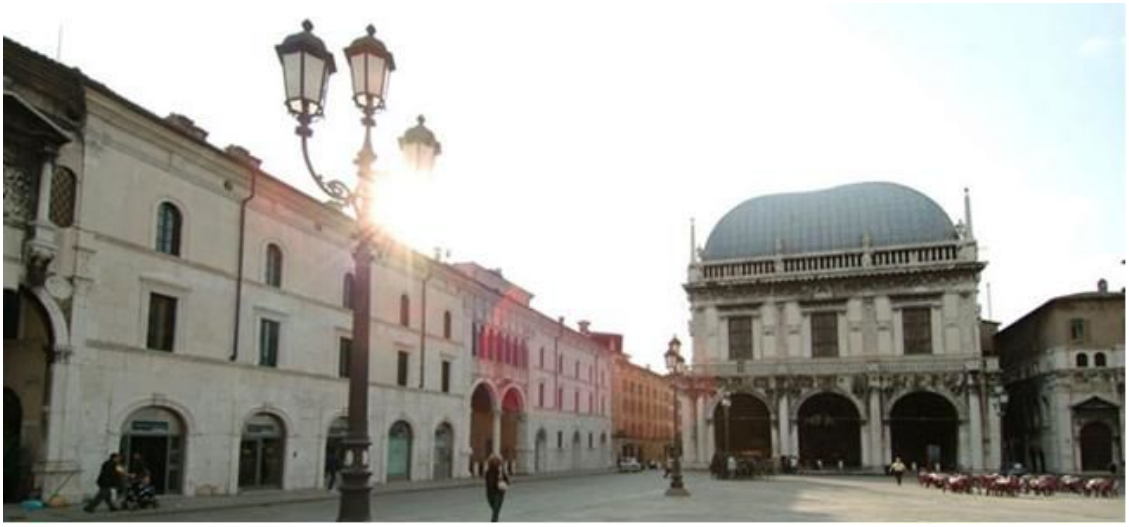
DIANA Users Association

Annual report 2010

08-11-2011



Brescia, International Users Meeting 2010

Dr. ir. A. de Boer
Chairman DIANA User's Association

Annual Report 2010

Contents

1 Aim of the Association

The members of the Association are all users of the DIANA software package of TNO-DIANA BV.
In this capacity, they have a considerable interest in gaining knowledge in the Finite Element Method and (numerical) mechanics, as well as in the further development and extension of DIANA.

To achieve this, the Association fulfils a coordinating role by taking stock of the members' needs in terms of research and development, and initiating new projects.

The Association is also a meeting place for the exchange of experiences with the software package.

Furthermore, TNO-DIANA BV utilizes the Association to inform the Users on the DIANA package development progress.

2 Executive Committee 2010

During this reporting year, the Executive Committee consisted of:

Chairman:	dr.ir. A. de Boer, Centre for Infrastructures, Ministry of Infrastructures and Environment, Utrecht
Secretary/ Treasurer:	ir. N. Vollema, Royal Haskoning, Nijmegen

The Executive Committee has mainly dealt with the following:

1. Discussion on continuing new research projects on the basis of a national and international user's wish list.
2. Organizing of the 7th International DIANA Users Meeting in Brescia, Italy.
3. Continuing contributing to the set-up a database with publications related to DIANA or FEA.
4. Extending the existing e-mail database with foreign users in the fields of concrete, concrete mechanics, bridges and tunnels.
5. Preparation of general and technical meetings.
6. Association finance.
7. Progress in an international response/discussion forum around developments now and in the future related to Users Wishes.

3 Actitivities

3.1 General

The Association holds a general meeting of members twice a year, followed if possible by a technical meeting (lectures). In 2010 there was held only one technical meeting, a lecture evening.

3.2 Technical lectures 25 November 2010

Ecobarrier Schiphol
Ernst Klamer, Royal Haskoning

Predicting bearing capacity of metal structures loaded by fire
Johan Maljaars, TNO-Bouw

Boxgirder bridge re-examination
Chantal Frissen, TNO DIANA BV

Viaduct Zuidpoort
Bart Peerdeman, Royal Haskoning

Guideline nonlinear analyses beams
Max Hendriks, TU-Delft

3.3 International DIANA Users Meeting, 17-18 June 2010, Brescia, Italy

Lectures

Building code developments for FRC structures
Giovanni Plizzari, University of Brescia, Italy

Structural Analysis of Historical Masonry Structures: Concepts and Possibilities
Paulo B. Lourenço, University of Minho, Portugal

Autogenous deformations analysis in Mose concrete caissons
Gabriele Bertagnoli, Politecnico of Torino, Italy & Nadia Zoratto, Technital S.p.A, Italy

