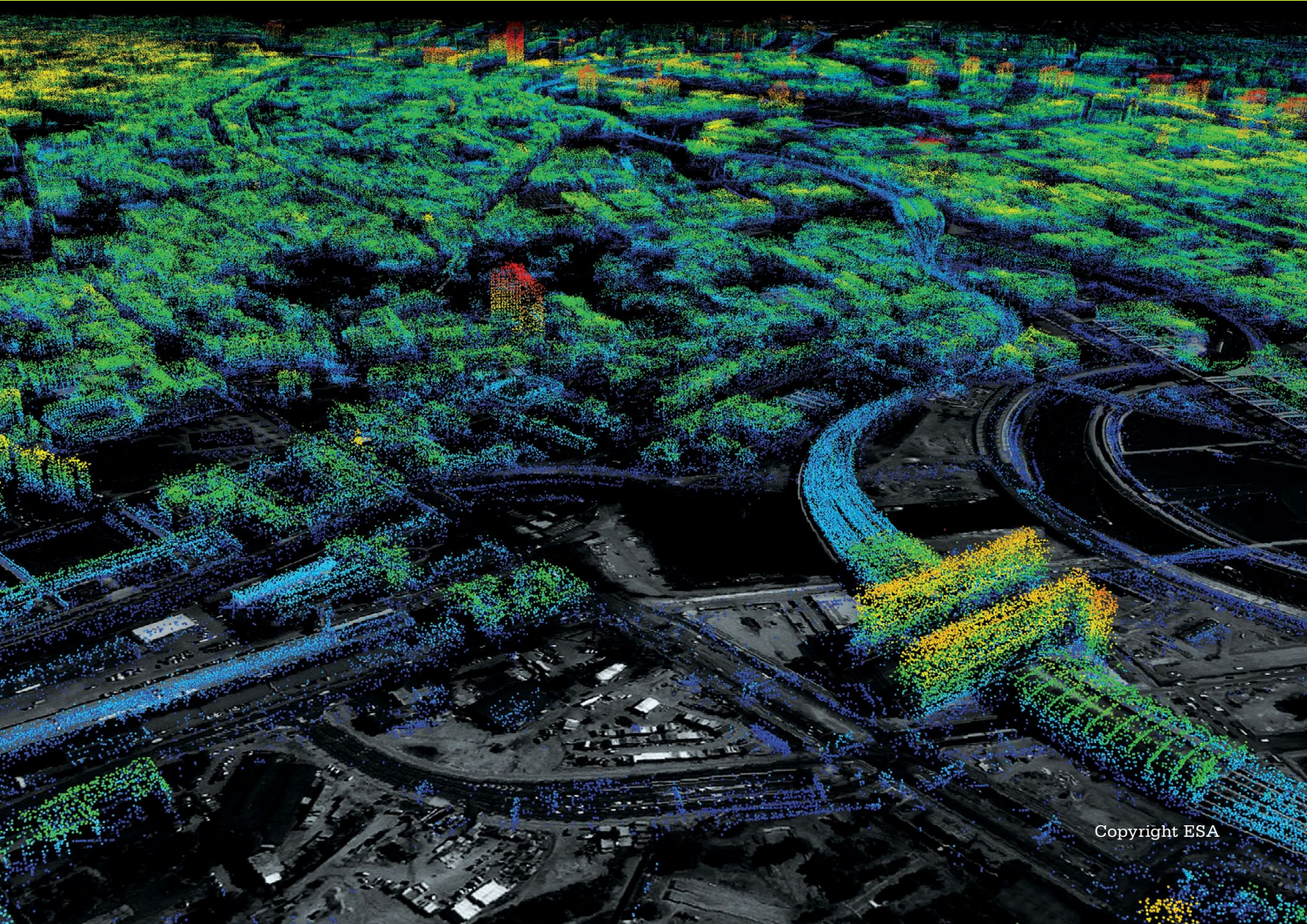


SMART SATELLITES 2015: INVESTING IN THE UK SPACE ECONOMY

Institution of
**MECHANICAL
ENGINEERS**

25 June 2015
Hilton Leicester Hotel, Leicester
www.imeche.org/smartsatellites

Aerospace Division
Seminar



Copyright ESA

SMART SATELLITES 2015: INVESTING IN THE UK SPACE ECONOMY

25 June 2015, Hilton Leicester Hotel, Leicester



THIS JUNE, THE INSTITUTION OF MECHANICAL ENGINEERS WILL BE LAUNCHING ITS FIRST REPORT ON THE SPACE INDUSTRY AS A RESPONSE TO THE UK SPACE STRATEGY.

