

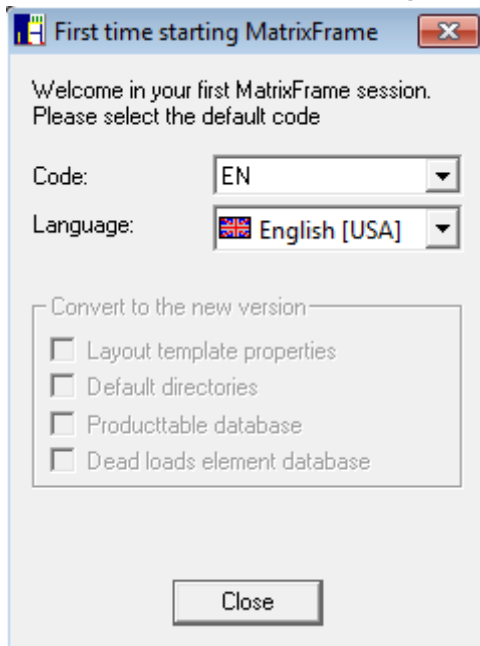
## MatrixCAE version 4.3 - Release note

Incorporated in version 4.3 (2010-05-21):

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### General:

1. Before installation please read the Installation Guide.  
**Note: In case a USB dongle is connected at your PC, first remove it before installation!**  
(or remove it after installation and reconnect it)
2. Up to MatrixFrame® version 4.3 software protection is possible. For the exchange of the (hardware) dongle for software protection please contact the sales department  
Note: Previous versions (MatrixFrame® 4.2 and older) are not operational with software protection!
3. At the first start of 4.3 the program will show a dialog with settings you can convert from the previous version. You can (un)check the settings that you want to convert from a previous version to 4.3.



**Note:**

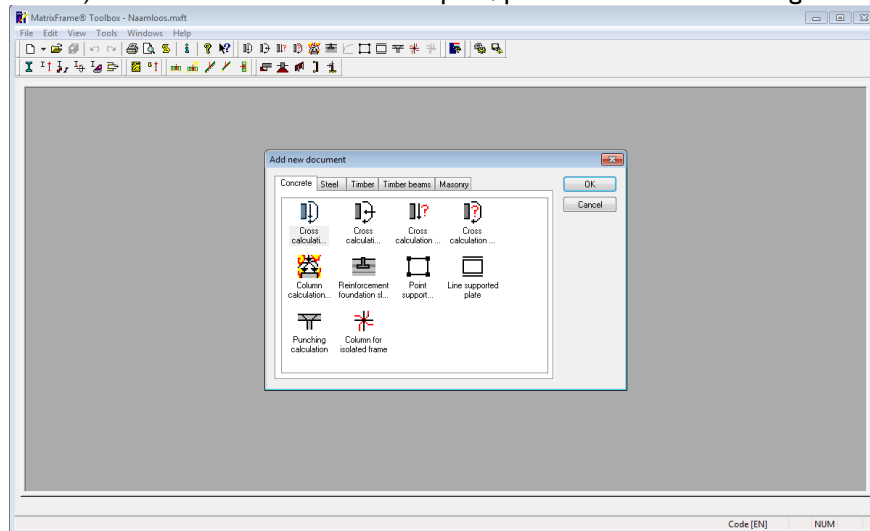
*It's recommended to store once again the imported MXP (Matrix Properties =User profile) files in version 4.3, to be sure that all new features will be stored in the new user profile.*

4. **NEW !**  
Calculation of the Euler buckling load of a frame and Alfa\_critical, for example needed for steel check according to the EN1993 (extension module).
5. In the past the dynamic calculation supported only nodal loads; member loads internally are converted to nodal loads in this version.

