	TDiodeCi(°C)	TlgbtCi(°C)	TcaseCi(°C)	TDiodeCi(°C)	TlgbtCi(°C)
Maximum	94.6	103.2	108.2	80.4	80.4	100.0

time(s)	TcaseCi(°C)	TDiodeCi(°C)	TlgbtCi(°C)	TcaseCi(°C)	TDiodeCi(°C)	TlgbtCi(°C)
0	42	45.3115	45.5059	42	42	42
1	44.1676	53.646	54.6046	54.1693	54.1693	54.1693
2	46.5673	58.8899	60.9667	57.3327	57.3327	57.3327
3	47.9678	58.3352	61.1092	58.3559	58.3559	58.3559
4	48.8748	58.4254	61.8789	58.8598	58.8598	58.8598
5	49.5011	58.2841	62.4107	59.1581	59.1581	59.1581
6	50.009	58.1378	62.8974	59.3516	59.3516	59.3516
7	50.4527	57.9328	63.3281	59.4865	59.4865	59.4865
8	50.8756	57.8247	63.7551	59.5957	59.5957	59.5957
9	51.2877	57.7137	64.1746	59.6884	59.6884	59.6884
10	51.8704	57.5165	64.5623	59.7566	59.7566	59.7566
11	52.0264	57.2659	64.9192	59.802	59.802	59.802
12	52.3776	57.1947	65.1479	59.837	59.837	59.837
13	52.7425	57.3322	65.2524	59.8709	59.8709	59.8709
14	53.1639	57.6146	65.6451	59.9239	59.9239	59.9239
15	53.7777	58.3655	66.9607	60.052	60.052	60.052
16	54.5012	59.2206	68.3667	60.2391	60.2391	60.2391
17	54.7849	58.9376	67.5983	60.3069	60.3069	60.3069
18	54.8225	58.4338	66.615	60.2782	60.2782	60.2782
19	54.8435	58.1396	66.0554	60.2078	60.2078	60.2078
20	54.9713	58.1626	66.0105	60.1369	60.1369	60.1369
21	55.1559	58.2471	66.0303	60.086	60.086	60.086
22	55.3854	58.4166	66.1613	59.9993	59.9993	59.9993
23	55.6512	58.6538	66.3507	59.9394	59.9394	59.9394
24	55.9359	58.9108	66.6204	59.8855	59.8855	59.8855
25	56.1902	59.072	66.7105	59.828	59.828	59.828
26	54.4079	56.4187	57.8026	59.3327	59.3327	59.3327
27	53.5755	54.6137	57.1776	58.8976	58.8976	58.8976
28	53.186	54.2344	56.9147	58.5008	58.5008	58.5008
29	53.0395	54.102	56.8954	58.1384	58.1384	58.1384
30	52.9404	53.9841	56.6243	57.791	57.791	57.791
31	52.9338	53.985	56.6877	57.4695	57.4695	57.4695
32	52.9725	54.0292	56.7766	57.1708	57.1708	57.1708
33	53.0219	54.0787	56.8261	56.8901	56.8901	56.8901
34	53.0769	54.1337	56.8811	56.6259	56.6259	56.6259
35	53.1348	54.1916	56.939	56.3768	56.3768	56.3768
36	53.194	54.2508	56.9982	56.1416	56.1416	56.1416
37	53.2538	54.3106	57.058	55.9191	55.9191	55.9191
38	53.3136	54.3704	57.1178	55.7082	55.7082	55.7082
39	53.3733	54.4301	57.1775	55.5082	55.5082	55.5082
40	53.4327	54.4896	57.2389	55.3182	55.3182	55.3182
41	53.4918	54.5488	57.296	55.1375	55.1375	55.1375
42	53.5505	54.6073	57.3547	54.9654	54.9654	54.9654
43	53.5165	54.5463	56.9937	54.7892	54.7892	54.7892
44	53.5034	54.5294	56.9239	54.6191	54.6191	54.6191





45	53.5009	54.5232	56.8654	54.4545	54.4545	54.4545
46	53.5153	54.5367	56.867	54.2967	54.2967	54.2967
47	53.5258	54.5433	56.8196	54.1437	54.1437	54.1437
48	55.3402	57.7829	65.0688	54.206	54.206	54.206
49	56.2523	58.3448	65.3497	54.2444	54.2444	54.2444
50	56.6696	58.4224	65.1547	54.261	54.261	54.261
51	56.8298	58.2856	64.7799	54.2595	54.2595	54.2595
52	56.9609	58.3616	64.7766	54.2537	54.2537	54.2537
53	57.0747	58.422	64.783	54.244	54.244	54.244
54	57.1776	58.4731	64.7425	54.2309	54.2309	54.2309
55	57.2727	58.5176	64.7188	54.2144	54.2144	54.2144
56	57.3616	58.5563	64.6861	54.195	54.195	54.195
57	57.428	58.5435	64.5499	54.171	54.171	54.171
58	57.4782	58.5125	64.392	54.1427	54.1427	54.1427
59	57.5168	58.4713	64.2258	54.1104	54.1104	54.1104
60	57.5456	58.4195	64.0479	54.0742	54.0742	54.0742
61	57.5646	58.3572	63.8578	54.0342	54.0342	54.0342
62	57.5921	58.3243	63.737	53.9921	53.9921	53.9921
63	57.6629	58.3996	63.8157	53.9518	53.9518	53.9518
64	57.7574	58.4784	63.9182	53.9131	53.9131	53.9131
65	57.8646	58.5798	64.0337	53.8759	53.8759	53.8759
66	57.9788	58.688	64.1562	53.8403	53.8403	53.8403
67	58.0961	58.7997	64.2804	53.8061	53.8061	53.8061
68	58.2127	58.9122	64.3954	53.773	53.773	53.773
69	58.3287	59.0242	64.5097	53.7411	53.7411	53.7411
70	58.444	59.1356	64.6234	53.7102	53.7102	53.7102
71	58.5586	59.2462	64.7365	53.6803	53.6803	53.6803
72	58.6725	59.3564	64.8489	53.6514	53.6514	53.6514
73	58.7828	59.4645	64.9466	53.6232	53.6232	53.6232
74	58.8906	59.5703	65.0418	53.5956	53.5956	53.5956
75	58.9966	59.6743	65.1354	53.5686	53.5686	53.5686
76	59.1013	59.777	65.2279	53.5423	53.5423	53.5423
77	59.2048	59.8787	65.3194	53.5166	53.5166	53.5166
78	58.0943	58.6616	59.7291	53.4043	53.4043	53.4043
79	57.4735	58.0409	59.1084	53.2948	53.2948	53.2948
80	57.1185	57.6858	58.7534	53.1881	53.1881	53.1881
81	56.9456	57.4294	58.7599	53.0866	53.0866	53.0866
82	56.8425	57.3186	58.6855	52.9881	52.9881	52.9881
83	56.7777	57.2462	58.6494	52.8924	52.8924	52.8924
84	56.7098	57.2004	58.5047	52.7978	52.7978	52.7978
85	56.6571	57.1477	58.452	52.7054	52.7054	52.7054
86	56.6127	57.1033	58.4076	52.6151	52.6151	52.6151
87	58.2485	70.3729	60.8313	58.208	58.208	78.6985
88	59.2016	71.4555	61.7404	61.395	61.395	81.9797
89	59.7697	72.0709	62.2812	63.3426	63.3426	83.934
90	60.0906	72.1763	62.5282	64.5797	64.5797	84.9251
91	60.3632	72.0872	63.2579	65.3582	65.3582	85.1528
92	60.7653	72.1355	64.8393	65.8146	65.8146	84.7782
93	61.1428	72.3019	65.8689	66.0737	66.0737	84.1475
94	61.9308	73.6929	68.6418	66.2429	66.2429	83.42
95	62.5238	74.0866	69.674	66.336	66.336	82.609
96	62.7532	73.5624	69.5435	66.3542	66.3542	81.6983
97	62.9008	73.1271	69.8541	66.3116	66.3116	80.6945
98	63.3377	74.25	70.8545	66.2435	66.2435	79.6695
99	63.596	74.3015	71.0769	66.1195	66.1195	78.5382





100	63.8116	74.2352	71.722	65.9554	65.9554	77.3717
101	64.119	74.4995	72.8743	65.7696	65.7696	76.2078
102	64.5231	75.2212	74.0712	65.5699	65.5699	75.054
103	64.8915	75.8256	75.0232	65.3224	65.3224	73.7474
104	65.2368	76.3486	76.0147	65.0486	65.0486	72.4463
105	64.9814	73.8793	74.4019	64.1791	64.1791	68.2303
106	64.1241	70.3267	71.6604	62.7817	62.7817	62.7817
107	63.7243	71.2859	72.4652	62.0539	62.0539	62.0539
108	61.7735	61.7735	61.7735	61.5785	61.5785	61.5785
109	60.6875	60.6875	60.6875	61.2832	61.2832	61.2832
110	60.082	60.082	60.082	61.0816	61.0816	61.0816
111	59.7435	59.7435	59.7435	60.9294	60.9294	60.9294
112	59.5534	59.5534	59.5534	60.8035	60.8035	60.8035
113	59.4458	59.4458	59.4458	60.692	60.692	60.692
114	59.3839	59.3839	59.3839	60.5887	60.5887	60.5887
115	59.3475	59.3475	59.3475	60.4904	60.4904	60.4904
116	59.3253	59.3253	59.3253	60.3955	60.3955	60.3955
117	59.3109	59.3109	59.3109	60.303	60.303	60.303
118	59.3009	59.3009	59.3009	60.2125	60.2125	60.2125
119	59.2933	59.2933	59.2933	60.1237	60.1237	60.1237
120	59.2871	59.2871	59.2871	60.0364	60.0364	60.0364
121	59.2816	59.2816	59.2816	59.9507	59.9507	59.9507
122	59.2765	59.2765	59.2765	59.8663	59.8663	59.8663
123	59.2716	59.2716	59.2716	59.7833	59.7833	59.7833
124	59.2669	59.2669	59.2669	59.7016	59.7016	59.7016
125	62.589	78.5278	79.7067	59.7706	59.7706	59.7706
126	64.5186	78.2955	80.0201	59.8376	59.8376	59.8376
127	65.6724	77.1261	79.4372	59.9027	59.9027	59.9027
128	66.4041	76.4987	79.4883	59.9662	59.9662	59.9662
129	66.9063	76.2041	79.8731	60.0284	60.0284	60.0284
130	67.2869	75.8591	80.1856	60.0693	60.0693	60.0693
131	67.6073	75.5385	80.4974	60.0832	60.0832	60.0832
132	67.8945	75.201	80.7688	60.0833	60.0833	60.0833
133	68.1769	74.96	81.0587	60.0771	60.0771	60.0771
134	68.4556	74.7134	81.3447	60.0677	60.0677	60.0677
135	68.7008	74.3557	81.594	60.0556	60.0556	60.0556
136	68.9251	73.9741	81.8198	60.0417	60.0417	60.0417
137	69.1605	73.9054	81.8482	60.0273	60.0273	60.0273
138	69.4073	73.9258	81.8357	60.0129	60.0129	60.0129
139	69.7723	74.2636	82.4611	60.0032	60.0032	60.0032
140	70.2969	74.9201	83.6612	60.0017	60.0017	60.0017
141	70.8116	75.4235	84.487	60.0041	60.0041	60.0041
142	70.9401	75.0193	83.6131	59.995	59.995	59.995
143	70.8694	74.4858	82.8339	59.9757	59.9757	59.9757
144	70.7897	74.0972	82.0203	59.951	59.951	59.951
145	70.8152	74.0346	81.9007	59.9254	59.9254	59.9254
146	70.8976	74.0359	81.8496	59.899	59.899	59.899
147	71.0114	74.0768	81.8433	59.8721	59.8721	59.8721
148	71.1567	74.1888	81.9342	59.8452	59.8452	59.8452
149	71.3235	74.337	82.0707	59.8185	59.8185	59.8185
150	71.5014	74.4981	82.2211	59.7919	59.7919	59.7919
151	71.6846	74.6656	82.3788	59.7656	59.7656	59.7656
152	71.8701	74.8358	82.5394	59.7395	59.7395	59.7395
153	72.0307	74.937	82.5952	59.7127	59.7127	59.7127
154	71.0216	72.7667	77.3405	59.6432	59.6432	59.6432



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011890



155	70.2393	71.7445	75.8778	59.5662	59.5652	59.5652
156	69.8327	71.3534	75.3189	59.4885	59.4885	59.4885
157	69.7319	71.3772	75.6049	59.4168	59.4168	59.4168
158	69.704	71.3669	75.634	59.3464	59.3464	59.3464
159	69.7179	71.3998	75.7095	59.2773	59.2773	59.2773
160	69.7581	71.462	75.821	59.2096	59.2096	59.2096
161	69.8136	71.5395	75.9478	59.1433	59.1433	59.1433
162	69.7638	71.3898	75.5741	59.0744	59.0744	59.0744
163	69.7457	71.3717	75.556	59.0062	59.0062	59.0062
164	69.7447	71.3706	75.5549	58.9387	58.9387	58.9387
165	69.7529	71.3788	75.5631	58.8718	58.8718	58.8718
166	69.766	71.392	75.5763	58.8056	58.8056	58.8056
167	69.7817	71.4077	75.592	58.7401	58.7401	58.7401
168	69.7988	71.4248	75.6091	58.6753	58.6753	58.6753
169	69.8168	71.4426	75.6269	58.611	58.611	58.611
170	69.8347	71.4607	75.645	58.5474	58.5474	58.5474
171	69.8529	71.4788	75.6631	58.4845	58.4845	58.4845
172	69.871	71.497	75.6813	58.4221	58.4221	58.4221
173	69.8892	71.5151	75.6994	58.3604	58.3604	58.3604
174	69.9072	71.5332	75.7175	58.2993	58.2993	58.2993
175	69.9251	71.5511	75.7354	58.2387	58.2387	58.2387
176	69.9429	71.5689	75.7532	58.1788	58.1788	58.1788
177	69.9606	71.5865	75.7708	58.1195	58.1195	58.1195
178	69.9781	71.6041	75.7884	58.0607	58.0607	58.0607
179	69.9913	71.4045	75.3545	57.9993	57.9993	57.9993
180	69.8312	71.3281	75.2441	57.938	57.938	57.938
181	69.8105	71.3188	75.2581	57.8776	57.8776	57.8776
182	69.7713	71.2479	75.1181	57.8169	57.8169	57.8169
183	70.085	71.8335	76.639	57.767	57.767	57.767
184	71.1682	73.6482	80.9642	57.7448	57.7448	57.7448
185	71.6961	73.9394	81.0654	57.719	57.719	57.719
186	71.9085	73.9018	80.8271	57.6894	57.6894	57.6894
187	71.9356	73.6668	80.3818	57.6559	57.6559	57.6559
188	71.8492	73.3089	79.8058	57.6184	57.6184	57.6184
189	71.8008	73.209	79.6346	57.5801	57.5801	57.5801
190	71.7691	73.1236	79.4747	57.541	57.541	57.541
191	71.7425	73.0411	79.3147	57.5011	57.5011	57.5011
192	71.7148	72.9552	79.1483	57.4603	57.4603	57.4603
193	71.6788	72.8622	78.9498	57.4186	57.4186	57.4186
194	71.6156	72.6881	78.6272	57.3753	57.3753	57.3753
195	71.5355	72.5087	78.2924	57.3306	57.3306	57.3306
196	71.4437	72.3195	77.9506	57.2844	57.2844	57.2844
197	71.3432	72.1233	77.6049	57.2369	57.2369	57.2369
198	71.2692	72	77.4163	57.1891	57.1891	57.1891
199	71.241	71.9657	77.3865	57.1418	57.1418	57.1418
200	71.2376	71.9564	77.4014	57.0951	57.0951	57.0951
201	71.2478	71.9609	77.4198	57.049	57.049	57.049
202	71.7114	83.9683	74.1769	62.6013	62.6013	83.13
203	71.9168	83.8238	74.3255	65.5903	65.5903	85.7443
204	72.2264	83.7621	75.7525	67.1616	67.1616	86.545
205	72.5546	83.8203	76.9514	67.9779	67.9779	86.5009
206	73.0334	84.4316	78.6445	68.3946	68.3946	86.0272
207	73.8189	85.7752	81.2893	68.6018	68.6018	85.339
208	74.0728	85.2593	80.9167	68.6717	68.6717	84.5009
209	74.1429	84.602	80.9912	68.6455	68.6455	83.5224



