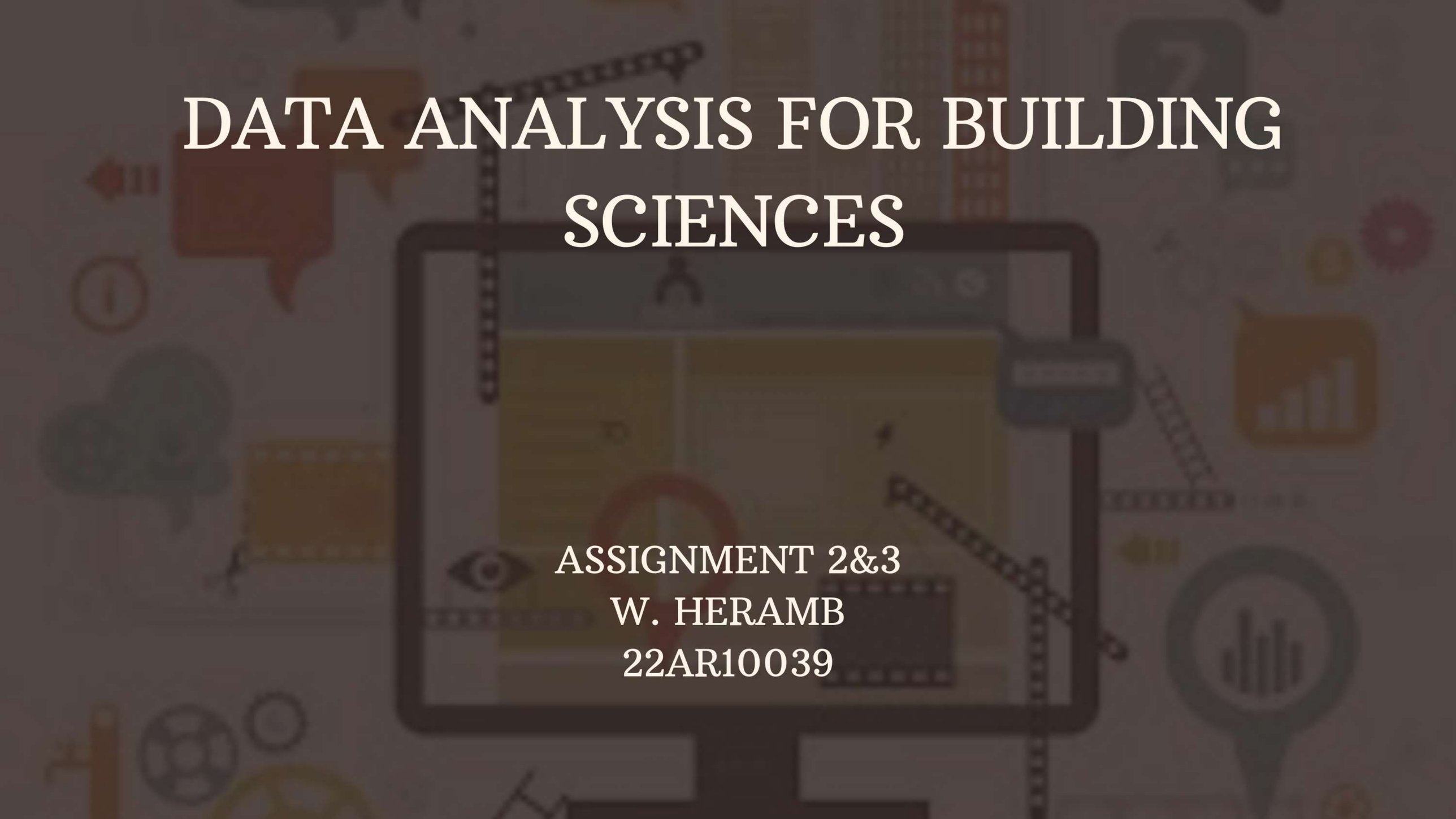
DATA ANALYSIS FOR BUILDING SCIENCES



ASSIGNMENT 2&3
W. HERAMB
22AR10039

3 DATA SETS

- INDOOR AIR QUALITY
- OUTDOOR AIR QUALITY
- ENERGY DATASET

ASSIGNMENT

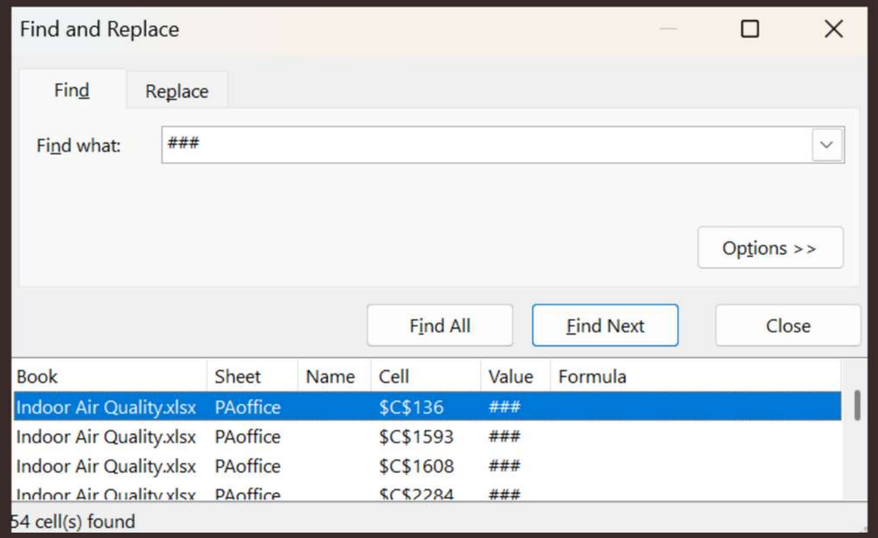
1. UNDERSTANDING THE DATA.
2. CLEANING THE DATA SET.
3. CLEANING - REMOVING THE DIRECT ROW AND PUTTING THE , MEAN OR MEDIAN VALUES.
4. GENERATING THE GRAPHS.
5. MERGING THE DATASETS, TO FIND THE USABLE RANGE TO COMPARE

INDOOR AIR QUALITY

UNDERSTANDING THE DATASETS

- THE DATA IS TAKEN IN THE INTERVAL OF EVERY 15 MINUTES FOR A YEAR.
- THE READINGS ARE TAKEN IN THE FORMAT OF [ppm], [°C],[mbar] ,[%RH] ,[°C td],[g/m³]
- TOTAL NULL VALUES ARE IN 54 CELLS.

[PROCESS - IN EXCEL - FIND (CNTRL+F) THE NULL, NON-NUMERICAL VALUES AND IT SHOWED THERE ARE 54 CELLS AS ###
PYTHON - TO FIND THE TOTAL NUMBER OF NON-NUMERICAL VALUES IN ROWS -




```
null_values = df[df.isnull().any(axis=1)]
print("Rows with NaN values:\n", null_values)
```

FINAL MASTERSHEET LINK

INDOOR AIR QUALITY

CLEANING THE DATASET

1. MERGING THE DAY AND TIME COLUMNS

EXCEL

```
=TEXT(B2, "yyyy-mm-dd") & " " & TEXT(C2, "HH:mm:ss")
```

MERGED	Location		testo 160 IAQ_5161 6142 [ppm]	testo 160 IAQ_5161 6142 [°C]	testo 160 IAQ_5161 6142 [mbar]	testo 160 IAQ_5161 6142 [%RH]	testo 160 IAQ_5161 6142 [°C td]	testo 160 IAQ_5161 6142 [g/m³]
2023-01-01 00:00:00	01-01-2023	00:00:00	385	21.7	1010	63.5	14.5	12.1
2023-01-01 00:15:00	01-01-2023	00:15:00	387	21.7	1010	63.7	14.5	12.2
2023-01-01 00:30:00	01-01-2023	00:30:00	390	21.7	1010	63.8	14.6	12.2
2023-01-01 00:45:00	01-01-2023	00:45:00	389	21.7	1010	63.8	14.6	12.2
2023-01-01 01:00:00	01-01-2023	01:00:00	391	21.7	1010	63.8	14.5	12.2
2023-01-01 01:15:00	01-01-2023	01:15:00	389	21.7	1010	63.7	14.5	12.2
2023-01-01 01:30:00	01-01-2023	01:30:00	389	21.7	1010	63.9	14.6	12.2
2023-01-01 01:45:00	01-01-2023	01:45:00	391	21.7	1010	64.3	14.7	12.3
2023-01-01 02:00:00	01-01-2023	02:00:00	388	21.7	1010	64.3	14.6	12.3
2023-01-01 02:15:00	01-01-2023	02:15:00	391	21.7	1010	64.4	14.7	12.3
2023-01-01 02:30:00	01-01-2023	02:30:00	388	21.7	1010	64.5	14.7	12.3
2023-01-01 02:45:00	01-01-2023	02:45:00	391	21.6	1010	64.5	14.7	12.3
2023-01-01 03:00:00	01-01-2023	03:00:00	388	21.6	1010	64.3	14.6	12.2
2023-01-01 03:15:00	01-01-2023	03:15:00	390	21.6	1010	64.2	14.6	12.2

PYTHON

```
data['Iloveu'] = data['Location'].astype(str) + ", " + data['Unnamed: 1'].astype(str)
```

```
data = data.drop(['Location','Unnamed: 1'], axis = 1)
```

```
call = data.pop('Iloveu')
data.insert(0,'Iloveu',call)
data.head()
```

	Iloveu	testo 160 IAQ_51616142 [ppm]	testo 160 IAQ_51616142 [°C]	testo 160 IAQ_51616142 [mbar]	testo 160 IAQ_51616142 [%RH]	testo 160 IAQ_51616142 [°C td]	testo 160 IAQ_51616142 [g/m³]
0	2023-01-01, 00:00:00	385	21.7	1010	63.5	14.5	12.1
1	2023-01-01, 00:15:00	387	21.7	1010	63.7	14.5	12.2
2	2023-01-01, 00:30:00	390	21.7	1010	63.8	14.6	12.2
3	2023-01-01, 00:45:00	389	21.7	1010	63.8	14.6	12.2
4	2023-01-01, 01:00:00	391	21.7	1010	63.8	14.5	12.2

