

Using EXCEL to determine the Hammerlink custom curve parameters

The “Trend Line” function of EXCEL to provide the polynomial or exponential function required by the custom curve function of Hammerlink. The example used is based on real data collected in China by the Shaanxi Province Construction Science Research Institute, used to create the Chinese regional curve in SilverSchmidt ST/PC.

Data Format Required

Rebound Value Q	Compressive Strength
47.006	36.9
48.250	34.8
49.750	37.1
49.500	39.3
49.531	36.1
48.906	37.6
45.594	35.7
46.000	34.5
46.750	32.0

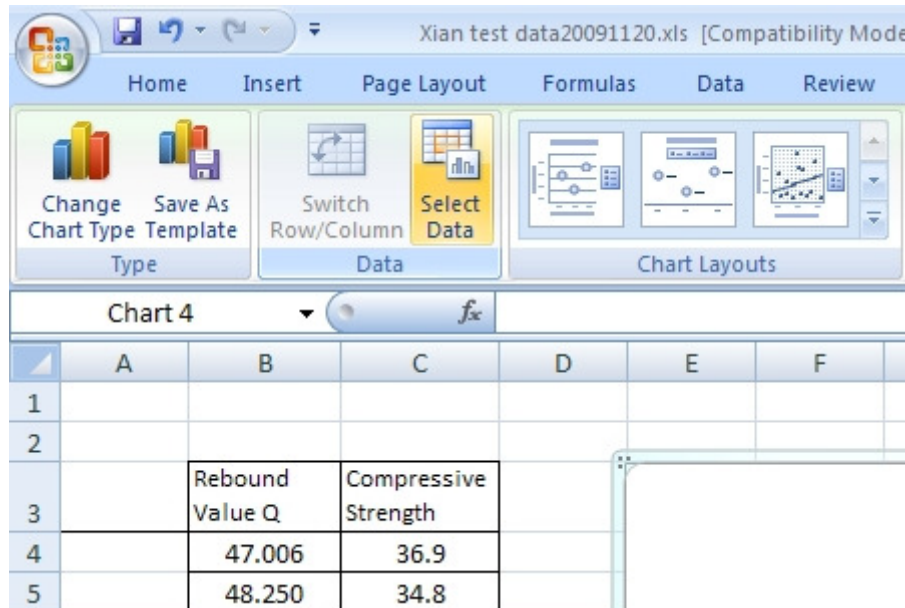
In order to generate the custom curve the data is required in the above format with the measured Q-values in one column and the actual compressive strength measured in the press in the second column.

Step 1 – Putting the data into a chart

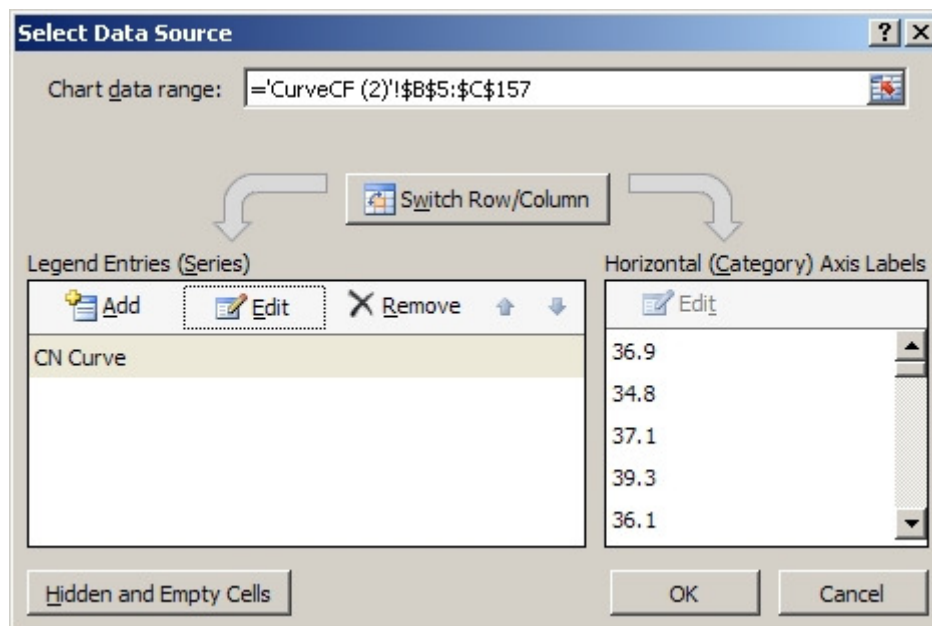
The screenshot shows the Excel interface with the 'Insert' ribbon active. The 'Charts' group is expanded, and the 'Scatter' chart type is selected. The worksheet below shows the data table with columns for 'Rebound Value Q' and 'Compressive Strength'.

