SERIES
SEISMIC ENGINEERING RESEARCH INFRASTRUCTURES FOR EUROPEAN SYNERGIES

Workpackage [WP4/NA3]

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ABSTRACT

The 2nd Workshop of SERIES Project took place in Ohrid (MK), hosted by the Institute for Earthquake Engineering and Engineering Seismology (IZIIS, Skopje (MK)). It was held on September 2nd, 2010, in conjunction with the 14th European Conference on Earthquake Engineering (14ECEE). The Workshop was on the “Role of Research Infrastructures in Performance-based Earthquake Engineering”, including also a special session on “Qualification of Research Infrastructures”. It attracted renowned experts from around the globe who presented about 20 invited contributions, and a fairly large audience. The Proceedings of the Workshop were published by Springer as Volume 22 of its Geotechnical, Geological and Earthquake Engineering series (hardcover, approx. 400 pages, ISBN: 978-94-007-1976-7).
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1. 2010 SERIES International Workshop “Role of Research Infrastructures in Performance-based Earthquake Engineering”, September 2nd, 2010 (Ohrid, MK)

1.1. SUMMARY

The 2010 International Workshop, which was held in conjunction with the 14th European Conference on Earthquake Engineering (14ECEE), was an opportunity to present the first outcomes of SERIES and its contribution so far towards Performance-Based Earthquake Engineering. The SERIES Workshop in Ohrid (MK) pooled together the largest European seismic testing facilities and experts in experimental earthquake engineering from Europe and the USA to present recent research achievements and to address future development, given that the concept and methodologies for performance-based earthquake engineering have developed – apart from the analytical/numerical research, large-scale seismic testing has been recently adopted.

The papers that were presented during the Workshop were published by Springer as Volume 22 of its Geotechnical, Geological and Earthquake Engineering series (hardcover, approx. 400 pages, ISBN: 978-94-007-1976-7). They comprise of 19 papers mainly by SERIES partners, and experts from Europe and the USA. Editing the Proceedings was a joint effort by Michael N. Fardis (UPAT) and Zoran T. Rakicevic (IZIIS).
1.2. CONCLUSIONS

The conclusions of the 2010 International Workshop, as approved by the General Committee of SERIES, are the following:

I. Qualification of Research Infrastructures

- Industry needs:
  - Qualified testing facilities per ISO 9001 and EN ISO/IEC 17025;
  - Standardized test methods and estimates of measurement uncertainty.
- Reference for accreditation: European cooperation for Accreditation, national accreditation bodies.
- Only applicable standards for certification/accreditation: ISO 9001, EN ISO/IEC 17025
- European seismic testing facilities lack official certification but have a Quality Management System and meet most accreditation requirements per EN ISO/IEC 17025
- Specific standards for qualification of seismic research (testing) facilities need to be developed.
- Some standards for seismic testing of certain types of structural components exist; more are needed, especially for structural systems.
- A Common Protocol for the qualification of seismic research testing facilities is a proper step towards their official accreditation, according to standards yet to be developed.

II. Transnational Access (TA) to European Research Infrastructures

- The wider European S/T community of Earthquake Engineering responded to the possibility of access to the SERIES facilities with a large number of high quality proposals coming from large transnational teams of researchers.
- Following the high demand for TA during the SERIES project, there will be an increasing demand for TA in the future, including an increased support for the evolution of EC8.

III. Need for Future Developments

- To keep up with developments in other parts of the world (US, Pacific area), and to meet the increasing RTD demands of its own S/T community and industry, Europe should work towards building a State-of-the-Art Seismic Testing facility, comprising a versatile combination of Shake
Tables and Reaction Systems, supplemented with numerical and hybrid testing capabilities, advanced control, etc.

