

Sensor Data Analysis Report

Statistics Summary

Available Row	Missing Rows	Duplicates	Frequency	mean	Standard Deviation	min	25%	
69	2236	2303	3600.0	-2.6953119999...	4.47342654149...	-2.695312	-2.695312	
2022	283	295	3600.0	0.00214382240...	0.00044077608...	0.0	0.00181101725	
1438	867	874	3600.0	98.1059796942...	43.3354429081...	-17.91932146	94.023395345	
2283	22	91	3600.0	48.4648342185...	18.9491466930...	0.056966146	47.35578476	
2305	0	0	3600.0	2446.08256631...	171.905546857...	1311.946773	2495.39286	
2305	0	0	3600.0	2444.37604501...	164.140579860...	1266.977008	2495.716154	
2305	0	0	3600.0	2423.79545893...	146.191328867...	1244.9031	2444.40721	
2305	0	0	3600.0	2458.42066503...	131.994091943...	1336.98413	2462.90825	
2305	0	0	3600.0	2347.36734585...	147.024414209...	1441.099709	2361.316963	
2302	3	2	3600.0	2206.76196410...	594.149905791...	72.01865434	2370.46459525	
2305	0	0	3600.0	2269.16181031...	599.091626845...	71.99072425	2443.460163	
2305	0	0	3600.0	2265.03736545...	598.624986360...	71.01675468	2437.84346	
2305	0	0	3600.0	216.184367638...	85.7143676428...	-0.104241288	224.3980294	
70	2235	2303	3600.0	32.0	0.0	32.0	32.0	
1711	594	1944	3600.0	82.4813040003...	3.46141569028...	66.5	82.414285715	
853	1452	1465	3600.0	2.14702896669...	0.29395329795...	0.0	2.167877274	
1474	831	2225	3600.0	43.9862570265...	15.3122927478...	5.0	32.0	
1290	1015	2233	3600.0	40.5250830564...	13.8339458347...	12.0	31.0	
81	2224	2301	3600.0	30.1358024691...	0.37924551479...	29.0	30.0	
1736	569	2227	3600.0	64.8748189598...	16.3828527625...	20.0	52.0	
1604	701	2226	3600.0	43.8645885286...	14.6046512521...	5.0	33.0	
1379	926	2235	3600.0	38.6014192479...	13.4011665971...	4.0	28.0	
1762	543	2219	3600.0	40.6648289281...	16.0734772657...	-2.0	28.0	
2304	1	0	3600.0	742.495601100...	180.444059200...	78.05007751	798.33173425	
69	2236	2303	3600.0	219.7432	0.0	219.7432	219.7432	
2304	1	0	3600.0	-1.6526864897...	0.50331545064...	-2.293068518	-1.9747335385	
2126	179	188	3600.0	8397.07881886...	2025.92783102...	0.0	7677.68664675	
2304	1	0	3600.0	504.730218445...	119.534687292...	78.07840918	523.254092025	
2304	1	1	3600.0	40.3384360890...	16.1316020902...	25.17604865	25.200057355	
2304	1	0	3600.0	39.3784669731...	16.2259664331...	24.79283688	24.815218845	
1945	360	359	3600.0	2334.54536144...	98.5660501772...	1732.858754	2284.262606	
1945	360	359	3600.0	2344.77954339...	95.2111070357...	1740.895938	2297.18048	
1945	360	359	3600.0	9.82376325740...	0.48110976003...	7.743709801	9.596114455	
1945	360	359	3600.0	7.53980281895...	0.33691092697...	6.578536078	7.330226252	
1945	360	359	3600.0	2.28396043844...	0.34584706555...	1.070777225	2.188820187	
2304	1	0	3600.0	20.5572931864...	6.55721203245...	-0.027722636	21.66463411	
1751	554	575	3600.0	0.23233418342...	2.00039314910...	0.0	0.1050815565	
1752	553	572	3600.0	0.23690691767...	2.00097227456...	0.0	0.106440126	
1437	868	867	3600.0	5.75789206102...	1.86916825100...	-39.94700631	5.634958244	

