What's new in ConSteel 11
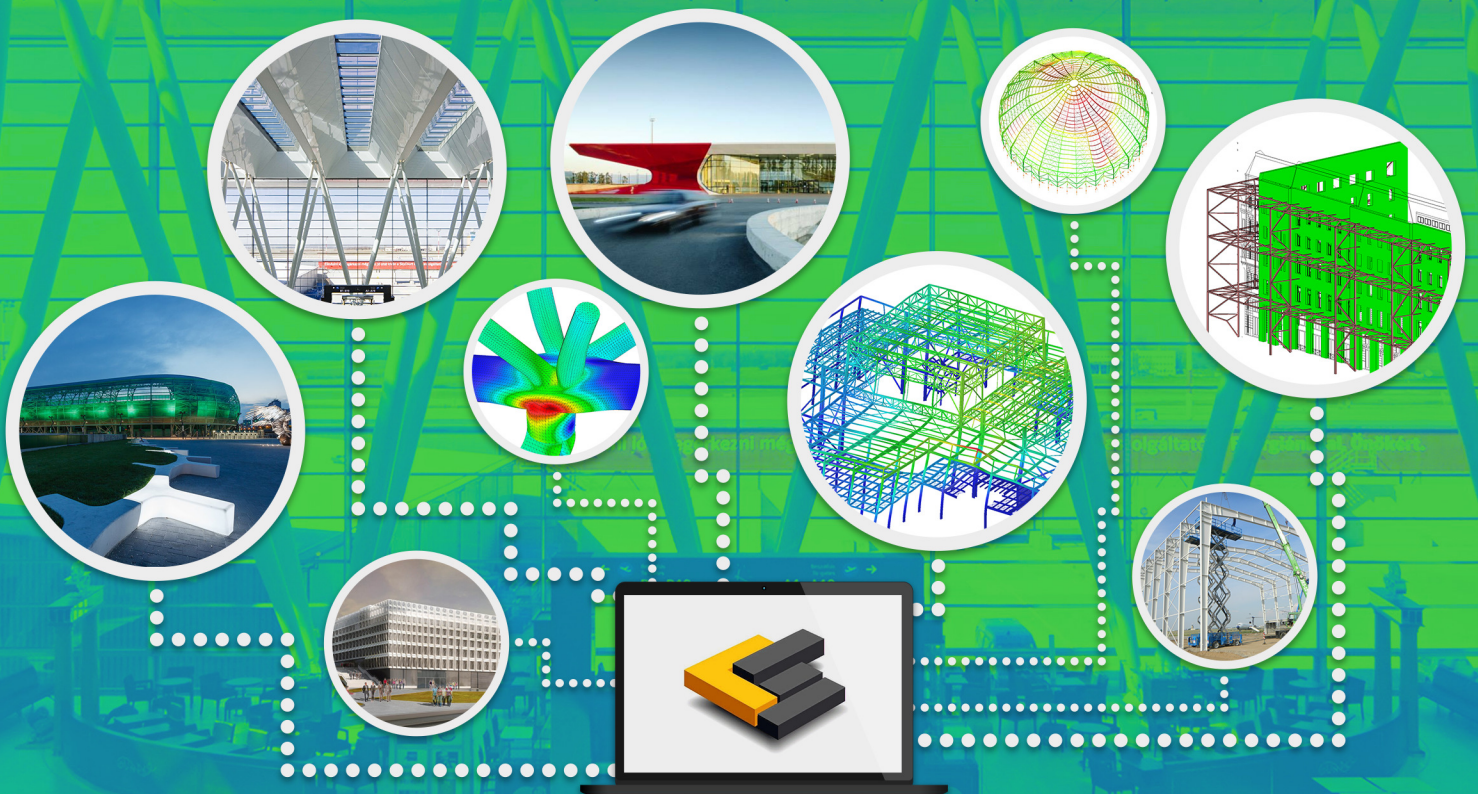
27.04.2017.

Version 11.0

# Content

1. BIM INTERFACE

1.1 CONSTEEL-TEKLA STRUCTURES CHANGE MANAGEMENT

This Change Management tool allows project team members to visually verify the modifications, deletions and new elements between the ConSteel and Tekla Structure models in ConSteel at any time.

