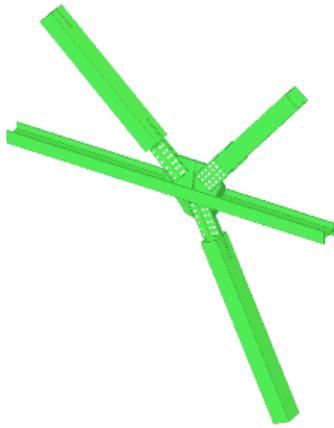
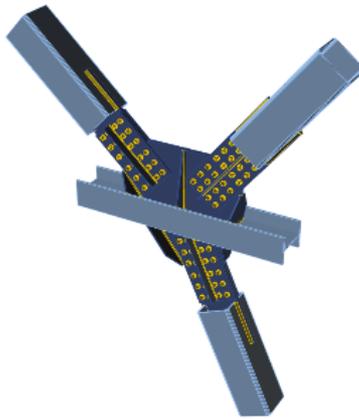


IDEA StatiCa tutorial – Tekla Structures link (EN)

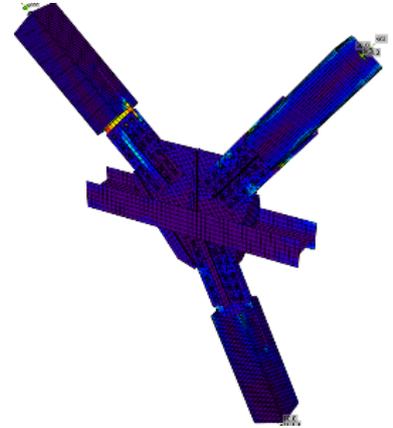
Welcome to IDEA StatiCa tutorial. This tutorial will show how to activate and use the link between **Tekla Structures** and **IDEA StatiCa Connection**.



Activate the link



Use the link



Update the project

Known limitations

1 How to activate the link

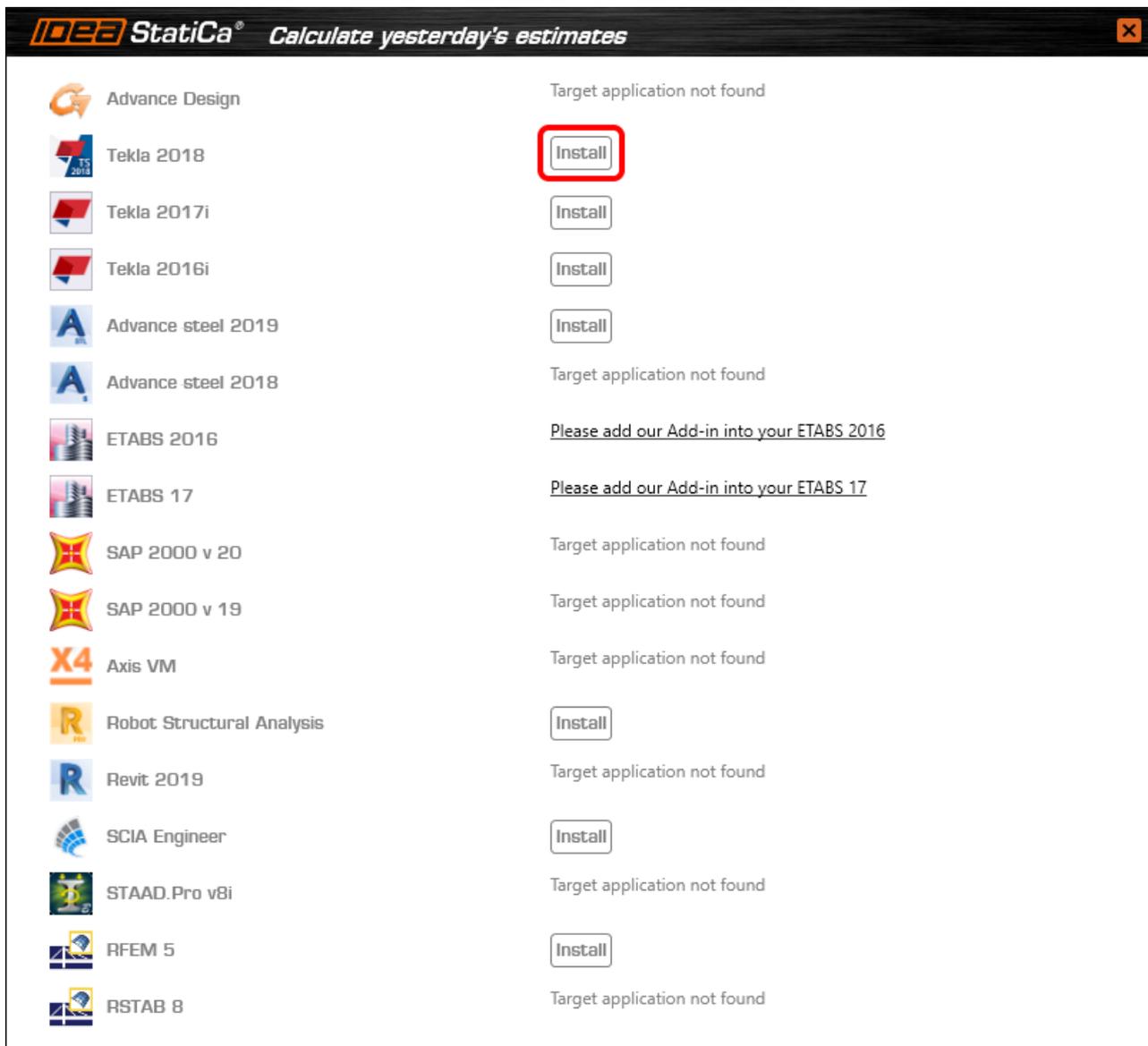
- Install the latest version of IDEA StatiCa, get it in the [Downloads](#)
- Make sure you are using a supported version of Tekla Structures – updates are published in the [BIM section](#).

IDEA StatiCa automatically integrates the BIM link into your CAD/CAE software during its installation. You can check the status and activate more BIM links for later installed software in the BIM link installer.

Open IDEA StatiCa and navigate to the panel **BIM** and open the **BIM link installer**. A notification "*Run as administrator*" may appear, please confirm with the **Yes** button.

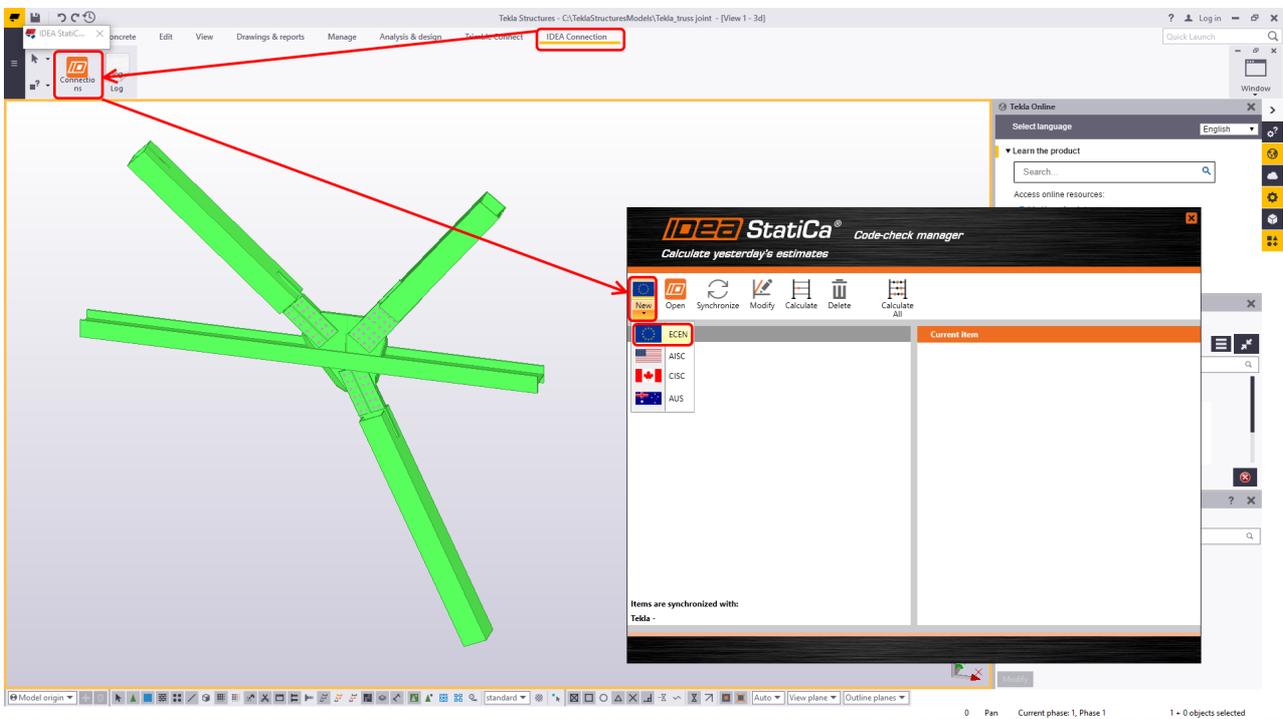
The screenshot shows the IDEA StatiCa software interface. At the top, the logo "IDEA StatiCa®" is displayed with the tagline "Calculate yesterday's estimates". Below the logo, there are navigation tabs for "STEEL", "CONCRETE", and "BIM", with "BIM" highlighted. A "Resource center" link is also visible. A red box highlights the "BIM" tab and a button labeled "Activate your BIM link...". The main content area features a heading "IDEA StatiCa is a part of your workflow" and a sub-heading "Speed up your analysis and design process by importing data model from the most widespread FEA and CAD programs." Below this, a three-step process is shown: "Beam Selection" (a 3D model of a steel frame), "Design of Beam" (a 3D model of a beam with design parameters), and "Check EC / SIA" (a diagram showing a beam cross-section and its design parameters). A button labeled "Open existing project Import from other program" is located on the left. At the bottom, there is a "Have a question?" link and social media icons for LinkedIn, Facebook, and YouTube.