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011881

210	74.346	84.9053	81.5725	68.5593	68.5593	82.4781
211	74.6489	85.5513	82.209	68.4249	68.4249	81.3677
212	74.7417	85.2721	82.2071	68.2338	68.2338	80.1605
213	74.9233	85.2464	83.2524	68.0131	68.0131	78.9487
214	75.2113	85.7478	84.356	67.7751	67.7751	77.7532
215	75.5243	86.337	85.3554	67.5032	67.5032	76.4738
216	75.8068	86.8358	86.2431	67.1911	67.1911	75.1137
217	76.0613	87.2178	87.1324	66.8482	66.8482	73.7192
218	75.1849	81.9573	83.052	65.4214	65.4214	66.8189
219	74.4883	81.3497	82.6086	64.3538	64.3538	64.3538
220	74.1769	82.3973	83.5018	63.799	63.799	63.799
221	72.2631	72.2631	72.2631	63.4629	63.4629	63.4629
222	71.1964	71.1964	71.1964	63.2639	63.2639	63.2639
223	70.6004	70.6004	70.6004	63.1357	63.1357	63.1357
224	70.266	70.266	70.266	63.0444	63.0444	63.0444
225	70.0769	70.0769	70.0769	62.9724	62.9724	62.9724
226	69.9686	69.9686	69.9686	62.9104	62.9104	62.9104
227	69.9052	69.9052	69.9052	62.8539	62.8539	62.8539
228	69.8667	69.8667	69.8667	62.8005	62.8005	62.8005
229	69.842	69.842	69.842	62.7488	62.7488	62.7488
230	69.825	69.825	69.825	62.6982	62.6982	62.6982
231	69.8124	69.8124	69.8124	62.6483	62.6483	62.6483
232	69.8021	69.8021	69.8021	62.5991	62.5991	62.5991
233	69.7931	69.7931	69.7931	62.5503	62.5503	62.5503
234	69.7849	69.7849	69.7849	62.502	62.502	62.502
235	69.777	69.777	69.777	62.4541	62.4541	62.4541
236	69.7694	69.7694	69.7694	62.4066	62.4066	62.4066
237	69.762	69.762	69.762	62.3594	62.3594	62.3594
238	73.072	87.9526	89.4061	62.391	62.391	62.391
239	74.9934	87.7221	89.7113	62.4217	62.4217	62.4217
240	76.1423	86.6475	89.2869	62.4518	62.4518	62.4518
241	76.8752	86.5835	89.9025	62.4814	62.4814	62.4814
242	77.3783	86.2948	90.2943	62.5107	62.5107	62.5107
243	77.7408	86.0038	90.6385	62.5146	62.5146	62.5146
244	78.0132	85.6218	90.8896	62.4856	62.4856	62.4856
245	78.25	85.3027	91.128	62.4409	62.4409	62.4409
246	78.4719	85.0029	91.3589	62.3886	62.3886	62.3886
247	78.6683	84.6329	91.5588	62.3327	62.3327	62.3327
248	78.8345	84.1946	91.7278	62.2748	62.2748	62.2748
249	78.9911	83.8533	91.813	62.2162	62.2162	62.2162
250	79.1629	83.7976	91.7243	62.1579	62.1579	62.1579
251	79.3513	83.7748	91.6929	62.1003	62.1003	62.1003
252	79.7512	84.312	92.7958	62.0481	62.0481	62.0481
253	80.2751	84.9719	94.0162	62.0012	62.0012	62.0012
254	80.4626	84.7274	93.4849	61.9504	61.9504	61.9504
255	80.3624	84.0764	92.348	61.8938	61.8938	61.8938
256	80.1795	83.4953	91.4239	61.8333	61.8333	61.8333
257	80.1134	83.3211	91.1797	61.7729	61.7729	61.7729
258	80.1099	83.2133	91.0044	61.7124	61.7124	61.7124
259	80.1528	83.1861	90.9322	61.6523	61.6523	61.6523
260	80.2367	83.2396	90.9666	61.593	61.593	61.593
261	80.3426	83.3158	91.0241	61.5343	61.5343	61.5343
262	80.3769	83.1774	90.7505	61.4745	61.4745	61.4745
263	80.2024	82.5452	89.751	61.4101	61.4101	61.4101
264	79.9046	81.7966	88.6406	61.3413	61.3413	61.3413





265	79.5361	80.9929	87.4872	61.2682	61.2682	61.2682
266	79.2891	80.6681	87.0531	61.1946	61.1946	61.1946
267	79.1083	80.4105	86.689	61.1206	61.1206	61.1206
268	78.9613	80.1885	86.3633	61.0461	61.0461	61.0461
269	78.8169	79.9465	85.975	60.971	60.971	60.971
270	78.6573	79.686	85.5053	60.8949	60.8949	60.8949
271	78.4867	79.3738	85.0304	60.8179	60.8179	60.8179
272	78.3074	79.0811	84.5525	60.74	60.74	60.74
273	78.1733	78.9025	84.3225	60.6624	60.6624	60.6624
274	78.0906	78.813	84.2495	60.5856	60.5856	60.5856
275	78.0361	78.7518	84.2045	60.5096	60.5096	60.5096
276	77.9972	78.7063	84.1748	60.4345	60.4345	60.4345
277	77.9662	78.6694	84.1503	60.3601	60.3601	60.3601
278	77.9375	78.6367	84.12	60.2864	60.2864	60.2864
279	77.9101	78.6056	84.0911	60.2135	60.2135	60.2135
280	77.8834	78.5755	84.0631	60.1413	60.1413	60.1413
281	77.0538	77.518	80.2779	60.0537	60.0537	60.0537
282	77.7989	90.0969	80.2694	65.5921	65.5921	86.1689
283	78.1279	90.0536	80.5397	68.5531	68.5531	88.7271
284	78.4827	90.0148	82.0209	70.0868	70.0868	89.4622
285	78.8183	90.0696	83.2594	70.8524	70.8524	89.3149
286	79.3352	90.8106	85.1792	71.2163	71.2163	88.7525
287	77.9961	80.1704	81.2647	68.3443	68.3443	74.2167
288	77.1518	78.1794	80.6	65.5591	65.5591	65.5591
289	76.6396	77.6875	80.088	64.1047	64.1047	64.1047
290	76.3084	77.3363	79.7568	63.3193	63.3193	63.3193
291	76.0756	77.1036	79.524	62.8706	62.8706	62.8706
292	75.8966	76.9245	79.345	62.5914	62.5914	62.5914
293	75.9226	77.02	79.9886	62.4013	62.4013	62.4013
294	75.9113	77.027	80.0379	62.2549	62.2549	62.2549
295	75.8812	77.0152	80.0682	62.1312	62.1312	62.1312
296	75.842	76.9943	80.0895	62.0195	62.0195	62.0195
297	75.7991	76.9697	80.1071	61.9145	61.9145	61.9145
298	75.6543	76.7356	79.8671	61.8114	61.8114	61.8114
299	75.5339	76.6152	79.5497	61.7107	61.7107	61.7107
300	75.4271	76.5083	79.4398	61.6115	61.6115	61.6115
301	75.3278	76.4091	79.3406	61.5135	61.5135	61.5135
302	75.233	76.3143	79.2458	61.4166	61.4166	61.4166
303	75.1409	76.2222	79.1537	61.3207	61.3207	61.3207
304	75.0506	76.1318	79.0633	61.2257	61.2257	61.2257
305	74.9615	76.0427	78.9742	61.1315	61.1315	61.1315
306	74.8734	75.9546	78.8861	61.0382	61.0382	61.0382
307	74.786	75.8673	78.7988	60.9457	60.9457	60.9457
308	74.6994	75.7807	78.7122	60.8541	60.8541	60.8541
309	74.6135	75.6947	78.6263	60.7633	60.7633	60.7633
310	74.5282	75.6095	78.541	60.6733	60.6733	60.6733
311	74.4436	75.5248	78.4563	60.5842	60.5842	60.5842
312	74.3595	75.4408	78.3723	60.4958	60.4958	60.4958
313	74.2608	75.3349	78.2204	60.4079	60.4079	60.4079
314	74.161	75.2321	78.0932	60.3207	60.3207	60.3207
315	74.1517	75.297	78.3762	60.2358	60.2358	60.2358
316	74.1128	75.2582	78.3373	60.1516	60.1516	60.1516
317	74.0582	75.2036	78.2827	60.0682	60.0682	60.0682
318	74.0018	75.1541	78.2491	59.9856	59.9856	59.9856
319	73.9557	75.1263	78.2636	59.9041	59.9041	59.9041





320	73.8154	74.8966	77.8281	59.8218	59.8218	59.8218
321	73.7034	74.7847	77.7162	59.7403	59.7403	59.7403
322	73.6071	74.6884	77.6198	59.6595	59.6595	59.6595
323	73.5196	74.6008	77.5323	59.5794	59.5794	59.5794
324	73.437	74.5183	77.4498	59.5	59.5	59.5
325	73.3574	74.4387	77.3702	59.4214	59.4214	59.4214
326	73.2797	74.3609	77.2925	59.3434	59.3434	59.3434
327	73.2032	74.2845	77.216	59.2661	59.2661	59.2661
328	73.1277	74.2089	77.1404	59.1896	59.1896	59.1896
329	73.0529	74.1341	77.0656	59.1137	59.1137	59.1137
330	72.9787	74.06	76.9915	59.0384	59.0384	59.0384
331	72.9052	73.9864	76.9179	58.9639	58.9639	58.9639
332	72.8322	73.9134	76.8449	58.89	58.89	58.89
333	72.7597	73.841	76.7725	58.8168	58.8168	58.8168
334	72.6878	73.7691	76.7008	58.7442	58.7442	58.7442
335	72.6164	73.6977	76.6292	58.6722	58.6722	58.6722
336	72.4288	73.487	76.0327	58.599	58.599	58.599
337	72.2476	73.276	75.7044	58.5257	58.5257	58.5257
338	72.069	73.0677	75.3821	58.4523	58.4523	58.4523
339	71.8909	72.9003	75.0644	58.379	58.379	58.379
340	72.0127	73.1206	76.1138	58.3106	58.3106	58.3106
341	73.5782	75.9584	83.1942	58.268	58.268	58.268
342	74.2817	76.2884	83.2245	58.2225	58.2225	58.2225
343	74.509	76.1468	82.787	58.1743	58.1743	58.1743
344	74.4334	75.7707	81.9158	58.1228	58.1228	58.1228
345	75.1531	86.7609	81.3975	62.6704	62.6704	80.0408
346	75.834	87.5648	83.1209	64.9417	64.9417	81.4128
347	76.0399	87.0078	82.8038	66.0434	66.0434	81.5992
348	76.098	86.3441	82.9792	66.5304	66.5304	81.126
349	76.393	87.1539	83.7848	66.7007	66.7007	80.3395
350	76.622	87.4125	84.1371	66.8839	66.8839	79.3287
351	76.7314	87.2011	84.4499	66.5532	66.5532	78.1898
352	76.9227	87.2317	85.4995	66.3597	66.3597	77.0085
353	77.2251	87.8558	86.8052	66.1334	66.1334	75.8336
354	77.5125	88.3945	87.5146	65.8549	65.8549	74.5153
355	77.7736	88.8496	88.4042	65.5395	65.5395	73.1636
356	77.681	87.553	87.8134	64.8823	64.8823	70.1497
357	76.8536	82.3917	83.7781	63.3367	63.3367	63.3367
358	76.1603	83.4199	84.6335	62.5368	62.5368	62.5368
359	74.161	74.161	74.161	62.094	62.094	62.094
360	73.0467	73.0467	73.0467	61.8501	61.8501	61.8501
361	72.424	72.424	72.424	61.7089	61.7089	61.7089
362	72.0745	72.0745	72.0745	61.6209	61.6209	61.6209
363	71.8769	71.8769	71.8769	61.5604	61.5604	61.5604
364	71.7636	71.7636	71.7636	61.5142	61.5142	61.5142
365	71.6972	71.6972	71.6972	61.4754	61.4754	61.4754
366	71.6568	71.6568	71.6568	61.4405	61.4405	61.4405
367	71.6309	71.6309	71.6309	61.4077	61.4077	61.4077
368	71.6131	71.6131	71.6131	61.3761	61.3761	61.3761
369	71.5997	71.5997	71.5997	61.3452	61.3452	61.3452
370	71.5888	71.5888	71.5888	61.3147	61.3147	61.3147
371	71.5792	71.5792	71.5792	61.2845	61.2845	61.2845
372	71.5705	71.5705	71.5705	61.2544	61.2544	61.2544
373	71.5622	71.5622	71.5622	61.2246	61.2246	61.2246
374	71.5541	71.5541	71.5541	61.195	61.195	61.195

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375	71.5461	71.5461	71.5461	61.1655	61.1655	61.1655
376	74.8692	91.2884	92.346	61.1859	61.1859	61.1859
377	76.7981	91.0553	92.6586	61.2058	61.2058	61.2058
378	77.9512	89.9995	92.1805	61.2254	61.2254	61.2254
379	78.6772	88.9488	91.7874	61.2447	61.2447	61.2447
380	79.1759	88.6538	92.1728	61.2637	61.2637	61.2637
381	79.5304	88.2468	92.4324	61.2596	61.2596	61.2596
382	79.7964	87.8695	92.6898	61.2258	61.2258	61.2258
383	80.0105	87.4334	92.8833	61.1771	61.1771	61.1771
384	80.2136	87.1129	93.0937	61.1217	61.1217	61.1217
385	80.4107	86.787	93.2983	61.0633	61.0633	61.0633
386	80.5783	86.3658	93.4696	61.0035	61.0035	61.0035
387	80.7224	85.9056	93.6166	60.9431	60.9431	60.9431
388	80.8694	85.6849	93.6149	60.8828	60.8828	60.8828
389	81.0299	85.598	93.5151	60.8231	60.8231	60.8231
390	81.2682	85.732	93.8164	60.7651	60.7651	60.7651
391	81.6919	86.2927	94.9413	60.7108	60.7108	60.7108
392	82.1839	86.8628	95.9854	60.6596	60.6596	60.6596
393	82.2404	86.3398	94.9516	60.6046	60.6046	60.6046
394	82.0651	85.6264	93.7636	60.5462	60.5462	60.5462
395	81.9038	85.188	93.0977	60.4866	60.4866	60.4866
396	81.844	85.0238	92.8643	60.4273	60.4273	60.4273
397	81.8385	84.9173	92.8925	60.3682	60.3682	60.3682
398	81.8815	84.9083	92.8503	60.3097	60.3097	60.3097
399	81.9598	84.9573	92.8811	60.2519	60.2519	60.2519
400	82.0566	85.026	92.732	60.1947	60.1947	60.1947
401	82.0618	84.8282	92.374	60.1388	60.1388	60.1388
402	81.8859	84.234	91.4442	60.0764	60.0764	60.0764
403	81.8052	83.5461	90.4294	60.0136	60.0136	60.0136
404	81.2612	82.8051	89.3698	59.9484	59.9484	59.9484
405	80.9989	82.4043	88.826	59.8828	59.8828	59.8828
406	80.8112	82.1486	88.4758	59.8171	59.8171	59.8171
407	80.662	81.9324	88.1689	59.7514	59.7514	59.7514
408	80.5325	81.7375	87.8816	59.6856	59.6856	59.6856
409	80.3931	81.5009	87.4955	59.6196	59.6196	59.6196
410	80.2402	81.2426	87.0718	59.5533	59.5533	59.5533
411	80.0777	80.9764	86.8435	59.4867	59.4867	59.4867
412	79.9075	80.7046	86.2127	59.4197	59.4197	59.4197
413	79.7569	80.4883	85.9029	59.3529	59.3529	59.3529
414	79.6596	80.3847	85.8146	59.2867	59.2867	59.2867
415	79.5915	80.3104	85.7554	59.2212	59.2212	59.2212
416	79.5397	80.2524	85.7123	59.1564	59.1564	59.1564
417	79.497	80.2037	85.6781	59.0923	59.0923	59.0923
418	79.458	80.1598	85.6416	59.0288	59.0288	59.0288
419	79.42	80.1178	85.602	58.9659	58.9659	58.9659
420	79.383	80.0787	85.5833	58.9036	58.9036	58.9036
421	79.3466	80.0383	85.5253	58.8419	58.8419	58.8419
422	79.3106	79.9987	85.4879	58.7808	58.7808	58.7808
423	79.2742	79.9576	85.4481	58.7202	58.7202	58.7202
424	79.236	79.918	85.401	58.6603	58.6603	58.6603
425	79.1971	79.8779	85.355	58.6008	58.6008	58.6008
426	79.1581	79.838	85.3105	58.542	58.542	58.542
427	79.1193	79.7986	85.2679	58.4836	58.4836	58.4836
428	79.0808	79.7597	85.2269	58.4258	58.4258	58.4258
429	79.0426	79.7211	85.1864	58.3685	58.3685	58.3685

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011805



430	79.0048	79.6829	85.1482	58.3118	58.3118	58.3118
431	78.9672	79.6449	85.1063	58.2556	58.2556	58.2556
432	78.9298	79.6072	85.0667	58.1999	58.1999	58.1999
433	78.8927	79.5698	85.0273	58.1447	58.1447	58.1447
434	78.8559	79.5326	84.9883	58.09	58.09	58.09
435	78.8193	79.4956	84.9495	58.0358	58.0358	58.0358
436	78.7829	79.4589	84.911	57.9821	57.9821	57.9821
437	78.7467	79.4222	84.8719	57.9289	57.9289	57.9289
438	78.7103	79.385	84.8301	57.8762	57.8762	57.8762
439	78.6738	79.3471	84.7854	57.824	57.824	57.824
440	77.2444	77.8632	78.2689	57.7545	57.7545	57.7545
441	76.676	78.1291	78.4533	59.0834	59.0834	59.0834
442	76.3755	78.6501	78.0554	60.3498	60.3498	60.3498
443	76.2093	79.005	77.8787	61.3643	61.3643	61.3643
444	78.056	78.8691	77.7255	61.9863	61.9863	61.9863
445	75.9103	78.7408	77.5799	62.4105	62.4105	62.4105
446	75.7689	78.6139	77.4386	62.7334	62.7334	62.7334
447	75.6286	78.4736	77.2982	62.9972	62.9972	62.9972
448	75.4892	78.3342	77.1589	63.2304	63.2304	63.2304
449	75.3509	78.1959	77.0205	63.4472	63.4472	63.4472
450	75.1889	77.8459	76.8579	63.5558	63.5558	63.5558
451	74.9788	77.1643	76.6618	63.4301	63.4301	63.4301
452	75.4343	81.9718	77.3589	65.4205	65.4205	65.4205
453	76.5308	88.7038	79.0968	68.3537	68.3537	68.3537
454	77.1289	89.4054	79.6509	70.1536	70.1536	70.1536
455	77.4462	89.7596	79.9228	71.36	71.36	71.36
456	77.5577	89.5398	79.9786	72.1504	72.1504	72.1504
457	77.7397	89.3555	80.9971	72.6225	72.6225	72.6225
458	78.004	89.3148	82.2615	72.868	72.868	72.868
459	78.3273	89.5721	83.4749	72.9711	72.9711	72.9711
460	79.0915	91.0516	86.4006	72.991	72.991	72.991
461	79.4011	90.7526	86.3793	72.9458	72.9458	72.9458
462	79.4569	90.0702	86.2795	72.8414	72.8414	72.8414
463	79.5557	89.9677	86.6815	72.6895	72.6895	72.6895
464	79.8717	90.8579	87.4651	72.5009	72.5009	72.5009
465	79.9432	90.5454	87.3826	72.2599	72.2599	72.2599
466	80.0624	90.43	88.2063	71.9881	71.9881	71.9881
467	80.2842	90.7516	89.2567	71.6959	71.6959	71.6959
468	80.5643	91.3283	90.2703	71.3769	71.3769	71.3769
469	80.8134	91.8076	91.1074	71.0127	71.0127	71.0127
470	81.0412	92.1966	91.9986	70.627	70.627	70.627
471	80.367	88.0793	88.921	69.3866	69.3866	69.3866
472	79.5445	86.1146	87.4065	68.1437	68.1437	68.1437
473	79.1625	87.0916	88.2292	67.4998	67.4998	67.4998
474	77.2137	77.2137	77.2137	67.1437	67.1437	67.1437
475	76.127	76.127	76.127	66.9474	66.9474	66.9474
476	75.5193	75.5193	75.5193	66.8335	66.8335	66.8335
477	75.1778	75.1778	75.1778	66.7623	66.7623	66.7623
478	74.9842	74.9842	74.9842	66.7131	66.7131	66.7131
479	74.8728	74.8728	74.8728	66.6753	66.6753	66.6753
480	74.8071	74.8071	74.8071	66.6435	66.6435	66.6435
481	74.7667	74.7667	74.7667	66.6148	66.6148	66.6148
482	74.7405	74.7405	74.7405	66.5878	66.5878	66.5878
483	74.7221	74.7221	74.7221	66.5617	66.5617	66.5617
484	74.708	74.708	74.708	66.5361	66.5361	66.5361

