

23rd — 24th May 2019 | Glasgow, UK



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2nd International Conference on
Health Monitoring of Civil & Maritime Structures

HeaMES 2019

Call for Papers

Abstracts should be sent to heames@asranet.co.uk, by the deadline of 23rd October 2018.
Abstract format is available [HERE](#).

HeaMES 2019

About the Conference

There is an urgent need for further progress in structural health monitoring 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 - 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 2019 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, recent research and ways forward to application and commercialisation.

Conference Themes

- ◆ 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
- ◆ 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
- ◆ 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

Technical Advisory Panel

Prof. Sören Ehlers, *Hamburg University of Technology, Germany*

Prof. Michael Havbro Faber, *Aalborg University, Denmark*

Prof. Dan Frangopol, *Lehigh University, USA*

Prof. Nenad Gucunski, *Rutgers University, USA*

Dr Daniele Inaudi, *Switzerland*

Dr Abhishek Kundu, *Cardiff University, UK*

Prof. Franklin Moon, *Rutgers University, USA*

Prof. Carlo Rainieri, *University of Molise, Italy*

Prof. Jung-Ryul Lee, *KAIST, Korea*

Dr Jun Li, *Curtin University, Australia*

Prof. S. A. Sudath Siriwardane, *University of Stavanger, Norway*

Prof. Serdar Soyoz, *Boğaziçi University, Turkey*

Dr Helder Sousa, *HS Consulting, Portugal*

Dr Dmitri Tcherniak, *Bruel and Kjaer, Denmark*

Dr Ying Wang, *University of Surrey, UK*

Prof. Ufuk Yazgan, *Istanbul Technical University, Turkey*

Keynote Speakers

Prof. Dan Frangopol, *Lehigh University, USA*

Dr Daniele Inaudi, *CTO, Smartec SA, Switzerland*

Invited Speakers

Prof. Jung-Ryul Lee, *KAIST, Korea*

Dr Abhishek Kundu, *Cardiff University, UK*

Prof. Franklin Moon, *Rutgers University, USA*

Prof. Carlo Rainieri, *University of Molise, Italy*

Prof. Franck Schoefs, *University of Nantes, France*

Prof. S. A. Sudath Siriwardane, *University of Stavanger*

Dr Helder Sousa, *HS Consulting, Portugal*

Organising Committee

Professor Purnendu Das
ASRANet Ltd, UK

Dr Piotr Omenzetter
University of Aberdeen, UK

Registration Fees

Full Registration: £400

Student Registration: £200

Key Dates

Abstract Deadline: 23rd October 2018 Abstract Acceptance: 23rd November 2018

Full Payment: 23rd March 2019 Full paper submission: 23rd April 2019

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Keynote and Invited Lectures

Prof. Dan Frangopol, Lehigh University, USA

Longevity of marine structures

Dr. Dan Frangopol is the inaugural holder of the Fazlur R. Khan Endowed Chair of Structural Engineering and Architecture at Lehigh University. Before joining Lehigh University in 2006, he was Professor of Civil Engineering at the University of Colorado at Boulder, where he is now Professor Emeritus. He is recognized as a leader in the field of life-cycle engineering of civil and marine structures. His main research interests are in the application of probabilistic concepts and methods to civil and marine engineering including structural reliability, probability-based design and optimization of buildings, bridges and naval ships, structural health monitoring, life-cycle performance maintenance, management and cost of structures and infrastructures under uncertainty, risk-based assessment and decision-making, infrastructure sustainability and resilience to disasters, and stochastic mechanics. Dr. Frangopol is the Founding President of the International Associations for Bridge Maintenance and Safety (IABMAS) and Life-Cycle Civil Engineering (IALCCE). He has authored/co-authored 3 books and over 370 articles in archival journals including 9 award-winning papers. He is the Founding Editor of *Structure and Infrastructure Engineering*. Dr. Frangopol is the recipient of several medals, awards, and prizes from ASCE, IABSE, IASSAR and other professional organizations, such as the OPAL Award, the Newmark Medal, the Alfredo Ang Award, the T.Y. Lin Medal, the F. R. Khan Medal, and the Croes Medal (twice). He holds 4 honorary doctorates and 12 honorary professorships from major universities. He is a foreign member of the Academia Europaea (Academy of Europe, London), a foreign member of the Royal Academy of Belgium, an Honorary Member of the Romanian Academy, an Honorary Member of the Romanian Academy of Technical Sciences, and a Distinguished Member of ASCE.