Sensor Health Check

Missing Values %	Duplicates %	Outliers	Isolation Forest Anom	One-Class SVM Anom	Kalman Filter Anomal	Cp	Cpk	K-S Statistic	K-S p-value	Skewness	Normality Test
97.01	99.91	0	0	69	1	Not Enough Data	Not Enough Data	nan	nan	Not Enough Data	N/A
12.28	12.8	16	102	167	36	1.15	0.67	0.2842	0.0	-0.92	0.0001
37.61	37.92	520	71	214	24	2.79	0.89	0.6755	0.0	9.366	0.0001
0.95	3.95	305	115	72	54	0.67	0.5	0.29237	0.0	-1.742	0.0001
0.0	0.0	365	116	95	26	1.25	0.31	0.67712	0.0	-2.539	0.0001
0.0	0.0	422	116	66	35	1.31	0.23	0.65891	0.0	-2.55	0.0001
0.0	0.0	334	116	99	29	1.47	0.26	0.5236	0.0	-2.617	0.0001
0.0	0.0	320	115	79	27	1.62	0.41	0.42209	0.0	-2.62	0.0001
0.0	0.0	330	116	66	23	1.19	0.33	0.46549	0.0	-2.476	0.0001
0.13	0.09	321	116	48	14	0.67	0.13	0.39804	0.0	-3.084	0.0001
0.0	0.0	371	116	49	13	0.68	0.13	0.55834	0.0	-3.236	0.0001
0.0	0.0	364	116	48	12	0.68	0.13	0.55921	0.0	-3.214	0.0001
0.0	0.0	341	116	32	53	0.62	0.41	0.41606	0.0	-1.886	0.0001
96.96	99.91	0	0	70	2	Not Enough Data	Not Enough Data	nan	nan	Not Enough Data	N/A
25.77	84.34	256	86	305	12	1.47	1.39	0.18638	0.0	-1.871	0.0001
62.99	63.56	246	43	18	4	1.31	0.18	0.38122	0.0	-6.851	0.0001
36.05	96.53	0	73	217	8	0.84	0.83	0.10851	0.00031	-0.044	0.0001
44.03	96.88	78	62	200	11	0.98	0.69	0.13623	1e-05	1.136	0.0001
96.49	99.83	0	1	1	2	0.88	0.76	0.84293	0.0	1.409	0.0001
24.69	96.62	0	86	122	6	0.77	0.63	0.0365	0.59116	-0.253	0.0001
30.41	96.57	0	77	287	12	0.87	0.85	0.07974	0.01128	-0.031	0.0001
40.17	96.96	0	68	146	15	0.82	0.78	0.0954	0.00344	0.034	0.0001
23.56	96.27	0	89	229	13	0.86	0.84	0.10819	6e-05	0.058	0.0001
0.04	0.0	544	112	49	30	0.69	0.15	0.77778	0.0	-3.079	0.0001
97.01	99.91	0	0	69	2	Not Enough Data	Not Enough Data	nan	nan	Not Enough Data	N/A
0.04	0.0	282	116	50	36	0.74	0.42	0.56684	0.0	2.233	0.0001
7.77	8.16	277	107	129	30	1.36	1.35	0.38107	0.0	1.167	0.0001
0.04	0.0	316	116	51	20	0.72	0.25	0.31424	0.0	-2.716	0.0001
0.04	0.04	0	116	43	33	0.44	0.31	0.38542	0.0	0.199	0.0001
0.04	0.0	0	116	51	40	0.49	0.3	0.40365	0.0	0.326	0.0001
15.62	15.57	44	98	399	18	1.53	1.02	0.08804	0.00101	-0.901	0.0001
15.62	15.57	45	98	301	18	1.57	1.03	0.08953	0.00078	-0.964	0.0001
15.62	15.57	138	98	533	45	1.75	1.44	0.12223	0.0	1.028	0.0001
15.62	15.57	75	98	522	50	1.71	0.95	0.14637	0.0	2.296	0.0001
15.62	15.57	225	98	567	14	1.61	1.17	0.16668	0.0	-0.667	0.0001
0.04	0.0	335	116	66	52	0.71	0.38	0.34722	0.0	-2.392	0.0001
24.03	24.95	13	88	41	5	6.96	0.04	0.52752	0.0	41.303	0.0001
23.99	24.82	11	88	41	5	6.96	0.04	0.53761	0.0	41.291	0.0001
37.66	37.61	82	72	45	13	5.48	2.82	0.25037	0.0	-15.038	0.0001