The user can control which modifications of ConSteel model should be updated or neglected on the Tekla model. All of the parameters (section, material, geometry) of the ConSteel and Tekla Structures models can be seen and compared in the new Tekla Model Update dialog.
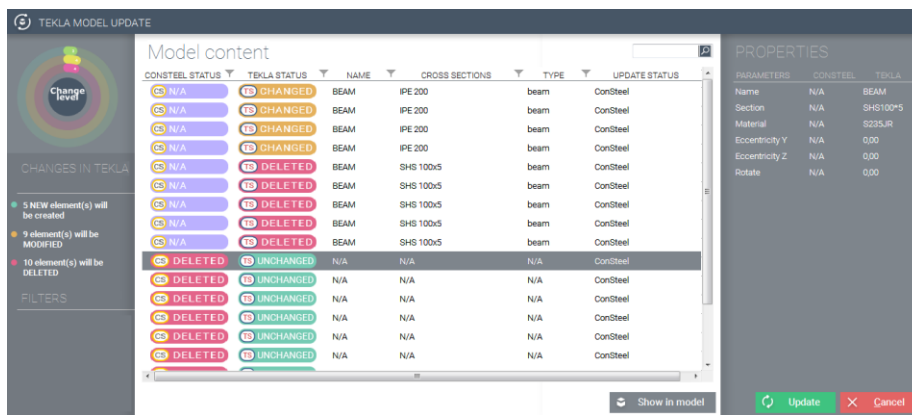
1.2 TEKLA MODEL IMPORT/EXPORT

The complete model exchange is possible to the latest Tekla 2016i version.

With the new ConSteel 11 version, not just the structural elements, but the used structural grid (regular and irregular) can be imported and exported.
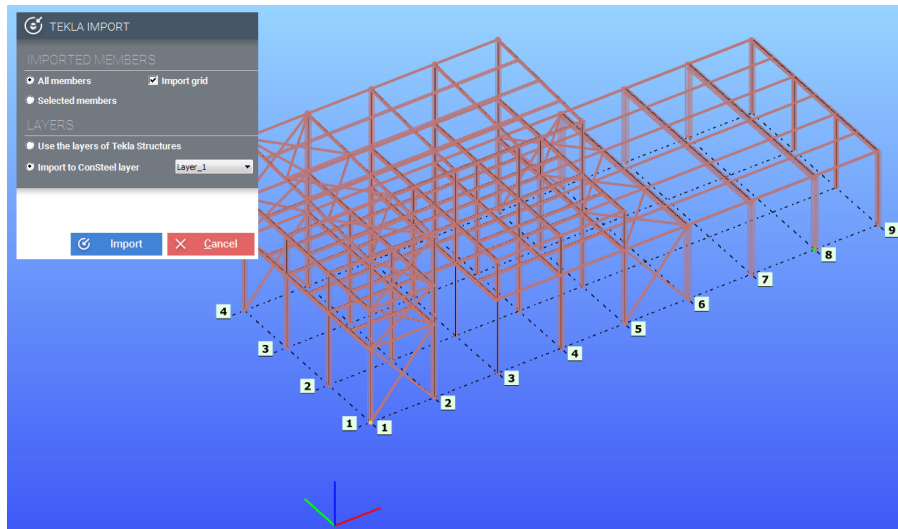
1.3 IFC MODEL IMPORT/EXPORT

Collaborate with any members of the AEC industry. Thanks to the new function, IFC model can be imported and exported to/from ConSteel 11.

ConSteel 11 supports the IFC2x3 IFC schema.