Dr Daniele Inaudi, CTO, Smartec SA, Switzerland

Fibre optic sensors for SHM in hazardous and hostile environments

Daniele Inaudi received a degree in physics at the Swiss Federal Institute of Technology in Zurich (ETHZ). In 1997, he obtained his Ph.D. in civil engineering at the Laboratory of Stress Analysis (IMAC) of the Swiss Federal Institute of Technology in Lausanne for his work on the development of a fibre optic deformation sensing system for civil engineering structural monitoring. He is co-founder and CTO of SMARTEC SA (Manno, Switzerland, www.smartec.ch), a company active since 1996 in the domains of SHM and fibre optic sensing. He is also CTO of Roctest: a Nova Matrix company which acquired SMARTEC in 2006. He authored more than 200 papers, three book chapters, edited a book on Optical Non-destructive Testing and co-authored the book "Fibre Optic Methods for Structural Health Monitoring".

Prof. Jung-Ryul Lee, Korea Advanced Institute of Science and Technology, Korea

Aerospace Structural Evaluation by Laser, Microwave, and Artificial intelligence

J. R. (Jung-Ryul) Lee is a Chaired Professor of the Department of Aerospace Engineering in Korea Advanced Institute of Science and Technology (KAIST). He served as a co-director of the LANL-CBNU Engineering Institute-Korea between Los Alamos National Lab and Chonbuk National University from July 2011 to December 2014. He was a visiting scholar at Los Alamos National Laboratory in the US from August 2013 to July 2014. His research interests include Smart Hangar (Inventor), integrated systems health monitoring, fiber optic sensors, remote and wireless sensing, advanced nondestructive evaluation and measurement, pyroshock, laser ultrasonics, optics in engineering, AI-based NDE and stealth performance imaging. He has published over 105 SCI journal papers in these areas. He serves as an editorial board member of MST, associate editor of SHM-IJ, and editor-in-chief of ACM. He has produced 4 professors in Malaysia, India, Nepal and Ethiopia and 9 PhDs.

Prof. Franklin Moon, Rutgers, The State University of New Jersey, USA

Towards data-driven asset management for highway bridge structures and the role of emerging technologies

Dr. Franklin Moon is a Professor of Civil Engineering at Rutgers University. Over the last decade, his research has focused on the development, application, and integration of structural health monitoring (SHM), structural identification (St-Id), and nondestructive evaluation (NDE) approaches to diagnose, preserve, and renew civil infrastructure systems. He currently serves as the principal investigator for the management contract associated with the \$50 million Long-term Bridge Performance Program led by the U.S. Federal Highway Administration. Dr. Moon has received an NSF CAREER Award for his work in multiple-model structural identification and the ASCE Pankow Innovation Award for his work on the development of a rapid modal testing device.

Continued on next page.

Keynote and Invited Lectures—continued

Prof. Carlo Rainieri, University of Molise, Italy

Linear and non-linear analysis for compensation of environmental effects on natural frequency estimates

Carlo Rainieri is Assistant Professor at the University of Molise. He got his Ph.D. in structural engineering from the University of Naples defending the thesis "Operational Modal Analysis for seismic protection of structures". His research interests are in the fields of structural dynamics, operational modal analysis, and structural health monitoring. He reviews for several related international peer-reviewed journals and sits on editorial boards. He co-authored the first book on operational modal analysis ("Operational Modal Analysis of Civil Engineering Structures: An Introduction and Guide for Applications", Springer). He published more than 140 papers, mainly focused on output-only modal identification and structural health monitoring, in international peer-reviewed journals and national and international conference proceedings. He is founder of S2X s.r.l., a spin off company of the University of Molise aimed at providing high-end solutions and services in the field of civil and earthquake engineering, including output-only modal identification tests and vibration-based structural health monitoring.

Prof. Franck Schoefs, University of Nantes, France

SHM of wharves: review of case studies from around the world and value of SHM for maintenance optimization

Dr Franck Schoefs is a former student of ENS Cachan School, where he was valedictorian of the Civil Engineering degree in 1992. He got his PhD in Civil Engineering and Structural Reliability in 1996 and the accreditation to supervise research (HDR) in 2007. He has been Full Professor at Université de Nantes, France, since 2010, head of the Health Monitoring, Reliability and Structural Computation Group in GeM Laboratory and CEO of Sea and Litoral Research Institute (IUML - 650 people) since 2017. He was the Director of the MSc programme in Civil Engineering at Université de Nantes' Faculty of Sciences and Technologies for 8 years, which includes a degree in science and technology of public and maritime works. He has published more than 60 journal papers and 10 book chapters in the 15 last years and has supervised 30 PhD students to completion at the same time. He has lectured widely on reliability analysis and organised Continuing Professional Development courses on this subject; he has also organised courses on marine renewable energy for practising engineers as the leader of the WEAMEC (WEst Atlantic Marine Energy Centre) training programme.