Feature Stability Analysis

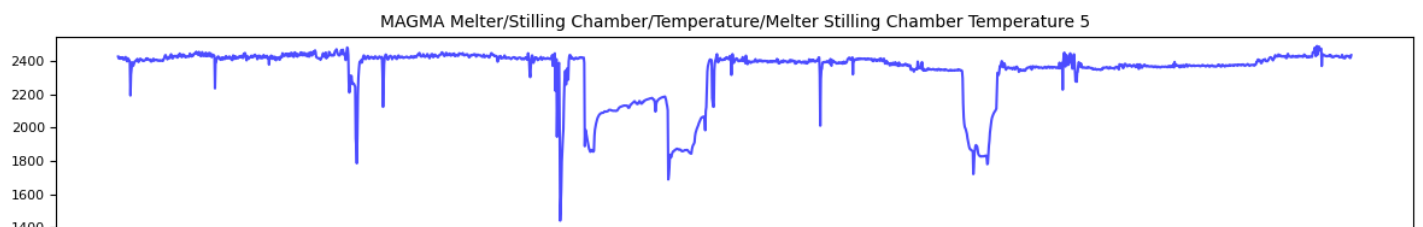
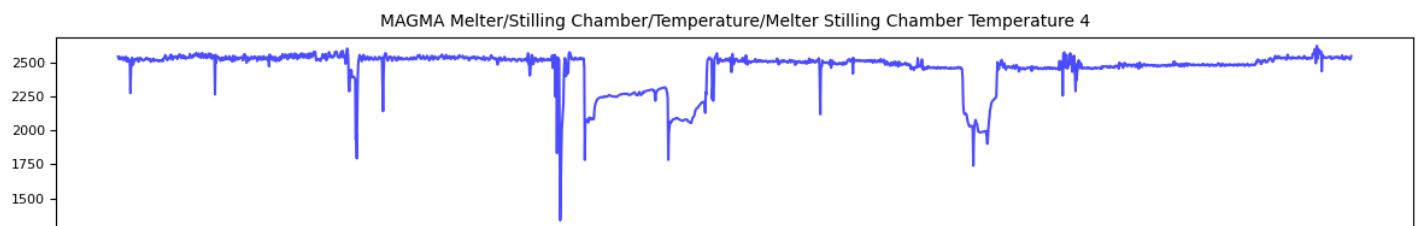
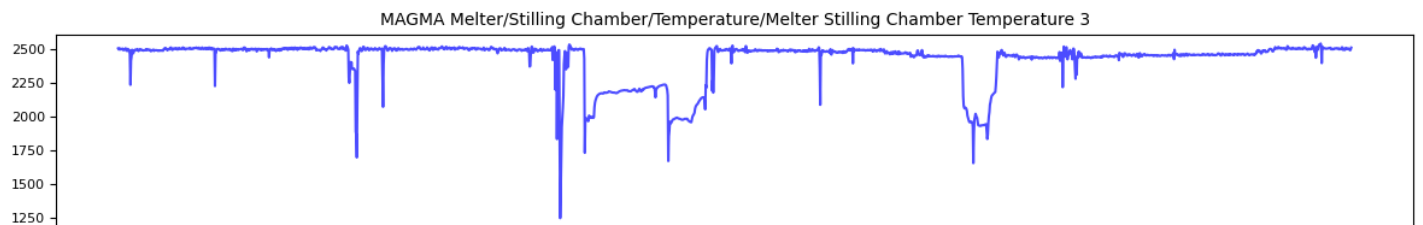
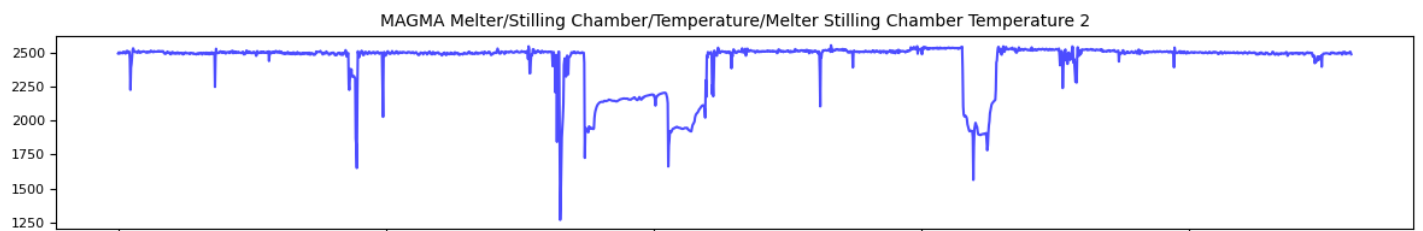
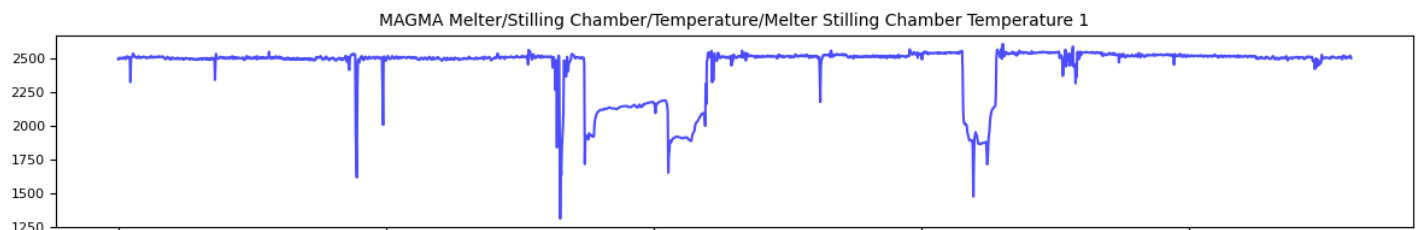
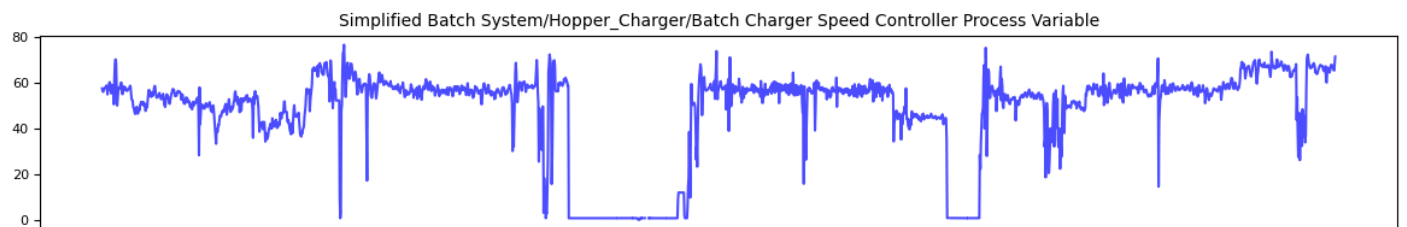
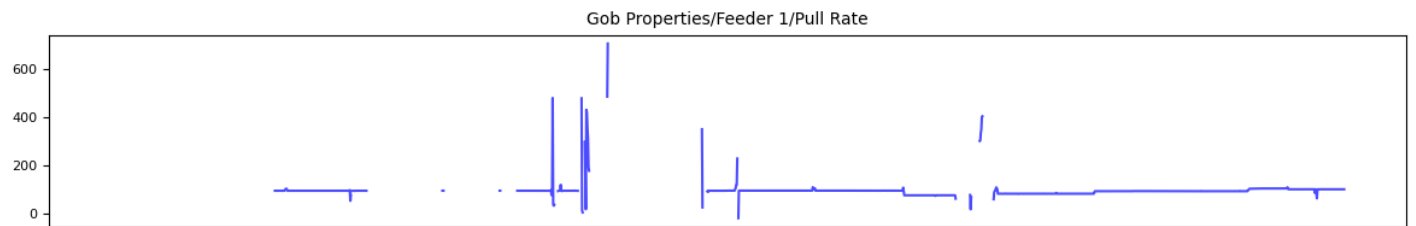
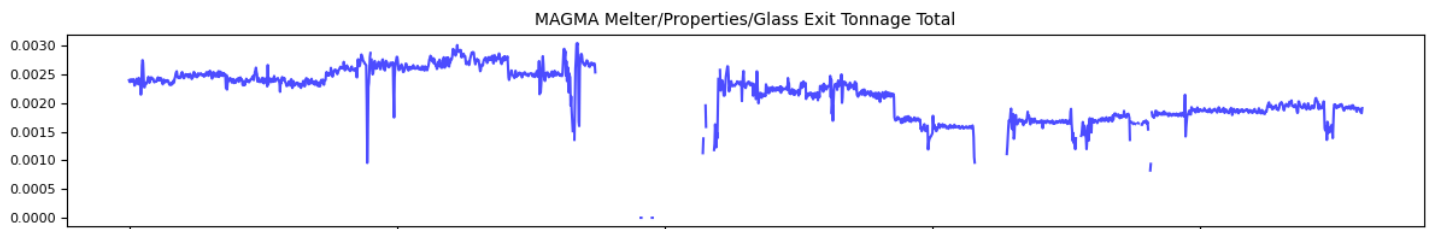
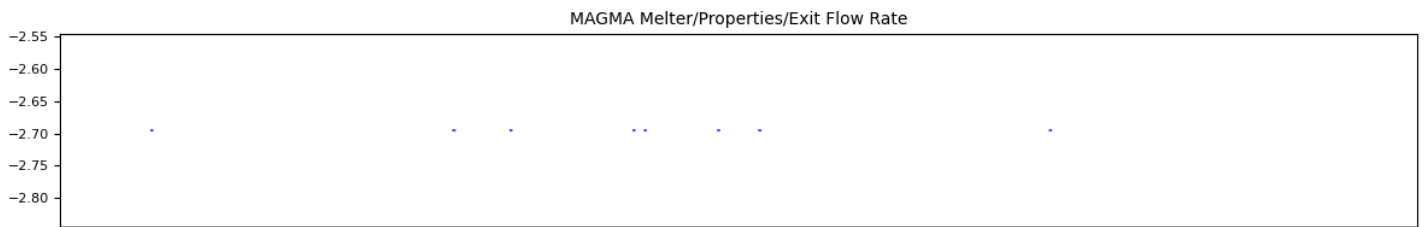
Feature Name	CV	PSI	KS Test	KL Divergence	Outliers (%)	Rolling Mean S
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MAGMA Melter/...	-0.0	0.0	0.0	0.0	0.0	Unstable
MAGMA Melter/...	0.206	inf	0.841	1.246	0.79	Unstable
Gob Propertie...	0.442	inf	0.651	inf	1.46	Unstable
Simplified Ba...	0.391	0.344	0.194	0.194	0.0	Unstable
MAGMA Melter/...	0.07	0.698	0.581	0.491	4.56	Unstable
MAGMA Melter/...	0.067	inf	0.383	inf	4.38	Unstable
