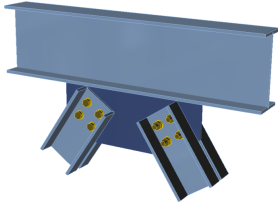


Tutorial - SAP2000 link

This tutorial will show how to activate and use the link between SAP2000 and IDEA StatiCa Steel Connection.



1 How to activate the link

1. SAP2000, version 18 or 19 (x64) must be installed on the computer.
2. Download and install the latest version of 64-bit IDEA StatiCa. Enhanced edition is required.
3. After installation of both programs, run IDEA StatiCa and start with the item **BIM**.

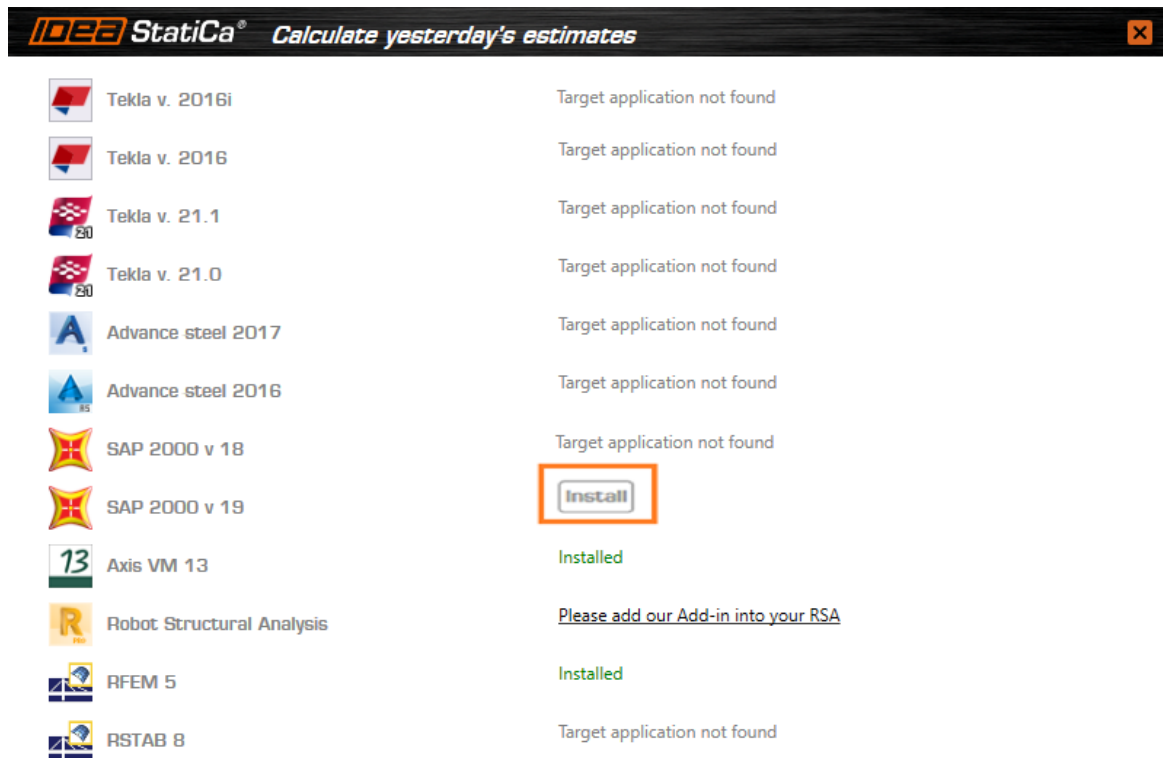


IDEA StatiCa provides structural design and code check of members and details. Novel methods in simple software for daily work of engineers. Get more resources at <http://www.ideastatica.com>

4. In the BIM wizard continue with the item **Links...** During the process notification "Run as administrator" appears. Please confirm with the button **YES**.