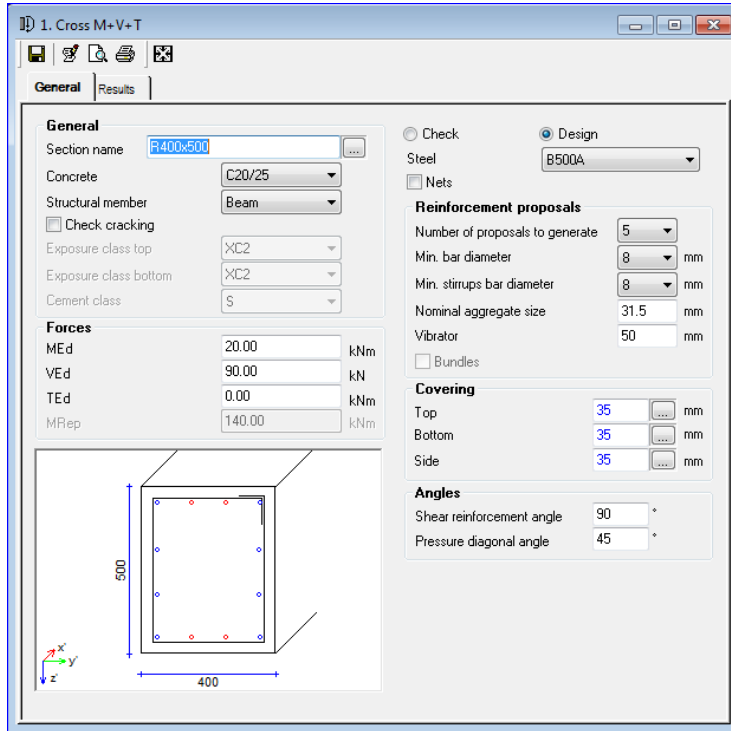
6. The timber codes "EN1995" and "NEN-EN1995 are fully implemented, for MatrixFrame® as well as for MatrixFrame® Toolbox. Other National Annexes on request, please contact our sales organization.

## MatrixFrame® Toolbox:

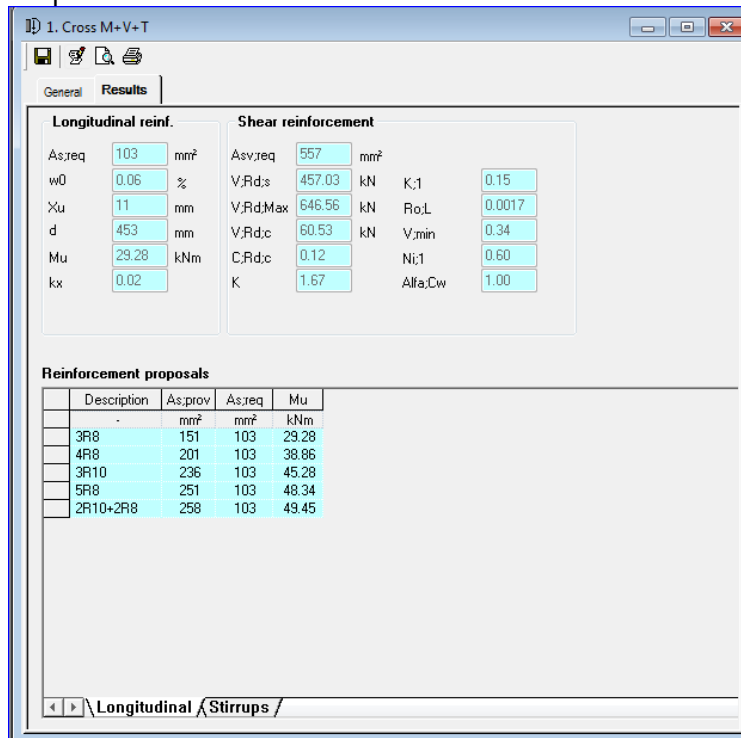
- I. Engineering Toolbox is completely redesigned as a part of MatrixFrame ® Toolbox. This version of the toolbox supports EN (General European Standard) as well as NEN-EN (European Standard with Dutch National Annex). Other National Annexes on request, please contact our sales organization.



