EXCEL TOOL: TREND ANALYZER

1.1 TREND ANALYZER

1.1.1 Purpose

The purpose of the Excel Trend Analyzer tool is to generate time-based graphs from numeric datasets in Excel spreadsheets. It is designed to be user-friendly and efficient by allowing users to paste their own spreadsheet data and visualize it in a customizable chart. The graph format is pragmatic and easy to understand: The x-value of the graph displays time values, and the y-values display numeric values. The graph also allows for users to zoom, offset, and activate/deactivate certain datasets in the graph, with the final graph result loaded automatically after each input. It allows for up to 10 separate trend sets to be added and displayed graphically.

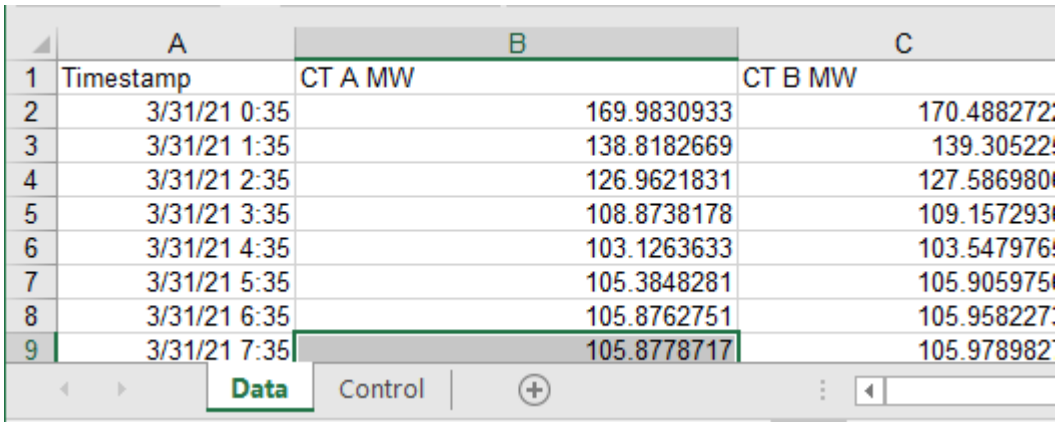
1.1.2 Input Data Format

The input data is added in the **Data** spreadsheet. The input data should consist of only one header row, in which the labels for the data displayed on the graph are added (**Timestamp, CT A MW, CT B MW**). The first column must contain timestamp data.

1.1.3 Procedure

This program runs through two spreadsheets, **Data** and **Control**. The two tabs at the bottom left allow for you to switch between these spreadsheets whenever needed. To manipulate and format the data, you will use the **Control** spreadsheet. To add inputs and data, you will use the **Data** spreadsheet.

1.) To begin using the program, first clear out any inputs in the **Data** spreadsheet. Paste or add the new data in such a way that the header labels are in row 1 and the timestamp column is in column A. The remaining columns should contain the numerical inputs corresponding to the timestamp in column A.



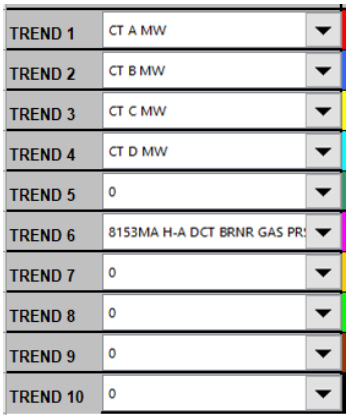
	A	B	C
1	Timestamp	CT A MW	CT B MW
2	3/31/21 0:35	169.9830933	170.488272
3	3/31/21 1:35	138.8182669	139.30522
4	3/31/21 2:35	126.9621831	127.586980
5	3/31/21 3:35	108.8738178	109.157293
6	3/31/21 4:35	103.1263633	103.547976
7	3/31/21 5:35	105.3848281	105.905975
8	3/31/21 6:35	105.8762751	105.958227
9	3/31/21 7:35	105.8778717	105.978982

Data | Control

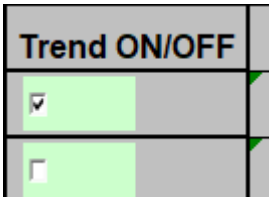
2.) Next, switch to the "**Control**" spreadsheet.

