

```
[1]: import pandas as pd
[2]: data=pd.read_csv('C:\\Users\\siva\\Downloads\\01.Data Cleaning and Preprocessing.csv')
[3]: type(data)
[3]: pandas.core.frame.DataFrame
[4]: data.info
[4]: <bound method DataFrame.info of
      Observation   Y-Kappa   ChipRate   BF-CMratio   BlowFlow   ChipLevel4 \
0    31-00:00    23.10     16.520    121.717   1177.607    169.805
1    31-01:00    27.60     16.810    79.022   1328.360    341.327
2    31-02:00    23.19     16.709    79.562   1329.407    239.161
3    31-03:00    23.60     16.478    81.011   1334.877    213.527
4    31-04:00    22.90     15.618    93.244   1334.168    243.131
..    ...
319   10-16:00    23.75     12.667    93.450   1178.252    276.955
320   9-19:00     19.80     12.558    94.352   1184.119    297.071
321   9-20:00     23.01     12.550    90.842   1188.517    289.826
322   9-21:00     24.32     13.083    88.910   1192.879    318.006
323   9-22:00     25.75     13.417    85.451   1186.342    248.312

      T-upperExt-2   T-lowerExt-2   UCZAA   WhiteFlow-4 ...   SteamFlow-4 \
0    358.282     329.545    1.443     599.253 ...    67.122
1    351.050     329.067    1.549     537.201 ...    60.012
2    350.022     329.260    1.600     549.611 ...    61.304
3    350.938     331.142    1.604     623.362 ...    68.496
4    351.640     332.709    NaN     638.672 ...    70.022
..    ...
319   347.286     310.970    1.523     513.956 ...    61.141
320   399.135     319.576    1.451     570.058 ...    67.667
321   373.633     314.591    1.457     549.306 ...    66.446
322   364.081     308.559    1.523     504.852 ...    61.054
323   356.289     310.482    1.474     497.375 ...    58.247

      Lower-HeatT-3   Upper-HeatT-3   ChipMass-4   WeakLiquorF   BlackFlow-2 \
0    329.432     303.099    175.964    1127.197   1319.039
1    330.823     304.879    163.202    665.975   1297.317
2    329.140     303.383    164.013    677.534   1327.072
3    328.875     302.254    181.487    767.853   1324.461
4    328.352     300.954    183.929    888.448   1343.424
..    ...
319   330.117     304.006    148.174    1027.201   1357.271
320   330.848     304.616    165.178    906.962   1311.177
321   330.226     304.686    160.841    887.125   1319.226
322   327.346     304.363    147.589    804.423   1320.225
323   328.092     304.093    144.218    828.328   1320.848

      WeakwashF   SteamHeatF-3   T-Top-Chips-4   Sulphidityl-4
0    257.325     54.612     252.077     NaN
1    241.182     46.603     251.406     29.11
2    237.272     51.795     251.335     NaN
3    239.478     54.846     250.312     29.02
4    215.372     54.186     249.916     29.01
..    ...
319   381.643     45.264     252.947     30.86
320   25.494     50.528     252.092     30.70
321   0.638     45.549     252.438     NaN
322   0.000     43.725     253.176     31.13
323   1.276     43.840     253.216     NaN

[324 rows x 23 columns]>
[5]: data.describe()
[5]: <table border="1">
|  | Y-Kappa | ChipRate | BF-CMratio | BlowFlow | ChipLevel4 | T-upperExt-2 | T-lowerExt-2 | UCZAA | WhiteFlow-4 | AAWhiteSt-4 | SteamFlow-4 | Lower-HeatT-3 | Upper-HeatT-3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| count | 324.000000 | 319.000000 | 307.000000 | 308.000000 | 323.000000 | 322.000000 | 299.000000 | 323.000000 | 173.000000 | ... | 323.000000 | 322.000000 | 322.000000 |
| mean | 20.635370 | 14.347937 | 87.464456 | 1237.837614 | 258.164483 | 356.904295 | 324.020180 | 1.492010 | 591.732260 | 6.140410 | ... | 66.668285 | 325.567820 | 300.525699 |
| std | 3.070036 | 1.499095 | 7.995012 | 100.593735 | 87.987452 | 9.209290 | 7.621402 | 0.105923 | 67.016351 | 0.081609 | ... | 5.708587 | 4.609862 | 4.568484 |
| min | 12.170000 | 9.983000 | 68.645000 | 0.000000 | 0.000000 | 339.168000 | 284.633000 | 1.182000 | 405.111000 | 5.890000 | ... | 48.568000 | 318.051000 | 293.312000 |
| 25% | 18.382500 | 13.358000 | 81.823000 | 1193.215250 | 213.527000 | 350.241250 | 321.420000 | 1.431500 | 540.989500 | 6.089000 | ... | 62.518000 | 321.385500 | 296.513250 |
| 50% | 20.845000 | 14.308000 | 86.739000 | 1273.138500 | 271.792000 | 356.843000 | 325.669000 | 1.498000 | 592.895000 | 6.135000 | ... | 67.429000 | 324.741000 | 299.126000 |
| 75% | 23.032500 | 15.517000 | 92.372000 | 1289.196000 | 321.680000 | 362.242250 | 329.175000 | 1.560500 | 639.480500 | 6.199000 | ... | 71.522000 | 329.845250 | 304.244750 |
| max | 27.600000 | 16.958000 | 121.717000 | 1351.240000 | 419.014000 | 399.135000 | 337.012000 | 1.747000 | 731.394000 | 6.340000 | ... | 76.147000 | 333.854000 | 311.146000 |
|  | Observation | Y-Kappa | ChipRate | BF-CMratio | BlowFlow | ChipLevel4 | T-upperExt-2 | T-lowerExt-2 | UCZAA | WhiteFlow-4 | AAWhiteSt-4 | SteamFlow-4 | Lower-HeatT-3 | Upper-HeatT-3 | ChipMass-4 | WeakLiquo |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 31-00:00 | 23.10 | 16.520 | 121.717 | 1177.607 | 169.805 | 358.282 | 329.545 | 1.443 | 599.253 | ... | 67.122 | 329.432 | 303.099 | 175.964 | 1127.197 |
| 1 | 31-01:00 | 27.60 | 16.810 | 79.022 | 1328.360 | 341.327 | 351.050 | 329.067 | 1.549 | 537.201 | ... | 60.012 | 330.823 | 304.879 | 163.202 | 665.975 |
| 2 | 31-02:00 | 23.19 | 16.709 | 79.562 | 1329.407 | 239.161 | 350.022 | 329.260 | 1.600 | 549.611 | ... | 61.304 | 329.140 | 303.383 | 164.013 | 677.534 |
| 3 | 31-03:00 | 23.60 | 16.478 | 81.011 | 1334.877 | 213.527 | 350.938 | 331.142 | 1.604 | 623.362 | ... | 68.496 | 328.875 | 302.254 | 181.487 | 767.853 |
| 4 | 31-04:00 | 22.90 | 15.618 | 93.244 | 1334.168 | 243.131 | 351.640 | 332.709 | NaN | 638.672 | ... | 70.022 | 328.352 | 300.954 | 183.929 | 888.448 |
| .. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 298 | 12-09:00 | 20.90 | 15.167 | 84.640 | 1283.706 | 339.440 | 354.803 | 311.041 | 1.635 | 532.419 | ... | 65.561 | 332.924 | 307.626 | 145.299 | 832.906 |
| 299 | 12-10:00 | 24.98 | NaN | 85.034 | 1278.345 | 368.564 | 357.723 | 321.387 | NaN | 520.365 | ... | 65.729 | 332.523 | 307.169 | 151.544 | 905.61 |

