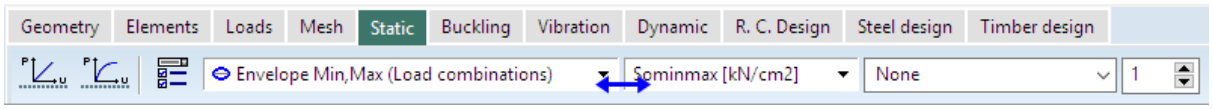
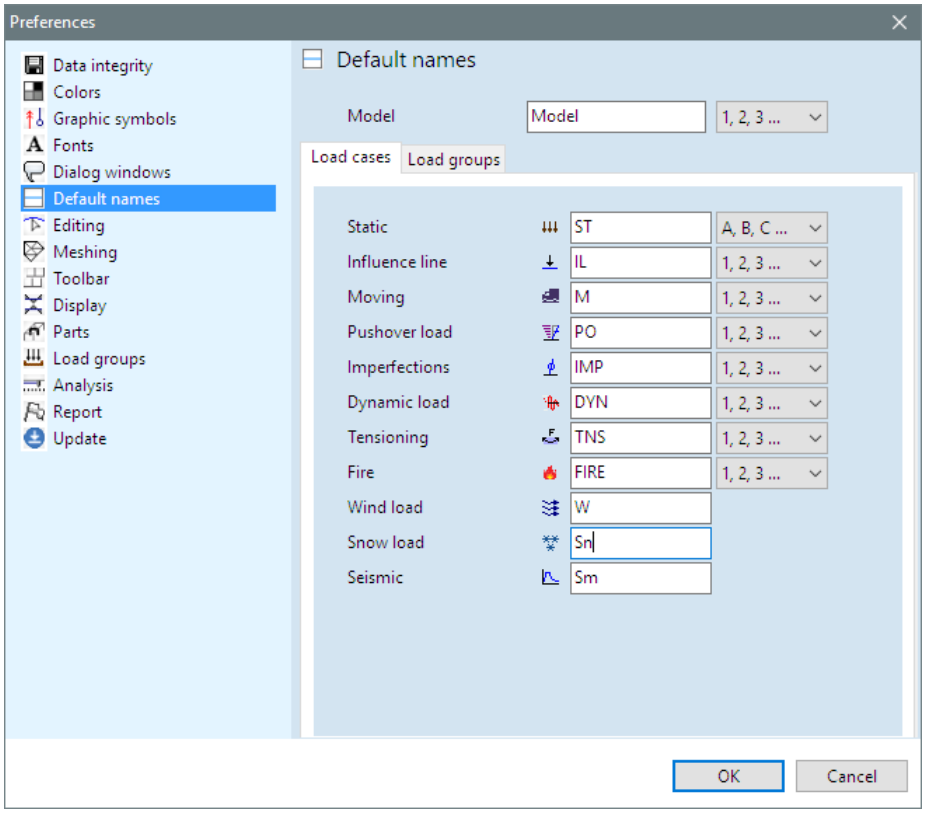
New features in AxisVM **X5** Release 1

GENERAL FEATURES

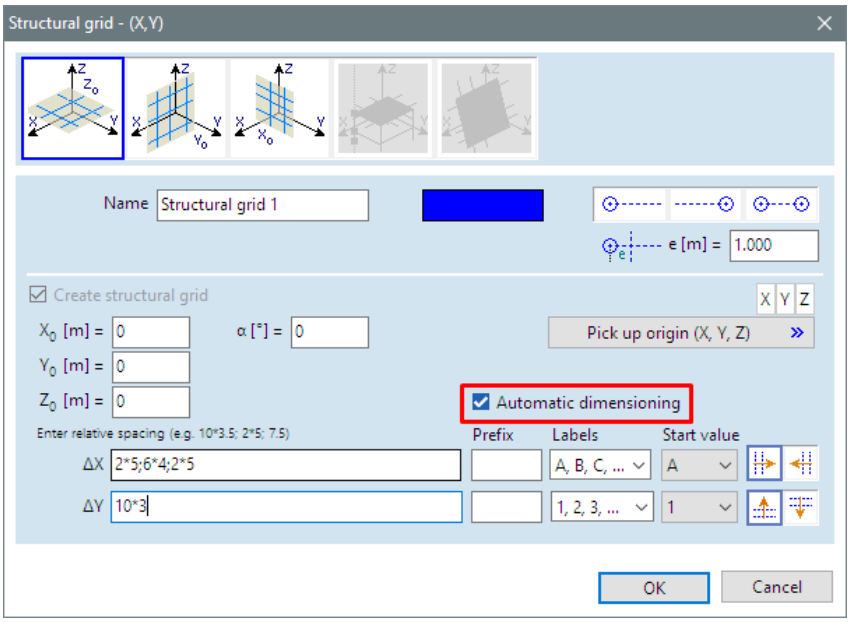
- Dropdown lists displaying load cases / combinations, result components and result display modes on the main window and on design dialogs are directly resizable.

