What's New in Scia Engineer 2011

Tractebel Engineering - Musée des Confluences - Lyon, France - image © COOP HIMMELB(L)AU

Dedicated software for structural analysis and design of concrete, steel, aluminium, composite and other structures

Scia Engineer

What's New in Scia Engineer 2011

Eurocodes Leadership

The obligatory use of the Eurocodes started in most European countries in 2010. They gradually become the standard solution in engineering practice.
Scia Engineer continuously follows the developments in the field of these European standards.
Scia Engineer version 2011 extends the current set of implemented National Annexes and integrates the latest versions including corrections sheets.
In addition, Nemetschek Scia continuously updates its specialised Eurocodes microsite devoted to the implementation of the Eurocodes in Scia Engineer:
http://www.eurocodes-online.com. On this website, you can find, among other information relating to the Eurocodes, real-life projects designed according to the Eurocodes and a collection of benchmarks.

Interoperability and openBIM

Scia Engineer is a pioneer in Structural BIM and continuously focuses on the overall interoperability with other CAD/CAE systems. Many direct links with wide spread CAD/CAE applications are available.
Besides this, Scia Engineer, as the first CAE program with the IFC 2x3 certification, promotes openBIM, which means the exchange of the model between different applications through a versatile and open standard.
Using the openBIM approach, a structural engineer can easily control his data flow process without affecting the working habits of others. The only extra step the other parties must do is import or export model data using IFC or another standard exchange format.
Version 2011 presents an extended interactive graphical environment for transformation of the structural model (typical for CAD applications) into the analysis model required for an accurate numerical analysis and precise and economical design. This is an integral part of the Scia Engineer BIM toolbox that helps users to streamline the process of converting the structural model into the analysis one including checking possible collisions between them.

Users' Experience

Version 2011 comes with a whole range of improvements that will streamline the everyday use of the program.
The improvements are based on remarks and comments made by our customers. They have been made in all parts of the program, which means that every user will benefit from at least some of them, regardless of the type of structures or material he or she deals with.

Modeller

The biggest innovation is the option to input specific data in an integrated Table Input which can be in some situations faster than graphical input.

Moreover, the data from the integrated Table Input can be copy+pasted into a sheet of MS Excel and vice versa.

Other improvements:

Modelling:
• End+Continue command for faster input of the same type of entities with different properties,
• New wizard for easy definition of user-defined attributes.

Definition of buckling system:
• The input of the buckling system is made in a new graphical window,
• Selected members can be excluded from the buckling system.

Import and export:
• Data imported from third party applications are now checked on the consistency of loads, load groups and load cases and completeness of cross references,
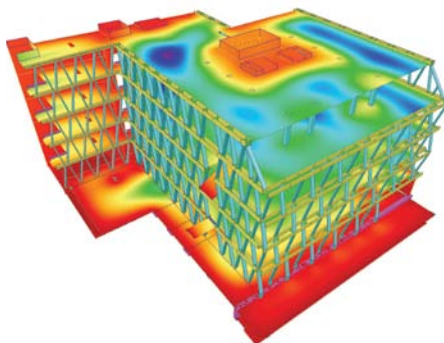• Exchange data through DWG 2011 format.

Display:
• Manual repositioning of labels in the graphical window,
• Use of colours with auxiliary lines.

Loads

One of the most time-consuming actions in the definition of a model is the input of loads. New extensions include:
• Definition of projection load on load panels,
• Adjustable precision for recalculation of panel-loads to load-bearing elements,
• Copying of loads from one load case to another.

Analysis

A lot of small, but significant, improvements relate to the core function of Scia Engineer, i.e. analysis.
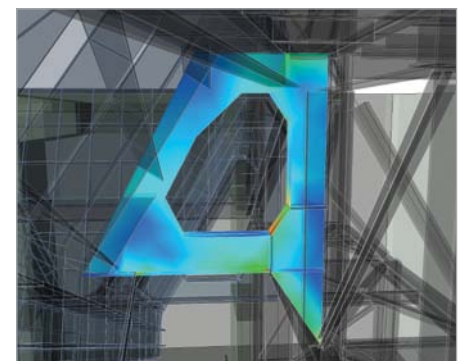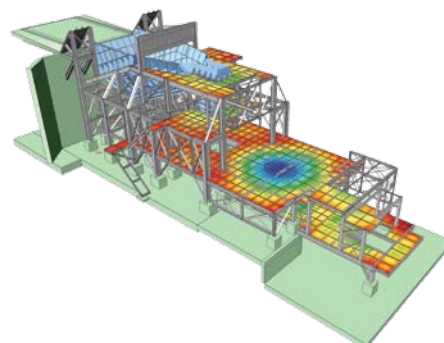
Calculation of sectional characteristics:
• Warping constant Iw by FEM calculation,
• Plastic moment of a cross section for asymmetrical cross sections.

