IDEA Connection

Release „November 2014"

New and improved functions

New version of IDEA Connection with a lot of new functions was released in the middle of November. Download it at our website http://www.idea-rs.com/downloads/.

Manufacturing operations

- Cleats
- General plate
- General cut of plate by another plate
- General group bolts – grid connector

Loads

- Input of loads (internal forces) at any section of steel member

Checks

- Stiffness of the connection

BIM

- Reading joints from AxisVM, SCIA Engineer, MIDAS Civil and Gen

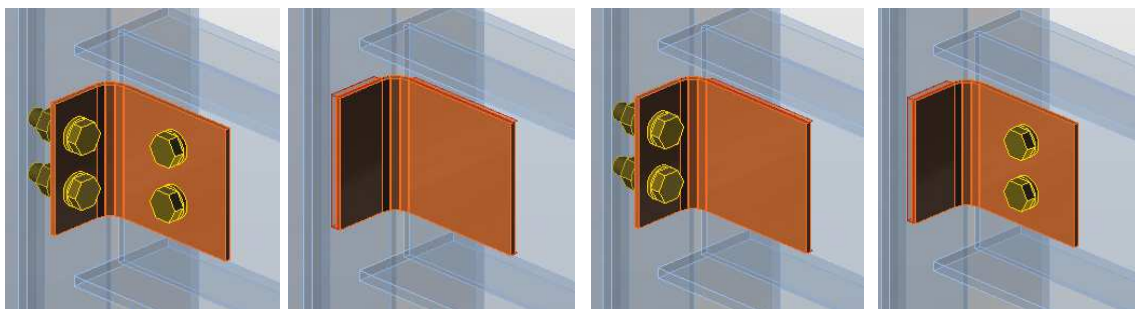# New manufacturing operations

Connections with cleats

Cleats (angles) can be now used as connecting elements between 2 steel plates – flanges or webs. Hot rolled or cold formed angles are available. Cleat can be welded or bolted. Different bolt groups on different legs can be defined.
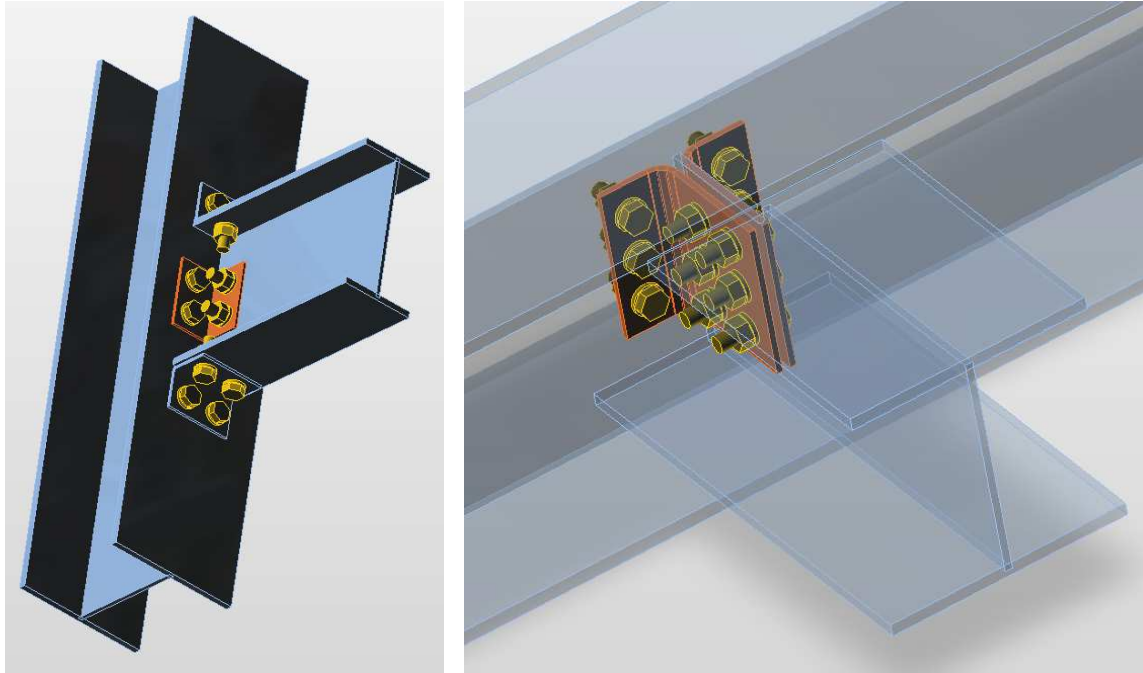

Cleat can be welded or bolted. Mixed connection can be also done.