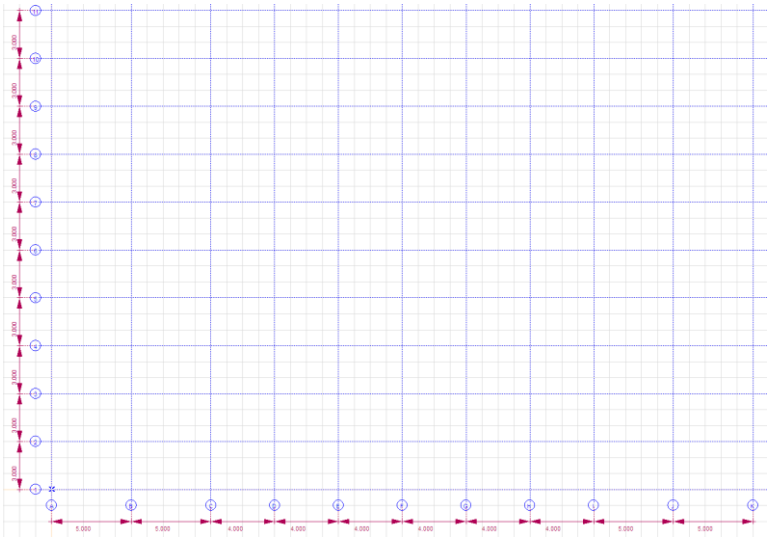


- Customizable default names for new models, load cases and load groups

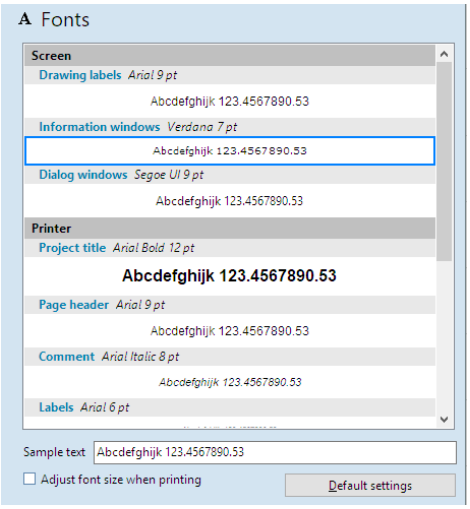


- Automatic dimensioning of structural gridlines

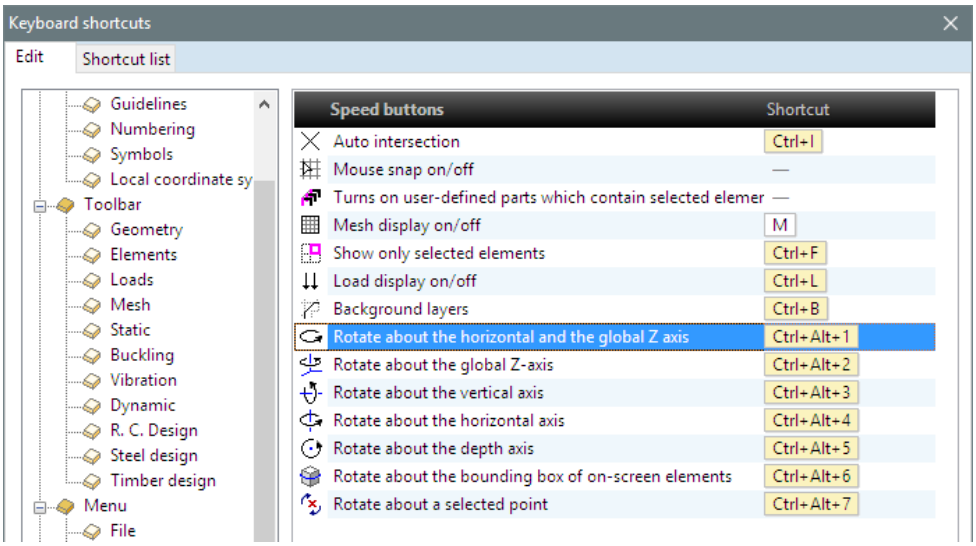




- All font settings in one dialog



- Keyboard shortcuts can be assigned to *Deformed shape, Show non-visible parts grayed* (see *Menu.View* category) and several rotation control commands (see *Speed buttons* category).