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485	74.6964	74.6964	74.6964	66.5107	66.5107	66.5107
486	74.6861	74.6861	74.6861	66.4856	66.4856	66.4856
487	74.6765	74.6765	74.6765	66.4606	66.4606	66.4606
488	74.6674	74.6674	74.6674	66.4358	66.4358	66.4358
489	74.6585	74.6585	74.6585	66.411	66.411	66.411
490	74.6497	74.6497	74.6497	66.3863	66.3863	66.3863
491	77.9582	93.3098	94.5905	66.3697	66.3697	66.3697
492	79.8814	93.0736	94.9458	66.4128	66.4128	66.4128
493	81.0295	91.7594	94.2532	66.4256	66.4256	66.4256
494	81.781	91.64	94.8134	66.4383	66.4383	66.4383
495	82.2612	91.3437	95.1963	66.4508	66.4508	66.4508
496	82.6124	91.0089	95.507	66.4271	66.4271	66.4271
497	82.8644	90.6121	95.744	66.3569	66.3569	66.3569
498	83.0707	90.2356	95.9471	66.264	66.264	66.264
499	83.2605	89.9042	96.1485	66.1604	66.1604	66.1604
500	83.4304	89.5246	96.3202	66.052	66.052	66.052
501	83.5869	89.0566	96.4596	65.9415	65.9415	65.9415
502	83.6858	88.5987	96.5636	65.8304	65.8304	65.8304
503	83.8217	88.5051	96.4389	65.7198	65.7198	65.7198
504	83.9688	88.423	96.3238	65.61	65.61	65.61
505	84.2905	88.8216	97.1832	65.5033	65.5033	65.5033
506	84.7546	89.4212	98.341	65.3999	65.3999	65.3999
507	85.0115	89.4104	98.2862	65.2967	65.2967	65.2967
508	84.938	88.7863	97.1764	65.1914	65.1914	65.1914
509	84.6959	88.0429	95.9916	65.0843	65.0843	65.0843
510	84.5846	87.8275	95.7088	64.9779	64.9779	64.9779
511	84.544	87.6881	95.5056	64.8723	64.8723	64.8723
512	84.5413	87.5919	95.3489	64.7676	64.7676	64.7676
513	84.5846	87.6053	95.3434	64.6639	64.6639	64.6639
514	84.6537	87.648	95.3696	64.5613	64.5613	64.5613
515	84.7364	87.7055	95.4113	64.4598	64.4598	64.4598
516	84.7515	87.6676	95.1533	64.3586	64.3586	64.3586
517	84.599	87.0442	94.3321	64.2562	64.2562	64.2562
518	84.3505	86.4359	93.4351	64.1528	64.1528	64.1528
519	84.0452	85.7815	92.5007	64.0484	64.0484	64.0484
520	83.7294	85.1783	91.66	63.9433	63.9433	63.9433
521	83.512	84.9013	91.3005	63.8388	63.8388	63.8388
522	83.3488	84.678	90.9968	63.7348	63.7348	63.7348
523	83.2087	84.4833	90.7237	63.6314	63.6314	63.6314
524	83.0842	84.3036	90.4676	63.5285	63.5285	63.5285
525	82.9564	84.1053	90.1642	63.4261	63.4261	63.4261
526	82.814	83.8739	89.7935	63.3241	63.3241	63.3241
527	82.6616	83.6343	89.4171	63.2224	63.2224	63.2224
528	82.502	83.389	89.0377	63.121	63.121	63.121
529	82.3366	83.1394	88.6565	63.0201	63.0201	63.0201
530	82.1757	82.9086	88.3197	62.9196	62.9196	62.9196
531	82.064	82.7917	88.2154	62.8201	62.8201	62.8201
532	81.8794	82.7019	88.1381	62.7215	62.7215	62.7215
533	81.9098	82.6272	88.0757	62.6239	62.6239	62.6239
534	81.8487	82.5611	88.0216	62.5273	62.5273	62.5273
535	81.7925	82.5	87.9723	62.4316	62.4316	62.4316
536	81.7386	82.4418	87.9227	62.3368	62.3368	62.3368
537	82.1448	94.4508	84.6304	67.8534	67.8534	67.8534
538	82.2961	94.3307	84.7256	70.8238	70.8238	70.8238
539	82.4471	94.1112	85.5425	72.4037	72.4037	72.4037

*[Handwritten signature]*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011337



540	82.6943	94.029	86.8775	73.2022	73.2022	92.0164
541	82.9441	94.1152	87.869	73.5774	73.5774	91.4942
542	83.6543	95.5462	90.7571	73.7285	73.7285	90.7434
543	83.9927	95.4144	91.028	73.746	73.746	89.8525
544	84.0374	94.7153	90.8493	73.6717	73.6717	88.8407
545	84.082	94.432	91.1359	73.5313	73.5313	87.7409
546	84.3897	95.4084	91.9936	73.3471	73.3471	86.5993
547	84.443	95.0796	91.8993	73.1064	73.1064	85.3414
548	84.5184	94.9046	92.5847	72.8309	72.8309	84.068
549	84.6952	95.1339	93.5956	72.5327	72.5327	82.7993
550	84.8449	95.6857	94.5984	72.2099	72.2099	81.5027
551	85.1632	96.1403	95.4004	71.8402	71.8402	80.074
552	85.3602	96.5012	96.258	71.4484	71.4484	78.6621
553	84.7559	92.8619	93.5976	70.2973	70.2973	73.3597
554	83.8693	90.3174	91.6231	68.9881	68.9881	68.9881
555	83.451	91.2581	92.4095	68.3098	68.3098	68.3098
556	81.4838	81.4836	81.4836	67.939	67.939	67.939
557	80.386	80.386	80.386	67.7363	67.7363	67.7363
558	79.7718	79.7718	79.7718	67.6206	67.6206	67.6206
559	79.4262	79.4262	79.4262	67.5496	67.5496	67.5496
560	79.2299	79.2299	79.2299	67.502	67.502	67.502
561	79.1164	79.1164	79.1164	67.4663	67.4663	67.4663
562	79.049	79.049	79.049	67.4368	67.4368	67.4368
563	79.0073	79.0073	79.0073	67.4106	67.4106	67.4106
564	78.9798	78.9798	78.9798	67.3862	67.3862	67.3862
565	78.9601	78.9601	78.9601	67.3626	67.3626	67.3626
566	78.9449	78.9449	78.9449	67.3395	67.3395	67.3395
567	78.9321	78.9321	78.9321	67.3168	67.3168	67.3168
568	78.9207	78.9207	78.9207	67.2942	67.2942	67.2942
569	78.91	78.91	78.91	67.2718	67.2718	67.2718
570	78.8998	78.8998	78.8998	67.2494	67.2494	67.2494
571	78.8898	78.8898	78.8898	67.2271	67.2271	67.2271
572	78.8799	78.8799	78.8799	67.2049	67.2049	67.2049
573	82.1934	97.7416	99.0191	67.2154	67.2154	67.2154
574	84.1158	97.5021	99.3253	67.2256	67.2256	67.2256
575	86.2624	96.2325	98.6657	67.2355	67.2355	67.2355
576	86.9915	96.944	99.0569	67.2453	67.2453	67.2453
577	88.4893	95.6434	99.435	67.255	67.255	67.255
578	86.8312	95.2881	99.7272	67.227	67.227	67.227
579	87.0644	94.8703	99.9454	67.1506	67.1506	67.1506
580	87.2453	94.4572	100.121	67.0504	67.0504	67.0504
581	87.4068	94.0954	100.29	66.9391	66.9391	66.9391
582	87.5514	93.6999	100.441	66.8228	66.8228	66.8228
583	87.6808	93.2047	100.553	66.7044	66.7044	66.7044
584	87.7506	92.6942	100.648	66.5854	66.5854	66.5854
585	87.8559	92.5598	100.497	66.467	66.467	66.467
586	87.9712	92.4478	100.352	66.3494	66.3494	66.3494
587	88.2473	92.7664	101.079	66.2344	66.2344	66.2344
588	88.6727	93.3281	102.201	66.1226	66.1226	66.1226
589	88.9504	93.4207	102.359	66.0117	66.0117	66.0117
590	88.8868	92.824	101.293	65.8992	65.8992	65.8992
591	88.6438	92.0884	100.123	65.7854	65.7854	65.7854
592	88.4781	91.7476	99.6461	65.672	65.672	65.672
593	88.3966	91.5709	99.4078	65.5596	65.5596	65.5596
594	88.3606	91.4445	99.223	65.4481	65.4481	65.4481

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011838

ALSTOM

595	88.3637	91.395	99.1397	65.3376	65.3376	65.3376
596	88.3986	91.4033	99.1314	65.2283	65.2283	65.2283
597	88.4506	91.4297	99.1417	65.1201	65.1201	65.1201
598	88.5117	91.466	99.1624	65.013	65.013	65.013
599	88.3654	90.9279	98.3101	64.9051	64.9051	64.9051
600	88.086	90.2407	97.2955	64.7962	64.7962	64.7962
601	87.7184	89.4575	96.1787	64.6863	64.6863	64.6863
602	87.3449	88.7788	95.2399	64.5758	64.5758	64.5758
603	86.8521	86.6055	89.1446	64.4547	64.4547	64.4547
604	85.0541	87.2841	88.2407	65.8541	65.8541	72.3182
605	84.566	87.0436	87.7267	66.7514	66.7514	73.8468
606	84.257	87.0097	87.4236	67.4054	67.4054	75.1227
607	83.1876	83.4849	83.9278	65.9408	65.9408	65.9408
608	83.472	84.2749	87.8574	65.151	65.151	65.151
609	84.7761	95.932	89.5133	69.5086	69.5086	87.5709
610	84.2169	87.263	87.6068	69.0381	69.0381	77.0493
611	83.3465	86.8926	87.2365	68.8578	68.8578	76.6691
612	83.5512	86.4195	86.9163	68.7346	68.7346	76.4029
613	83.2784	85.8605	86.6036	68.5801	68.5801	75.6961
614	83.0262	85.3551	86.3454	68.4001	68.4001	74.955
615	82.7164	84.4104	85.9091	67.9376	67.9376	72.8666
616	81.8205	82.3242	82.7698	66.9045	66.9045	68.3701
617	81.5017	82.2729	83.4796	66.0035	66.0035	66.0035
618	81.437	82.3531	84.1872	65.488	65.488	65.488
619	81.3835	82.2528	84.3933	65.1664	65.1664	65.1664
620	81.2948	82.1558	84.3749	64.9428	64.9428	64.9428
621	81.2169	82.0651	84.4769	64.7692	64.7692	64.7692
622	81.1003	81.9486	84.3603	64.6211	64.6211	64.6211
623	80.9632	81.8114	84.2233	64.4863	64.4863	64.4863
624	80.8157	81.6638	84.0757	64.3588	64.3588	64.3588
625	80.6629	81.5111	83.923	64.2354	64.2354	64.2354
626	80.5078	81.356	83.7679	64.1147	64.1147	64.1147
627	80.352	81.2002	83.6121	63.9959	63.9959	63.9959
628	80.1964	81.0445	83.4564	63.8785	63.8785	63.8785
629	80.0413	80.8895	83.3013	63.7624	63.7624	63.7624
630	79.887	80.7352	83.1471	63.6474	63.6474	63.6474
631	79.6771	80.5419	82.7247	63.5329	63.5329	63.5329
632	79.4813	80.3503	82.4934	63.4195	63.4195	63.4195
633	79.2931	80.1663	82.2699	63.3069	63.3069	63.3069
634	79.1091	79.9864	82.0504	63.1953	63.1953	63.1953
635	79.5206	80.5684	84.5527	63.0899	63.0899	63.0899
636	80.4915	81.9468	88.4377	62.9924	62.9924	62.9924
637	80.9765	82.3704	88.776	62.8954	62.8954	62.8954
638	80.3524	84.6418	83.6906	65.3933	65.3933	75.9682
639	81.3527	92.7606	86.993	68.8297	68.8297	86.4503
640	80.6224	84.4059	84.2893	68.1755	68.1755	76.7322
641	79.5845	80.6913	82.6791	65.8562	65.8562	65.8562
642	79.1089	80.1152	82.1137	64.6347	64.6347	64.6347
643	78.7486	79.7519	81.8329	63.9653	63.9653	63.9653
644	78.5099	79.519	81.68	63.5738	63.5738	63.5738
645	78.3389	79.3538	81.5948	63.3227	63.3227	63.3227
646	78.3775	79.4502	82.3242	63.144	63.144	63.144
647	78.3895	79.4972	82.4897	63.0018	63.0018	63.0018
648	78.3907	79.5459	82.6477	62.8786	62.8786	62.8786
649	78.3894	79.5925	82.8068	62.7656	62.7656	62.7656



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011300



650	78.3905	79.642	82.9723	62.6584	62.8584	62.6584
651	78.2931	79.4855	82.6739	62.5539	62.5539	62.5539
652	78.2178	79.433	82.6764	62.4516	62.4516	62.4516
653	78.1341	79.3493	82.5927	62.3509	62.3509	62.3509
654	78.0461	79.2614	82.5048	62.2513	62.2513	62.2513
655	77.9562	79.1715	82.4149	62.1527	62.1527	62.1527
656	77.8656	79.0808	82.3242	62.0552	62.0552	62.0552
657	77.7748	78.99	82.2334	61.9585	61.9585	61.9585
658	77.6842	78.8995	82.1428	61.8628	61.8628	61.8628
659	77.5826	78.7859	82.0005	61.7678	61.7678	61.7678
660	77.4454	78.6058	81.7188	61.6734	61.6734	61.6734
661	77.2876	78.4051	81.4202	61.5795	61.5795	61.5795
662	77.022	78.0641	80.8829	61.4852	61.4852	61.4852
663	76.7731	77.8026	80.2451	61.3914	61.3914	61.3914
664	76.5321	77.5491	79.82	61.298	61.298	61.298
665	76.2942	77.2992	79.4029	61.2051	61.2051	61.2051
666	76.0616	77.0709	79.003	61.1125	61.1125	61.1125
667	77.7429	80.1516	87.4103	61.0365	61.0365	61.0365
668	78.489	80.5112	87.4597	60.9595	60.9595	60.9595
669	78.7179	80.3585	86.9971	60.8816	60.8816	60.8816
670	78.739	80.1637	86.6121	60.8034	60.8034	60.8034
671	78.7138	80.0726	86.4297	60.7256	60.7256	60.7256
672	78.662	79.9566	86.2247	60.6481	60.6481	60.6481
673	78.5945	79.8265	86.0079	60.571	60.571	60.571
674	78.5096	79.6676	85.7406	60.4943	60.4943	60.4943
675	78.3975	79.4545	85.3696	60.4177	60.4177	60.4177
676	78.2681	79.2262	84.9863	60.3412	60.3412	60.3412
677	78.1272	78.9882	84.5962	60.265	60.265	60.265
678	77.9778	78.7434	84.2022	60.189	60.189	60.189
679	77.8654	78.5952	84.0138	60.1135	60.1135	60.1135
680	77.7947	78.5186	83.9515	60.0388	60.0388	60.0388
681	77.7469	78.4649	83.912	59.9648	59.9648	59.9648
682	77.7118	78.4241	83.8851	59.8916	59.8916	59.8916
683	77.6839	78.3904	83.8651	59.8191	59.8191	59.8191
684	77.6586	78.3606	83.8422	59.7472	59.7472	59.7472
685	78.0411	90.1479	80.4822	65.2131	65.2131	85.581
686	78.2707	90.0186	81.085	68.0945	68.0945	87.9415
687	78.5969	89.982	82.6246	69.5715	69.5715	88.5977
688	78.8741	90.049	83.5515	70.3073	70.3073	88.4475
689	79.5126	91.2197	86.0573	70.6557	70.6557	87.9017
690	80.0274	91.6512	87.2272	70.7908	70.7908	87.1357
691	80.1475	91.0154	86.928	70.795	70.795	86.2174
692	80.1486	90.318	87.0551	70.7078	70.7078	85.17
693	80.4483	91.3035	87.9183	70.5659	70.5659	84.0714
694	80.8097	91.3471	88.1035	70.3663	70.3663	82.8696
695	80.6994	91.1403	88.5379	70.123	70.123	81.6217
696	80.8772	91.2309	89.5658	69.8516	69.8516	80.3686
697	81.1604	91.8358	90.6522	69.5623	69.5623	79.1306
698	81.412	92.3268	91.4952	69.2252	69.2252	77.7384
699	81.6403	92.7387	92.3831	68.8593	68.8593	76.3418
700	81.3613	90.8239	91.0483	68.0115	68.0115	72.518
701	80.3763	86.4289	87.7795	68.5375	68.5375	68.5375
702	79.9042	87.3527	88.5449	65.7746	65.7746	65.7746
703	77.9132	77.9132	77.9132	65.3646	65.3646	65.3646
704	76.803	76.803	76.803	65.1441	65.1441	65.1441