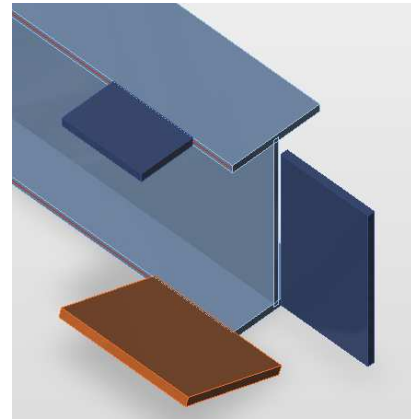### Additional plates – ribs, wideners, doublers

Any new steel plate can be added into the joint. Plates are introduced in the local coordinate system of the joint, local coordinate system of any steel member or local coordinate system of any other plate. New plate can be directly welded or can be let like not welded.
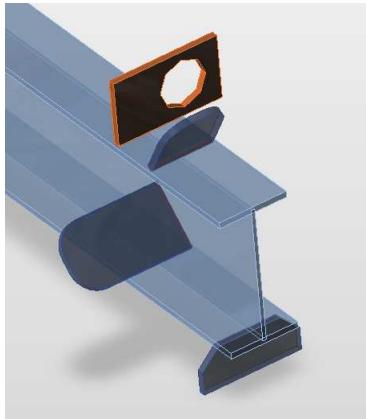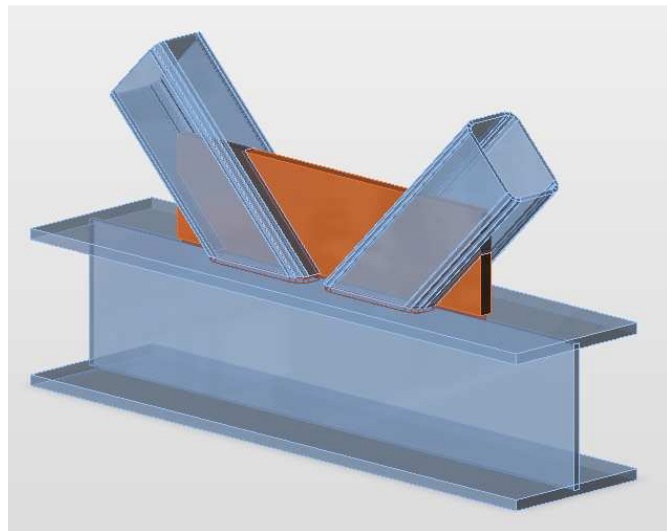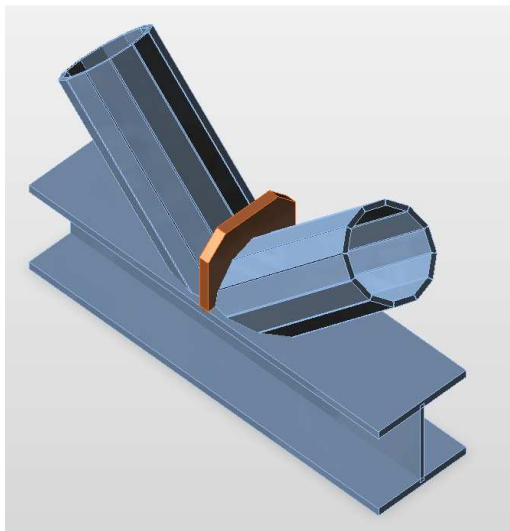
Ribs
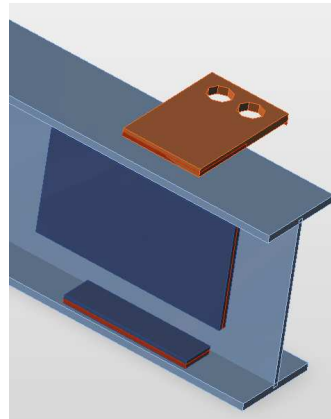
Doublers

Wideners

General plates are very useful for replenishment of joint with not very typical items. See examples of fully welded truss connections with additional stiffening plates.


