The FEM-Design PreDesign module is used to perform a pre-calculation for reaction and internal forces of load-bearing walls and columns and to estimate material quantities for the entire structure.

Automatic wind, snow and deviation load generation ensure fast and easy definition of the complete statical model which later can be opened in 3D Structure for in-depth analysis and design.

With FEM-Design Plate, concrete slabs or other two-dimensional transversely loaded structures can be analysed.

Reinforced concrete is designed according to code, accounting for cracked section analysis, shrinkage and creep considering calculated or applied reinforcement.

Required reinforcement is calculated for ultimate or serviceability limit state, checking deflections and/or crack width. Alternatively, reinforcement can be applied and checked according to code and deflections and crack patterns displayed.

Concrete walls are designed according to EC2 and different national codes. Design forces are calculated as a combination of normal and shear stresses in the wall. Tension reinforcement requirements are calculated and a check is made that allowable compressive stresses in the concrete are not exceeded.

Structural Design Software in Europe AB (StruSoft) is a Swedish innovative software company with more than 25 years of experience in specialized software applications for the building industry.

FEM-Design
An advanced 3D FEM software for analysis and design of complex structures with concrete, steel and timber elements.

IMPACT Precast
A BM software for production of concrete precast elements. Based on AutoCAD® and open database technology.

IMPACT Reinforcement
An AutoCAD®-based application for detailing and scheduling reinforcement.

WIN-Statik
A series of powerful, but easy to use applications for common design tasks such as beams, columns or frames.

VIP-Energy
A series of software covering the calculation of the entire building energy balance.
FEM-Design 3D Structure

FEM-Design 3D Structure is an analysis and design software for complete structures containing a combination of shell elements, slabs, walls, bars, beams and columns with arbitrary loads. The steel and concrete modules allow code-specific design of all elements in the entire 3D-model.

Static-, dynamic- and seismic analyses can be performed as well as solving global stability problems. The powerful concrete module designs according to EC2 and Revit Structure.

Features
- Simple & user-friendly working environment
- Intelligent data converters UI
- Wizard for quick and easy input of slab and frame
- Point, line and surface supports with rigid, free or elastic stiffness components
- Relative constraints
- Section editor for defining sections for bars, beams and columns with arbitrary shapes
- Automatic generation of most unfavorable load combinations according to standards
- A powerful automatic optimal finite element mesh generator for any geometry
- No limit to the number of finite elements
- Peak smoothing
- Animation of displacement, vibration and stability results
- Analysis and steel design of straight bars with varying cross sections and bars with hollow space and stiffeners
- Steel design according to 2nd order theory and imperfections
- Concrete dome on commercial building in Dubai, UAE
- Frame and truss structures
- Concrete and reinforced concrete structures
- Reinforcement can be designed according to deflection
- Reinforcement results for a complete structure and a single bar
- Reinforcement design results for a T-section beam
- Steel design results. Above right: buckling check for a shell element beam
- Reinforcement design results for a T-section beam
- Documentation
- Portable Concrete dome on commercial building in Dubai, UAE
- Reinforcement design results for a T-section beam
- Second entrance to the underground train station at Triangeln, Malmö, Sweden. Integra Engineering AB

Static, dynamic (eigen frequencies), stability and seismic analyses can be carried out for the entire structure at once. The finite element mesh is automatically generated with optimal element sizes and automatic refinements at supports and element connections, freeing the user to focus on the engineering task. There is no limit to the number of elements.

Analysis

A number of display methods can be used for viewing results including graphs, contour lines, colour palettes in 3D for the whole structure, 2D for each wall or slab, or as arbitrarily placed sections.

Absolute or local maximum values can be automatically displayed and the user can point anywhere on the structure to get a numeric result value.

Concrete dome on commercial building in Dubai, UAE


AL HAWRAA Engineering Consultants for ICON Precast.

Concrete dome on commercial building in Dubai, UAE

Above left: wind load deflection. Above right: normal forces.

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