3.) After adding data in the **Data** spreadsheet, you will see in the **Control** spreadsheet that the program has preloaded the **Data** header cells into dropdown lists. To view this data, press the triangle drop down button on the left of the label. Select the label to be shown on the chart by

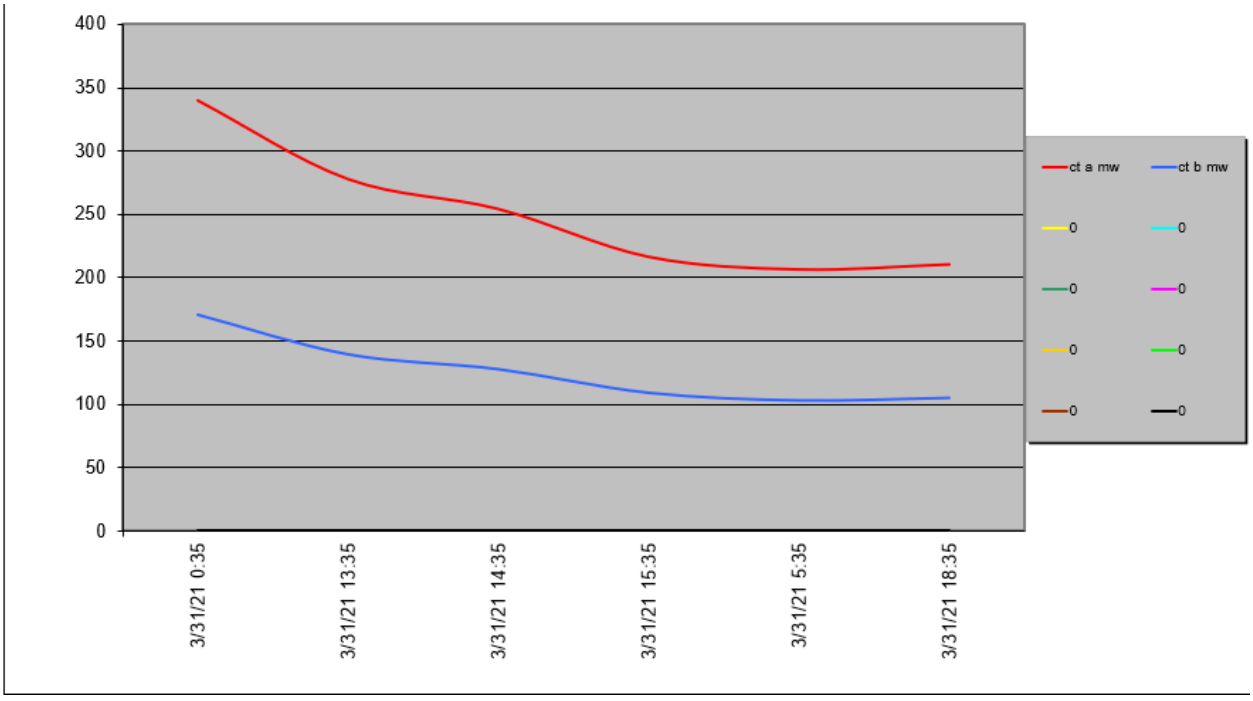
selecting header. Enter zero to leave the trend blank. Trends 1-5 are displayed as a smooth line type on the graph.



4.) Now, to turn the trend on in the graph, check the check box in column **Trend ON/OFF**. The graph will be generated underneath the interface.



Here is an example of a successfully generated graph.:



The Trend Analyzer graph feature also allows for users to personalize their graphs by manipulating the **Zoom** and **Offset** values corresponding to each trend. Under the **Zoom** and **Offset** columns, press on the the light green boxes with numbers to alter the data visualization. The default value for the **Zoom** column is 1, whereas the default value of the **Offset** column is 0. If the box is light green and displays its respective default value, it means that the data has not been altered. To alter the data as it appears on the graph:

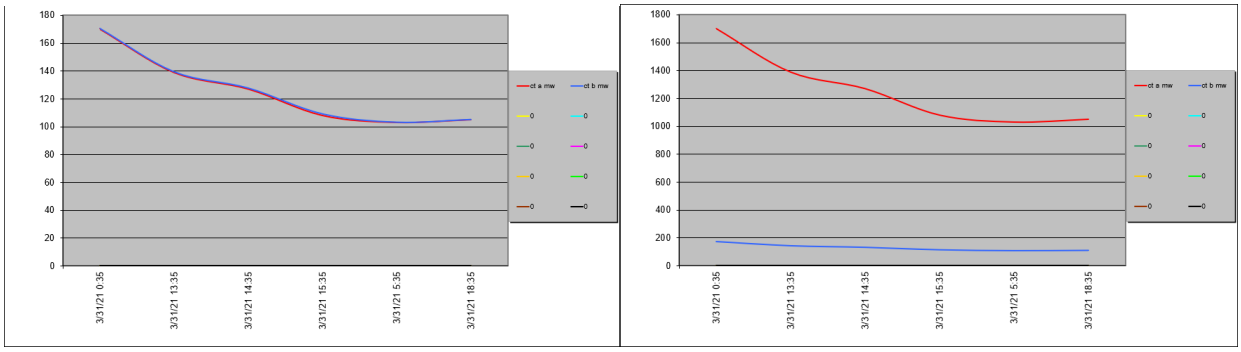
- Enter a **Zoom** value to multiply the dataset values by a constant. This will magnify smaller trend changes on the graph.
- Enter an **Offset** value to add/substract constants from dataset y-values. This will shift the trend up or down on the graph.