Cuts and notches

The role of general plates can be appreciated only with another possibility – cuts and notches. Any plate in the joint can be cut by the surface of another plate (it can be also any plate of member like flanges, webs, etc.).

Possibilities are shown in the following example of connection of diagonal member by 2 splice plates.
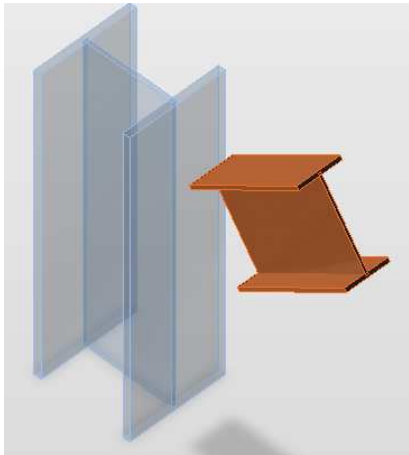
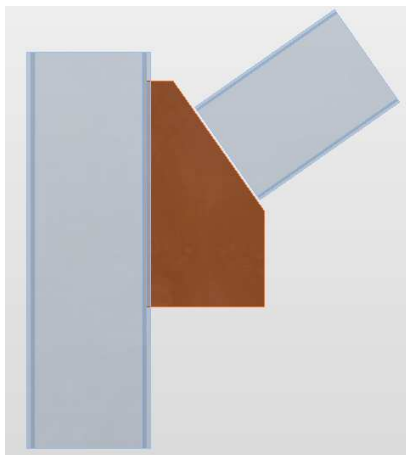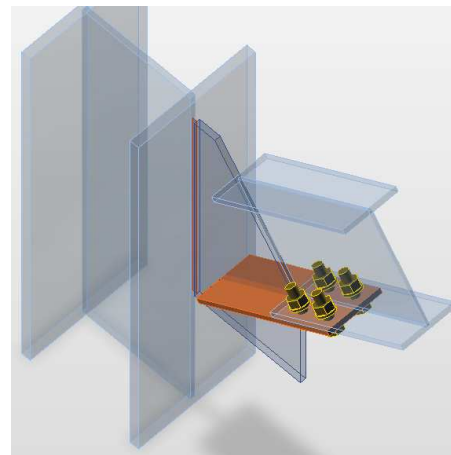Beam is cut by column with offset
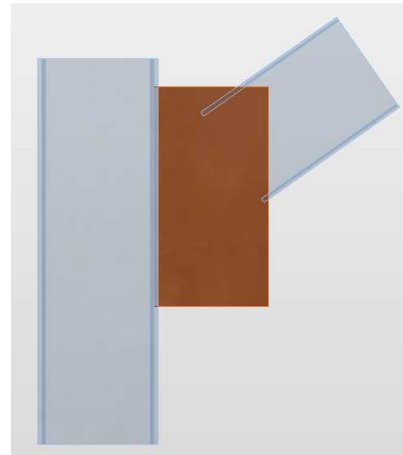
Rectangular rib plate on column