MAGMA Melter/...	0.06	inf	0.446	inf	3.95	Unstable
MAGMA Melter/...	0.054	inf	0.491	2.165	2.6	Unstable
MAGMA Melter/...	0.063	4.152	0.469	1.659	4.64	Unstable
MAGMA Melter/...	0.269	inf	0.507	3.092	6.6	Unstable
MAGMA Melter/...	0.264	inf	0.214	0.958	6.85	Unstable
MAGMA Melter/...	0.264	inf	0.455	1.29	6.85	Unstable
Glass Propert...	0.396	inf	0.547	inf	0.0	Unstable
MAGMA Melter/...	0.0	0.0	0.0	0.0	0.0	Unstable
MAGMA Melter/...	0.042	2.883	0.359	1.688	2.28	Unstable
Burners_Avg_O...	0.137	inf	0.32	2.676	1.76	Unstable
Facilities/Am...	0.348	0.248	0.304	0.12	0.0	Unstable
Facilities/Am...	0.341	0.49	0.322	0.268	1.4	Unstable
Facilities/Am...	0.013	inf	0.095	3.181	1.23	Stable
Facilities/Am...	0.252	0.093	0.099	0.052	0.0	Unstable
Facilities/Am...	0.333	0.134	0.337	0.068	0.0	Unstable
Facilities/Am...	0.347	0.113	0.359	0.056	0.0	Unstable
