

## Product news

### AmQuake

**The new version 1.24 of AmQuake has been released**

This version supports special University Licence. For only 390Euro it can be used by unlimited number of students. If you are interested in the new University licence, please contact us at [info@amquake.eu](mailto:info@amquake.eu). Student version is identical to the full version with the following restrictions:

- the name of the University is printed in all images and graphs
- the tables in the analysis protocol are limited to 10 rows

Program AmQuake was developed in cooperation between Cervenka Consulting and Wienerberger AG, Vienna. It allows engineers to design safe masonry buildings in seismic regions in accordance with the latest European standards. For more information see [www.amquake.eu](http://www.amquake.eu).

Only  
for 390 EUR

### ATENA

**ATENA version 4.3.0 has been released.**

Main changes since 4.2.7g:

- first 64bit version of the ATENA kernel, AtenaConsole, and AtenaWin (x64)
- completely new graph component in AtenaWin
- new model for hydration heat and improved moisture transport in concrete
- gap/contact elements with initial opening
- residual crack opening is possible through the new parameter UNLOADING in the NonLinearCementitious2 material family
- correction of the mesh generation problems with some ATENA 3D models
- improved import of results to GiD through the updated A2G utility, which now supports also the import of reinforcement results
- online check if a newer ATENA version is available for download
- many small fixes and improvements in the kernel, AtenaWin/AtenaConsole, ATENA 2D and 3D GUEs, ATENA-GiD, and in the installer

Users with valid maintenance can download the new version from our [website](http://www.cervenka.cz)

## ATENA Supports Engineers in Using Modern Methods for Seismic Assessment

Pushover analysis enables engineers to quantify the real structural behaviour taking into account the nonlinear effects such as cracking, reinforcement yielding, etc. At the same time this method still preserves reasonable computational cost compared to full dynamic nonlinear analysis. This method is also favoured by engineers due to its relative simplicity, and because it nicely works with the standard definition of the seismic loading by elastic response spectra.

In the last year, ATENA has been used successfully in several projects involving seismic assessment of existing safety critical structures from nuclear industry. The following figures show the main results from a pushover analysis of a reinforced concrete nuclear shielding structure and a full scale analysis of a reinforced concrete frame building, which houses the control room of a nuclear power plant.