Click on the menu item “Insert / Charts / Scatter” as shown, to insert a chart into the worksheet.

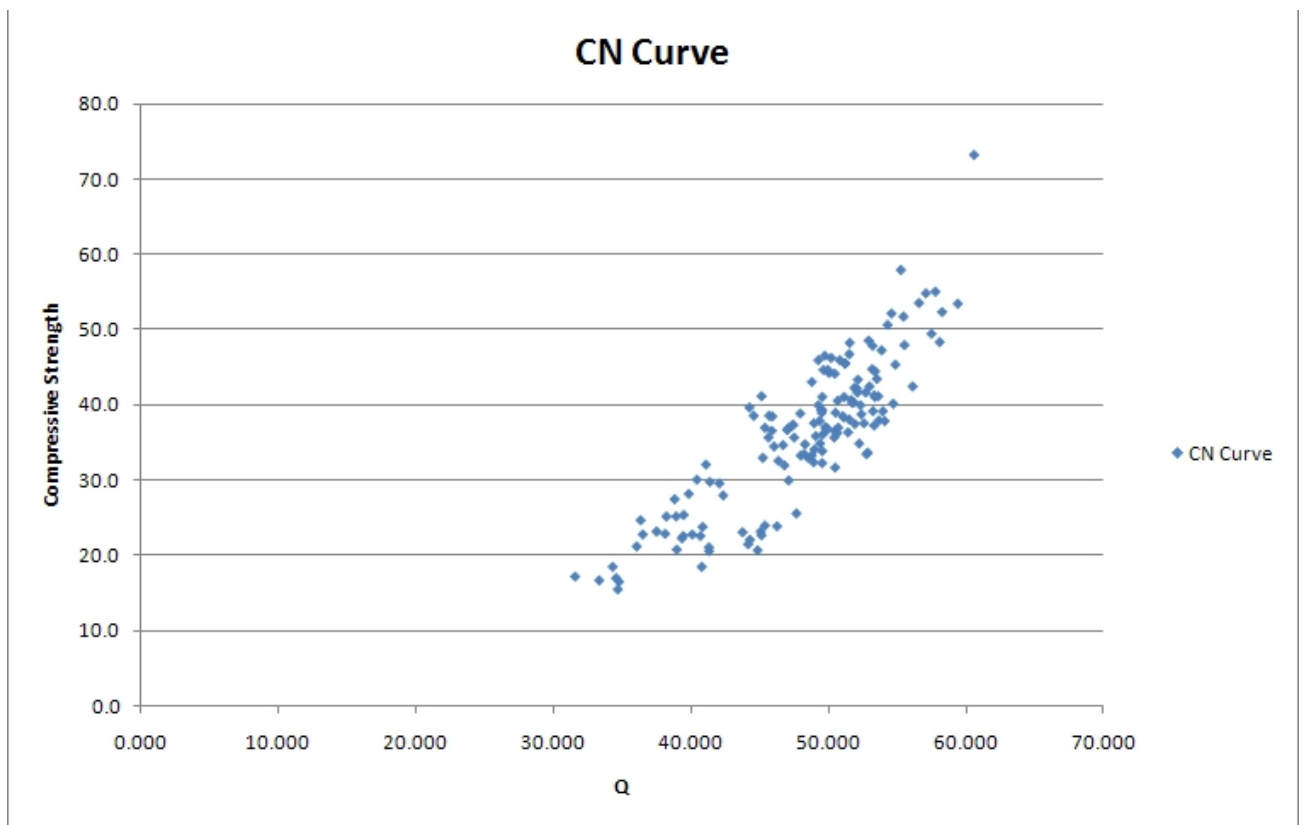
Click on the menu item "Select Data"



The wizard prompts you to select the data range. Here you must select the data in the two columns Q-value and MPa.



