



HRVATSKO DRUŠTVO ZA MEHANIKU  
CROATIAN SOCIETY OF MECHANICS

**PODRUŽNICA OSIJEK**

I

**Građevinski fakultet Sveučilišta J.J.Strossmayera u Osijeku**

*P o z i v a j u*

*na popularno-znanstveno predavanje*

***" Seismic behaviour and safety of precast industrial buildings –  
Research in support of Eurocode 8"***

*koje će održati*

***Prof.dr.sc. Matej Fischinger***  
*Građevinski fakultet Sveučilišta u Ljubljani*

***u petak 19. travnja 2013. u 11,00 sati,***

***na Građevinskom fakultetu u Osijeku, Crkvena 21, Predavaonica br. 10/I.***

*PREDSJEDNICA PODRUŽNICE:*

*prof.dr.sc. Mirjana Bošnjak-Klečina*

## Summary

### **SEISMIC BEHAVIOUR AND SAFETY OF PRECAST INDUSTRIAL BUILDINGS – Research in support of Eurocode 8**

Precast industrial buildings, consisting of an assemblage of cantilever columns connected with ties, house many businesses, people and equipment in Europe. The ability of these structures to dissipate energy during the earthquake is closely related to the connection details. The basic design challenge is consequently to provide a proper balance between the structural safety and the technological feasibility, which determines the costs and competitiveness of the system.

This is a complex and difficult problem and the related knowledge has been relatively poor, as reflects in the incomplete and ambiguous code requirements. Large EU research campaign was initiated to overcome this problem and to formulate improved requirements in Eurocode 8. Cyclic, pseudo-dynamic and shake-table experiments beyond comparison in the past were performed and inelastic models for supporting numerical analyses were developed.

Main results of the past as well as on-going research projects will be presented and the related modifications of the EC8 requirements will be introduced. The following main topics will be particularly addressed:

- Behaviour of the typical beam column dowel connection (strength formulae and numerical FEM and macro models; behaviour at large relative rotations)
- Numerical models for flexible cantilever columns with high shear-span ratio
- On-going research of the typical cladding-to-structure connections
- Response of the large full-scale structures
- Higher modes effect in the multi-storey structures
- Seismic risk studies
- Behaviour factors

## C.V. Matej Fischinger

Professor of Earthquake Engineering and Reinforced Concrete Structures  
University of Ljubljana, Slovenia (Assist. Prof., 1990; Assoc. Prof., 1991; Full Prof. since 1996)



Member of the Slovenian Academic Society of Technical and Natural Sciences.  
Vice-president of the Slovenian Association for Earthquake Engineering.  
Former Member of the Scientific Council for Civil Engineering at the Slovenian Research Agency, Ministry of Science and Technology of RS.

Born in Ljubljana in 1954.

Ph.D.(1989): “Inelastic Dynamic Analysis of Reinforced Concrete Structures under Seismic Loading”;  
Mentor. Acad. Prof. Peter Fajfar.

For the related research work Peter Fajfar and Matej Fischinger got the research award in the Republic of Slovenia.

His research has been concerned with earthquake resistant design of RC structures and inelastic design procedures (in particular N2 method). His current interest is in the seismic resistance of bridges, RC industrial buildings and structural walls, seismic isolation, performance-based design methodologies, the Eurocode, and the use of information technology in education. He has coordinated more than 30 national and international research projects. His recent research projects in the European Framework programs include PRECAST Structures EC8, Shaking table tests and benchmark studies of large scale models of structural walls, VAST-IMAGE – Variable Stiffness Seismic Isolators based on Magnetically Controlled Elastomer, SAFECAST – Performance of Innovative Mechanical Connections in Precast Building Structures under Seismic Conditions and SAFECLADDING – Improved fastening systems of cladding wall panels of precast buildings in seismic zones. He has been European international partner in the NEES project Seismic Performance of Bridge Systems with Conventional and Innovative Materials, testing a large-scale bridge on 3 parallel shaking tables. He was a member of the fib – TG 7.4 Seismic Design and Assessment Procedures for Bridges. He prepared an efficient interactive Web data base EASY depicting and commenting earthquake damage recorded in the past, based on the photo material he had made during his reconnaissance visits of the damaged areas after many major earthquakes.

He is the author of 170 technical papers and publications, and he has given several invited lectures in the USA, Canada, Europe, Mexico and Japan.

As a designer, consultant or reviewer, he has participated in 70 design projects. He has been very active in development of Eurocode 8 and its introduction as a National code in Slovenia. Slovenia was the first country to adopt Eurocodes as national code on January 1, 2008. He wrote the commentary for the RC section. He has actively participated in the recent modifications of the design rules for prefabricated structures in EC8.