Facilities/Am...	0.395	0.161	0.354	0.085	0.0	Unstable
MECS/Line Uti...	0.243	0.562	0.177	0.359	6.29	Unstable
MAGMA Melter/...	0.0	0.0	0.0	0.0	0.0	Unstable
MAGMA Melter/...	-0.304	inf	0.645	inf	2.52	Unstable
MECS/Stack Fl...	0.241	inf	0.172	inf	3.25	Unstable
MECS/Line Uti...	0.237	1.592	0.546	0.722	6.21	Unstable
MECS/Exhaust ...	0.4	inf	0.337	inf	0.0	Unstable
MECS/Exhaust ...	0.412	inf	0.286	inf	0.0	Unstable
MAGMA Melter/...	0.042	inf	0.148	inf	0.98	Unstable
MAGMA Melter/...	0.041	inf	0.151	inf	1.03	Unstable
Water_Cooling	0.049	1.812	0.155	0.839	1.39	Unstable
Circuit_Q	0.045	1.661	0.25	0.803	1.39	Unstable
Burner_Q	0.151	inf	0.441	0.476	0.77	Unstable
MAGMA Melter/...	0.319	inf	0.264	inf	6.94	Unstable
Gob Propertie...	8.608	inf	0.565	2.839	0.06	Stable
Gob Propertie...	8.444	inf	0.565	0.028	0.06	Stable
Energy per ton	0.325	inf	0.206	inf	1.74	Stable

