SCIA scientific software

NL FR EN DE CZ

April 2006

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NEWS

- Customers can help each other. Join us making the **SCIA Forum** a real success! **Register today**
- SCIA values **your feedback**. Please use **this form** for sending us your remarks, ideas and suggestions which help us improve our services.
- Please note that the Belgian Office, **Support department** included, will be closed on the 25th and 26th May (Ascension Day).
- **New Service Release**: SCIA.ESA PT 5.2.318 and ESA-Prima Win 3.70.318 available on our **secured download-section**

EVENTS

- SCIA organizes a '**Free initiation day**' on 14th June 2006 in Gent (B) ... **subscribe**

TRAINING

- SCIA organizes a course '**SCIA.ESA PT, Concrete**' in Herk-de-Stad (B) on 20th April 2006. **Calendar & Subscription** ...
- On 27th April 2006, SCIA organizes a course '**Dynamics**' in SCIA.ESA PT in Arnhem (NL). **Calendar & Subscription** ...

JOBS

- SCIA is an **innovative company** in full expansion. We are constantly searching for new result-oriented co-workers looking for a **challenging career**. If interested, please fill out our **Online Application Form**, motivating your interest.

SCIA also highly encourages **spontaneous applications**.

GALLERY

- Design of a shop with **Allplan Architecture**

Dear SCIA eNews reader,

The winter has lasted long enough now. So as to set in spring we offer you some captivating and fresh articles, e.g. the cooperation between SCIA and Arcelor, the fact that China wants to build no less than 40 new airports in the coming 4 years, … As long as the Chinese keep the airspace open for the Easter bells, we really don't mind …

Much reading pleasure with this new edition!

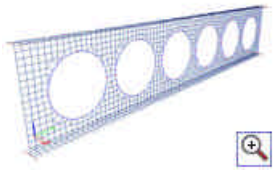
Arcelor and SCIA, a strong tandem for innovation

Arcelor Commercial Sections (**www.asc.arcelor.com**) lays large emphasis on innovation in the use of steel in the construction world. With high-grade steel, efficient new construction methods for floors, bearing structures of buildings, large spans, …, are pursued.

arcelor Steel solutions for a better world

The strategic cooperation with SCIA leads to **new products and services**.

Arcelor has a beautiful offer of software for predimensioning, free available on their Internet site. For construction components (for example a beam or a column) fast insight in feasible dimensions for **ACB's** (Arcelor Cellular Beams), **PMX / CCD** beams & columns carried out in mixed steel/concrete, is obtained. The integration of Arcelor dimensioning software in the general design surroundings of SCIA (SCIA.ESA PT) provide direct advantage: the designer is immediately able to compare several options: standard steel profiles, reinforced concrete, prestress concrete, mixed steel concrete implementation or special steel profiles.



Arcelor and SCIA promote an appropriate use of steel by creating insight in its bearing power, fire security and cost effectiveness.

Both companies will promote each other's products and technology to a wider public.

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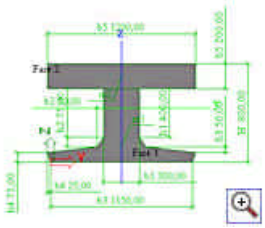
Linear and Non-linear construction stages in SCIA.ESA PT 5.2

The **linear construction stages** were developed for the '**Prestressing**' project in ESA-Prima Win.
It allows the user to built-up its structure (also 'Steel constructions'!) during the construction and service stages, thus allowing the user to model the entire life cycle of a structure.

This module allows the adding / removing of supports, 1D-elements and tendons. For each construction stage, safety factors can be set for the permanent and variable load cases including the prestress load cases, thus resulting in a bandwidth of min/max stresses/forces/deformations/reactions. Additionally the user is able to transform cross-sections by adding newly cast (concrete) or installed (steel/timber/other) materials during the construction stage. Thus easily a composite steel/concrete bridge can be modelled using this module. This module is based on superposing (linearisation) load cases and as a consequence, the user can easily verify results by adding and removing individual cases.



The **non-linear construction stages** were developed for the `**PIPFAS**' project in SCIA.ESA PT. Hereby we calculate tensions, forces and deformations in pipelines throughout the various phases that are to be analysed.
With a non-linear construction phase model, you calculate in fact a load case that changes as the phases develop. The history of the previous phase (i.e. the deformed structure, internal forces) is remembered for calculating a new construction phase. This module has been based on the 2nd order theory of Newton-Raphson with large bending deformations in the structure. This module cooperates with the physical and geometrical non-linearity's of SCIA.ESA PT. Particularly, several types of non-linearity can be taken into account: e.g. second order, non-linear point and line supports, not linear ground spring, tension member & compression elements.

The input of these phases works according to the same principle as and uses the same dialogues as the linear construction phases.

During the calculation non-linear combinations are generated, representing each one a construction phase. The user can examine the results in the standard ESA menus. The total forces, absolute positions of the members, relative deformations (i.e. with respect to the previous phase), the reactions of the support points, support lines and flexible ground, can be easily asked per phase, either graphically and/or in the form of a table.

