WHAT'S NEW IN CONSTEEL 8

Version 8.0

20.11.2013

www.consteelsoftware.com

Content

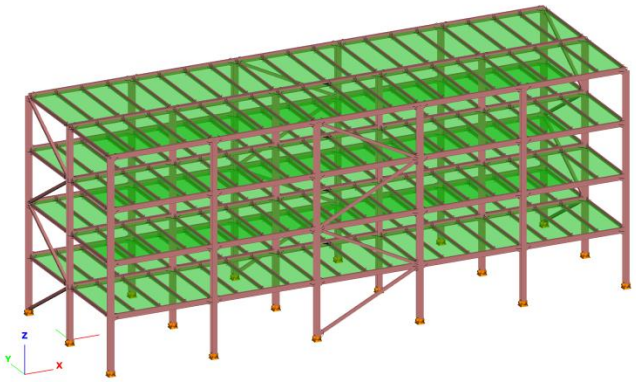
1. STRUCTURAL INPUT

1.1 NEW SECTION CATALOGS

U.S. and Russian steel section catalogs are available as well.

1.2 DIAPHRAGM ELEMENT

In-plane rigid element can be defined on the model in arbitrary planar. All of the planar structural members can be added to the diaphragm element or just the selected. The added members' distance from each other will be same in the plane of the diaphragm element. With diaphragm element the in-plane rigid structural elements for example slab, trapezoid sheet can be modelled.



1.3 RIGID BODY

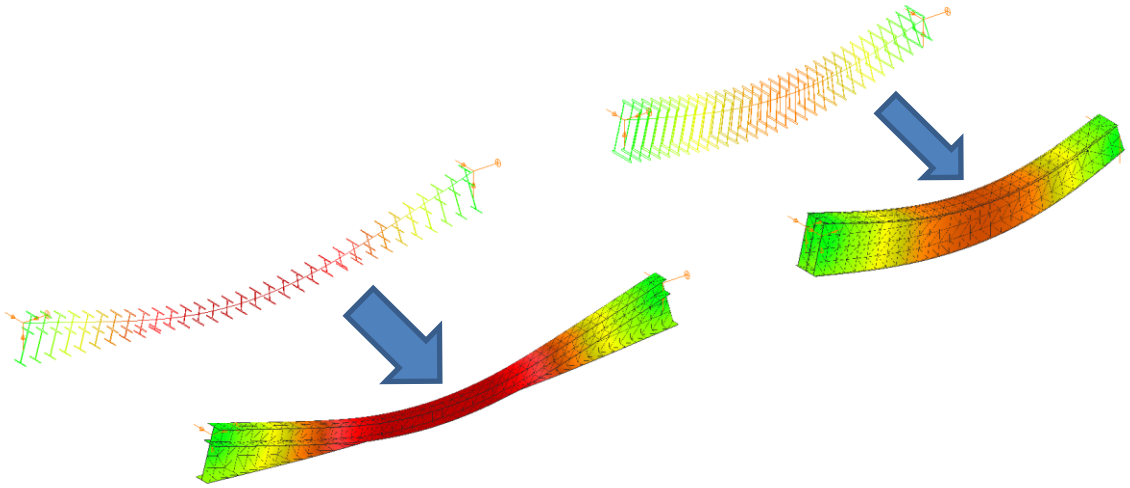
Arbitrary rigid body line can be defined on the model. Separate structural members can be linked with the rigid body.

1.4 STRUCTURAL MEMBER AUTOMATIC CONVERSION TO PLATES

The selected members can be automatically converted to plates. During the conversion the given eccentricities are considered therefore the eccentric loads and supports will be in the

same position after the conversion. Attaching nodes of the connecting members, haunches and tapered members are automatically converted.