CONNECTIVITY

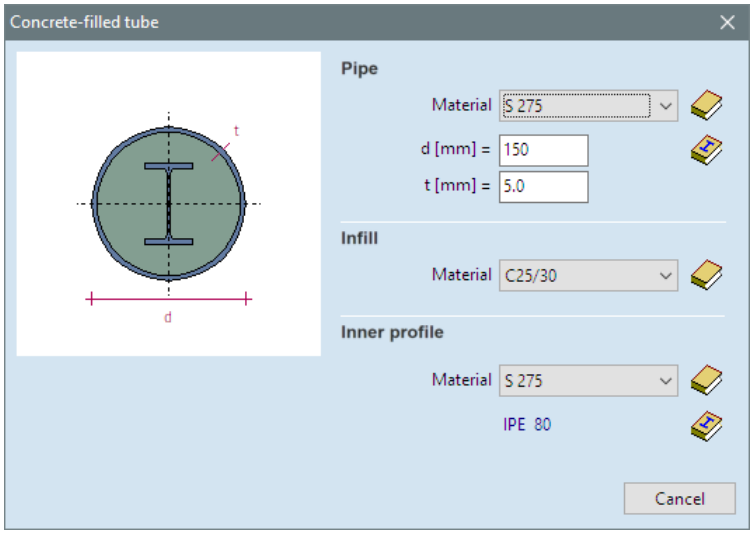
- Import/export of tapered walls to IFC (Open BIM connection)
- Export of selected elements from Revit to AxisVM
- Updating Revit model from AxisVM with detecting changes (Close BIM connection)
- Updating AxisVM model from Revit with detecting changes (Close BIM connection)
- Grasshopper and Dynamo interface to build parametric structures

CROSS-SECTION EDITOR

- Cross-section Editor allows editing of thick-walled sections
- Parametric thick walled C, L, T sections

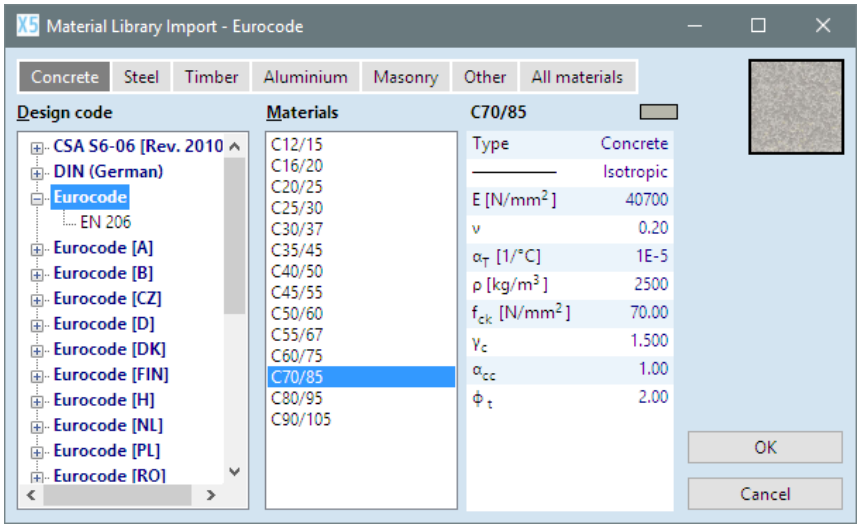
- Composite cross-sections (static analysis in R1, RC column design in R2)

- Concrete-filled tube with an optional inner profile
- Concrete-filled box shape with an optional inner profile
- Circular concrete encased profile
- Rectangular concrete encased profile

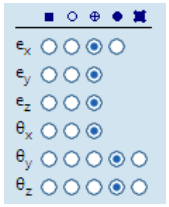


ELEMENTS

- High-strength concrete grades
- Material Library: material type can be selected



