

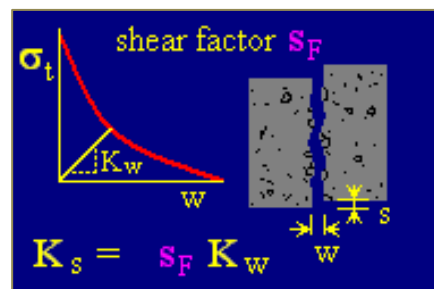
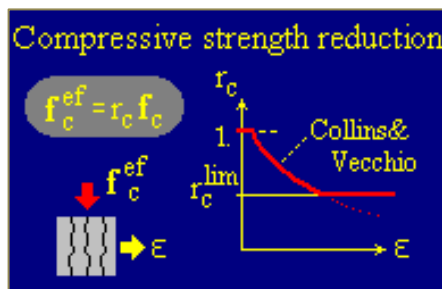
## ATENA Development

### ATENA - new version 4.2

We are continuously developing and improving our flagship product ATENA. In November 2009, the new version of ATENA 4.2 will be released.

This version includes the following improvements:

- new features in concrete material models based on the Modified Compression Field theory of Prof. Collins
  - compressive strength reduction due to cracking
  - shear strength of cracked concrete based on aggregate interlock
  - alternatively, compression and shear strength can be arbitrarily specified by user defined laws



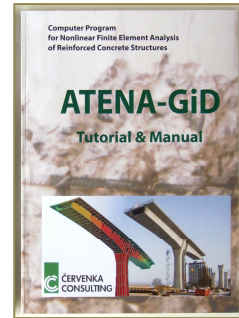
- improved ATENA-GiD interface. This interface that is used mainly in ATENA Science has been significantly improved to make it much easier for users to exploit the extensive capabilities of the advanced ATENA Science product.

**ATENA Science** makes it possible to perform advanced analysis of

- creep
  - thermal analysis including high temperatures
  - dynamics
  - statics including effects of high temperatures
- many corrections and improvements based on user suggestions, problems, and comments

## ATENA-GiD Tutorial

We want to support the growing number of ATENA Science users. The ATENA-GiD interface, which is used heavily for the data preparation, has been reworked and improved in the version 4.2. In addition, a new tutorial has been prepared, and is available for [download](#). This tutorial is an excellent step by step introduction to building numerical models for ATENA analysis in the GiD environment. This tutorial is also available as [book](#) that can be directly ordered from us by e-mail .