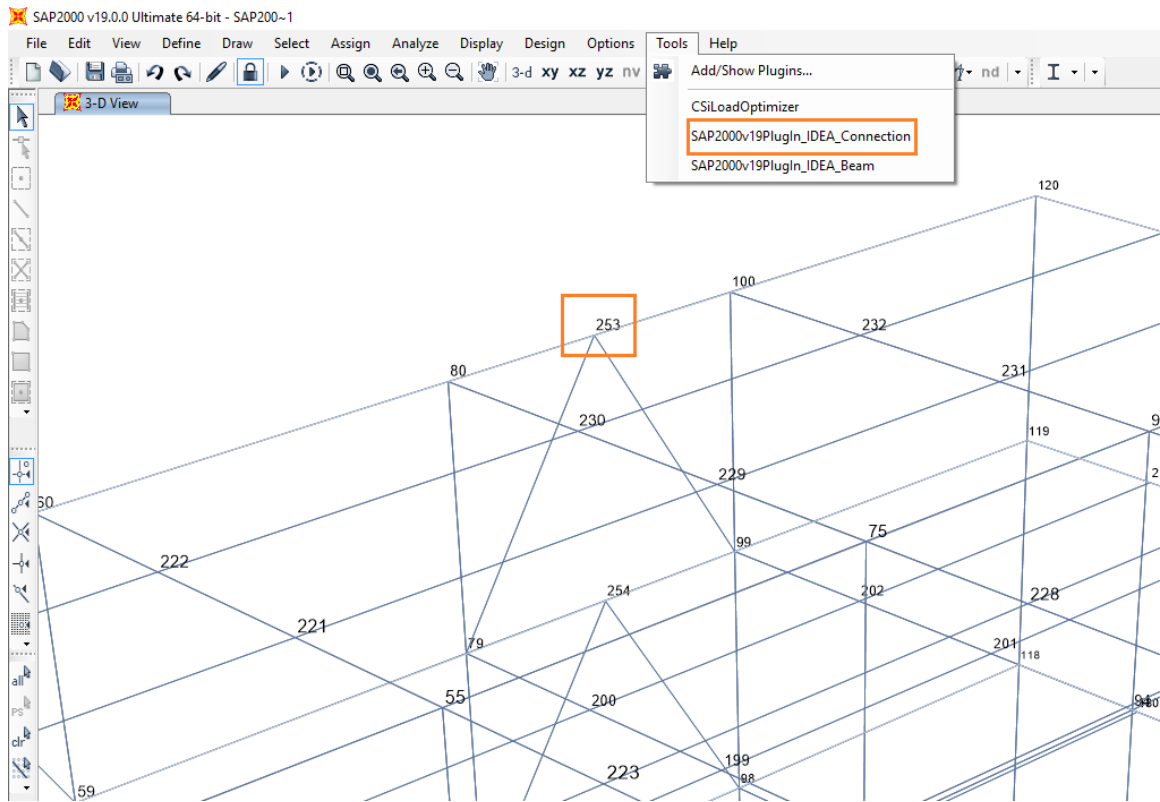


5. Select your version of SAP2000 and click the button **Install**. The process of integration will start.



2 How to use the link

1. Open attached project in SAP2000.
2. Run analysis
3. Mark the node "253 and connecting members.
4. In the menu bar select *Tools* and click **SAP200019PlugIn_IDEA_Connection**

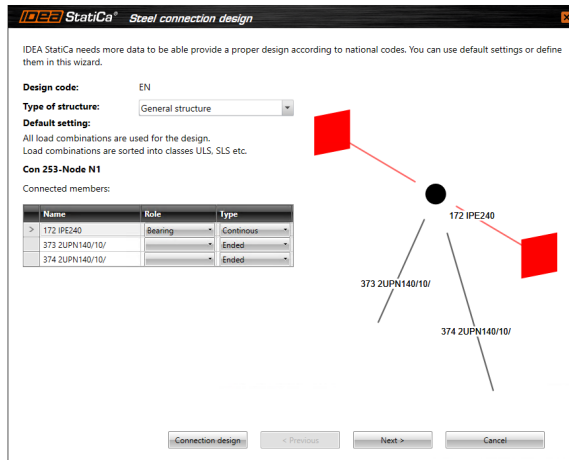


5. IDEA StatiCa joint import wizard is launched. Set file name and path of IDEA StatiCa Connection project to save and click button Next