Office Blocks Gedimino 35 - Lithuania (Conserela UAB)

University Campus - Slovak Republic (HESCON s.r.o.)
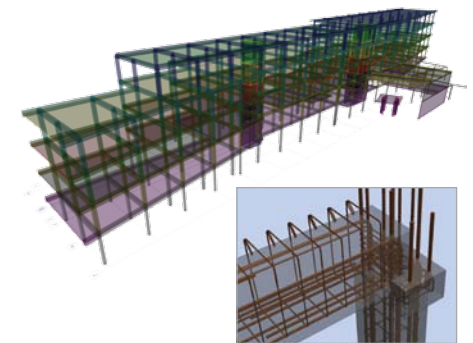
New Crushing Line - Belgium (EBC sprl)

FEM generation:
- Improved treatment of finite elements with "poor" shape,
- Direct selection of mesh nodes.

Results:
- Representation of results on 2D members in user-defined direction (incl. radial direction),
- User-defined LCS for curved surfaces,
- Output of result values within a certain interval, e.g. unity check between 0.75 and 0.95.

Design of 2D member as 1D member:
- Improved display of exported internal forces,
- Export to either a new project or to a template.

Document, Prints

Production of clear and comprehensive project documentation is also a very important part of the design process. Consequently, this part of Scia Engineer has been enhanced as well.

Graphical output:
- Templates for direct printing from the graphical window,
- Automatic generation of plain sections for Automated General Arrangement drawings.

Document:
- Bill of material includes user-defined attributes,
- Narrow tables can be split to multiple-column tables,
- The isoline-palette does not overlap with the structure itself anymore.

Steel

Steel designers will benefit from a wide range of various modifications, both code-related and general.

Cross sections:
- Library cross sections include manufacturers data for effective section properties,
- Newly extended library of pair-sections and asymmetrical sigma sections.

Eurocode:
- Optional neglecting of web crippling,
- Check of battened compression members,
- Additional methods to calculate LTB moment factors: ENV 1993-1-1 Annex F (current method); ECCS 119/Galea (new); Lopez, Yong, Serna (new),
- New method to calculate kc for lateral torsional buckling: EN 1993-1-1 table 6.6 (current); Determined from C1 (new),
- Plastic section check for other than I, RHS and CHS.

Joist (IBC code):
- Input and check of steel joists,
- Library of joists,
- Down-lift loading supported.

Program control:
- Possibility to interrupt the check in large projects.

Concrete

Also structural engineers involved in the design of concrete structures will find improvements just for their work.

Check:
- Crack calculation for 2D members (EC-EN) including graphical representation,
- More economical punching reinforcement,
- Decompression check and limit values of crack width for prestressed concrete (EC-EN).

Documentation:
- New manuals with practical examples for concrete columns, reinforced slabs and post-tensioned slabs and new benchmarks.

Aluminium
- Aluminium scaffolding member check and interaction coupler check,
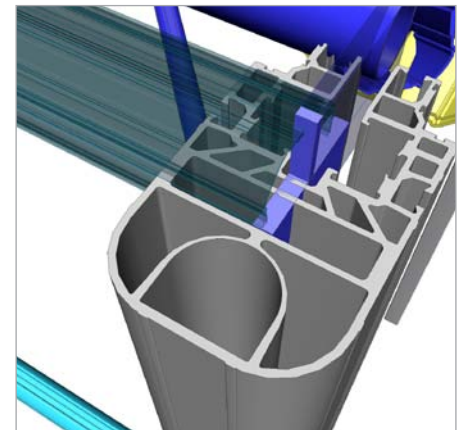- Optional interruption of the check for large projects.

Scaffolding
- Scaffolding check for circular hollow sections for both low and large shear force,
- Interaction coupler check.

Protection
- Automatic update of a license from the Scia server.

