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5th International Conference on Health Monitoring of
Civil & Maritime Structures

HeaMES 2024

VIRTUAL

24-25 June 2024



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About the Conference

There is an urgent need for further progress in structural health monitoring (SHM) for both civil and maritime structures. Maximising the availability and productivity of onshore and offshore infrastructure and marine vessels, whilst operating them safely and with minimal impact on the environment, is of major concern to operators. Many such structures are unique, e.g. ships such as FPSOs have specific constraints, loading characteristics and damage consequences that make them different to other offshore installations and conventional ships, and often more challenging to maintain and operate. Market research shows that there is a need for efficient SHM which could facilitate structural, fatigue and corrosion analyses and underpin risk based inspections to address the structural integrity of onshore and offshore structures. Radical developments in the telecommunication, sensor and data processing technologies are transforming the way that asset management is conceived and carried out. Sensors and structural health monitoring systems are increasingly becoming an integral part of new and existing buildings, bridges, offshore structures and installations, and vessels. Sensing arrays can be permanently connected to distributed management networks so that owners, users, and in general, all those involved in the management process and connected via the Internet can query in real time condition and performance during construction and operation. Whereas today the structural engineer conceives the single building or bridge as a stand-alone project, in future it is likely that structures will be regarded as nodes of a complex infrastructure network. Design specifications, real-time operation, and any decision on maintenance, upgrading and reconstruction of the single node will reflect the management policy of the whole system, properly accounting for concepts such as cost, risk and sustainability and structural health monitoring will play a critical role in these transformed approaches. HeaMES 2024 provides an ideal platform for innovative industry and practitioners, leading researchers, technology developers, and supply chain partners to meet. Bringing the pioneering experts together, the conference aims to promote exchange of ideas.

Conference Themes

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| <ul style="list-style-type: none">• Performance and condition monitoring• Quantitative SHM-based reliability, safety and performance assessment• Modelling and dealing with uncertainty in SHM data• Economic analysis of SHM strategies and benefits• Management of structures exceeding design life• Damage control, repair and strengthening | <ul style="list-style-type: none">• Damage detection• Modelling of operational and environmental influences• Digital twin/SHM integration• SHM-based design• Validation and certification• Design guidelines and codes• Signal processing• Big data in SHM• Real time monitoring• Standardization of SHM systems | <ul style="list-style-type: none">• Sensors and actuators for infrastructure instrumentation• Sensor networks• Remote monitoring systems• Global system integration• Smart structures and materials• Field applications and case studies• Critical issues in SHM• Visionary, disruptive and transformational concepts |
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Organising Committee

Professor Purnendu Das & Dr Yahui Zhang, *MA Marine Consultants Ltd, UK*
Dr Piotr Omenzetter, *University of Aberdeen, UK*

Registration Fees

Virtual Conference (online): £200

Key Dates

Abstract Deadline: 23 February 2024	Final Payment: 26 April 2024	Final Paper: 24 July 2024
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KEYNOTE SPEAKERS



Dr Carlo Rainieri

Senior Researcher, National Research Council of Italy

Biography: Dr Carlo Rainieri is Senior Researcher at the National Research Council of Italy (CNR) and scientific coordinator of the secondary branch of Naples of the Construction Technologies Institute at CNR. His research interests are in the fields of structural dynamics, Operational Modal Analysis, Structural Health Monitoring, self-sensing materials. He is author of the first book on Operational Modal Analysis (OMA) appeared in the literature ("Operational Modal Analysis of Civil Engineering Structure: An Introduction and Guide for Applications", edited by Springer). He is also author of about 200 papers, mainly focused on output-only modal identification and Structural Health Monitoring (SHM) of civil structures, and published on international peer-reviewed Journals and National and International conference proceedings. In particular, his main achievements concern the development of data processing methods for vibration-based SHM applications, including a number of original automated OMA procedures and novel methods for compensation of environmental/operational influence on modal properties. His work in the domain of Operational Modal Analysis was recognized with the 2019 IOMAC Award. He is also co-founder and former CEO of S2X s.r.l. (<http://www.s2x.it/en/>), a University spin off company aimed at providing solutions and software for OMA and vibration-based SHM.