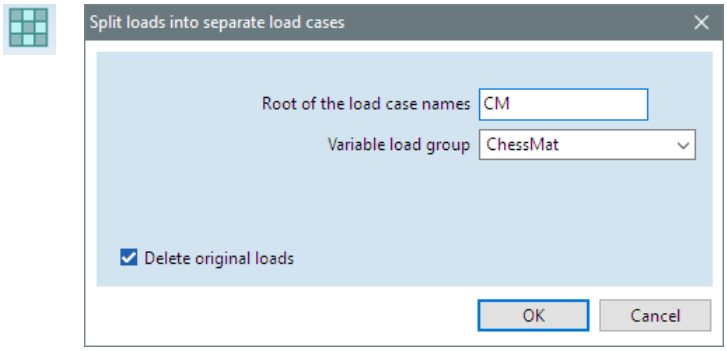
- Stiffness and resistance of beam end releases can be specified in each direction, plastic hinge is available in x direction



- New type of spring elements with plastic behavior and hysteresis for nonlinear and dynamic analysis
- Line support in reference direction

LOADS

- Splitting loads into separate load cases. Loads of each selected line element and/or domain are placed into a separate load case. Generated load cases can be gathered in a variable load group.



- Moving selected loads to separate load cases

- Optional stacked display of overlapping line loads
- Fire curve editor to define customized fires
- Optional new tendon geometry editor using linear or parabolic segments and arcs

RESULTS

- Faster calculation of beam stresses
- Labeling of extremes can be switched on/off within the Drawings Library
- It is easier to compare critical combinations as their numeric identifier can also be displayed

-0.007	<17> [1.35*0.85*ST1+1.35*0.85*ST2] {1.5*Snow DX-}
0.081	<84> [ST1+ST2] {1.5*Wd [krov] X+.S.O} (1.5*0.5*Snow DX+)
-1.113	<10> [1.35*0.85*ST1+1.35*0.85*ST2] {1.5*Snow DX-} (1.5*0.6*Wd [krov] X+.P.O)
-0.195	<10> [1.35*0.85*ST1+1.35*0.85*ST2] {1.5*Snow DX-} (1.5*0.6*Wd [krov] X+.P.O)
-0.078	<99> [1.35*ST1+1.35*ST2] {1.5*0.5*Snow DX-} (1.5*0.6*Wd [krov] Y-.P.O)
-0.556	<96> [1.35*ST1+1.35*ST2] {1.5*0.5*Snow DX-} (1.5*0.6*Wd [krov] Y+.P.O)
-0.250	<83> [1.35*0.85*ST1+1.35*0.85*ST2] {1.5*Wd [krov] Y+.P.O} (1.5*0.5*Snow DY-)
0.094	<86> [ST1+ST2] {1.5*Wd [krov] Y-.P.O} (1.5*0.5*Snow DY+)
-0.107	<9> [1.35*0.85*ST1+1.35*0.85*ST2] {1.5*Wd [krov] Y+.P.O}
0.249	<10> [1.35*0.85*ST1+1.35*0.85*ST2] {1.5*Snow DX-} (1.5*0.6*Wd [krov] X+.P.O)
-1.116	<10> [1.35*0.85*ST1+1.35*0.85*ST2] {1.5*Snow DX-} (1.5*0.6*Wd [krov] X+.P.O)
0.253	<10> [1.35*0.85*ST1+1.35*0.85*ST2] {1.5*Snow DX-} (1.5*0.6*Wd [krov] X+.P.O)

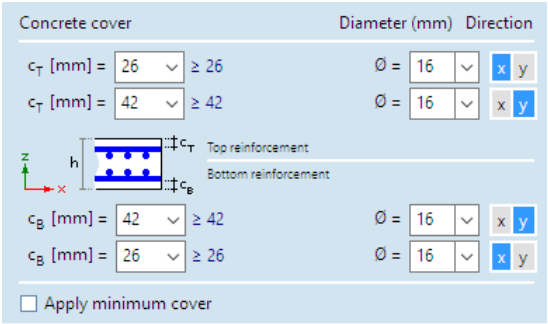
- New result component derived from support forces:

