

INTERACTIVE IABSE – COST ACTIONS WORKSHOP IN ZAGREB

PREPARED:

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# Value of structural health monitoring for reliable bridge management

At the beginning of March 2017 an interesting workshop took place at the Faculty of Civil Engineering of the University of Zagreb. The workshop was organised by two European cooperation and networking projects under the auspices of the COST framework and the Working Commission 1 of the International Association for Bridges and Structural Engineering.

COST Action TU 1402, dedicated to quantifying the value of Structural Health Monitoring, and COST Action TU 1406, dealing with Quality specifications for roadway bridges, were initiated in 2014/2015 and together they involve about 250 participants from 38 European countries and 15 countries from other parts of the world. IABSE WC1 is dedicated to the problems related to structural performance, safety and life-cycle cost.

The long-term objective of this workshop is to jointly contribute to the improvement of the bridge management leading to satisfied users and bridge operators, and sustainable development of the European road network. More specific objective is to reveal the value of using sophisticated methods of collecting, updating and processing



The workshop in Zagreb gathered 120 participants of different professional background from 40 countries

data and, subsequently, to include such methods in the probabilistic-based reliability analysis.

The workshop gathered 120 participants from 40 countries and was organised through three main sessions:

- Performance assessment of existing bridges for their reliable management
- Framework, strategies and tools towards quantification of the value of SHM

- Management and performance-assessment of existing structures.

Four important keynote lecturers shared their knowledge on the assessment, monitoring and life cycle management of bridges:

- Dan M. Frangopol from the Department of Civil and Environmental Engineering of the Lehigh University in the USA lectured on Risk-, Resilience- and Sustainability-Informed



Active discussions during the workshop gave rise to future cooperation plans





Vice dean for International Cooperation of the Faculty of Civil Engineering in Zagreb, prof. Ivica Završki, welcomed participants at the beginning of the workshop (left), and Head of the Bridge Chair, associate professor Ana Mandić Ivanković, local organiser and member of all involved associations, closed the workshop emphasising that it represents the first step for future collaboration (right)

Decision Making for Bridges in a Life-Cycle Multi-Objective Optimization Context

- James L. Beck from the Department of Computing & Mathematical Sciences of the California Institute of Technology in USA introduced participants to Bayesian uncertainty quantification and sparse Bayesian learning for model updating in SHM
- Ho-Kyung Kim from the Department of Civil and Environmental Engineering of the Seoul National University in South Korea shared the experience in What We Have Learned from Operational Monitoring and Serviceability Assessment of Long-Span Bridges
- Hitoshi Furuta from the Faculty of Informatics of the Kansai University in Japan gave an overview of New Technologies for Condition Assessment of Existing Structures.

Twenty authors with different backgrounds presented their theoretical and practical knowledge and experience, recent research and application examples in the area of the structural health monitoring, performance assessment, quality control, maintenance and management of bridges.

In addition, technical visit to the Sava bridges was organised. Altogether 5 bridges on 3 different locations – old composite Sava Bridge, railway steel Green Bridge, arch steel Liberty Bridge, prestressed girder Adriatic Bridge, and extrados prestressed Homeland Bridge - were visited and their structural specificities, history details, and curiosities were explained to the participants.

After the closing of the Workshop, the Joint Steering Committee of both Cost Actions TU 1406 & 1402 and IABSE

WC1 decided to continue the cooperation through

- joint special contribution in the SEI journal
- selection of joint case study bridge example
- development of joint training schools
- organisation of interactive short-term scientific missions.

Further information is available at:  
<http://www.grad.unizg.hr/joint-zagreb-workshop>



Discussions are continuing at informal gatherings of participants