With the IFC import function, the section and material conversion function are renewed as well. Not just the design, but the whole conversion process was renewed. Thanks to the new multi-level conversion process almost all of the section and material types can be converted automatically.
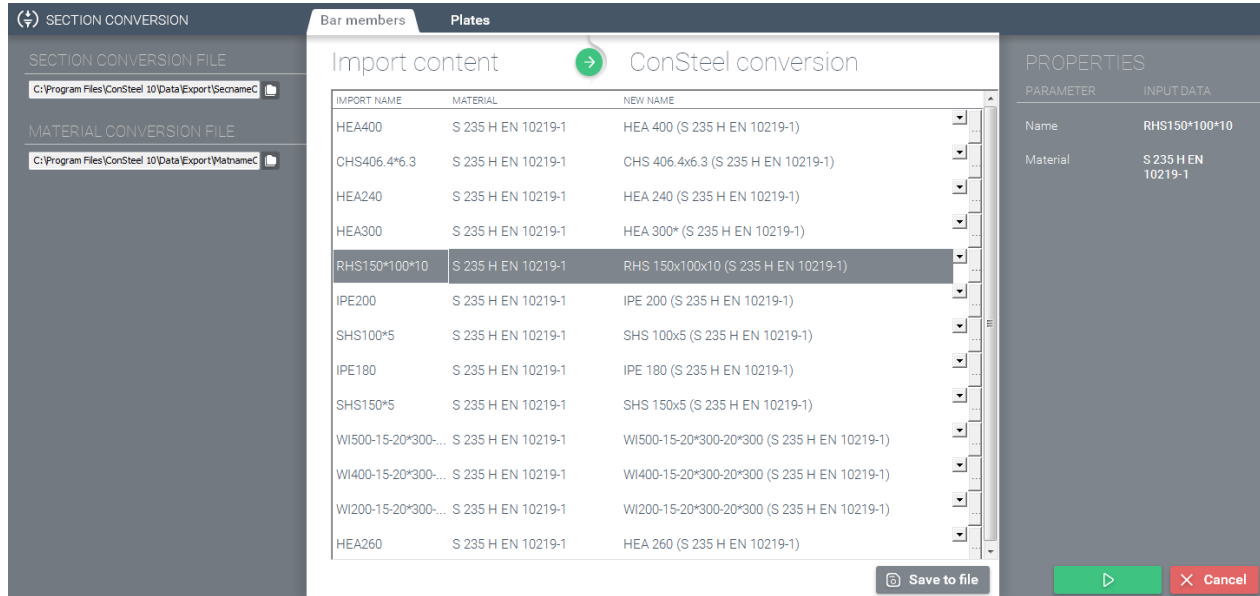
1.4 HIGH-LEVEL INTERFACE BETWEEN IDEA STATICA CONNECTION AND CONSTEEL
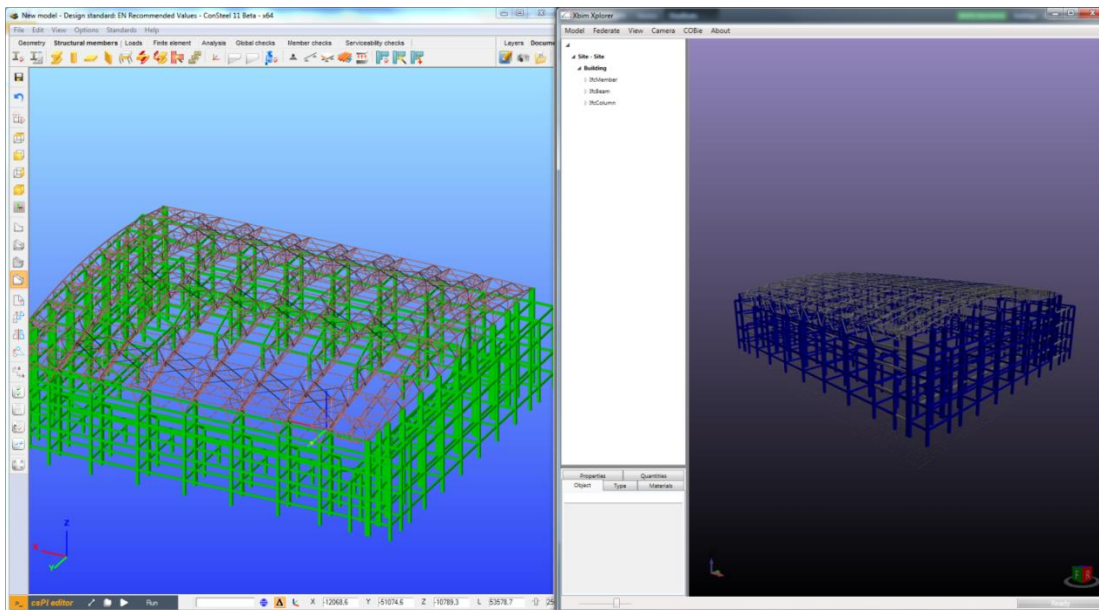

With a simple click on any connection point of ConSteel 3D model, the whole structural geometry, materials, and the joint loadings can be automatically export to IDEA Connection for further connection design.