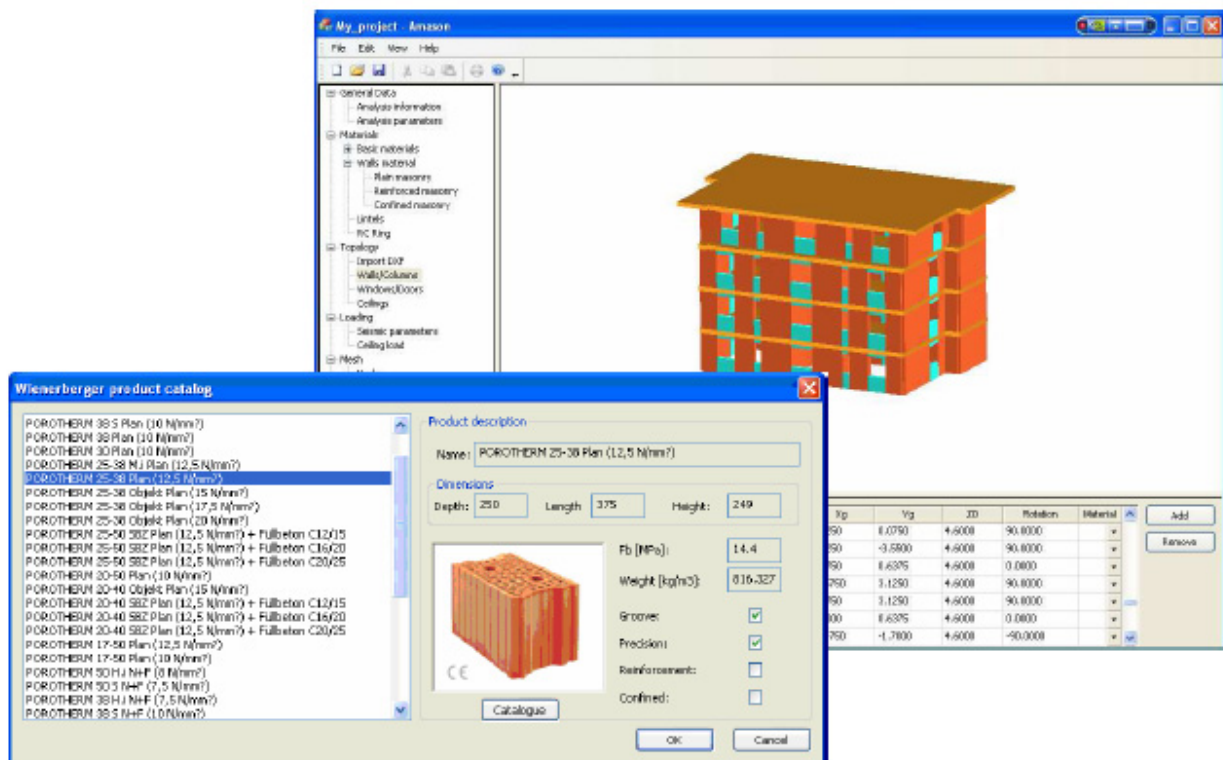


## Our Current Projects

### Program AMASON

We are happy to announce a totally new product in our portfolio of civil engineering programs. The project has a code name AMASON, and it is a result of a close cooperation with the company Wienerberger, major European manufacturer of masonry systems. The program will help engineers to design safe masonry buildings in the seismic regions of Europe. This development was initiated by the introduction of Eurocode 6 and 8 in Europe. These standards will become mandatory in the European Union starting from March 2010, and they will enforce strong rules for masonry buildings in seismic regions.

AMASON is using pushover analysis to check the seismic safety of masonry buildings in a graphical user friendly environment. The official release is expected in March 2010. The program will be localized into 10 European versions. The following screenshots give you a preview of the program look and functionality.

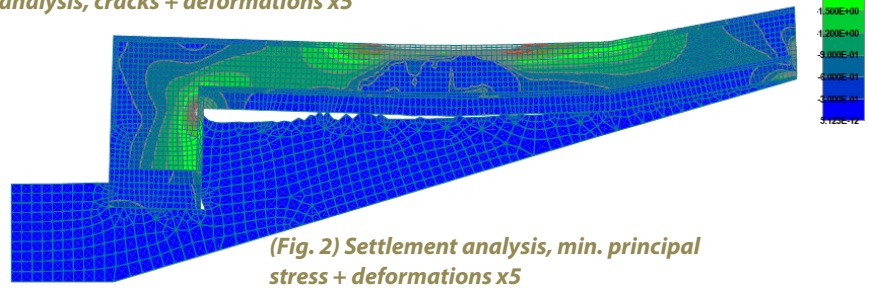
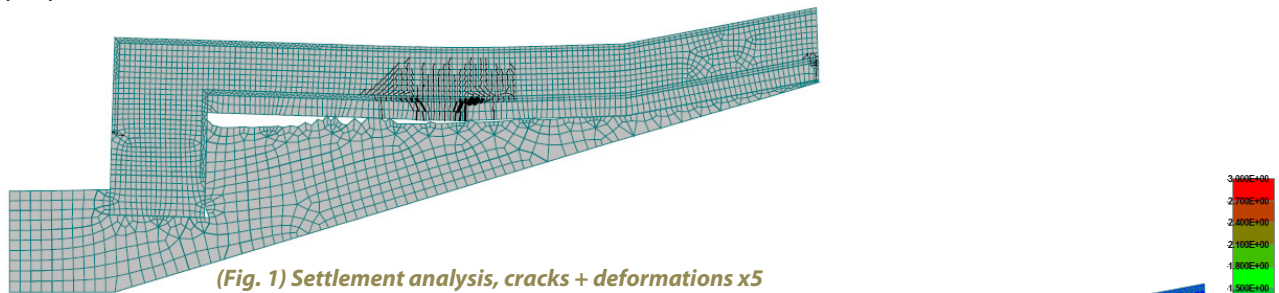


## ATENA Advanced User Seminars 2009

Our traditional user seminar in September 2009 was a huge success. The seminar was oriented towards advanced applications with ATENA Science such as creep, dynamic, and fire analyses. The last section of the three-day seminar was devoted to solving user problems and to the presentation of interesting ATENA applications. In the following part selected user projects are introduced:

### Mikael HALLGREN/Tyréns AB

Mikael Hallgren from Tyréns AB, Sweden presented an analysis of the influence of settlement and buoyancy caused by building a new railway tunnel under a lake on an existing concrete culvert. Warning and Limit values for deformations based on the limitation of surface crack widths were proposed.