Dr Helder Sousa, HS Consulting, Portugal

Achievements and challenges in the serviceability and safety of bridges and viaducts supported by structural health monitoring techniques

Dr Helder Sousa is an expert with more than 15 years of expertise in Structural Health Monitoring (SHM), demonstrated by several top-ranked international journal publications. In the recent past, he has been a Teaching Fellow and an Individual Marie Skłodowska-Curie Fellow at the Department of Civil & Environmental Engineering at the University of Surrey, UK where he acted as the Module Convenor in Bridge Loading Analysis and Prestressed Concrete Bridge Design. Acting as an independent consultant in SHM applied to civil engineering structures – HS Consultancy – he is currently leading one of the biggest monitoring projects in the world applied to long-span bridges. In parallel, he has been engaging with worldwide experts in the field of SHM as the leader of the Innovation Committee of the COST Action TU1402 – Quantifying the Value of SHM, aiming to facilitate societal benefits and developments in the design and asset management of structure and infrastructure systems by optimised SHM systems.

Dr S. A. Sudath Siriwardane, University of Stavanger, Norway

Life extension of offshore structures: current practices in SHM and remaining fatigue life estimation

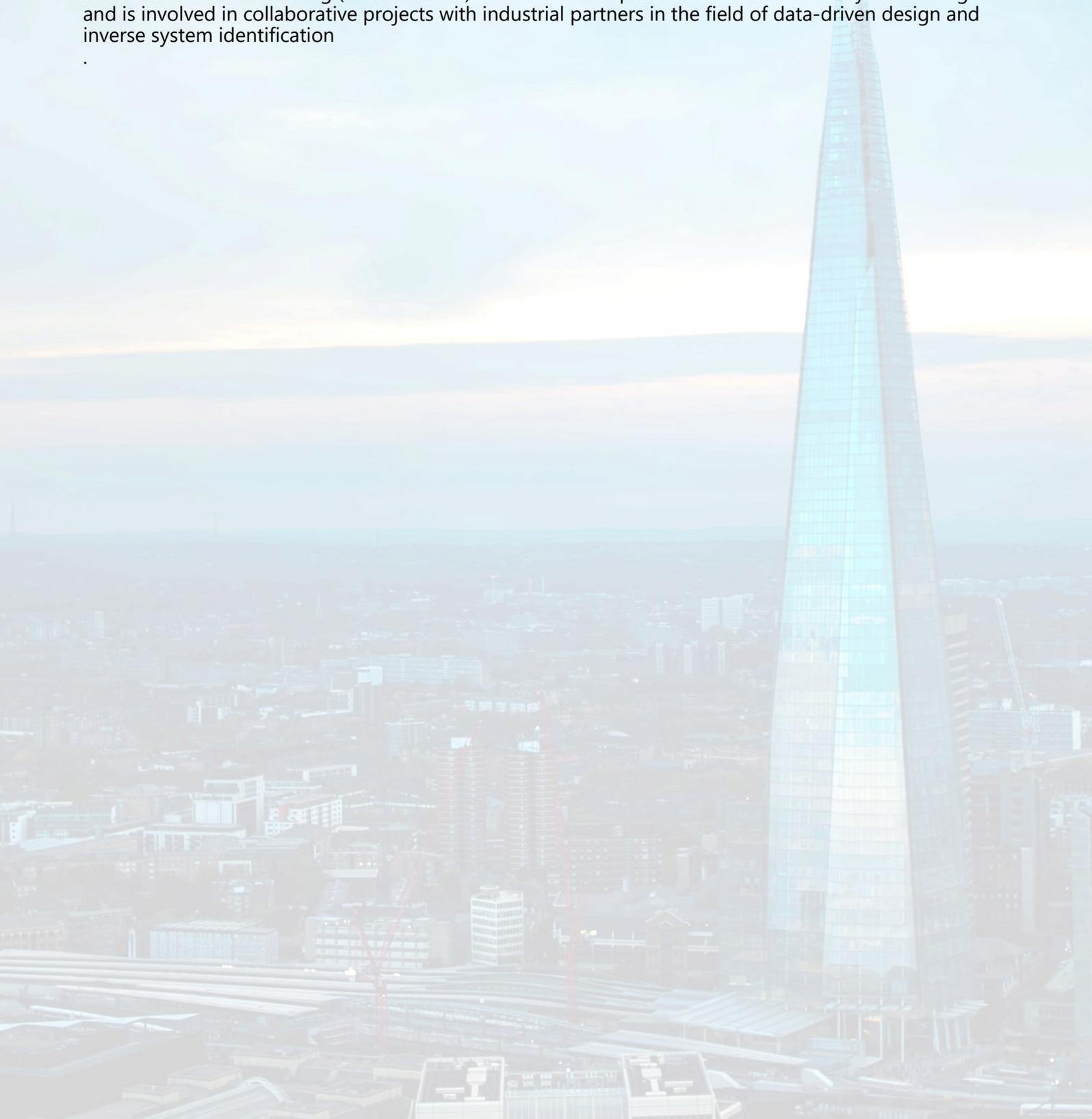
Sudath C. Siriwardane is currently working as an Associate Professor in Department of Structural, Mechanical Engineering and Materials Science, University of Stavanger, Norway. He is also serving the department as the structural engineering discipline leader. His areas of research are fracture and fatigue of steel structures, meso-plasticity of metals under cyclic loading, nonlinear structural analysis and design, structural health monitoring. His teaching areas are design of steel structures, theory of plasticity and plastic analysis of structures. He has disseminated his knowledge in recognized publication channels as journal papers, books, book chapters.