To coincide with the report, **Smart Satellites: Investing in the UK Space Economy** will highlight the research and development, technology, engineering and skills that will be required to meet both the needs of the space sector and wider society.

The UK Space Agency's Civil Space Strategy addresses how UK industry has the potential to grow its existing global contribution. The principal focus will be to look at 'Smart Space' – the global space and satellite platform that will provide low-cost, sustainable and interconnected access to everywhere on earth.

Through highlighting a drive for innovation and investment, this seminar will boost industry awareness, expose opportunities for economic growth and bring SMEs to the forefront of commerce.

BENEFITS OF ATTENDANCE:

- Receive a free copy of the Institution's first in-depth report on the Satellite Industry
- The **only space event** where engineers and their skills will be the main focus
- Hear the latest developments in satellite strategic policy from Dr Alice Bunn, Director of Policy, **UK Space Agency**
- Understand how the UK plans to contribute 10% to the global space market by 2030
- Acknowledge with **Airbus** the issues associated with skills and recruitment in the space industry
- Recognise how **Local Enterprise Partnerships** are supporting local businesses and SMEs to engage in the UK space sector

PARTNERS:



ROYAL
AERONAUTICAL
SOCIETY

UKSPACE
THE SPACE TRADE ASSOCIATION



CATAPULT
Satellite Applications



SPONSORSHIP & EXHIBITION OPPORTUNITIES

GET INVOLVED

Attending this event as either an exhibitor or sponsor will give you the opportunity to display your solutions, services and products to the right people at the right time.

This is an excellent way to enhance your company profile and communicate effectively to your target audience.

BENEFITS OF SPONSORING

- **Showcase** new products
- **Raise** awareness of your operation
- **Improve** perception of your brand
- **Influence** other organisations' spending plans

For more information please call +44 (0)20 7973 1309 or email sponsorship@imeche.org

PROGRAMME

THURSDAY 25 JUNE 2015

08:30 REGISTRATION AND REFRESHMENTS

09:00 MORNING CHAIR'S OPENING REMARKS
Helen Meese, Head of Engineering in Society, Institution of Mechanical Engineers

SESSION 1 - UPSTREAM AND DOWNSTREAM APPLICATIONS

09:10 KEYNOTE ADDRESS: SPACE IN THE 21ST CENTURY: THE UK STORY
Stuart Martin, CEO, Satellite Applications Catapult

- An overview of how the space sector is undergoing revolutionary change
- Understanding how commercial businesses and a new breed of entrepreneurs are leading space innovation
- An explanation of why the space sector is generating so much interest and how the UK is set to become a major protagonist

09:40 FOSTERING INNOVATION IN APPLICATION TECHNOLOGY
Tim Just, Head of Space, Innovate UK

- The UK space industry is a hidden success story and key to UK economic growth
- Earth Observation (EO) and telecommunications are set to make significant contributions to technology innovation
- Bringing together the UK's innovators and ensuring the UK is at the forefront of satellite technology development over the next 30 years

10:10 EARTH OBSERVATION: LEVERAGING TECHNICAL INNOVATION
Doug Liddle, Head of Science, SSTL

- Reduced entry level costs of imaging from space are catalysing a technological revolution
- It's a business, not rocket science: capitalising on a re-energised market – it's not one size fits all

10:40 NETWORKING REFRESHMENT BREAK

11:10 COMMERCIAL TELECOMS: THE DRIVING FORCE OF THE SPACE ECONOMY
Peter Aspden, Marketing Manager, Airbus Defence & Space