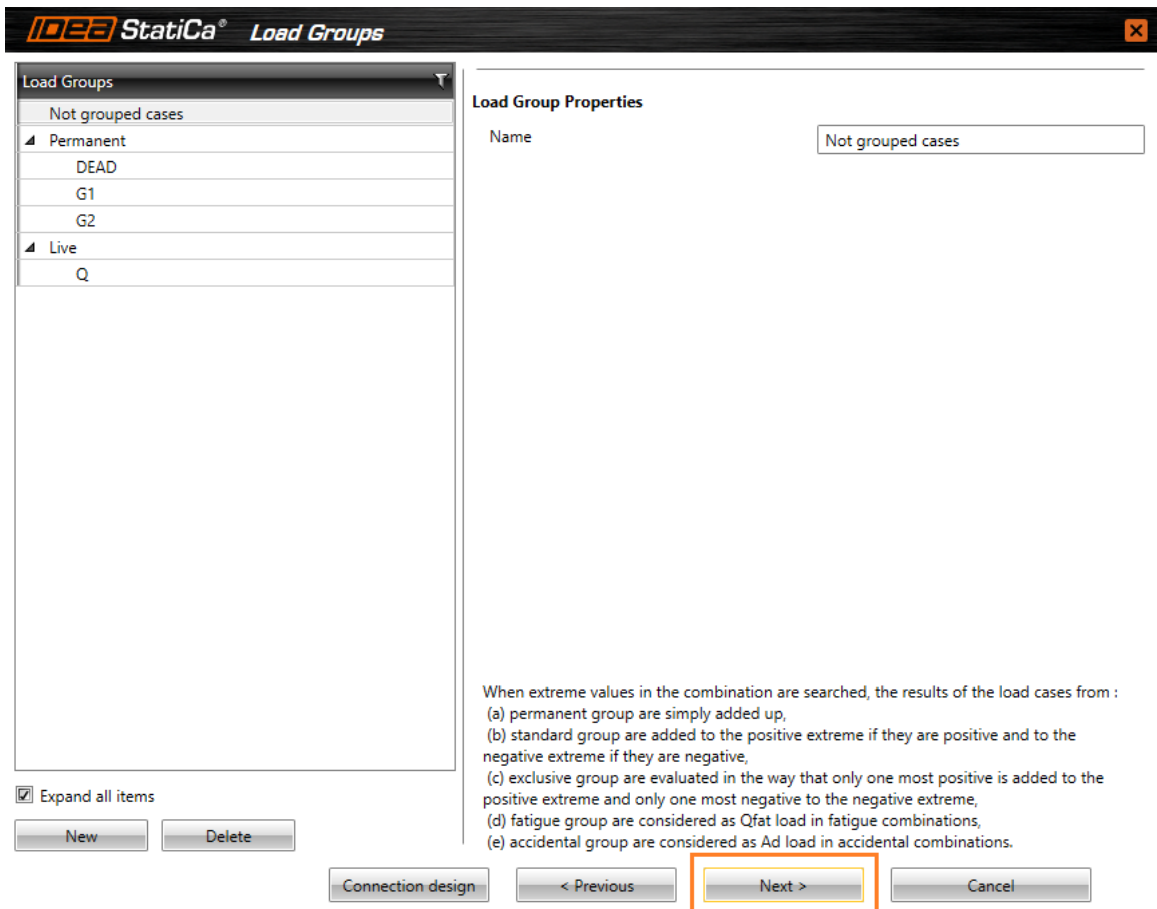


6. Select beam member and set it as Bearing. Finish settings by Connection design button.

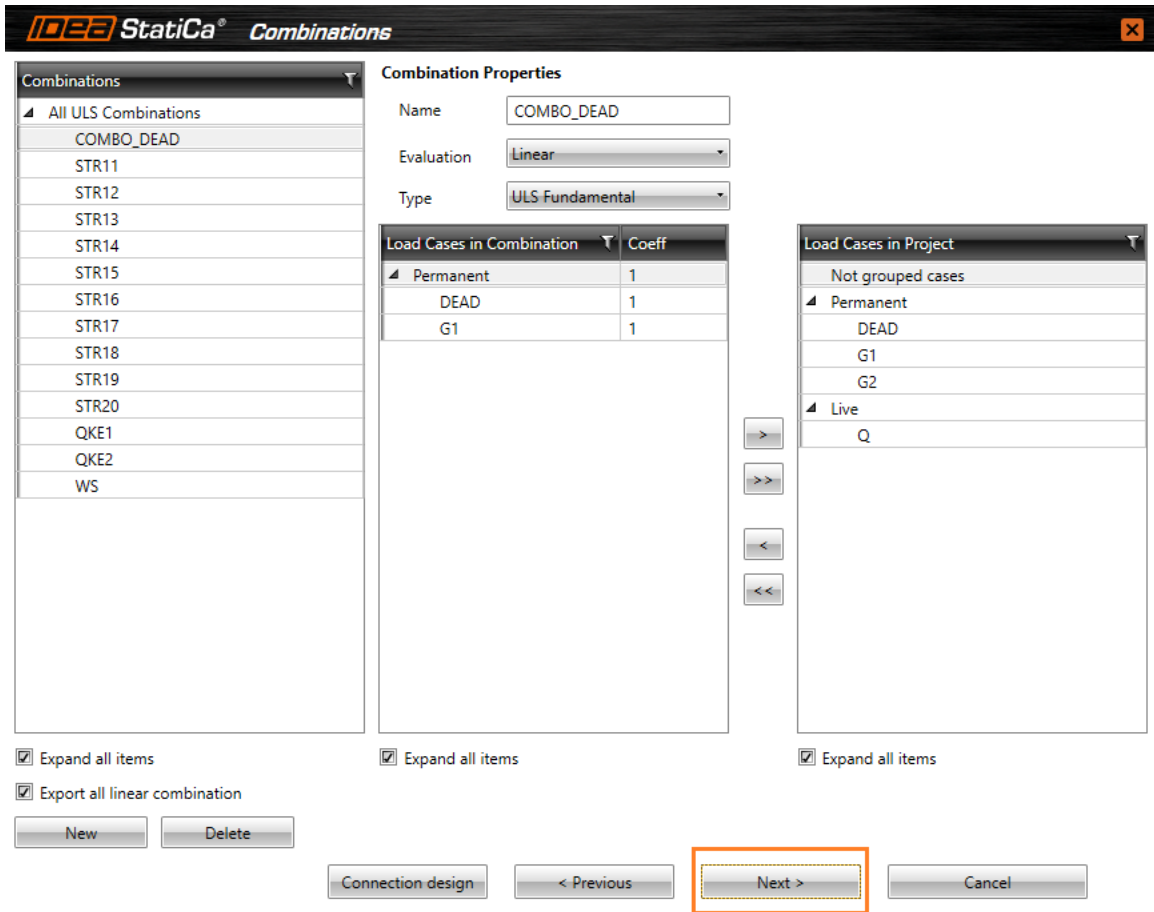