2583



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011830

ALSTOM

705	76.1821	76.1821	76.1821	65.0216	65.0216	65.0216
706	75.8333	75.8333	75.8333	64.9496	64.9496	64.9496
707	75.6355	75.6355	75.6355	64.9037	64.9037	64.9037
708	75.5217	75.5217	75.5217	64.8714	64.8714	64.8714
709	75.4546	75.4546	75.4546	64.846	64.846	64.846
710	75.4134	75.4134	75.4134	64.8243	64.8243	64.8243
711	75.3866	75.3866	75.3866	64.8045	64.8045	64.8045
712	75.3678	75.3678	75.3678	64.7857	64.7857	64.7857
713	75.3534	75.3534	75.3534	64.7674	64.7674	64.7674
714	75.3415	75.3415	75.3415	64.7494	64.7494	64.7494
715	75.331	75.331	75.331	64.7316	64.7316	64.7316
716	75.3213	75.3213	75.3213	64.7139	64.7139	64.7139
717	75.312	75.312	75.312	64.6962	64.6962	64.6962
718	75.3029	75.3029	75.3029	64.6787	64.6787	64.6787
719	75.294	75.294	75.294	64.6611	64.6611	64.6611
720	78.6134	94.7321	95.8655	64.6696	64.6696	64.6696
721	80.5397	94.4964	96.1757	64.6779	64.6779	64.6779
722	81.6903	93.3665	95.6214	64.686	64.686	64.686
723	82.4168	92.5777	95.5107	64.694	64.694	64.694
724	82.9143	92.2784	95.8909	64.7019	64.7019	64.7019
725	83.2623	91.8886	96.1623	64.678	64.678	64.678
726	83.5107	91.4877	96.3956	64.6133	64.6133	64.6133
727	83.7071	91.0571	96.5808	64.5285	64.5285	64.5285
728	83.8885	90.7151	96.7697	64.4344	64.4344	64.4344
729	84.0619	90.3656	96.9506	64.3361	64.3361	64.3361
730	84.2004	89.9038	97.0921	64.236	64.236	64.236
731	84.3167	89.4159	97.2112	64.1355	64.1355	64.1355
732	84.4408	89.2047	97.1501	64.0354	64.0354	64.0354
733	84.5774	89.1139	97.0264	63.936	63.936	63.936
734	84.8204	89.3033	97.4666	63.8384	63.8384	63.8384
735	85.2366	89.8563	98.5829	63.7433	63.7433	63.7433
736	85.6406	90.2363	99.2857	63.6499	63.6499	63.6499
737	85.6387	89.6611	98.2048	63.5552	63.5552	63.5552
738	85.4396	88.9644	97.0892	63.4594	63.4594	63.4594
739	85.273	88.5589	96.4697	63.3638	63.3638	63.3638
740	85.2019	88.3937	96.242	63.269	63.269	63.269
741	85.1822	88.284	96.0741	63.175	63.175	63.175
742	85.1996	88.2371	95.9859	63.0818	63.0818	63.0818
743	85.2521	88.2645	95.9975	62.9896	62.9896	62.9896
744	85.3239	88.3109	96.0279	62.8983	62.8983	62.8983
745	85.4058	88.3683	96.07	62.808	62.808	62.808
746	84.5232	86.4555	91.7214	62.7114	62.7114	62.7114
747	82.8889	83.8952	88.0171	62.6071	62.6071	62.6071
748	81.9274	82.9336	85.0555	62.5037	62.5037	62.5037
749	81.3312	82.3374	84.4593	62.4013	62.4013	62.4013
750	80.9337	81.9399	84.0618	62.2997	62.2997	62.2997
751	80.5672	81.5812	83.4037	62.1986	62.1986	62.1986
752	80.2637	81.3058	82.9788	62.0981	62.0981	62.0981
753	79.8557	80.7278	81.955	61.9972	61.9972	61.9972
754	79.9914	79.0477	79.1271	61.8932	61.8932	61.8932
755	78.6759	79.1271	79.7635	61.792	61.792	61.792
756	80.7558	83.1191	90.3414	61.7092	61.7092	61.7092
757	81.666	83.5695	90.4228	61.6253	61.6253	61.6253
758	81.936	83.3922	89.8857	61.5405	61.5405	61.5405
759	82.0217	83.3957	89.7739	61.4561	61.4561	61.4561



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011331

ALSTOM

760	82.0059	83.2963	89.5586	61.372	61.372	61.372
761	81.9313	83.1379	89.284	61.2883	61.2883	61.2883
762	81.7983	82.8797	88.833	61.2048	61.2048	61.2048
763	81.6268	82.5778	88.3267	61.1215	61.1215	61.1215
764	81.4338	82.2604	87.8147	61.0383	61.0383	61.0383
765	81.247	81.9792	87.3921	60.9555	60.9555	60.9555
766	81.1261	81.8509	87.2814	60.8735	60.8735	60.8735
767	81.041	81.7589	87.2061	60.7923	60.7923	60.7923
768	80.9756	81.687	87.15	60.7119	60.7119	60.7119
769	80.921	81.6262	87.1042	60.6323	60.6323	60.6323
770	80.8703	81.571	87.0534	60.5534	60.5534	60.5534
771	80.8216	81.5181	87.003	60.4753	60.4753	60.4753
772	80.7741	81.4665	86.9539	60.398	60.398	60.398
773	80.7276	81.416	86.9058	60.3214	60.3214	60.3214
774	80.6818	81.3662	86.8585	60.2455	60.2455	60.2455
775	80.634	81.3159	86.7992	60.1703	60.1703	60.1703
776	80.5846	81.2645	86.7368	60.0958	60.0958	60.0958
777	80.5345	81.2123	86.6738	60.022	60.022	60.022
778	80.4841	81.1599	86.6108	59.9489	59.9489	59.9489
779	80.4337	81.1075	86.548	59.8765	59.8765	59.8765
780	79.1538	79.7824	80.6996	59.7959	59.7959	59.7959
781	78.3711	79	79.9171	59.716	59.716	59.716
782	77.8592	78.488	79.4052	59.6368	59.6368	59.6368
783	77.4961	78.1193	79.0503	59.5582	59.5582	59.5582
784	77.213	77.8361	78.7672	59.4804	59.4804	59.4804
785	76.9723	77.6011	78.5183	59.4032	59.4032	59.4032
786	76.757	77.3846	78.3047	59.3267	59.3267	59.3267
787	76.5556	77.1839	78.1023	59.2508	59.2508	59.2508
788	76.3657	76.9824	77.9291	59.1756	59.1756	59.1756
789	77.9029	90.0169	80.4892	64.6839	64.6839	85.1669
790	78.7391	90.9701	81.2857	67.7862	67.7862	88.3543
791	79.1828	91.4771	81.6827	69.6586	69.6586	90.2505
792	79.3835	91.5361	81.832	70.8465	70.8465	91.2635
793	79.4739	91.273	82.1164	71.5931	71.5931	91.5519
794	79.7266	91.1534	83.6178	71.9955	71.9955	91.1411
795	79.9682	91.1727	84.5537	72.1889	72.1889	90.4543
796	80.5158	92.1219	86.7551	72.2597	72.2597	89.6322
797	81.0881	92.8207	88.3764	72.2514	72.2514	88.7246
798	81.218	92.1876	87.9816	72.1809	72.1809	87.739
799	81.2161	91.4659	88.098	72.0523	72.0523	86.6501
800	81.464	92.2223	88.8544	71.8841	71.8841	85.5248
801	81.651	92.4423	89.1665	71.6895	71.6895	84.3166
802	81.7206	92.1908	89.4371	71.4125	71.4125	83.0513
803	81.8739	92.1822	90.4458	71.1278	71.1278	81.7788
804	82.1395	92.7685	91.5177	70.8275	70.8275	80.5298
805	82.3912	93.2726	92.3919	70.4839	70.4839	79.1467
806	82.6169	93.8925	93.246	70.108	70.108	77.7345
807	82.492	92.3742	92.6318	69.3983	69.3983	74.6784
808	81.4368	87.1697	88.5566	67.8183	67.8183	67.8183
809	80.9273	88.1841	89.398	67.0006	67.0006	67.0006
810	78.919	78.919	78.919	66.564	66.564	66.564
811	77.7989	77.7989	77.7989	66.3307	66.3307	66.3307
812	77.1725	77.1725	77.1725	66.2023	66.2023	66.2023
813	76.8204	76.8204	76.8204	66.1281	66.1281	66.1281
814	76.6207	76.6207	76.6207	66.0819	66.0819	66.0819

*Handwritten signature*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011832

815	76.5057	76.5057	76.5057	66.0502	66.0502	66.0502
816	76.4378	76.4378	76.4378	66.0259	66.0259	66.0259
817	76.3961	76.3961	76.3961	66.0055	66.0055	66.0055
818	76.3688	76.3688	76.3688	65.9872	65.9872	65.9872
819	76.3497	76.3497	76.3497	65.9699	65.9699	65.9699
820	76.335	76.335	76.335	65.9532	65.9532	65.9532
821	76.3229	76.3229	76.3229	65.9368	65.9368	65.9368
822	76.3121	76.3121	76.3121	65.9205	65.9205	65.9205
823	76.3021	76.3021	76.3021	65.9044	65.9044	65.9044
824	76.2925	76.2925	76.2925	65.8883	65.8883	65.8883
825	76.2832	76.2832	76.2832	65.8723	65.8723	65.8723
826	76.274	76.274	76.274	65.8563	65.8563	65.8563
827	79.5959	96.0201	97.0764	65.8629	65.8629	65.8629
828	81.5235	96.7858	97.3879	65.8694	65.8694	65.8694
829	82.6754	94.73	96.8894	65.8758	65.8758	65.8758
830	83.4001	93.6736	96.5106	65.882	65.882	65.882
831	83.8965	93.3732	96.8897	65.8882	65.8882	65.8882
832	84.2419	92.9598	97.144	65.8595	65.8595	65.8595
833	84.4857	92.5545	97.3727	65.7861	65.7861	65.7861
834	84.6741	92.0982	97.5468	65.8907	65.8907	65.8907
835	84.8479	91.7485	97.7281	65.585	65.585	65.585
836	85.0142	91.3923	97.9025	65.4747	65.4747	65.4747
837	85.15	90.9389	98.0413	65.3626	65.3626	65.3626
838	85.2627	90.4503	98.1588	65.25	65.25	65.25
839	85.3769	90.1729	98.1231	65.1378	65.1378	65.1378
840	85.5051	90.0737	97.9908	65.0265	65.0265	65.0265
841	85.7106	90.1741	98.2571	64.9168	64.9168	64.9168
842	86.1021	90.7025	99.3498	64.8092	64.8092	64.8092
843	86.5631	91.2428	100.365	64.704	64.704	64.704
844	86.5871	90.685	99.2953	64.5978	64.5978	64.5978
845	86.3782	89.9343	98.0569	64.4908	64.4908	64.4908
846	86.1866	89.4689	97.3774	64.3841	64.3841	64.3841
847	86.0962	89.2733	97.1122	64.2782	64.2782	64.2782
848	86.06	89.1354	96.9085	64.1732	64.1732	64.1732
849	86.0736	89.0991	96.8404	64.0693	64.0693	64.0693
850	86.1221	89.1183	96.8411	63.9664	63.9664	63.9664
851	86.1894	89.1571	96.8621	63.8645	63.8645	63.8645
852	86.1488	88.8852	96.407	63.763	63.763	63.763
853	86.9264	88.2308	95.4058	63.6609	63.6609	63.6609
854	86.5982	87.4808	94.3173	63.5583	63.5583	63.5583
855	86.2068	86.6796	93.1872	63.4553	63.4553	63.4553
856	84.9306	86.3209	92.7217	63.353	63.353	63.353
857	84.7202	86.0404	92.3439	63.2512	63.2512	63.2512
858	84.5443	85.796	92.0046	63.1502	63.1502	63.1502
859	84.3837	85.5653	91.6754	63.0497	63.0497	63.0497
860	84.2063	85.2778	91.2154	62.9498	62.9498	62.9498
861	84.0173	84.9807	90.7491	62.8503	62.8503	62.8503
862	83.8196	84.677	90.2794	62.7513	62.7513	62.7513
863	83.615	84.3684	89.8079	62.6528	62.6528	62.6528
864	83.483	84.1914	89.6133	62.5552	62.5552	62.5552
865	83.353	84.0749	89.5125	62.4585	62.4585	62.4585
866	83.2663	83.9818	89.4348	62.3628	62.3628	62.3628
867	83.1925	83.9018	89.37	62.2679	62.2679	62.2679
868	83.1257	83.8292	89.3099	62.1741	62.1741	62.1741
869	83.0808	83.76	89.2433	62.0811	62.0811	62.0811

*Handwritten signature*





ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011833



870	82.9972	83.6923	89.1751	61.9889	61.9889	61.9889
871	82.9346	83.6256	89.1139	61.8977	61.8977	61.8977
872	82.8729	83.5599	89.0506	61.8073	61.8073	61.8073
873	82.8113	83.4947	88.9853	61.7178	61.7178	61.7178
874	82.7474	83.4286	88.9081	61.6291	61.6291	61.6291
875	82.6824	83.3615	88.8301	61.5413	61.5413	61.5413
876	82.6169	83.294	88.7519	61.4542	61.4542	61.4542
877	82.5514	83.2265	88.6738	61.368	61.368	61.368
878	82.486	83.1591	88.596	61.2826	61.2826	61.2826
879	81.1915	81.8203	82.7375	61.1901	61.1901	61.1901
880	80.3946	81.0234	81.9406	61.0984	61.0984	61.0984
881	79.8882	80.497	81.4142	61.0076	61.0076	61.0076
882	79.4892	80.115	81.0352	60.9175	60.9175	60.9175
883	79.1908	79.8196	80.7368	60.8282	60.8282	60.8282
884	78.9368	79.5656	80.4828	60.7397	60.7397	60.7397
885	78.7117	79.3254	80.2796	60.6521	60.6521	60.6521
886	79.7942	89.2556	82.0321	65.4081	65.4061	83.5689
887	80.7822	92.9878	83.3374	68.8112	68.8112	89.3608
888	81.3036	93.5909	83.8123	70.8354	70.8354	91.4278
889	81.5499	93.769	84.0092	72.1163	72.1163	92.8045
890	81.6057	93.4767	84.0085	72.9318	72.9318	93.0473
891	81.8293	93.3296	85.4743	73.3667	73.3667	92.6726
892	82.069	93.3157	86.5245	73.5781	73.5781	92.021
893	82.5114	93.9729	88.314	73.6544	73.6544	91.2077
894	83.1772	95.0653	90.5921	73.6464	73.6464	90.3031
895	83.3348	94.4528	90.123	73.5748	73.5748	89.3235
896	83.3332	93.7285	90.192	73.4438	73.4436	88.2355
897	83.5001	94.1198	90.7766	73.2694	73.2694	87.1034
898	83.718	94.5881	91.2647	73.0523	73.0523	85.9055
899	83.754	94.2681	91.2959	72.7881	72.7881	84.6273
900	83.8757	94.1804	92.2813	72.4956	72.4956	83.3433
901	84.1084	94.8734	93.3244	72.1864	72.1864	82.0804
902	84.3644	95.188	94.2372	71.84	71.84	80.7168
903	84.5713	95.8143	95.0863	71.4561	71.4561	79.2864
904	84.6621	95.4302	95.4494	70.9493	70.9493	77.3355
905	83.6633	90.0474	91.2466	69.4204	69.4204	70.3332
906	82.9809	89.9627	91.2079	68.4046	68.4046	68.4046
907	82.6764	91.0172	92.1081	67.8781	67.8781	67.8781
908	80.7635	80.7635	80.7635	67.593	67.593	67.593
909	79.6963	79.6963	79.6963	67.4383	67.4383	67.4383
910	79.099	79.099	79.099	67.3511	67.3511	67.3511
911	78.7629	78.7629	78.7629	67.2988	67.2988	67.2988
912	78.5719	78.5719	78.5719	67.2641	67.2641	67.2641
913	78.4615	78.4615	78.4615	67.2389	67.2389	67.2389
914	78.3959	78.3959	78.3959	67.2185	67.2185	67.2185
915	78.3552	78.3552	78.3552	67.2006	67.2006	67.2006
916	78.3283	78.3283	78.3283	67.184	67.184	67.184
917	78.3092	78.3092	78.3092	67.168	67.168	67.168
918	78.2943	78.2943	78.2943	67.1525	67.1525	67.1525
919	78.2817	78.2817	78.2817	67.1371	67.1371	67.1371
920	78.2705	78.2705	78.2705	67.1219	67.1219	67.1219
921	78.2601	78.2601	78.2601	67.1067	67.1067	67.1067
922	78.25	78.25	78.25	67.0916	67.0916	67.0916
923	78.2402	78.2402	78.2402	67.0765	67.0765	67.0765
924	78.2305	78.2305	78.2305	67.0615	67.0615	67.0615

