

Interactive Roark's Formulas – The Use of the Superposition Wizard

Interactive Roark's Formulas, is the only software version of the 7th Edition of Roark's Formulas for Stress and Strain available in the world today. UTS are able to offer the product as both a desktop and as a web-enabled product.

Not only have UTS continued to work closely with the Authors and Publishers of this world renowned book, it continues to innovate and create features in the software that improves the users ability to solve and report work undertaken in a productive and efficient manner.

Creating a means of entering data quickly and allowing multiple loads to be handled simply, were two goals for this release of the product. As a result, a simple series of data entry windows have been created to facilitate this. We call this a wizard and TK is packed full of them. For Interactive Roark's Formulas, the Superposition Data entry Wizard has been created.

The Superposition Data Entry Wizard (SDEW)

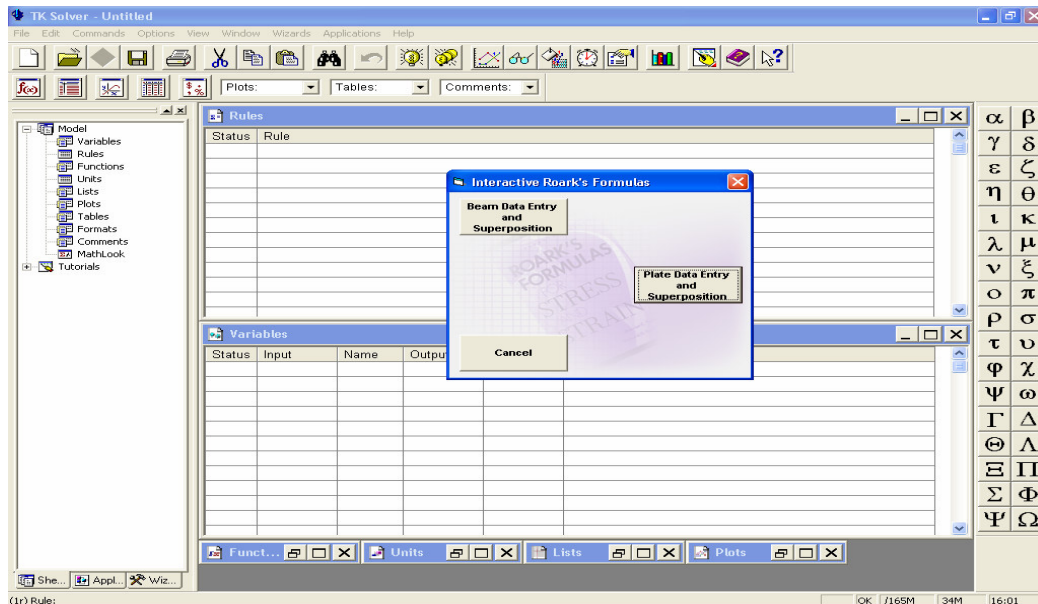
The Superposition data entry wizard (SDEW) works with TK Solver allowing information to be simply entered in as few steps as possible. It consists of a series of screens that allows data to be both entered and selected from pull down menus. Beam and plate solutions become simple and quick to use.

The wizard loads the specific TK Solver model and loads and updates data into TK as necessary. You can switch between the wizard and TK Solver as necessary.

Here are some features of this wizard.

Beam or Plate?

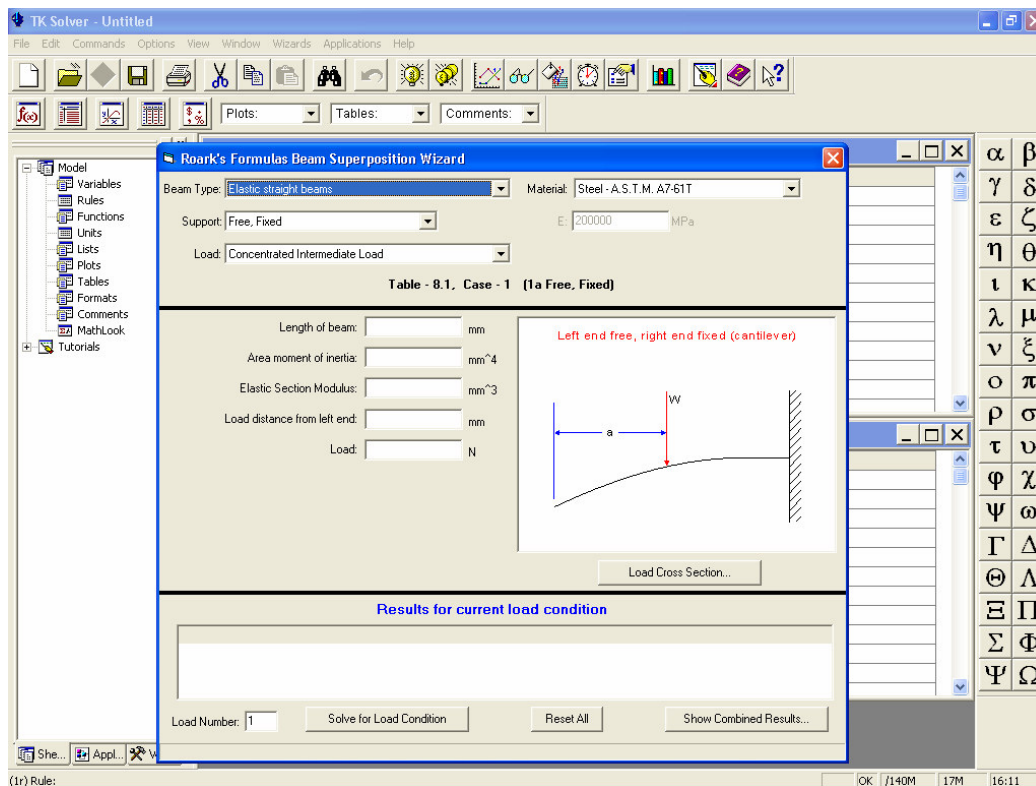
The SDEW is activated from the Wizards Menu within TK Solver and can be used for both plates and beams. This is the first choice to make.