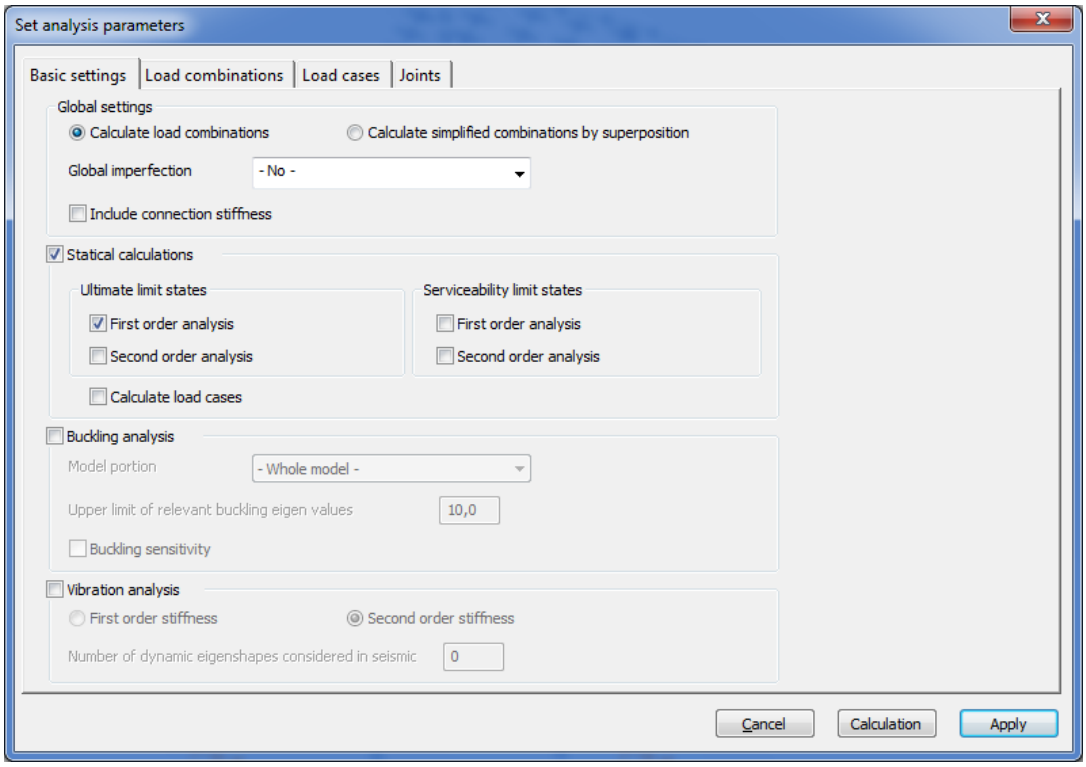
In case of hot-rolled sections not only the flanges and web are converted to plates but also the neck area with a suitable additional plate element. Therefore the section properties of the original member and the converted are the same.



2. ANALYSIS

2.1 NEW AND MORE TRANSPARENT ANALYSIS PARAMETERS DIALOG

On the new dialog the different analysis options are much more transparent and manageable. Settings of the different analysis types are ordered in separated groups accordingly an analysis type can be switched off with one click.



2.2 SIMPLIFIED COMBINATION CALCULATION WITH SUPERPOSITION

In case of first order analysis only the load cases are calculated and the load combination results are determined by superposition of the load case results. By the help of this new feature the running time can be significantly decreased.

2.3 GEOMETRIC IMPERFECTIONS FOR ANY BUCKLING MODES WITH SUPERPOSITION

Buckling modes can be applied as a geometric imperfections with user defined amplitude. Even more buckling modes can be easily superposed as one imperfection.

According to the EuroCode in case of proper buckling mode based imperfection it is enough to calculate the utilization of the cross sections based on the second order analysis results. In this case buckling check is not necessary.