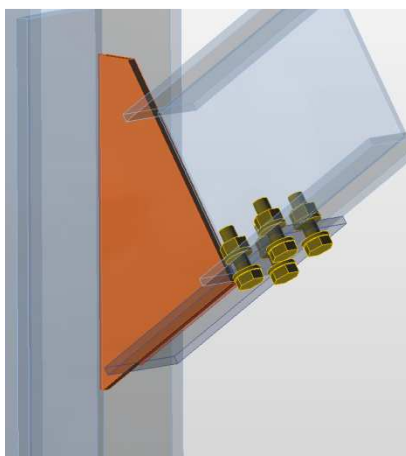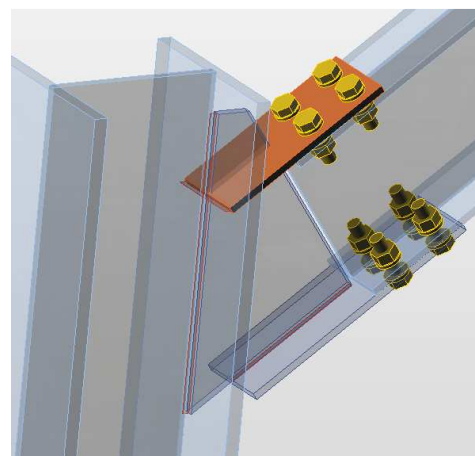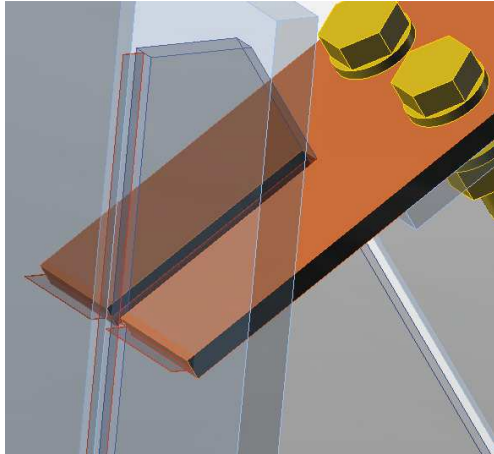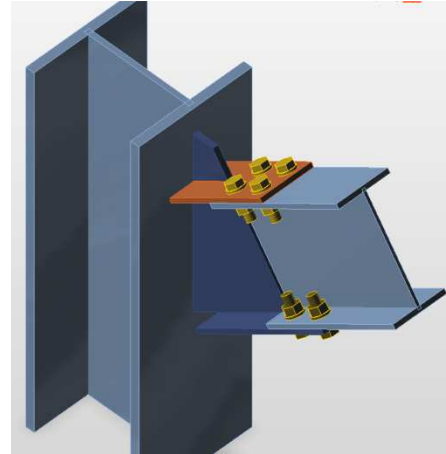Plate is cut by end of beam

Bolted splice on bottom flange

Plate is cut by splice and welded
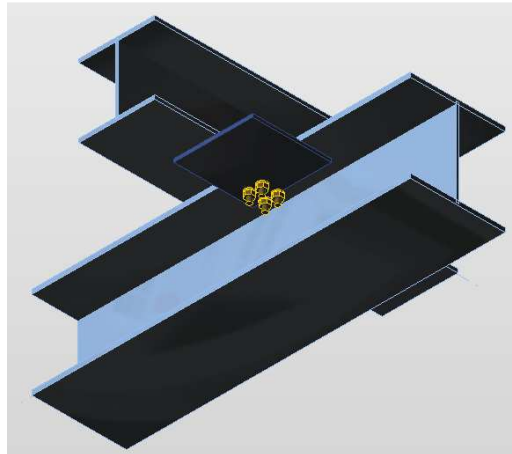
Upper splice plate is cut by column flange
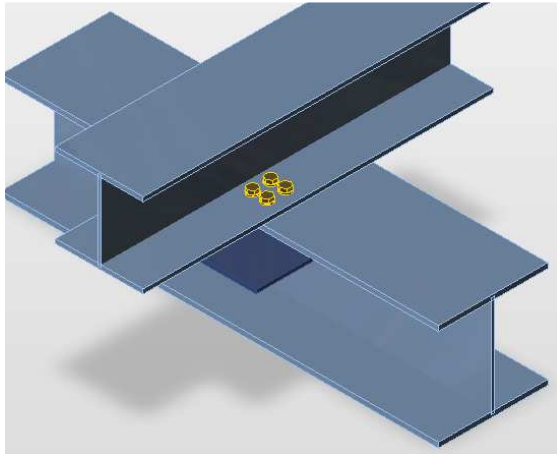
Notch in splice plate is done by plate

