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Overlay I

View Multiple Signals and Overlay Statistics

Create or open a project.

Click on the **Create Overlay Chart** button  and the following window appears:

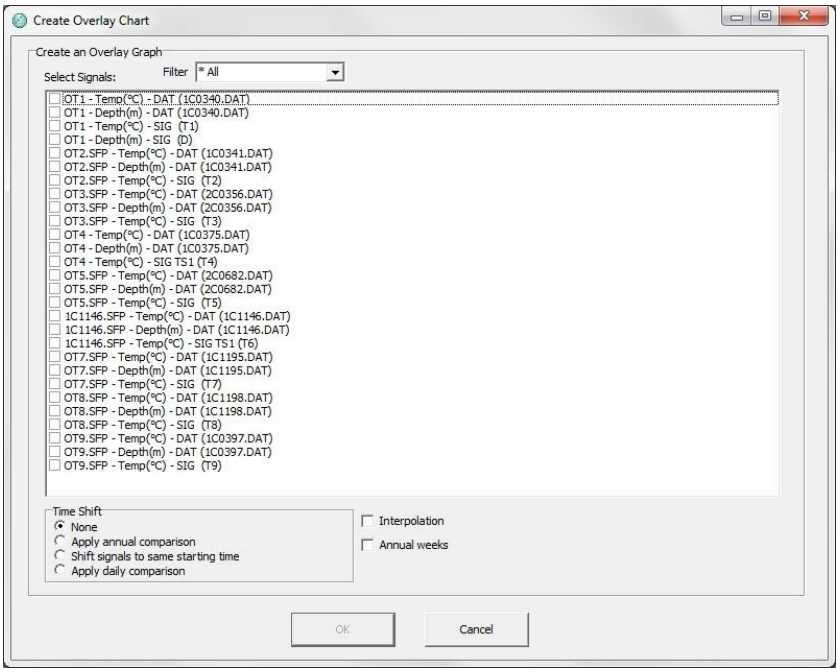

Figure 1 Create Overlay Graph

Apply annual comparison: This option allows the user to compare the signals on a yearly basis (see tutorial 12).
Shift signals to the same starting time: This options allows the user to shift two or more signals to the same starting time (see tutorial 11).
Apply daily comparison: This option allows the user to compare the signals on a daily basis (see tutorial 13).

Select the signals you want to overlay. It is possible to filter the signals by selecting one of the options in the drop-down list. In the figure below temperature has been selected.

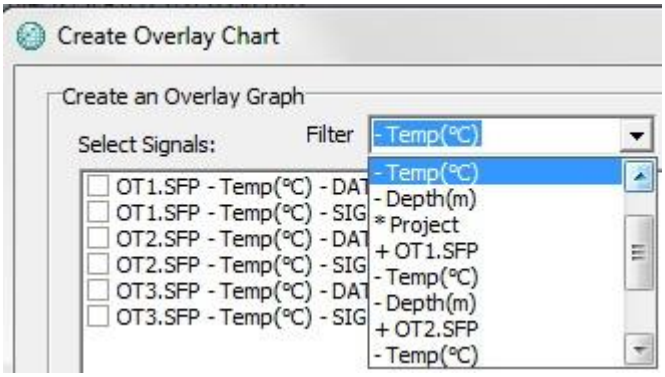

Figure 2 Filter

In figure 3 three different signals have been overlaid.