- a. In the tab "General", the input data can be entered

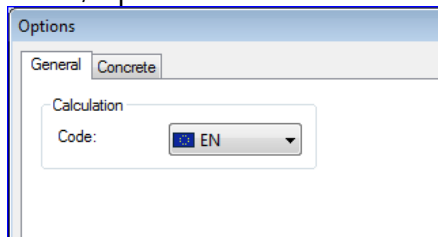


- b. In the tab "Results" the results instantly (calculated on the fly) could be viewed without starting a report.




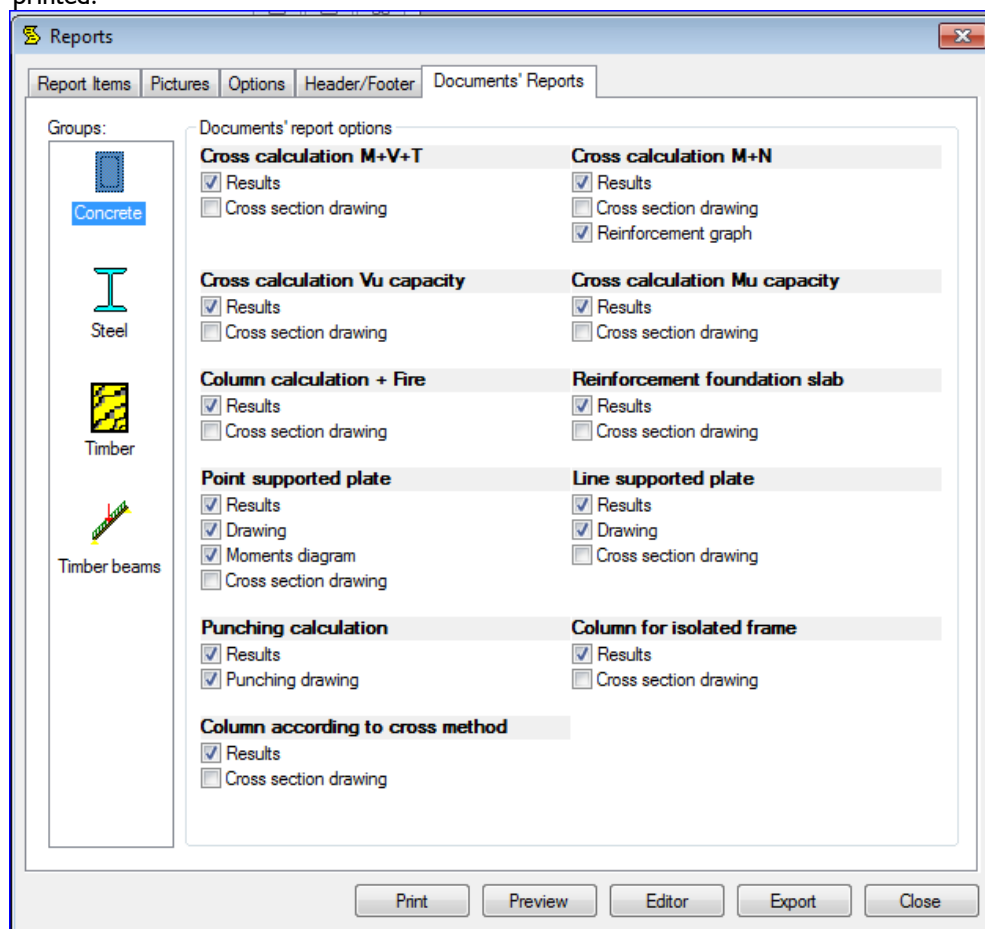
- c. Several modules do have additional tabs added for charts and / or images

- d. The relevant standard (NEN, EN, NEN-EN, ??-EN) could be set via the menu "Tools / Options"