*[Handwritten signature]*

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011834

925	81.5311	96.2297	97.6822	87.0666	67.0666	67.0666
926	83.4516	95.9887	98.0263	87.0716	67.0716	67.0716
927	84.6003	95.0354	97.7353	87.0764	67.0764	67.0764
928	85.3328	94.9732	98.3532	87.0812	67.0812	67.0812
929	85.8054	94.6593	98.7186	87.0483	67.0483	67.0483
930	86.1109	94.3109	99.001	86.9668	66.9668	66.9668
931	86.3268	93.878	99.2019	86.8616	66.8616	66.8616
932	86.5085	93.519	99.3913	86.7452	66.7452	66.7452
933	86.6723	93.1567	99.5597	86.6239	66.6239	66.6239
934	86.8076	92.7187	99.6984	86.5006	66.5006	66.5006
935	86.9141	92.2207	99.8076	86.3768	66.3768	66.3768
936	87.0144	91.8564	99.8132	86.2535	66.2535	66.2535
937	87.1295	91.745	99.669	86.131	66.131	66.131
938	87.2747	91.707	99.6618	86.0098	66.0098	66.0098
939	87.6177	92.1821	100.681	85.8909	65.8909	65.8909
940	88.073	92.7658	101.794	85.7744	65.7744	65.7744
941	88.2369	92.5636	101.376	85.6581	65.6581	65.6581
942	88.1362	91.9804	100.387	85.5415	65.5415	65.5415
943	87.9158	91.3492	99.3736	85.4247	65.4247	65.4247
944	87.7747	91.0617	98.9715	85.3088	65.3088	65.3088
945	87.7148	90.9287	98.7913	85.1939	65.1939	65.1939
946	87.6894	90.8476	98.6877	85.08	65.08	65.08
947	87.7089	90.7983	98.5804	84.9671	64.9671	64.9671
948	87.7356	90.7792	98.5317	84.8553	64.8553	64.8553
949	87.7834	90.8114	98.5542	84.7447	64.7447	64.7447
950	87.8423	90.8563	98.5902	84.6351	64.6351	64.6351
951	87.9072	90.9076	98.633	84.5266	64.5266	64.5266
952	87.975	90.9624	98.6796	84.4193	64.4193	64.4193
953	88.0443	91.0191	98.7284	84.313	64.313	64.313
954	88.1142	91.0768	98.7785	84.2077	64.2077	64.2077
955	88.1599	91.069	98.7292	84.1034	64.1034	64.1034
956	88.1186	90.8437	98.358	83.9995	63.9995	63.9995
957	86.9946	88.7274	93.1509	83.8901	63.8901	63.8901
958	86.3486	88.0813	92.5049	83.7818	63.7818	63.7818
959	85.9609	87.6937	92.1172	83.6744	63.6744	63.6744
960	85.7137	87.4464	91.87	83.5681	63.5681	63.5681
961	85.5429	87.2756	91.6992	83.4627	63.4627	63.4627
962	85.4138	87.1465	91.5701	83.3584	63.3584	63.3584
963	85.3075	87.0403	91.4639	83.255	63.255	63.255
964	85.1544	86.8238	91.1053	83.1523	63.1523	63.1523
965	84.89	86.6142	90.7947	83.0502	63.0502	63.0502
966	84.7339	86.2222	90.118	82.9484	62.9484	62.9484
967	84.4324	85.801	89.413	82.8469	62.8469	62.8469
968	84.1082	85.3657	88.7105	82.7457	62.7457	62.7457
969	83.8685	85.1168	88.4436	82.6454	62.6454	62.6454
970	83.5946	84.7585	87.8803	82.5456	62.5456	62.5456
971	83.3046	84.3838	87.3097	82.4462	62.4462	62.4462
972	83.0045	84.054	86.7442	82.3472	62.3472	62.3472
973	82.6973	83.727	86.1734	82.2488	62.2488	62.2488
974	82.3136	83.3222	85.2694	82.1504	62.1504	62.1504
975	81.9783	83.0031	84.7517	82.0526	62.0526	62.0526
976	81.7135	82.7383	84.4869	81.9557	61.9557	61.9557
977	81.4875	82.5123	84.2609	81.8597	61.8597	61.8597
978	81.2831	82.308	84.0565	81.7645	61.7645	61.7645
979	81.0911	82.116	83.8645	81.6702	61.6702	61.6702

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011035

980	80.9064	81.9313	83.6798	61.5768	61.5768	61.5768
981	80.7282	81.7511	83.4996	61.4842	61.4842	61.4842
982	80.549	81.5739	83.3224	61.3924	61.3924	61.3924
983	80.3741	81.3989	83.1475	61.3014	61.3014	61.3014
984	80.2009	81.2257	82.9743	61.2113	61.2113	61.2113
985	80.0292	81.0541	82.8026	61.1219	61.1219	61.1219
986	79.7033	80.6078	81.8837	61.0325	61.0325	61.0325
987	79.3087	80.0184	81.0195	60.9431	60.9431	60.9431
988	78.8701	79.3851	80.1114	60.8538	60.8538	60.8538
989	78.4013	78.7214	79.173	60.7645	60.7645	60.7645
990	77.9095	78.0348	78.2116	60.6752	60.6752	60.6752
991	80.1651	82.6399	89.9517	60.6016	60.6016	60.6016
992	81.1927	83.24	90.2087	60.5274	60.5274	60.5274
993	81.5488	83.1819	89.8182	60.4527	60.4527	60.4527
994	81.6277	83.0469	89.4876	60.378	60.378	60.378
995	81.6211	82.9705	89.3148	60.3038	60.3038	60.3038
996	81.5671	82.8491	89.0997	60.23	60.23	60.23
997	81.4884	82.7033	88.8637	60.1566	60.1566	60.1566
998	81.3762	82.5055	88.5336	60.0836	60.0836	60.0836
999	81.2384	82.2647	88.1314	60.011	60.011	60.011
1000	81.0841	82.0103	87.7206	59.9386	59.9386	59.9386
1001	80.9199	81.7502	87.3103	59.8666	59.8666	59.8666
1002	80.7487	81.4854	86.899	59.7949	59.7949	59.7949
1003	80.6346	81.3627	86.7855	59.7239	59.7239	59.7239
1004	80.554	81.2781	86.7132	59.6536	59.6536	59.6536
1005	80.4918	81.2081	86.6593	59.5839	59.5839	59.5839
1006	80.815	92.8611	83.2998	64.952	64.952	86.0136
1007	81.1879	92.8604	84.9259	67.6864	67.6864	86.9317
1008	81.5025	92.7326	86.0091	69.0645	69.0645	87.4375
1009	82.0259	93.5451	88.0026	69.7406	69.7406	87.2218
1010	82.6741	94.4972	90.0381	70.0469	70.0469	86.6298
1011	82.8248	93.8818	89.5739	70.1468	70.1468	85.8216
1012	82.8296	93.1669	89.6981	70.1147	70.1147	84.8292
1013	83.0312	93.7082	90.3531	70.0042	70.0042	83.7812
1014	83.2368	94.0746	90.7709	69.8309	69.8309	82.6015
1015	83.2852	93.7806	90.8967	69.6031	69.6031	81.3624
1016	83.4155	93.7035	91.8907	69.3417	69.3417	80.1095
1017	83.6602	94.2511	92.9409	69.0623	69.0623	78.8798
1018	83.9067	94.7586	93.8365	68.7416	68.7416	77.5329
1019	84.1251	95.1812	94.6736	68.3846	68.3846	76.1348
1020	84.1278	94.5425	94.6568	67.8202	67.8202	73.7652
1021	83.0778	89.1086	90.4029	66.2702	66.2702	66.7419
1022	82.4541	89.5455	90.7782	65.3495	65.3495	65.3495
1023	82.1824	90.6327	91.7112	64.8724	64.8724	64.8724
1024	80.2859	80.2859	80.2859	64.6145	64.6145	64.6145
1025	79.2279	79.2279	79.2279	64.475	64.475	64.475
1026	78.6359	78.6359	78.6359	64.3965	64.3965	64.3965
1027	78.3027	78.3027	78.3027	64.3495	64.3495	64.3495
1028	78.1133	78.1133	78.1133	64.3189	64.3189	64.3189
1029	78.0039	78.0039	78.0039	64.2966	64.2966	64.2966
1030	77.9389	77.9389	77.9389	64.2788	64.2788	64.2788
1031	77.8986	77.8986	77.8986	64.2632	64.2632	64.2632
1032	77.872	77.872	77.872	64.2487	64.2487	64.2487
1033	77.853	77.853	77.853	64.2349	64.2349	64.2349
1034	77.8383	77.8383	77.8383	64.2214	64.2214	64.2214

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*Handwritten mark*



**ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS**

INVERTER TEMPERAT-EBRCL13.xls

**ALSTOM**

00011836

1035	77.8259	77.8259	77.8259	64.2081	64.2081	64.2081
1036	77.8148	77.8148	77.8148	64.1949	64.1949	64.1949
1037	77.8045	77.8045	77.8045	64.1818	64.1818	64.1818
1038	77.7946	77.7946	77.7946	64.1687	64.1687	64.1687
1039	77.7849	77.7849	77.7849	64.1557	64.1557	64.1557
1040	77.7753	77.7753	77.7753	64.1426	64.1426	64.1426
1041	81.08	95.6048	97.1406	64.1475	64.1475	64.1475
1042	82.9974	95.3603	97.4418	64.1522	64.1522	64.1522
1043	84.1453	94.5156	97.2701	64.1569	64.1569	64.1569
1044	84.8767	94.4502	97.8841	64.1615	64.1615	64.1615
1045	85.3506	94.1521	98.2605	64.1358	64.1358	64.1358
1046	85.6582	93.8058	98.547	64.0712	64.0712	64.0712
1047	85.8767	93.3756	98.7505	63.9876	63.9876	63.9876
1048	86.0612	93.0254	98.9405	63.8951	63.8951	63.8951
1049	86.229	92.8701	99.1157	63.7985	63.7985	63.7985
1050	86.366	92.2284	99.2578	63.7004	63.7004	63.7004
1051	86.4744	91.7323	99.3682	63.6019	63.6019	63.6019
1052	86.5796	91.4032	99.3574	63.5037	63.5037	63.5037
1053	86.6988	91.295	99.2162	63.4063	63.4063	63.4063
1054	86.8699	91.3167	99.3309	63.31	63.31	63.31
1055	87.2376	91.8215	100.401	63.2157	63.2157	63.2157
1056	87.7215	92.4412	101.58	63.1235	63.1235	63.1235
1057	87.7779	91.9469	100.62	63.0307	63.0307	63.0307
1058	87.5844	91.2107	99.4052	62.9374	62.9374	62.9374
1059	87.3664	90.6856	98.5833	62.8441	62.8441	62.8441
1060	87.2584	90.4526	98.3024	62.7516	62.7516	62.7516
1061	87.2097	90.3039	98.0891	62.6599	62.6599	62.6599
1062	87.2071	90.2398	97.9856	62.5691	62.5691	62.5691
1063	87.2427	90.2485	97.9773	62.4792	62.4792	62.4792
1064	87.2986	90.2808	97.9949	62.3902	62.3902	62.3902
1065	87.3651	90.3256	98.0261	62.3021	62.3021	62.3021
1066	87.324	90.0695	97.5985	62.2143	62.2143	62.2143
1067	87.1725	89.6261	96.9208	62.1265	62.1265	62.1265
1068	86.9664	89.1538	96.2349	62.0389	62.0389	62.0389
1069	86.7208	88.638	95.5024	61.9514	61.9514	61.9514
1070	86.4444	88.0896	94.7356	61.864	61.864	61.864
1071	86.1785	87.6223	94.0972	61.7768	61.7768	61.7768
1072	85.9848	87.376	93.7781	61.6903	61.6903	61.6903
1073	85.8257	87.1809	93.4853	61.6044	61.6044	61.6044
1074	85.6808	86.9565	93.1984	61.5191	61.5191	61.5191
1075	85.5388	86.7514	92.906	61.4343	61.4343	61.4343
1076	85.3783	86.492	92.4991	61.3501	61.3501	61.3501
1077	84.7645	85.5722	90.0233	61.264	61.264	61.264
1078	83.7522	85.4573	86.364	62.3627	62.3627	67.4984
1079	83.1186	84.824	85.7307	62.9434	62.9434	68.0792
1080	82.6917	84.3968	85.3035	63.2637	63.2637	68.3994
1081	82.3664	84.0436	84.9463	63.4325	63.4325	68.4822
1082	81.9132	83.1804	83.8625	63.2577	63.2577	67.073
1083	81.3807	82.2379	82.6993	62.8922	62.8922	65.4731
1084	80.9967	81.87	82.34	62.7104	62.7104	65.3398
1085	80.5955	81.2755	81.6416	62.4756	62.4756	64.5232
1086	80.1621	80.6095	80.8503	62.1783	62.1783	63.5254
1087	79.6129	79.6262	79.6413	61.6897	61.6897	61.6897
1088	80.3359	81.0335	84.5376	61.404	61.404	61.404
1089	81.2927	82.1663	87.7943	61.2209	61.2209	61.2209

*Handwritten signature in blue ink.*

*Handwritten mark in red ink.*



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011837

1090	81.721	82.4942	87.9649	61.0878	61.0878	61.0878
1091	81.9026	82.6325	88.0508	60.9802	60.9802	60.9802
1092	81.9772	82.7007	88.1346	60.886	60.886	60.886
1093	81.9943	82.7114	88.1607	60.7988	60.7988	60.7988
1094	81.9806	82.6915	88.1558	60.7155	60.7155	60.7155
1095	81.9506	82.6553	88.1346	60.6346	60.6346	60.6346
1096	81.9095	82.6098	88.0925	60.5553	60.5553	60.5553
1097	81.8625	82.5587	88.0438	60.4771	60.4771	60.4771
1098	81.8128	82.5046	87.9923	60.3998	60.3998	60.3998
1099	82.2289	94.5144	84.7398	65.9319	65.9319	86.5243
1100	82.4202	94.6654	84.8838	68.9902	68.9902	89.5063
1101	81.0633	83.092	82.9707	66.8253	66.8253	73.5619
1102	79.8161	80.2358	80.6438	64.1986	64.1986	64.1986
1103	79.0357	79.4555	79.8834	62.8319	62.8319	62.8319
1104	78.5093	78.929	79.337	62.0986	62.0986	62.0986
1105	78.3984	79.15	80.1708	61.6853	61.6853	61.6853
1106	78.2558	78.8906	80.0521	61.4325	61.4325	61.4325
1107	78.0977	78.8184	79.9197	61.2607	61.2607	61.2607
1108	77.932	78.6387	79.7796	61.1301	61.1301	61.1301
1109	77.743	78.4978	79.5115	61.0204	61.0204	61.0204
1110	77.5562	78.311	79.3247	60.9217	60.9217	60.9217
1111	77.3727	78.1201	79.1505	60.8289	60.8289	60.8289
1112	77.1859	77.9543	78.9378	60.7394	60.7394	60.7394
1113	76.5454	90.4714	80.9572	66.1308	66.1308	86.3051
1114	79.4354	90.9997	82.8656	68.901	68.901	88.3468
1115	80.0612	91.3415	84.4125	70.298	70.298	88.8829
1116	80.647	92.0019	86.1272	70.9781	70.9781	88.665
1117	81.5095	93.5047	89.0116	71.2824	71.2824	88.0655
1118	81.7787	92.9964	88.8512	71.378	71.378	87.2487
1119	81.826	92.3159	88.6691	71.3427	71.3427	86.2609
1120	81.9768	92.5094	89.1817	71.2254	71.2254	85.181
1121	82.2413	93.1571	89.8069	71.0484	71.0484	84.0267
1122	82.2812	92.8184	89.7183	70.8129	70.8129	82.7724
1123	82.4095	92.7384	90.7114	70.5449	70.5449	81.5114
1124	82.6416	93.1665	91.7611	70.2582	70.2582	80.2637
1125	82.903	93.7083	92.7157	69.9331	69.9331	78.9372
1126	83.1336	94.1572	93.5489	69.5687	69.5687	77.5234
1127	83.3442	94.529	94.4228	69.1811	69.1811	76.1172
1128	82.4477	89.3584	90.4159	67.7547	67.7547	69.3249
1129	81.6953	88.5139	89.7775	66.6471	66.6471	66.6471
1130	81.352	89.5295	90.6389	66.0736	66.0736	66.0736
1131	79.4203	79.4203	79.4203	65.7667	65.7667	65.7667
1132	78.3429	78.3429	78.3429	65.6021	65.6021	65.6021
1133	77.7401	77.7401	77.7401	65.5111	65.5111	65.5111
1134	77.4011	77.4011	77.4011	65.458	65.458	65.458
1135	77.2086	77.2086	77.2086	65.4245	65.4245	65.4245
1136	77.0976	77.0976	77.0976	65.4012	65.4012	65.4012
1137	77.0318	77.0318	77.0318	65.3831	65.3831	65.3831
1138	76.9911	76.9911	76.9911	65.3677	65.3677	65.3677
1139	76.9644	76.9644	76.9644	65.3537	65.3537	65.3537
1140	76.9455	76.9455	76.9455	65.3404	65.3404	65.3404
1141	76.9309	76.9309	76.9309	65.3275	65.3275	65.3275
1142	76.9187	76.9187	76.9187	65.3149	65.3149	65.3149
1143	76.9079	76.9079	76.9079	65.3023	65.3023	65.3023
1144	76.8977	76.8977	76.8977	65.2899	65.2899	65.2899

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011338

ALSTOM

1145	76.888	76.888	76.888	65.2774	65.2774	65.2774
1146	76.8785	76.8785	76.8785	65.265	65.265	65.265
1147	76.8692	76.8692	76.8692	65.2527	65.2527	65.2527
1148	80.178	95.1368	96.5831	65.2565	65.2565	65.2565
1149	82.0979	94.8947	96.8667	65.2603	65.2603	65.2603
1150	83.2447	93.775	98.393	65.2639	65.2639	65.2639
1151	83.9764	93.7123	97.0106	65.2676	65.2676	65.2676
1152	84.4773	93.4187	97.3969	65.2712	65.2712	65.2712
1153	84.8234	93.1013	97.7153	65.2415	65.2415	65.2415
1154	85.0654	92.6945	97.9422	65.1693	65.1693	65.1693
1155	85.262	92.3312	98.1398	65.0762	65.0762	65.0762
1156	85.4393	91.9868	98.3261	64.9733	64.9733	64.9733
1157	85.5896	91.5733	98.48	64.8659	64.8659	64.8659
1158	85.7089	91.0906	98.6038	64.7568	64.7568	64.7568
1159	85.8161	90.6855	98.6463	64.6473	64.6473	64.6473
1160	85.9388	90.5811	98.509	64.5383	64.5383	64.5383
1161	86.0703	90.4884	98.3848	64.4301	64.4301	64.4301
1162	86.4154	90.9699	99.4282	64.3238	64.3238	64.3238
1163	86.8851	91.5745	100.588	64.2195	64.2195	64.2195
1164	87.0537	91.3577	100.15	64.1155	64.1155	64.1155
1165	86.9271	90.6883	99.0017	64.0111	64.0111	64.0111
1166	86.6885	90.0183	97.9558	63.9067	63.9067	63.9067
1167	86.5729	89.801	97.6728	63.8031	63.8031	63.8031
1168	86.5237	89.6553	97.4647	63.7005	63.7005	63.7005
1169	86.5124	89.5573	97.3106	63.5988	63.5988	63.5988
1170	86.5455	89.5635	97.3	63.4981	63.4981	63.4981
1171	86.6025	89.5948	97.3151	63.3984	63.3984	63.3984
1172	86.6722	89.6398	97.3446	63.2998	63.2998	63.2998
1173	86.6606	89.4518	97.0175	63.2017	63.2017	63.2017
1174	86.4851	88.9027	96.1886	63.1036	63.1036	63.1036
1175	86.2166	88.2735	95.2499	63.0055	63.0055	63.0055
1176	85.8905	87.5929	94.2848	62.9075	62.9075	62.9075
1177	85.5687	87.0095	93.4804	62.8098	62.8098	62.8098
1178	85.3399	86.7187	93.1034	62.7128	62.7128	62.7128
1179	85.1587	86.4748	92.7728	62.6165	62.6165	62.6165
1180	85.0009	86.2543	92.4653	62.5209	62.5209	62.5209
1181	84.8537	86.0448	92.1694	62.426	62.426	62.426
1182	84.6887	85.7742	91.7369	62.3317	62.3317	62.3317
1183	84.506	85.4912	91.2936	62.238	62.238	62.238
1184	84.3159	85.2005	90.8456	62.1448	62.1448	62.1448
1185	84.1183	84.9044	90.3952	62.0522	62.0522	62.0522
1186	83.9483	84.6772	90.0933	61.9604	61.9604	61.9604
1187	83.8238	84.5483	89.9797	61.8694	61.8694	61.8694
1188	83.7286	84.4467	89.8934	61.7793	61.7793	61.7793
1189	83.6486	84.3605	89.8223	61.69	61.69	61.69
1190	83.5773	84.283	89.7597	61.6017	61.6017	61.6017
1191	83.5091	84.2101	89.6923	61.5141	61.5141	61.5141
1192	83.4425	84.1388	89.6239	61.4274	61.4274	61.4274
1193	83.377	84.0686	89.5565	61.3415	61.3415	61.3415
1194	83.3128	83.9993	89.4902	61.2565	61.2565	61.2565
1195	83.2475	83.9298	89.4151	61.1722	61.1722	61.1722
1196	83.1794	83.8587	89.3281	61.0888	61.0888	61.0888
1197	83.11	83.7861	89.2387	61.0061	61.0061	61.0061
1198	82.3493	82.7793	85.9548	60.9209	60.9209	60.9209
1199	81.6148	84.4241	83.2844	63.0733	63.0733	72.3081