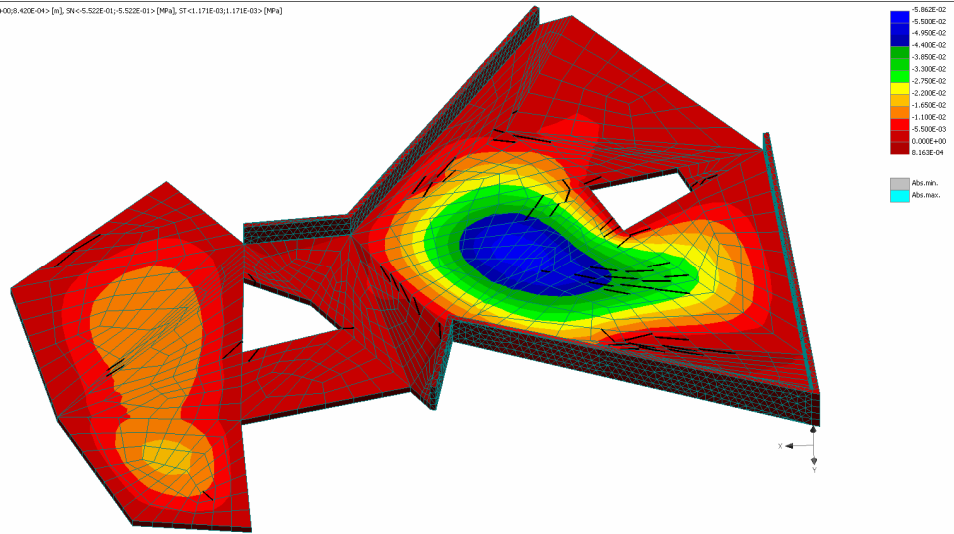


Another interesting model analyzed by Tyréns AB is the concrete structure of the visitor center of an oak biotopes nature reserve near Linköping. The complicated geometry with two trees growing through and extreme roof load has been modelled in ATENA 3D using shell elements and smeared reinforcement.



Project courtesy ARKITEKTSTUDIO WIDJEDAL RACKI BERGERHOFF, picture courtesy BLOOM IMAGES

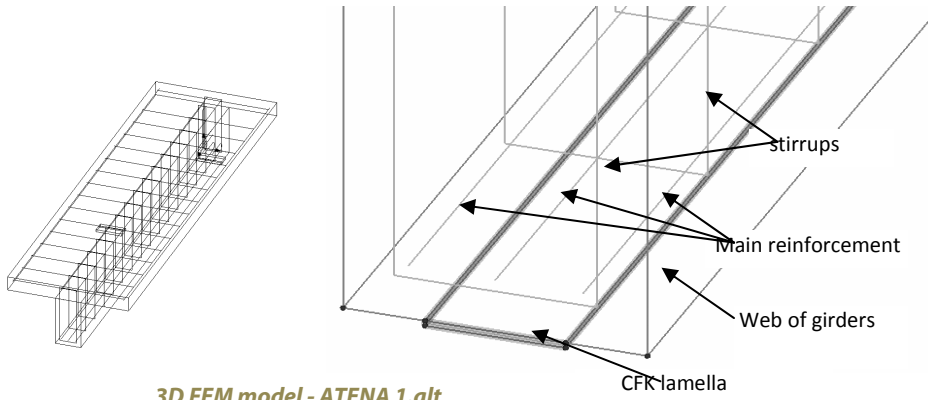
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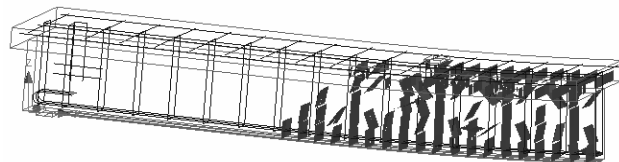
*Model of the visitor center in program ATENA. View of deflections and cracks*

**Peter KOTEŠ, Patrik KOTULA/University of Žilina, Civil Engineering Faculty  
 Department of Structures and Bridges**

Peter Koteš from University of Žilina presented an application of ATENA for strengthening of RC bridges by means of CFRP (lamels and sheets)