Select the software to integrate the IDEA StatiCa BIM link into, click the **Install** button and check the Installed status.

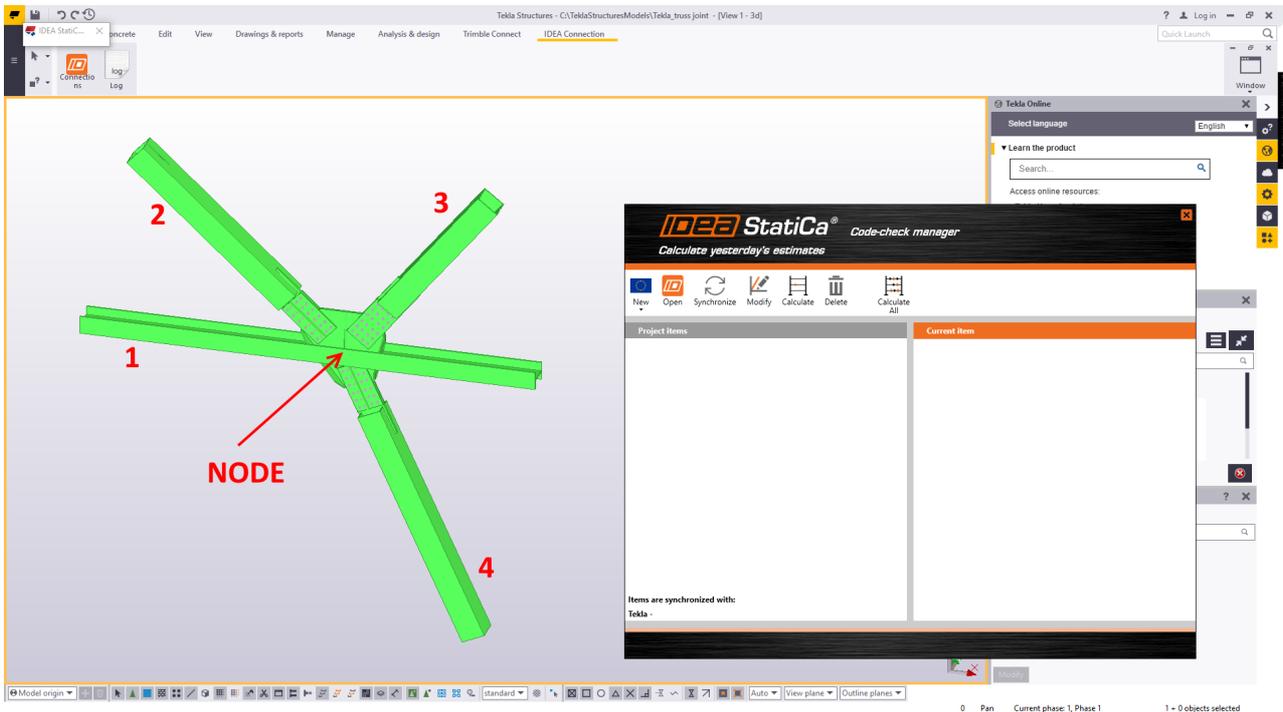


2 How to use the link

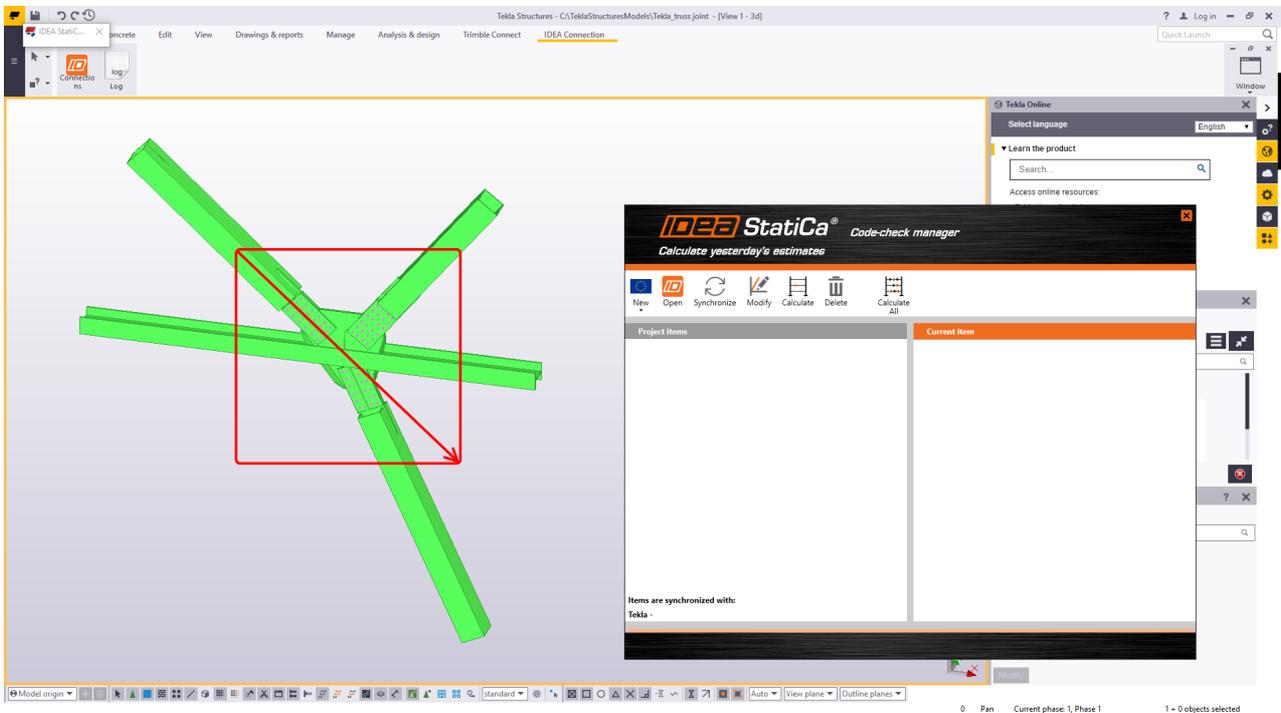
Open the attached [project](#) in Tekla Structures. Then choose **IDEA Connection** in the upper ribbon, button **Connections** and choose **design code**.



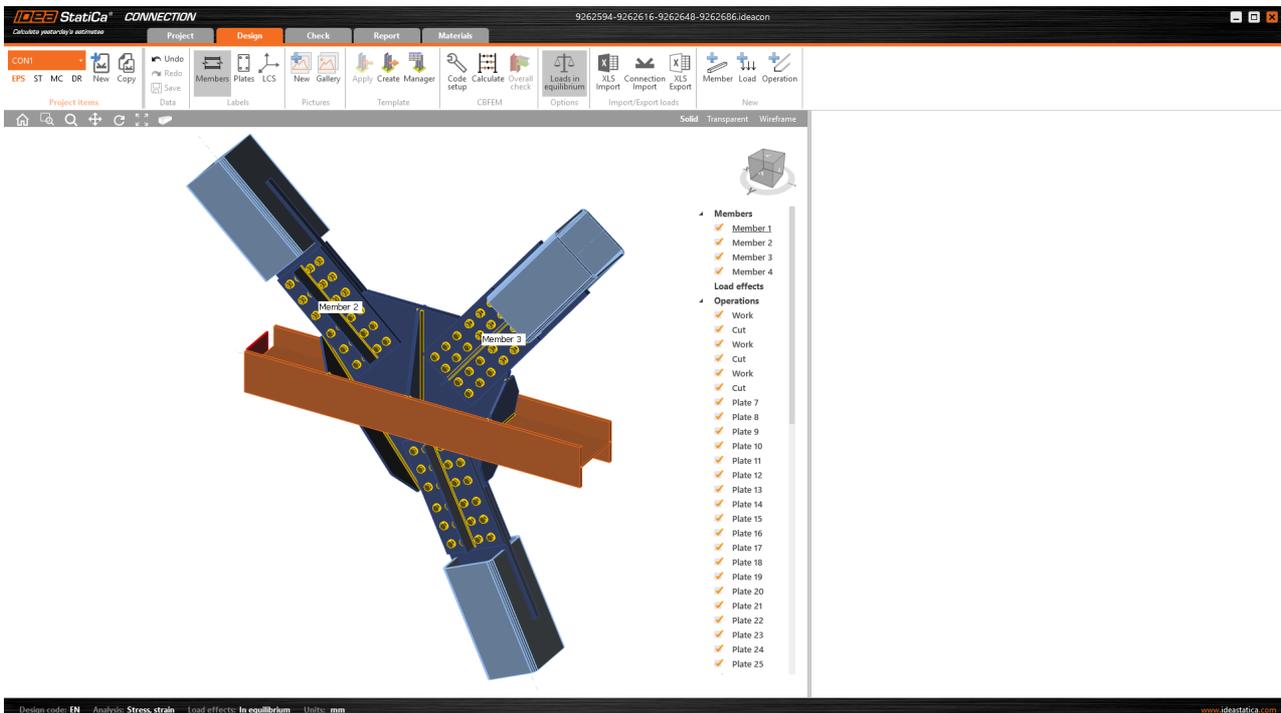
We select the **point** which represents the node. Then we choose all the structural **members** of the joint, the first chosen member will be set as bearing one. And confirm with **spacebar**.