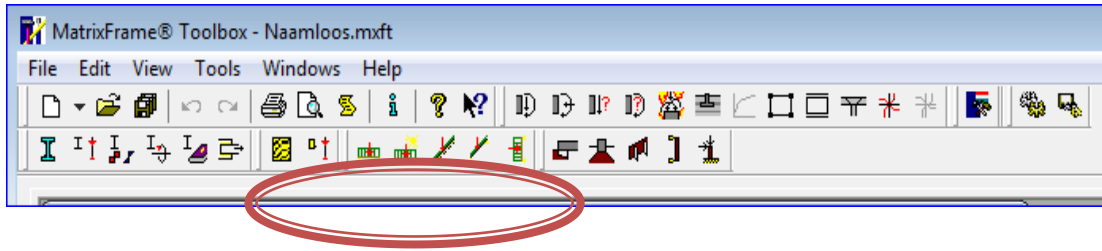
- e. For concrete, it's possible to set the diameters and center-to-center distances at which the proposed reinforcement will be used. The tables of diameters and distances can be extended by the user.

- f. By using tab "Document reports" the report settings  could be set as in the various reports printed.



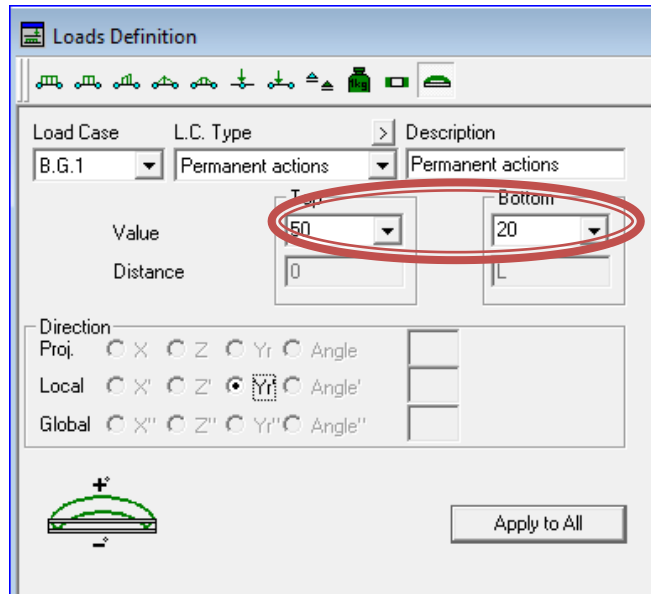
- g. Masonry NEN-norm is consistent with the recent referral sheet NEN6790/A1: 2009. Bearings Detail old style was dropped in this standard and replaced by two alternative calculation method. Of course EN 1996 as well as NEN-EN 1996 are implemented too.
- h. MN-kappa and Section properties is not (yet) supported in this version of the MatrixFrame<sup>®</sup> Toolbox. Via a service pack, these two parts will be delivered at a later date.

