

## ATENA Advanced User Seminar 2009

We are pleased to invite you to our traditional **ATENA Advanced User Seminar 2009**. The seminar will take place at the facilities of the Faculty of Civil Engineering at the Czech Technical University in Prague, Czech Republic on **September 9-11, 2009**. The workshop will be targeted for advanced ATENA users, who want to learn more about the theoretical background of the new ATENA version 4. The main focus will be on the package ATENA Science, which includes a new and robust GiD interface, pre-post/processing and supports new analysis types such as dynamic, eigenvalue, creep, thermal or fire analyses. You can register on-line in our web: [www.cervenka.cz](http://www.cervenka.cz) or by e-mail by filling the registration form which you find at the address:

<http://www.cervenka.cz/news/atena-advanced-user-seminar-2009>

The seminar will cover the following topics:

### **Day 1: Advanced ATENA topics**

Concrete material models  
Fiber-reinforced concrete  
Reinforcement bond  
Interface modeling  
Fatigue material  
Strengthening  
ATENA-SARA - probabilistic modeling  
- reliability analysis

### **Day 2: ATENA-GiD interface**

GiD pre-processing  
Running analysis with AtenaWin  
Post-processing in AtenaWin, ATENA 3D, GiD  
ATENA Science - practical examples  
- Static analysis  
- Thermal analysis



*Photo from Adv. Seminar 08*

### **Day 3: Creep, Dynamic, and Fire Analysis**

ATENA Science advance analyses  
- Creep analysis  
- Dynamic analysis  
- Eigenvalue analysis  
- Seismic analysis



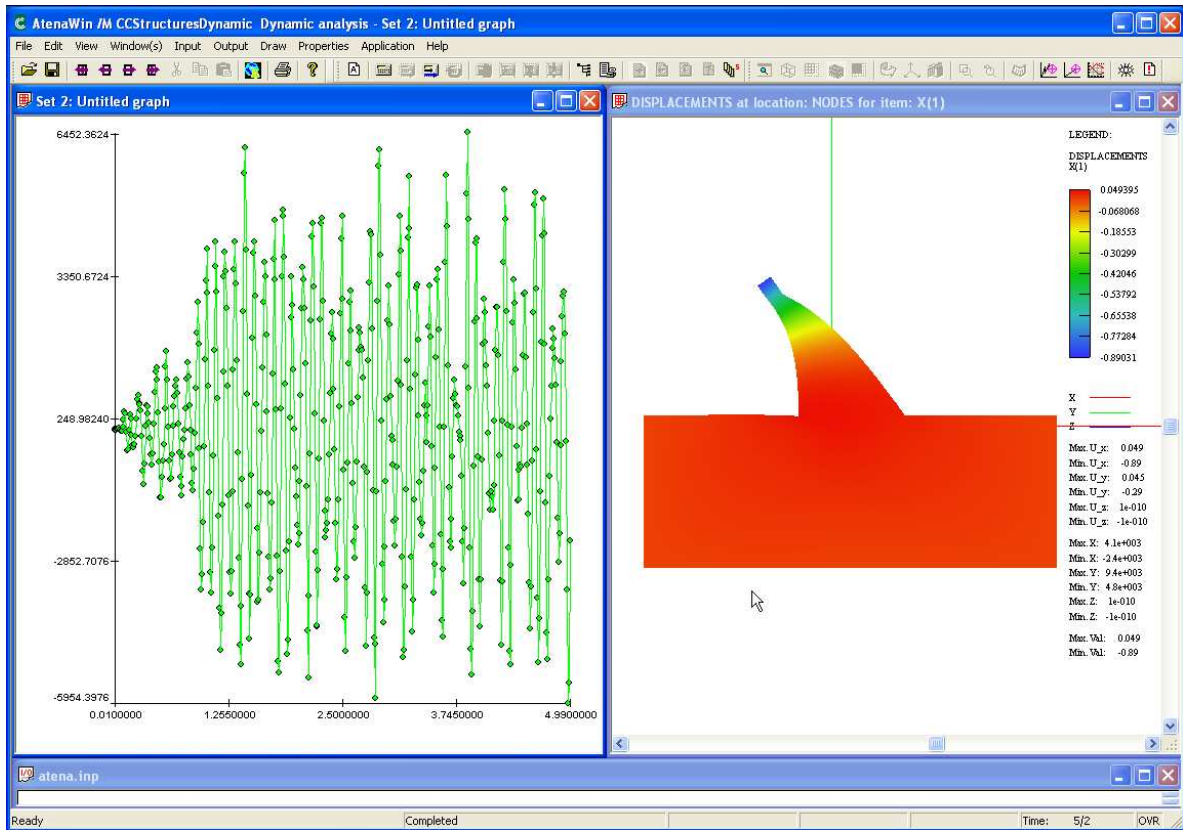
*Photo from Adv. Seminar 08*

## ATENA – NEW DEVELOPMENT

We are working hard on bringing the latest discoveries in the advanced numerical modeling of concrete structures to your desktop. We are continuously developing and improving our software. **ATENA version 4.1.3** has been recently released with the following new features:

### **Improved dynamic analysis**

The application of seismic accelerogram has been simplified. Accelerations are applied to a moving coordinate system of the model. The main advantage of this approach is that the calculated displacements and velocities are relative to the fundamentals. This is also a standard method used by many programs.