In the end we select **all the remaining entities** of the connection such as plates, bolts, and welds.e. And confirm with **spacebar**.



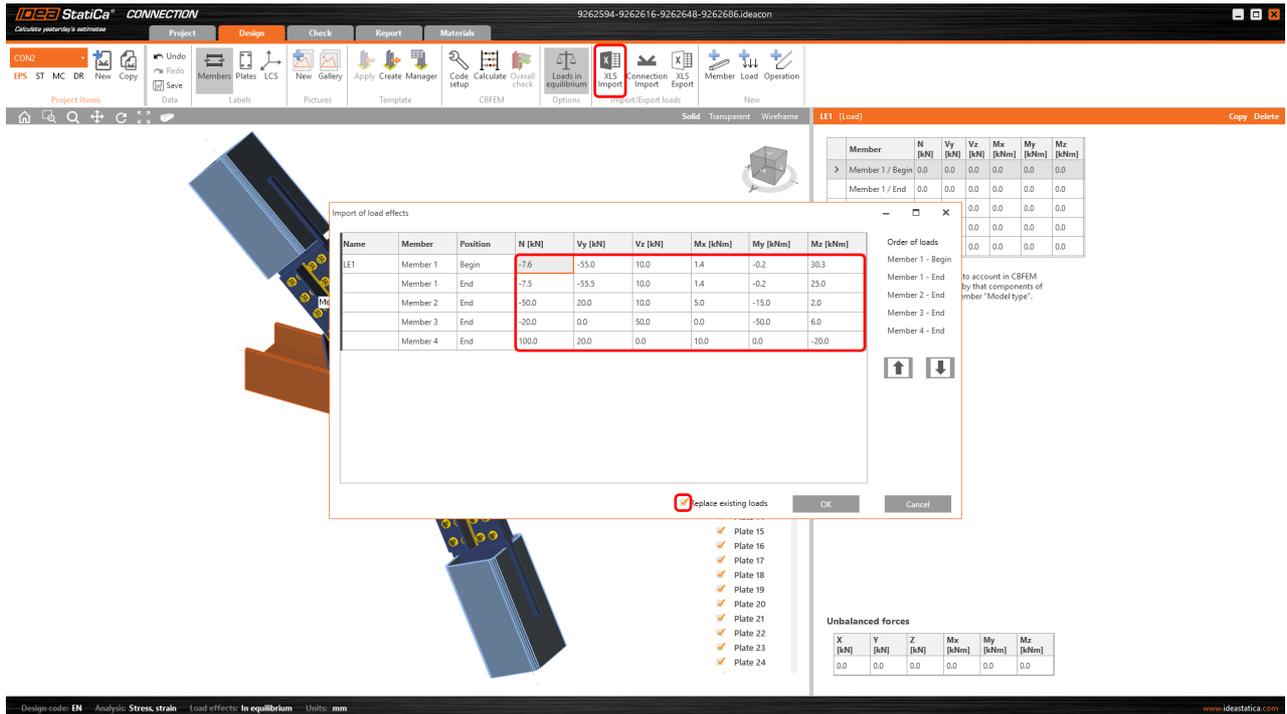
Automatic data transfer is finished and IDEA StatiCa Connection with the generated project is launched. We imported the geometry, cross-sections and all needed data from Tekla Structures.



3 Load effects

When we import a model from CAD program like Tekla, we need to input the internal forces to load the members. In this example where we have many members, we can easily import the forces from the enclosed [Excel sheet](#).

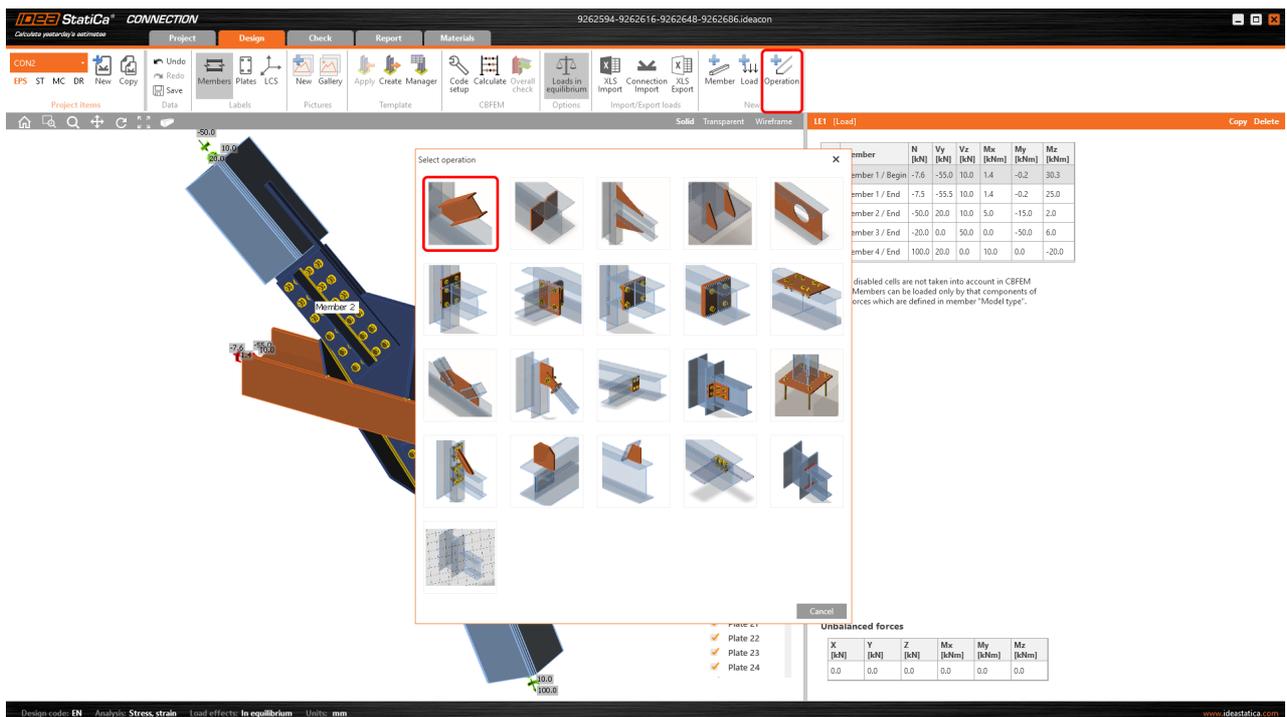
For import the forces, you can check workflow in FAQ: [How to import load effects from Excel sheet.](#)



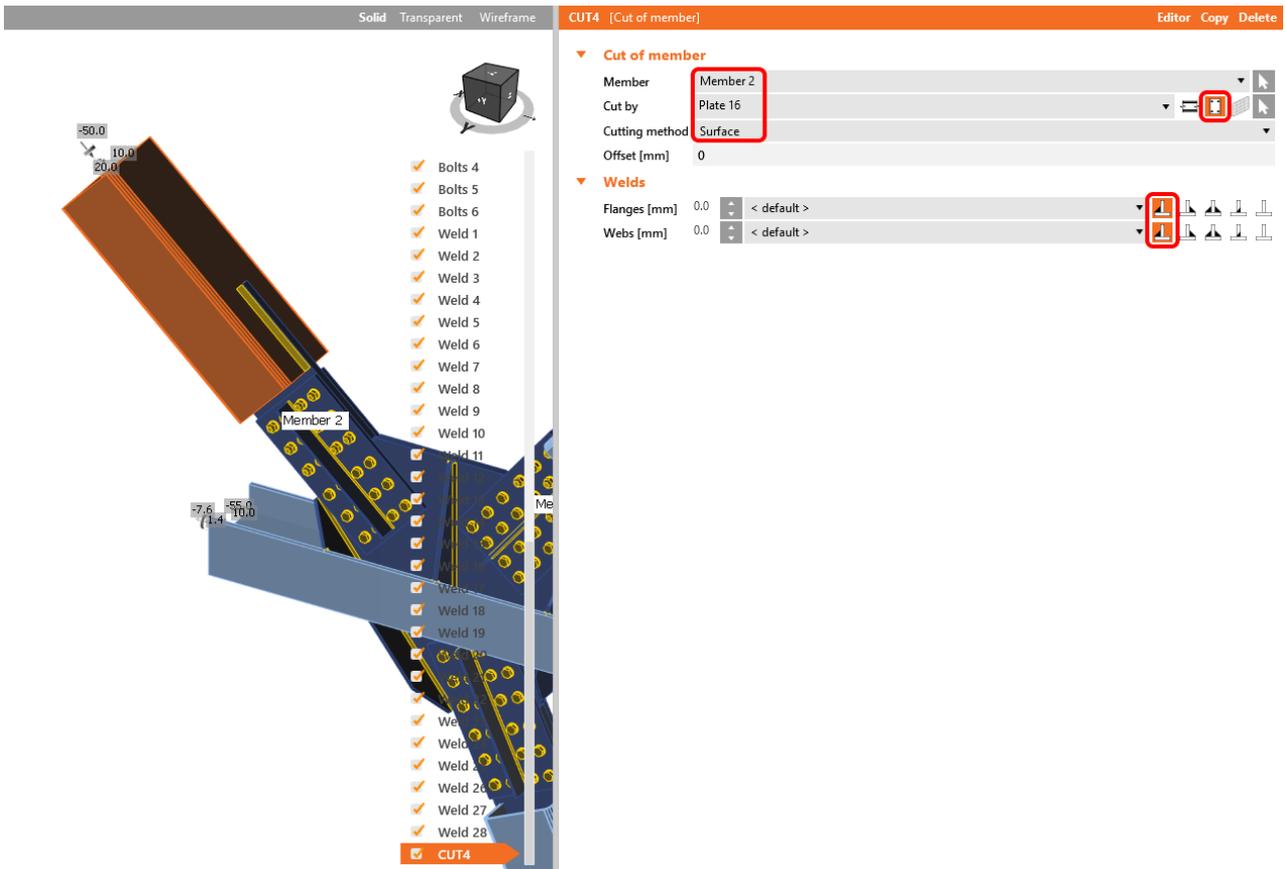
4 Design

Before the analysis, we add the manufacturing operation **Cut** for all members in the joint which are connected to the bearing member.