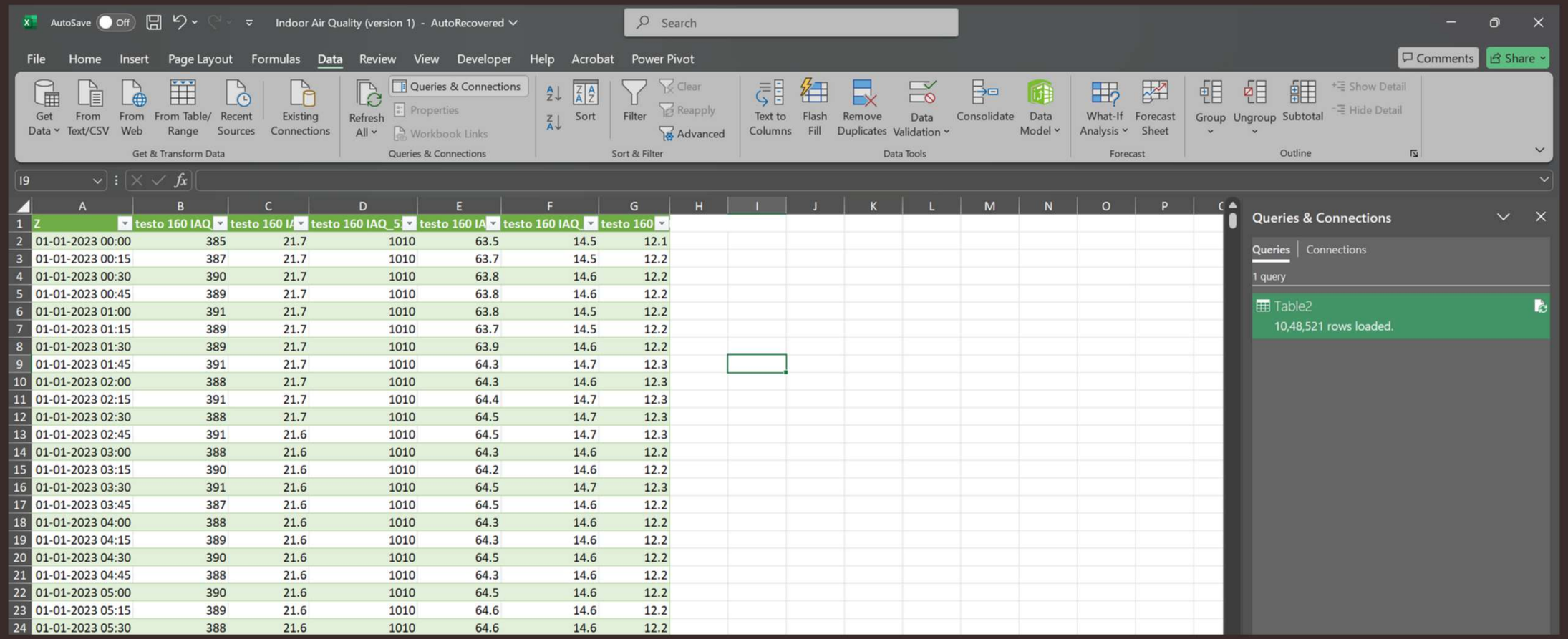
INDOOR AIR QUALITY

CLEANING THE DATASET

2. DROPPING THE ROWS WITH NULL VALUES

USING EXCEL

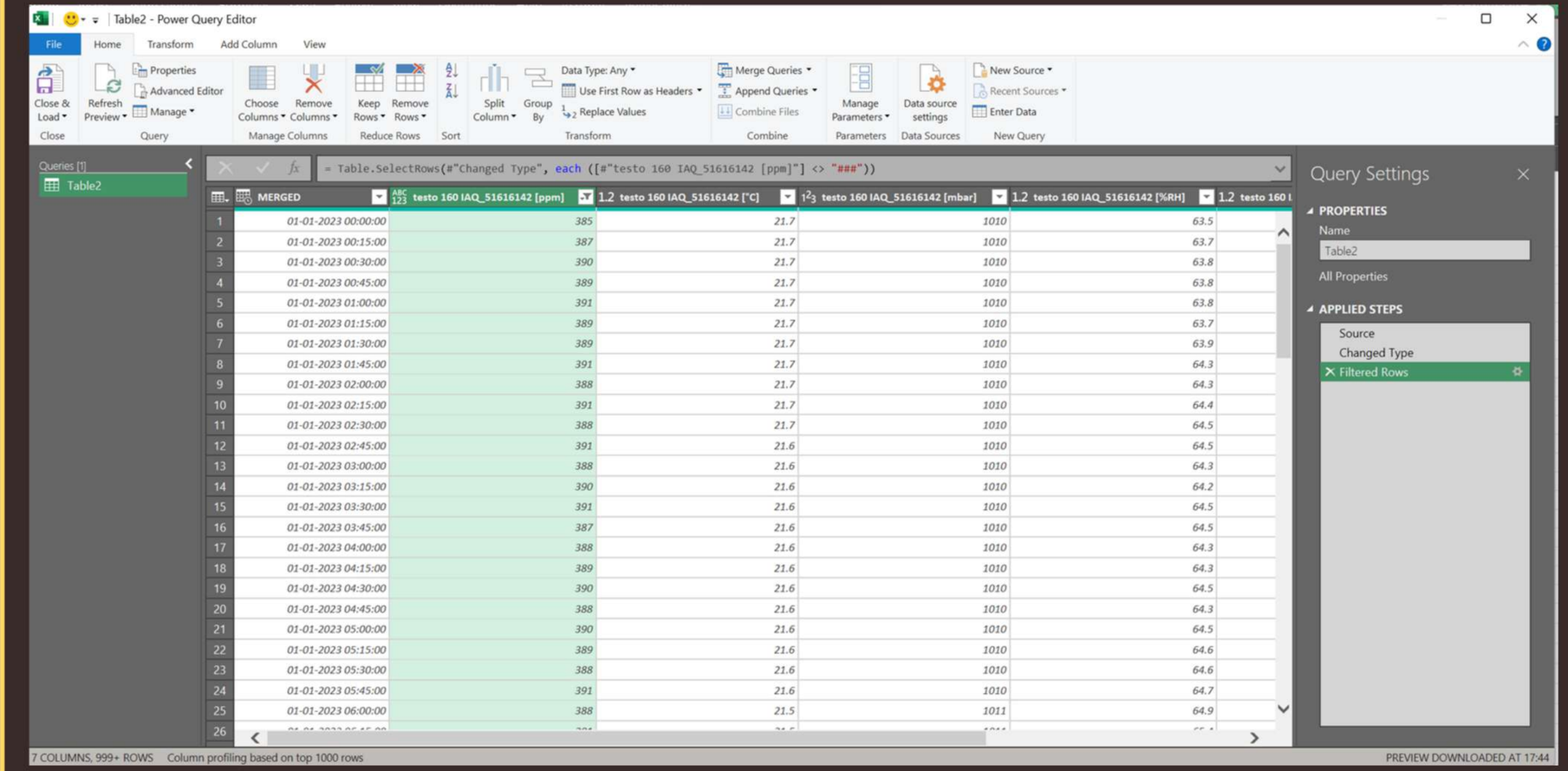
1. Select your data range Go to Data Click Get & Transform From Table/Range.
2. In Power Query, select the column that contains the unwanted values.
3. Click Filter (dropdown arrow) and uncheck the values you want to remove.
4. Click Close & Load to apply changes.

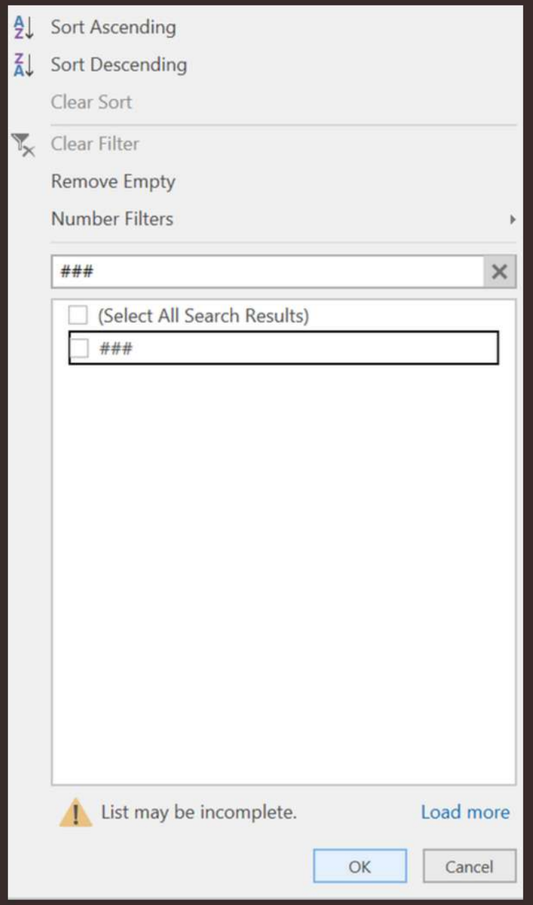


	A	B	C	D	E	F	G
1	Z	testo 160 IAQ_	testo 160 IA	testo 160 IAQ_5	testo 160 IA	testo 160 IAQ_	testo 160
2	01-01-2023 00:00	385	21.7	1010	63.5	14.5	12.1
3	01-01-2023 00:15	387	21.7	1010	63.7	14.5	12.2
4	01-01-2023 00:30	390	21.7	1010	63.8	14.6	12.2
5	01-01-2023 00:45	389	21.7	1010	63.8	14.6	12.2
6	01-01-2023 01:00	391	21.7	1010	63.8	14.5	12.2
7	01-01-2023 01:15	389	21.7	1010	63.7	14.5	12.2
8	01-01-2023 01:30	389	21.7	1010	63.9	14.6	12.2
9	01-01-2023 01:45	391	21.7	1010	64.3	14.7	12.3
10	01-01-2023 02:00	388	21.7	1010	64.3	14.6	12.3
11	01-01-2023 02:15	391	21.7	1010	64.4	14.7	12.3
12	01-01-2023 02:30	388	21.7	1010	64.5	14.7	12.3
13	01-01-2023 02:45	391	21.6	1010	64.5	14.7	12.3
14	01-01-2023 03:00	388	21.6	1010	64.3	14.6	12.2
15	01-01-2023 03:15	390	21.6	1010	64.2	14.6	12.2
16	01-01-2023 03:30	391	21.6	1010	64.5	14.7	12.3
17	01-01-2023 03:45	387	21.6	1010	64.5	14.6	12.2
18	01-01-2023 04:00	388	21.6	1010	64.3	14.6	12.2
19	01-01-2023 04:15	389	21.6	1010	64.3	14.6	12.2
20	01-01-2023 04:30	390	21.6	1010	64.5	14.6	12.2
21	01-01-2023 04:45	388	21.6	1010	64.3	14.6	12.2
22	01-01-2023 05:00	390	21.6	1010	64.5	14.6	12.2
23	01-01-2023 05:15	389	21.6	1010	64.6	14.6	12.2
24	01-01-2023 05:30	388	21.6	1010	64.6	14.6	12.2