```

	Time	Flow	Y-Kappa	BF-CMratio	BlowFlow	ChipLevel4	upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	...	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3	ChipMass-4	WeakLiquor
300	12-11:00	21.00	NaN	88.013	1307.722	278.842	357.438	323.757	NaN	553.070	...	65.795	331.263	306.400	157.954	908.69
301	12-12:00	21.40	NaN	85.490	1255.986	273.484	361.365	322.689	NaN	590.199	...	71.456	333.032	308.732	174.069	986.20
307	31-05:00	20.89	14.308	94.172	1327.832	251.120	351.263	332.485	1.522	631.514	...	71.286	328.699	300.706	180.229	903.60

301 rows × 23 columns

```
[11]: data.isnull()
```

[11]:

	Observation	Y-Kappa	ChipRate	BF-CMratio	BlowFlow	ChipLevel4	upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	...	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3	ChipMass-4	WeakLiquor
0	False	False	False	False	False	False	False	False	False	False	...	False	False	False	False	False
1	False	False	False	False	False	False	False	False	False	False	...	False	False	False	False	False
2	False	False	False	False	False	False	False	False	False	False	...	False	False	False	False	False
3	False	False	False	False	False	False	False	False	False	False	...	False	False	False	False	False
4	False	False	False	False	False	False	False	False	True	False	...	False	False	False	False	False
...
298	False	False	False	False	False	False	False	False	False	False	...	False	False	False	False	False
299	False	False	True	False	False	False	False	False	True	False	...	False	False	False	False	False
300	False	False	True	False	False	False	False	False	True	False	...	False	False	False	False	False
301	False	False	True	False	False	False	False	False	True	False	...	False	False	False	False	False
307	False	False	False	False	False	False	False	False	False	False	...	False	False	False	False	False