2. Timber Beams is completely redesigned and has become a part of the MatrixFrame ® Toolbox

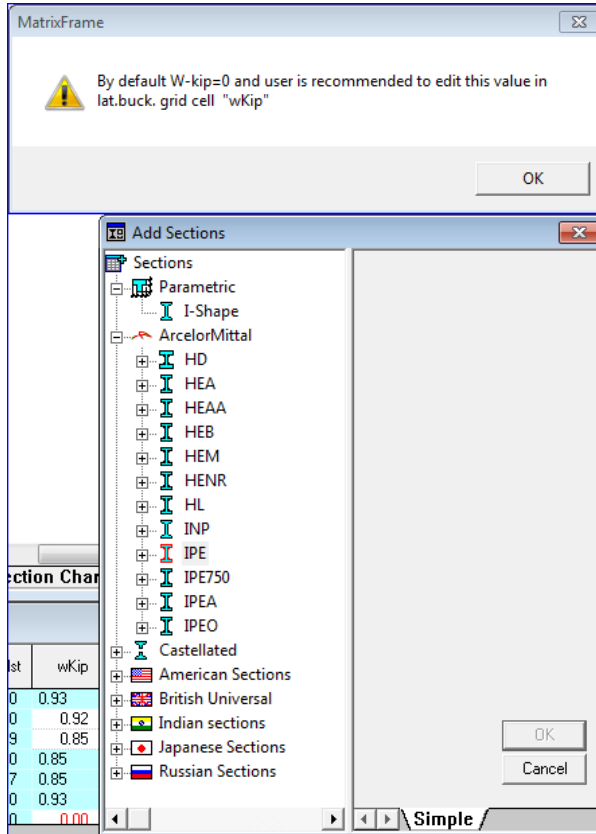


## MatrixFrame®

1. Input
  - a. After removal of the grids, occasionally it was unable to create grids: has been fixed.
2. Loads
  - a. In case of temperature loads, the labels for the values are adjusted.



- b. In case of changing a loaded node or member, the label of the load remains the same. Previously always a new load label has been created.
    - c. The renumbering of loads is based on “load case” instead of “type of load”.
3. Concrete code check:
  - a. Generation of concrete drawings: multiple stirrups are included in the drawing. So, 3R8-300 provides six vertical stirrup cuts.
  - b. NEN6720: In case of applying a bar R25, the minimal coverage erroneously multiplied by 1.5. This is only necessary for bars bigger than R25. This has been fixed.
  - c. NEN6720: The calculation of deep beams was based on  $A_{s,min}$  instead  $1.25 * A_s$ ; This could cause too much reinforcement. Has been fixed.
  - d. NEN-EN1992: Concrete calculations in the FEM-plate/wall only  $A_{s,min}$  was taken into account, now  $A_{s,min} 2$  is processed. ( $A_{s,min} 2 = 1.25 * M_d$ )
  - e. In shear force calculations the shear angle of the diagonal pressure is a setting in menu “Tools / Options” in the tab “Concrete”, Beams. Default value for NEN is  $45^\circ$  and for EN  $21.8^\circ$ .
  - f. In case of rotated ( $180^\circ$ ) T-beams, the check of the bar distance was incorrectly. Has been fixed.
  - g. Walls reinforced by nets the calculation of  $mm^2/m^1$  was based on the number of bars instead of the real width. This has been adapted.
4. Steel code checking:
  - a. Tapered and non-double-symmetrical sections are supported in this version. A messagebox appears, where the user can set the factor for  $W_{kip}$  where the steel codecheck has to be done with.



- b. When using the tapered sections it occasionally happened that after opening the model it gave an error. This was caused by the incomplete recording. To avoid additional safeguards provided in the module storing.
- c. The National Annex for EN1993 is incorporated in this version. This sometimes refers back to the NEN6770/71, the reference to article numbers combined in the form NEN-EN1993 | NEN6770 (Formula or article number NEN).
- d. IFB sections and cables are now supported for the EN1993 en NEN-EN1993.
- e. When using the steel buckling optimization, the control settings were changed to default settings. This has been adapted.
- f. Wrong stresses calculation of angular sections has been corrected.
- g. The steelcheck for hot-rolled tubes the wrong instability curve was used. This has reduced the steel control worse off. This has been fixed.
- h. Additional manually setting added for buckling in the weak direction of the section. In a second order elastic analysis it is necessary to know whether the structure is braced or not. Now you can specify this.