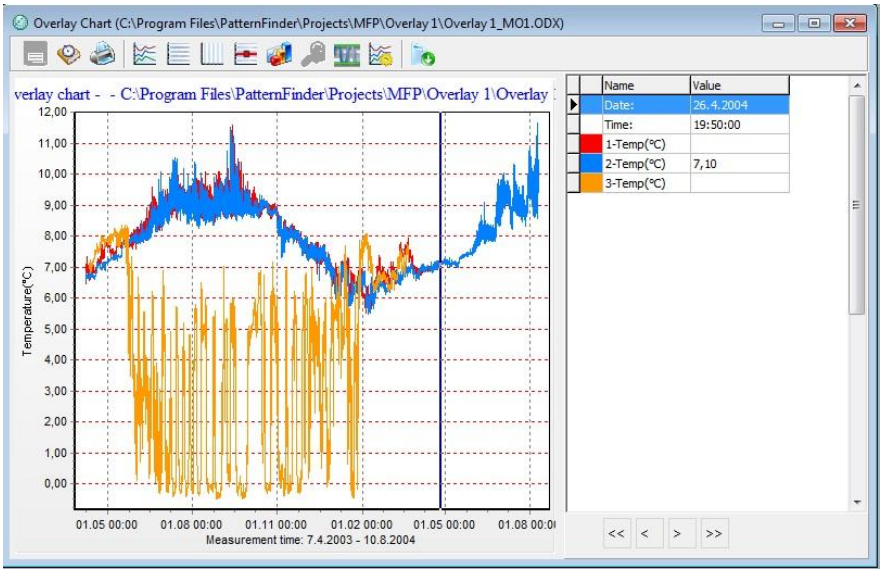

Figure 3 Overlay Chart

Each unit has an axis and a different colour (see figure 4), but overlays with a single unit use colours outside of unit group colours.

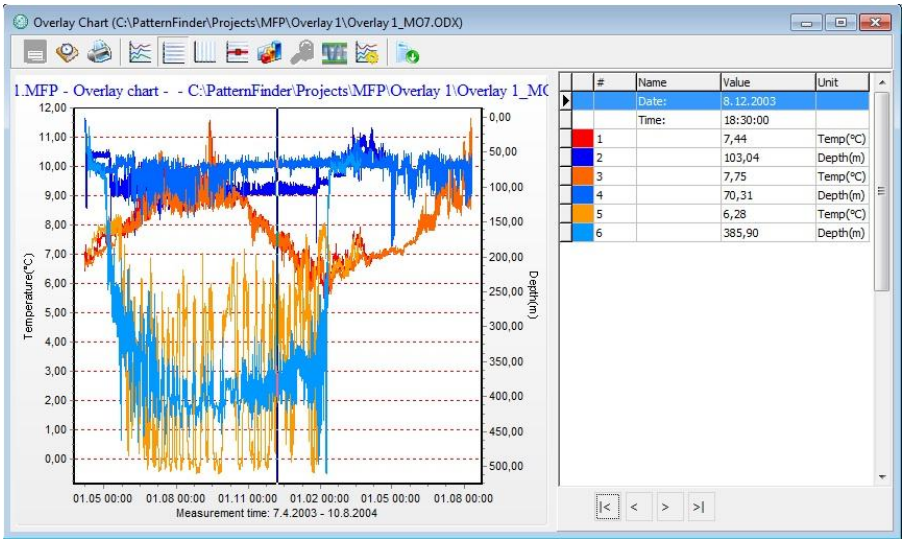

Figure 4 Overlay chart: two units

Overlay Statistics

To do a statistical analysis on the overlaid chart, select the chart and click the **Overlay statistics** button 

The following window appears:

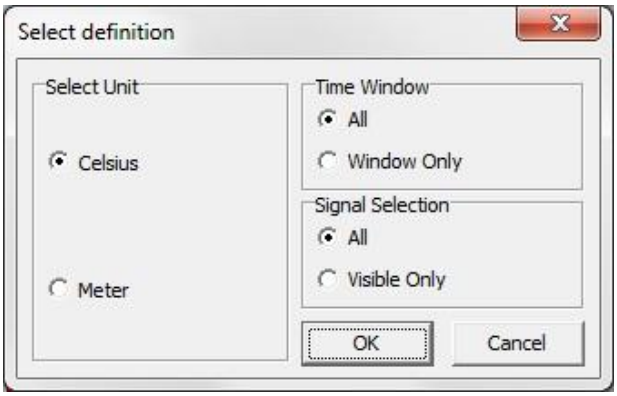

Figure 5 Select definition

Select the unit you want to analyze under **Select Unit.** You can analyze the whole data by selecting **All** under **Time Window** or only the zoomed data by selecting **Window Only**.