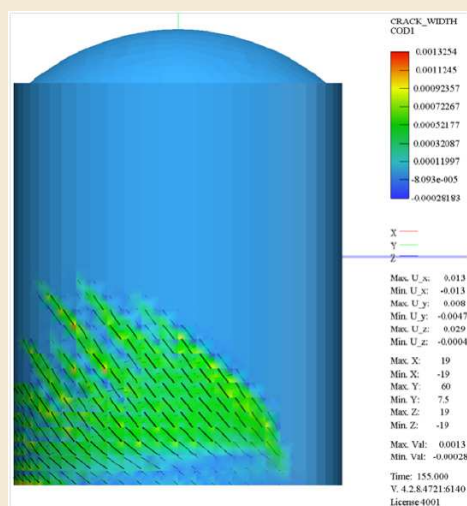


Fig. 1: Crack Development in the Shield Building

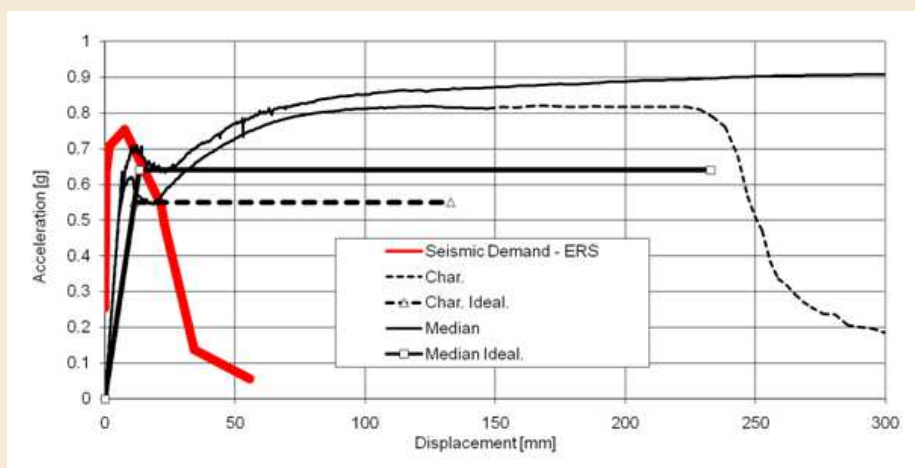


Fig. 2: Pushover Evaluation for Median and Characteristic Response

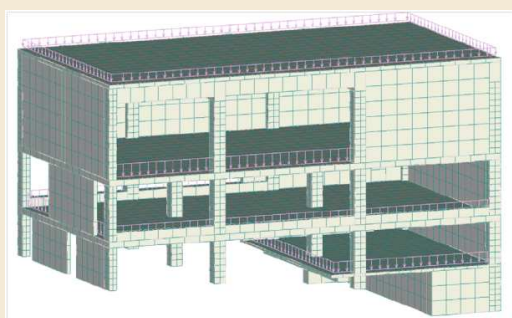


Fig. 3: ATENA Finite Element Model for the Reinforced Concrete Frame Structure

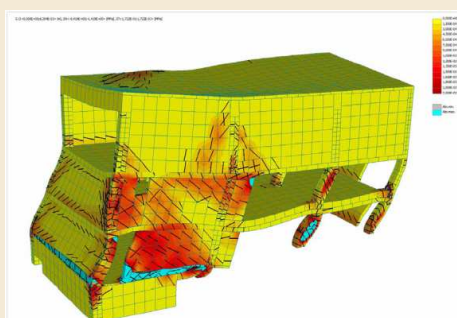


Fig. 4: Final Failure Mode of the Building Calculated by ATENA Showing Concrete Cracking and Crushing

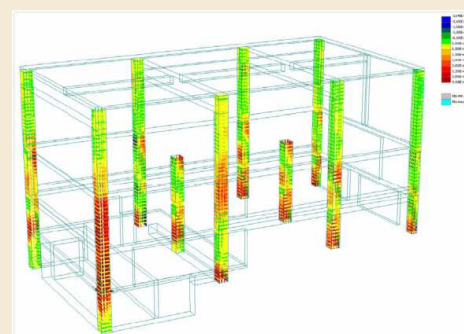


Fig. 5: Reinforcement Yielding in the Vertical Columns at Peak Load

## ATENA User Seminar

We would like to invite you to our regular training seminars:

**ATENA Advanced User Seminar 2012** in CZECH language (CVUT Prague, Faculty of Civil Engineering) Prague, Czech Republic, scheduled for June, 2012

**ATENA Advanced User Seminar 2012** in ENGLISH language (CVUT Prague, Faculty of Civil Engineering) Prague, Czech Republic, scheduled for September, 2012

During these seminars you will have the unique opportunity to try the new product **ATENA Studio** (see below) and learn about the new features in ATENA and SARA programs.

For further information please see our webpage [www.cervenka.cz](http://www.cervenka.cz), where recent information about the seminar will be given.

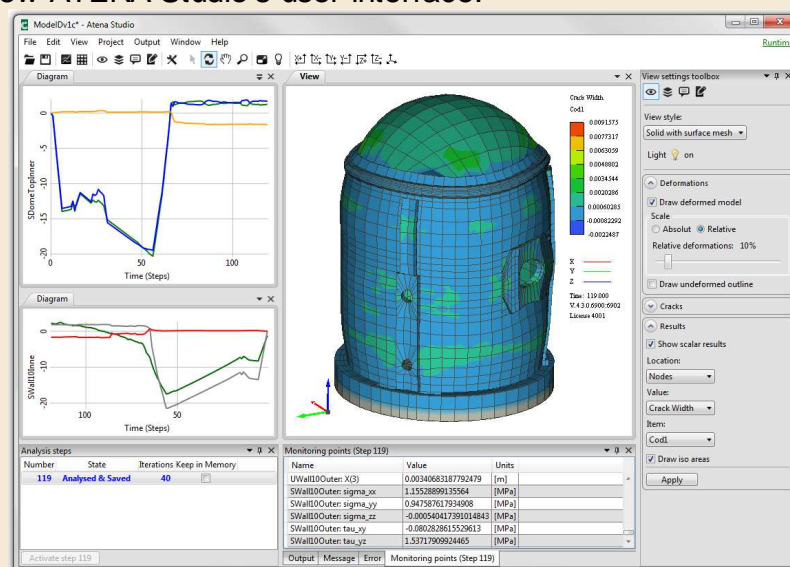
## ATENA Studio

**ATENA Studio** will be our new powerful product. Its main goal is to merge both ATENA product lines - ATENA Science and ATENA Engineering - in one compact, simple and beautiful environment. In the near future, ATENA Studio is going to improve your productivity with new intuitive design and guide you throughout entire analysis lifecycle.

Some of today's basic features:

- simple and intuitive user interface (no need to read manuals)
- new project file - keeps all references to all data relevant to your project
- fast and fluent work with diagram windows
- improved result management compared to AtenaWin
- all postprocessing features are available also during runtime
- unified and powerful environment for all analysis types: 2D, 3D, statics, dynamics, creep, heat & moisture transport
- and many more

Here is a quick look at new ATENA Studio's user interface:



## Recent Articles

PUKL, R., CERVENKA, V., CERVENKA, J., Realistische Modellierung von Werkstoffen und nichtlineare Bemessung von Strukturen im Betonbau, Neue Normen und Werkstoffe im Betonbau, Holschemacher, ISBN 978-3-89932-306-1, pp. 41-56

PRYL, D., Tensile Fatigue of Concrete – Modelling High-cycle Experiments, Applied Mechanics 2011, Velké Bílovice, 18–20.4.2011, ISBN 978-80-87434-03-1, pp. 167

JANDA, Z., Nonlinear Analysis of Reactor Containment in Software ATENA, Applied Mechanics 2011, Velké Bílovice, 18–20.4.2011, ISBN 978-80-87434-03-1, pp. 75