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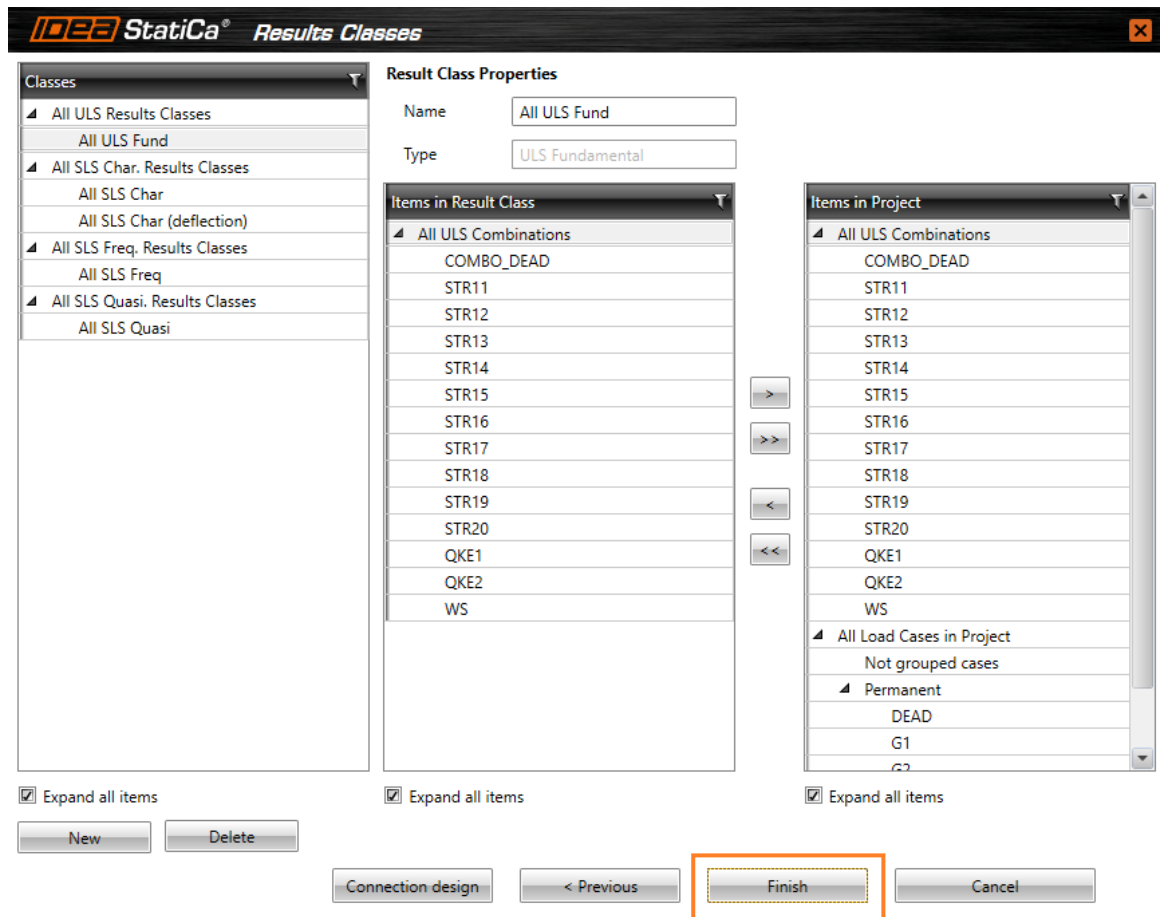
7. In the "Load Groups" continue with button "Next"