Model Stability Summary

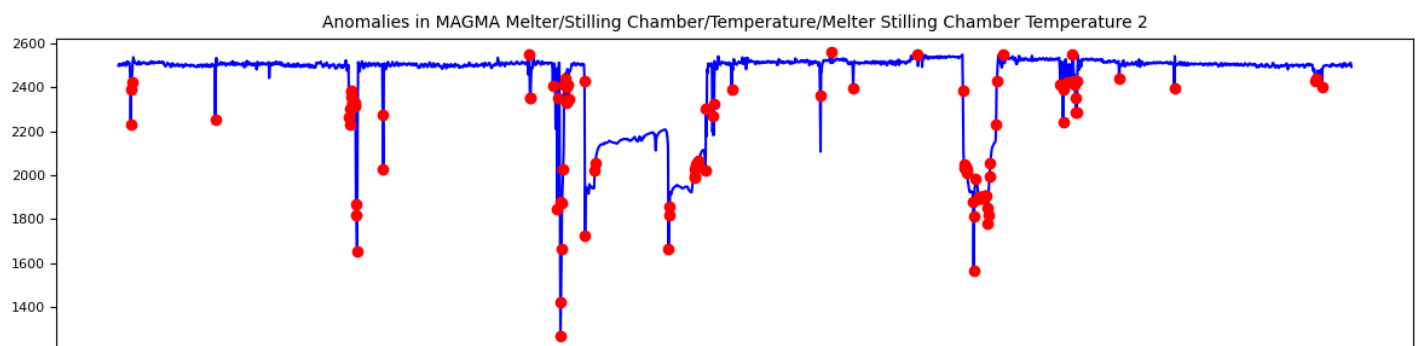
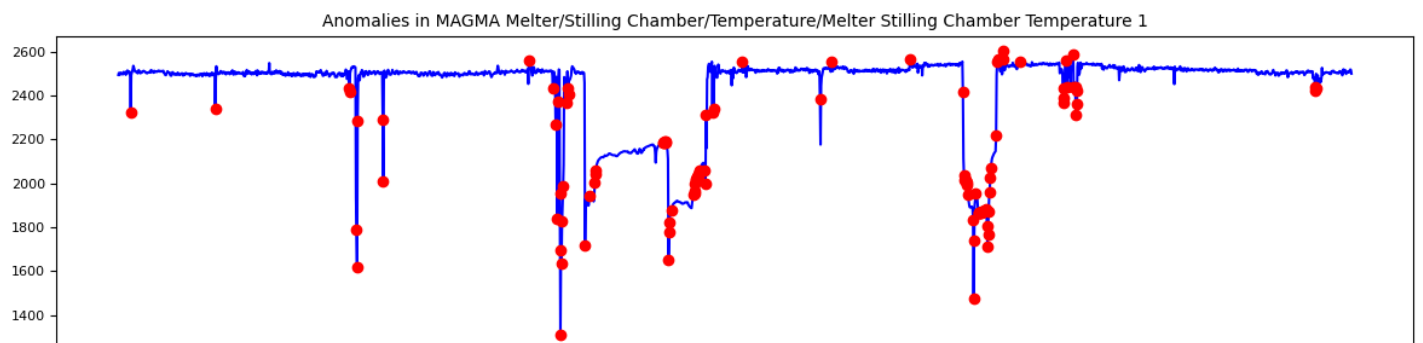
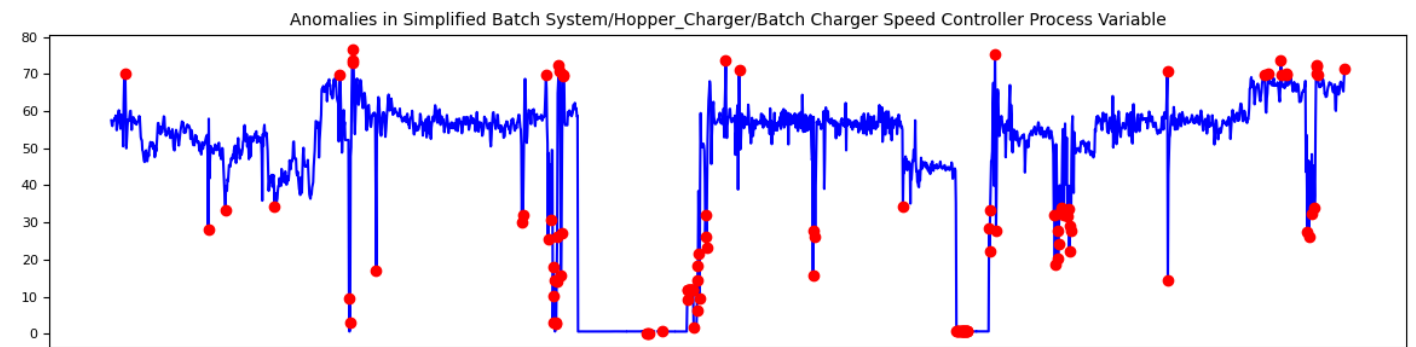
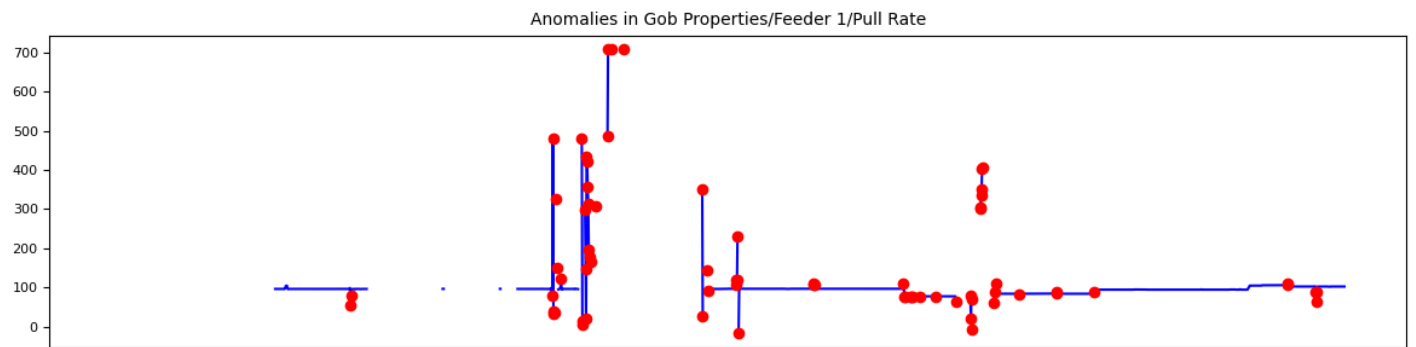