Let's show you how the SDEW works, and in particular the Beam Data Entry and Superposition.

Select a case

After selecting the Beam Data Entry and Selection, a new screen appears requesting further information. They include:



(Note that the units depend on whether the SI or the US version of Interactive Roark's Formulas has been selected.)

Beam Type. Select from all the various cases that are available from the pull down menu and note that the Table reference and description provided are references to the actual 7th Edition of Roark's Formulas for Stress and Strain. In addition, to further clarify, a diagram of the system is shown with nomenclature.

Support type and Load type. The beam support type and load type are made available in a pull down menu. The options available are dependent on the Beam type selected. This choice made will be shown in the diagram of the system.

Material. Various materials are listed within the material pull down menu and include metals, woods, concretes and other material types. For each material type, the Young's modulus and the Gamma value (if appropriate), are automatically populated upon material selection.

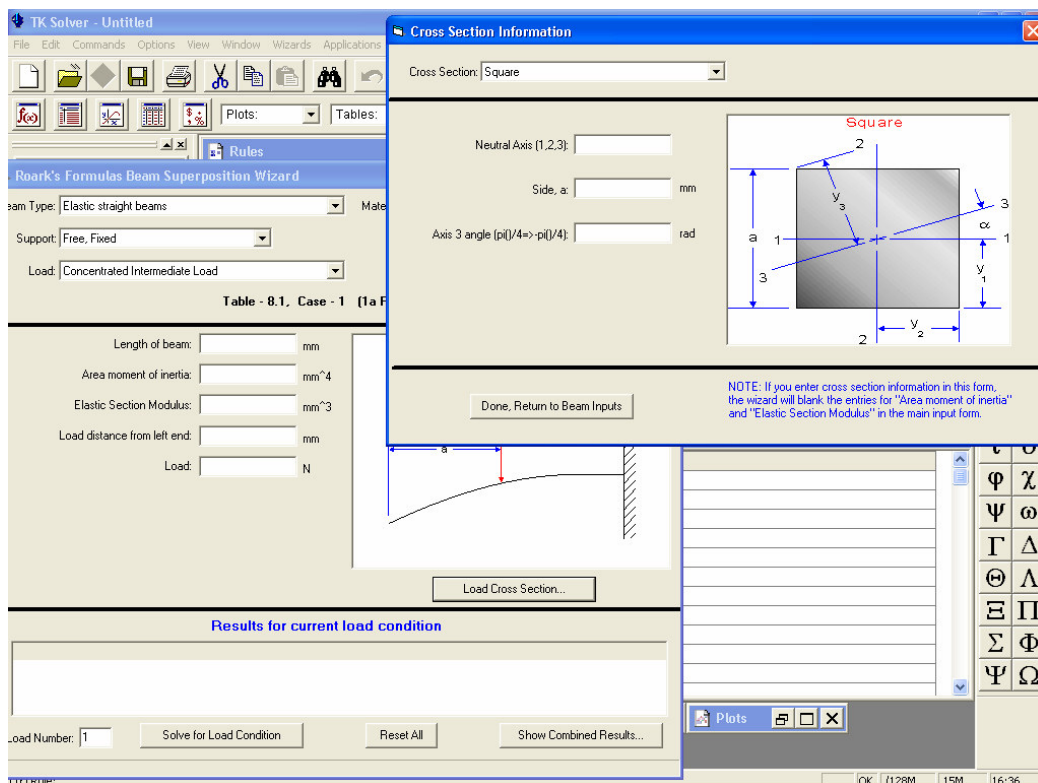
If the material type is not available or specific Young's Modulus and or gamma values are required, then these can be directly entered.