INDOOR AIR QUALITY

USING EXCEL





INDOOR AIR QUALITY

USING PYTHON

```
data.shape
```

```
(38945, 8)
```

BEFORE DROPPING

```
data = data.dropna()
```

```
data = data[~data.isin(["###"]).any(axis=1)]
```

```
data.shape
```

```
(38891, 7)
```

AFTER DROPPING

APPROACH 2, WITHOUT REMOVING THE NULL VALUE, TAKING THE MEAN OF LAST TWO AND UPCOMING TWO VALUES

USING EXCEL

```
=IF(A2="", AVERAGE(OFFSET(A2,-1,0), OFFSET(A2,1,0)), A2)
```

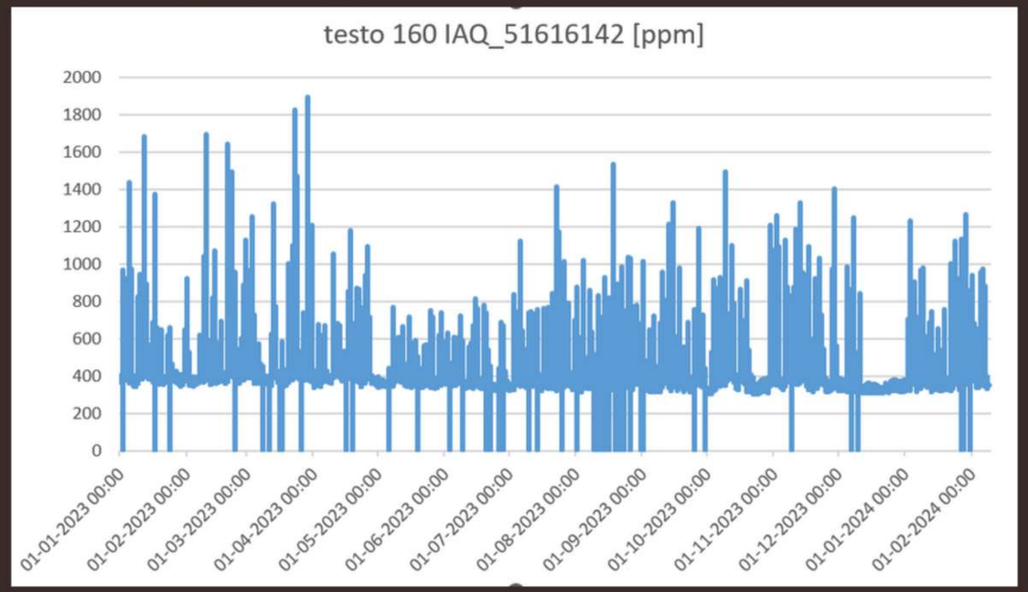
USING PYTHON

```python
def fill_missing_values(series):
    for i in range(1, len(series) - 1):
        if pd.isna(series[i]):
            series[i] = (series[i-1] + series[i+1]) / 2
    return series

df['Values'] = fill_missing_values(df['Values'])

print(df)
data.head()
```