- Contributing over \$300bn to the entire global space economy
- Understanding how satellites are the only means of connection for those in remote locations, in the air or on the oceans
- Broadcasting to millions of consumers from a single transmitter, satellites make for the most efficient means of delivery
- Preparing for an already mature sector to evolve as internet entrepreneurs and commercial companies look to invest

11:40 TACKLING DISASTERS FROM THE TOP
Confirmed Representative from DMCii

- Addressing the use of satellites for disaster management
- International and regional partnerships for satellite access in disaster response
- New opportunities for applications of EO in disaster management beyond the response phase

SESSION 2 - ENHANCING EDUCATION AND SKILLS IN THE UK SPACE SECTOR

Chaired by Abbie Huty, Senior Structures Engineer, Airbus Defence & Space

12:10 SPACE EDUCATION AND SKILLS: SUSTAINING THE GROWTH OF THE UK SPACE SECTOR
Anu Ojha, Director, National Space Academy

- The UK space sector workforce: upstream and downstream statistics, characteristics and forecasts for growth
- Government strategies and industry perspectives: addressing the future challenges for space sector workforce growth
- Sustaining the space skills supply lines: existing and future programmes for support at school, university and postgraduate/professional levels
- Space exploration and space exploitation: balancing the competing demands and prioritisation between space research and space industry growth and the implications for space skills development

12:40 Q&A SESSION WHERE INVITED GRADUATES AND STUDENTS WILL OFFER INSIGHT INTO STUDYING AND WORKING WITHIN THE SPACE SECTOR
Loughborough College, Airbus Defence & Space and De Montfort University

13:10 NETWORKING LUNCH

- 14:10 GROWING THE SPACE INDUSTRY TECHNICAL SKILLS MARKET**
Daniel White, Head of Technology Innovation/UK R&T, Airbus Defence & Space
- Identifying ways to engage with students and graduate engineers
 - The recruitment challenge
 - Building partnerships with academic institutions, universities and SMEs

SESSION 3 - INVESTING IN THE UK SPACE INDUSTRY
Chaired by Helen Meese, Head of Engineering in Society, Institution of Mechanical Engineers

- 14:40 MAKING THE UK THE PLACE FOR SPACE**
Alice Bunn, Director of Policy, UK Space Agency
- Shared Government/industry targets for growth
 - The challenges of achieving these targets
 - The ways Government is supporting the sector in overcoming these

15:10 NETWORKING REFRESHMENT BREAK

- 15:30 THE ROLE OF LEICESTER LOCAL ENTERPRISE PARTNERSHIP (LLEP) AND UNIVERSITIES IN SUPPORTING SPACE INNOVATION AND SECTOR GROWTH**
Corin Crane, Director, Leicester Local Enterprise Partnership (LLEP) and Paul Monks, Professor Atmospheric Chemistry and Earth Observation Science, University of Leicester
- Overview of the LLEP strategy
 - Perspective of experts from University of Leicester
 - Examples of local work and research undertaken

- 16:00 SUPPORTING ECONOMIC GROWTH THROUGH SPACE EXPLORATION**
Prof Martin Barstow, President, Royal Astronomical Society
- The technological developments made from the current space programme, the direct benefits to industry and the downstream impact
 - Case studies from UK experience
 - The vision for space exploration in the next decade and potential stimulation for new research and innovation through the technological developments needed

- 16:30 IT IS ROCKET SCIENCE! DESIGNING DEPLOYABLE STRUCTURES FOR SPACE**
Mike Lawton, CEO, Oxford Space Systems
- A look at some of the innovative designs and materials that Oxford Space Systems (OSS) is commercialising for the global satellite industry
 - Why the space environment can be fiendishly tricky to design mechanical systems for
 - A personal look at the experiences of being an SME in the satellite sector

- 17:00 SME Q&A PANEL SESSION**
Chaired by Helen Meese, Head of Engineering in Society, Institution of Mechanical Engineers
 Invited panellists include Clyde Space and Oxford Space Systems

17:20 CHAIR'S CLOSING REMARKS

17:30 END OF SEMINAR

Find out more about our speakers at www.imeche.org/smartsatellites

- This programme is subject to change.
- The Institution is not responsible for the views or opinions expressed by individual speakers.