$$\alpha = \frac{1}{R_z}\sqrt{R_x^2 + R_y^2}$$

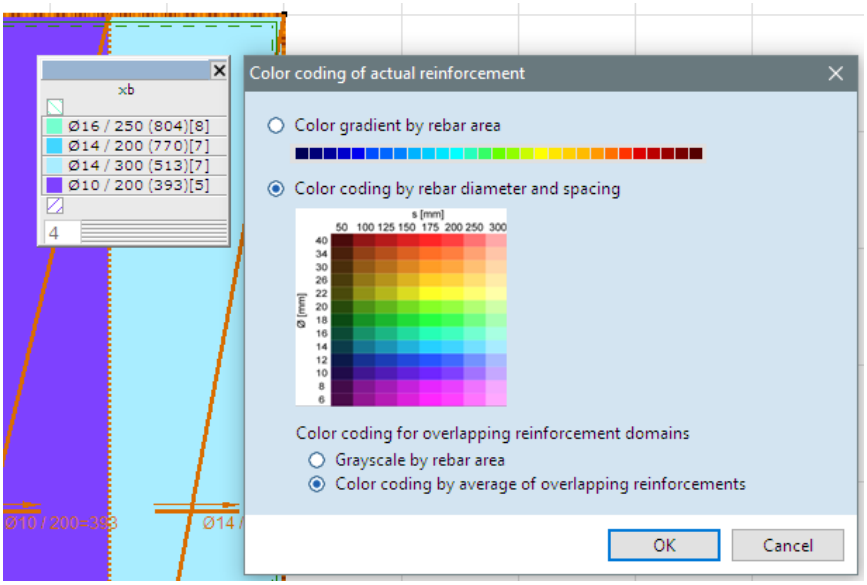
- New surface principal force components: *an1, an2, am1, am2, avRz*
- Point of application is calculated for unbalanced loads

DESIGN

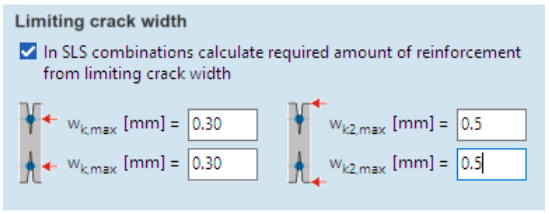
- Surface reinforcement parameters: Concrete cover can be specified for the secondary (inner) layer of reinforcement as well



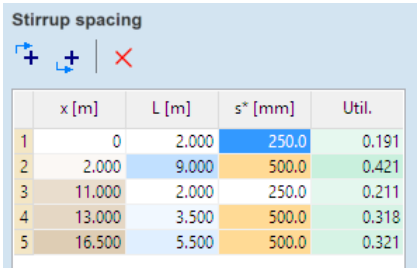
- Alternative color coding of actual reinforcement by rebar diameter and spacing



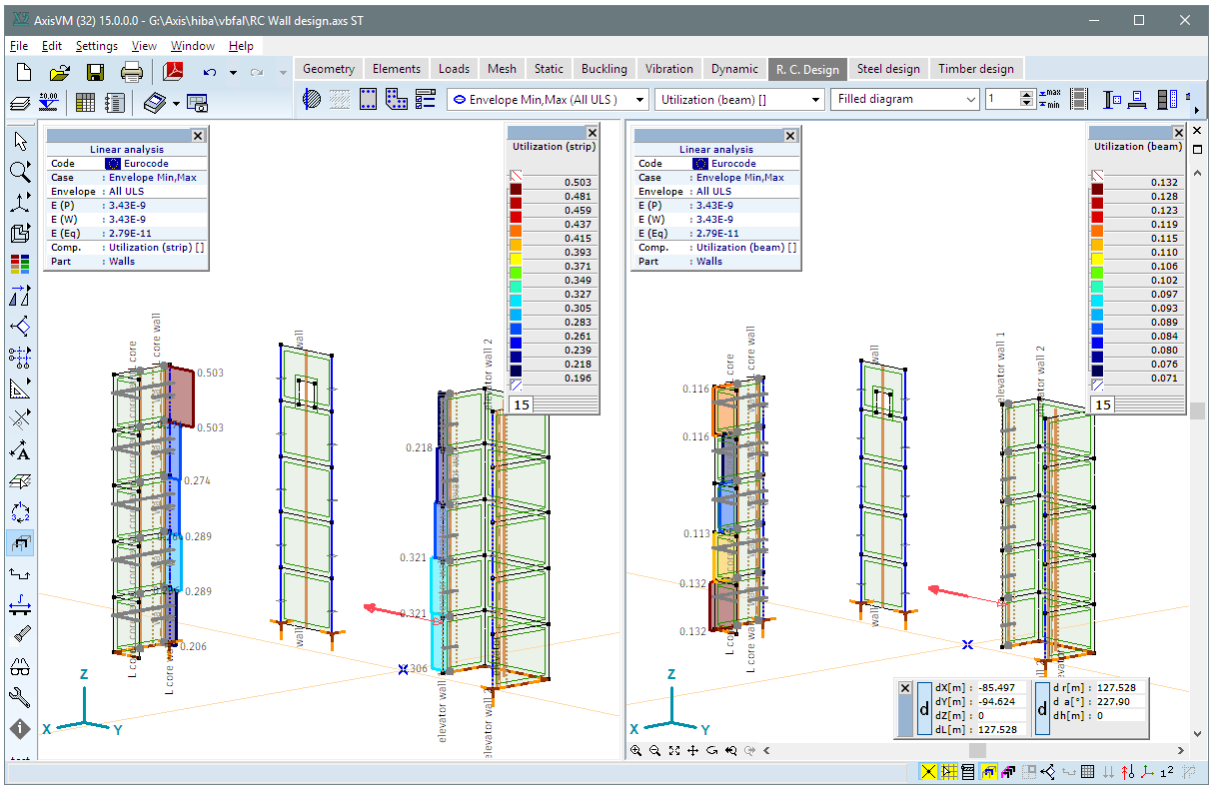
- Limiting crack width for surface reinforcement calculation can be defined both for the axis of rebars *(wk,max)* and at the extreme concrete fiber *(wk2,max)*