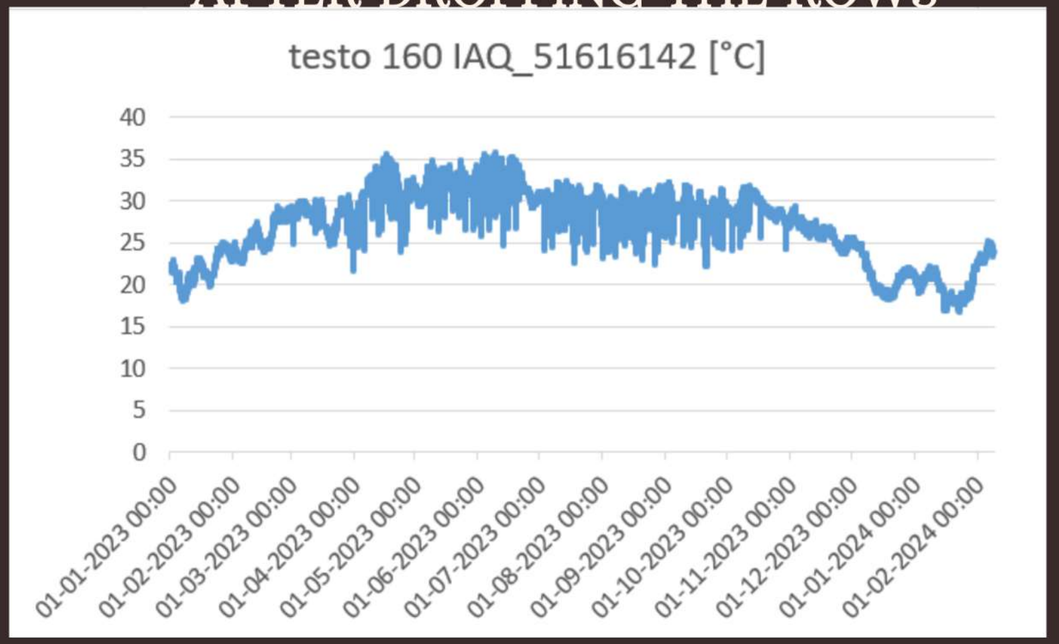
INDOOR AIR QUALITY

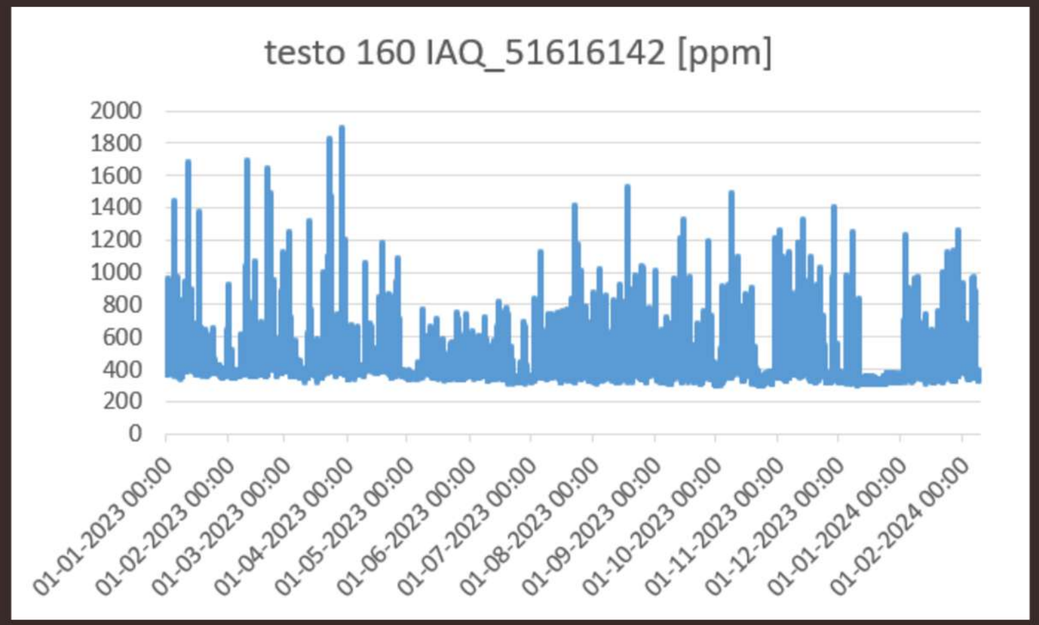
GRAPHS

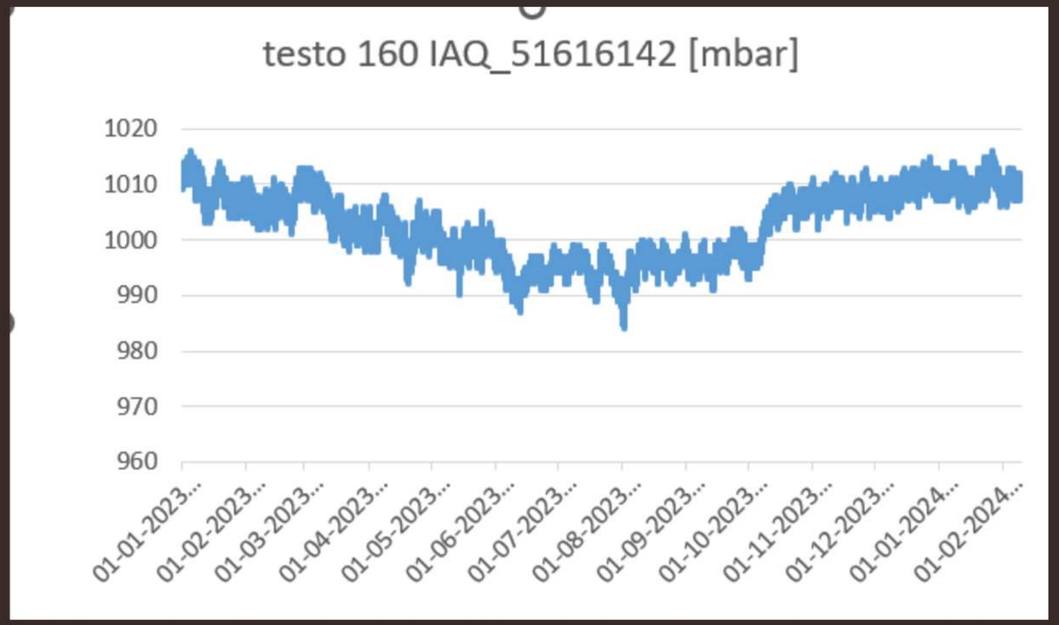
BEFORE DROPPING THE ROWS



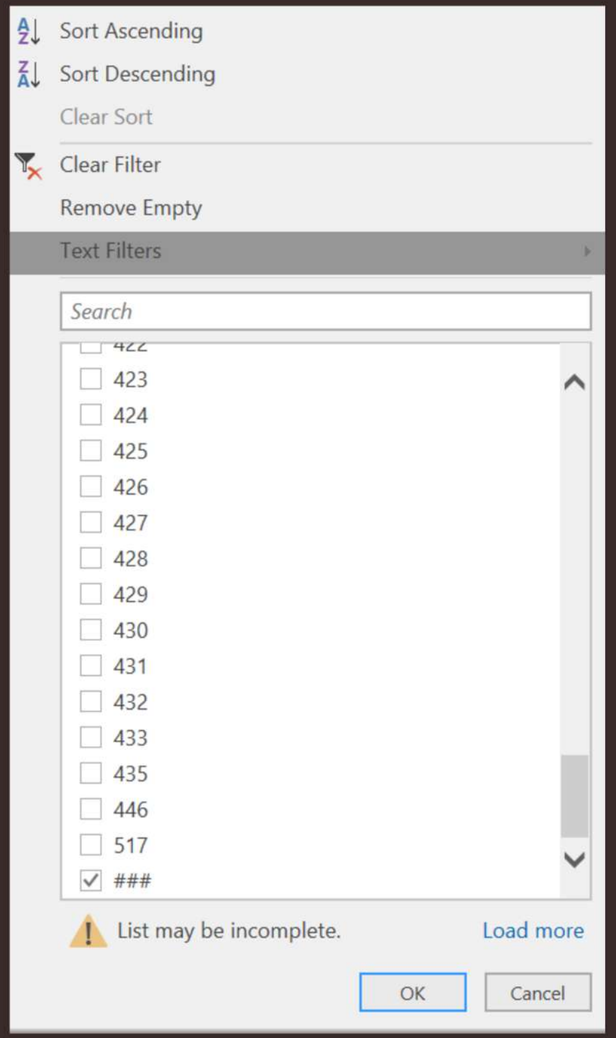
AFTER DROPPING THE ROWS







OUTDOOR AIR QUALITY



SAME PROCESS AS INDOOR AIR QUALITY FOR DATA MERGING AND CLEANING.

TOTAL 45 MISSING VALUES

```
= Table.SelectRows(#"Changed Type", each ([#"testo 160 IAQ_51616135_outdoor [ppm]"] = "###"))
```

	DateTime	testo 160 IAQ_51616135_outdoor [ppm]	testo 160 IAQ_51616135_outdoor [°C]	testo 160 IAQ_51616135_
21	08-05-2023 02:45:00	###	35.6	
22	08-05-2023 22:30:00	###	29.3	
23	09-05-2023 04:45:00	###	30.8	
24	13-05-2023 00:45:00	###	29	
25	15-05-2023 07:15:00	###	32.1	
26	27-05-2023 12:00:00	###	31.8	
27	31-05-2023 09:15:00	###	31.8	
28	11-06-2023 08:30:00	###	29.8	
29	18-06-2023 10:45:00	###	28.7	
30	25-06-2023 21:00:00	###	28.4	
31	27-06-2023 00:45:00	###	29.4	
32	27-06-2023 02:45:00	###	30.9	
33	27-06-2023 03:30:00	###	31.1	
34	29-06-2023 03:30:00	###	30.4	
35	30-06-2023 22:30:00	###	27.2	
36	03-07-2023 07:30:00	###	32.8	
37	06-07-2023 06:00:00	###	30.7	
38	06-07-2023 06:15:00	###	30.5	
39	08-07-2023 16:30:00	###	30.2	
40	10-07-2023 16:30:00	###	27.9	
41	17-07-2023 20:45:00	###	31.4	
42	22-07-2023 17:30:00	###	27	
43	31-08-2023 21:30:00	###	26.5	
44	29-09-2023 11:15:00	###	20.2	

