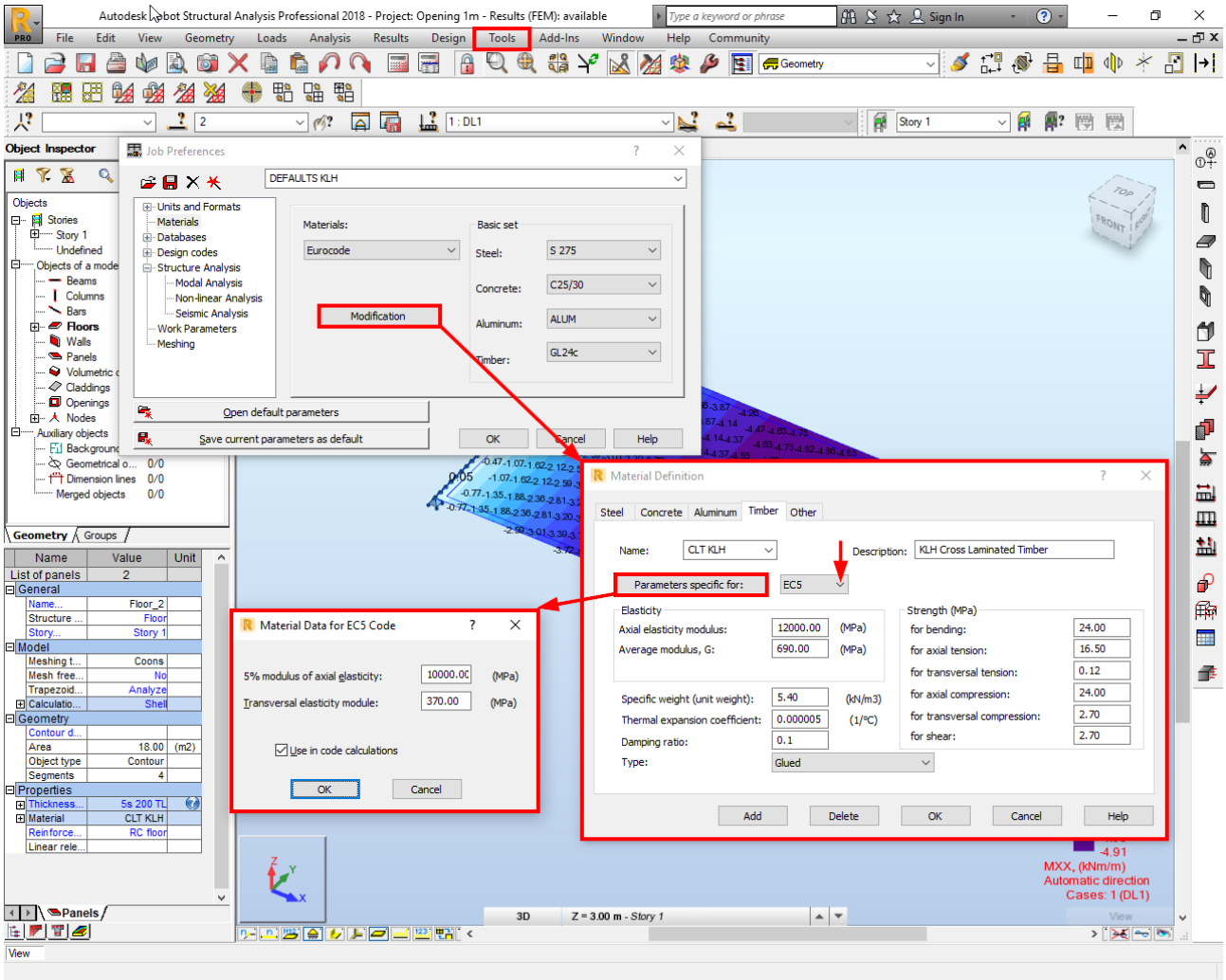
Modelling KLH structures with AUTODESK Robot Structural Analysis Professional

This FAQ will help you to model your KLH structure with AUTODESK Robot Structural Analysis Professional (further referred to as "Robot Structural" within this document). It is assumed that a model has already been built and only KLH-specific information is missing.