301 rows × 23 columns

```
[12]: data.notnull()
```

[12]:

	Observation	Y-Kappa	ChipRate	BF-CMratio	BlowFlow	ChipLevel4	upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	...	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3	ChipMass-4	WeakLiquor
0	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True
1	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True
2	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True
3	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True
4	True	True	True	True	True	True	True	True	True	False	...	True	True	True	True	True
...
298	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True
299	True	True	False	True	True	True	True	True	False	True	...	True	True	True	True	True
300	True	True	False	True	True	True	True	True	True	False	...	True	True	True	True	True
301	True	True	False	True	True	True	True	True	True	False	...	True	True	True	True	True
307	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True

301 rows × 23 columns

```
[13]: data.isnull().sum()
```

[13]: 352

```
[16]: data2=data.fillna(value=0)
data2
```

[16]:

	Observation	Y-Kappa	ChipRate	BF-CMratio	BlowFlow	ChipLevel4	upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	...	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3	ChipMass-4	WeakLiquor
0	31-00:00	23.10	16.520	121.717	1177.607	169.805	358.282	329.545	1.443	599.253	...	67.122	329.432	303.099	175.964	1127.19
1	31-01:00	27.60	16.810	79.022	1328.360	341.327	351.050	329.067	1.549	537.201	...	60.012	330.823	304.879	163.202	665.91
2	31-02:00	23.19	16.709	79.562	1329.407	239.161	350.022	329.260	1.600	549.611	...	61.304	329.140	303.383	164.013	677.51
3	31-03:00	23.60	16.478	81.011	1334.877	213.527	350.938	331.142	1.604	623.362	...	68.496	328.875	302.254	181.487	767.81
4	31-04:00	22.90	15.618	93.244	1334.168	243.131	351.640	332.709	0.000	638.672	...	70.022	328.352	300.954	183.929	888.44
...
298	12-09:00	20.90	15.167	84.640	1283.706	339.440	354.803	311.041	1.635	532.419	...	65.561	332.924	307.626	145.299	832.90
299	12-10:00	24.98	0.000	85.034	1278.345	368.564	357.723	321.387	0.000	520.365	...	65.729	332.523	307.169	151.544	905.61
300	12-11:00	21.00	0.000	88.013	1307.722	278.842	357.438	323.757	0.000	553.070	...	65.795	331.263	306.400	157.954	908.69
301	12-12:00	21.40	0.000	85.490	1255.986	273.484	361.365	322.689	0.000	590.199	...	71.456	333.032	308.732	174.069	986.20
307	31-05:00	20.89	14.308	94.172	1327.832	251.120	351.263	332.485	1.522	631.514	...	71.286	328.699	300.706	180.229	903.60

301 rows × 23 columns

```
[17]: data2.isnull().sum().sum()
```

[17]: 0

[18]: data

[18]:

	Observation	Y-Kappa	ChipRate	BF-CMratio	BlowFlow	ChipLevel4	upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	...	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3	ChipMass-4	WeakLiquor
--	-------------	---------	----------	------------	----------	------------	------------	--------------	-------	-------------	-----	-------------	---------------	---------------	------------	------------

0	31-00:00	23.10	16.520	121.717	1177.607	169.805	358.282	329.545	1.443	599.253	...	67.122	329.432	303.099	175.964	1127.19
1	31-01:00	27.60	16.810	79.022	1328.360	341.327	351.050	329.067	1.549	537.201	...	60.012	330.823	304.879	163.202	665.9;
2	31-02:00	23.19	16.709	79.562	1329.407	239.161	350.022	329.260	1.600	549.611	...	61.304	329.140	303.383	164.013	677.5;
3	31-03:00	23.60	16.478	81.011	1334.877	213.527	350.938	331.142	1.604	623.362	...	68.496	328.875	302.254	181.487	767.8;
4	31-04:00	22.90	15.618	93.244	1334.168	243.131	351.640	332.709	NaN	638.672	...	70.022	328.352	300.954	183.929	888.4;
...	
298	12-09:00	20.90	15.167	84.640	1283.706	339.440	354.803	311.041	1.635	532.419	...	65.561	332.924	307.626	145.299	832.9;
299	12-10:00	24.98	NaN	85.034	1278.345	368.564	357.723	321.387	NaN	520.365	...	65.729	332.523	307.169	151.544	905.6;
300	12-11:00	21.00	NaN	88.013	1307.722	278.842	357.438	323.757	NaN	553.070	...	65.795	331.263	306.400	157.954	908.6;
301	12-12:00	21.40	NaN	85.490	1255.986	273.484	361.365	322.689	NaN	590.199	...	71.456	333.032	308.732	174.069	986.2;
307	31-05:00	20.89	14.308	94.172	1327.832	251.120	351.263	332.485	1.522	631.514	...	71.286	328.699	300.706	180.229	903.6;