ADVANCED POWER QUERY

FINAL MASTERSHEET LINK

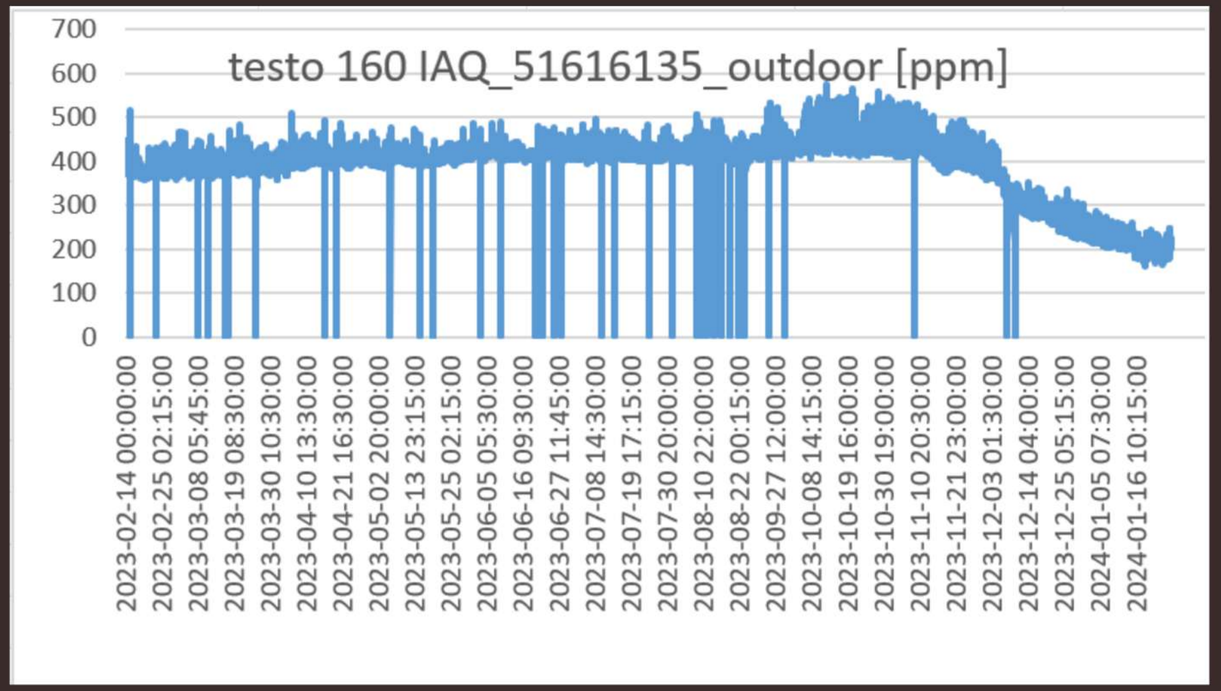
OUTDOOR AIR QUALITY

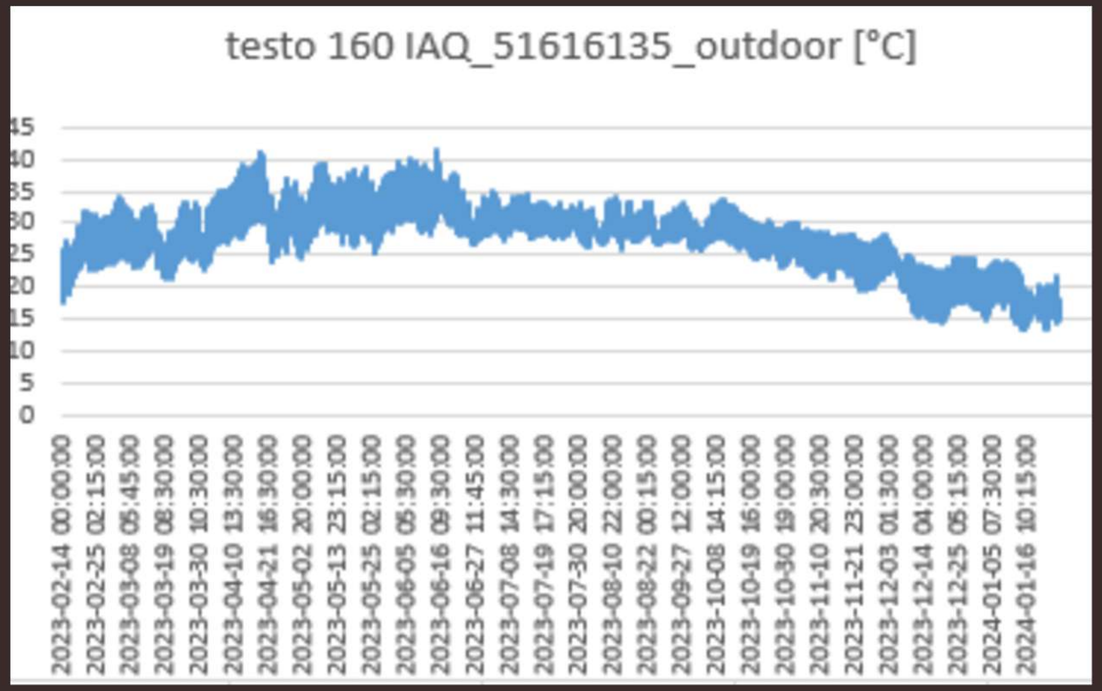
J9 | Z

	A	B	C	D	E	F	G
1	DateTime	testo 160 IAQ_51616135_outdoor [ppm]	testo 160 IAQ_51616135_outdoor [°C]	testo 160 IAQ_51616135_outdoor [mbar]	testo 160 IAQ_51616135_outdoor [%RH]	testo 160 IAQ_51616135_outdoor [°Ctd]	testo 160 IAQ_51616135_outdoor [g/m³]
2	2023-01-01 00:00:00	401	22	1008	48.7	10.7	9.4
3	2023-01-01 00:15:00	399	21.8	1008	48.1	10.4	9.2
4	2023-01-01 00:30:00	391	21.7	1008	46.4	9.7	8.9
5	2023-01-01 00:45:00	391	21.6	1008	45.8	9.5	8.7
6	2023-01-01 01:00:00	389	21.5	1008	45.2	9.2	8.5
7	2023-01-01 01:15:00	392	21.5	1008	43.8	8.7	8.3
8	2023-01-01 01:30:00	390	21.5	1008	40.8	7.6	7.7
9	2023-01-01 01:45:00	390	21.5	1008	38.8	6.9	7.3
10	2023-01-01 02:00:00	386	21.5	1008	36.8	6.1	6.9
11	2023-01-01 02:15:00	388	21.3	1008	35.8	5.6	6.7
12	2023-01-01 02:30:00	386	21.1	1008	36.3	5.6	6.7
13	2023-01-01 02:45:00	389	20.9	1008	37.3	5.8	6.8
14	2023-01-01 03:00:00	389	20.6	1008	38.6	6.1	6.9
15	2023-01-01 03:15:00	386	20.4	1008	39.1	6	6.9
16	2023-01-01 03:30:00	387	20.2	1008	38.9	5.8	6.8
17	2023-01-01 03:45:00	387	20	1008	39.2	5.8	6.8
18	2023-01-01 04:00:00	390	19.9	1008	40.1	6	6.9
19	2023-01-01 04:15:00	388	19.8	1008	40	5.8	6.8
20	2023-01-01 04:30:00	392	19.6	1008	40.6	5.9	6.9
21	2023-01-01 04:45:00	395	19.5	1008	40.4	5.7	6.8
22	2023-01-01 05:00:00	384	19.4	1008	40.3	5.6	6.7

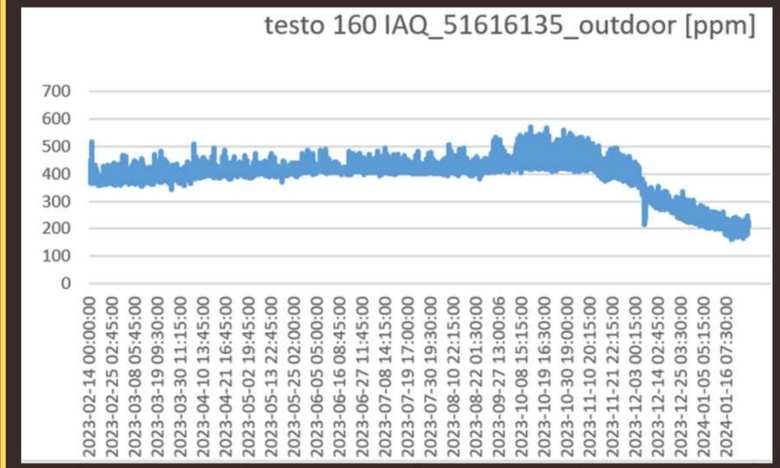
OUTDOOR AIR QUALITY

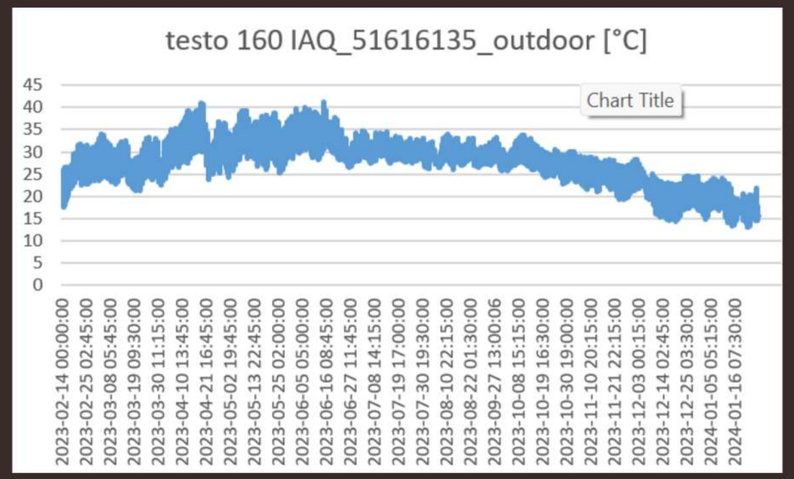
BEFORE DROPPING

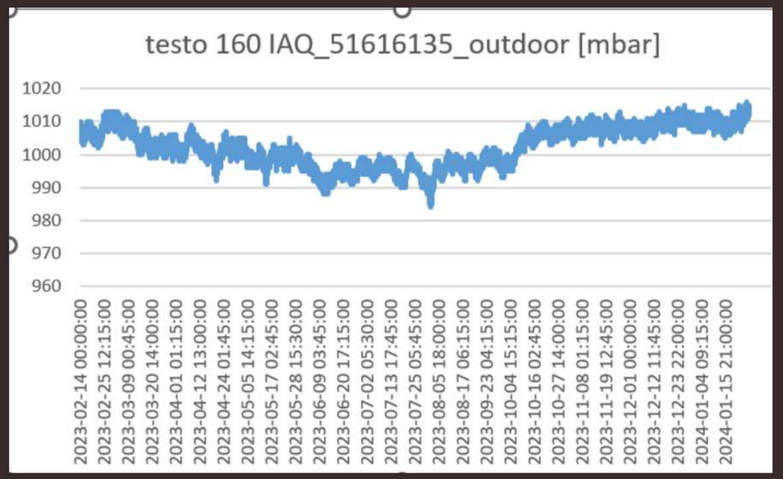




AFTER DROPPING







ENERGY DATA

```
=IF(ISNUMBER(SEARCH("/",A2)),
DATE(RIGHT(LEFT(A2,10),4),LEFT(A2,2),MID(A2,4,2)) +
TIME(MID(A2,12,2),MID(A2,15,2),MID(A2,18,2)),
DATEVALUE(LEFT(A2,10)) + TIMEVALUE(MID(A2,12,8)))
```

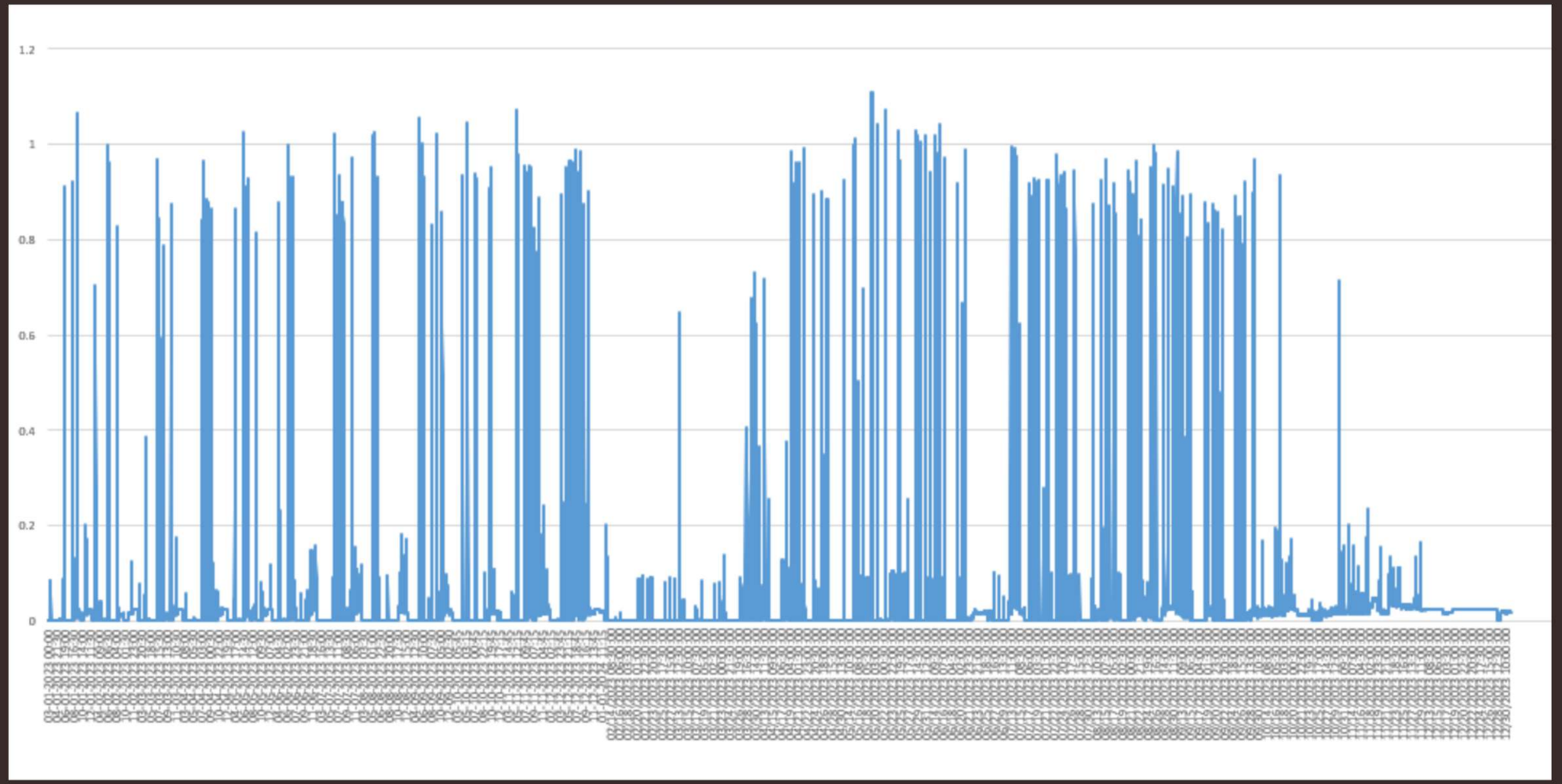
THIS WILL GIVE THE DATA IN THE SAME EXACT FORMAT FOR WHOLE COLUMN AS SOME WAS IN THE FORMAT DD:MM:YYYY HH:MM AND SOME IN MM/DD/YYYY HH:MM SO THIS FORMULA WILL CONVERT IT INTO THE ONE FORMAT WHICH WILL BE HELPFUL FOR SORTING

