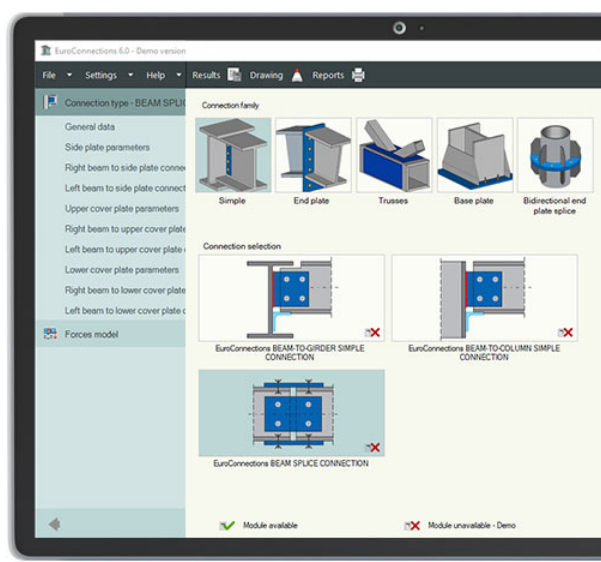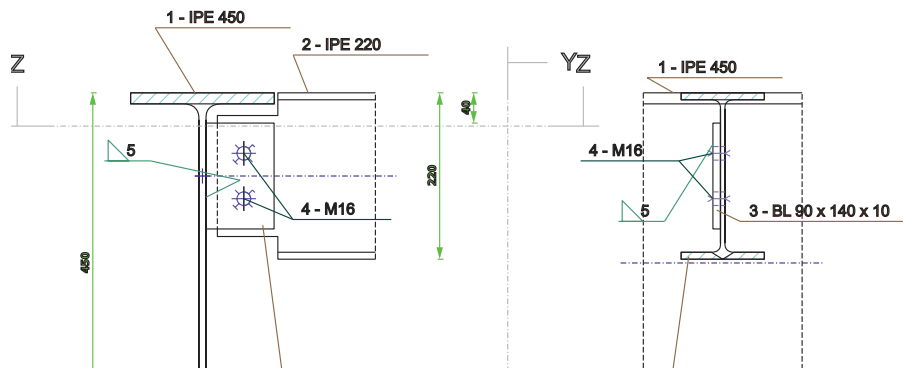# EuroConnections

A collection of programs for steel connections design.

Design and verify the capacity of typical uniplanar frames & lattice connections in steel structures according to PN-EN 1993-1-8:2006 standard.
Welded or bolted connections in various joints types.

Possibility to create a model for a rigid, semi-rigid or nominally pinned joint. Various additional connection components can be used, depending on specific connetion type: side plate, fin plate, flange cover plate, landing cleat, end plate, base plate, stiffener plate, haunch, shear nib, gusset plate, etc.
The program operates in a standalone mode, or as a design module for steel connections calculations in ArCADia-RAMA program.
The program creates a bill of materials for connectors and other components used in connection.
The program creates an advanced and dynamic sketch of the designed connection model, which can also be saved to an editable file in the DXF format.
Reports with verification result in RTF or PDF format can be created in four different detailed levels with the option of customizing their scope by the user.

The following types of connections are supported:

SIMPLE group:
- BEAM-TO-GIRDER simple connection +DXF
- BEAM-TO-COLUMN simple connection +DXF
- BEAM SPLICE connection +DXF

END PLATE group:
- BEAM-TO-COLUMN END PLATE connection +DXF
- BEAM-TO-BEAM END PLATE connection +DXF

TRUSSES group:
- TRUSS GUSSET PLATE connection +DXF
- WEDLED TUBULAR TRUSS node +DXF

BASE PLATE group:
- I-BEAM COLUMN BASE +DXF
- DOUBLE-BRANCH COLUMN BASE +DXF
- RECTANGULAR HOLLOW SECTION COLUMN BASE +DXF
- CIRCULAR HOLLOW SECTION COLUMN BASE +DXF

BIDIRECTIONAL END PLATE SPLICE group:
- END PLATE I-BEAM JOINT
- END PLATE DOUBLE-BRANCH PROFILE JOINT
- BIDIRECTIONAL END PLATE SPLICE FOR RECTANGULAR PIPES
- BIDIRECTIONAL END PLATE SPLICE FOR ROUND PIPES
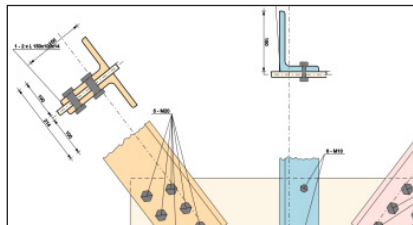
TRUSS GUSSET PLATE connection

Connection type BEAM-TO-BEAM END PLATE connection, with plate stiffeners and haunches, bolted joint, verification for set of uniplanar internal forces, or the full bearing capacity of members.

The algorithm for verification of a connection in which two I-beam section beams (eg. girder) are connected using end plates attached to each of them, with various possible configurations.
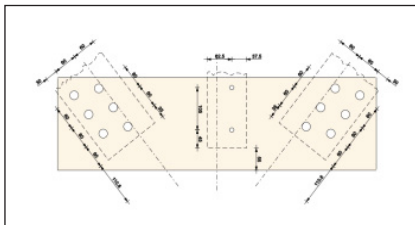
General:
- advanced and dynamic sketch of the designed connection model in an editable the DXF format, which includes bill of materials
- calculations can be performed for T, Y, K, N and KT type of joints
- if more than two bars converge at the joint (KT-joints) - their axes should converge in a single node point
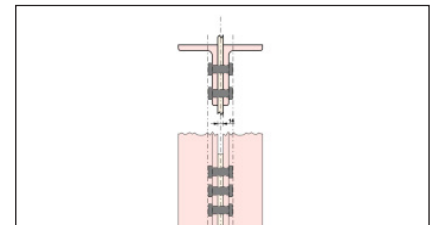
Gusset plate:
- gusset plate of any rectangular dimensions
- longitudinally connected to the chord with a T-weld

Chord:
- cross-sections for the chord are I-beam sections
- the orientation of the I-beam section is vertical (flanges subject to compression/tension as a result of a bending moment acting about the stronger axis of inertia)

Braces:
- possible cross-sections for the vertical and diagonal bars are: rectangular / square tubes (tee joint), C-sections or L-sections
- possible model configurations for braces with rectangular or square tube section includes: contact with the gusset plate through slotted end section (T-shaped connection), welded connection
- possible model configurations for L-section braces includes: the use of doubled section (cross-section symmetry), welded or bolted connection, contact with the gusset plate along the L-section arm
- possible model configurations for C-section braces includes: the use of doubled section (cross-section symmetry), welded or bolted connection, contact with the gusset plate along the C-section web plane