301 rows × 23 columns

```
[19]: data2=data.fillna(value=0)
data2
```

	Observation	Y-Kappa	ChipRate	BF-CMratio	BlowFlow	ChipLevel4	upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	...	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3	ChipMass-4	WeakLiquo
0	31-00:00	23.10	16.520	121.717	1177.607	169.805	358.282	329.545	1.443	599.253	...	67.122	329.432	303.099	175.964	1127.19
1	31-01:00	27.60	16.810	79.022	1328.360	341.327	351.050	329.067	1.549	537.201	...	60.012	330.823	304.879	163.202	665.9;
2	31-02:00	23.19	16.709	79.562	1329.407	239.161	350.022	329.260	1.600	549.611	...	61.304	329.140	303.383	164.013	677.5;
3	31-03:00	23.60	16.478	81.011	1334.877	213.527	350.938	331.142	1.604	623.362	...	68.496	328.875	302.254	181.487	767.8;
4	31-04:00	22.90	15.618	93.244	1334.168	243.131	351.640	332.709	0.000	638.672	...	70.022	328.352	300.954	183.929	888.4;
...	
298	12-09:00	20.90	15.167	84.640	1283.706	339.440	354.803	311.041	1.635	532.419	...	65.561	332.924	307.626	145.299	832.9;
299	12-10:00	24.98	0.000	85.034	1278.345	368.564	357.723	321.387	0.000	520.365	...	65.729	332.523	307.169	151.544	905.6;
300	12-11:00	21.00	0.000	88.013	1307.722	278.842	357.438	323.757	0.000	553.070	...	65.795	331.263	306.400	157.954	908.6;
301	12-12:00	21.40	0.000	85.490	1255.986	273.484	361.365	322.689	0.000	590.199	...	71.456	333.032	308.732	174.069	986.2;
307	31-05:00	20.89	14.308	94.172	1327.832	251.120	351.263	332.485	1.522	631.514	...	71.286	328.699	300.706	180.229	903.6;

301 rows × 23 columns

```
[20]: data3=data.fillna(method='pad')
data3
```

C:\Users\siva\AppData\Local\Temp\ipykernel_13816\713231795.py:1: FutureWarning: DataFrame.fillna with 'method' is deprecated and will raise in a future version. Use obj.ffill() or obj.bfill() instead.
data3=data.fillna(method='pad')

	Observation	Y-Kappa	ChipRate	BF-CMratio	BlowFlow	ChipLevel4	upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	...	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3	ChipMass-4	WeakLiquo
0	31-00:00	23.10	16.520	121.717	1177.607	169.805	358.282	329.545	1.443	599.253	...	67.122	329.432	303.099	175.964	1127.19
1	31-01:00	27.60	16.810	79.022	1328.360	341.327	351.050	329.067	1.549	537.201	...	60.012	330.823	304.879	163.202	665.9;
2	31-02:00	23.19	16.709	79.562	1329.407	239.161	350.022	329.260	1.600	549.611	...	61.304	329.140	303.383	164.013	677.5;
3	31-03:00	23.60	16.478	81.011	1334.877	213.527	350.938	331.142	1.604	623.362	...	68.496	328.875	302.254	181.487	767.8;
4	31-04:00	22.90	15.618	93.244	1334.168	243.131	351.640	332.709	1.604	638.672	...	70.022	328.352	300.954	183.929	888.4;
...	
298	12-09:00	20.90	15.167	84.640	1283.706	339.440	354.803	311.041	1.635	532.419	...	65.561	332.924	307.626	145.299	832.9;
299	12-10:00	24.98	15.167	85.034	1278.345	368.564	357.723	321.387	1.635	520.365	...	65.729	332.523	307.169	151.544	905.6;
300	12-11:00	21.00	15.167	88.013	1307.722	278.842	357.438	323.757	1.635	553.070	...	65.795	331.263	306.400	157.954	908.6;
301	12-12:00	21.40	15.167	85.490	1255.986	273.484	361.365	322.689	1.635	590.199	...	71.456	333.032	308.732	174.069	986.2;
307	31-05:00	20.89	14.308	94.172	1327.832	251.120	351.263	332.485	1.522	631.514	...	71.286	328.699	300.706	180.229	903.6;