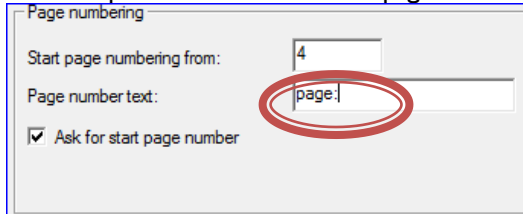
Member	Field	Lsys	Y-axis(local system)				Z-axis(local system)				UC Max
			Load Comb.	Method	Lbuc	Lbuc/Lsys	Load Comb.	Method	Lbuc	Lbuc/Lsys	
S18	F1 (0.000-3.374)	3.374	All	GNL	GNL	N/A	All	User sway	3.374	1.000	N/A
S19	F1 (0.000-3.537)	3.537	All	GNL	GNL	N/A	All	User sway	3.537	1.000	N/A
S21	F1 (0.000-3.374)	3.374	All	GNL	GNL	N/A	All	User braced	3.374	1.000	N/A
S22	F1 (0.000-3.374)	3.374	All	GNL	GNL	N/A	All	User braced	3.374	1.000	N/A
S23	F1 (0.000-3.537)	3.537	All	GNL	GNL	N/A	All	User braced	3.537	1.000	N/A
S24	F1 (0.000-3.537)	3.537	All	GNL	GNL	N/A	All	User braced	3.537	1.000	N/A
S27	F1 (0.000-3.374)	3.374	All	GNL	GNL	N/A	All	User braced	3.374	1.000	N/A

5. Results:

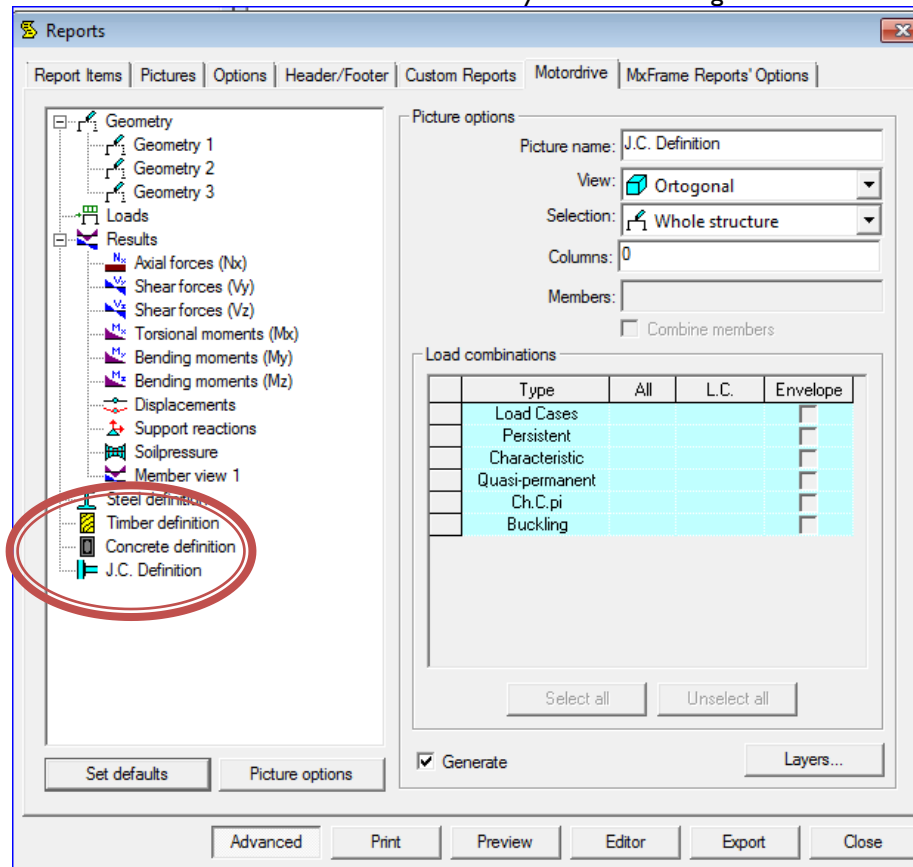
- a. Copying size grids of result stresses in 3D will now no longer mentioned that the selection is too big. It also now always adopt the last line.

6. Reports:

- a. It is now possible to add a text for page numbers.