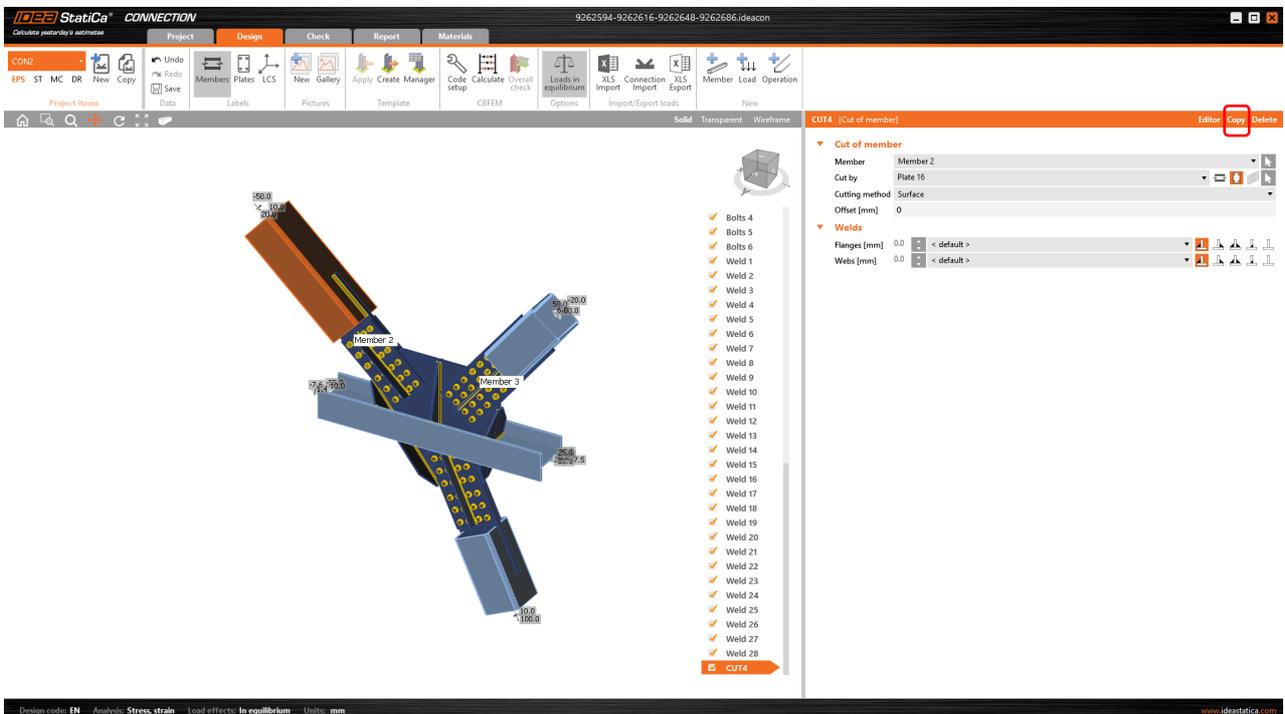
We will add the first **Cut**.



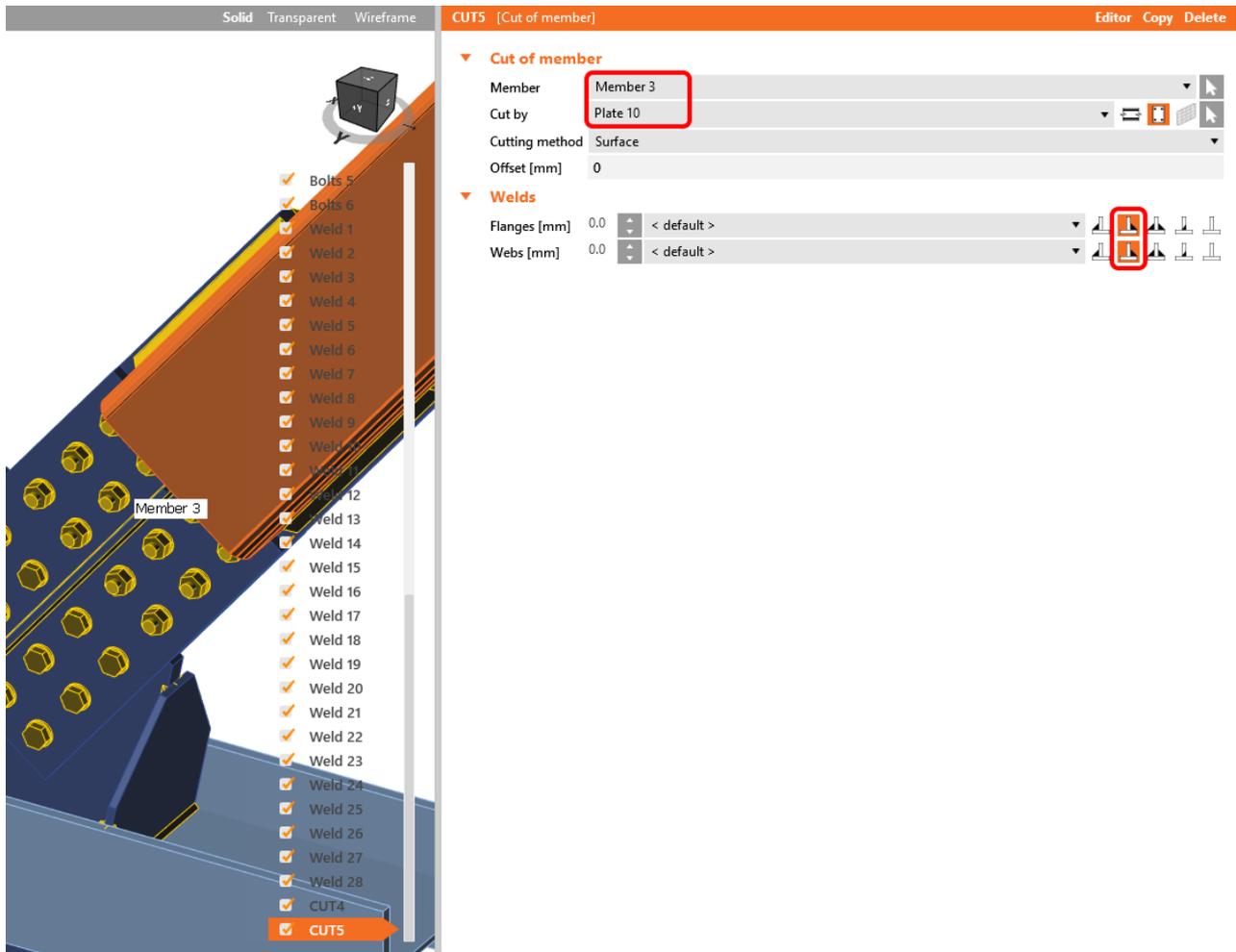
We set it for **Member 2** and define the type of welds and other properties.



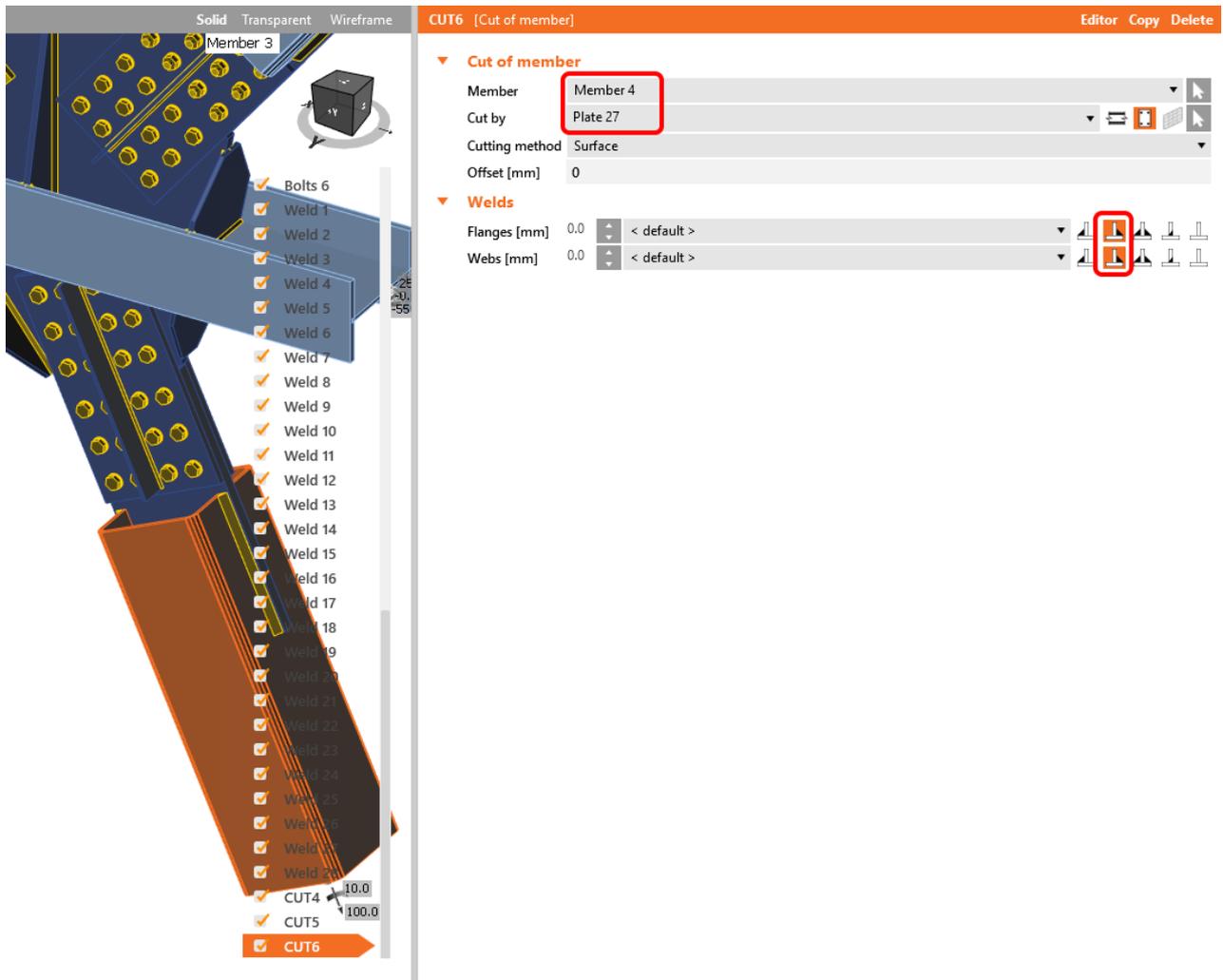
Then we will use operation **Copy** from the ribbon to replicate **CUT4** and create **CUT5**.



