December 2008

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Dear eNews reader,

Time flies …. 2008 is almost over. You still have until the end of this month to upload your project(s) and enter the **'Nemetschek Engineering User Contest 2009'**. When glancing at the submitted projects we can already state the fact that there is a manifest trend to use Scia Engineer more and more for the design and modelling of **high-rise buildings**, the motto seems to be "The sky is the limit".

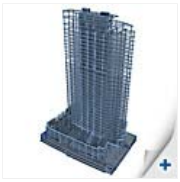
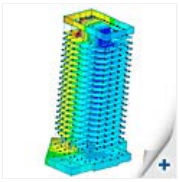
Further we show you the plans for the 'Olympic Winter Games' in Sochi (Russia) and for the client project of the month we put a bearing construction for the transportation of a yacht in the picture, a project by Saltwater Engineering (The Netherlands).

For now we already wish you joyful end of year celebrations and we meet again in 2009!

Corporate News: Designing high rise buildings with Scia Engineer

Looking at the incoming projects for the Nemetschek Engineering User Contest we see that more and more high rise buildings are designed by users of Scia Engineer. The Scia activities and our presence with an office in the UAE (Dubai) reinforce the need to enhance the design capabilities for such spectacular structures.

Tall buildings require very specific functionalities which are not readily available in the mainstream CAE software programs. A Scia task team has examined the requirements to assure that **Scia Engineer** (current and future versions) **gives an adequate answer to the technical requirements**. Tall buildings nearly always are built with a central core and surrounding columns. The core gives torsional resistance while the core and columns together give lateral resistance (mainly against wind & earthquake). The loading conditions are extreme: dynamic wind loading, seismic loading, P-Delta, foundation settlements, etc … Yet the most singular requirement concerns the construction sequence; due to the size of the project this sequence gives raise to important horizontal sideways. It is essential to be able to simulate creep, to incrementally add deformations and internal forces and to correctly model the vertical shortening of walls & columns.

Scia is proud to participate with its flagship software Scia Engineer to the design of impressive yet safe buildings.
Its general concept, based on an extremely fast finite element analysis core, permits for any complex geometries true non-linear static & dynamic simulations.

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Product News: Free loads become real load generators in Scia Engineer

In today's engineering practice it seems that the sky is the limit for the shape of structures.
In this article we show some examples of projects with amazing shapes.

For the engineer it is not easy to put loads (e.g. wind, snow, life loads, etc) on these types of structures. That is why Scia Engineer provides a tool that makes it easier: **Free loads**.

"Free loads" is a powerful tool for loading both flat and curved 2D members such as walls, slabs and shells.The definition of free loads is composed of:
- their geometry, which is independent of the geometry of structural members,
- the direction of the load effect,
- a list of 2D members which are influenced by the free loads.

Free loads are in fact easy load generators.

Original load / generated load
The input of free loads is easy. It was already available in previous versions. In Scia Engineer 2008.1 nice enhancements have been made for this load generator. Version 2008.1 introduces the possibility to generate loads directly on 2D members and to display them.

It will provide a clear view of which 2D members are loaded and in which direction. These Generated loads are displayed in the same way as the rest of generated loads (wind, snow, load panels).

The user can easily check if the input is correct or if some adaptations are needed. Free loads which are not projected to any 2D members are highlighted to warn users, that their definition is probably not correct.

Nemetschek Engineering User Contest 2009

Closing date is getting near. Subscribe today!

Latest News

► Nemetschek Scia presents the new **Scia Engineer Modules / Add-ons** section.. more..

► The **'Scia Movie Center'** is now fully integrated in our website and easier to use than ever. more ...

Nemetschek Scia Movie Center

► Nemetschek Scia is expanding its activities in the Gulf region by establishing a **representative office in Dubai** as of 1st November 2008. more..

► Nemetschek Scia presents the **new Scia Engineer 2008.1**. See the what's new page and PDF for full details.

► Let's **improve** both your company's as well as Scia's website **visibility** by putting links to each other. We invite all our **customers and partners** to use this link exchange form to make this trade possible.

► Dear customers, please note that our offices will be closed on **25th and 26th** December 2008 and on **1st and 2nd** January 2009. On **9th January** we gather for our yearly 'Kick Off Meeting' and we will stop our activities at 3.00 p.m. Support can be reached by e-mail.

Software Update

► Customers can download the following **latest service packs** in our secured download section.
- **Scia Engineer 2008.1.131**
- **ESA-Prima Win 3.100.230**
- **Allplan 2008.0c1**

Training

► **Scia Engineer**
- Basis course
- Concrete
- Dynamics

► **Allplan BIM**
- Basis course

Online training calendar 2008 and 2009. Subscribe online...

► "Did you post your question in our **Scia Forum**? We have a new moderator Mr. Mischa Nieuwboer." Register today...

Jobs

► Scia's customers are invited to add their job vacancies **free of charge** in our 'Scia Jobs Network'.

Nemetschek Scia Jobs Network

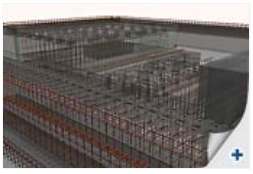
Please also check Nemetschek Scia's Job Openings. We have 9 vacancies. Good luck!

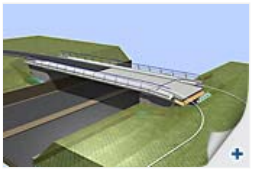
Scia Tribute

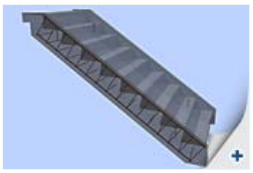
- "**Robert Hooke**, **a forgotten genius,** died 305 years ago. A tribute by our development partner Dr. ir. Eduard Hobst" more ...