The Spectrum, Aluminium Space Frame Building - The Netherlands (Tentech bv)

Seismic Design in ECtools

Scia Engineer 2011 is offered (optionally) with a stand-alone application ECtools. This program is linked to Scia Engineer through a dedicated interface. ECtools is a special application for seismic design of concrete structures.

Free Scia Engineer Viewer

Scia Engineer 2011 offers a new mode: viewer. In this mode, which does not require a purchased license, the user can view the project prepared by another user (who has a standard commercial license of the program).

The viewer mode can be used to present the results of the design process to parties that do not have standard license of Scia Engineer. It is possible to view the model, review the results of calculation, evaluate the checks, regenerate document and drawings. All prints contain a watermark. It is not possible to run the calculation, perform checks or re-save the project.

Cloud Computing with Scia Desk

Nemetschek Scia is offering a new service for customers that will give them the opportunity to take the advantages of a new trend in IT - cloud computing. The new service is called Scia Desk and it allows the clients to store and share their projects "in the cloud", i.e. on a secure server on the internet.

This service is useful especially if several teams cooperate on one project or for customers who prefer to have easy access to their data from different places (computers).

Augmented Reality

Scia Engineer integrates an augmented reality tool ARMedia by Inglobe technologies. This tool visualises the 3D Scia Engineer model in an interactive environment. which moves the presentation of the project to a higher, impressive level.
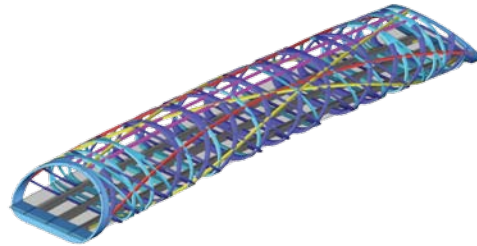
Winners Nemetschek Engineering User Contest 2011

Scia Engineer

Category: Buildings

Prodis plus s.r.o.
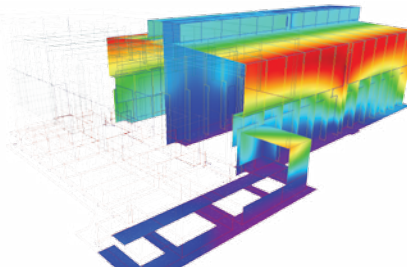*River House - Bratislava*
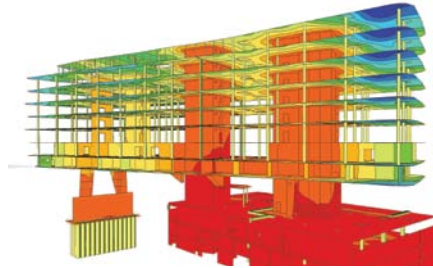
Category: Civil Structures

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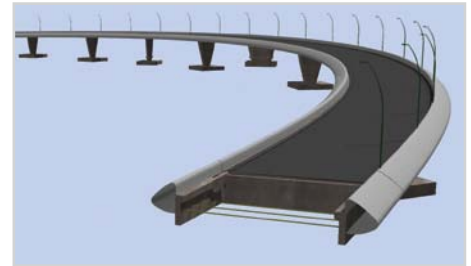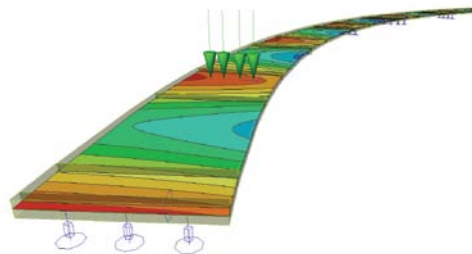*Hans Wilsdorf Bridge - Switzerland*

Category: Design of Industrial Buildings and Plants

STATIKA s.r.o.
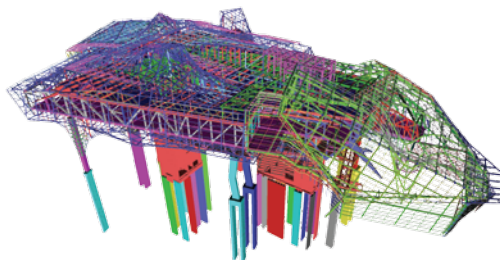*Warehouse for Spent Nuclear Fuel - Czech Republic*

Category: Industrial planning

Movares
Fly-Over - Kerensheide, The Netherlands

Category: Special Projects

Tractebel Engineering
The Confluences Museum - France

Special Jury BIM Prize

Inginerie Structurala srl
Orchidea Tower - Romania