Numerical and experimental cyclic response of alternative column to foundation connections of reinforced concreteprecast structures: comparisons
Roberto Nascimbene, Eucentre , Italy

Design and Static and Dynamic Analysis of Khudoni Arch Dam
Anton Tzenkov, Stucky Ltd, Switzerland

Nonlinear time history analysis of soil-structure interaction for a curved bridge situated on the Italian Tollway A25 using Diana
Mario Ucci & Guido Camata, University of Chieti-Pescara, Italy

FEM modelling for St+B11. Petersburg Flood Barrier
Dirk Jan Peters, Royal Haskoning, The Netherlands

Nonlinear finite element analyses for reinforcement optimization of concrete structures
Luca Facconi, University of Brescia, Italy

In-plane shear and out-of-plane bending – examining hidden margins
Coen van der Vliet, Arcadis, The Netherlands

Settlement induced damage modelling of historical buildings: the bell tower of the "Basilica dei Frari" in Venice
Filippo Lorenzoni, University of Padova, Italy

Long-term behaviour of a viaduct made with precast beams
Carlos Sousa, University of Porto, Portugal

Nonlinear static and dynamic analysis of a historical masonry tower
Valentina Mariani, University of Florence, Italy

3D modelling of building damage due to tunnelling
Giorgia Giardina, Delft University of Technology, The Netherlands

Masonry Veneer walls subjected to earthquake loading
Karl Vincent Hoiseth, NTNU, Norway

Guidelines for non-linear finite element analysis of RC structures
Beatrice Belletti, University of Parma, Italy

Incorporating the FEM Analysis in the digital design process
Eliza Guse, Delft University of Technology, The Netherlands

Numerical study on shrinkage cracking in concrete slabs on grade
Giuseppe Tiberti, University of Brescia, Italy

Probabilistic approach to the modelling of reinforced concrete elements using Gaussian random fields
Geoffrey Decan, University of Gent, Belgium

Design of frozen soil bodies for the construction of crosspassages between two shield driven tunnels in the Amsterdam North/South metro line
Arjan Luttikholt, Witteveen + Bos, The Netherlands

FEM modelling for block revetment research
Dirk Jan Peters, Royal Haskoning, The Netherlands

Experimental and numerical comparison of different test methods for fibre-reinforced concrete
Linn Grepstad Nes, NTNU, Norway

On the evaluation of shear critical beams with sequentially linear analysis
Anne van de Graaf, Delft University of Technology, The Netherlands

4. Financial aspects 2010

DIANA Ontwikkelingsvereniging

Balans behorend bij financiëel jaarverslag 2010

	31 december 2010		31 december 2009	
ACTIVA				
VASTE ACTIVA	€ 0		€ 0	
		€ 0		**€ 0**
VLOTTENDE ACTIVA				
Vorderingen (debiteuren)	€ 284		€ 0	
Liquide middelen	€ 35,431		€ 38,321	
Transitoria	€ 0		€ 0	
		€ 35,715		**€ 38,321**
TOTAAL ACTIVA		**€ 35,715**		**€ 38,321**
PASSIVA				
EIGEN VERMOGEN	€ 35,043		€ 36,437	
		€ 35,043		**€ 36,437**
KORTLOPENDE SCHULDEN				
Transitoria (crediteuren)	€ 672		€ 1,884	
		€ 672		**€ 1,884**
TOTAAL PASSIVA		**€ 35,715**		**€ 38,321**

Winst- en verliesrekening behorend bij financiëel jaarverslag 2010

		2010
Netto omzet	€ 13,700 +	
Kostprijs van de omzet	€ 9,976 –	
BRUTO OMZETRESULTAAT		**€ 3,725**
Personeelskosten	€ 5,566 –	
Algemene beheerskosten	€ 1,476 –	
Financiële baten	€ 1,924 +	
Financiële lasten	€ 0 –	
RESULTAAT UIT GEWONE BEDRIJFSVOERING		**-€ 1,394**
Buitengewone baten en lasten	€ 0 +	
RESULTAAT		**-€ 1,394**

Penningmeester DOV:	Accordering kascommissie:	
	handtekening:	handtekening:
Nynke Vollema opgemaakt 19 juni 2011	naam: Sander Meijers	naam: Ostar Joostensz
	datum: 27 juni 2011	datum: 20-06-2011

5. Publication list

TNO Earth, Environmental and Life Sciences

1) Orlic, B., ter Heege, J., Wassing, B. (2010). Assessing the integrity of fault- and top seals at CO2 storage sites. Proc. of the 10th International Conference on Greenhouse Gas Control Technologies (GHGT-10), Amsterdam. Energy Procedia.

2) Feasibility study P18: Top Seal and Fault Integrity Study, (2010). CATO-2 report, WP3.01-D06 (confidential).