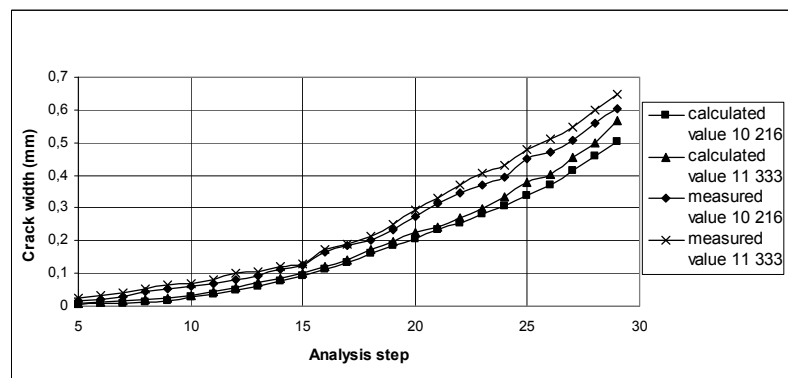
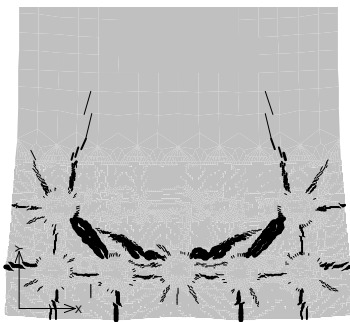
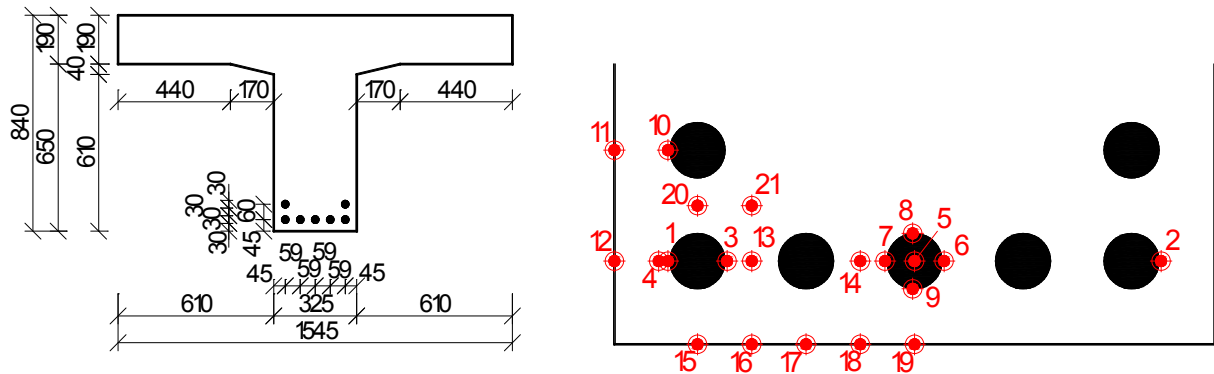
*3D FEM model - ATENA 1.alt*



*Crack pattern*

**Peter KOTEŠ, Miroslav BRODŇAN / University of Žilina, Civil Engineering Faculty  
Department of Structures and Bridges**

Another interesting application from Žilina (Slovakia) was using ATENA to simulate the reinforcement corrosion in reinforced concrete girder. The effect of corrosion was modeled in ATENA 2D by applying prescribed volume expansion of the steel reinforcement, known from experimental measurements of the corrosion process of steel reinforcement in reinforced concrete beams.



*Process of the crack width depending on analysis steps*

Due to the large number of participants it was necessary to divide the seminar into two parts. Because of that we are planning the following specialized ATENA seminars in the near future:

May/June 2010  
September 2010

The seminars will focus on the following topics:

- fibre reinforced concrete
- modelling structural strengthening in ATENA
- fire analysis
- advanced modelling topics in ATENA Science
- probabilistic and reliability analysis in ATENA

If you are planning to attend any of these seminars we would like to receive your feedback about the seminar topics. It would help us greatly if you fill in the attached **form** and return it by e-mail to [cervenka@cervenka.cz](mailto:cervenka@cervenka.cz). Many thanks for your soon reply.

We are preparing a special ATENA Advanced User Seminar in German language at BOKU University in Vienna. If you are interested to participate on this Seminar please contact us for further details. The program of this Seminar will be similar to the Workshop organized in September 2009 in Prague.

## Updates for ATENA users

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Current ATENA users with valid maintenance can always download the latest ATENA version directly from our web site: <http://www.cervenka.cz/downloads>. Please check this site regularly for new updates. Alternatively, you can request an installation CD by e-mail at [cervenka@cervenka.cz](mailto:cervenka@cervenka.cz).

## Where You Can Meet Us?

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### **16th Concrete Days** (CZECH REPUBLIC)

**Hradec Kralove, November 25 - 26, 2009**

**The Concrete Days** conference gradually builds an exclusive position among domestic conference events in this field due to its professional level, range of program and even a rich social part that enable an exceptional opportunity to meet before the end of the year for all those who work professionally or are interested in this field of concrete, concrete structures and building construction. We will present us at the Exhibition CONCRETE 2009 in the ALDIS Congress Centre in Hradec Kralove.

### **7th International Probabilistic Workshop** (THE NETHERLANDS)

**TU Delft, November 25 - 26, 2009**

A scientific paper related to Global Safety Factors will be presented by Vladimir Cervenka.

### **Computational Modelling of Concrete Structures** (AUSTRIA)

**Rohrmoos/Schladming, March 15 - 18, 2010**

**The EURO-C** brings together researchers and practicing engineers concerned with computational modelling of concrete structures, in order to review and discuss research advancements and to assess the applicability and robustness of methods and models for the analysis of complex concrete, reinforced concrete and prestressed concrete structures in engineering practice. We will have a company presentation at the exhibition in the Rohrmooser Erlebniswelt Centre in Rohrmoos/Schladming.