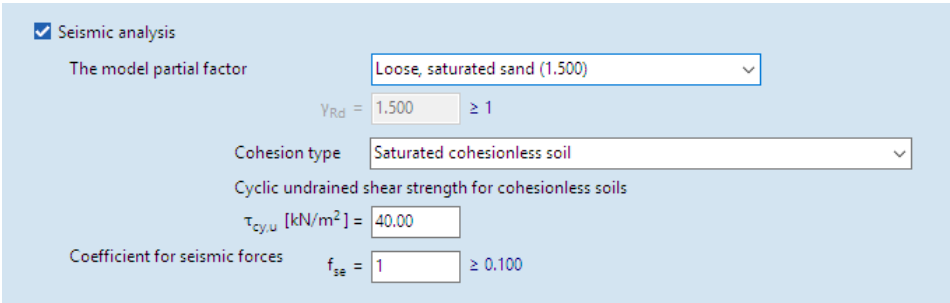
- Punching analysis can be limited to selected domains
- Diameter of side rebars can be defined for reinforced concrete beams
- User-defined actual stirrup spacing for reinforced concrete beams



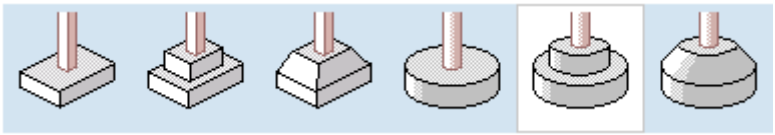
- Design of reinforced concrete walls and core walls (**New module RC5**)