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China, 40 new airports from now up to 2010

According to the national newspaper 'China Daily', China will invest 17,4 billion dollars in its airport infrastructures during the next five years, and they plan to build an extra forty airports to answer the strong growth of the air traffic.

The number of airports should thus increase from 142 today to 186 in 2010, according to Gao Hongfeng, vice-minister of civil aviation, as quoted by the 'China Daily'. The anticipated investment during the next five years is exceeding the sums devoted to air infrastructure of the last fifteen years: that is 14,9 billion dollars between 1990 and 2005.

Xian Xianyang Airport

Macau International Airport

Guangzhou Baiyun Airport

This effort in particular aims at facing the increase in the traffic expected at the time of the 'World Exhibition' of Shanghai in 2010, where some 70 million visitors are awaited, notes the newspaper.

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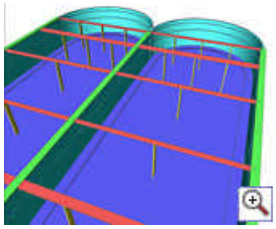
Customer's Project: Venting Shafts of the Wastewater Treatment Plant of Pierre Bénite

The IOA team is multidisciplinary. The company counts 30 people with various competences making it possible for IOA to incorporate themselves in various fields.

IOA combines four trades:

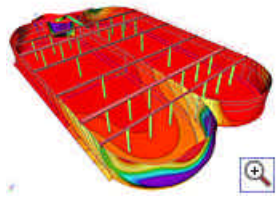
- complete work control or technical assistance with the project superintendent,
- assistance work control (technical aid in design phase and realization),
- laboratory/expertise, engineering and
- design department

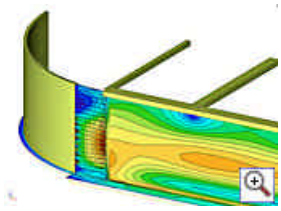


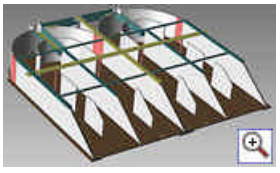
Project
Extension and modernization of an existing water treatment station in order to arrive at a processing capacity of 1 million equivalent/inhabitant in 2006.
Work description of IOA
Realisation studies of the reinforced concrete and prestress concrete of the ventilation ducts
Supervision: Le Grand Lyon
Project management: HB Architecte and Michel Lassagne Béture Cérec
Contractors: Stereau - GFC Construction

Description of the project
It regards four ventilation ducts of 30.000 m^3, each one grouped two by two (dimensions 110 m length X 70 m width X 10,5 m height for each pair) with longitudinal prestressing by post-tension of the straight envelope and of the upper ties.

Dimensions
Thickness of the external envelopes: 57 cm.
Thickness of the central envelope: 65 cm.
Thickness of the footings strip under the principal envelopes: 40 cm under the external envelopes and 50 cm under the central envelope.
Thickness of the thin interior foundation: 20 cm.
Envelopes poured in only one go; foundation by stud of 400 m^2.







Main quantities
Concrete: 11500 m^3
Reinforcements: 1520 tons

Savings made in terms of quantities compared to the preliminary draft
Concrete: 726 m^3 per basin
Reinforcements: 59 tons per basin

Use of two different models:

- a model entirely in shell elements for the determination of internal forces in the right parts
- a locally refined model in order to take into account the eccentricities between two walls and the diffusion of post-tension in these walls. The internal forces provided by the program then could be exploited to deduce the necessary reinforcement in these zones.

ESA-PRIMA Win Software has been used for this project.

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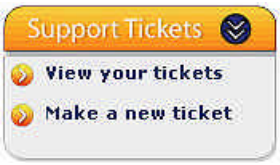
Tips & Tricks: Online Support, requesting "Ticket Status"

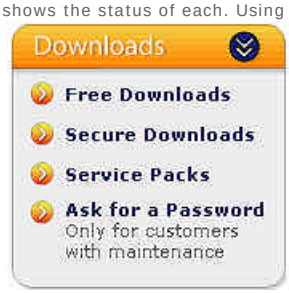
As a registered customer, it is possible to check the status of your tickets online using our website **www.scia-online.com**.

On the website, go to **Support > Online Support**

On the Support page, you can find the options **View your Tickets** and **Make a new Ticket**.



Using **View your Tickets** gives an overview of all your tickets send to support and shows the status of each. Using **Make a new Ticket** it is possible to create a new support question through the website. This also allows to add several attachments like project files.



In general, tickets created through the website or e-mail, which include a project file, can be solved more quickly than tickets created by phone calls. The reason is that most of the time, after a phone call, it is still needed to send in the project file. Therefore, the Customer Services Centre advises the use of the website or e-mail as primary ticket submission tools.

As specified, these services are only available for registered customers. Customers who do not yet have a username and password for the website can request this using the **Ask for a Password** option under the **Downloads** section of the homepage.

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