ENERGY DATA

	DateTime	Computer - kWatts	Plug Load (kWatts)	Air Conditioner-kWatts	light + fan - kWatts
1	01-01-2023 00:00:00	No CT	0	0	No CT
2	01-01-2023 00:15:00	No CT	0	0	No CT
3	01-01-2023 00:30:00	No CT	0	0	No CT
4	01-01-2023 00:45:00	No CT	0	0	No CT
5	01-01-2023 01:00:00	No CT	0	0	No CT
6	01-01-2023 01:15:00	No CT	0	0	No CT
7	01-01-2023 01:30:00	No CT	0	0	No CT
8	01-01-2023 01:45:00	No CT	0	0	No CT
9	01-01-2023 02:00:00	No CT	0	0	No CT
10	01-01-2023 02:15:00	No CT	0	0	No CT
11	01-01-2023 02:30:00	No CT	0	0	No CT
12	01-01-2023 02:45:00	No CT	0	0	No CT
13	01-01-2023 03:00:00	No CT	0	0	No CT
14	01-01-2023 03:15:00	No CT	0	0	No CT
15	01-01-2023 03:30:00	No CT	0	0	No CT
16	01-01-2023 03:45:00	No CT	0	0	No CT
17	01-01-2023 04:00:00	No CT	0	0	No CT
18	01-01-2023 04:15:00	No CT	0	0	No CT
19	01-01-2023 04:30:00	No CT	0	0	No CT
20	01-01-2023 04:45:00	No CT	0	0	No CT
21	01-01-2023 05:00:00	No CT	0	0	No CT
22	01-01-2023 05:15:00	No CT	0	0	No CT
23	01-01-2023 05:30:00	No CT	0	0	No CT
24	01-01-2023 05:45:00	No CT	0	0	No CT
25	01-01-2023 06:00:00	No CT	0	0	No CT
26	01-01-2023 06:15:00	No CT	0	0	No CT

ENERGY DATA

SUM



MERGED DATA

HAVE TO MERGE THE DATASETS WITH RESPECT TO DATE AND TIME

BY PYTHON

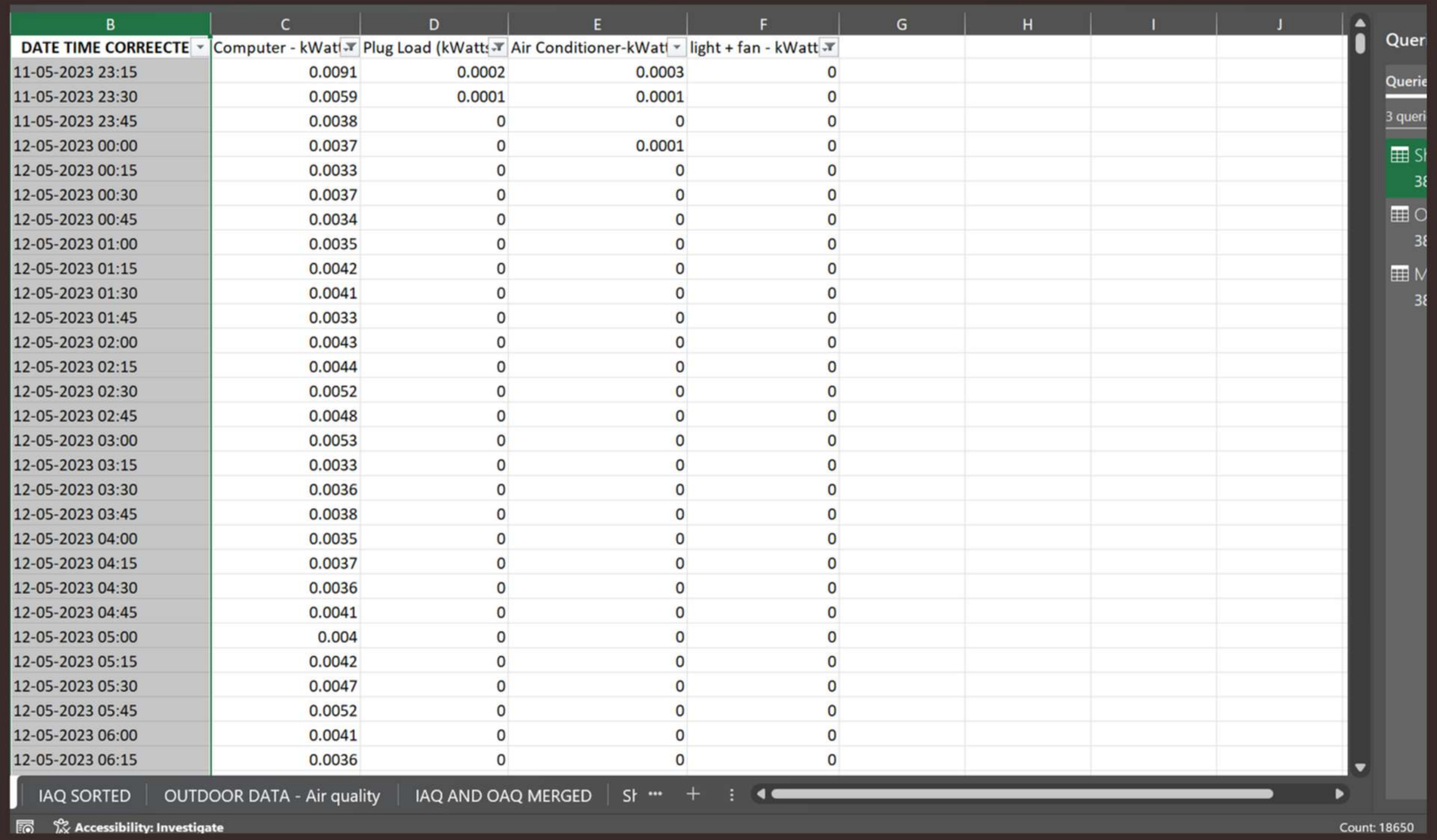
```python
import pandas as pd

file1 = "IAQ.xlsx"
file2 = "OAQ.xlsx"

df1 = pd.read_excel(IAQ)
df2 = pd.read_excel(OAQ)

df1['DateTime'] = pd.to_datetime(df1['DateTime'])
df2['DateTime'] = pd.to_datetime(df2['DateTime'])

common_rows = df1.merge(df2, on='DateTime', how='inner')

common_rows.to_excel("common_rows.xlsx", index=False)

print("COMPLETE")
```

FIRSTLY MERGE THE SAME DATA POINTS FROM IAQ AND OAQ FILE, THEN WILL SEARCH FOR THE SAME DATA POINTS IN THE ENERGY USAGE DATASET

CLEANING THE DATA MERGED DATASET

MERGED DATA

HAVE TO MERGE THE DATASETS WITH RESPECT TO DATE AND TIME IN EXCEL



DATE TIME CORREECTE	Computer - kWatt	Plug Load (kWatt	Air Conditioner-kWat	light + fan - kWatt
11-05-2023 23:15	0.0091	0.0002	0.0003	0
11-05-2023 23:30	0.0059	0.0001	0.0001	0
11-05-2023 23:45	0.0038	0	0	0
12-05-2023 00:00	0.0037	0	0.0001	0
12-05-2023 00:15	0.0033	0	0	0
12-05-2023 00:30	0.0037	0	0	0
12-05-2023 00:45	0.0034	0	0	0
12-05-2023 01:00	0.0035	0	0	0
12-05-2023 01:15	0.0042	0	0	0
12-05-2023 01:30	0.0041	0	0	0
12-05-2023 01:45	0.0033	0	0	0
12-05-2023 02:00	0.0043	0	0	0
12-05-2023 02:15	0.0044	0	0	0
12-05-2023 02:30	0.0052	0	0	0
12-05-2023 02:45	0.0048	0	0	0
12-05-2023 03:00	0.0053	0	0	0
12-05-2023 03:15	0.0033	0	0	0
12-05-2023 03:30	0.0036	0	0	0
12-05-2023 03:45	0.0038	0	0	0
12-05-2023 04:00	0.0035	0	0	0
12-05-2023 04:15	0.0037	0	0	0
12-05-2023 04:30	0.0036	0	0	0
12-05-2023 04:45	0.0041	0	0	0
12-05-2023 05:00	0.004	0	0	0
12-05-2023 05:15	0.0042	0	0	0
12-05-2023 05:30	0.0047	0	0	0
12-05-2023 05:45	0.0052	0	0	0
12-05-2023 06:00	0.0041	0	0	0
12-05-2023 06:15	0.0036	0	0	0

