

Planar 2D members

esa.01

Highlights

Easy-to-use graphical user interface.

Straight and curved 1D members, planar and curved surfaces including their intersection.

Full control of the display style including perspective, rendering, activity, colour management, etc.

Extensive library of predefined materials, cross-sections and type-structures.

Independent analysis and structural model which means both accurate results and realistic and nice looking pictures.

Graphical user interface

The graphical user interface is the “communication” link between the user and the system. Its main features are:

- The view of the structure (i.e. zoom ratio, view direction) may be adjusted as needed, several graphical windows may be opened at the same time while the same or different parts of the structure are displayed in each of them.
- All accessible functions are clearly sorted in a standard menu and also in a clear tree menu that guides the user through individual steps.
- Functions that are not accessible (either due to their absence in a particular license or because some preliminary steps of the design have not been completed yet) are hidden and therefore do not add to the complexity of the menu.
- Everything that has been defined can be displayed on the screen, including hinges, reinforcement, cross-links, stiffeners, etc., which makes it a simple task to check the work.
- A structure constructed in steps can be easily reviewed for each construction stage.
- The emphasis is on interactive CAD-style graphical work, so that the user can really “draw” his structure on the computer using drag-and-drop, rendering, grids and other implemented graphical tools. On the other hand, the detailed numerical input of individual values or checks is also possible if necessary (e.g. node coordinates or reinforcement schemes)

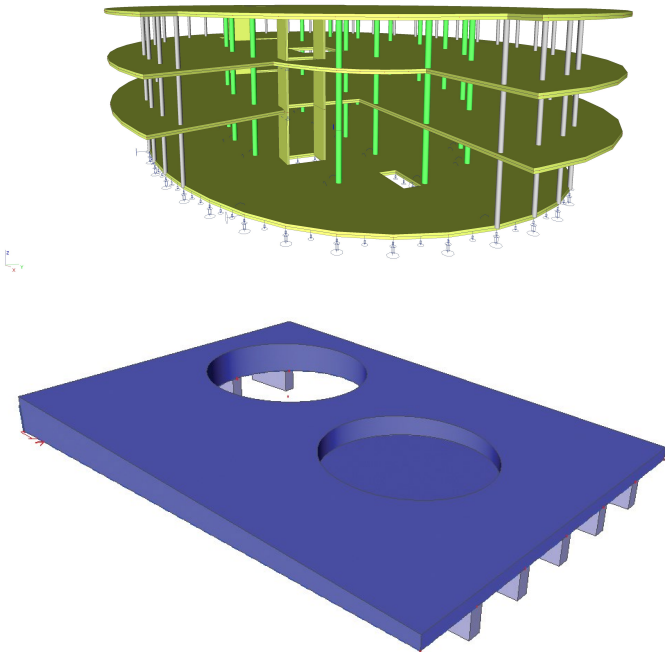
Perspective

The perspective view of the structure is a very useful tool when presenting to your customers.

Rendering / Animation

The structure is normally drawn as a line model. For presentations, however, a more attractive view is available. Several rendering modes are available to help producing effective drawings.

Results for the calculation of dynamic loading, etc. can be easily animated, thus contributing to a better insight in the behaviour of the structure.

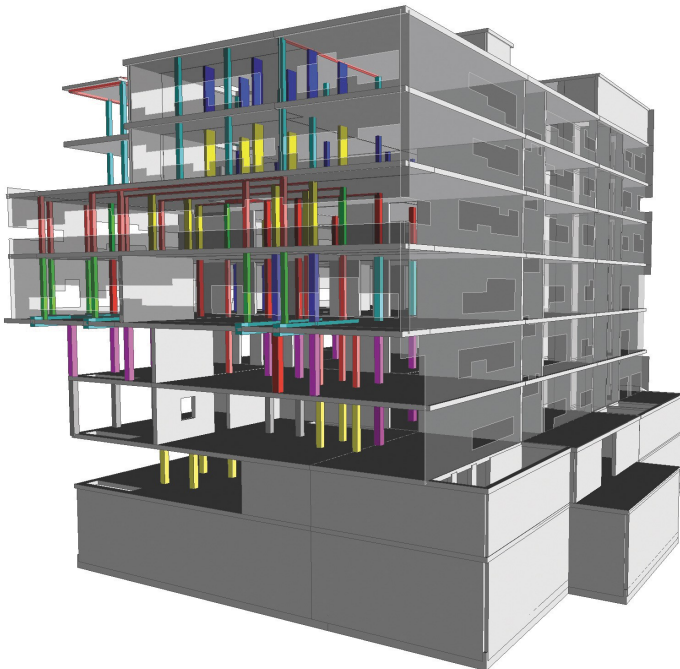
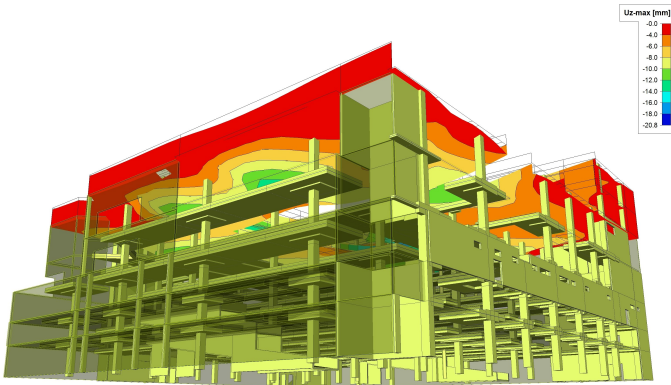


Property window

The Property window represents a unique feature of SCIA Engineer. Any time an entity (member, support, hinge, load, etc.) is selected, its properties are displayed in the Property window. These properties may be either reviewed or edited (e.g. assigning a new cross-section to the beam). Once a property is retyped in the Property window, the modification is immediately shown in the graphical window.

Activity

The Activity tool is a big asset when a large and complex structure is being designed. The user may select individual members that are relevant for a particular task and make them “active”. All the remaining elements of the structure are made “inactive” i.e. temporarily hidden.



Tools

Units

There is a wide choice of units throughout the program and the units for individual properties are independent. Therefore, it is possible, for example, to define the geometry in metres, display calculated displacements in inches and have dimension lines of connection drawings in millimetres. All the units may be changed at any time and in any phase of the project. Especially for the American market, an easy mechanism for switching between Imperial and SI units is implemented.

User Coordinate System

What may seem unnecessary for simple 2D structures, can be an important factor for complicated structures. The user may position his/her coordinate system to any point of the modelling space and rotate it to an arbitrary direction. What's more, it is possible to create as many of these auxiliary coordinate systems as necessary. The coordinates of all points in the structure are then measured in the selected user coordinate system.

Grids

Grids are extremely useful for the proper input of new nodes, beams and slabs. In the cursor snap settings, the user can define which points will be used during the input.

Dot grid

The dot grid is the basic kind of grid. It is placed into the user work plane:

Line grid

It is very common in structural 3D modelling to pursue some kind of regularity in the structure geometry. Being able to predefine this pattern can be of great help when you actually start modelling the structure. In SCIA Engineer, this pattern can be set up by means of the line-grid or 3D-grid tools. The user defines one or more grids whose vertices can be easily picked by a mouse and used as end-nodes of structural members. This way, the definition of the geometry is made easy. Also the line grid shows some measurements that can be useful in the structure.

Available grid types are:

- Cartesian grid
- Oblique grid (i.e. inclined Cartesian grid)
- Spherical grid
- Cylindrical grid

Required modules

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