You can analyze all of the signals by selecting **All** under **Signal Selection** or only the selected signal by checking **Visible Only**.

Click **OK** and a statistics chart appears:

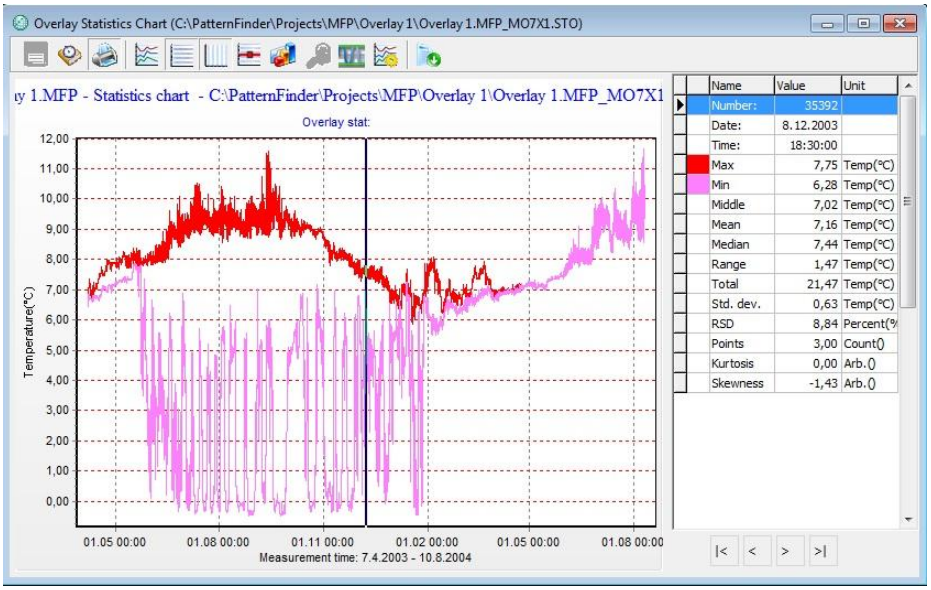

Figure 6 Overlay statistics chart

Each point in the chart represents a statistical value for each time stamp in the overlay chart. If points in the overlay chart do not match in time, **PatternFinder** will interpolate the signals.

Save the chart and a STO file will be created.

There are 12 parameters in total, each with its own colour. By moving the cursor on the chart the value for each parameter is shown in the table on the right side of the chart (see figure 7).

Name	Value	Unit
Number:	35392	
Date:	8.12.2003	
Time:	18:30:00	
Max	7,75	Temp(°C)
Min	6,28	Temp(°C)
Middle	7,02	Temp(°C)
Mean	7,16	Temp(°C)
Median	7,44	Temp(°C)
Range	1,47	Temp(°C)
Total	21,47	Temp(°C)
Std. dev.	0,63	Temp(°C)
RSD	8,84	Percent(%)
Points	3,00	Count()
Kurtosis	0,00	Arb.()
Skewness	-1,43	Arb.()

Figure 7 Table

The table lists the following parameters:

Number of the measurement
Date of the measurement,
Time of the measurement

- **Max**: Maximum value
- **Min**: Minimum value
- **Middle:** The average of the max and min value
- **Mean:** The standard average value
- **Median:** The mid value in the sequence of measurements arranged by amplitude
- **Range:** The difference between max and min
- **Total:** The sum of all the signal values in a singular point.
- **Std. Dev.:** Standard deviation
- **RSD:** Relative standard deviation
- **Points:** Number of signal points in the period
- **Kurtosis**: A measure of the "peakedness" of the distribution and how it varies from the normal distribution. A zero value indicates a normal distribution. A positive value indicates a peaked distribution while a negative value indicates a flat distribution.
- **Skewness**: A measure of the asymmetry of the distribution and how it differs from a normal distribution. A zero value indicates a normal distribution. A positive value indicates a positively skewed distribution while a negative value indicates a negatively skewed distribution.