3. STANDARD DESIGN

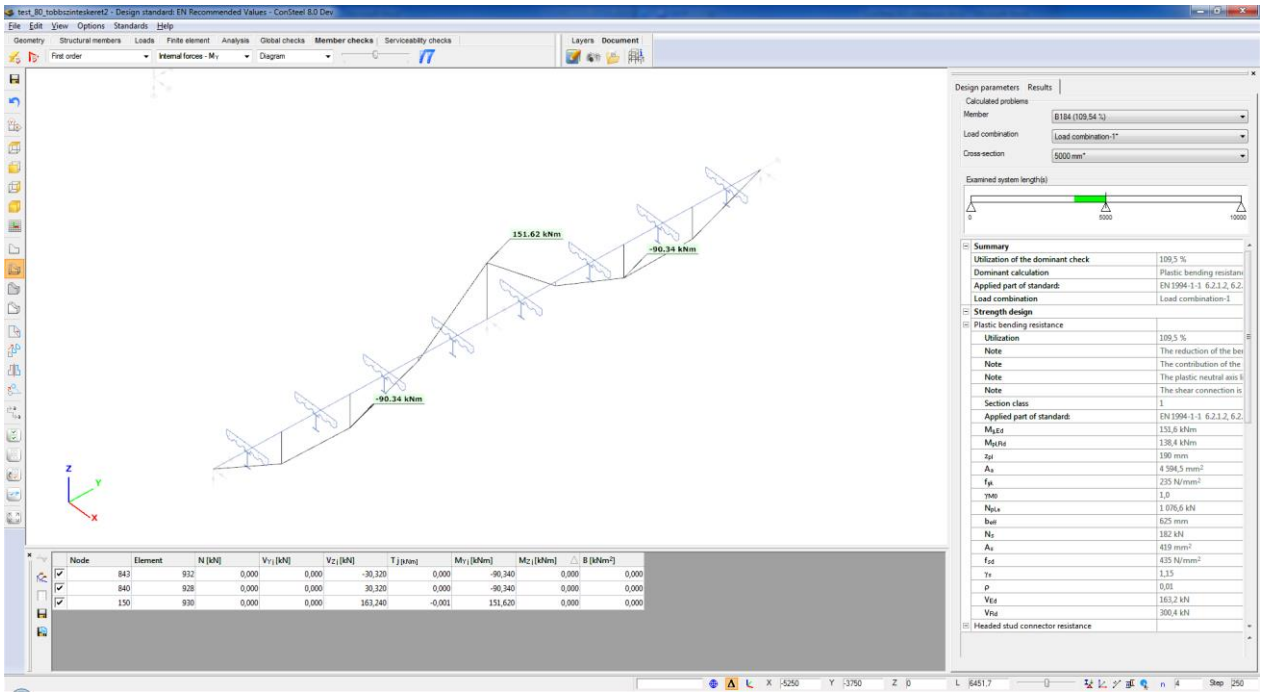
3.1 DESIGN OF COMPOSITE BEAMS ACCORDING TO THE EUROCODE 4

Composite beam can be checked according to the EuroCode 4 standard.

Two types of composite beams can be created with the macro section editor.

-  Composite beam with solid concrete lab
-  Composite beam with profiled steel sheeting and concrete slab

Number of shear studs, layout of the top and bottom reinforcement bars and geometry of the trapezoid sheet can be set during the section creation.



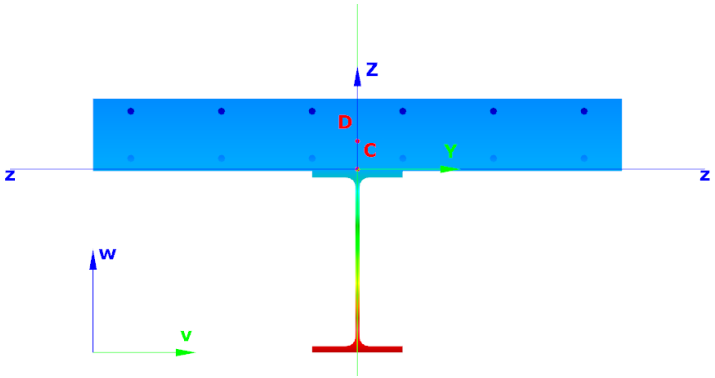
Effective width of the cross section and the optimal number and layout of the shear studs are automatically calculated during the analysis.