- b. Various reports have been adjusted to give a tighter presentation possible.
- c. Reports of concrete columns with GNL calculations have been improved
- d. When printing the bar connections and eccentricities Psi "0" was printed. This is fixed.
- e. Incorrect text export of the creep deformation data is adjusted.
- f. In the motor drive are new items for a summary of code checking.



## 1D Beam:

1. In some cases it could happen that the permanent load was not recognized, so the related combination factor was not generated. Has been fixed.
2. After changes in the weight calculation, the combinations are not always recalculated. This is adapted.
3. The sorted sequence of the generated load cases is adapted.
4. Tooltips were added to individual buttons.

## 2D Frame:

1. Load generator:
  - a. **The load generator according to the EN1990/91 and NEN-EN1990/91 is implemented.**
  - b. For buildings taller than 15 meters, the natural frequency is required. This can be calculated using the advanced analysis option "Dynamic analysis (expansion module)"
  - c. The load combinations generator according to EN1990/91 and NEN-EN1990/91 is adapted and expanded with "Imposed displacement (alfa\_n)" to enable reduction of the entire building.
  - d. The dialogue windows in the spreadsheet "Loads calculations" are completely renewed for EN1990/91 and NEN-EN1990/91
  - e. NEN6702: Changing the weight factor in the weight calculation is now incorporated in the load cases for the type qG.
  - f. NEN6702: In case of defining a weight factor of "0", no permanent loads at all were generated. This is adapted.
  - g. NEN6702: In case of wind on the head, the level wasn't correctly processed. It was taken 2 times. This is restored.
  - h. NEN6702: Problem with generation of snow load for a continuous roof with an intermediate node is resolved.
  - i. NEN6702: In case of a balcony or terrace, the value was "0", this is solved.
2. Joint connections:
  - a. For various types in the histograms and export additional welding checks are added.
  - b. The recognition and definition of the type of connection is extended in many places
  - c. A beam-beam connection at certain angles in the top couldn't be recognized. Is fixed
  - d. Changing the column and beam in a knee joint (end plate upper - below) is resolved  
*Note: For existing models, the connection has to be removed first, and then re-defined.*
  - e. The occasional crashes when activating MatrixFrame® of steel connections has been fixed.
  - f. In case of detailed reports the internal values are only 1 time printed instead of for each load combination. The reports are many times shorter now.
  - g. Printing the joint connections, sometimes the print was ignored. This has been fixed.
  - h. The incorrect conversion of the loads in case of a member connection with a hinge is resolved.
  - i. The occasional incorrect conversion of forces from the tie rods with base plates is solved
  - j. The occasional "missed resources" messages in the output adapted.
  - k. The double printing of the loads after advanced calculation is resolved.
  - l. Tapered sections are calculated like a continuous section in the joint connection at the location of the connection.

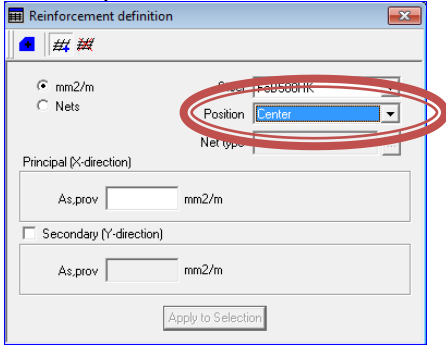
## 2D Grillage:

1. **A recalculation of the concrete results has been added in order to process changes in the code correctly when opening models from previous versions. In this way the loading of the section results of a larger model can take longer than before. After saving the concrete results in 4.3 this has been fixed.**
2. The concrete design wizard caused occasional crashes in MatrixFrame® after changes in stirrups in the Tab "Cross Section Concrete ". This has been fixed.
3. At the service reinforcement an occasional incorrect "error" was given for the  $A_s$  check with small torsional moments. This has been fixed.
4. The incorrect check "OK" with stirrups while the  $S_{,perp} > 500$  has been fixed.