3) Dynamic Fault Seals, (2010). TNO-report, TNO-060-UT-2011-00891 (confidential)

TNO DIANA BV

1) N.B. Yenigul(1), A.S. Elkadi(2), 3D Settlement analysis using GIS and FEM: a case study in Sliedrecht area, the Netherlands, Numerical Methods in Geotechnical Engineering 2010, isbn 978-0-415-59239-0, pag. 529-534.

2) Guo, Ultimate load of RC structures, TNO Report 2010-DIANA-R003.

3) K. Hoiseth, The total-strain crack model Test methods related to post cracking lateral effects, TNO Report 2010-DIANA-R004.

Chalmers University

1) Coronelli, D., Zandi Hanjari, K., Lundgren, K., and Rossi, E., 2010. Severely Corroded Reinforced Concrete with Cover Spalling: Part 1. Crack Initiation, Crack Propagation and Cover Delamination. Joint Fib-RILEM Workshop on Modelling of Corrosion Concrete Structures, 22 - 23 November, 2010, Madrid, Spain, pp. 195-205.

2) Zandi Hanjari, K., Lundgren, K., and Coronelli, D., 2010. Severely Corroded Reinforced Concrete with Cover Spalling: Part 2. Anchorage Capacity. Joint Fib-RILEM Workshop on Modelling of Corrosion Concrete Structures, 22 – 23 November, 2010, Madrid, Spain, pp. 207-217.

3) Zandi Hanjari, K. 2010. Structural Behaviour of Deteriorated Concrete Structures. Doctoral Thesis, Ny serie Nr 3142, Department of Civil and Environmental Engineering, Division of Structural Engineering, Chalmers University of Technology.

Full text at http://publications.lib.chalmers.se/records/fulltext/129454.pdf

University Minho

1) Peña, F., Lourenço, P.B., Mendes, N., Oliveira, D.V., Numerical models for the seismic assessment of an old masonry tower, Engineering Structures, 32(5), p. 1466-1478 (2010).

2) Barbosa, C.S., Lourenço, P.B., Hanai, J.B., On the compressive strength prediction for concrete masonry prisms, Materials and Structures, 43(3), p. 331-344 (2010).

3) Mendes, N., Lourenço, P.B., Seismic assessment of masonry "Gaioleiros" buildings in Lisbon, Portugal, Journal of Earthquake Engineering, 14, p. 80-101 (2010).

4) Oliveira, E.A., Silva, R.M., Lourenço, P.B., A Numerical Study of Non Structural Masonry Walls with Bed Joint Reinforcement subject to Flexure, Proceedings of the Tenth International Conference on Engineering Computational Technology, September 14-17, Valencia, Spain, CD-ROM, paper 354 (2010).

5) Barbosa, C.S., Hanai, J.B., Lourenço, P.B., Numerical validation of compressive strength prediction for hollow concrete blocks, Proceedings of 8th International Masonry Conference, Dresden, Germany, July 4-7, p.1625-1634 (2010).

6) Lourenço, P.B., Ramos, L.F., Trujillo, A., In situ investigation and stability analysis of Famagusta Churches, Proceedings of 8th International Masonry Conference, Dresden, Germany, July 4-7, p. 1973-1982 (2010).

7) Ramos, L.F.; Aguilar, R.; Alaboz, M.; Lourenço, P.B., Dynamic Identification and FE Updating of S. Torcato Church, Portugal, IMAC-XXVIII: A Conference and Exposition on Structural Dynamics, February, Jacksonville, USA, 2010.

Delft University of Technology

1) A.V. van de Graaf, M.A.N. Hendriks, J.G. Rots, "Saw-tooth softening models for discrete cracks and slip planes in concrete and masonry". Abstract in proceedings of the IV European Conference on Computational Mechanics, ECCM 2010, Paris, France, May 16-21, 2010.

2) S. Invernizzi, D. Trovato, M.A.N. Hendriks, A.V. van de Graaf, "Sequentially linear modelling of local snap-back in extremely brittle structures", in Computational Modelling of Concrete Structures; Editors: Nenad Bicanic et al., EURO-C 2010, Rohrmoos/Schladming, 15-18 March 2010, Austria, 647-654, 2010.

3) M.A. Kyriakides, M.A.N. Hendriks, S.L. Billington, "Simulation of Masonry Beams Retrofitted with Engineered Cementitious Composites", in Computational Modelling of Concrete Structures; Editors: Nenad Bicanic et al., EURO-C 2010, Rohrmoos/Schladming, 15-18 March 2010, Austria, 655-664, 2010.

4) A.V. van de Graaf, M.A.N. Hendriks & J.G. Rots, "A discrete cracking model for sequentially linear analysis", in Computational Modelling of Concrete Structures; Editors: Nenad Bicanic et al., EURO-C 2010, Rohrmoos/Schladming, 15-18 March 2010, Austria, 409-418, 2010.