2. STRUCTURAL INPUT

2.1 SHEAR FIELD CALCULATION

With the new object, the stiffening effect of trapezoid sheeting can be considered in buckling analysis.

The following methods are implemented:

- EuroCode
- Hoesch
- Fischer
- Arcelor

The most used trapezoid sheetings are uploaded to the library.
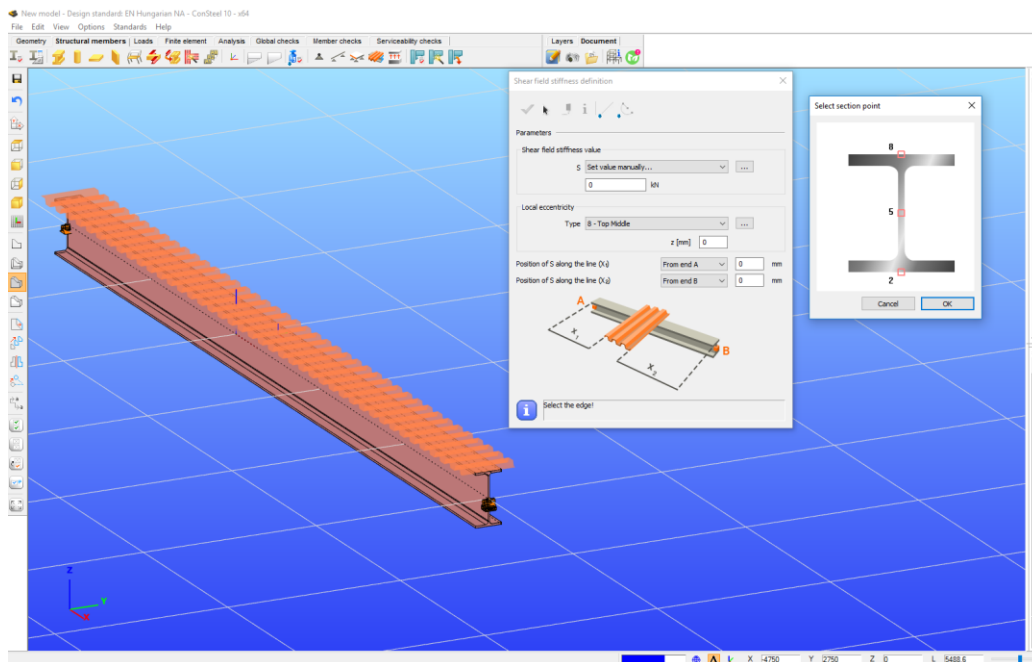
2.2 FRAME CORNER WIZARD 2.0

With the improved Frame corner wizard function, connection topologies can be considered in the warping transfer in frame corner zones.

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The following connection topology types are supported:

- Box-type stiffened bolted or welded
- Bolted or welded with diagonal end plate
- Box-type stiffened bolted or welded with additional one or two diagonal stiffener(s)
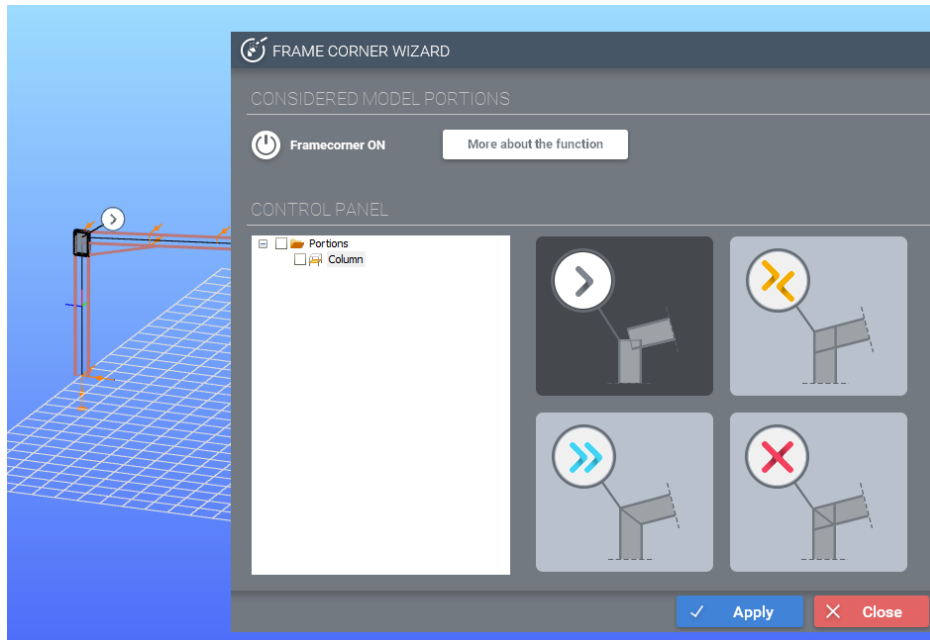
2.3 NEW SECTION TYPE IN CONVERT TO PLATES FUNCTION