Organising committee:

Aerospace Division

Helen Meese, Head of Engineering in Society, Institution of Mechanical Engineers

SPEAKERS AND CONTRIBUTORS

STUART MARTIN KEYNOTE SPEAKER CEO, SATELLITE APPLICATIONS CATAPULT

Stuart Martin was appointed CEO of the Satellite Applications Catapult in January 2013. Prior to this appointment, he was a partner at Logica (now CGI), a large European business technology company where he was responsible for the worldwide space business. During his time at Logica, Stuart held a range of engineering and management functions, mainly in the fields of satellite navigation and meteorological processing. More recently, he held the position of Vice Chair of UK Space, the UK trade association for space business. Stuart was elected a Fellow of the Royal Aeronautical Society, and the Institute of Physics in 2003.

HELEN MEESE CHAIR HEAD OF ENGINEERING IN SOCIETY, INSTITUTION OF MECHANICAL ENGINEERS

Helen Meese works to raise the profile of mechanical engineering, focusing on innovative and emerging technologies and how they impact on society in the UK and internationally. She graduated from Loughborough University in 1996 with a degree in Electro-Mechanical Power Engineering and then gained a PhD in Mechanical Engineering developing performance characteristic programmes for turbocharger compressors. Outside her work with Babcock and BAE Systems, Helen worked for GE Energy, project managing several contracts on the design and installation of electrical propulsion and navigation systems in South Korea.

ABBIE HUTTY CHAIR SENIOR STRUCTURES ENGINEER, AIRBUS DEFENCE & SPACE

Abbie Hutton is a Spacecraft Structures Engineer on Airbus' ExoMars Rover Project. She gained her Master's in Mechanical Engineering at Surrey University, where she received several awards and prizes for her achievements, including her placement year at SSTL, and her Master's thesis on the use of composites in spacecraft structures. She joined Astrium at Stevenage, now Airbus Defence & Space, as a Mechanical Engineer in 2010. Abbie now leads a team of specialists in the design of the ExoMars Rover Vehicle Structure. In 2013 she was selected as the IMechE's Young Member of the Year and later named as the IET's Young Woman Engineer of the Year.

TIM JUST HEAD OF SPACE, INNOVATE UK

Tim Just is the Head of Space at Innovate UK, the new name of the Technology Strategy Board. Innovate UK is a business-led executive non-departmental public body sponsored by the Department for Business, Innovation and Skills, and is in effect the 'Innovation Agency'. In addition to working closely with the recently formed UK Space Agency, Tim fulfils a broad thought leadership and co-ordination role for space activity and its applications in the UK between various government departments, industry and other stakeholders. Tim is also a Non-Executive Director for the Satellite Applications Catapult Centre and is a Fellow of the Royal Institute of Navigation.

ALICE BUNN DIRECTOR OF POLICY, UK SPACE AGENCY

Alice Bunn originally worked for the Natural Environment Research Council where she was Head of Earth Observation Future Missions (2002-04) and Earth Observation Science Co-ordinator (2000-02). Her successful career in the science sector follows a PhD in Metallurgy from the University of Cambridge. As Director of Policy at the UK Space Agency, Alice's primary responsibility is to provide policy advice on civil space activities to the Minister for Universities and Science, and other ministers as required.

RICHARD PECKHAM BUSINESS DEVELOPMENT DIRECTOR SPACE, AIRBUS DEFENCE & SPACE

Richard Peckham is Business Development Director Space for Airbus Defence & Space in the UK, having worked in the aerospace sector for the last 30 years in a range of senior engineering and management positions. In his current post, he leads business acquisition, manages the company relationship with Government and leads on national strategy. Richard is a member of the UK Space Leadership Council and has previously been Chairman of UK Space, a Founding Director of the International Space Innovation Centre (now part of the Satellite Applications Catapult) and has served on UK Trade & Investment advisory boards.