IAQ SORTED | OUTDOOR DATA - Air quality | IAQ AND OAQ MERGED | Sh

Accessibility: Investigate

Count: 18650

IAQ AND OAQ DATE TIME COLUMN SORTED

MERGED DATA

HAVE TO MERGE THE DATASETS WITH RESPECT TO DATE AND TIME IN EXCEL

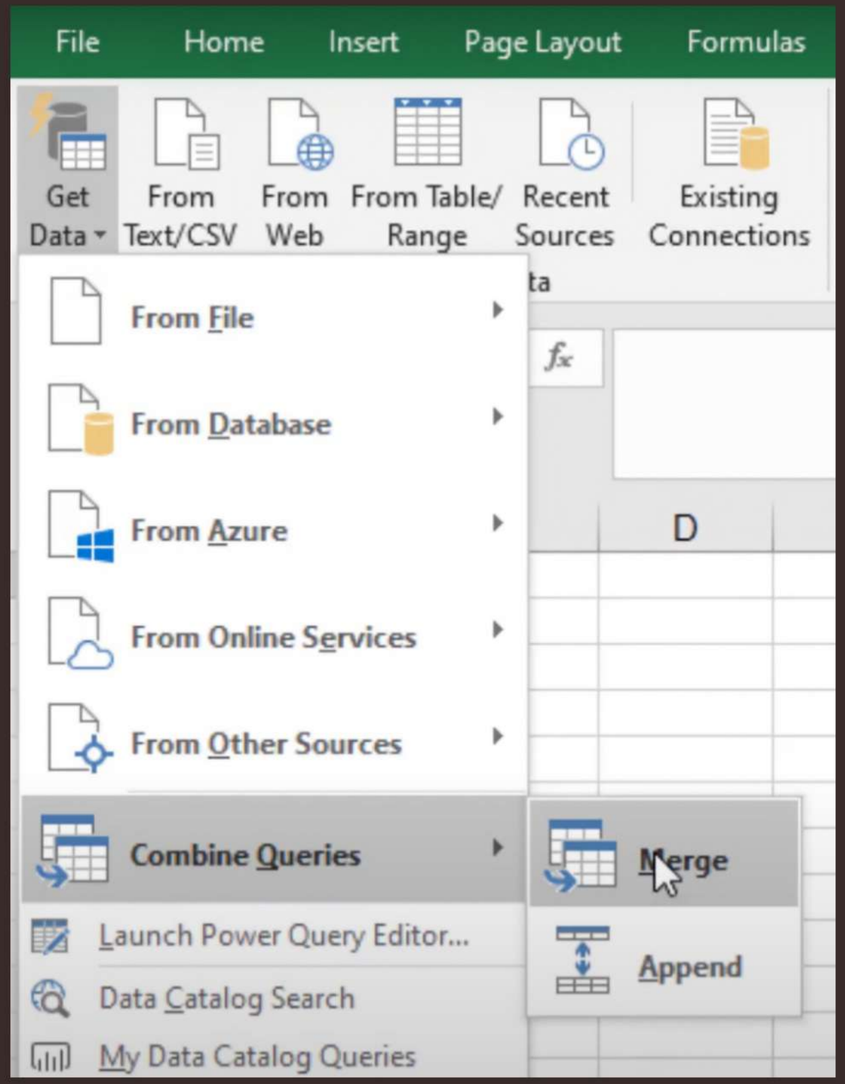
AFTER CONVERTING THE DATA TIME DATA IN THE SAME FORMAT OF DD-MM-YYYY HH:MM

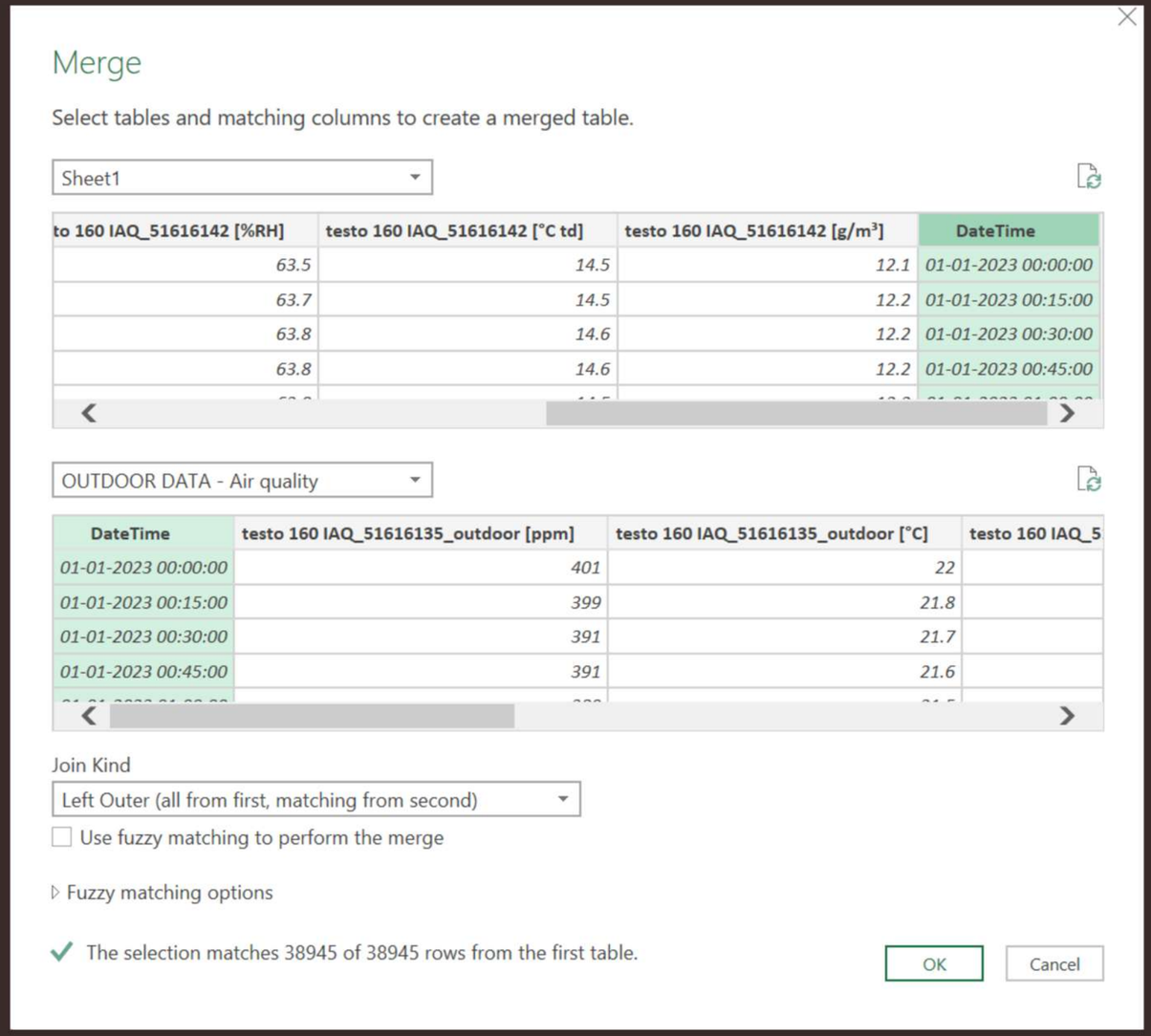
```
=IF(ISNUMBER(SEARCH("-",A27801)),
  TEXT(A27801,"dd-mm-yyyy hh:mm"),

TEXT(DATEVALUE(LEFT(A27801,10))+TIMEVALUE(RIGHT(A2780
1,8)),"dd-mm-yyyy hh:mm")
)
```

NOW FOR ENERGY DATA WHICH HAS COMPLEXITIES

	A	B	C	D	E
1	DateTime		Computer - kWat	Plug Load (kWatts	Air Conditioner-kWat
.2627	2023-05-11 23:15:00	=IF(ISNUMBER(SEARCH("-",A12627)),			
.2628	2023-05-11 23:30:00	TEXT(A12627,"dd-mm-yyyy hh:mm"),			
.2629	2023-05-11 23:45:00	TEXT(DATEVALUE(LEFT(A12627,10))+TIMEVALUE(RIGHT(A12627,8)),"dd-mm-yyyy hh:mm")			
.2630	2023-05-12 00:00:00	)			