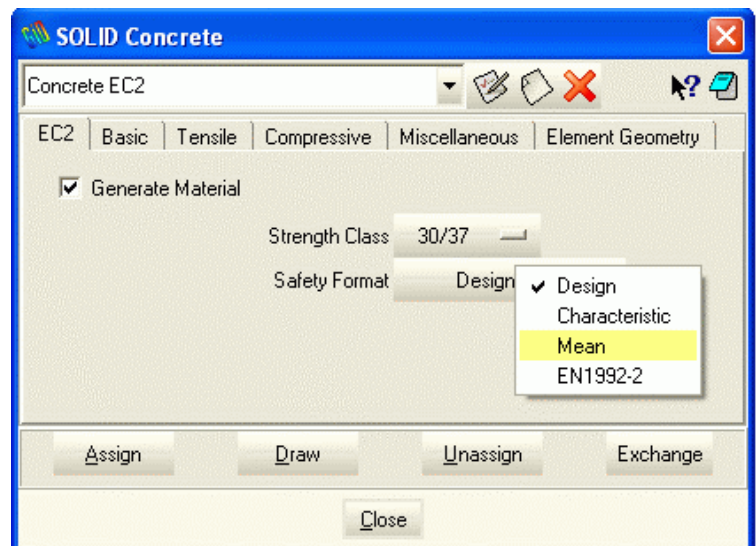


Seismic load applied in AtenaWin. Left window: The horizontal acceleration of the top of the dam. Right window: the deformed shape and horizontal displacements at  $t=5s$ .

## New features in ATENA-GiD

ATENA-GiD interface has been significantly improved as well:

- Concrete and reinforcement material properties automatically generated based on EC2 material types
- User friendly definition of temperature dependent materials (concrete, steel, reinforcement) including a direct support of EC2 standards
- Support for beam and shell elements
- New ETK (EN 1363, ISO 834) fire curve
- Improved support for post-processing in GiD
- Static, creep, transport, and dynamic calculation
- User friendly preprocessing using the full power of ATENA Science



## Other fixes and improvements

The reinforcement material can now be limited to tension. This makes it easy to model reinforcement members that are not active in compression.

## Updates for all users of ATENA

Current ATENA users with valid maintenance can download an update installation directly from our web site: <http://www.cervenka.cz/downloads>. Alternatively you can request an installation CD by e-mail.

## Your suggestions on ATENA development and language support

We are greatly interested in your comments and suggestions about our ATENA software. It helps us to improve and develop the software such that it meets your expectations and addresses your professional requirements. In this respect we would greatly appreciate if you would follow the link below and answer the short questionnaire (1 page) about ATENA. We plan to introduce a support for other languages and your input would be greatly appreciated.

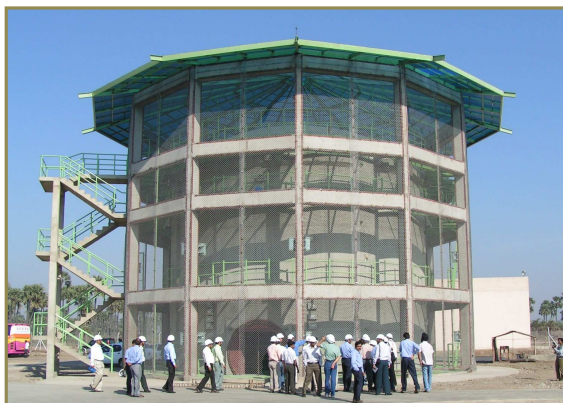
<http://www.cervenka.cz/user-survey>

## OUR CURRENT PROJECTS

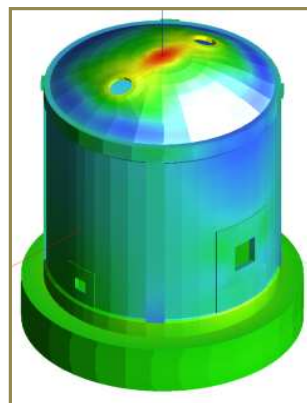
### BARC Containment Model Round Robin Analysis

Bhabha Atomic Research Centre in India, **BARC**, has launched an interesting and demanding project on testing a 1:4 scaled model of 540 MW pressurized heavy water reactor containment made of prestressed concrete. ATENA is one of the 16 participants in this project. The aim is to simulate the test and to predict the failure.