Welded T section type is added to the available section range that can be converted from member to plates.

2.4 NEW STANDARD SECTION MACROS

New standard section macro category is added to the program.

Following standard section can be created with macros:

- Rolled I or H shape (wide parallel flange)
- Rolled I shape (sloped flange)
- Rolled angle (parallel legs)
- Rolled U shape (sloped flange)
- Rolled U shape (parallel flange)
- RHS shape(cold formed shape)
- CHS shape (hot-rolled)
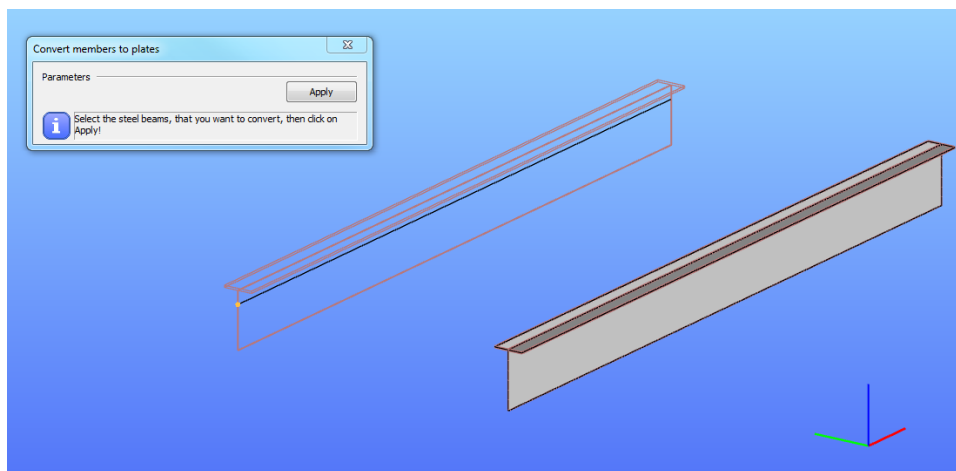- C shape (cold formed)
- Z shaped (cold formed)
- T shaped (hot-rolled half I)
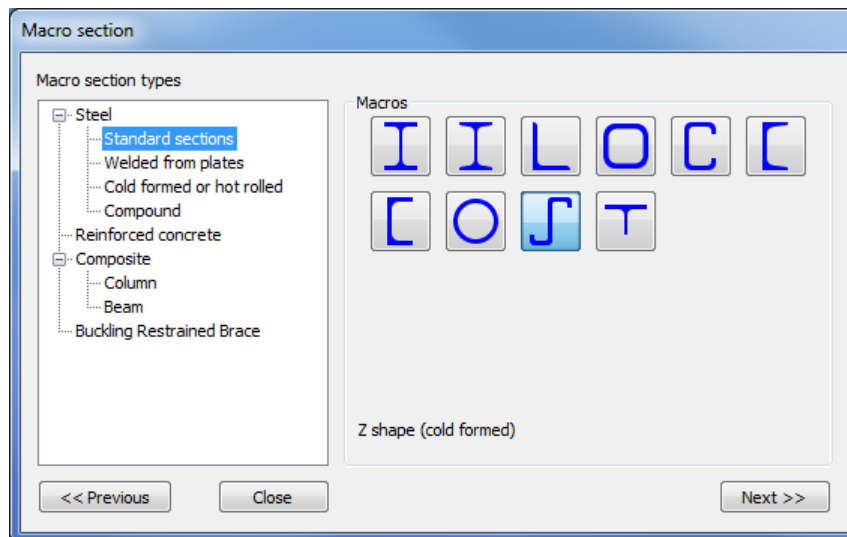
3. IMPROVED SEISMIC ANALYSIS