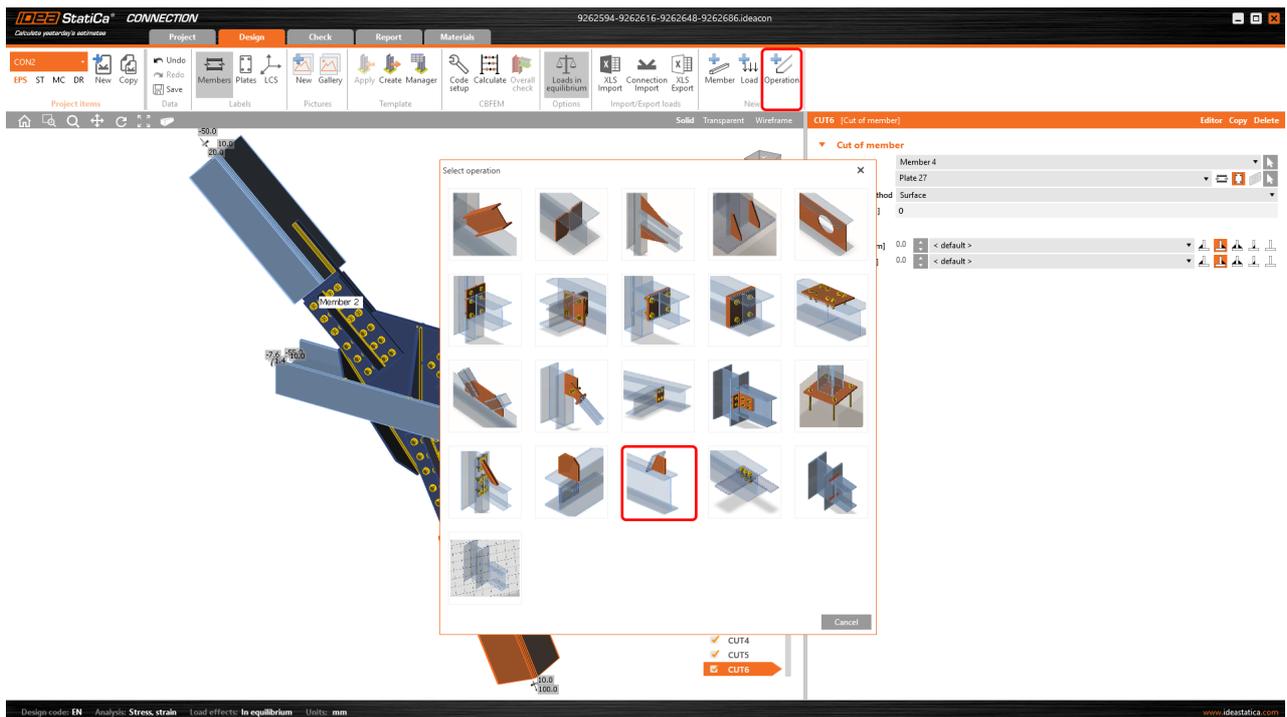
And we modify properties for **CUT5**.

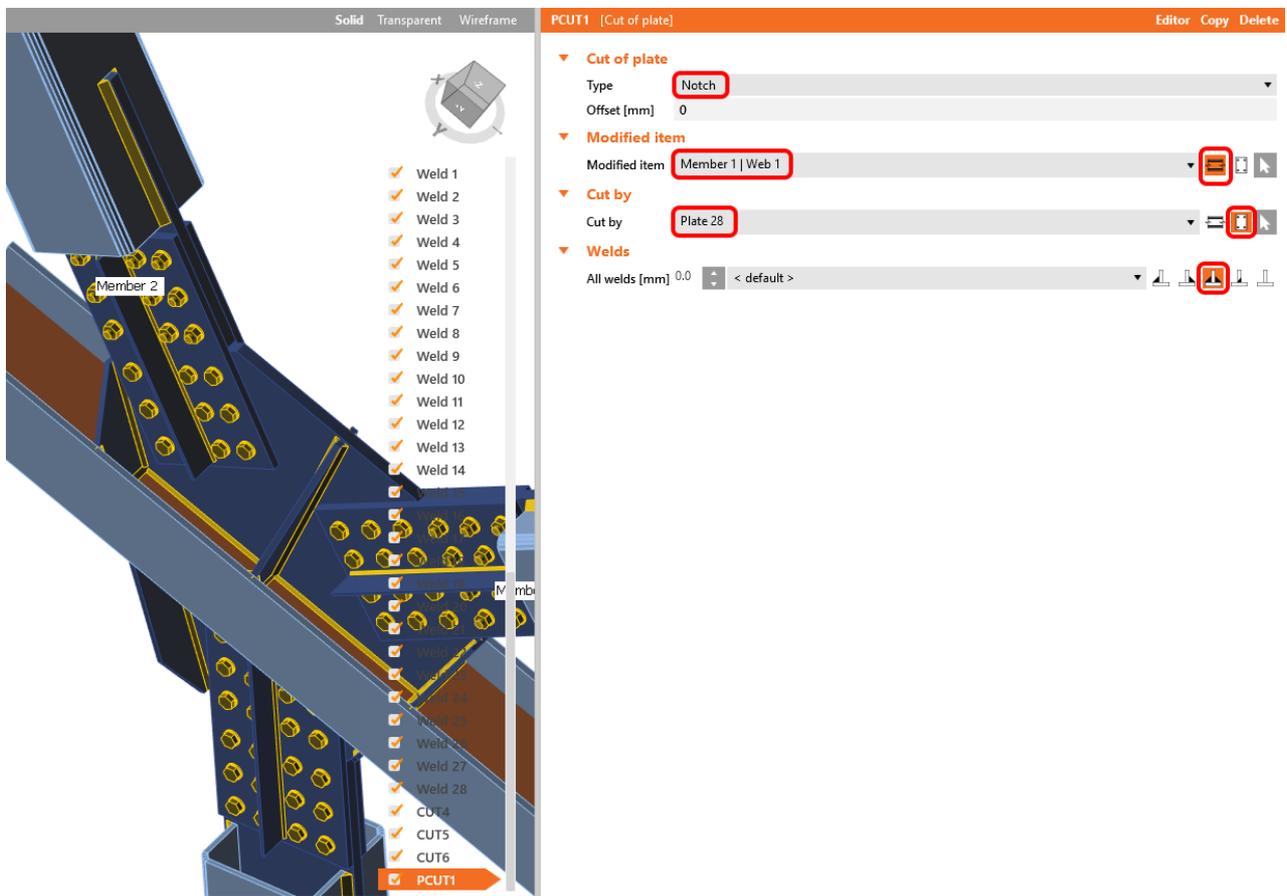


Then we will use operation **Copy** from the ribbon to replicate **CUT5** and create **CUT6**.
And we modify properties for **CUT6**.