The following design checks are performed:

- Plastic bending resistance
- Vertical shear resistance

- Longitudinal shear resistance
- Headed stud connector resistance
- Crushing resistance of the concrete flange
- Shear buckling resistance

Exact composite cross-section GSS model for elastic stress calculation can be seen in section module.



3.2 New EuroCode national annexes

Two more national annexes can be used to standard design:

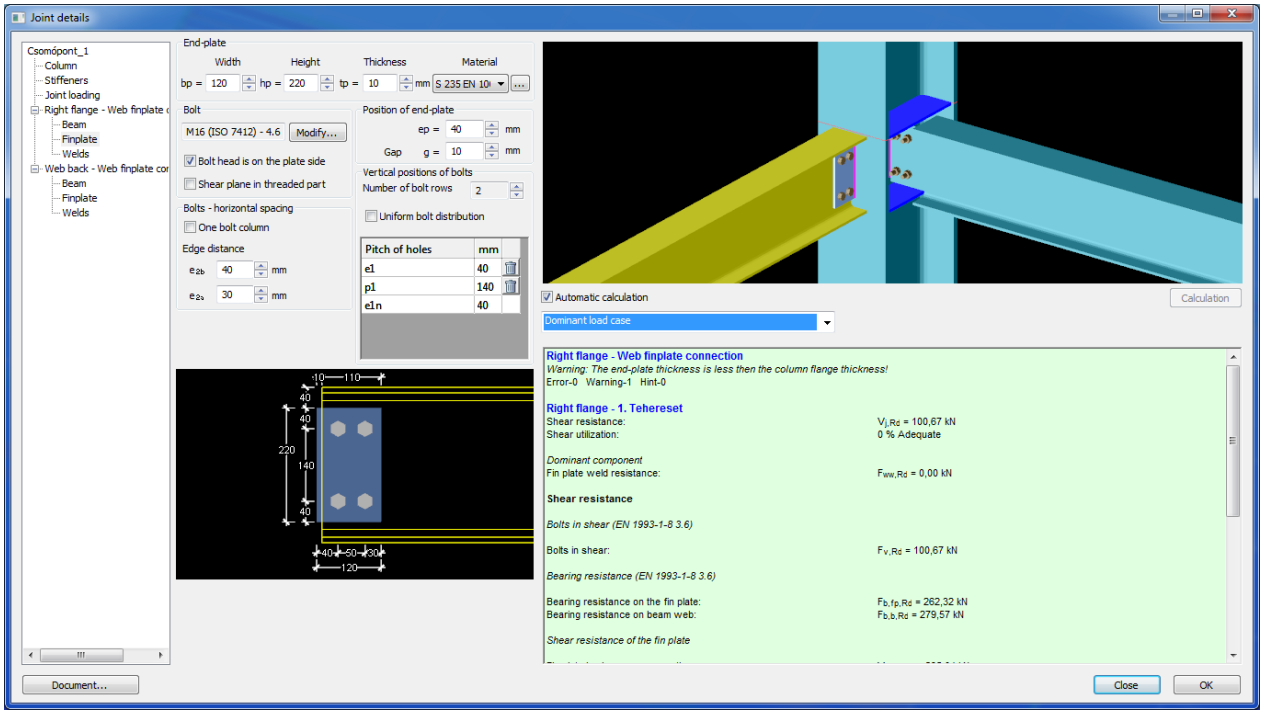
German national annex

Polish national annex

5. CSJOINT JOINT MODULE

5.1 BEAM CONNECTION TO COLUMN FLANGE AND WEB WITH FIN PLATE

Beam connection to column flange and web with fin plate can be created and checked. Sizes of the beams are optional. Upper and lower notch can be used on the end of the beam.

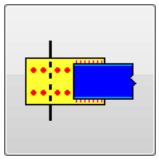


5.2 GUSSET PLATE CONNECTION TO COLUMN FLANGE AND WEB

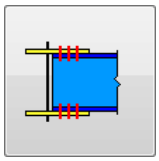
Gusset plate connection to column flange and web can be created and checked. Even three members can connect to a gusset plate (three bracing or two bracing and one beam).