A completely renewed Seismic analysis tool is coming with ConSteel 11. The new tool is very flexible and transparent. All of the phases of the calculation can be checked and controlled.

3.1 CONCEPT OF MASSES AND MASS COMBINATIONS

In ConSteel 11 the loads and masses (cases, combinations) are completely separated.

For handling of masses, a totally new tab and functionalities are implemented.
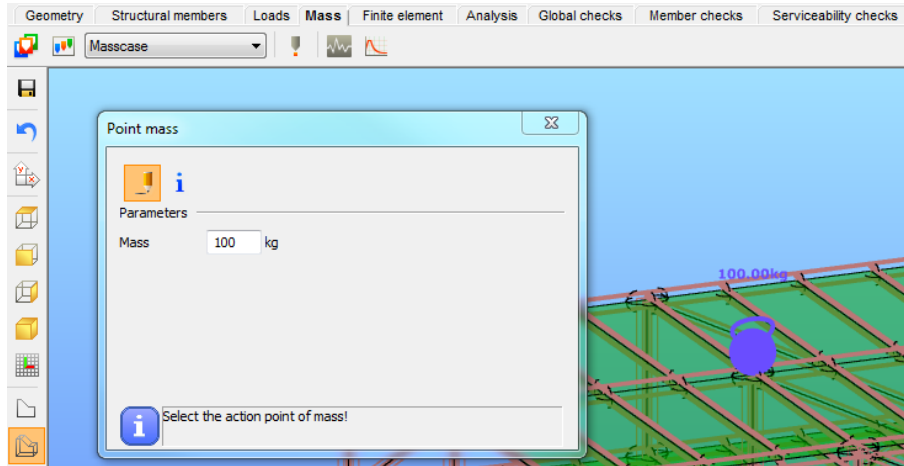
With the new functionalities, independent mass cases and combinations can be created. Naturally, the previously created load cases can be converted to masses with a simple click, but with the new Point mass function, there is a chance to place some extra masses on the structure.
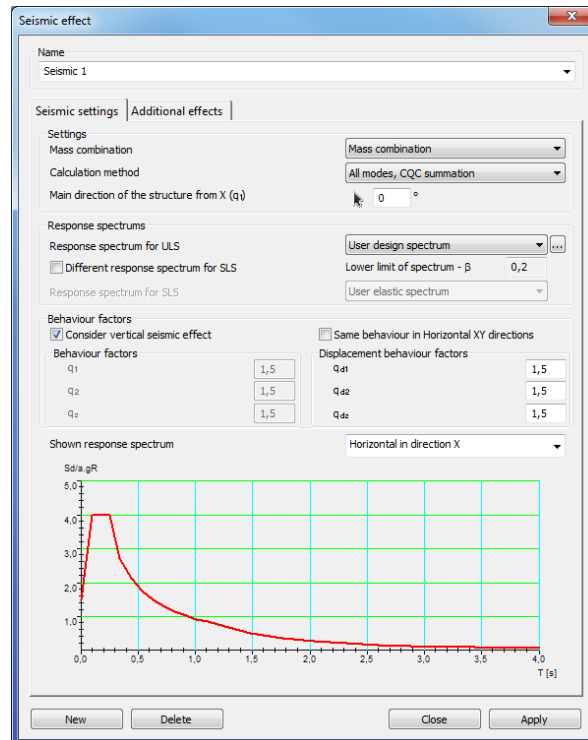
On the new Earthquake effect dialog can be selected the used mass combination and response spectrum and if needed a different elastic response spectrum for SLS.

3.2 ANALYSIS

Three different Model Response Spectrum Analysis based methods are available:

- Single dominant mode
- Selected modes with linear summation
- All modes with CQC summation

Extra tool to include masses not activated in calculated vibration modes in order to reach the effective mass required by Eurocode 8 (residual mass method).