301 rows × 23 columns

```
[22]: # filling null value with the next value
data4=data.fillna(method='bfill')
data4
```

C:\Users\siva\AppData\Local\Temp\ipykernel_13816\4074617093.py:2: FutureWarning: DataFrame.fillna with 'method' is deprecated and will raise in a future version. Use obj.fillna() or obj.bfill() instead.
data4=data.fillna(method='bfill')

	Observation	Y-Kappa	ChipRate	BF-CMratio	BlowFlow	ChipLevel4	upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	...	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3	ChipMass-4	WeakLiquo
0	31-00:00	23.10	16.520	121.717	1177.607	169.805	358.282	329.545	1.443	599.253	...	67.122	329.432	303.099	175.964	1127.19
1	31-01:00	27.60	16.810	79.022	1328.360	341.327	351.050	329.067	1.549	537.201	...	60.012	330.823	304.879	163.202	665.9;
2	31-02:00	23.19	16.709	79.562	1329.407	239.161	350.022	329.260	1.600	549.611	...	61.304	329.140	303.383	164.013	677.5;
3	31-03:00	23.60	16.478	81.011	1334.877	213.527	350.938	331.142	1.604	623.362	...	68.496	328.875	302.254	181.487	767.8;
4	31-04:00	22.90	15.618	93.244	1334.168	243.131	351.640	332.709	1.436	638.672	...	70.022	328.352	300.954	183.929	888.4;
...	
298	12-09:00	20.90	15.167	84.640	1283.706	339.440	354.803	311.041	1.635	532.419	...	65.561	332.924	307.626	145.299	832.9;
299	12-10:00	24.98	14.308	85.034	1278.345	368.564	357.723	321.387	1.522	520.365	...	65.729	332.523	307.169	151.544	905.6;
300	12-11:00	21.00	14.308	88.013	1307.722	278.842	357.438	323.757	1.522	553.070	...	65.795	331.263	306.400	157.954	908.6;

```
301    12-12:00  21.40   14.308  85.490  1255.986  273.484  361.365  322.689  1.522  590.199 ...  71.456  333.032  308.732  174.069  986.20
307    31-05:00  20.89   14.308  94.172  1327.832  251.120  351.263  332.485  1.522  631.514 ...  71.286  328.699  300.706  180.229  903.60
```

301 rows × 23 columns

```
[23]: import numpy as np
from scipy import stats

[24]: data2.columns

[24]: Index(['Observation', 'Y-Kappa', 'ChipRate', 'BF-CMratio', 'BlowFlow',
       'ChipLevel4', 'T-upperExt-2', 'T-lowerExt-2', 'UCZAA', 'WhiteFlow-4',
       'AAWhiteSt-4', 'AA-Wood-4', 'ChipMoisture-4', 'SteamFlow-4',
       'Lower-HeatT-3', 'Upper-HeatT-3', 'ChipMass-4', 'WeakLiquorF',
       'BlackFlow-2', 'WeakWashF', 'SteamHeatF-3', 'T-Top-Chips-4',
       'SulphidityL-4'],
      dtype='object')

[28]: data2.drop(['Observation'], axis=1, inplace=True)
data2.columns

[28]: Index(['Y-Kappa', 'ChipRate', 'BF-CMratio', 'BlowFlow', 'ChipLevel4',
       'T-upperExt-2', 'T-lowerExt-2', 'UCZAA', 'WhiteFlow-4', 'AAWhiteSt-4',
       'AA-Wood-4', 'ChipMoisture-4', 'SteamFlow-4', 'Lower-HeatT-3',
       'Upper-HeatT-3', 'ChipMass-4', 'WeakLiquorF', 'BlackFlow-2',
       'WeakWashF', 'SteamHeatF-3', 'T-Top-Chips-4', 'SulphidityL-4'],
      dtype='object')

[31]: Q1= data2.quantile(0.25)
Q3= data2.quantile(0.75)
IQR=Q3-Q1
print(IQR)

Y-Kappa        4.550
ChipRate       2.233
BF-CMratio    10.912
BlowFlow       96.766
ChipLevel4    105.868
T-upperExt-2  11.994
T-lowerExt-2  7.609
UCZAA          0.152
WhiteFlow-4   100.098
AAWhiteSt-4   6.143
AA-Wood-4     1.486
ChipMoisture-4 2.186
SteamFlow-4    8.840
Lower-HeatT-3  8.585
Upper-HeatT-3  7.852
ChipMass-4    19.347
WeakLiquorF   180.613
BlackFlow-2    280.829
WeakWashF     267.219
SteamHeatF-3   6.983
T-Top-Chips-4 2.044
SulphidityL-4 30.420
dtype: float64

[32]: data2=data2[~((data2<(Q1-1.5*IQR))|(data2>(Q3+1.5*IQR))).any(axis=1)]
data2

[32]:
```