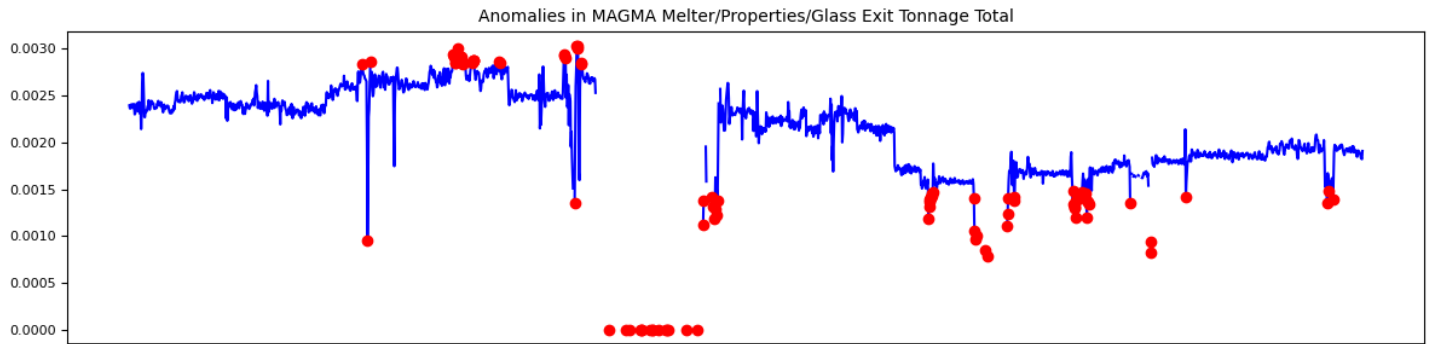
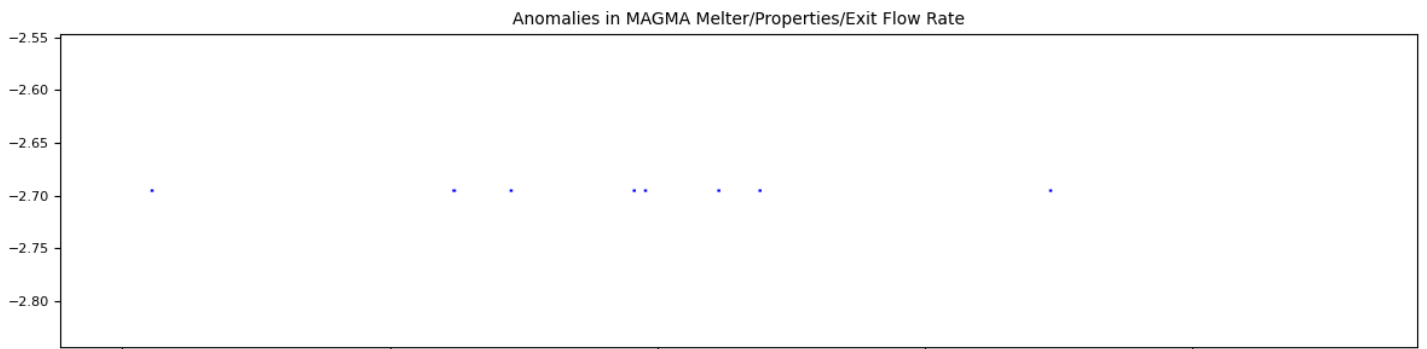
Mean MAE	MAE Variance	Mean MSE
0.67705902033...	0.00013268691...	1.66718507119...