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011000

1200	81.1358	83.9449	82.8051	64.2486	64.2486	73.4834
1201	80.7953	83.6046	82.4649	64.9322	64.9322	74.167
1202	80.5311	83.3403	82.2006	65.3677	65.3677	74.6025
1203	80.3085	83.1178	81.9781	65.6779	65.6779	74.9127
1204	80.1093	82.9185	81.7788	65.9241	65.9241	75.1589
1205	79.9232	82.7324	81.5927	66.1373	66.1373	75.3721
1206	79.7447	82.554	81.4143	66.3331	66.3331	75.5679
1207	79.5711	82.3803	81.2408	66.5193	66.5193	75.7541
1208	79.4005	82.2098	81.07	66.6998	66.6998	75.9346
1209	79.2322	82.0415	80.9017	66.8766	66.8766	76.1114
1210	79.0656	81.8749	80.7351	67.0507	67.0507	76.2855
1211	78.9006	81.7099	80.5701	67.2226	67.2226	76.4575
1212	78.738	81.5583	80.4076	67.3974	67.3974	76.6498
1213	78.5765	81.3966	80.2461	67.5692	67.5692	76.825
1214	78.4159	81.2359	80.0854	67.7379	67.7379	76.9936
1215	78.2571	81.0833	79.9266	67.9074	67.9074	77.1754
1216	78.0893	80.8443	79.7589	68.036	68.036	77.1639
1217	77.9263	80.6802	79.596	68.1779	68.1779	77.3035
1218	77.767	80.522	79.4364	68.327	68.327	77.4555
1219	77.618	80.4371	79.2875	68.5121	68.5121	77.6682
1220	77.4683	80.2958	79.1379	68.6871	68.6871	77.9577
1221	77.3189	80.1548	78.9884	68.8567	68.8567	78.1438
1222	77.1627	79.9515	78.8322	68.9939	68.9939	78.1885
1223	77.0011	79.7262	78.6703	69.1038	69.1038	78.1737
1224	76.8363	79.4971	78.5053	69.1969	69.1969	78.1408
1225	76.6699	79.2664	78.3387	69.2788	69.2788	78.0967
1226	76.5037	79.0408	78.1741	69.3523	69.3523	78.0419
1227	76.3379	78.817	78.0104	69.4188	69.4188	77.9795
1228	76.1764	78.6302	77.8498	69.4981	69.4981	78.0027
1229	76.0208	78.4747	77.6942	69.5973	69.5973	78.1019
1230	75.8689	78.3227	77.5423	69.7058	69.7058	78.2104
1231	75.7195	78.1733	77.3928	69.8185	69.8185	78.3231
1232	75.5718	78.0256	77.2452	69.9327	69.9327	78.4372
1233	75.4256	77.8795	77.099	70.047	70.047	78.5516
1234	75.2808	77.7346	76.9541	70.1609	70.1609	78.6655
1235	75.137	77.5908	76.8104	70.274	70.274	78.7786
1236	74.9944	77.4482	76.6678	70.3861	70.3861	78.8907
1237	74.8528	77.3066	76.5262	70.4973	70.4973	79.0018
1238	74.7123	77.1661	76.3856	70.6073	70.6073	79.1119
1239	74.5727	77.0266	76.2461	70.7164	70.7164	79.2209
1240	74.4342	76.888	76.1076	70.8243	70.8243	79.3289
1241	74.2967	76.7505	75.9701	70.9312	70.9312	79.4358
1242	74.1602	76.614	75.8336	71.0371	71.0371	79.5417
1243	74.0247	76.4786	75.6981	71.1419	71.1419	79.6465
1244	75.3764	87.4956	77.991	74.7805	74.7805	95.2672
1245	76.1213	88.3543	78.6672	76.9032	76.9032	97.4727
1246	76.5273	88.8172	79.0327	78.2439	78.2439	98.8351
1247	76.7334	88.9736	79.1962	79.1561	79.1561	99.6689
1248	76.7942	88.7331	79.2081	79.7708	79.7708	99.9589
1249	76.9566	88.5797	80.1897	80.1358	80.1358	99.71
1250	77.2038	88.5486	81.3563	80.3296	80.3296	99.1865
1251	77.4324	88.5973	82.1407	80.4106	80.4106	98.5087
1252	77.9837	89.6108	84.2867	80.4253	80.4253	97.7714
1253	78.6957	79.8314	80.0512	77.768	77.768	85.0674
1254	78.9592	78.8949	79.3147	78.4453	78.4453	83.7447

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

- 00011900

1255	75.522	78.4577	78.8775	75.7929	75.7929	83.0923
1256	75.2474	78.1831	78.6029	75.4771	75.4771	82.7786
1257	75.0613	77.9971	78.4169	75.3303	75.3303	82.6297
1258	74.8261	77.2641	78.0961	75.0433	75.0433	81.4603
1259	74.6473	77.0376	77.9111	74.8744	74.8744	81.2031
1260	74.4989	76.8415	77.7586	74.7635	74.7635	81.004
1261	74.3677	76.6842	77.6212	74.6803	74.6803	80.8321
1262	74.2496	76.5075	77.5075	74.6096	74.6096	80.6707
1263	74.1758	76.6201	77.4466	74.6593	74.6593	81.0879
1264	74.0955	76.5398	77.3663	74.6823	74.6823	81.1109
1265	74.0118	76.4562	77.2827	74.692	74.692	81.1206
1266	73.9287	76.3711	77.1976	74.695	74.695	81.1236
1267	73.8411	76.2854	77.1119	74.6945	74.6945	81.1232
1268	73.7555	76.1998	77.0263	74.6924	74.6924	81.1211
1269	73.6701	76.1145	76.941	74.6895	74.6895	81.1181
1270	73.5852	76.0296	76.8561	74.6861	74.6861	81.1147
1271	73.5008	75.9452	76.7717	74.6826	74.6826	81.1112
1272	73.417	75.8613	76.6878	74.6789	74.6789	81.1075
1273	73.3337	75.7781	76.6048	74.6752	74.6752	81.1038
1274	73.2511	75.6954	76.5219	74.6714	74.6714	81.1001
1275	73.149	75.4907	76.4065	74.6195	74.6195	80.8584
1276	73.0323	75.2011	76.3008	74.4918	74.4918	80.3434
1277	72.9104	74.9138	76.1979	74.3202	74.3202	79.7824
1278	72.6956	74.3949	75.6827	74.03	74.03	78.7054
1279	72.1492	73.1171	73.8507	73.3892	73.3892	76.0523
1280	71.4026	71.639	71.8183	72.5434	72.5434	73.1942
1281	73.8811	85.8877	81.3307	76.3278	76.3278	93.1991
1282	75.0986	86.4549	82.0807	78.1534	78.1534	94.1828
1283	75.6562	86.2712	82.4786	78.9506	78.9506	94.0357
1284	76.0411	86.4623	83.1545	79.2089	79.2089	93.3198
1285	76.513	87.4837	84.1002	79.1788	79.1788	92.2991
1286	76.676	87.2551	84.1061	78.9739	78.9739	91.0559
1287	76.8693	87.2208	85.078	78.6785	78.6785	89.7521
1288	77.1485	87.6427	86.1913	78.3336	78.3336	88.4318
1289	77.4824	88.2485	87.2256	77.9437	77.9437	87.0371
1290	77.7398	88.7514	88.1056	77.5044	77.5044	85.5353
1291	77.9938	89.1678	89.0285	77.0398	77.0398	84.043
1292	77.2031	84.3671	85.3564	75.5961	75.5961	77.4826
1293	76.4554	83.2016	84.4735	74.3916	74.3916	74.3916
1294	76.1153	84.2227	85.34	73.767	73.767	73.767
1295	74.1872	74.1872	74.1872	73.434	73.434	73.434
1296	73.1124	73.1124	73.1124	73.2557	73.2557	73.2557
1297	72.5117	72.5117	72.5117	73.1571	73.1571	73.1571
1298	72.1744	72.1744	72.1744	73.0998	73.0998	73.0998
1299	71.9835	71.9835	71.9835	73.0638	73.0638	73.0638
1300	71.8739	71.8739	71.8739	73.0388	73.0388	73.0388
1301	71.8096	71.8096	71.8096	73.0194	73.0194	73.0194
1302	71.7703	71.7703	71.7703	73.003	73.003	73.003
1303	71.745	71.745	71.745	72.9881	72.9881	72.9881
1304	71.7275	71.7275	71.7275	72.9741	72.9741	72.9741
1305	71.7143	71.7143	71.7143	72.9604	72.9604	72.9604
1306	71.7035	71.7035	71.7035	72.947	72.947	72.947
1307	71.694	71.694	71.694	72.9336	72.9336	72.9336
1308	71.6852	71.6852	71.6852	72.9204	72.9204	72.9204
1309	71.6769	71.6769	71.6769	72.9072	72.9072	72.9072



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011001



1310	71.6688	71.6688	71.6688	72.894	72.894	72.894
1311	71.6608	71.6608	71.6608	72.8808	72.8808	72.8808
1312	74.9661	90.0483	91.4002	72.8819	72.8819	72.8819
1313	76.8906	89.8304	91.7664	72.8828	72.8828	72.8828
1314	78.0399	88.6306	91.1971	72.8837	72.8837	72.8837
1315	78.7736	88.5791	91.8178	72.8846	72.8846	72.8846
1316	79.2747	88.2904	92.2	72.8854	72.8854	72.8854
1317	79.6321	87.9807	92.5258	72.833	72.833	72.833
1318	79.8973	87.8027	92.7759	72.7123	72.7123	72.7123
1319	80.123	87.2624	93.0047	72.5581	72.5581	72.5581
1320	80.3307	86.945	93.2149	72.3882	72.3882	72.3882
1321	80.5192	86.5853	93.4097	72.2111	72.2111	72.2111
1322	80.6751	86.1372	93.5679	72.0314	72.0314	72.0314
1323	80.8162	85.7202	93.6842	71.8511	71.8511	71.8511
1324	80.9726	85.6457	93.578	71.6715	71.6715	71.6715
1325	81.1383	85.584	93.4634	71.4931	71.4931	71.4931
1326	81.4925	86.0302	94.4189	71.317	71.317	71.317
1327	81.9841	86.6581	95.6082	71.1434	71.1434	71.1434
1328	82.2342	86.5958	95.4387	70.971	70.971	70.971
1329	82.1643	85.9738	94.3297	70.799	70.799	70.799
1330	81.9507	85.2916	93.2362	70.6276	70.6276	70.6276
1331	81.885	85.1062	92.9864	70.4578	70.4578	70.4578
1332	81.8488	84.9984	92.8193	70.2896	70.2896	70.2896
1333	81.8705	84.9353	92.7014	70.1228	70.1228	70.1228
1334	81.9313	84.9593	92.7021	69.9577	69.9577	69.9577
1335	82.0177	85.0233	92.752	69.7942	69.7942	69.7942
1336	82.1177	85.103	92.819	69.6323	69.6323	69.6323
1337	82.2243	85.192	92.8969	69.472	69.472	69.472
1338	82.3176	85.2407	92.9123	69.3132	69.3132	69.3132
1339	82.2947	84.9895	92.4779	69.1554	69.1554	69.1554
1340	82.2158	84.7082	92.0341	68.9987	68.9987	68.9987
1341	82.1075	84.4109	91.5851	68.8431	68.8431	68.8431
1342	81.9745	84.0534	91.1015	68.6885	68.6885	68.6885
1343	81.8241	83.7417	90.6063	68.535	68.535	68.535
1344	81.6617	83.3939	90.1098	68.3826	68.3826	68.3826
1345	81.4863	83.0316	89.5973	68.2312	68.2312	68.2312
1346	81.3374	82.7761	89.2439	68.081	68.081	68.081
1347	81.2314	82.8301	89.0423	67.9321	67.9321	67.9321
1348	81.1454	82.5015	88.8549	67.7846	67.7846	67.7846
1349	81.0673	82.3794	88.6716	67.6383	67.6383	67.6383
1350	80.99	82.2554	88.4831	67.4932	67.4932	67.4932
1351	80.9092	82.1252	88.2844	67.3494	67.3494	67.3494
1352	80.8123	81.9578	88.0114	67.2067	67.2067	67.2067
1353	80.6892	81.7395	87.6439	67.0652	67.0652	67.0652
1354	80.5469	81.4993	87.2503	66.9247	66.9247	66.9247
1355	80.3919	81.2481	86.8487	66.7853	66.7853	66.7853
1356	80.2278	80.9894	86.442	66.6469	66.6469	66.6469
1357	80.1027	80.8323	86.2514	66.5098	66.5098	66.5098
1358	80.0178	80.7414	86.1749	66.374	66.374	66.374
1359	79.9549	80.6728	86.1202	66.2395	66.2395	66.2395
1360	79.9044	80.6166	86.0776	66.1063	66.1063	66.1063
1361	79.8608	80.5675	86.0418	65.9743	65.9743	65.9743
1362	79.8199	80.5221	86.0036	65.8437	65.8437	65.8437
1363	79.7797	80.4781	85.9619	65.7142	65.7142	65.7142
1364	79.74	80.4347	85.9208	65.586	65.586	65.586

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1365	79.7009	80.3919	85.8802	65.459	65.459	65.459
1366	79.6622	80.3496	85.8401	65.3332	65.3332	65.3332
1367	79.6241	80.3078	85.8004	65.2086	65.2086	65.2086
1368	79.5833	80.2649	85.7462	65.0852	65.0852	65.0852
1369	79.541	80.2202	85.6891	64.963	64.963	64.963
1370	79.4978	80.1745	85.6302	64.8418	64.8418	64.8418
1371	79.4541	80.1281	85.5699	64.7219	64.7219	64.7219
1372	78.4027	80.7124	80.0813	66.5584	66.5584	74.7431
1373	77.8134	80.5482	79.4826	67.7795	67.7795	76.8685
1374	77.4327	80.2328	79.1022	68.5001	68.5001	77.7168
1375	77.1161	79.5934	78.7886	68.7605	68.7605	77.3172
1376	76.822	78.8618	78.5175	68.6917	68.6917	76.2421
1377	76.5499	78.1883	78.2942	68.436	68.436	74.9364
1378	76.3044	77.6056	78.1285	68.0747	68.0747	73.5272
1379	75.7242	76.1817	78.4437	67.09	67.09	69.0428
1380	75.5642	76.1761	77.1346	68.1083	68.1083	68.1083
1381	76.2633	82.9909	78.2057	69.4827	69.4827	84.6858
1382	77.4599	89.6483	80.0209	73.0187	73.0187	93.5558
1383	78.1062	90.3889	80.8205	75.0907	75.0907	95.6834
1384	78.437	90.6986	80.9033	76.3887	76.3887	96.9225
1385	78.5497	90.4853	80.9598	77.1934	77.1934	97.3566
1386	78.7775	90.3285	82.2525	77.6221	77.6221	97.0388
1387	79.0368	90.3314	83.3441	77.8393	77.8393	96.4843
1388	77.4884	78.4047	79.7714	73.1858	73.1858	73.1858
1389	76.6407	77.6448	79.1512	70.7691	70.7691	70.7691
1390	76.1161	77.1085	78.6414	69.4767	69.4767	69.4767
1391	75.7673	76.748	78.3075	68.7499	68.7499	68.7499
1392	75.5146	76.4835	78.0695	68.3078	68.3078	68.3078
1393	75.3667	76.1882	78.1938	68.0098	68.0098	68.0098
1394	75.2358	76.0449	78.1098	67.7847	67.7847	67.7847
1395	75.1144	75.9119	78.0316	67.597	67.597	67.597
1396	74.9957	75.7854	77.9418	67.4288	67.4288	67.4288
1397	74.8455	75.664	77.6844	67.2709	67.2709	67.2709
1398	74.7038	75.5222	77.5427	67.119	67.119	67.119
1399	74.5671	75.3855	77.406	66.9707	66.9707	66.9707
1400	74.4336	75.252	77.2724	66.8249	66.8249	66.8249
1401	74.3021	75.1206	77.141	66.681	66.681	66.681
1402	74.1723	74.9908	77.0112	66.5387	66.5387	66.5387
1403	74.0354	74.8629	76.8404	66.3979	66.3979	66.3979
1404	73.9333	74.728	76.6611	66.2585	66.2585	66.2585
1405	73.8218	74.6165	76.7496	66.1205	66.1205	66.1205
1406	73.7303	74.5078	76.7587	65.9839	65.9839	65.9839
1407	73.6456	74.4123	76.7515	65.8486	65.8486	65.8486
1408	73.4816	74.3001	76.3205	65.7143	65.7143	65.7143
1409	74.9777	88.1175	79.7849	70.3676	70.3676	88.362
1410	76.367	88.196	83.2801	72.6567	72.6567	89.7502
1411	77.1589	88.6351	84.2388	73.7348	73.7348	89.9058
1412	77.4602	88.1821	84.2649	74.183	74.183	89.4106
1413	77.6446	87.9588	84.6702	74.2934	74.2934	88.5527
1414	78.0569	89.064	85.6504	74.2232	74.2232	87.5201
1415	78.198	88.8509	85.6574	74.0299	74.0299	86.3061
1416	78.3329	88.7267	86.3675	73.7673	73.7673	85.0409
1417	78.5597	88.9871	87.4321	73.4646	73.4646	83.7643
1418	78.8596	89.5924	88.4932	73.1298	73.1298	82.4588
1419	79.125	90.0941	89.3423	72.7441	72.7441	81.0141