5) Beatrice Belletti, Max A.N. Hendriks, Joop A. den Uijl, Cecilia Damoni, "Developing standardized guidelines for safety assessment of shear-critical RC beams based on nonlinear finite element modeling", proceedings of the 3rd fib International Congress - 2010, Washington, 30 May - 2 June 2010.

6) Marios A. Kyriakides, Max A.N. Hendriks, and Sarah L. Billington, "Experimental and analytical investigation of masonry beams retrofitted with ECCc under out-of-plane bending", proceedings of the 9th HSTAM International Congress on Mechanics Limassol, Cyprus, 12 - 14 July 2010, 2010.

7) M. A. Kyriakides, M. A. N. Hendriks and S. L. Billington, "Simulation of unreinforced masonry beams retrofitted with Engineered Cementitious Composites in flexure", Journal of Materials in Civil Engineering (ASCE), under review.

8) Verstrynge, E., Schueremans, L., van Gemert, D., Hendriks, M.A.N., "A 3D damage model to describe creep deterioration in historical masonry", In: 8IMC, Dresden, 8th International Masonry Conference 2010 in Dresden, Editors: Prof. Dr.-Ing.Wolfram Jäger, Barry A. Haseltine, Anton Fried, ISBN: 978-3-00-031381-3, Vol. 1, pp. 267-276.

9) Giardina, Giorgia, Hendriks, Max A.N., Rots Jan G., Marini, Alessandra, "A 3D damage model to describe creep deterioration in historical masonry", In: 8IMC, Dresden, 8th International Masonry Conference 2010 in Dresden, Editors: Prof. Dr.-Ing.Wolfram Jäger, Barry A. Haseltine, Anton Fried, ISBN: 978-3-00-031381-3, Vol. 2, pp. 1163-1170.

10) Giorgia Giardina, Max A.N. Hendriks and Jan G. Rots, "Numerical analysis of tunnelling effects on masonry buildings: the influence of tunnel location on damage assessment", SAHC, Advanced Materials Research, Vols. 133-134 (2010) pp 289-294

11) J. Rots, B. Belletti, C. Damoni, M. Hendriks, "Development of Dutch guidelines for nonlinear finite element analyses of shear critical bridge and viaduct beams", In "Shear and punching shear in RC and FRC elements", fib Bulletin, No 57 (2010), pp.139-154.

12) E. Verstrynge, L. Schueremans, D. Van Gemert, M.A.N. Hendriks, "Modelling and analysis of time-dependent behaviour of historical masonry under high stress levels", Engineering Structures, article in press.

13) S. Invernizzi, D. Trovato, M.A.N. Hendriks, A.V. van de Graaf, "Sequentially linear modelling of local snap-back in extremely brittle structures", Engineering Structures, submitted.

14) B. Belletti, M. Hendriks, C. Damoni, "Sviluppo di linee guida per l'analisi nonlineare ad elementi finiti di strutture in c.a.", Proceedings of the 18th CTE conference, Brescia, November 11-13, 2010, Also: European Journal of Environmental and Civil Engineering, selected for publication.

15) Calvin C.K. Leung, "Reinforcing glass with glass - Application of transparent reinforcement in structural glass beams", MSc thesis, TU Delft, 2010.

16) Michiel Kortenaar, "Application of Ultra High Strength Concrete in LNG Terminals", MSc thesis, TU Delft, 2010.

17) Niels Kostense, "Feasibility of a full concrete viaduct modelled with volume elements" , MSc thesis, TU Delft, 2010.

18) Sebastiaan Ensink, "Simulation of steel-concrete bond-slip with sequentially linear analysis using interface elements" , MSc thesis, TU Delft, 2010.

Rijkswaterstaat, Centre for Infrastructure and Delft University of Technology

A. de Boer, “Design strategy structural concrete in 3D”, PhD Thesis, Delft University of Technology, Delft

P.C.J. Hoogenboom A. de Boer, “ Computation of optimal concrete reinforcement in three dimensions”, Euro-C, Saalbach-Hinterglem, Austria, March 2010

Ane de Boer, Cornelis van der Veen, “Safety aspects re-examination of existing reinforced concrete bridge structures”, fib 2010 Washington, USA, may 2010

Yuguang Yang, Joop den Uijl, Gerrie Dieteren, Ane de Boer, “Shear capacity of 50 years old reinforced concrete bridge deck without shear reinforcement”, fib 2010 Washington, USA, may 2010

C. van der Veen en A. de Boer, “Ten years of monitoring a HPC bridge”, Short and Medium span bridges, Niagara Falls, Canada 2010

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