MERGED DATA





WILL COMBINE SHEETS,
FIRSTLY IAQ AND OAQ

MERGED DATA

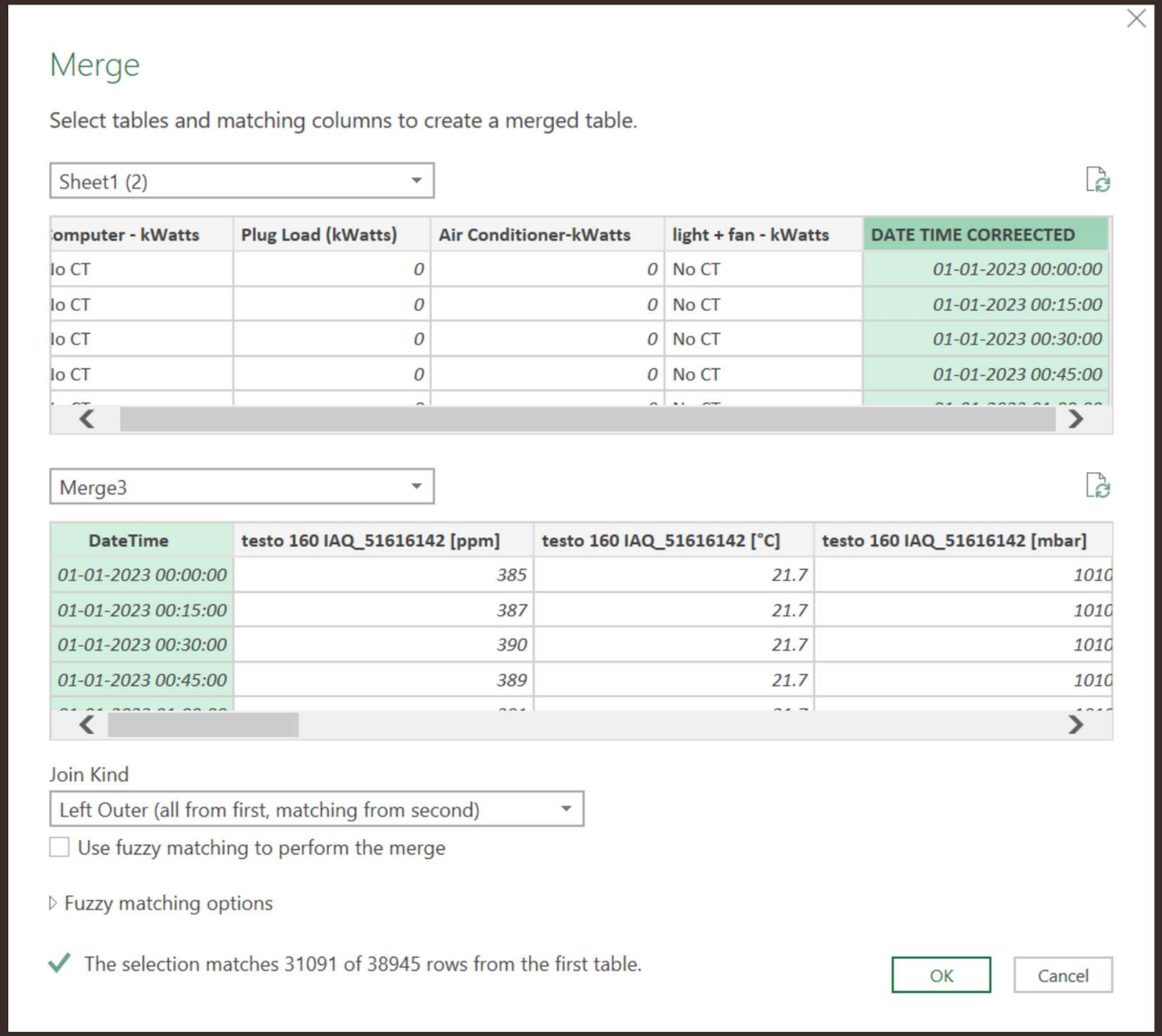
DateTime	testo 160 IAQ_51616 142 [ppm	tes to 1	testo 160 IAQ_5161 6142	testo 160 IAQ_	testo 160 IAQ_5161 6142 [°C	testo 160 IAQ_516161 42 [g/m³]	OUTDOOR DATA - Air quality.DateTim	OUTDOOR DATA - Air quality.t	OUTDOOR DATA - Air quality.testo 1	OUTDOOR DATA - Air quality.t	OUTDOOR DATA - Air quality.te	OUTDOOR DATA - Air quality.testo	OUTDOOR DATA - Air quality.testo 160 IAQ
01-01-2023 00:00	385	22	1010	63.5	14.5	12.1	01-01-2023 00:00	401	22	1008	48.7	10.7	
01-01-2023 00:15	387	22	1010	63.7	14.5	12.2	01-01-2023 00:15	399	21.8	1008	48.1	10.4	
01-01-2023 00:30	390	22	1010	63.8	14.6	12.2	01-01-2023 00:30	391	21.7	1008	46.4	9.7	
01-01-2023 00:45	389	22	1010	63.8	14.6	12.2	01-01-2023 00:45	391	21.6	1008	45.8	9.5	
01-01-2023 01:00	391	22	1010	63.8	14.5	12.2	01-01-2023 01:00	389	21.5	1008	45.2	9.2	
01-01-2023 01:15	389	22	1010	63.7	14.5	12.2	01-01-2023 01:15	392	21.5	1008	43.8	8.7	
01-01-2023 01:30	389	22	1010	63.9	14.6	12.2	01-01-2023 01:30	390	21.5	1008	40.8	7.6	
01-01-2023 01:45	391	22	1010	64.3	14.7	12.3	01-01-2023 01:45	390	21.5	1008	38.8	6.9	
01-01-2023 02:00	388	22	1010	64.3	14.6	12.3	01-01-2023 02:00	386	21.5	1008	36.8	6.1	
01-01-2023 02:15	391	22	1010	64.4	14.7	12.3	01-01-2023 02:15	388	21.3	1008	35.8	5.6	
01-01-2023 02:30	388	22	1010	64.5	14.7	12.3	01-01-2023 02:30	386	21.1	1008	36.3	5.6	
01-01-2023 02:45	391	22	1010	64.5	14.7	12.3	01-01-2023 02:45	389	20.9	1008	37.3	5.8	
01-01-2023 03:00	388	22	1010	64.3	14.6	12.2	01-01-2023 03:00	389	20.6	1008	38.6	6.1	
01-01-2023 03:15	390	22	1010	64.2	14.6	12.2	01-01-2023 03:15	386	20.4	1008	39.1	6	
01-01-2023 03:30	391	22	1010	64.5	14.7	12.3	01-01-2023 03:30	387	20.2	1008	38.9	5.8	
01-01-2023 03:45	387	22	1010	64.5	14.6	12.2	01-01-2023 03:45	387	20	1008	39.2	5.8	
01-01-2023 04:00	388	22	1010	64.3	14.6	12.2	01-01-2023 04:00	390	19.9	1008	40.1	6	
01-01-2023 04:15	389	22	1010	64.3	14.6	12.2	01-01-2023 04:15	388	19.8	1008	40	5.8	
01-01-2023 04:30	390	22	1010	64.5	14.6	12.2	01-01-2023 04:30	392	19.6	1008	40.6	5.9	
01-01-2023 04:45	388	22	1010	64.3	14.6	12.2	01-01-2023 04:45	395	19.5	1008	40.4	5.7	
01-01-2023 05:00	390	22	1010	64.5	14.6	12.2	01-01-2023 05:00	384	19.4	1008	40.3	5.6	
01-01-2023 05:15	389	22	1010	64.6	14.6	12.2	01-01-2023 05:15	387	19.3	1008	40.6	5.6	
01-01-2023 05:30	388	22	1010	64.6	14.6	12.2	01-01-2023 05:30	387	19.3	1008	40.9	5.7	
01-01-2023 05:45	391	22	1010	64.7	14.6	12.2	01-01-2023 05:45	385	19.2	1008	40.5	5.5	
01-01-2023 06:00	388	22	1011	64.9	14.7	12.3	01-01-2023 06:00	393	18.9	1008	42	5.8	
01-01-2023 06:15	391	22	1011	65.4	14.8	12.3	01-01-2023 06:15	430	18.9	1009	42.8	6	
01-01-2023 06:30	395	22	1011	65.4	14.7	12.3	01-01-2023 06:30	435	18.8	1009	43.7	6.2	

Count: 38847

TOTAL NUMBER OF COMMON TIME BETWEEN IAQ AND OAQ

FINAL MASTERSHEET LINK

MERGED DATA



NOW DOING SAME STUFF FOR IAQ+OAQ MERGED AND ENERGY DATA

MERGED DATA

Computer - kWatts	Plug Load (kWatts)	Air Conditioner-kWatts	light + fan - kWatts	DATE TIME CORREECTED	Merge3.DateTime	Merge3.testo 160 IAQ_51616142 [ppm]	Merge3.testo 1
0.0091000000000000004	0	0	0	11-05-2023 23:15	11-05-2023 23:15	406	
0.0058999999999999999	0	0	0	11-05-2023 23:30	11-05-2023 23:30	394	
0.0038	0	0	0	11-05-2023 23:45	11-05-2023 23:45	399	
0.0037000000000000002	0	0	0	12-05-2023 00:00	12-05-2023 00:00	391	
0.0033	0	0	0	12-05-2023 00:15	12-05-2023 00:15	392	
0.0037000000000000002	0	0	0	12-05-2023 00:30	12-05-2023 00:30	391	
0.0033999999999999998	0	0	0	12-05-2023 00:45	12-05-2023 00:45	389	
0.0035000000000000001	0	0	0	12-05-2023 01:00	12-05-2023 01:00	388	
0.0041999999999999997	0	0	0	12-05-2023 01:15	12-05-2023 01:15	380	
0.0041000000000000003	0	0	0	12-05-2023 01:30	12-05-2023 01:30	381	
0.0033	0	0	0	12-05-2023 01:45	12-05-2023 01:45	380	
0.0043	0	0	0	12-05-2023 02:00	12-05-2023 02:00	378	
0.0044000000000000003	0	0	0	12-05-2023 02:15	12-05-2023 02:15	381	
0.0051999999999999998	0	0	0	12-05-2023 02:30	12-05-2023 02:30	378	
0.0047999999999999996	0	0	0	12-05-2023 02:45	12-05-2023 02:45	376	
0.0053	0	0	0	12-05-2023 03:00	12-05-2023 03:00	382	
0.0033	0	0	0	12-05-2023 03:15	12-05-2023 03:15	378	
0.0035999999999999999	0	0	0	12-05-2023 03:30	12-05-2023 03:30	378	
0.0038	0	0	0	12-05-2023 03:45	12-05-2023 03:45	375	
0.0035000000000000001	0	0	0	12-05-2023 04:00	12-05-2023 04:00	379	
0.0037000000000000002	0	0	0	12-05-2023 04:15	12-05-2023 04:15	378	
0.0035999999999999999	0	0	0	12-05-2023 04:30	12-05-2023 04:30	378	
0.0041000000000000003	0	0	0	12-05-2023 04:45	12-05-2023 04:45	378	
0.0040000000000000001	0	0	0	12-05-2023 05:00	12-05-2023 05:00	373	
0.0041999999999999997	0	0	0	12-05-2023 05:15	12-05-2023 05:15	373	
0.0047000000000000002	0	0	0	12-05-2023 05:30	12-05-2023 05:30	374	
0.0051999999999999998	0	0	0	12-05-2023 05:45	12-05-2023 05:45	377	
0.0041000000000000003	0	0	0	12-05-2023 06:00	12-05-2023 06:00	377	
0.0035999999999999999	0	0	0	12-05-2023 06:15	12-05-2023 06:15	374	
0.0041000000000000003	0	0	0	12-05-2023 06:30	12-05-2023 06:30	376	
0.0044999999999999997	0	0	0	12-05-2023 06:45	12-05-2023 06:45	376	

Count: 18295

TOTAL USABLE ROWS 18294, 1 HEADER

FINAL MASTERSHEET LINK

THANK YOU
W. HERAMB
22AR10039

FINAL MASTERSHEET LINK