Possible bracing connections:

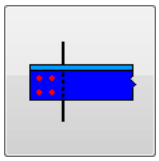
- Spice plate connection for round bar, tube and hollow section



- Double plate flange connection for I or H sections

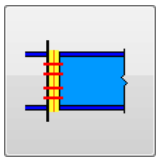


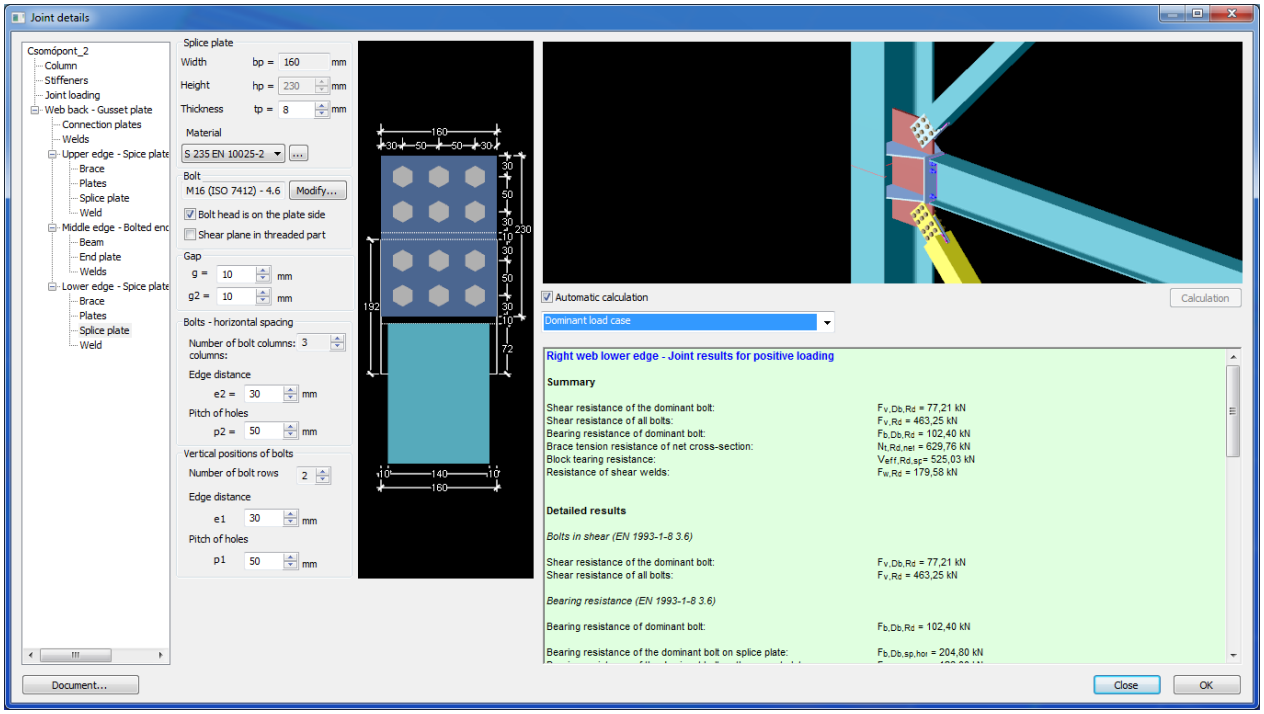
- Angle brace connection



Possible beam joint:

- Moment end-plate connection



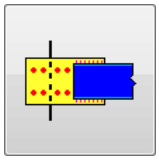


5.3 GUSSET PLATE CONNECTION TO BEAM

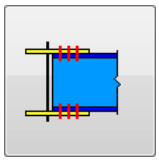
Gusset plate connection to arbitrary position on top, bottom flange and web of a beam can be created and checked. Even three members can be connected to a gusset plate.

Possible bracing joints:

- Spice plate connection for round bar, tube and hollow section



- Double plate flange connection for I or H sections



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