Keynote and Invited Lectures—continued

Dr Abhishek Kundu, *Cardiff University, UK*

Data-drive damage characterization in multi-layered composite structures: a machine learning approach

Dr Kundu is a lecturer in Applied & Computational Mechanics group at Cardiff School of Engineering, Cardiff University. His expertise lies in the field of machine learning approaches, Bayesian uncertainty quantification and computational methods in a range of engineering applications including structural health monitoring, vibration and noise control, aircraft design. He completed his PhD from Swansea University in 2014. He has the recipient of the prestigious Zienkiewicz scholarship for his work on computational methods and has won the best paper award at the recently concluded 9th European workshop on structural health monitoring (EWSHM 2018). He has over 30 publications within his early career stage and is involved in collaborative projects with industrial partners in the field of data-driven design and inverse system identification



About Glasgow

Glasgow has been named as one of the top 20 'Best of the World' destinations for 2016 by influential publication National Geographic Traveler, the city has also been voted the 'friendliest city in the world' in a Rough Guides poll and named a must visit destination by leading publications like the New York Times, The Guardian and Wanderlust! Earning its reputation as one of the world's greatest cities, you can expect a very warm welcome and when you add world-class architecture, a vibrant nightlife, breath taking scenery and out-standing shopping, you'll never want to leave! One of beauties of Glasgow is its compact size - you can see a lot of the city in a remarkably short space of time. It also has some very distinct neighbourhoods. If you're looking for the perfect place to people-watch, head for the trendy West End. Its up and coming rival is the emerging 'Cool Quarter' of Finnieston, which is buzzing with bars and independent shops. If you love the energy of a flea market, pay a visit to 'The Bar-ras' (Glaswegian dialect for "barrow"), in the East End. Or head over the river to the city's South Side, where the sprawling Pollok Park offers a woodland oasis, as well as the world-renowned Burrell Collection, with its fascinating range of art exhibits. Further afield, ancient castles, picture-postcard distilleries, tranquil lochs, outstanding golf courses and miles of unspoilt coastline are all just a short journey from the city centre - incredibly, you can get to Loch Lomond, gateway to the Scottish Highlands in only 30 minutes. The capital of Scotland, Edinburgh is only 50 minutes far by train.

Getting Here

Airport Connections

Glasgow is well connected globally by Glasgow International Airport through Emirates, KLM, Air France, Easyjet, Ryanair and many more. The airport is currently linked to Glasgow City Centre by Glasgow Shuttle bus service 500. This is run by First Glasgow under contract to Glasgow Airport. The service runs 24 hours a day, direct via the M8 motorway. An alternative entry to Scotland may be Edinburgh Airport located approx. 1 hour from Glasgow.

Train Connections

Fast trains run into the centre of Glasgow terminating at Glasgow Central. The train service from London, Manchester, Newcastle terminate at Glasgow Central or at Glasgow Queens Street with connections through Edinburgh Waverley.

Accommodation

With over 18,000 bedrooms in the Greater Glasgow area, and almost 7,000 in the city centre alone, you're guaranteed to find accommodation which suits your taste and budget! Whether your style is a luxury hotel retreat, a vibrant hostel, homely B&B or a comfortable city centre apartment, you can be assured of a warm Glaswegian welcome. Below are a list of hotels close to the conference venue:

Mercure Glasgow City	
The Brunswick Hotel	From £60
Holiday Inn City Centre	From £50
The Grand Central Hotel	From £43
DoubleTree By Hilton Glasgow Central (formerly The Glasgow City Hotel)	From £40
Premier Inn George Square	From £60

Visit www.asranet.co.uk for more details

Sponsorship & Exhibition Space

Sponsorship

Cost £1500 + VAT

Package Includes:

- 2 Free Delegate Registration
- Company Logo in the Conference Programme
- Company Logo in the Book of Abstracts
- Company Advert in the Book of Abstracts (A4 Size)
- Advert in the Conference Proceedings (USB)

Exhibition

Cost £1200 + VAT

Package Includes:

- 1 Free Delegate Registration
- 1 Display table (1800 x 1200 mm) in Breakout Area
- Display material: Published material, Structural component
- Display Banners

Sponsorship Package + Exhibition Package

Cost £2100 + VAT

- 2 Free Delegate Registrations
- 1 Display Table (1800 x 1200 mm) in Breakout Area