Final shape of joint

General bolt group

Also bolting of members and plates is now much improved. Up to 5 plates can be bolted together by one group of bolts. Example shows 2 crossing I sections. Their flanges are bolted together with one additional splice plate.
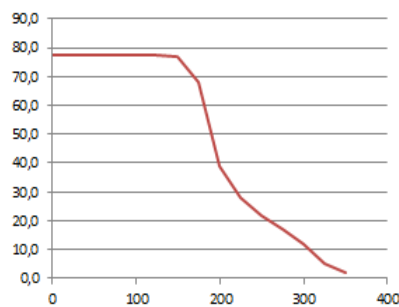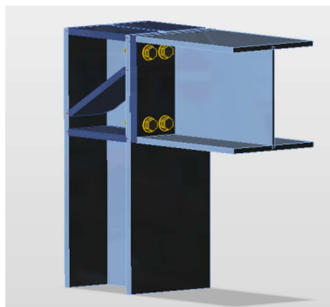
Stiffness of the connection

IDEA Connection is able to analyze rotational stiffness of Connection of any connected member. Such results are provided:

	Item	Comp	Loads	M [kNm]	Φ [mrad]	Sj [MNm/rad]	Sr [MNm/rad]	Sp [MNm/rad]	Class
>	B	My	LE1	20,000	-2,197	9,103	25,502	0,510	Semi-rigid

Stiffness is provided for all connected members and for each load case. Connection is classified as rigid/ semi-rigid or pinned. Structural engineer can use this value in his 3D analysis of the frame.

This function gives the opportunity to analyze connection behavior in detail. Diagrams of relation between stiffness, rotation and moment (load) can be provided.
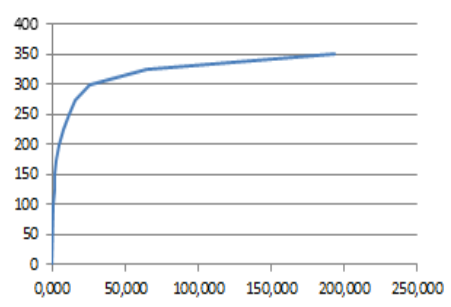
Stiffness / moment   Moment / rotation

BIM interface

IDEA Connection is independent standalone software. We linked it with several 3D FEA structural packages to get more powerful workflow. Structural engineer can design his 3D frame and optimize cross-sections of members in FEA program. Then we can read whole calculated structure or its part and send it into our IDEA StatiCa BIM module. Here required joints can be selected. Geometry and loading of joints is send to IDEA Connection.
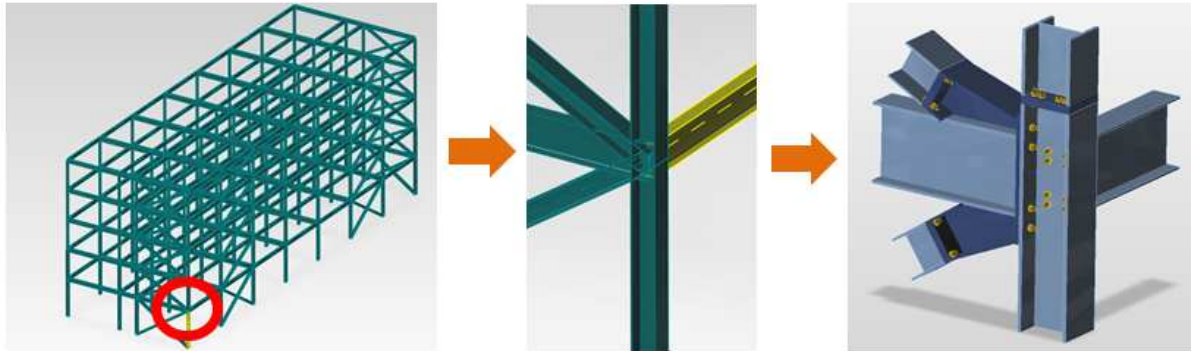
AxisVM, Midas Civil and GEN, SCIA Engineer, Nexis – these FEA programs are supported in version 5.2.