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011303



1420	79.3874	90.5028	90.2426	72.3335	72.3335	79.5821
1421	78.8456	87.1013	87.7968	71.2032	71.2032	74.4526
1422	77.977	84.3787	85.6897	69.8619	69.8619	69.8619
1423	77.5694	85.33	86.4867	69.1673	69.1673	69.1673
1424	75.6093	75.6093	75.6093	68.7996	68.7996	68.7996
1425	74.5165	74.5165	74.5165	68.6042	68.6042	68.6042
1426	73.9057	73.9057	73.9057	68.4978	68.4978	68.4978
1427	73.5626	73.5626	73.5626	68.4373	68.4373	68.4373
1428	73.3683	73.3683	73.3683	68.4006	68.4006	68.4006
1429	73.2567	73.2567	73.2567	68.3762	68.3762	68.3762
1430	73.1911	73.1911	73.1911	68.3581	68.3581	68.3581
1431	73.151	73.151	73.151	68.3433	68.3433	68.3433
1432	73.125	73.125	73.125	68.3301	68.3301	68.3301
1433	73.107	73.107	73.107	68.3179	68.3179	68.3179
1434	73.0933	73.0933	73.0933	68.3061	68.3061	68.3061
1435	73.0821	73.0821	73.0821	68.2946	68.2946	68.2946
1436	73.0722	73.0722	73.0722	68.2832	68.2832	68.2832
1437	73.0631	73.0631	73.0631	68.2718	68.2718	68.2718
1438	73.0544	73.0544	73.0544	68.2605	68.2605	68.2605
1439	73.0459	73.0459	73.0459	68.2493	68.2493	68.2493
1440	73.0376	73.0376	73.0376	68.238	68.238	68.238
1441	76.3532	91.9753	93.2341	68.2397	68.2397	68.2397
1442	78.2775	91.7377	93.5423	68.2414	68.2414	68.2414
1443	79.4261	90.4876	92.8977	68.2429	68.2429	68.2429
1444	80.1557	90.1336	93.2227	68.2444	68.2444	68.2444
1445	80.6565	89.8416	93.6112	68.2459	68.2459	68.2459
1446	81.0096	89.4866	93.9061	68.206	68.206	68.206
1447	81.268	89.0961	94.1494	68.113	68.113	68.113
1448	81.4809	88.7107	94.3564	67.9939	67.9939	67.9939
1449	81.6787	88.3852	94.5817	67.8626	67.8626	67.8626
1450	81.8628	88.032	94.7523	67.7258	67.7258	67.7258
1451	82.0127	87.5793	94.9064	67.5868	67.5868	67.5868
1452	82.1428	87.1067	95.0401	67.4474	67.4474	67.4474
1453	82.2669	86.9985	94.9364	67.3085	67.3085	67.3085
1454	82.4415	86.9258	94.8308	67.1706	67.1706	67.1706
1455	82.7498	87.2643	95.5572	67.0345	67.0345	67.0345
1456	83.2109	87.8616	96.7168	66.9004	66.9004	66.9004
1457	83.5267	87.987	96.9168	66.7675	66.7675	66.7675
1458	83.4853	87.3819	96.8147	66.6348	66.6348	66.6348
1459	83.2537	86.6256	94.5957	66.5022	66.5022	66.5022
1460	83.1417	86.3871	94.2699	66.3709	66.3709	66.3709
1461	83.104	86.2449	94.0602	66.2407	66.2407	66.2407
1462	83.1078	86.1529	93.9063	66.1116	66.1116	66.1116
1463	83.1609	86.1758	93.9103	65.9839	65.9839	65.9839
1464	83.2403	86.2259	93.942	65.8574	65.8574	65.8574
1465	83.3339	86.2909	93.989	65.7322	65.7322	65.7322
1466	83.2212	85.7813	93.1615	65.6073	65.6073	65.6073
1467	82.9606	85.0825	92.1111	65.4829	65.4829	65.4829
1468	82.6112	84.3031	90.9865	65.3587	65.3587	65.3587
1469	82.2821	83.7077	90.1574	65.2351	65.2351	65.2351
1470	82.0504	83.4014	89.7478	65.1126	65.1126	65.1126
1471	81.87	83.1484	89.394	64.991	64.991	64.991
1472	81.7159	82.9235	89.071	64.8703	64.8703	64.8703
1473	81.5545	82.6574	88.6443	64.7506	64.7506	64.7506
1474	81.3798	82.3683	88.1759	64.6317	64.6317	64.6317



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1475	81.1955	82.0715	87.7032	64.5136	64.5136	64.5136
1476	81.0033	81.7691	87.2281	64.3964	64.3964	64.3964
1477	80.8585	81.5873	87.0082	64.2802	64.2802	64.2802
1478	80.7613	81.4832	86.9207	64.1651	64.1651	64.1651
1479	80.6902	81.4054	86.8591	64.0512	64.0512	64.0512
1480	80.6335	81.3423	86.8117	63.9383	63.9383	63.9383
1481	80.5842	81.2872	86.7682	63.8265	63.8265	63.8265
1482	80.5371	81.2358	86.7194	63.7158	63.7158	63.7158
1483	80.4914	81.186	86.6721	63.6061	63.6061	63.6061
1484	80.4467	81.1373	86.6258	63.4975	63.4975	63.4975
1485	80.4028	81.0894	86.5803	63.3899	63.3899	63.3899
1486	80.3587	81.0419	86.532	63.2833	63.2833	63.2833
1487	80.3123	80.9935	86.4729	63.1778	63.1778	63.1778
1488	80.2648	80.944	86.4129	63.0732	63.0732	63.0732
1489	80.2169	80.8941	86.3525	62.9696	62.9696	62.9696
1490	80.1687	80.8439	86.2922	62.8669	62.8669	62.8669
1491	80.1205	80.7939	86.2322	62.7653	62.7653	62.7653
1492	78.8597	79.4271	80.4946	62.66	62.66	62.66
1493	78.0897	78.657	79.7245	62.5557	62.5557	62.5557
1494	77.5863	78.1536	79.2212	62.4524	62.4524	62.4524
1495	77.2312	77.7879	78.8814	62.3499	62.3499	62.3499
1496	76.9514	77.5187	78.5863	62.2485	62.2485	62.2485
1497	76.7159	77.2832	78.3507	62.1479	62.1479	62.1479
1498	76.5053	77.0712	78.1421	62.0482	62.0482	62.0482
1499	76.3081	76.8753	77.943	61.9495	61.9495	61.9495
1500	76.1191	76.6864	77.7539	61.8516	61.8516	61.8516
1501	75.9351	76.5024	77.57	61.7546	61.7546	61.7546
1502	75.7545	76.3218	77.3894	61.6585	61.6585	61.6585
1503	75.5763	76.1436	77.2111	61.5633	61.5633	61.5633
1504	75.3999	75.9673	77.0348	61.469	61.469	61.469
1505	75.2252	75.7925	76.86	61.3755	61.3755	61.3755
1506	75.0518	75.6192	76.6867	61.2828	61.2828	61.2828
1507	74.8798	75.4472	76.5147	61.191	61.191	61.191
1508	74.7091	75.2765	76.344	61.1	61.1	61.1
1509	74.5397	75.107	76.1745	61.0098	61.0098	61.0098
1510	74.3715	74.9388	76.0083	60.9204	60.9204	60.9204
1511	74.2045	74.7718	75.8393	60.8319	60.8319	60.8319
1512	74.0387	74.606	75.6735	60.7441	60.7441	60.7441
1513	73.8741	74.4414	75.5089	60.6572	60.6572	60.6572
1514	73.7107	74.278	75.3455	60.571	60.571	60.571
1515	73.5485	74.1158	75.1833	60.4856	60.4856	60.4856
1516	73.3874	73.9547	75.0222	60.401	60.401	60.401
1517	73.2275	73.7948	74.8623	60.3171	60.3171	60.3171
1518	73.0687	73.6361	74.7036	60.234	60.234	60.234
1519	72.9111	73.4785	74.546	60.1516	60.1516	60.1516
1520	72.7547	73.322	74.3895	60.07	60.07	60.07
1521	72.5993	73.1666	74.2341	59.9891	59.9891	59.9891
1522	72.4574	72.991	74.153	59.909	59.909	59.909
1523	72.358	72.8182	74.2516	59.8298	59.8298	59.8298
1524	72.289	72.704	74.4125	59.7514	59.7514	59.7514
1525	72.2537	72.6502	74.6321	59.6741	59.6741	59.6741
1526	72.2482	72.6402	74.9024	59.5976	59.5976	59.5976
1527	72.2706	72.6681	75.1545	59.5222	59.5222	59.5222
1528	72.316	72.7246	75.502	59.4478	59.4478	59.4478
1529	72.2959	72.7045	75.4819	59.374	59.374	59.374






ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

00011305



1530	72.2406	72.6492	75.4266	59.3009	59.3009	59.3009
1531	72.1665	72.5751	75.3525	59.2285	59.2285	59.2285
1532	72.0251	72.4258	74.9999	59.1565	59.1565	59.1565
1533	71.833	72.2264	74.6058	59.0849	59.0849	59.0849
1534	71.6148	72.0068	74.164	59.0138	59.0138	59.0138
1535	71.385	71.7833	73.7095	58.943	58.943	58.943
1536	71.163	71.5695	73.2682	58.8727	58.8727	58.8727
1537	70.9234	71.3783	72.8489	58.8029	58.8029	58.8029
1538	70.7181	71.1964	72.5529	58.7337	58.7337	58.7337
1539	70.6914	72.8832	72.3752	60.5443	60.5443	68.4213
1540	72.1413	84.3189	74.7061	65.2469	65.2469	85.7781
1541	72.9425	85.2227	75.4599	67.9375	67.9375	88.5304
1542	73.3782	85.6556	75.8453	69.5821	69.5821	90.1349
1543	73.5598	85.4875	75.9719	70.5888	70.5888	90.7649
1544	73.8383	85.3939	77.2889	71.1488	71.1488	90.5801
1545	74.1477	85.4257	78.5063	71.4345	71.4345	90.0094
1546	74.5839	85.9402	80.0682	71.5564	71.5564	89.2415
1547	75.3889	87.3883	82.894	71.58	71.58	88.3703
1548	75.646	86.8776	82.5266	71.5338	71.5338	87.4162
1549	75.7084	86.2076	82.5476	71.4263	71.4263	86.3595
1550	75.8774	86.3962	83.071	71.2715	71.2715	85.2464
1551	76.1816	87.1064	83.7508	71.075	71.075	84.0773
1552	76.2577	86.8004	83.6732	70.828	70.828	82.8132
1553	76.4249	86.7601	84.7033	70.5527	70.5527	81.5464
1554	76.6958	87.2134	85.7935	70.258	70.258	80.2917
1555	77.0001	87.7978	86.7968	69.9301	69.9301	78.9827
1556	77.2733	88.2926	87.6707	69.5608	69.5608	77.5431
1557	77.5261	88.7066	88.5868	69.1688	69.1688	76.1324
1558	76.702	83.7315	84.757	67.7675	67.7675	69.486
1559	75.9892	82.751	84.0189	66.639	66.639	66.639
1560	75.6375	83.7782	84.8918	66.0547	66.0547	66.0547
1561	73.7136	73.7136	73.7136	65.7449	65.7449	65.7449
1562	72.6411	72.6411	72.6411	65.5801	65.5801	65.5801
1563	72.0417	72.0417	72.0417	65.4903	65.4903	65.4903
1564	71.7053	71.7053	71.7053	65.4391	65.4391	65.4391
1565	71.5149	71.5149	71.5149	65.4078	65.4078	65.4078
1566	71.4057	71.4057	71.4057	65.3869	65.3869	65.3869
1567	71.3415	71.3415	71.3415	65.3713	65.3713	65.3713
1568	71.3025	71.3025	71.3025	65.3586	65.3586	65.3586
1569	71.2774	71.2774	71.2774	65.3471	65.3471	65.3471
1570	71.26	71.26	71.26	65.3365	65.3365	65.3365
1571	71.2469	71.2469	71.2469	65.3262	65.3262	65.3262
1572	71.2362	71.2362	71.2362	65.3162	65.3162	65.3162
1573	71.2268	71.2268	71.2268	65.3062	65.3062	65.3062
1574	71.2182	71.2182	71.2182	65.2963	65.2963	65.2963
1575	71.21	71.21	71.21	65.2865	65.2865	65.2865
1576	71.202	71.202	71.202	65.2767	65.2767	65.2767
1577	71.1942	71.1942	71.1942	65.2668	65.2668	65.2668
1578	74.505	89.5224	90.9338	65.2688	65.2688	65.2688
1579	76.4287	89.2821	91.2393	65.2708	65.2708	65.2708
1580	77.5748	88.1267	90.7263	65.2726	65.2726	65.2726
1581	78.3071	88.0821	91.3413	65.2745	65.2745	65.2745
1582	78.8087	87.7727	91.7324	65.2763	65.2763	65.2763
1583	79.1674	87.4828	92.0596	65.244	65.244	65.244
1584	79.4362	87.0893	92.3201	65.1679	65.1679	65.1679

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011306

1585	79.6635	86.7469	92.5411	65.0704	65.0704	65.0704
1586	79.8757	86.4376	92.7625	64.9627	64.9627	64.9627
1587	80.0643	86.0851	92.9552	64.8505	64.8505	64.8505
1588	80.2216	85.6171	93.1147	64.7366	64.7366	64.7366
1589	80.3671	85.2426	93.2043	64.6222	64.6222	64.6222
1590	80.5284	85.1764	93.1051	64.5084	64.5084	64.5084
1591	80.698	85.1185	93.0138	64.3953	64.3953	64.3953
1592	81.079	85.6318	94.0826	64.284	64.284	64.284
1593	81.5877	86.2766	95.2882	64.1744	64.1744	64.1744
1594	81.7925	86.0908	94.8778	64.0653	64.0653	64.0653
1595	81.6977	85.444	93.7444	63.9562	63.9562	63.9562
1596	81.4991	84.823	92.7566	63.8474	63.8474	63.8474
1597	81.421	84.6387	92.5037	63.7396	63.7396	63.7396
1598	81.4077	84.5241	92.3236	63.6327	63.6327	63.6327
1599	81.437	84.4756	92.225	63.5269	63.5269	63.5269
1600	81.5091	84.519	92.2503	63.4221	63.4221	63.4221
1601	81.604	84.5862	92.3002	63.3183	63.3183	63.3183
1602	81.7111	84.6865	92.3637	63.2156	63.2156	63.2156
1603	81.6181	84.1919	91.5832	63.1131	63.1131	63.1131
1604	81.398	83.5787	90.8545	63.011	63.011	63.011
1605	81.1052	82.908	89.6804	62.9091	62.9091	62.9091
1606	80.778	82.2342	88.7262	62.8075	62.8075	62.8075
1607	80.5612	81.9532	88.3563	62.7068	62.7068	62.7068
1608	80.4021	81.7305	88.0454	62.6068	62.6068	62.6068
1609	80.2729	81.5392	87.7682	62.5077	62.5077	62.5077
1610	80.1581	81.3631	87.5072	62.4094	62.4094	62.4094
1611	80.032	81.1463	87.1509	62.3117	62.3117	62.3117
1612	79.8922	80.9075	86.7572	62.2148	62.2148	62.2148
1613	79.7435	80.663	86.3627	62.1186	62.1186	62.1186
1614	79.5888	80.4158	85.9707	62.0231	62.0231	62.0231
1615	79.4298	80.1678	85.5832	61.9282	61.9282	61.9282
1616	79.3258	80.0542	85.4759	61.8343	61.8343	61.8343
1617	79.2542	79.9773	85.412	61.7413	61.7413	61.7413
1618	79.2007	79.9187	85.3657	61.6492	61.6492	61.6492
1619	79.1571	79.8701	85.3291	61.5579	61.5579	61.5579
1620	79.1191	79.8273	85.298	61.4676	61.4676	61.4676
1621	79.0841	79.7878	85.2684	61.3781	61.3781	61.3781
1622	79.0492	79.7496	85.2322	61.2894	61.2894	61.2894
1623	79.0144	79.7118	85.1962	61.2016	61.2016	61.2016
1624	78.98	79.6743	85.1606	61.1146	61.1146	61.1146
1625	78.9459	79.6372	85.1252	61.0284	61.0284	61.0284
1626	78.9121	79.6004	85.0903	60.9431	60.9431	60.9431
1627	78.8787	79.5641	85.0557	60.8586	60.8586	60.8586
1628	78.8446	79.5277	85.0185	60.7748	60.7748	60.7748
1629	78.809	79.4904	84.971	60.6919	60.6919	60.6919
1630	78.7725	79.4524	84.925	60.6097	60.6097	60.6097
1631	78.7357	79.4141	84.8787	60.5284	60.5284	60.5284
1632	78.6988	79.3757	84.8325	60.4477	60.4477	60.4477
1633	78.662	79.3374	84.7864	60.3679	60.3679	60.3679
1634	78.6252	79.2991	84.7405	60.2888	60.2888	60.2888
1635	78.1391	78.8367	82.6284	60.2088	60.2088	60.2088
1636	78.1808	86.5449	80.2925	64.6206	64.6206	81.6792
1637	78.7764	90.9797	81.3324	68.1752	68.1752	88.7231
1638	79.0922	91.3806	81.5995	70.2753	70.2753	90.8675
1639	79.2304	91.4258	81.6859	71.5864	71.5864	92.0492