Both **Offset** and **Zoom** values can be applied to the same trend.

In the below example, all **CT A MW** values are multiplied by 10 and all **CT B MW** values are increased by 5. The cells with altered **Zoom** and **Offset** values turn yellow to distinguish which values have been altered.

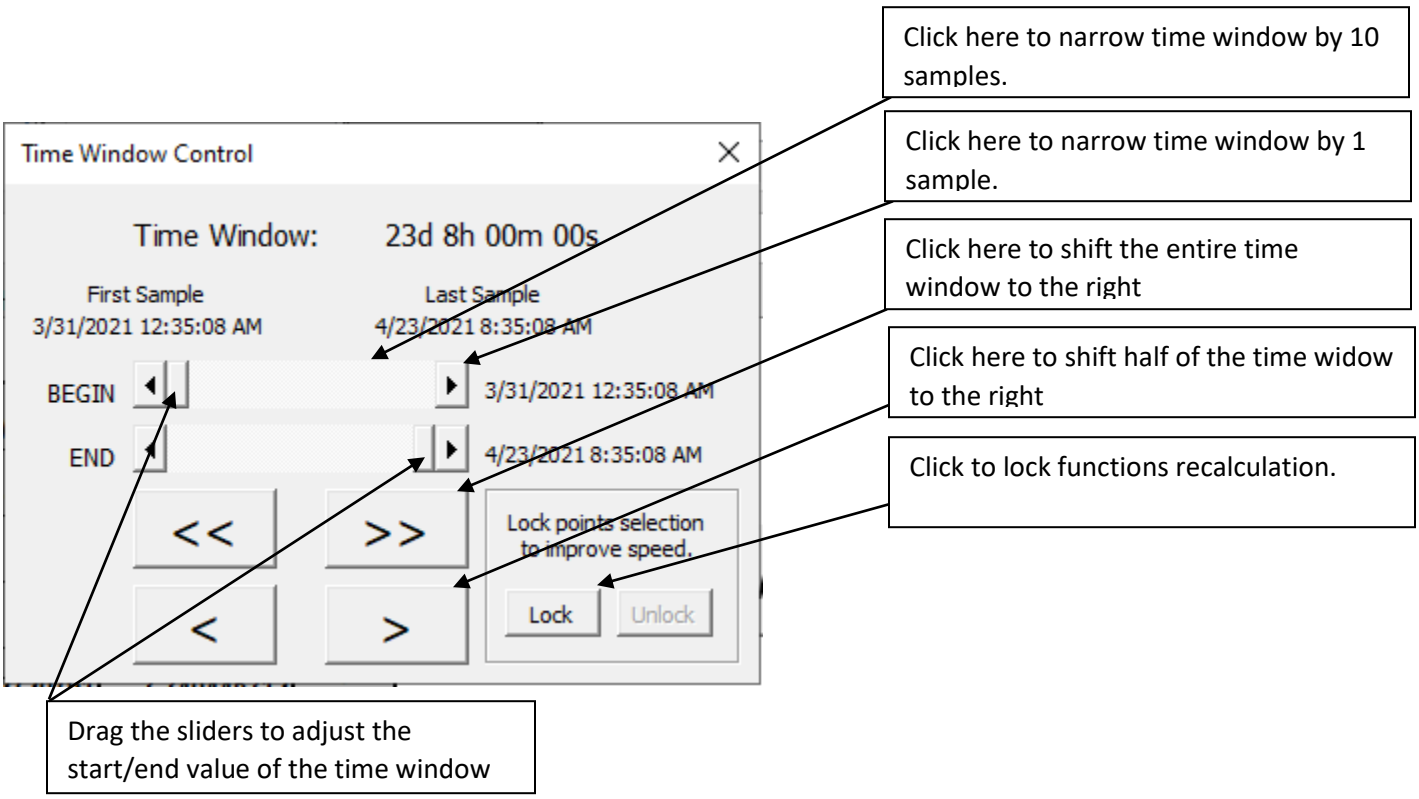
		Zoom		Offset	
TREND 1	CT A MW	X	10	+	0
TREND 2	CT B MW	X	1	+	5

The graph on the left displays how the graph would appear without **Zoom** and **Offset** values applied to the trends. The graph on the right displays how the example inputs above have altered the display of the graph on the left.



1.1.4 Time Window Control

Press the **TIME WINDOW CONTROL** button on the right side to open the time manipulation window. All functions are being adjusted to a new data set size at this time.



1.1.5 Lock Point Selection and Functions Recalculation

Working with large datasets may dramatically slow down the data window manipulation due to the program having to recalculate every function at each click. Engaging the **Lock** button seen in Row 1 of the **Control** spreadsheet will hold this recalculation process until it is toggled off. Once locked, only the time manipulation window will be active. Updating new trend selections, new biases, new offsets, and on/off check box statuses will be on hold and the yellow note “LOCKED SELECTION” will be displayed in cell B1.