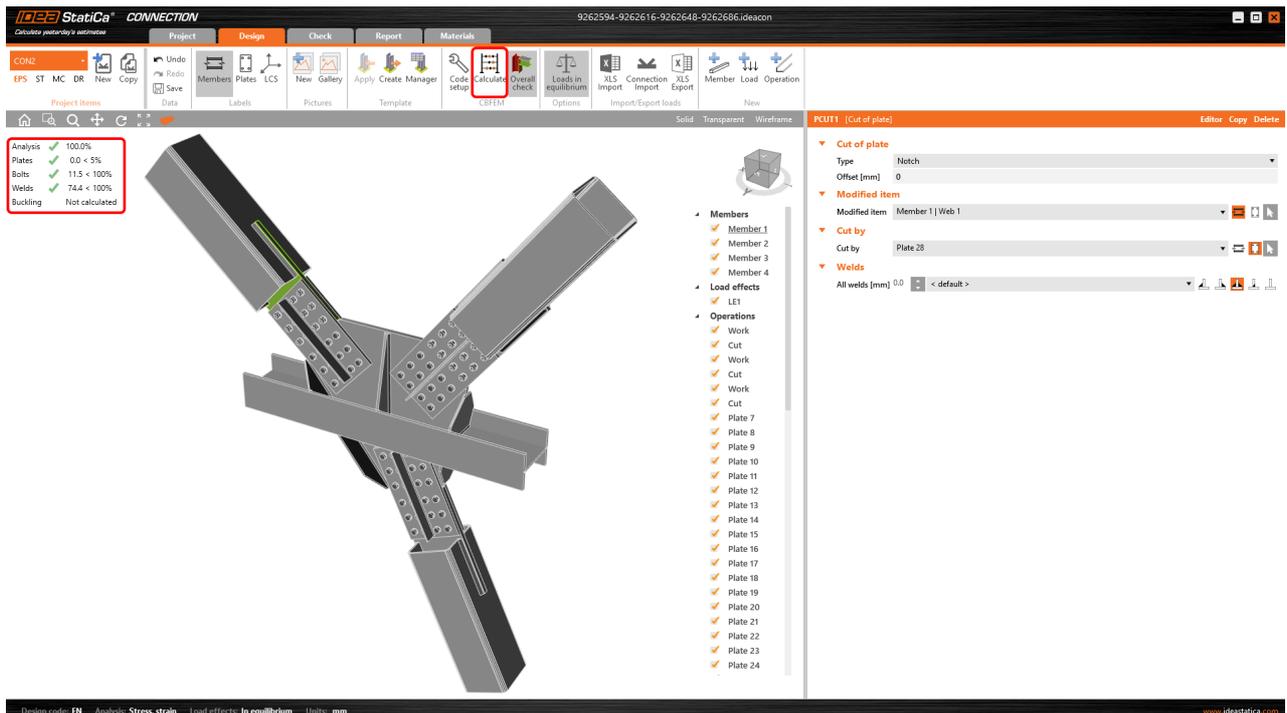
In the next step we create notch in the main beam and connect the plate by welds to bearing member.



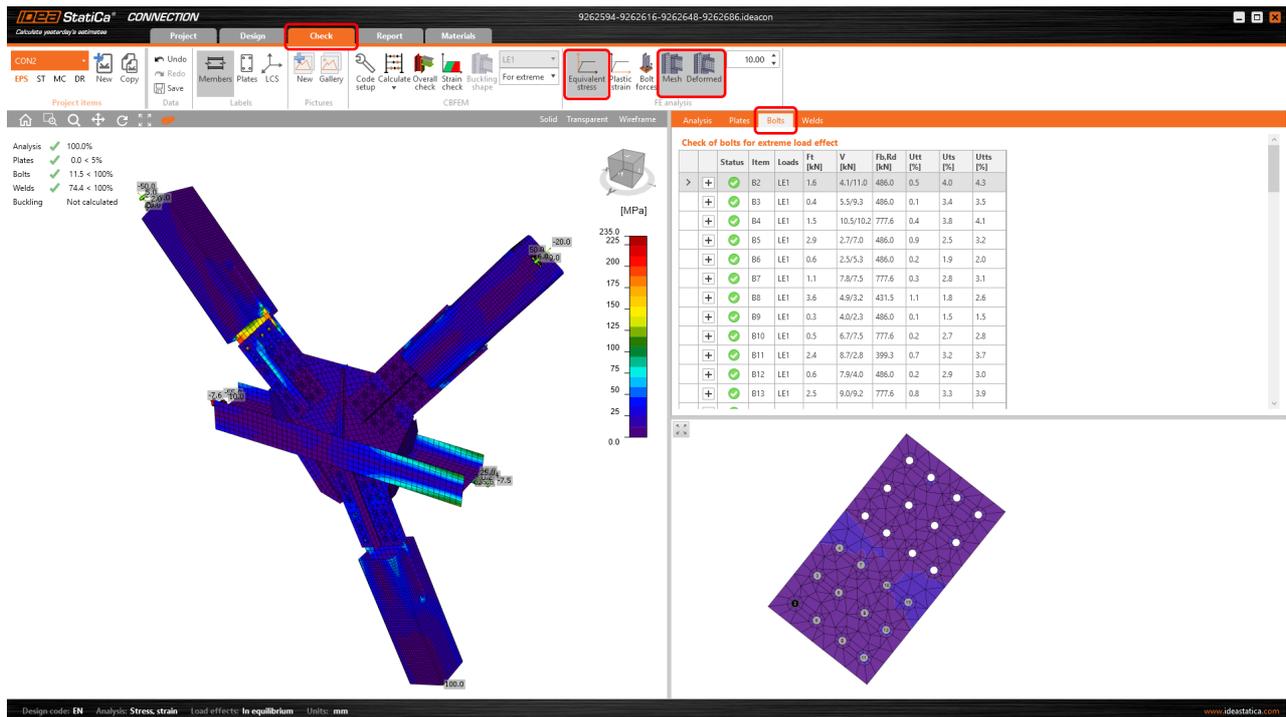


5 Check

We start the analysis by clicking **Calculate** in the ribbon. Analysis model is automatically generated, calculation is performed and we can see the Overall check displayed together with basic values of check results.

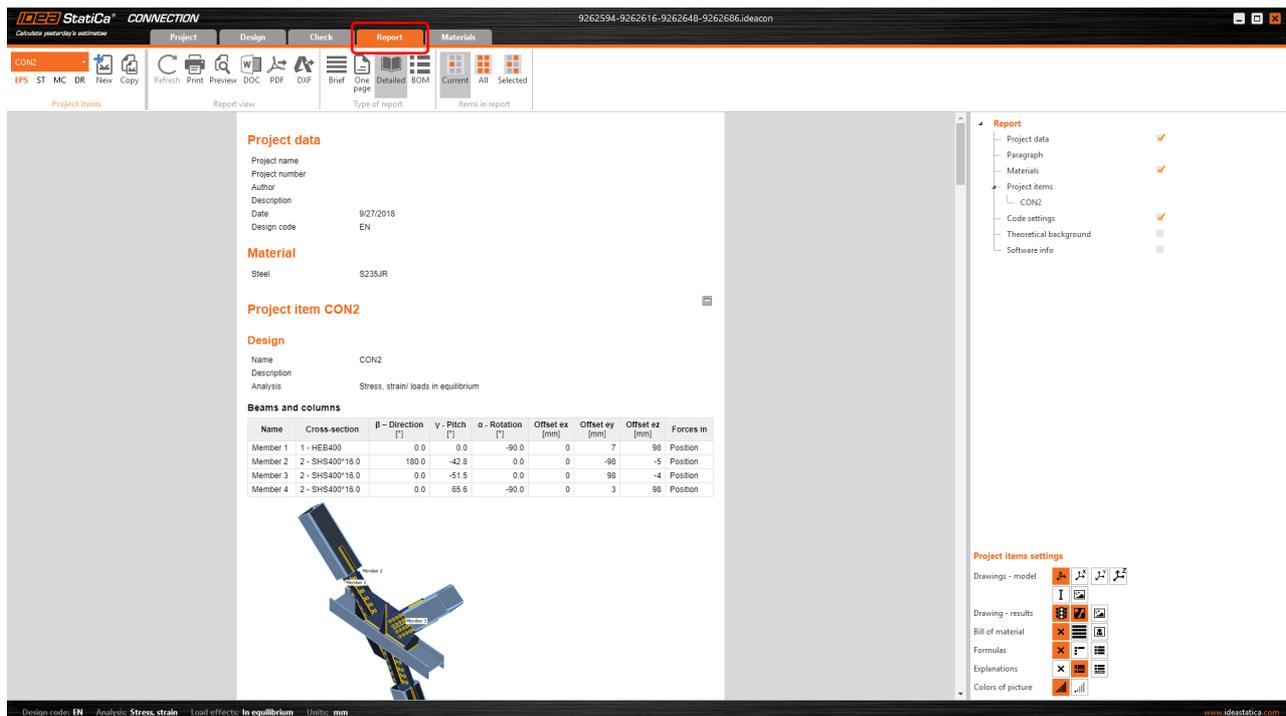


We go to the display tab **Check** and there we activate **Equivalent stress**, **Mesh** and **Deformed** from the ribbon to get a full picture of what is happening in the joint. We open the tab **Bolts** to see the results for these items.

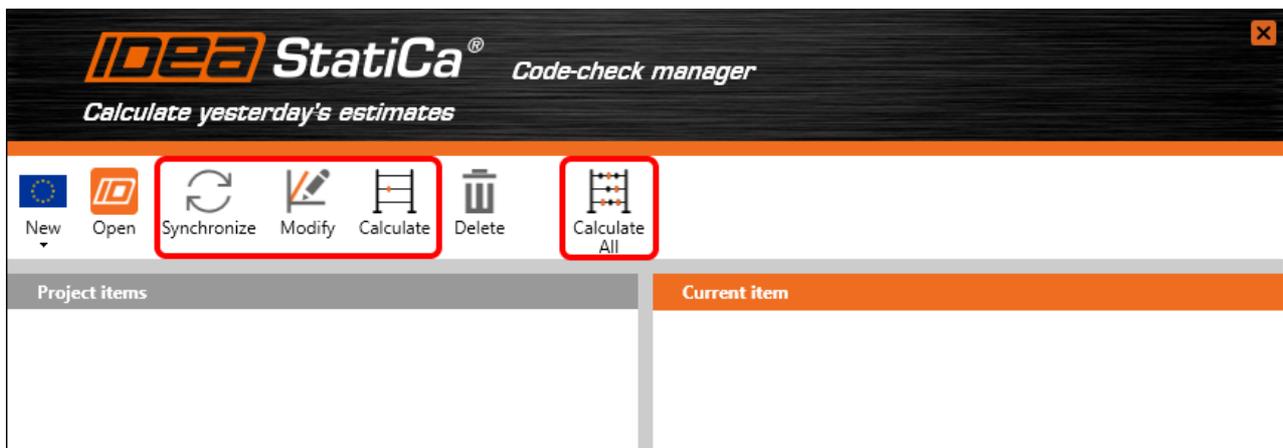


6 Report

Next we go to the tab **Report**. IDEA StatiCa offers a fully customizable report to print out or save in editable format.