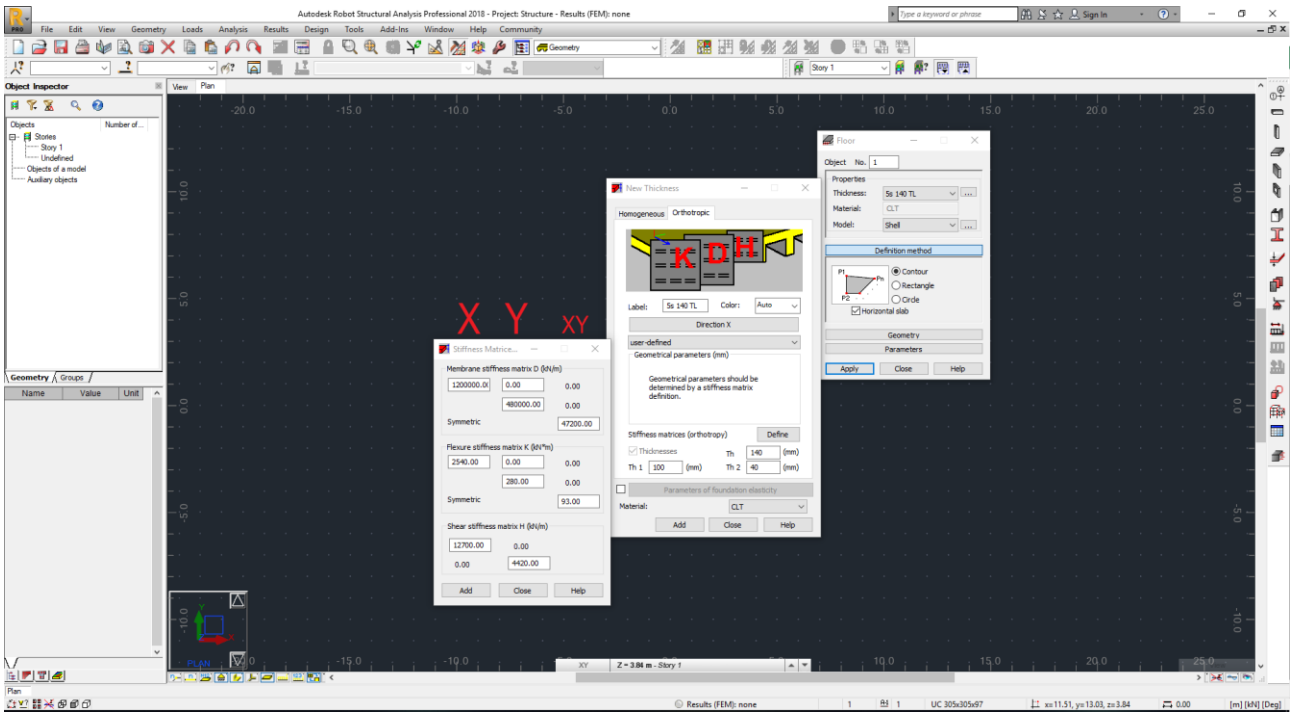
Step 1: Material Definition

Create "KLH default settings" and ensure that they are applied in the "Job Preferences" with Eurocode material set. A "CLT KLH" material (which is used independently from the panel type) can be defined as shown:



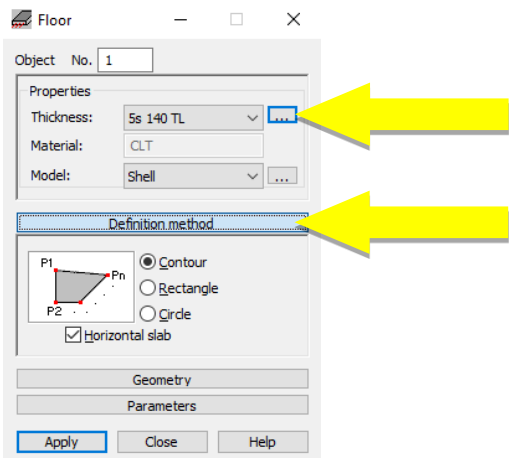
Note: The elasticity values you apply here do not influence the results as long as the stiffness parameters are given correctly. The Specific weight will be used to calculate the self-weight of the structure (in combination with the total thickness "Th").

Step 2: Definition of the KLH panel type – overview



Step 2a:

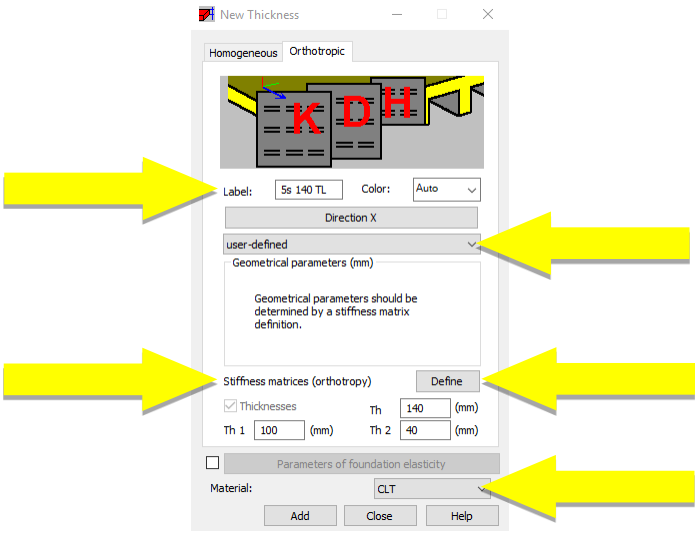
Name the KLH panel type by clicking on "..." and define the panel by clicking on "Definition method".