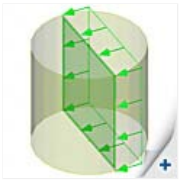
Software Gallery

- Some screenshots of **Allplan BIM Engineering**

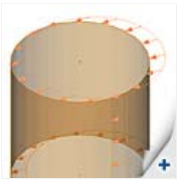




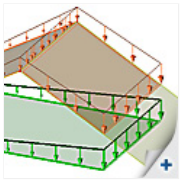




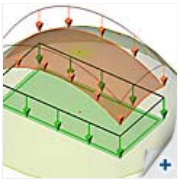
Definition of surface free load on a cylinder – wind load



Generated load on a cylinder



One definition of the free load can load more 2D members



Defined and generated load on a cupola

Generated loads in the Document
The side effect of the generation of "real loads" from free loads is the ability to print them into a document. Both possibilities are kept. The user can print the definition of free loads and/or generated loads related to 2D members.

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Market News: Call for investors for Sochi's Olympic infrastructure

The **XXII Olympic Winter Games** will be celebrated in **February 7-23, 2014** in the host city of **Sochi, Russia**. This will be the first time that Russia will host the Winter Olympics; the Soviet Union did however already host the 1980 Summer Games of 1980 in Moscow.

The government has estimated that the needed **200 separate construction projects will cost $12 billion**. The state is set to foot at least half the bill, with the other tranche to come from the private sector.

Olympstroy, the state corporation that is responsible for the coordination of the Olympic constructions in Sochi, failed to attract investors for some of the Olympic buildings. The tender's deadline was August 8th of this year but there were no proposals for four projects, including the ice arenas.

The Olympstroys' tender projects are tandems of Olympic sport centres plus hotels. Mr. Alexei Pokrov, President of the Investment Group says: the repayment period for the hotels is eight years and more, for the sports venues it would even be from 12 years on. By his calculations it could take more than 20 years to pay off the 'sport infrastructure and hotel' tandem.

Officials are not surprised about the outcome. The press secretary of the Ministry of Regional Development states on this subject that in many countries ice arenas are not paying off and are built with government funds.

However, the administration has to try to find private funds for these venues and so they will call for separate tenders for the hotels, while Olympstroy will finance the construction of the sports facilities. **The construction of 17 Olympic projects already got started, another 100 projects are in the engineering phase and around 60 more Olympics-related projects are applying for expert evaluation**.

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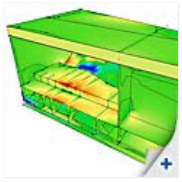
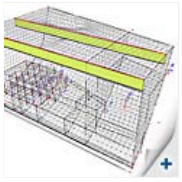
Saltwater Engineering (NL), Yacht on transport cradles – Analysis of internal structure

About Saltwater Engineering
Naval architecture and engineering company Saltwater Engineering BV is an engineering partner for companies working in shipbuilding and the maritime sector. They offer fast and flexible engineering solutions: from the initial design, all the way through the building process and up to final delivery of a vessel or marine product.

About the Project
The aim of this project was to prove that the internal structure of a luxury yacht would be strong enough to support the cradle forces exerted on the yacht as it was transported out of the production hall and on to the ship lift. Usually the cradles are placed directly under the transverse bulkheads of the vessel; in this case however the front cradles would have to be placed between the bulkheads to facilitate access to the ship lift. This resulted in a large force being introduced rather locally on to the vessel if compared to the normal situation of the vessel in the water.



Method of analysis
The calculations done with SCIA•ESA PT, now named Scia Engineer, covered all stresses occurring in the structure due to the introduced cradle load. The fore part of the ship was built up of mainly plates without additional stiffening. The reason for this was that it could be demonstrated that the main plate fields without the additional stiffening could support the introduced load. It can be concluded that the stiffened structure will meet the requirements. This results in the shell being modelled excluding the stiffeners. This approach has been chosen in order to ensure that the stress levels remain within the allowable limits.



SCIA•ESA PT (Scia Engineer) also allowed our customer to make accurate models of curved plates. They were created in order to determine deformations and internal stresses. This delivered accurate results since the interaction between the various plating and beams was taken into consideration.

Results
The results proved that the vessel would be able to support the introduced cradle loads between the bulkheads without any modifications. The conservative approach ensured that the actual deflections and stresses that occurred during the transport did not have any adverse effect on the yacht.

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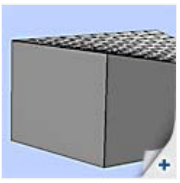
Tips & Tricks: Double-curved surfaces in Allplan 2008

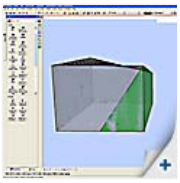
A surface is mathematically determined by 3 points. Suppose that we stretch one of the angular points of the upper surface, this will quite definitely lead to a buckling configuration.

In some cases however, a smooth transition or surface is required. This is possible by using the function **Three-point canopy, Four-point canopy** in Allplan 2008.

This function can be found in the **Bonus Tools**, tab **3D modelling**. Select the 3 (or 4) angular points of the 'canopy' and specify in the concerned dialogue the number of divisions in the length and transverse directions, as well as the sag percentage in these two directions. If we choose for a sag of 0% in both directions we obtain the screen in which one has the possibility to choose the type of the object: an area or an object.

When the last option is chosen, you have the possibility to create a 3D volume with the 'canopy' as upper part and z=0 as lower part. In the image below an example of such a volume is given at the right hand side.





It is also possible to create double curved surfaces in the other main directions (XZ or YZ), but here more interaction from the users is required. As the volume is always generated between the "canopy" and the level z=0, it is necessary to deduct the obtained result from the original volume. As is also the case with the other 3D modelling functions, **the creativity of the user is the only restriction for getting stunning results**.

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