	Y-Kappa	ChipRate	BF-CMratio	BlowFlow	ChipLevel4	T-upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	AAWhiteSt-4	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3	ChipMass-4	WeakLiquor
1	27.60	16.810	79.022	1328.360	341.327	351.050	329.067	1.549	537.201	6.076	60.012	330.823	304.879	163.202	665.97
2	23.19	16.709	79.562	1329.407	239.161	350.022	329.260	1.600	549.611	0.000	61.304	329.140	303.383	164.013	677.53
3	23.60	16.478	81.011	1334.877	213.527	350.938	331.142	1.604	623.362	6.054	68.496	328.875	302.254	181.487	767.85
5	14.23	15.350	85.518	1171.604	198.538	344.014	325.195	1.436	628.245	6.020	65.225	322.103	298.517	165.814	826.24
6	13.49	13.700	98.186	1243.688	116.275	346.208	326.982	1.434	696.766	0.000	72.989	322.982	296.080	182.018	784.28
...
276	22.70	15.517	83.008	1288.010	306.886	350.155	322.485	1.590	568.752	6.170	67.678	331.854	309.346	160.061	910.01
296	20.50	13.358	97.662	1304.597	377.678	347.672	313.147	1.546	496.460	6.340	60.119	332.615	308.575	141.076	997.90
297	20.40	14.233	89.790	1278.006	379.458	354.290	315.558	1.515	491.374	0.000	60.424	331.980	308.078	140.301	975.01
298	20.90	15.167	84.640	1283.706	339.440	354.803	311.041	1.635	532.419	6.340	65.561	332.924	307.626	145.299	832.90
307	20.89	14.308	94.172	1327.832	251.120	351.263	332.485	1.522	631.514	0.000	71.286	328.699	300.706	180.229	903.60

226 rows × 22 columns

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[33]: data2.describe()

[33]:
```

	Y-Kappa	ChipRate	BF-CMratio	BlowFlow	ChipLevel4	T-upperExt-2	T-lowerExt-2	UCZAA	WhiteFlow-4	AAWhiteSt-4	SteamFlow-4	Lower-HeatT-3	Upper-HeatT-3
count	226.000000	226.000000	226.000000	226.000000	226.000000	226.000000	226.000000	226.000000	226.000000	226.000000	226.000000	226.000000	226.000000
mean	20.690487	14.673491	85.882181	1255.288916	264.664912	356.861681	325.341124	1.487146	603.242482	3.098164	... 67.545478	324.752212	299.655420
std	2.982916	1.297369	7.033155	47.896055	74.345135	7.466897	5.557537	0.108054	61.052197	3.078138	... 4.914301	4.526481	4.383788
min	12.480000	10.833000	68.645000	1084.083000	61.783000	340.222000	310.421000	1.182000	468.841000	0.000000	... 52.962000	318.051000	293.312000
25%	18.457500	13.850000	80.984000	1221.926000	220.356000	350.704250	322.355500	1.429000	549.611000	0.000000	... 63.954000	321.179500	296.338500
50%	20.775000	14.729000	84.967000	1280.291500	270.965000	357.560500	326.508500	1.492000	602.508000	5.904500	... 68.147000	322.380000	297.636500
75%	23.010000	15.708000	91.178750	1289.254000	322.492000	361.555000	329.264500	1.556000	653.358500	6.140000	... 71.760750	329.575000	303.777000
max	27.600000	16.958000	108.104000	1351.240000	419.014000	375.047000	337.012000	1.712000	731.394000	6.340000	... 75.974000	333.223000	309.854000

8 rows × 22 columns

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[ ]:
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