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EDITORIAL

Novel methods in SHM and monitoring of bridges - Foreword

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This special issue of the Journal of Civil Structural Health Monitoring, which is dedicated to publishing practice-oriented articles and to providing technical information about the maintenance and safety of all types of civil infrastructure systems, includes contributions from two important topics of the last SHMII conference, held Turin in July 2015: "Novel Methods for Monitoring of Structures" and "Monitoring of Bridges". Selection of the presented papers was considered and authors were invited to propose new papers on the subject for a possible publication in a special issue of the JCSHM. On the basis of the usual rigorous peer review and revision process six papers have been selected. These are included in this issue, which presents an overview of the future trends in the research activities. It also represents a great starting point for new researchers interested in the field of civil structural health monitoring. The main content of the papers is briefly described in the following.

In the article entitled as, "Long-term monitoring of reinforced earth structures using distributed fibre optic sensing", the development and implementation of a structural monitoring system to measure the strain distribution of geogrids is discussed. Laboratory experiments for accurate portrayal of strain and temperature coefficients as well as long-term behavior of the monitoring structure for the period of 1 year following the field installations were examined.

The article pertaining to the "Monitoring the Structural Health of Main Cables of Suspension Bridges", the Authors report the results of a study focused on the development of a corrosion monitoring system for main cables of suspension bridges. The monitoring system, which includes sensors for the corrosion rate, temperature and relative humidity, was first tested in a laboratory setting using a full-scale cable mock-up and then on the main cables of one of the major suspension bridges in the New York. The study provided important information for testing the effectiveness of the cable dehumidification strategies.

The paper entitled, "a hydraulic monitoring system on a bridge over the River Esino, Italy", addresses the problem of the bridge failure due to local scour around bridge piers due to river floods. The article studied in detail the case of the Sciasciano Bridge in Italy, for which a monitoring system based on the measurement of the river bed level was developed. An innovative device, called BLESS (Bed Level Seeking System) was developed for real time monitoring of river bed levels.

It is important to develop reliable finite element models for real structures, not only in the design phase but also for the structural health monitoring and life-cycle management purposes. With this assumption, two case studies were examined in the article corresponding to the "model updating of real structures with ambient vibration data". In the ten-story concrete building example, the results of the study demonstrate the importance of having sufficiently detailed initial FEMs in automated model updating. The second example refers to a single span inflexible footbridge to highlight the necessity to consider external structural components in manual model updating of inflexible structures.

The article related to the "development and implementation of a continuous dynamic monitoring system in a wind turbine", the importance of dynamic monitoring systems for the continuous assessment of the condition of

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structures is highlighted. The procedure within the monitoring system permits to continuously track the wind turbine modal properties and allows for detailed understanding of the dynamic behavior of wind turbine structures under real operating conditions. The continuous assessment of these properties can be used as unique features to evaluate the presence of damage in wind turbine structure. The editors of these articles wish to thank the authors and the reviewers for their hard work and diligence in making the publication of these excellent articles possible.