7 Synchronize models



Code-check manager is a BIM tool to export and synchronize connections from other programs. It is launched directly in the 3rd party applications via a command/icon.

Synchronize

IDEA StatiCa detects changes in connection topology in the 3rd party application and update respective IDEA StatiCa Connection project.

Modify

Open a connection imported from a 3rd party application and modify it – add/delete a member, add missing welds etc.

Calculate

Synchronize and calculate current item and provide a new set of results.

Calculate all

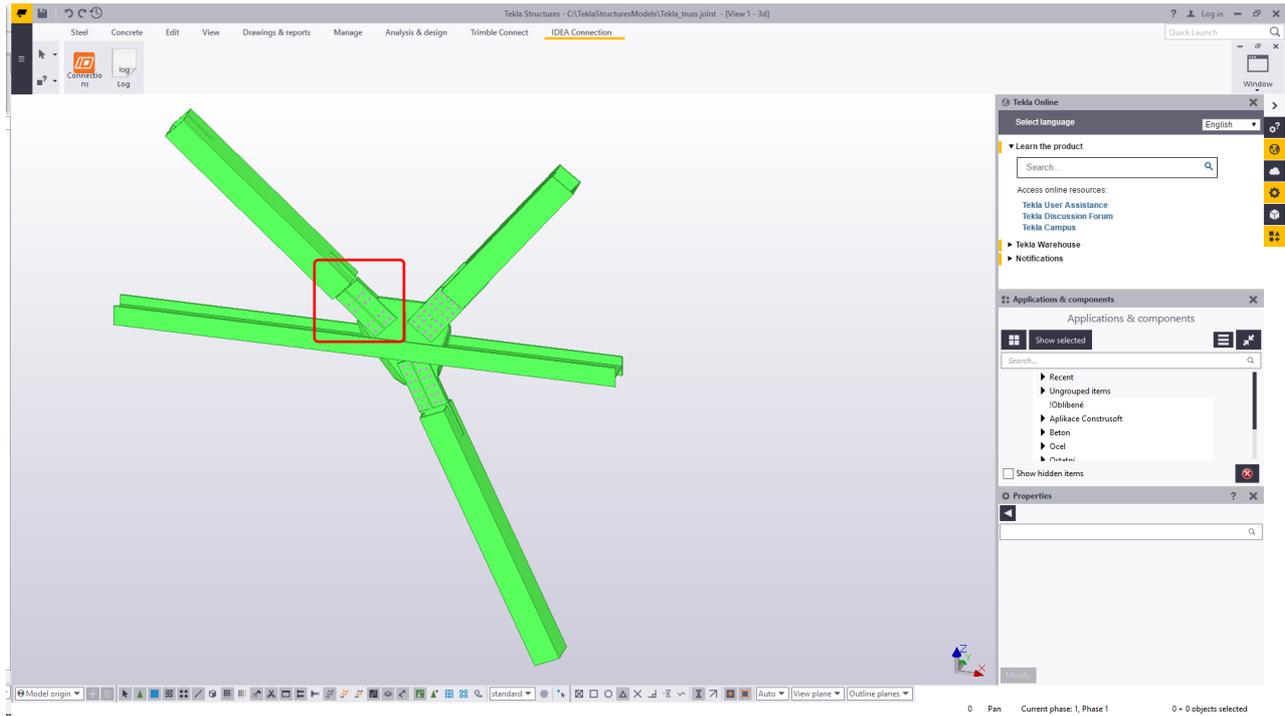
Synchronize and calculate all items and provide new set of results.

Note

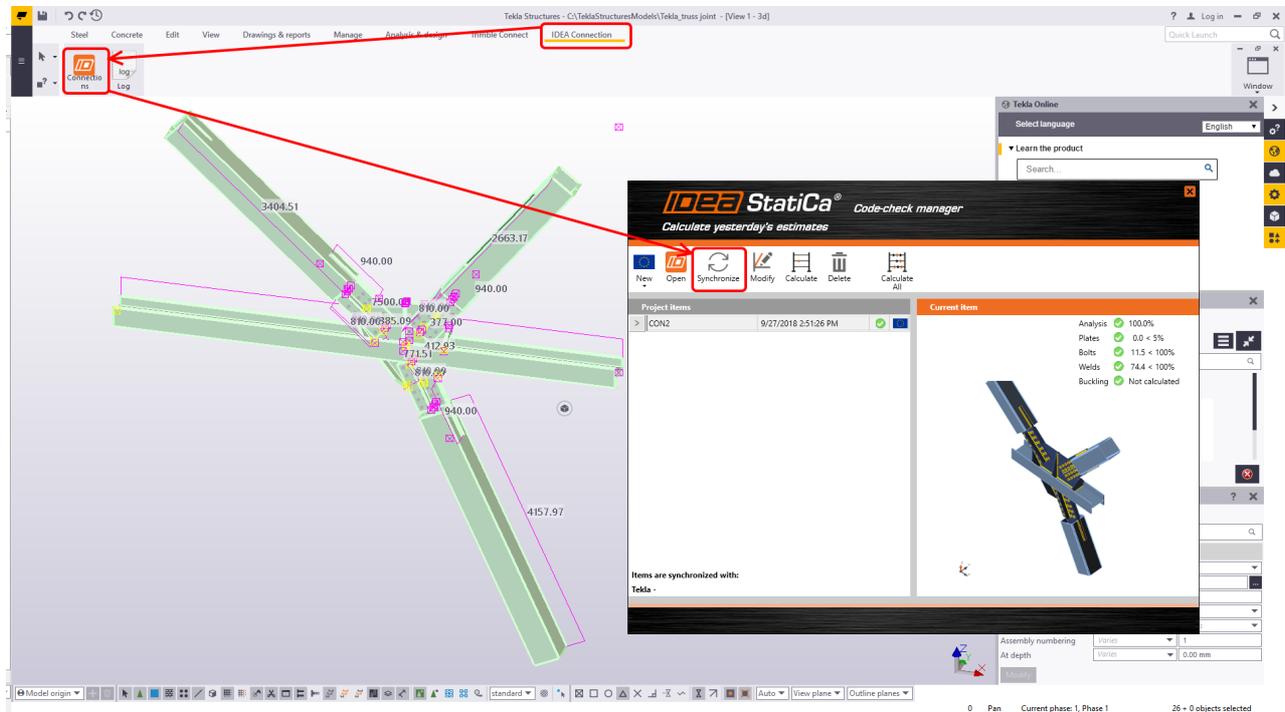
Kindly be aware that IDEA StatiCa syncs with a model of the 3rd party application, not the other way around. If we **add operations in IDEA StatiCa** and then use the options described above (Synchronize; Modify; Calculate; Calculate all), the additionally added operations will be deleted.

Let's show an example of managing changes in the models.

Then we again open project in **Tekla Structures** and redefine what we need. Let's remove 2 rows of bolts for plate, which connect Member 2.



Then choose **IDEA Connection** in the upper ribbon, button **Connections** and choose possibility **Synchronize**.



Automatic data transfer is finished and IDEA StatiCa Connection with the **changed** project is launched. You can notice only two rows of bolts for the each side (instead of original three rows).

The screenshot shows the IDEA StatiCa CONNECTION software interface. The main window displays a 3D model of a steel joint with four members (Member 1, 2, 3, 4) and several plates (Plate 7 to Plate 24). The software window includes a menu bar, a toolbar, and a right-hand panel with a table of member data and a list of operations.

Member Data Table:

Member	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
Member 1 / Begin	-7.6	-55.0	10.0	1.4	-0.2	30.3
Member 1 / End	-7.5	-53.5	10.0	1.4	-0.2	25.0
Member 2 / End	-50.0	20.0	10.0	5.0	-15.0	2.0
Member 3 / End	-20.0	0.0	50.0	0.0	-50.0	6.0
Member 4 / End	100.0	20.0	0.0	10.0	0.0	-20.0

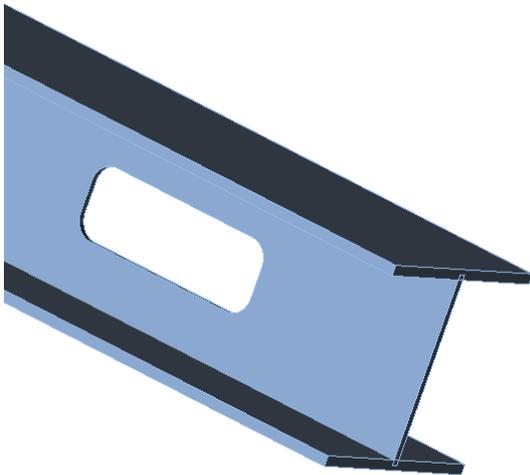
Unbalanced forces Table:

X [kN]	Y [kN]	Z [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
0.0	0.0	0.0	0.0	0.0	0.0

8 Known limitations

Link now works for a wide variety of connections / joints. However, please take into account yet unsupported functionality:

Holes in members and plates

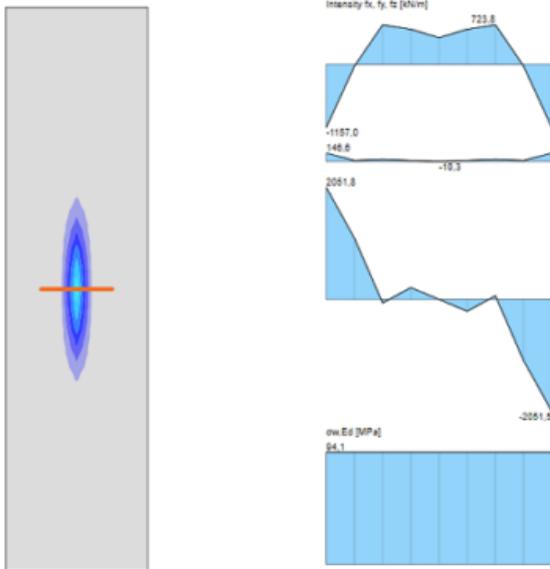


Openings in plates are supported.