ConSteel 11 automatically calculates and applies the 2nd order sensitivity factor in the analysis.

3.3 RESULTS

To increase the transparency of the calculation all of the results can be seen for each vibration modes.

In the new details of analysis dialog, all of the calculated vibration modes can be see visually on the considered elastic or design spectrum, plus the 2nd order sensitivity can be checked.

4. STANDARD DESIGN

4.1 NEW AVAILABLE NATIONAL STANDARD AND EUROCODE ANNEX

The following new national standard and EuroCode annex are implemented in ConSteel & csJoint 11:

Italian standard (NTC 2017)

Spanish seismic standard (NCSE-02)

Croatian national EuroCode annex

New maps for standard values:

- Wind velocity fundamental value - $v_{b,0}$
  - Italy
  - Cyprus
- Seismic ground acceleration – a_{gR}
  - Germany
  - Spain
  - Cyprus

5. DOCUMENTATION AND MODEL EXPORT

5.1 MATERIAL EFFICIENCY

Think about the environment and delivering well-optimized design using the minimum weight of steel in your structural solution.

Material Efficiency tool provides a clear visualization about your structural solution's efficiency on finite element, structural member, and global level. Efficiency measure the material usage of structural elements.
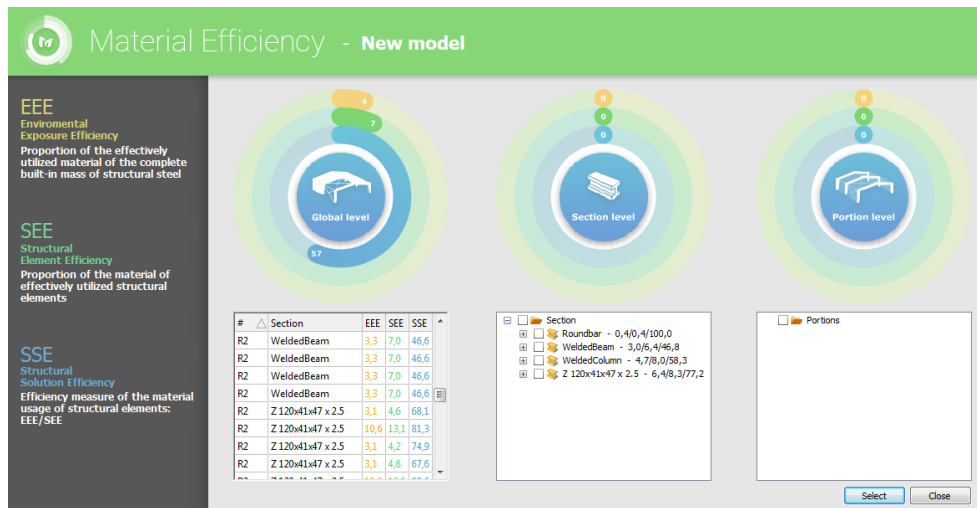
YouTube video: https://youtu.be/ek6R_-us5tw

5.2 REINFORCEMENT CALCULATION EXPORT TO AUTOCAD

With the new export function, the necessary slab reinforcement area calculation results can be exported to AutoCAD. Not just the graphical result views but the relevant color palettes are exported into the AutoCAD drawing as well.

6. CSPI – CONSTEEL PROGRAMING INTERFACE

Push the limits of structural modeling and increase the productivity with the new csPI interface.

With the new csPI interface, parametric models can be built easily and run anytime. Any kind of ConSteel objects (members, plates, support, loads etc.) and for-loop and if…else statement can be used for parametric modeling.