5. The occasional slanting positioning of the text in a generated dxf has been fixed.
6. In the output of concrete results of a model which contained both beams and slabs, the reinforcement was mixed up while printed. This has been fixed.

**FEM:**

1. In case of linear spring supports, the analysis was performed with a bigger spring stiffness. This has been fixed.
2. Possibility to define reinforcement in the center of the plate is added.



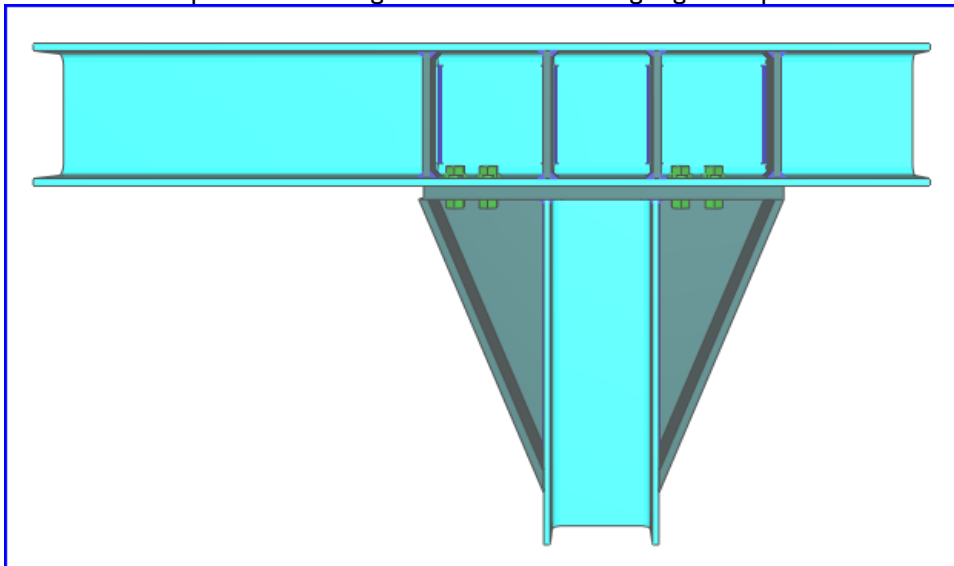
3. In the results, it is now possible to zoom window and zoom all.



4. The exposure class established under menu Tools / Options / concrete for FEM were not read correctly when opening a model. This has been fixed.

**Steel Joint Connection:**

1. The gap at a K-N joint connection was drawn incorrectly in the virtual model and the technical drawing. This has been fixed.
2. For a T-Y joint connection code check according to NEN 6772, checks formula 11.6.7 and 11.6.8 are added.
3. For a T-joint connection (90 degrees) it is now possible to define compression consoles with separate tension- and compression stiffenings for the left and the right compression console.



4. The positive and negative moments are calculated separately and printed as column endplates.
5. The scaling of the texts in the drawings has been improved
6. The missing company data on the drawings has been fixed.

7. The webplate wasn't drawn at the same position in the technical drawing and the virtual model when using a console. This has been fixed.
8. A third report option has been added "Current". This report is between extended and shortened . It contains all the main checks including answers, but all the values in between.
9. Not calculating tubes connections with parametric sections has been fixed.
10. For tube connections, the NEN 6772 formula 29a of the 11.6-table 8a for controlling effective width adjusted to last revision  $w / t_f = 20-28B$ .
11. The rapid increase of UC in changing the size of a console in a beam-beam connection has been fixed.
12. With the tube connection the numbers in the load picture weren't very clear in combination with the grid. This has been fixed.
13. Controls on edge and spaced base connections are further refined.
14. Not showing the control of shear in the results grid for the base connection calculation has been fixed.
15. The item "Weldings" in former Steel Connections again supported by the Matrix Frame ® Toolbox

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End release note