Openings in members are not supported.

Workaround: Import the whole joint and manually add these in IDEA StatiCa Connection.

Welds

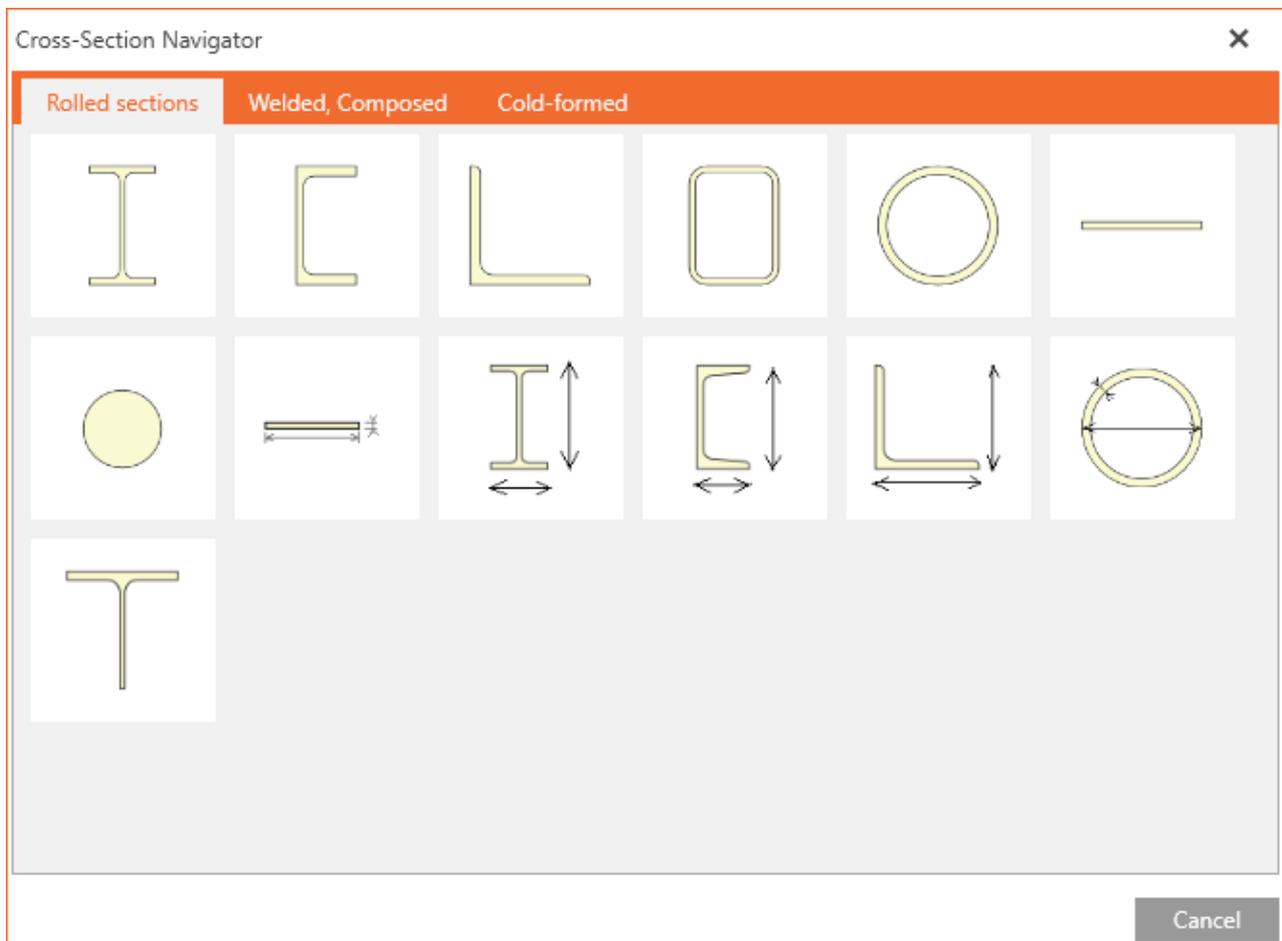


Option **AROUND** is supported.

We are not able to detect some welds.

Workaround: Generate a weld for each plate in Tekla. Always check imported welds.

Supported / unsupported profiles



I	Par/Lib
U	Lib
L	Par/Lib
Circular hollow	Par/Lib
Rectangular hollow	Par/Lib
Rectangular plate	Par
Cold formed C	Par/Lib

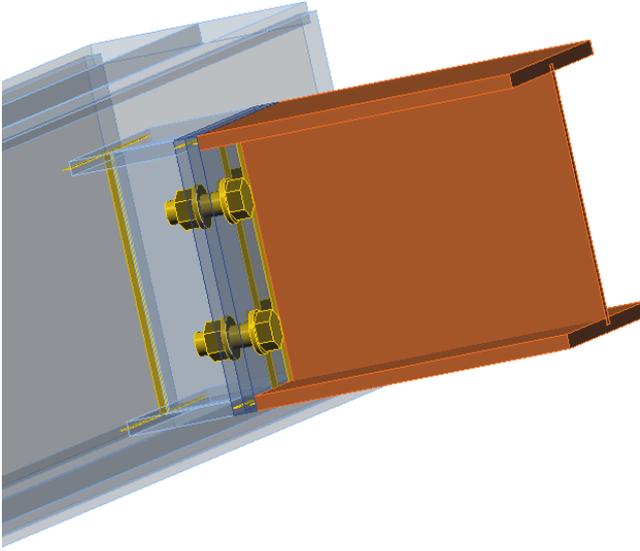
Par - dimensions are set by users

Lib - profiles are taken from Tekla Structures library

Welded and composite cross-sections are not supported.

Be aware that there is not a proper description of rounding of hot-rolled sections in Tekla Structures, IDEA StatiCa Connection defines missing values by itself.

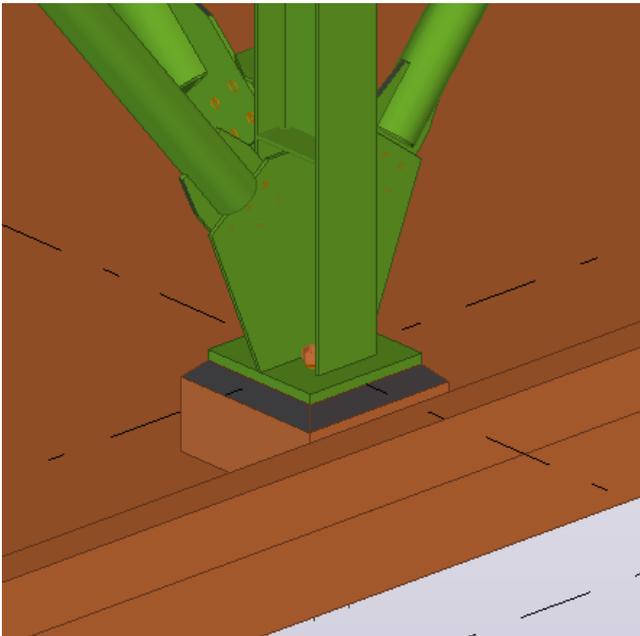
Stub



Import of stubs is supported.

Note: The import has to be done in the third step together with all joint elements (plates, bolts, welds) - *"Select parts of connection"*.

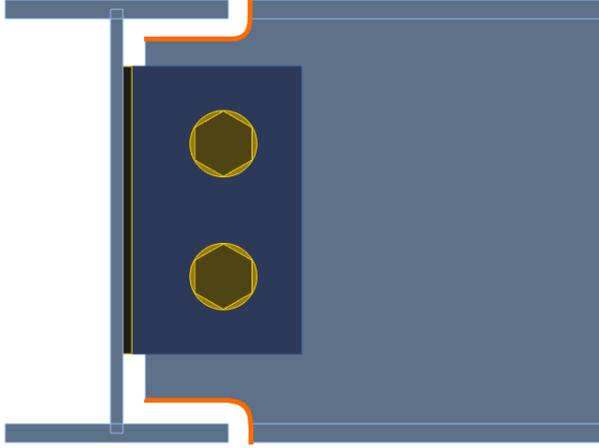
Anchoring



Currently not supported

Workaround: Can be added after import as *"Base Plate"* operation for any uncut member.

Notch



Notches in members and plates are supported.

Requirements:

Solid to cut by must be geometrically identical as solid of plate / member.

General polygon is not supported.

Welds on notches are not imported.

Workaround: Add welds manually in IDEA StatiCa Connection.

Keywords:

connection, joint, EN, Eurocode, analysis, end plate, connecting plate, cut, Tekla Structures, BIM, BIM link, bolt, update, link