Note: When the name and the values are entered onto a computer, they will always be available. The definition also can be transferred between machines by copying the file associated with the element types.

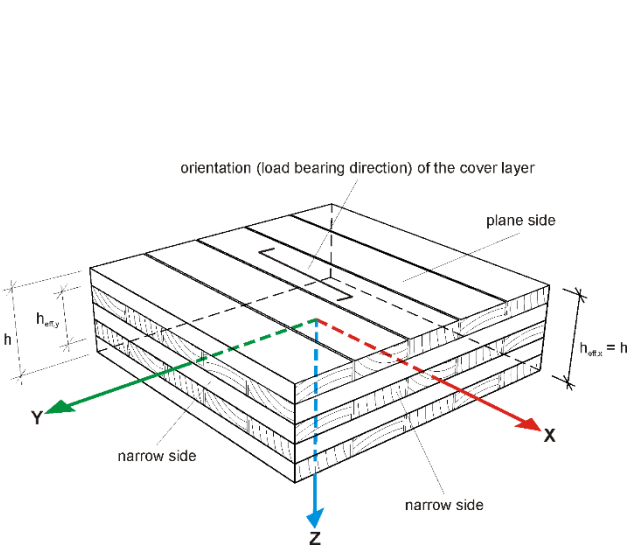
Step 2b: Panel name and thickness

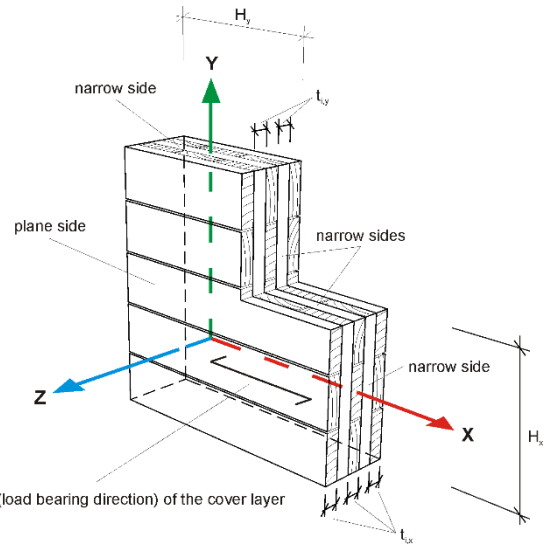
Switch to the "Orthotropic" tab: Name the "Label" with the KLH panel you want to calculate. Define the "Thicknesses" "Th", and select the "Material" from the drop-down menu as "CLT KLH", as shown in following window and click "Define" by "Stiffness matrices (orthotropy)".



Note: The thicknesses "Th", "Th1" and "Th2" (total and sums of layer thicknesses in x- and y-direction) have to be added manually. They do not influence the results, if the correct stiffness parameters are given (see step 2d).