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011307

1640	79.2596	91.0945	81.7824	72.4004	72.4004	92.4372
1641	79.4826	90.9384	83.2766	72.827	72.827	92.0359
1642	79.7187	90.9368	84.2633	73.0258	73.0258	91.3498
1643	80.2347	91.7971	86.3421	73.0912	73.0912	90.5193
1644	80.8377	92.5157	88.163	73.0732	73.0732	89.5999
1645	80.9769	91.9837	87.7325	72.9927	72.9927	88.6062
1646	80.9818	91.2741	87.8577	72.8542	72.8542	87.5087
1647	81.2126	91.9304	88.5897	72.6743	72.6743	86.3715
1648	81.4147	92.2286	88.9393	72.449	72.449	85.1561
1649	81.4807	91.9634	89.1462	72.1803	72.1803	83.8777
1650	81.6287	91.9169	90.1565	71.8827	71.8827	82.589
1651	81.8914	92.5008	91.2222	71.5898	71.5898	81.3277
1652	82.1479	93.0153	92.1142	71.2152	71.2152	79.9405
1653	82.3772	93.4433	92.9871	70.8267	70.8267	78.5133
1654	82.3213	92.4621	92.6501	70.1668	70.1668	75.7698
1655	81.2415	86.9984	88.3865	68.552	68.552	68.6816
1656	80.871	87.8472	89.0703	67.6693	67.6693	67.6693
1657	78.6296	78.6296	78.6296	67.2058	67.2058	67.2058
1658	77.4913	77.4913	77.4913	66.9614	66.9614	66.9614
1659	76.8549	76.8549	76.8549	66.8305	66.8305	66.8305
1660	76.4972	76.4972	76.4972	66.7582	66.7582	66.7582
1661	76.2945	76.2945	76.2945	66.716	66.716	66.716
1662	76.1779	76.1779	76.1779	66.6895	66.6895	66.6895
1663	76.1091	76.1091	76.1091	66.671	66.671	66.671
1664	76.0669	76.0669	76.0669	66.6586	66.6586	66.6586
1665	76.0395	76.0395	76.0395	66.6445	66.6445	66.6445
1666	76.0202	76.0202	76.0202	66.6334	66.6334	66.6334
1667	76.0056	76.0056	76.0056	66.6229	66.6229	66.6229
1668	75.9934	75.9934	75.9934	66.6128	66.6128	66.6128
1669	75.9827	75.9827	75.9827	66.6028	66.6028	66.6028
1670	75.9728	75.9728	75.9728	66.5928	66.5928	66.5928
1671	75.9633	75.9633	75.9633	66.583	66.583	66.583
1672	75.954	75.954	75.954	66.5731	66.5731	66.5731
1673	75.9449	75.9449	75.9449	66.5633	66.5633	66.5633
1674	79.268	95.8197	96.8439	66.5647	66.5647	66.5647
1675	81.1964	95.5862	97.1561	66.566	66.566	66.566
1676	82.3491	94.5615	98.681	66.5672	66.5672	66.5672
1677	83.0735	93.3949	96.1921	66.5684	66.5684	66.5684
1678	83.5705	93.0972	96.5746	66.5695	66.5695	66.5695
1679	83.9175	92.6788	96.8286	66.5335	66.5335	66.5335
1680	84.1616	92.2887	97.0495	66.4496	66.4496	66.4496
1681	84.3508	91.8092	97.2237	66.3424	66.3424	66.3424
1682	84.5256	91.4571	97.4054	66.2241	66.2241	66.2241
1683	84.6933	91.1017	97.5805	66.1009	66.1009	66.1009
1684	84.833	90.6575	97.7241	65.9758	65.9758	65.9758
1685	84.948	90.1676	97.842	65.8503	65.8503	65.8503
1686	85.0637	89.8718	97.8237	65.7253	65.7253	65.7253
1687	85.1937	89.7721	97.6908	65.6011	65.6011	65.6011
1688	85.3956	89.8563	97.9229	65.4782	65.4782	65.4782
1689	85.7906	90.3902	99.034	65.3572	65.3572	65.3572
1690	86.2491	90.9164	100.029	65.2378	65.2378	65.2378
1691	86.2636	90.3322	98.9186	65.1186	65.1186	65.1186
1692	86.0405	89.5501	97.6416	64.9996	64.9996	64.9996
1693	85.8632	89.1378	97.0396	64.8813	64.8813	64.8813
1694	85.7817	88.9514	96.7854	64.7642	64.7642	64.7642



ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011308

1695	85.7516	85.8206	96.5895	64.648	64.648	64.648
1696	85.7712	86.7951	96.5352	64.5331	64.5331	64.5331
1697	85.824	85.8187	96.5406	64.4192	64.4192	64.4192
1698	85.8946	86.8608	96.5647	64.3065	64.3065	64.3065
1699	85.8375	86.5383	96.0315	64.1944	64.1944	64.1944
1700	85.6022	87.8636	95.0041	64.0827	64.0827	64.0827
1701	85.2643	87.0995	93.8979	63.9712	63.9712	63.9712
1702	84.8807	86.3339	92.8216	63.8602	63.8602	63.8602
1703	84.6137	85.9941	92.3811	63.7501	63.7501	63.7501
1704	84.4084	85.7179	92.0067	63.6408	63.6408	63.6408
1705	84.2353	85.4757	91.6888	63.5325	63.5325	63.5325
1706	82.1169	82.1342	82.1463	63.4298	63.4298	63.4788
1707	80.8448	80.8619	80.8741	63.3233	63.3233	63.3722
1708	80.0321	80.0494	80.0616	63.2153	63.2153	63.2642
1709	79.4699	79.4872	79.4994	63.107	63.107	63.156
1710	79.0443	79.0616	79.0738	62.9991	62.9991	63.0481
1711	78.6937	78.711	78.7231	62.8919	62.8919	62.9409
1712	78.3845	78.4018	78.414	62.7855	62.7855	62.8344
1713	78.0988	78.1161	78.1282	62.68	62.68	62.7289
1714	77.8265	77.8438	77.856	62.5753	62.5753	62.6243
1715	77.5825	77.5798	77.592	62.4716	62.4716	62.5206
1716	77.3037	77.321	77.3332	62.3689	62.3689	62.4178
1717	77.1354	77.2803	77.4713	62.256	62.256	62.256
1718	76.9618	77.2021	77.3711	62.3062	62.3062	62.9862
1719	76.6959	76.7835	76.8989	62.1338	62.1338	62.1338
1720	76.6781	77.1234	77.7105	61.9983	61.9983	61.9983
1721	76.8083	77.6114	78.6701	61.8823	61.8823	61.8823
1722	78.238	79.4117	85.5093	61.7808	61.7808	61.7808
1723	78.9414	80.0119	85.9479	61.6845	61.6845	61.6845
1724	79.2505	80.2228	86.005	61.591	61.591	61.591
1725	79.3455	80.2245	85.8607	61.4993	61.4993	61.4993
1726	79.3235	80.1127	85.6083	61.4089	61.4089	61.4089
1727	79.2593	79.9909	85.405	61.3195	61.3195	61.3195
1728	79.2095	79.9356	85.3632	61.2311	61.2311	61.2311
1729	79.168	79.8886	85.3295	61.1436	61.1436	61.1436
1730	79.1312	79.8464	85.3004	61.057	61.057	61.057
1731	79.0973	79.8071	85.274	60.9712	60.9712	60.9712
1732	79.0652	79.7698	85.2493	60.8863	60.8863	60.8863
1733	79.0322	79.7331	85.2154	60.8022	60.8022	60.8022
1734	78.9987	79.6961	85.1805	60.7189	60.7189	60.7189
1735	78.9651	79.6591	85.1456	60.6363	60.6363	60.6363
1736	78.9317	79.6223	85.1108	60.5546	60.5546	60.5546
1737	78.8986	79.5858	85.0763	60.4736	60.4736	60.4736
1738	78.8658	79.5497	85.0422	60.3934	60.3934	60.3934
1739	79.3105	91.5646	81.8492	65.9191	65.9191	86.504
1740	79.5381	91.8403	82.0285	68.9991	68.9991	89.5905
1741	79.6086	91.673	82.0412	70.7594	70.7594	91.084
1742	79.7027	91.3904	82.7191	71.7398	71.7398	91.4551
1743	79.9375	91.2819	84.0908	72.2358	72.2358	91.0907
1744	78.228	79.1172	79.8583	68.2847	68.2847	70.8748
1745	77.8765	78.4266	81.1831	65.6848	65.6848	65.6848
1746	77.3584	78.1107	80.985	64.3254	64.3254	64.3254
1747	77.1696	77.9256	80.9317	63.5898	63.5898	63.5898
1748	77.0244	77.7818	80.8188	63.1681	63.1681	63.1681
1749	77.0109	77.7986	81.2143	62.9049	62.9049	62.9049



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500





00011309

1750	76.9714	77.7636	81.2223	62.7216	62.7216	62.7216
1751	76.9194	77.7169	81.2189	62.579	62.579	62.579
1752	76.8617	77.6648	81.2102	62.4574	62.4574	62.4574
1753	76.787	77.5894	81.1301	62.3466	62.3466	62.3466
1754	76.6605	77.4462	80.8432	62.2417	62.2417	62.2417
1755	76.548	77.3338	80.7307	62.1403	62.1403	62.1403
1756	76.4435	77.2292	80.6262	62.041	62.041	62.041
1757	76.3435	77.1293	80.5262	61.9433	61.9433	61.9433
1758	76.2464	77.0322	80.4291	61.8468	61.8468	61.8468
1759	76.1511	76.9369	80.3338	61.7513	61.7513	61.7513
1760	76.0571	76.8429	80.2398	61.6568	61.6568	61.6568
1761	75.9642	76.7499	80.1469	61.5633	61.5633	61.5633
1762	75.872	76.6578	80.0547	61.4706	61.4706	61.4706
1763	75.7807	76.5664	79.9634	61.3788	61.3788	61.3788
1764	75.6878	76.4324	79.7224	61.2878	61.2878	61.2878
1765	75.4987	76.2613	79.3907	61.1974	61.1974	61.1974
1766	76.1657	84.1518	80.1179	65.0264	65.0264	80.1909
1767	77.3787	88.8862	83.3201	67.8572	67.8572	85.3531
1768	78.405	90.1782	85.7264	69.2181	69.2181	85.7392
1769	78.7723	89.7212	85.5377	69.82	69.82	85.3558
1770	78.8995	89.0865	85.7928	70.0152	70.0152	84.5293
1771	79.2715	90.1287	86.7431	69.9971	69.9971	83.4999
1772	79.467	90.1845	86.9528	69.8432	69.8432	82.2935
1773	79.5922	90.0153	87.5048	69.6114	69.6114	81.025
1774	79.8021	90.1904	88.5768	69.3379	69.3379	79.7529
1775	80.1002	90.8061	89.6713	69.0368	69.0368	78.4786
1776	80.3608	91.3069	90.5217	68.6854	68.6854	77.0576
1777	80.5973	91.7185	91.414	68.3077	68.3077	75.646
1778	80.1585	88.7659	89.3667	67.2947	67.2947	70.9832
1779	79.2479	85.5491	86.8716	65.9232	65.9232	65.9232
1780	78.8169	86.4791	87.647	65.2136	65.2136	65.2136
1781	76.8452	76.8452	76.8452	64.8399	64.8399	64.8399
1782	75.7459	75.7459	75.7459	64.6427	64.6427	64.6427
1783	75.1313	75.1313	75.1313	64.5366	64.5366	64.5366
1784	74.7859	74.7859	74.7859	64.4775	64.4775	64.4775
1785	74.5903	74.5903	74.5903	64.4427	64.4427	64.4427
1786	74.4778	74.4778	74.4778	64.4205	64.4205	64.4205
1787	74.4115	74.4115	74.4115	64.4047	64.4047	64.4047
1788	74.3708	74.3708	74.3708	64.3923	64.3923	64.3923
1789	74.3445	74.3445	74.3445	64.3816	64.3816	64.3816
1790	74.3261	74.3261	74.3261	64.3718	64.3718	64.3718
1791	74.312	74.312	74.312	64.3625	64.3625	64.3625
1792	74.3005	74.3005	74.3005	64.3534	64.3534	64.3534
1793	74.2903	74.2903	74.2903	64.3444	64.3444	64.3444
1794	74.2808	74.2808	74.2808	64.3356	64.3356	64.3356
1795	74.2718	74.2718	74.2718	64.3267	64.3267	64.3267
1796	74.263	74.263	74.263	64.3179	64.3179	64.3179
1797	74.2543	74.2543	74.2543	64.3091	64.3091	64.3091
1798	77.5711	93.3545	94.5726	64.3107	64.3107	64.3107
1799	79.4961	93.1358	94.895	64.3122	64.3122	64.3122
1800	80.8455	91.9513	94.2997	64.3137	64.3137	64.3137
1801	81.374	91.434	94.453	64.3151	64.3151	64.3151
1802	81.8726	91.145	94.8357	64.3165	64.3165	64.3165
1803	82.2235	90.7816	95.1219	64.2864	64.2864	64.2864
1804	82.4768	90.392	95.3602	64.2156	64.2156	64.2156

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ANEXO 1E  
SIMULACIONES, CÁLCULOS Y GRÁFICAS

INVERTER TEMPERAT-EBRCL13.xls

ALSTOM

00011310

1805	82.6807	89.9851	95.5551	64.125	64.125	64.125
1806	82.8704	89.8579	95.7552	64.025	64.025	64.025
1807	83.0502	89.3127	95.9393	63.9208	63.9208	63.9208
1808	83.1937	88.8535	96.0856	63.815	63.815	63.815
1809	83.3168	88.3784	96.2137	63.7088	63.7088	63.7088
1810	83.4491	88.1968	96.1399	63.6031	63.6031	63.6031
1811	83.5934	88.1137	96.0239	63.4981	63.4981	63.4981
1812	83.8588	88.3515	96.5548	63.3943	63.3943	63.3943
1813	84.2911	88.9205	97.6869	63.2922	63.2922	63.2922
1814	84.67	89.2236	98.2357	63.1912	63.1912	63.1912
1815	84.858	88.8413	97.1505	63.0903	63.0903	63.0903
1816	84.4389	87.893	95.9358	62.9895	62.9895	62.9895
1817	84.2938	87.5574	95.4521	62.8894	62.8894	62.8894
1818	84.2351	87.3955	95.2238	62.7903	62.7903	62.7903
1819	84.2229	87.286	95.0511	62.692	62.692	62.692
1820	84.2588	87.2823	95.0222	62.5947	62.5947	62.5947
1821	84.3249	87.3213	95.0441	62.4984	62.4984	62.4984
1822	84.4073	87.3777	95.0843	62.403	62.403	62.403
1823	84.4296	87.257	94.8518	62.3084	62.3084	62.3084
1824	84.2795	86.7307	94.0235	62.214	62.214	62.214
1825	84.0433	86.153	93.1717	62.12	62.12	62.12
1826	83.7681	85.5696	92.3409	62.0265	62.0265	62.0265
1827	83.4727	84.9847	91.5237	61.9333	61.9333	61.9333
1828	83.256	84.6762	91.1183	61.8409	61.8409	61.8409
1829	83.1011	84.474	90.8506	61.7492	61.7492	61.7492
1830	81.8095	82.5593	85.2119	61.6548	61.6548	61.6548
1831	81.0389	81.7887	84.4413	61.5612	61.5612	61.5612
1832	80.5513	81.3012	83.9538	61.4685	61.4685	61.4685
1833	80.2178	80.9677	83.8202	61.3766	61.3766	61.3766
1834	79.9683	80.7182	83.3707	61.2856	61.2856	61.2856
1835	79.7539	80.5036	83.1144	61.1954	61.1954	61.1954
1836	79.5516	80.3045	82.8427	61.106	61.106	61.106
1837	79.3559	80.1128	82.5786	61.0173	61.0173	61.0173
1838	79.1524	79.9185	82.2627	60.9294	60.9294	60.9294
1839	78.9925	79.7512	82.1852	60.8423	60.8423	60.8423
1840	78.8204	79.5843	81.946	60.756	60.756	60.756
1841	78.6425	79.4153	81.7044	60.6704	60.6704	60.6704
1842	78.4644	79.2442	81.4758	60.5856	60.5856	60.5856
1843	78.2912	79.0751	81.2736	60.5015	60.5015	60.5015
1844	78.0926	78.911	80.9315	60.4181	60.4181	60.4181
1845	77.9141	78.7325	80.753	60.3355	60.3355	60.3355
1846	77.747	78.5655	80.5859	60.2536	60.2536	60.2536
1847	77.5886	78.4051	80.4255	60.1725	60.1725	60.1725
1848	77.4304	78.2488	80.2692	60.0921	60.0921	60.0921
1849	77.7918	82.2842	81.1079	62.6938	62.6938	73.5518
1850	79.1609	90.4028	84.2997	66.1774	66.1774	84.0058
1851	80.4994	92.4744	87.8536	67.8947	67.8947	84.8055
1852	81.0923	92.4129	88.0453	68.7061	68.7061	84.6934
1853	81.2989	91.8754	88.1277	69.0388	69.0388	84.0725
1854	81.494	91.947	88.6335	69.113	69.113	83.1797
1855	81.8303	92.7911	89.4135	69.0417	69.0417	82.1358
1856	81.905	92.4807	89.3334	68.867	68.867	80.9388
1857	82.035	92.3871	90.2431	68.6361	68.6361	79.7105
1858	82.2616	92.7522	91.2955	68.3718	68.3718	78.4805
1859	82.5309	93.3096	92.2816	68.071	68.071	77.1871

Handwritten signature or initials in blue ink.

Handwritten mark or signature in red ink.