Time Series Plot

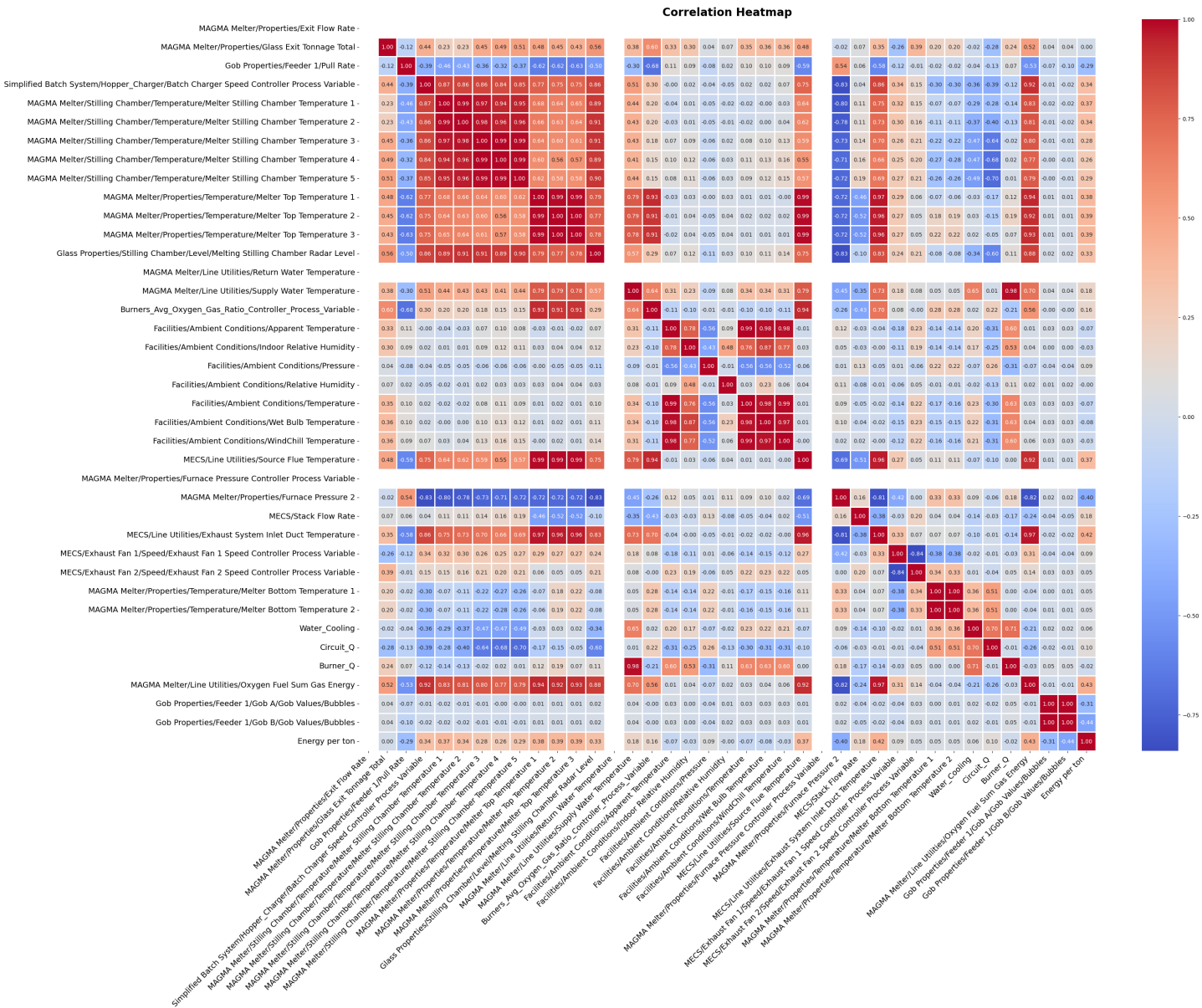


MAGMA Melter/Properties/Temperature/Melter Top Temperature 1

Anomaly Detection Plot



Correlation Heatmap



K-Selection Plot