To select the parameters which are to be displayed in the chart, click the **Active Series** button  on the chart bar. The following window appears:

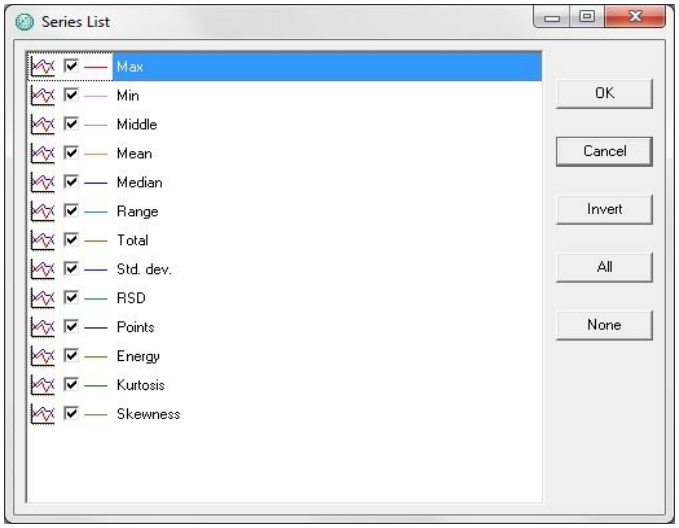

Figure 8 Active Series

In the chart below, all the parameters have been selected.

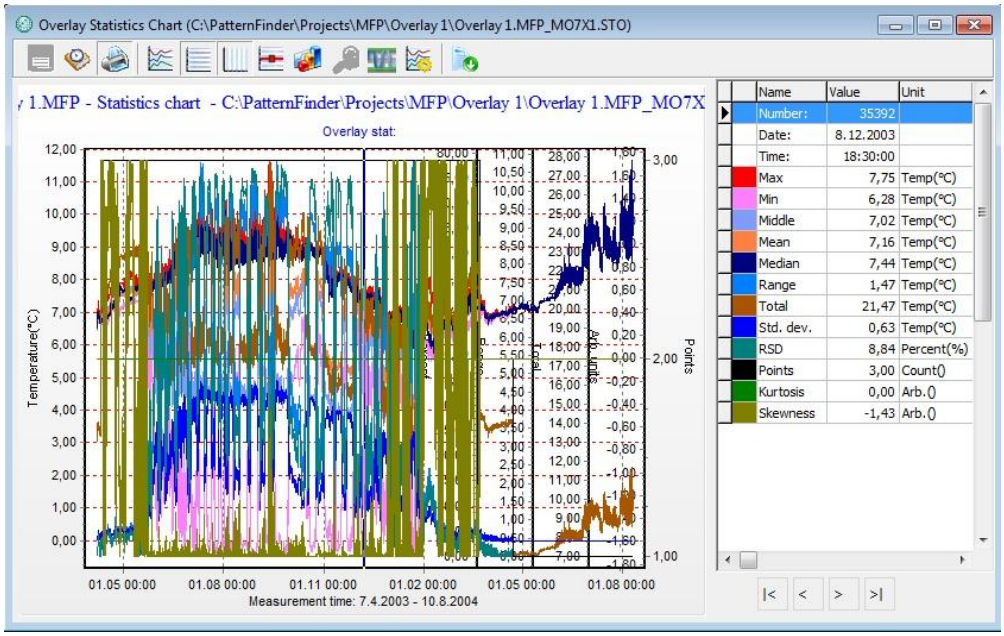

Figure 9 Overlay statistics chart

Extract signal from STO file

To extract a signal from the STO file, click the **Select signal to signal chart** button on the main toolbar  and the following window appears:

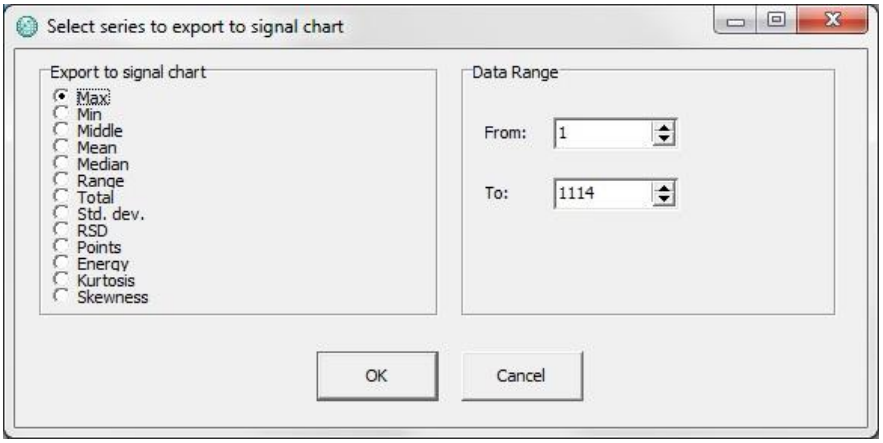

Figure 10 Select series to export to signal chart

Select the parameter and the data range you want to extract and click **OK**.

The following signal chart appears:

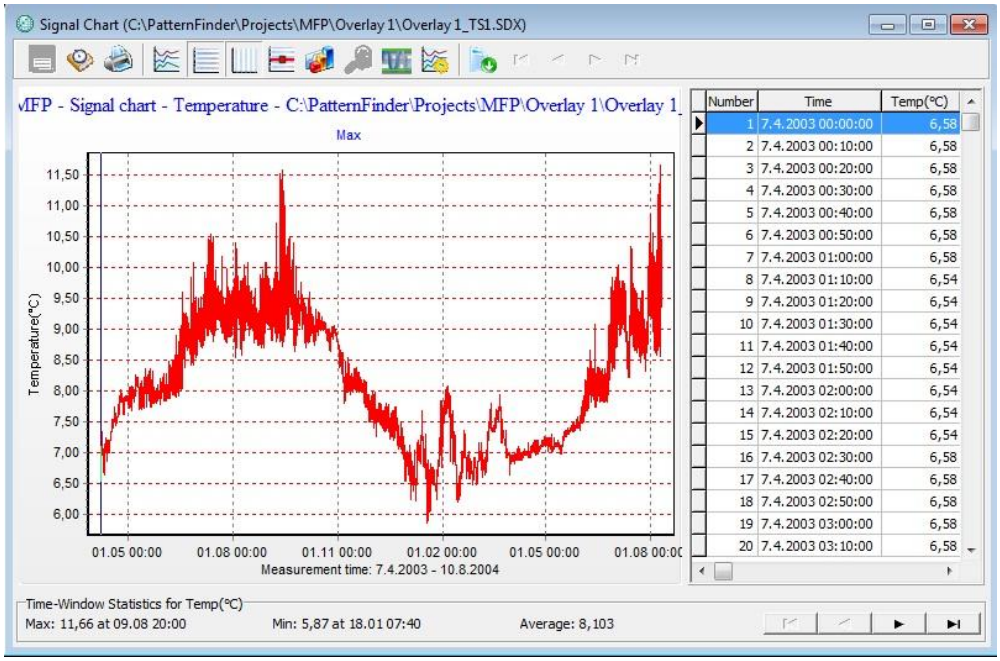

Figure 11 Signal chart

Interpolation

When performing overlay statistics analysis **PatternFinder** automatically interpolates the data.