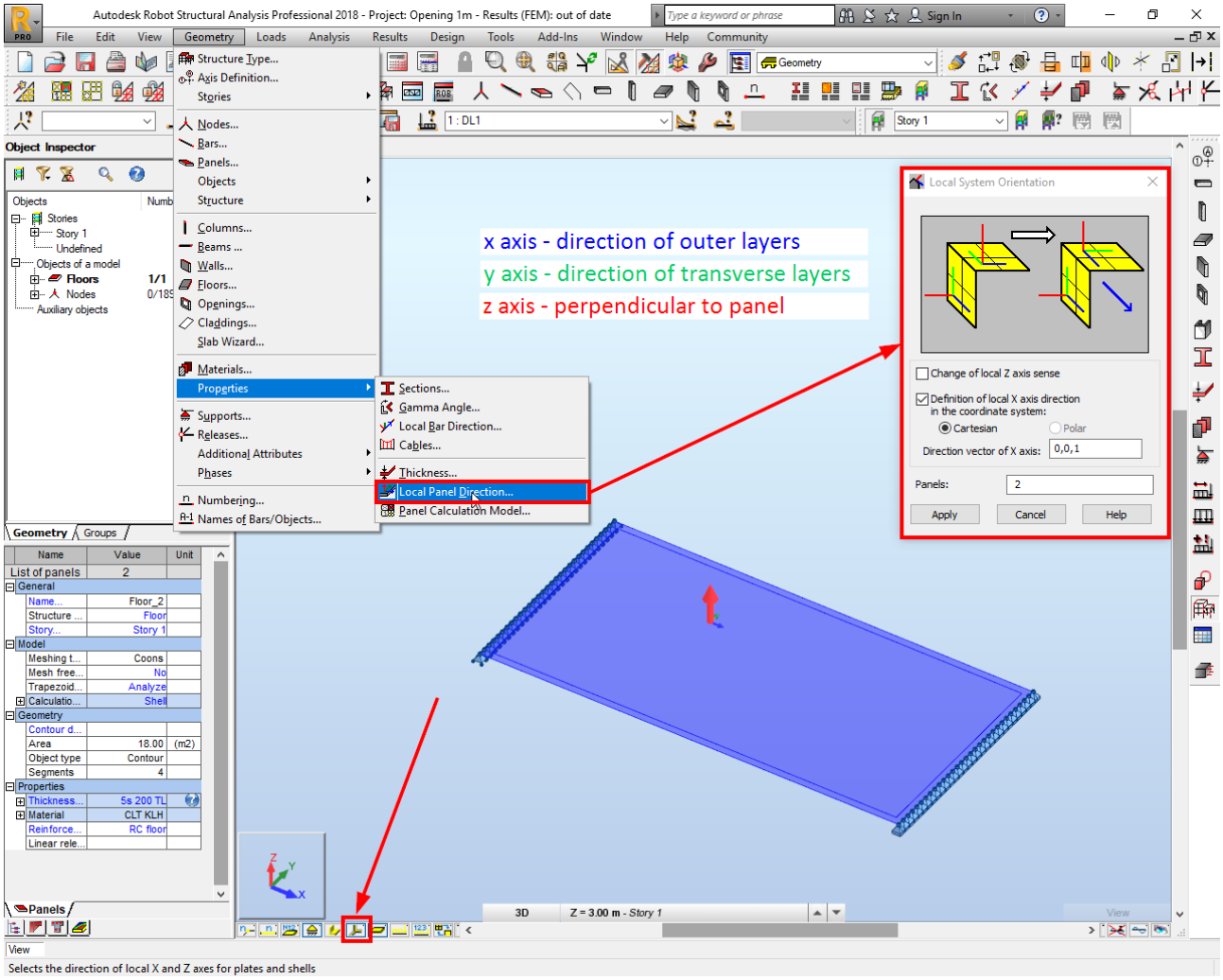
Note: For the definition of axes see the following image. The local x-direction of the panel is always the direction of outer layers (according to the definitions in KLHdesigner).





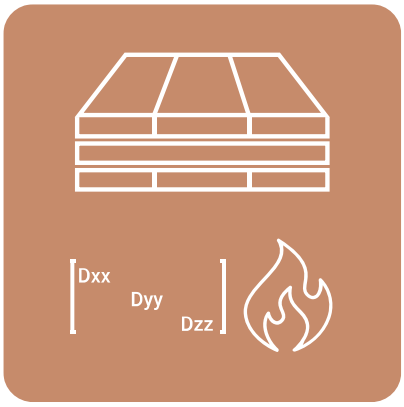
Definition of local system axes (panel directions)

You can view local systems in Robot Structural by clicking the box in the bottom left corner, and change panel orientation as shown below:

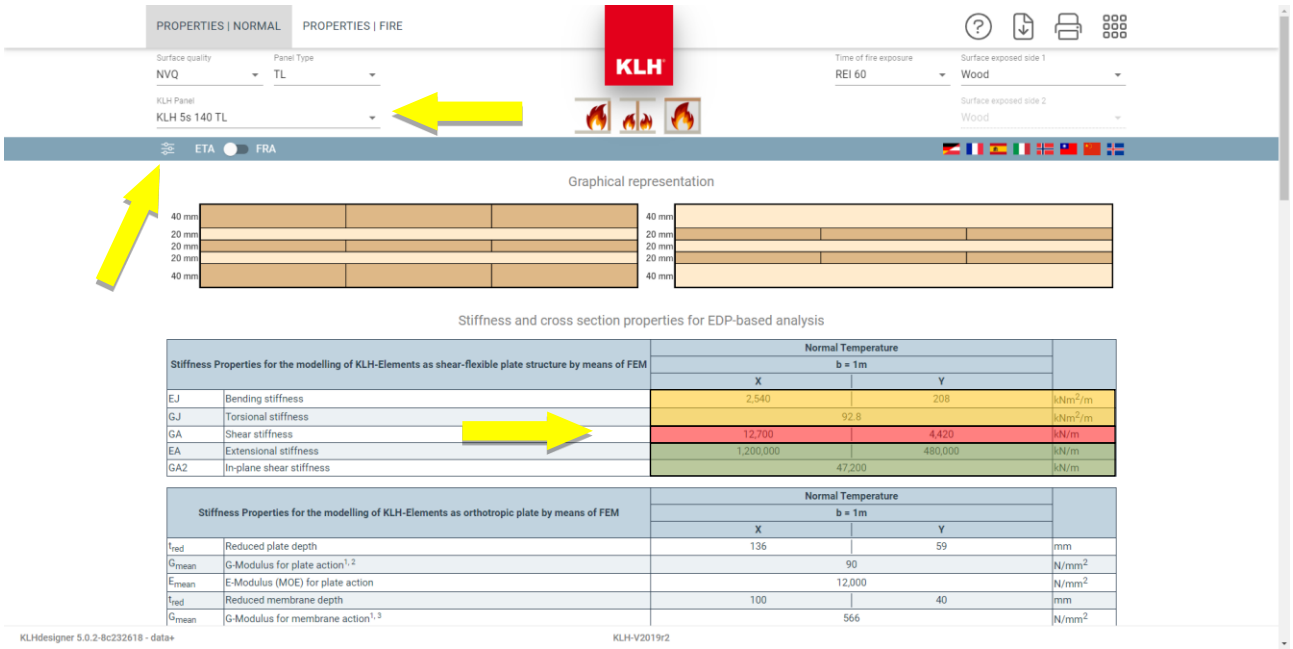


Step 2c: Stiffness properties

Open your web browser and go to www.klhdesigner.at and click on the **data+** icon. You can also click on the data+ icon below to be redirected directly to the app.



. Choose the KLH panel you want to use in Robot Structural to obtain the associated stiffness properties.

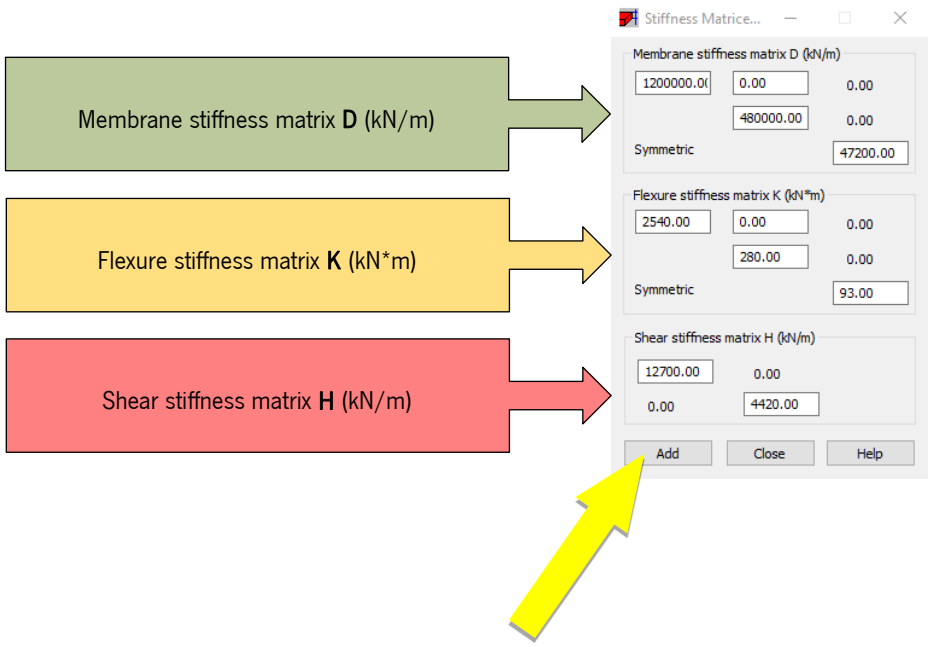


Shear stiffness matrix **H** (kN/m)	Flexure stiffness matrix **K** (kN*m)	Membrane stiffness matrix **D** (kN/m)

Note: You are able to change the units by clicking on the button as shown in the graphic above.

Step 2d: Stiffness Matrices in Robot Structural

Return to Robot Structural and fill in the stiffness values obtained from **data+** into the defined array as shown below and finally click "Add".



Note: Once you have defined a KLH panel with this procedure, it can be used for future models on this computer.