Discover the possibilities with ConSteel Wiki:

wiki.consteelsoftware.com

7. CSJOINT JOINT MODULE

7.1 AUTOMATIC JOINT UPDATE

With the new function, placed joints can be updated easily according to the actual ConSteel model.
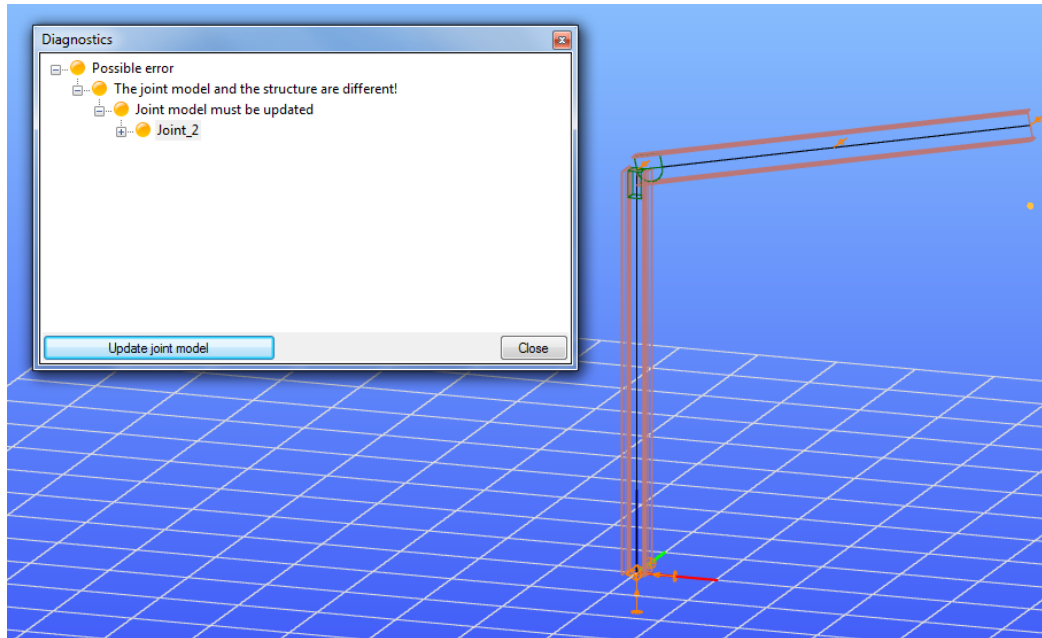
7.2 HOLLOW SECTION JOINT STIFFENING

Extra stiffeners can be added to the following hollow section joint:

- Joints between CHS or RHS brace members and I or H chords
  - Stiffeners can be added in the chord
- Joints between CHS and RHS members
  - Flange reinforcing
  - Side plates
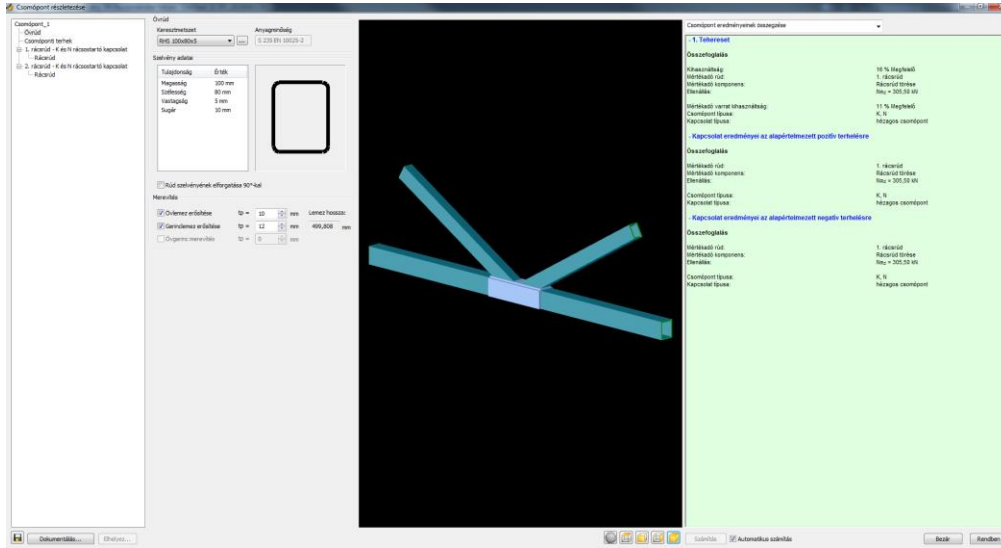
7.5 NEW TYPE OF COLUMN BASE CONNECTIONS

In csJoint 11 pinned based plate connection is available for RHS and SHS section also with 4 bolts configuration.