Interpolation is necessary when measurements do not match when comparing them in time. Signals that have the same sampling frequency but are shifted in time will display erroneous results in the statistical overlay analysis. With interpolation matching measurement points are created and thus all signals are included in each measurement point.

History

Click the **History** button  on the chart bar to add comments and view information on the origin of the signal and the progress of the project (see figure 12). Click **Print** to print out the information (see figure 13)

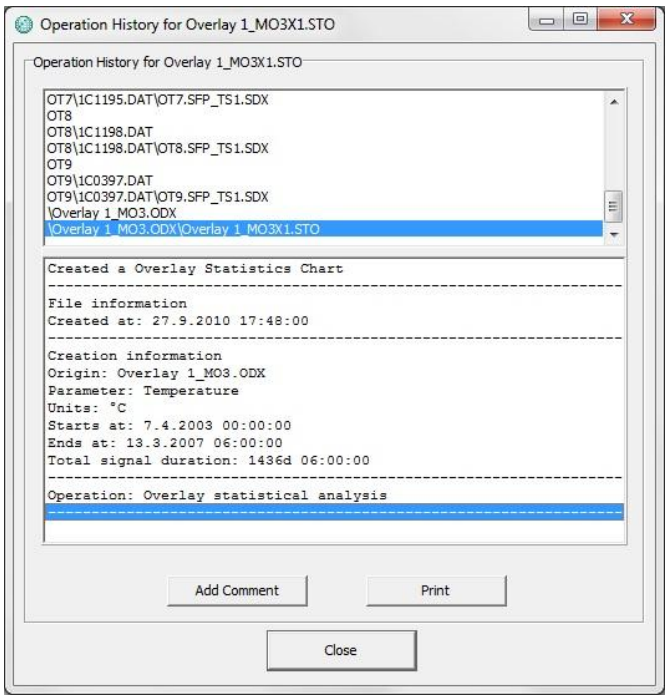

Figure 12 History

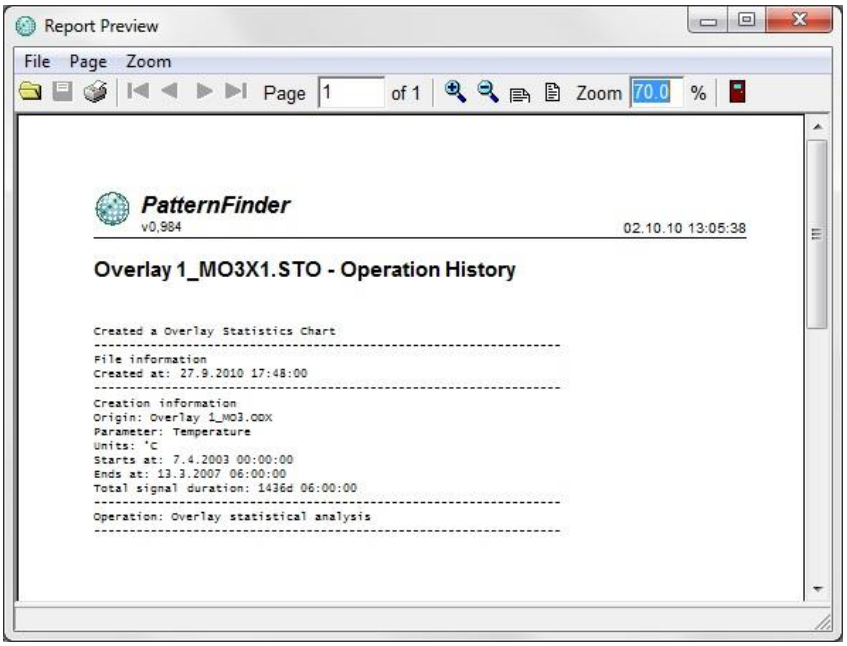

Figure 13 Print Preview