8. In the "Combinations" continue with button "Next"

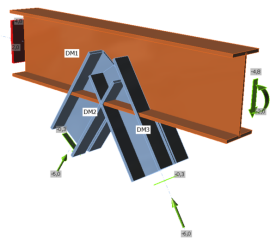


9. In the "Result Classes" continue with button "Finish"



3 IDEA StatiCa Connection

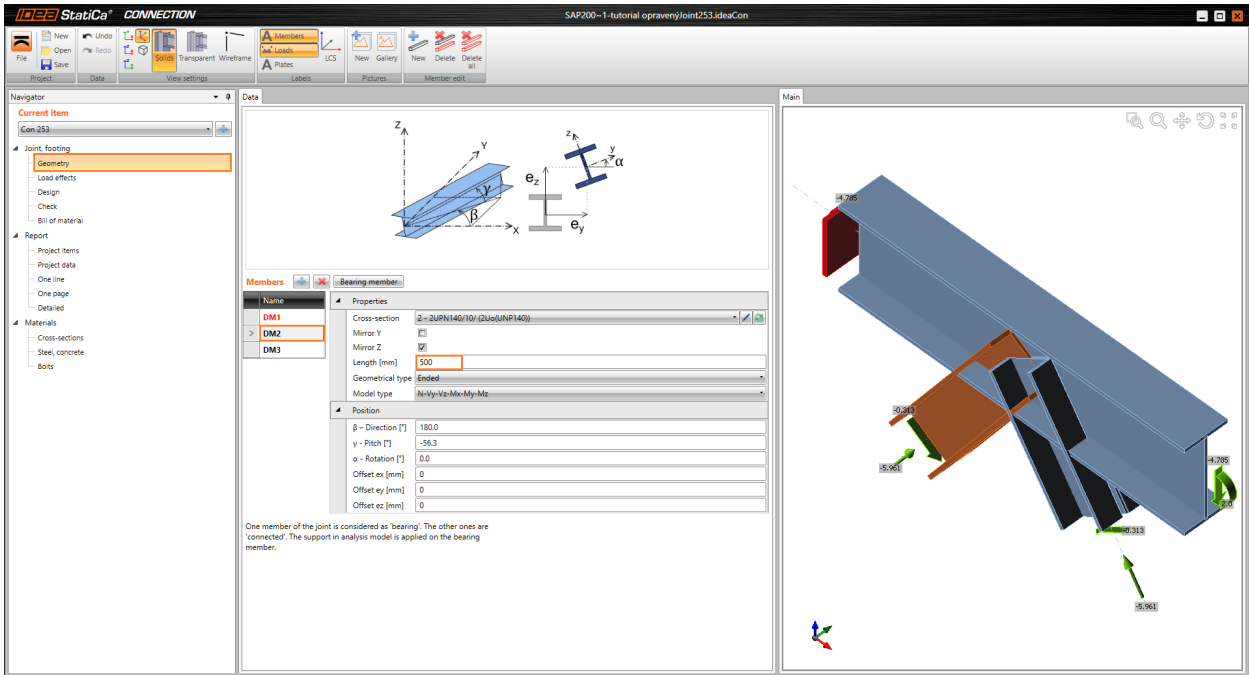
Automatic data transfer is started and IDEA StatiCa Steel Connection with generated project is launched. All members and load effects were added automatically.



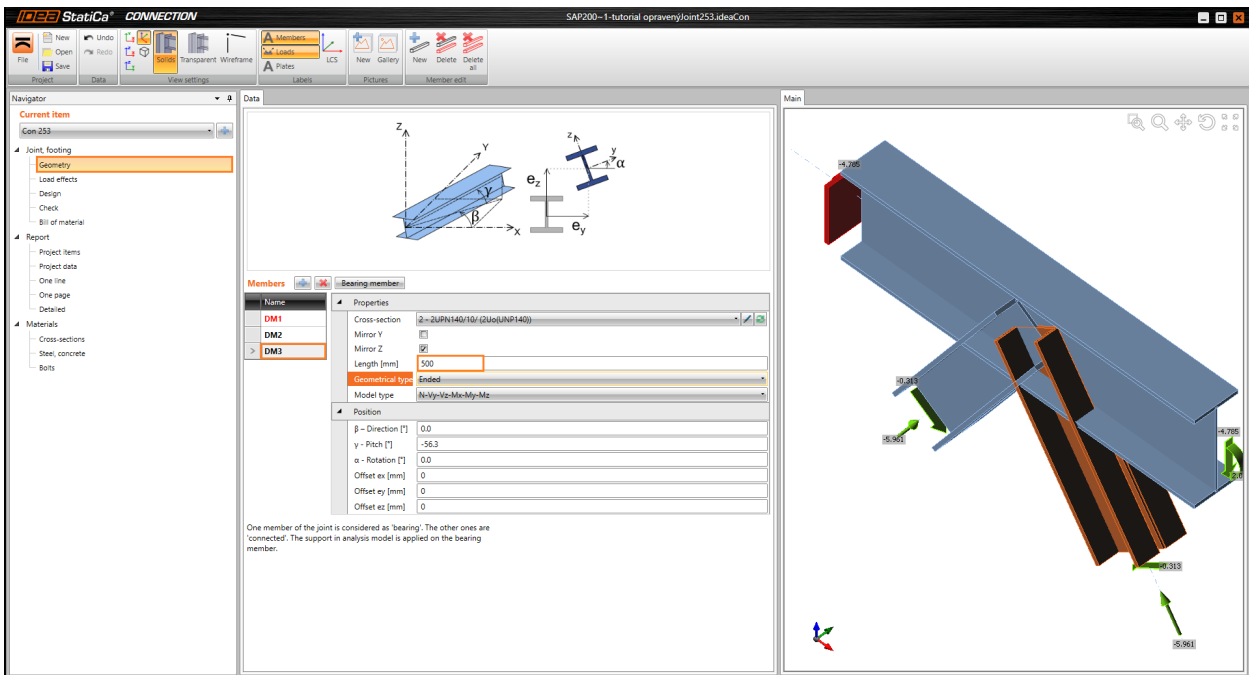
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4 Design


In the "Navigator" select button "Geometry" and change the length of the member "DM2" to the value "500 mm"

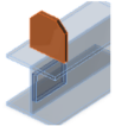


In the "Navigator" select button "Geometry" and change the length of the member "DM3" to the value "500 mm"





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We will define a set of manufacturing operations to model connections between members. A new operation can be added by  button.