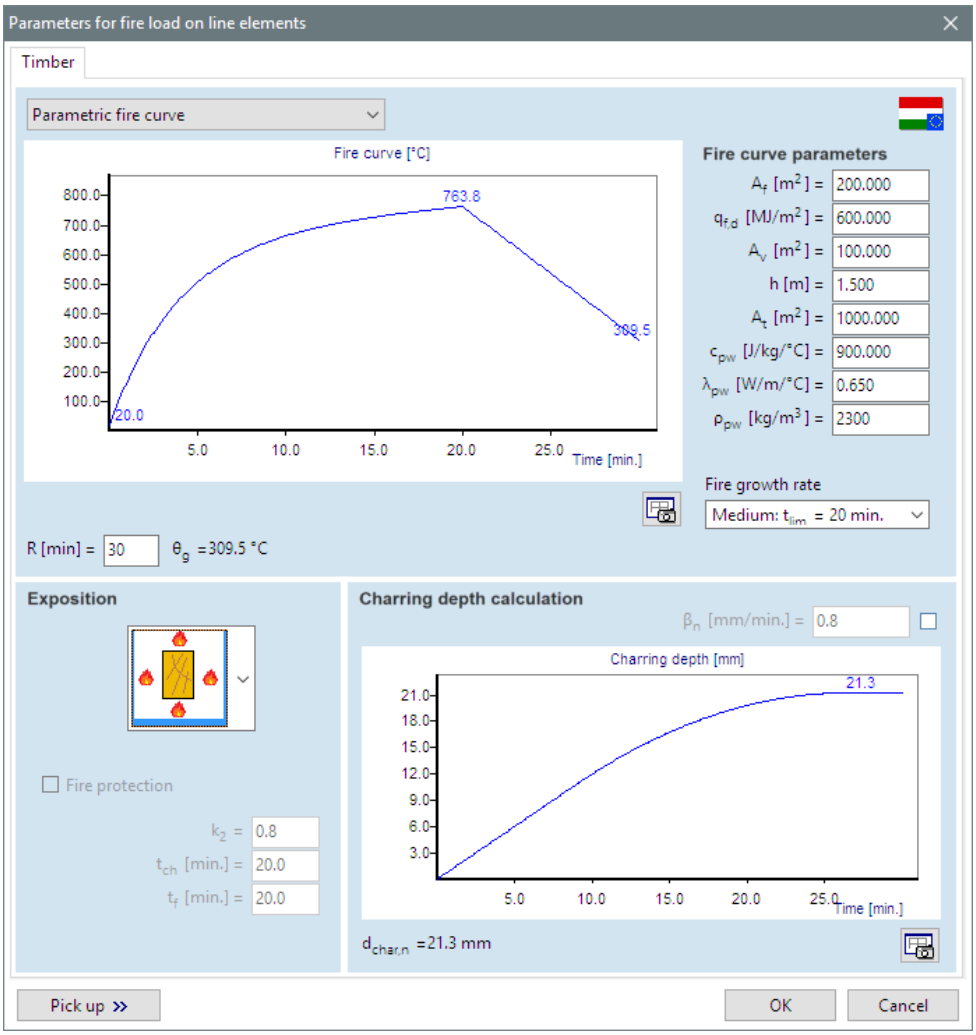
- Footing design for seismic action



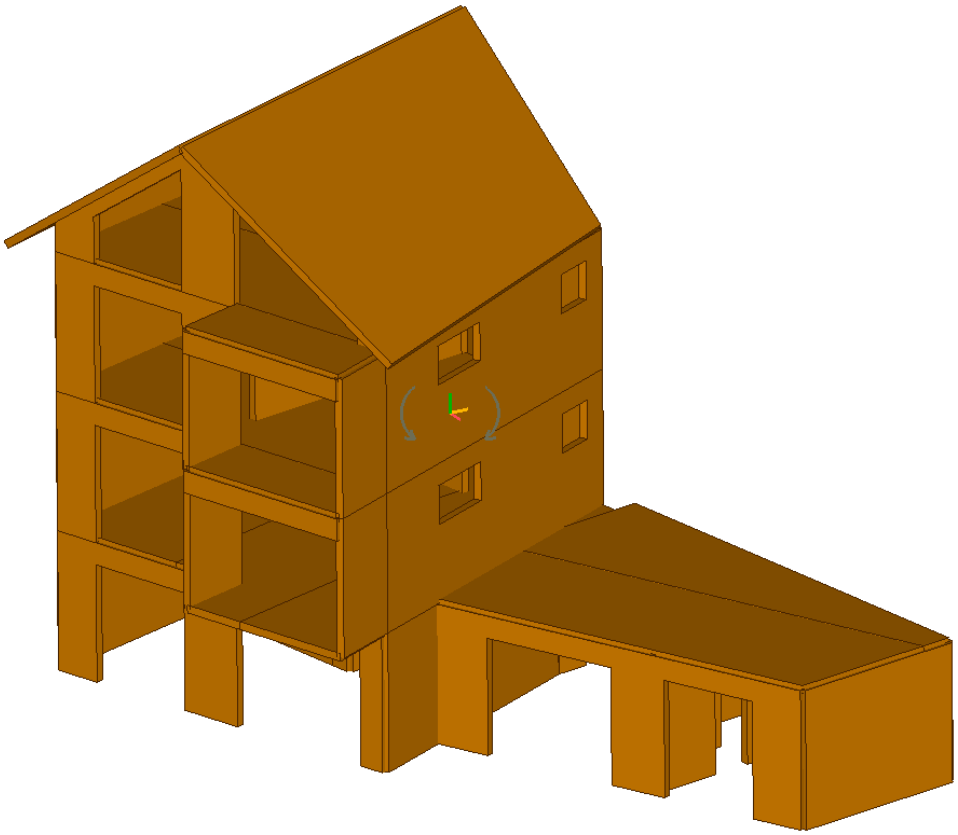
- Circular pad footings

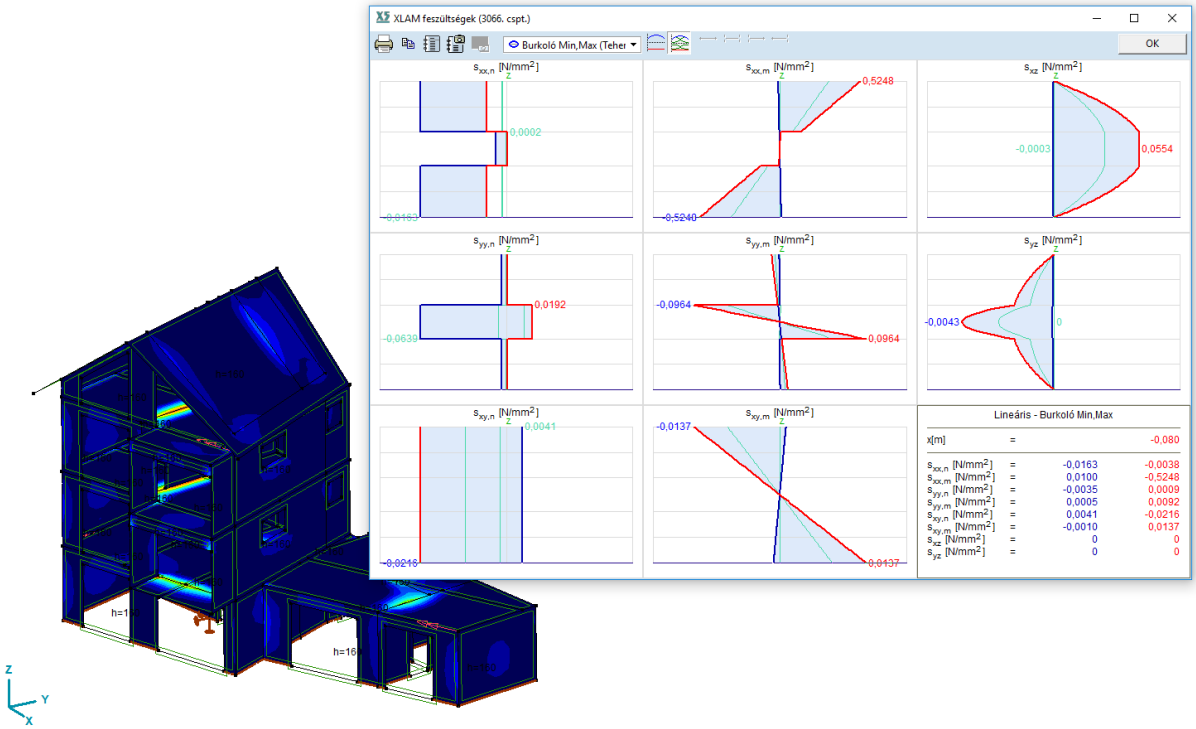


- Fire design of timber structures (**New module TD8**)



- Stress diagram for XLAM panels





In preparation for Release 2

GENERAL

- Displaying loads in rendered view
- Positions of beam distributed loads can be modified in the Table Browser

CONNECTIVITY

- Import/export using Tekla API

CROSS-SECTION EDITOR

- Break apart function for cross-section groups

ELEMENTS

- Trapezoidal steel plates
- Using new type of springs with plastic behavior and hysteresis to model nodal supports and beam end releases
- Dashpot damping element for dynamic analysis (DYN module)
- New way of controlling stiffness reduction parameters for seismic analysis
- New nodal support type (with 2 reference vectors for x and z direction)
- Prestress calculation for domains

ANALYSIS

- A constant load case can be added to the nonlinear analysis simulating loads that must be present in all increments (like dead load)
- Nonlinear analysis taking into account both calculated and applied reinforcement
- New response spectra for seismic analysis according to the Dutch national annex

RESULTS

- W_{tot} calculation also allowed for shells (if there is only bending moment)

DESIGN

- Displaying reinforcement in rendered view
- Design of composite columns (RC2 module)
- Masonry wall design (**New module MW**)
- Split and merge function for actual reinforcement domains
- Display of LTB support positions of steel design element

REPORTING

- Report template enhancements

March 6, 2019