Professor Daniele Zonta

Department of Civil, Environmental and Mechanical Engineering, University of Trento

Biography: Daniele Zonta is a Professor at University of Trento, Italy, and holds a courtesy appointment at the Italian National Research Council. He achieved his Doctorate at the University of Bologna in 2000 and has been a visiting scholar at the University of California, San Diego, Princeton University, and the University of Michigan. He founded and led until 2019 the Centre for Intelligent infrastructure at the University of Strathclyde, UK. His research activity encompasses: asset management; Structural Health Monitoring; sensor technology; decision making; all as applied to civil infrastructure. Much of Professor Zonta's research activity is carried out in collaboration with major European infrastructure operators. He is cofounder of Intelligent Infrastructure Innovation, a start-up company of the University of Trento. In 2014, Professor Zonta was awarded SHM Person of the Year by the SAGE SHM editorial board. He is author of over 170 scientific publications.



Professor Edwin Reynders

Faculty of Engineering Science, University of Leuven

Biography: The research expertise of Edwin Reynders is in structural mechanics and building acoustics, with current research focusing on numerical and experimental assessment of sound insulation, signal processing and system identification, and structural health monitoring. He received his PhD in Engineering Science from KU Leuven in 2009, which was awarded the Best PhD Award in mechanics from the Royal Academies of Belgium. He then became a Postdoctoral Fellow of the Research Foundation - Flanders (FWO) at KU Leuven and the University of Cambridge, before joining KU Leuven again, as an Assistant (2014), Associate (2021) and Full (2023) Professor. From 2017 until recently, he has been a Starting Grant holder of the European Research Council (ERC).

KEYNOTE SPEAKERS



Professor Monssef Drissi-Habti

Deputy Director of COSYS Department, Université Gustave Eiffel

Biography: Monssef Drissi-Habti ([linkedin.com/in/monssef-drissi-habti-85100a66](https://www.linkedin.com/in/monssef-drissi-habti-85100a66)) is a Research Professor at The French Institute for Transports. He holds a PhD thesis (1994) and the title of Research Professor since 1999 both on thermo-mechanical behavior of ceramic composite materials for aerospace. He worked in Japan from 1995 to 1999 as visiting researcher in NRI Nagoya and visiting Professor at the University of Tokyo. He then worked until 2003 at Brown University of Engineering, RI, USA. His experience includes ceramic matrix composites for thermal protection of space crafts on both space programs HERMES (European Space Program) and NIPPON HOPE (Japan Space Program). His experience includes thermo-mechanical behavior of smart composite materials. In USA, he worked on super-alloys for nuclear applications, in collaboration with the Research Centre Norton - St Gobain. His current research is mainly focusing on the development of structures based on smart composite materials and smart hi-voltage power cables for offshore wind-energy generation (projects with General Electric), transports (SNCF-TGV), smart cities and safety-security of critical infrastructures. He is PI of many national and international projects. He is also author of more than 100 articles in scientific journals.



Dr Abhishek Kundu

Senior Lecturer, School of Engineering, Cardiff University

Biography: Dr Abhishek Kundu is a Senior Lecturer at the School of Engineering at Cardiff University and a member of the Royal Aeronautical Society. His research interests span the fields of stochastic structural dynamics, structural health monitoring (SHM) using acoustic-ultrasonic techniques, noise and vibration control, machine learning and Bayesian identification. His main contribution lies in efficient computational techniques for the study of stochastic structural dynamics systems and control and data-driven approaches for SHM.

He finished his PhD from Swansea University as Zienkiewicz scholar in 2014. Dr Kundu has authored more than 50 scientific publications and was awarded the best paper at the European Workshop on Structural Health Monitoring (EWSHM 2018). Amongst his main research engagements, he has been the recipient of Royal Academy of Engineering's Industrial Fellowship with Airbus and currently serves as the PI in the EPSRC funded project on CyberSHM - cyberphysical systems for structural health monitoring.

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