Stiffening plate

Manufacturing operations  

	Name
<input checked="" type="checkbox"/>	SP1
<input checked="" type="checkbox"/>	CUT1
<input checked="" type="checkbox"/>	CUT2
<input checked="" type="checkbox"/>	GRD1
<input checked="" type="checkbox"/>	GRD2

Stiffening plate

Material: < default >

Thickness [mm]: 10

Shape: Rectangular

B1 - width [mm]: 260

B2 - width [mm]: 260

H1 - height [mm]: 215

H2 - height [mm]: 0

Origin: Member

Member: DM1

Plate: Bottom flange 1

Type: Rib

Location: Front

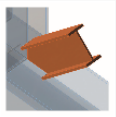
X - position [mm]: 0

Rotation [°]: 90,0

Pitch [°]: 0,0

Welds

Weld: 0 mm < default >



Cut

Manufacturing operations

	Name
<input checked="" type="checkbox"/>	SP1
<input checked="" type="checkbox"/>	CUT1

▲ Cut by member

Member	DM2
Cut by	DM1
Type	Member
Cutting method	Bounding box
Cutting plane	C – Closer
Direction	Pe – Perpendicular
Offset [mm]	20



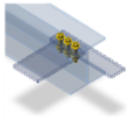
Copy operation CUT1 by  button from the ribbon and set that on member DM3.

Manufacturing operations

	Name
<input checked="" type="checkbox"/>	SP1
<input checked="" type="checkbox"/>	CUT1
<input checked="" type="checkbox"/>	CUT2

▲ Cut by member

Member	DM3
Cut by	DM1
Type	Member
Cutting method	Bounding box
Cutting plane	C – Closer
Direction	Pe – Perpendicular
Offset [mm]	20



Bolt grid or contact

Manufacturing operations **Delete all** **Calculate** **Editor**

	Name
<input checked="" type="checkbox"/>	SP1
<input checked="" type="checkbox"/>	CUT1
<input checked="" type="checkbox"/>	CUT2
<input checked="" type="checkbox"/>	GRD1
<input checked="" type="checkbox"/>	GRD2

Bolt grid or contact

Fastener: Bolts

Items count: 3

Item 1 type: Member

Member 1: DM2

Member 1 part: Web 1

Item 2 type: Plate

Plate 2: SP1

Item 3 type: Member

Member 3: DM2

Member 3 part: Web 2

Bolts

Type: M16 10.9

Coord. system: Orthogonal

Rows [mm]: -30 ; 30

Positions [mm]: 40 60

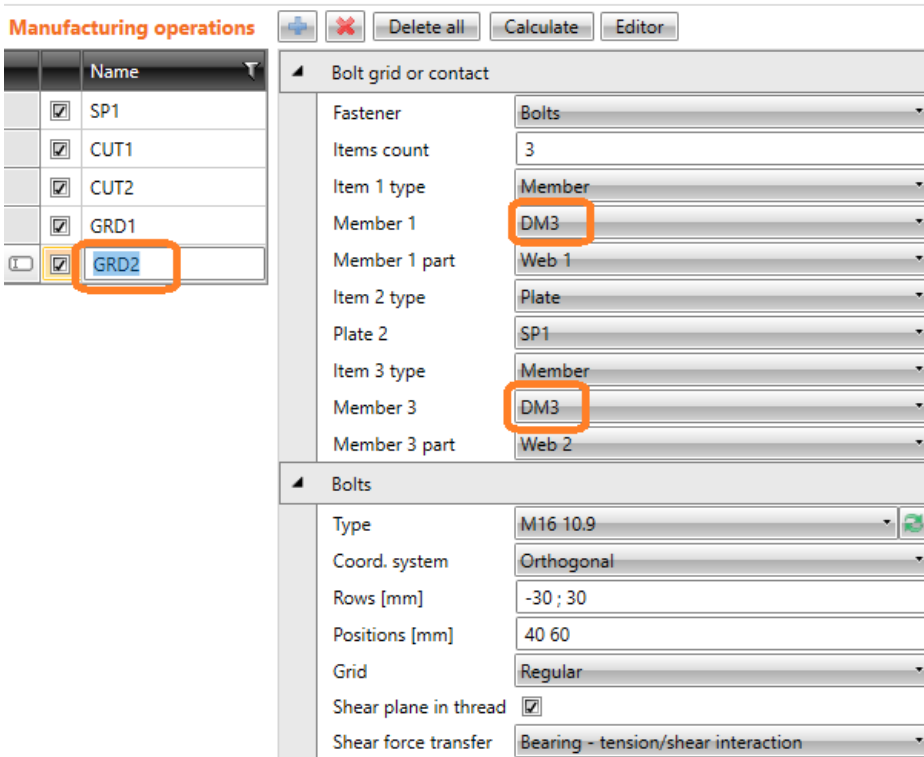
Grid: Regular

Shear plane in thread:

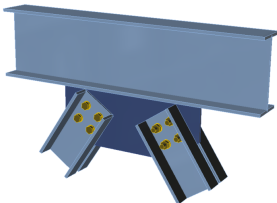
Shear force transfer: Bearing - tension/shear interaction



Copy operation GRD1 by button from the ribbon and set that on member DM3.




Let's check defined operations of the joint.

