

## Preface

Safety requirements and environmental, economic and cultural issues generate a growing need to maintain, upgrade and refurbish existing timber structures, as well as to promote the service life sustainability of timber structures at the construction stage.

The structural health assessment of timber structures uses diverse procedures and tools which can assist experts in the evaluation of the structural condition and safety of timber structures in situations where the viability of these structures is questionable because of visible deterioration, damaging events or change of use.

The assessment of timber structures is based on a multidisciplinary approach aimed at providing information about the mechanical properties and actual condition of timber members and the mechanical behaviour of joints. This information is essential for a reliable structural safety analysis which gives guidance to the conservation, replacement or strengthening work necessary to ensure an adequate safety level.

It is in this framework that the Department of Civil, Environmental and Mechanical Engineering of University of Trento in collaboration with the Trees and Timber Institute of the National Research Council of Italy and the COST ACTION FP 1101 "Assessment, Reinforcement and Monitoring of Timber Structures" set out to deliver the 2<sup>nd</sup> International Conference on Structural Health Assessment of Timber Structures (SHATIS'13) to be held in Trento (Italy) between 4 and 6 September 2013, following the first edition held in Lisbon in 2011.

In the organization of the Conference, a valuable contribution has been given by the local Cultural Heritage administration office (Soprintendenza Beni Architettonici) of Provincia Autonoma di Trento, hosting technical visits at Buonconsiglio Castle and Thun Castle, thanks to the sponsorship of "Castello del Buonconsiglio - monumenti e collezioni provinciali".

The event is endorsed by Provincia Autonoma di Trento, the ICOMOS International Wood Committee (IWC) and **International Scientific Committee on the Analysis and Restoration of Structures of Architectural Heritage (ISCARSAH)**, the International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM), the Italian Laboratories University Network of seismic engineering (RELUIS) and the Italian Association of Non Destructive Testing (AIPnD).

The technical sponsors of the Conference are Rubner Holzbau, Rothoblaas, Boviar and Trentino Network.

The contribution of endorsers and sponsors is critical to the success of the event and the widening and inclusivity of the debate.

A total of about 138 papers are collected in the Proceedings, covering a broad range of areas, including restoration and strengthening, seismic behaviour and retrofitting, inspection and monitoring, non-destructive testing, experimental results and laboratory testing, analytical and

numerical approaches, historical aspects and general methodology, innovative and traditional materials technology, case-studies, codes and guidelines.

The reading of these Proceedings shows that the discipline of Structural Health Assessment of Timber Structures is nowadays critical to the success of many conservation projects as well as of the design of new timber structures, and that it requires increasingly articulated and multidisciplinary skills. The book SHATIS'13 will be of valuable use and precious help for consultants, specialists, practitioners as well as for researchers and scholars for what concerns assessment, conservation, repair and monitoring of timber structures and wood artefacts.

The Editors are indebted to the Scientific and Organizing Committees members who have agreed to advise in the papers' selection and reviewing process, and for the efforts and support given to make the Conference possible.

Trento, 2013

Maurizio Piazza

Mariapaola Riggio

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