At this point, the case has been selected and specific dimensions can be entered and data solved.

The entry data that appears is specific to the case selected and is mainly dimensionally related. Let us take a look at this model.

Enter dimensional data

All of the data that appears in the boxes next to the diagram can be directly entered. Some data (Area moment of inertia and Elastic Section Modulus) are dependent on the shape of the cross section of the beam and this can be determined after clicking on **Load Cross Section...**



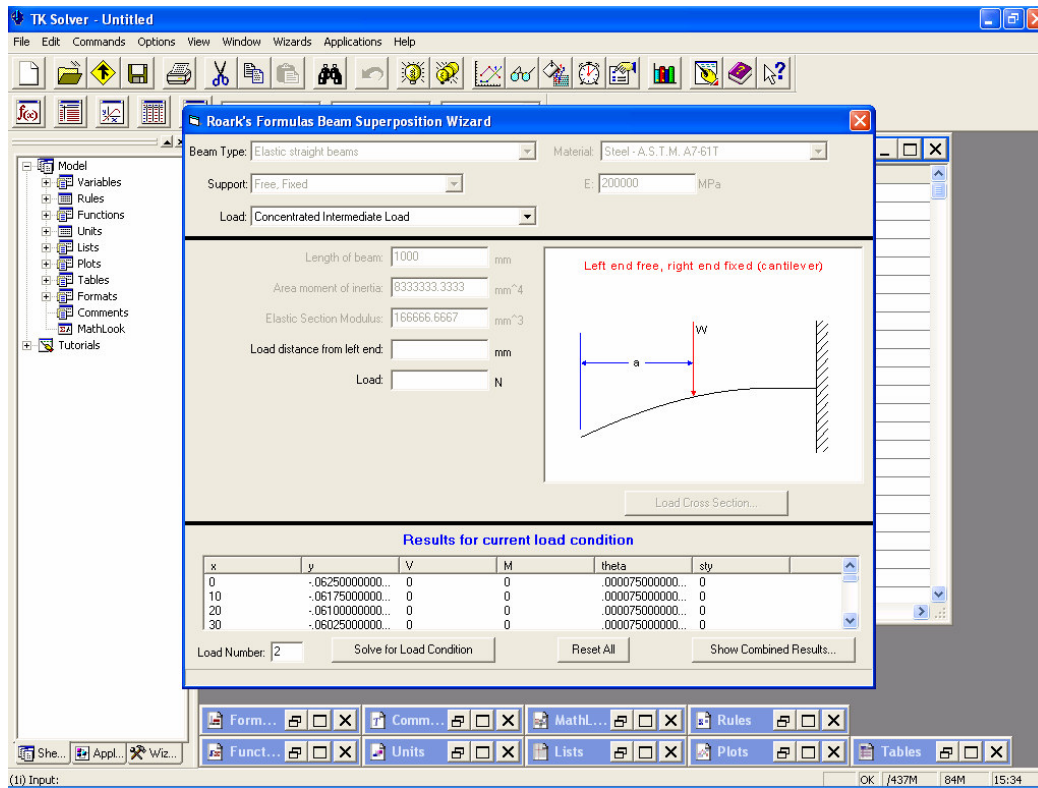
The **Cross Section** is selected from a pull down menu and a diagram is shown below with full nomenclature. The data can be simply entered and once complete, the **Done, Return to Beam Inputs** is clicked allowing the Area Moment of Inertia and the Elastic Section Modulus to be calculated.

Once all the data has been entered, the condition for this beam type can be calculated by clicking on **Solve for Load Condition**. This calculates various data such as deflection, bending moment, shear angle etc. The diagrams showing this data can be investigated within TK Solver and other results analysed further.

Adding further loads

If further loads need to be added to the beam, then this can be done within the SDEW.

In the lower left portion of the SDEW is a data entry field for the load number. When a second load is entered (enter 2), this greys out all fields that must remain constant for the second load.



After the data has been entered for the second load, the **Solve for Load Condition** is clicked. This combines the result data for the two load conditions, the **Show Combined Results** is clicked and the individual lists of data are combined and results displayed. The various TK plots are updated along with TK inputs. Further load points can be added or at this stage, the results can be analysed and reported within TK Solver.

That was an introduction to the Superposition Data Entry Wizard. It's a quick tool helping users to enter data and solve in the shortest possible time.

To find out more and talk with one of our representatives, or visit:

www.uts.com

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