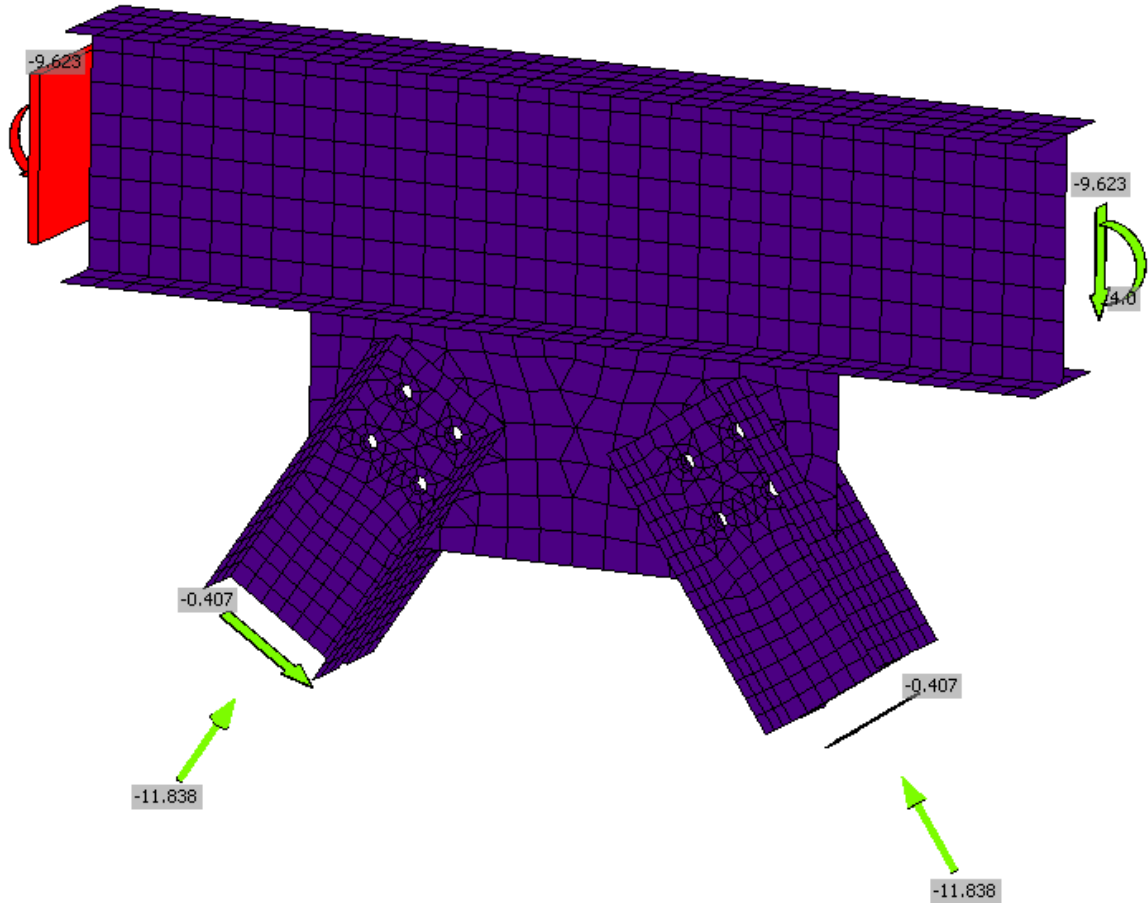


5 Check of a structural steel joint

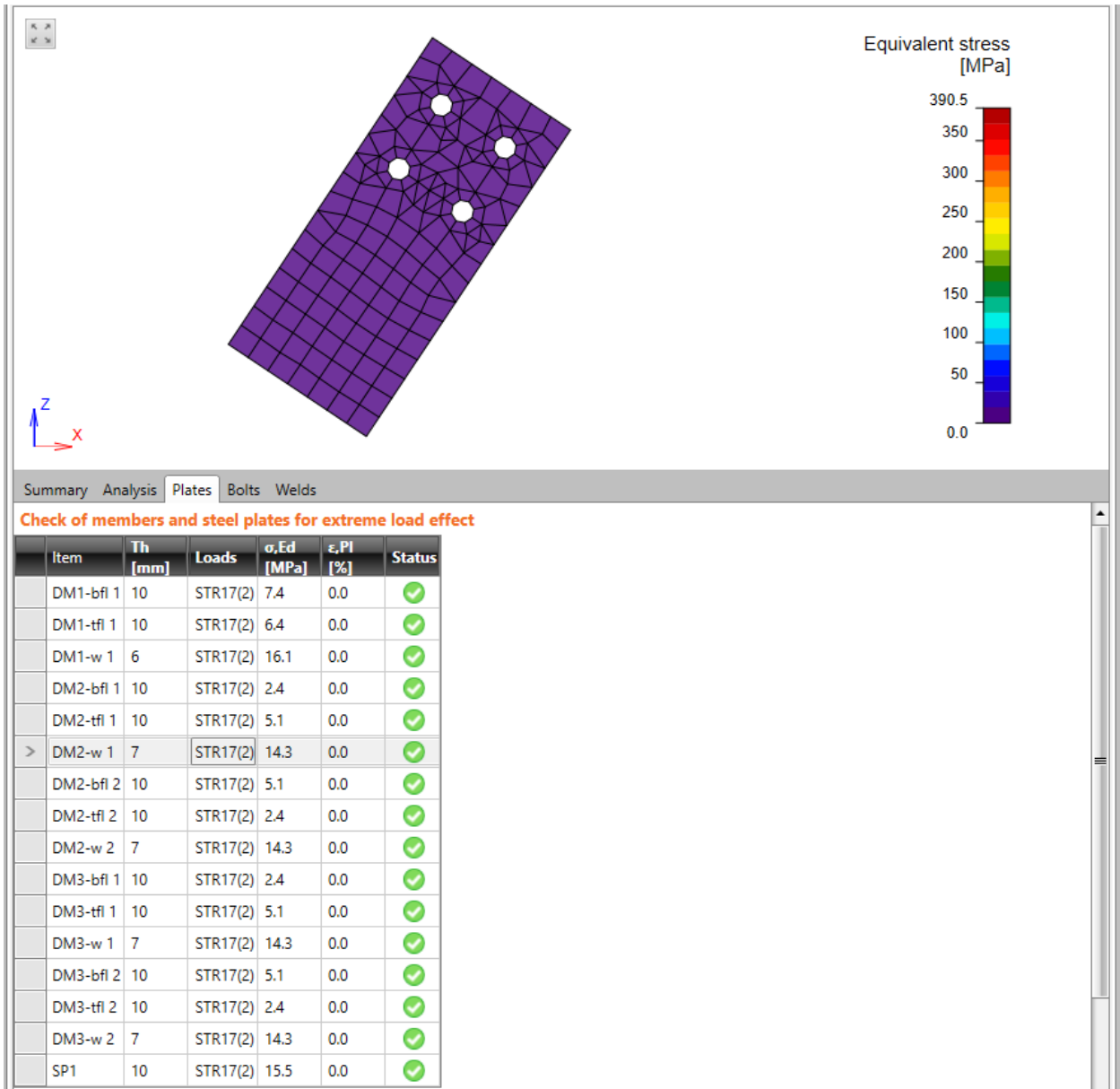


Nonlinear analysis is started by icon  from the top ribbon. Analysis model is automatically generated, calculation is performed and we can check results.

Activate Strain check, Mesh and Deformed from the ribbon to get a full picture of what is happening in the joint. Everything is displayed in the 3D window.



