

Design of reinforcement for walls, plates and shells according to EC2

esacd.02.01 Design of reinforcement for walls, plates and shells according to EC2

EC2 reinforced concrete plates and walls analysis is a Scia Engineer module for the calculation of reinforcement in plates and walls. The program is completely integrated with the Scia Engineer modules of structural analysis. With this module the structural engineer has an interactive graphical tool at his/her disposal for the calculation of required amount of reinforcement according to the regulations given by EN1992-1-1.



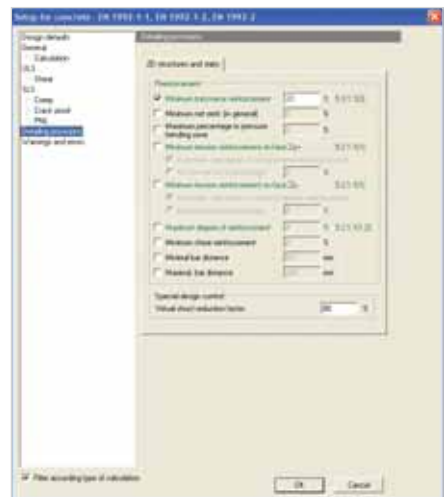
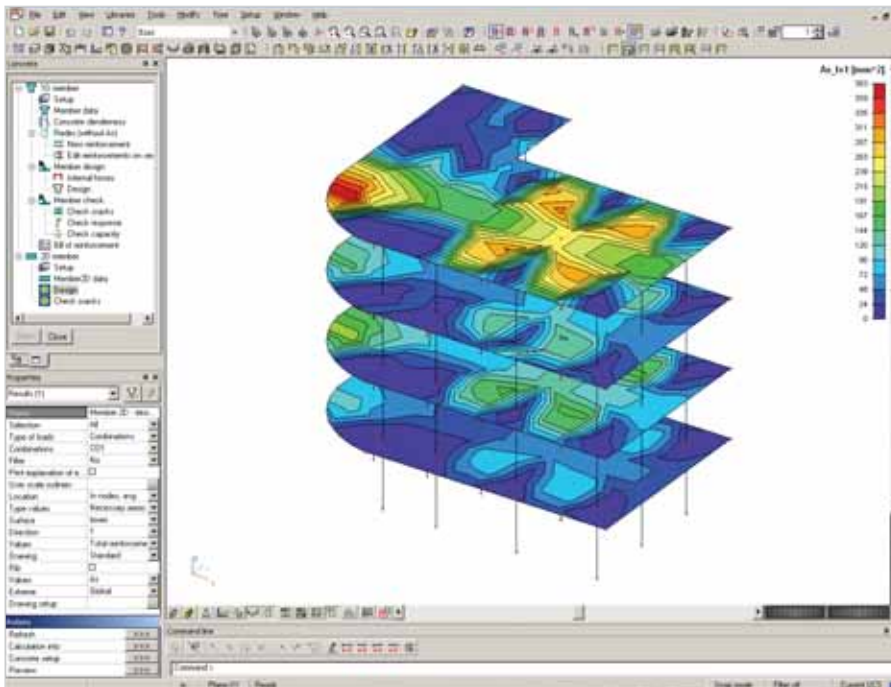
Datasheet Scia Engineer

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Scia
Engineer

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Working with the module RC plates and walls

The design and check of the structure is done in the graphical environment of Scia Engineer. The

plates or walls to-be-checked are selected graphically with the mouse pointer. Graphical functions such as Pan, Zoom in/out, Zoom Window, user-defined viewpoint, selection by intersection line, etc. make the work easy, even for complex structures. The input of concrete cover and reinforcement bars is done in a clear dialogue window.

The program calculates two or three required layers of reinforcement on both sides of the plate. The layers of reinforcement do not have to be placed orthogonally. They can be oriented in any direction to each other. It is also possible to calculate the reinforcement with a different thickness than the one defined in the model. The same is valid for walls in addition it is also possible here to work with one layer reinforced walls that are used in practice for thin plates.

Output

The graphical output will show all kinds of interesting results:

- The design internal forces that are used for the calculation of the reinforcement;
- The required reinforcement in every layer (also for crack control) together with background calculation details that give the user more insightfulness;
- The mass of the reinforcement;
- Several options for the display of results: isobands, isolines with or without labels, coloured or greyscale, sections, user scale isobands, etc.;
- Graphical output in a section across the structure;

Highlights

- ▶ 2D reinforcement design, shear proof and crack proof for two- and three-way reinforcement nets.
- ▶ Impact of shear on longitudinal reinforcement. Reliable control of the stiffening concrete strut. Code related assessment of minimum reinforcement restrictions.
- ▶ Averaging strips to eliminate singularity stress peaks.

What's New

UPDATED

- ▶ Intuitive setups
- ▶ The mass of the reinforcement as a result
- ▶ The 2D design internal forces can be reviewed
- ▶ More background results for longitudinal and shear reinforcement

- Results in the nodes or centre of an element;
- The graphical output can be exported (BMP, WMF, DXF, DWG, VRML, 3D PDF, etc.).

All items can be inserted into the document and can be adapted to meet user's wishes. The document can be active which means that some of the input values can be changed in the document and the model will automatically adjust these changes.

Input facilities

All the important factors and coefficients of EN1992-1-1 are proposed by the program and are editable by the user.

Calculation

Plates and walls are calculated according to "Eurocode 2: Design of concrete structures - Part 1: General rules and rules for buildings". Internal forces of elements are calculated in the direction of the layers of reinforcement. The reinforcement is calculated from these internal forces and introduced limitations. The required area of tensile and compression reinforcement is calculated in every element and in every node of every element. The program can also carry out the calculation of required reinforcement based on a crack proof.

Seamless integration with structural analysis

The results of the calculation (first order or second order calculation) are taken directly from the Scia Engineer modules for structural analysis. The results are available also in the document of the project.