- The work underway within the framework of FP7 project EFAST is a good basis towards this direction.
2 Workshop Programme

SERIES Workshop:
“Qualification of Research Infrastructures” and
“Role of Research Infrastructures in Performance-based Earthquake Engineering”

Thursday, September 2, 2010, 8.30-19.30, Hotel Granit, Ohrid (MK)

Programme

Part I: “Qualification of Research Infrastructures”

1. 08.30 – 08.45: Opening – Welcome

2. 08.45 – 09.10: Impact of qualification of experimental facilities in Europe on Industry, Standardization and Accreditation Bodies, Large Testing Facilities. (M.Zola - P&P LMC [IT])

3. 09.10 – 09.35: Testing Procedures and Standards Requirements in Large Testing Facilities. (H.Sucuoglu – METU [TR])

4. 09.35 – 10.00: Instrumentation and Equipment Management in Large Testing Facilities. (O.Bursi – Univ. of Trento [IT])

Coffee Break (10.00 – 10.15)
5. 10.15 – 10.40: Nonstructural Testing Research Needs to Support Performance Based Seismic Design (J.Gatscher - Schneider Electric - USA)

6. 10.40 – 11.05: Shaking Table_3D-Vision & remote control for qualification of components and systems at ENEA C.R. Casaccia (G. De Canio - ENEA C.R. Casaccia – [IT])

7. 11.05 – 11.30: On Quality Enhancement in Seismic Testing Laboratories based on Efficient IT Infrastructure Deployment (G.M. Atanasiu, M.H. Zaharia – Technical Univ. of Iasi [RO])

8. 11.30 – 12.00: Panel Session: Development of a Common Protocol for the qualification of research infrastructures in earthquake engineering.

9. 12.00 – 12.05: Closure

Part II: “Role of Research Infrastructures in Performance-based Earthquake Engineering”

1. 13.00 – 13.20: How can experimental testing contribute to performance based earthquake engineering (F. Taucer, A. Pinto – JRC [IT])

2. 13.20 – 13.40: Towards a new European facility for advanced seismic testing (E-FAST) (F. Marazzi, I. Politopoulos, A. Pavese – CEA, JRC, EUCENTRE [FR, IT])

3. 13.40 – 14.00: EUCENTRE TREES LAB: Laboratory for Training and Research in Earthquake Engineering and Seismology (S. Peloso, A. Pavese, C. Casarotti – EUCENTRE [IT])

4. 14.00 – 14.20: Experimental Earthquake Engineering Research at LNEC (E. Coelho, A. Campos Costa, P. Candeias – LNEC [PT])


Coffee Break (15.00 – 15.15)

7. 15.15 – 15.35 Use of large numerical models and high performance computers in geographically distributed seismic tests (U. Dorka, F. Obon – Kassel Univ. [DE])
8. 15.35 – 15.55 Experimental evaluation of the seismic performance of steel buildings with passive dampers using real-time hybrid simulation (T.Karavasilis, J.Ricles, R.Sause, C.Chen – Univ. of Oxford, Lehigh Univ., San Francisco State Univ. [UK, USA])

9. 15.55 – 16.15 Performance limits for reinforced concrete columns under severe displacement cycles (B.Acun, H.Sucuoglu – METU [TR])

10. 16.15 – 16.35 Experimental Study of Progressive Collapse of Conventional and Post-Tensioned Steel Frames (A.Tsitos, G.Mosqueda – Univ. Buffalo [USA])

11. 16.35 – 16.55 Shaking table testing of models of historic buildings and monuments - IZIIS’ experience (V.Shendova – IZIIS [MK])

12. 16.55 – 17.15 Experimental investigation of the behaviour of pinned beam–to–column connections to pure shear monotonic and cyclic excitation (I.Psycharis, H.Mouzakis, G.Kremmyda – National Technical Univ. of Athens [GR])

Coffee Break (17.15 – 17.30)

13. 17.30 – 17.50 Current State of Art of the Role of Research Infrastructures on Performance Based Earthquake Engineering and Future Perspectives for Europe (B.Ozturk – Nigde University [TR])


15. 18.10 – 18.30 Laminar Shear Box Design for Soil-Structure Interaction Studies (L.Dihoru, M.Dietz, A.J.Crewe, C.A.Taylor – Bristol Univ. [UK])


17. 18.50 – 19.10 Innovative Artificial Intelligence Methods for Minimizing the Risk in Post-Seismic Interventions (F.Leon, G.M.Aтанасиу, M.H.Zaharia – Technical Univ. of Iasi [RO])
3 Proceedings