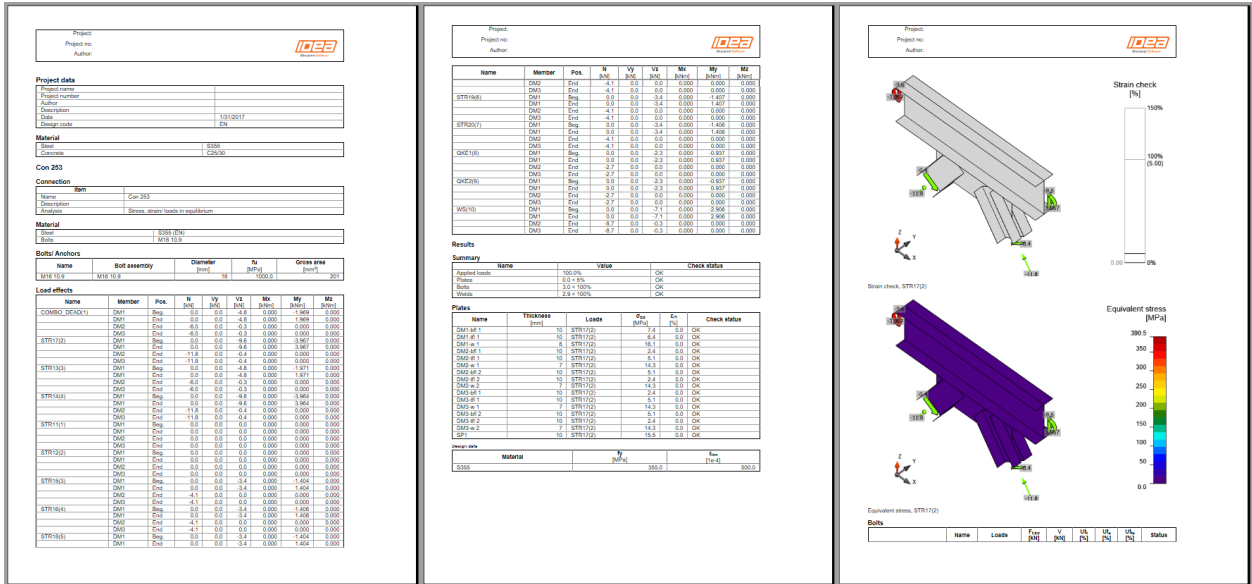
All values can be reviewed in detailed in the tables and 2D window. For example to display check of bolts select tab Bolts/Anchors tab.



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6 Report

IDEA StatiCa offers three types of output reports – one line, 1 page and detailed.



7 Structural steel joint was modeled, designed and checked

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