This will then plot the scatter chart:



Step 2 - Adding a trend line

The "Trendline" function of EXCEL allows you to select the "best fit" curve to your actual data and provides the polynomial or exponential function that you need to program into the custom curve in Hammerlink. With the chart selected, click on "Trendline – More Trendline Options.."

120.xls [Compatibility Mode] - Microsoft Excel

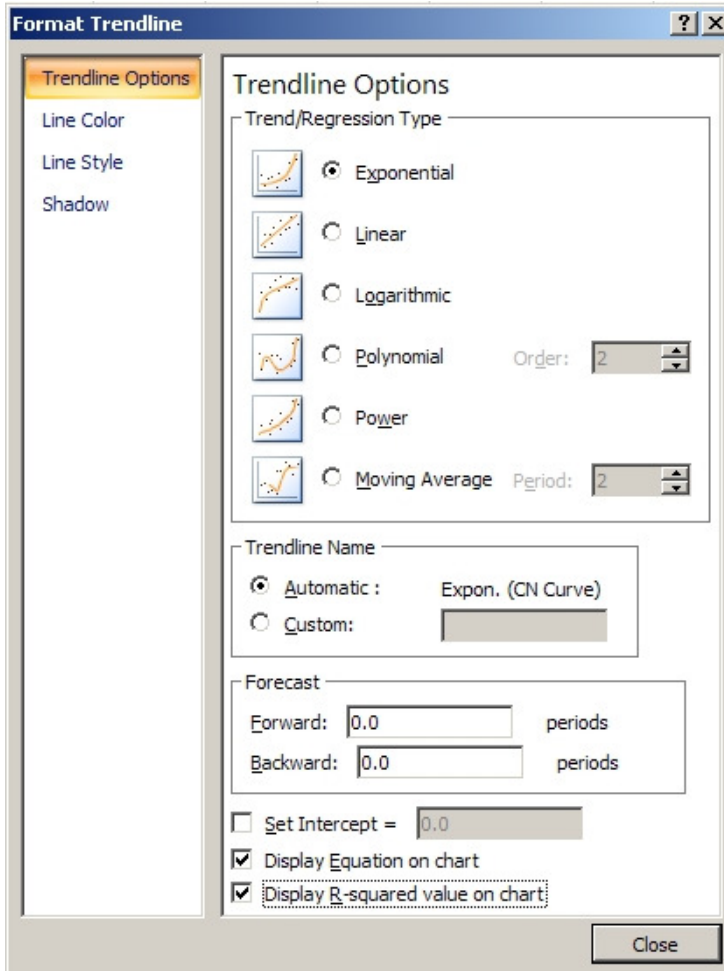
Chart Tools

Layout

Trendline

- None
Removes the selected Trendline or all Trendlines if none are selected
- Linear Trendline
Adds/sets a Linear Trendline for the selected chart series
- Exponential Trendline
Adds/sets an Exponential Trendline for the selected chart series
- Linear Forecast Trendline
Adds/sets a Linear Trendline with 2 period forecast for the selected chart series
- Two Period Moving Average
Adds/sets a 2 Period Moving Average Trendline for the selected chart series

More Trendline Options...



Select the type of curve:
Exponential or 3rd order polynomial is recommended.

Make sure “Display Equation on chart” and “Display R-squared value on chart” are ticked.

Close the window.

The best fit curve will now be displayed on the chart.

The equation of the curve is displayed along with the coefficient of determination (R^2).

This provides the information you need to enter the curve into Hammerlink.

CN Curve