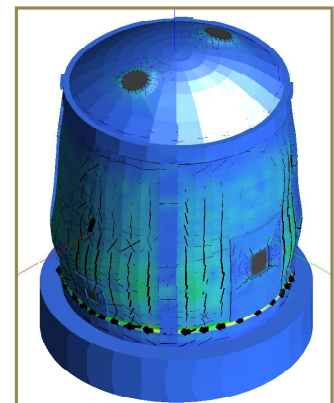
In January 2009 a pre-test meeting was organized in Bombay where the participants presented and compared their first results. This year the pressure test will be performed by BARC researchers and then our predictions will be compared with the reality



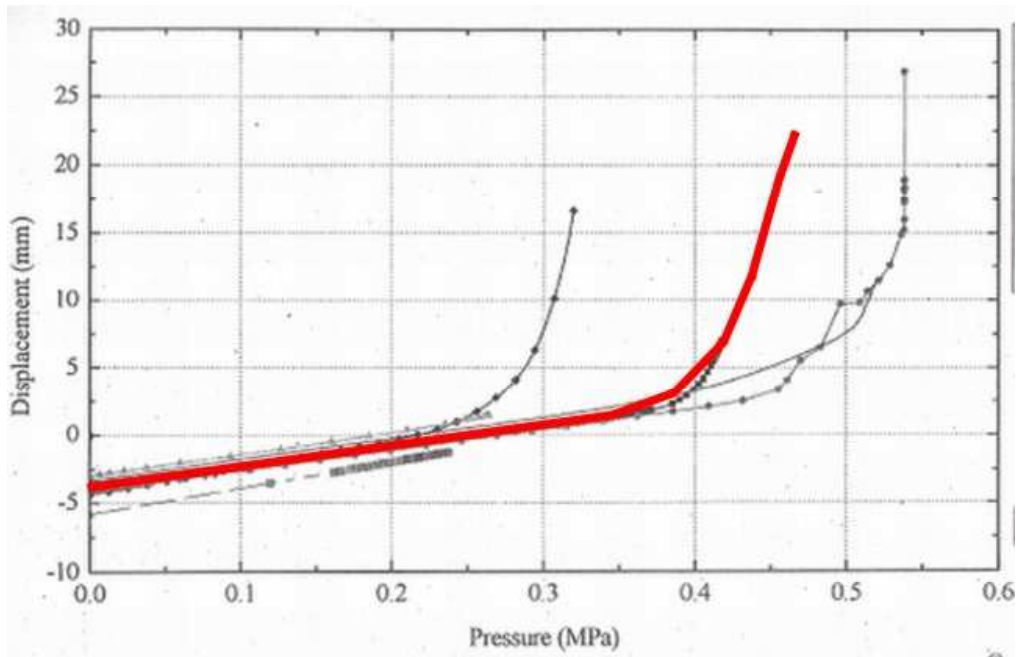
*1:4 model of the containment*



*ATENA numerical model*



*cracking pattern and deformations*



Comparison of predicted top dome deformations by all participants (ATENA results in red)

## PUBLICATIONS

We are proud to continuously publish our results in prominent professional journals and at international conferences. We would be greatly interested in your comments and opinion about our recent scientific publications:

### Three Dimensional Combined Fracture – Plastic Material Model for Concrete

Jan Cervenka, Vassilis K. Papanikolaou, Int. Journal of Plasticity, Volume 24, Issue 12, December 2008, ISSN 0749-6419

### Software ATENA for Design and Analysis of Concrete and Reinforced Concrete Structures (Software ATENA für Entwurf und Untersuchung von Beton- und Stahlbetonbauten)

Radomir Pukl, Beton- und Stahlbetonbau, Volume 104, Issue 4, April 2009, ISSN 0005-9900

## WHERE YOU CAN MEET US?

In the near future it is possible to visit our representatives at the following events and exhibitions where you can learn about more details about our new products and services.

### ✓ CONCRETE: 21ST CENTURY SUPERHERO (fib)

London, UK, June 22 – 24, 2009

**fib** and **The UK Concrete Society** are bringing together leading engineers, designers, contractors and researchers from the world of construction for **Concrete: 21st Century Superhero**, an international forum to debate and showcase of innovations in concrete design and construction. You can read



more on the web: <http://www.fiblondon09.com>

✓ **ICOSSAR 2009**

Osaka, JAPAN, September 13 –17, 2009

ICOSSAR'09 will encompass aspects of safety and reliability of structures and civil engineering systems. Special focus will be devoted to advanced technologies, analytical and computational methods of risk analysis, probability based design, life cycle cost analysis and damage assessment. We will participate in the Scientific Program of the Conference with the paper Assessment of structural performance considering spatial variability of material properties. More information about the conference you can read on the web: <http://www.sc.kutc.kansai-u.ac.jp/icossar2009>



✓ **CCC 2009**

Baden, AUSTRIA, September 24-25, 2009

The 5<sup>th</sup> Central European Congress on Concrete Engineering will take place in Congress Casino Baden. The purpose of the 5<sup>th</sup> Central European Congress on Concrete Engineering, devoted to the subject of "Innovative Concrete Technology in Practice", is to familiarize principals, contractors and planning engineers with state-of-the-art developments in applied research and the findings of construction practice in different countries. The more information you can find on the web: <http://www.ccc2009.at>