CERVENKA, J., Design of prestressed concrete nuclear containments assisted by numerical simulations, fib symposium Prague 2011, ISBN 978-80-87158-29-6, pp. 839, 8-10. 6. 2011

CERVENKA, V., SISTEK, M., CERVENKA, J., Verification of global safety assisted by numerical simulation, fib symposium Prague 2011, ISBN 978-80-87158-29-6, pp. 62, 8-10. 6. 2011

CERVENKA, V., GANZ, H-R., Development of VLS prestressing anchors supported by laboratory tests and numerical simulations, Beton TKS, 2/2011, Czech Republic, ISSN 1213-3116. pp.34-39. (In Czech)

CERVENKA, J., Nonlinear Analysis of Pre-stressed Concrete Nuclear Containments, Nordic Concrete Research, Proc. of XXI Nordic Concrete research Symposium, Hämeenlinna, Finland 30.5-1.6.2011, ISBN 978-82-8208-025-5, ISSN 0800-6377. pp.437-440.

JENDELE, L., ŠMILAUER, V., ČERVENKA, J., Multi-scale Analysis of Heat Transport in Hydrating Concrete Structures, Civil-Comp Press, 2011, Proceedings of the Thirteenth International Conference on Civil, Structural and Environmental Engineering Computing, B.H.V. Topping and Y. Tsompanakis, (Editors), Civil-Comp Press, Stirlingshire, Scotland

PUKL, R., HAVLASEK, P., SAJDLOVA, T., CERVENKA, V., ADVANCED MODELLING OF FIBRE REINFORCED CONCRETE STRUCTURES, Proc. of fib Congress, Balatonfüred, Hungary, Editors: G. L. Balazs and E. Lubloy, ISBN 978-963-313-036-0, pp. 381

CERVENKA, V., Design of fibre reinforced concrete structures based on nonlinear analysis, Proc. Fibre Concrete 2011, Prague, Czech Republic, 8-9.9.2011, ISBN 978-80-01-04836-8, pp. 11

PUKL, R., SAJDLOVA, T., HAVLASEK, P., Identification of Material Parameters for Nonlinear Modeling of Fibre Reinforced Concrete Structures, Proc. Fibre Concrete 2011, Prague, Czech Republic, 8-9.9.2011, ISBN 978-80-01-04836-8, pp. 45

CERVENKA, J., JANDA, Z., PRYL, D., Numerical Simulation of Prestressed Concrete Containments, Proc. SMIRT 21, New Delhi

JANDA, Z., ČERVENKA, J., Numerická analýza tlakové zkoušky experimentálního kontejnmentu v laboratořích BARC, Indie, Konference o bezpečnosti komponent jaderných zařízení, Srní 2011, Česká Republika,

JÄGER, A., CERVENKA, J., JANDA, Z., KASA, M., LU, S., AmQuake – Eine Software für Mauerwerks-Design auf Grundlage der Push-Over Analyse nach Eurocode 6 und 8, D-A-CH Tagung, 15-16.9.2011

## Where You Can Meet Us

### *Upcoming Events, Exhibitions and Presentations*

**Betontag** April 19-20, 2012 Austria, Vienna

International congress, which offers a high quality scientific program and introduces the very latest technological trends, project previews, construction and planning for traffic infrastructure engineering as well as building construction.

**SSCS** May 29 - June 01, 2012 France, Aix-en-Provence

International conference on numerical modeling strategies for sustainable concrete structures.

**Fib** June 11-14, 2012 Sweden, Stockholm

International Federation for Structural Concrete organizing international event: Concrete Structures for Sustainable Community.

**REC** June 13-15, 2012 Czech Republic, Brno

5th International Conference on Reliable Engineering Computing.

**IABMAS** July 08-12, 2012 Italy, Como

The 6th International Conference on Bridge Maintenance, Safety and Management (IABMAS 2012) is organized on behalf of the International Association for Bridge Maintenance And Safety.

**WCCM** July 08-13, 2012 Brazil, Sao Paulo

The 10th world congress on computational mechanics.

**Ph.D. Symposium** July 22-25, 2012 Germany, Karlsruhe

9th fib International PhD Symposium in Civil Engineering at the Karlsruhe Institute of Technology.

**ECCOMAS** September 10-14, 2012 Austria, Vienna

The European Community on Computational Methods in Applied Sciences (ECCOMAS) organizes the 6th European congress on computational methods in applied science and engineering.

**BEFIB** September 19-21, 2012 Portugal, Guimaraes

The 8th International Symposium on Fibre Reinforced Concrete: Challenges and Opportunities.

**IALCCE** October 03-06, 2012 Austria, Vienna

Third International Symposium on Life-Cycle Civil Engineering.

**CCC** October 04-06, 2012 Croatia, Plitvice

The 8th Central European congress on concrete engineering: Durability of concrete structures.

**Concrete days** November Czech Republic, Hradec králové

The 19th Czech concrete day about the most significant concrete structures in the Czech Republic from the last year and also the most important innovations in the fields of design and execution of concrete structures.