SPEAKERS AND CONTRIBUTORS

ANU OJHA

DIRECTOR, NATIONAL SPACE ACADEMY

Anu Ojha has been Director of Education & Space Communications at the Hilton Leicester Hotel, Leicester, since 2008 and is Director of the National Space Academy programme (STFC, ESA, UK Space Agency). He was awarded Advanced Skills Teacher status by the Department for Education in 2003 and was a Physics Lead Practitioner for the Specialist Schools and Academies Trust in 2010-11. In addition to being appointed as an ESA 'Space Ambassador' Anu has worked as a consultant in Holland and Spain, using data from the SOHO solar observatory and Mars Express missions.

CORIN CRANE

DIRECTOR, LEICESTER LOCAL ENTERPRISE PARTNERSHIP (LLEP)

Corin Crane took up the role of Director of the Leicester Local Enterprise Partnership in August 2014. Prior to this he held the post of Head of Economic Partnerships and Investment at Wolverhampton City Council, where he was also a lead officer with the Black Country Local Enterprise Partnership. Corin is responsible for driving forward the LLEP's Strategic Economic Plan, which sets out ambitions to create 45,000 new jobs, lever £2.5bn of private investment and increase GVA by £4bn, by 2020.

MARTIN BARSTOW

PRESIDENT, ROYAL ASTRONOMICAL SOCIETY

Martin Barstow was appointed to the Department of Physics & Astronomy at the University of Leicester in 1994, promoted to Reader in 1998 and became Professor of Astrophysics and Space Science in 2003. He has been involved in many space missions, including NASA's Voyager probes, the Hubble Space Telescope and ESA's Gaia. He has published more than 300 papers, has been a member of the ESA Astronomy Working Group and Space Programme Advisory Committee of the UK Space Agency. In 2013 he was elected as the President for two years of the Council of the Royal Astronomical Society.

MIKE LAWTON

CEO, OXFORD SPACE SYSTEMS

Mike Lawton co-founded Futuretec, an electronics and software design consultancy in 2003. This quickly gave rise to two internal business units: Smartcellar and Regenattec, which exploited ideas Mike had while studying electronics at university. Mike holds a BEng (Hons) in Electrical & Electronic Engineering from the University of Plymouth and has numerous awards for design and innovation including the IMechE Engineering the Future Award 2007, Oxfordshire Up and Coming Entrepreneur of Year 2007 and Best Green Technology Award for India 2009.

PAUL MONKS

PROFESSOR ATMOSPHERIC CHEMISTRY AND EARTH OBSERVATION SCIENCE, UNIVERSITY OF LEICESTER

Paul Monks was awarded the EU Lillehammer Young Scientist Award in 2004 and is currently the Co-Chair of the IGBP-International Global Atmospheric Chemistry Programme and Chair of the DEFRA Air Quality Expert Group, as well as being a member of the UK Space Agency, Space Leadership Council and NERC Council. Paul has recently been appointed as the European representative on the Environmental Pollution and Atmospheric Chemistry Scientific Steering Committee (EPAC SSC).

DANIEL WHITE

HEAD OF TECHNOLOGY INNOVATION/UK R&T, AIRBUS DEFENCE & SPACE

Daniel White began his career in what used to be Matra Marconi Space, holding a BEng (Hons) degree in Mechanical Engineering. On obtaining an MSc in Computing Science, he spent several years working in computer-aided engineering before returning to the mechanical design office to lead the Structure Engineering & Technology Group until 2014. He currently leads the Transnational Technology Innovation Group, responsible for innovation work streams, managing selection and delivery of early-stage technology studies as a precursor to R&T programmes, as well as a broader UK role supporting R&T.

BOOKING FORM

EVENT CODE: S6234AB

SMART SATELLITES 2015:
INVESTING IN THE UK SPACE
ECONOMY
25 June 2015
Hilton Leicester Hotel, Leicester

REGISTRATION Please complete in capitals.

Family Name	Title (Mr, Mrs, Miss)
First Name	Job Title
Membership No	Institution
Name of Organisation (for name badge)	
Address for correspondence	
Town/City	
Postcode	
Contact Telephone	
Email	
Do you have any special requirements?	

How did you hear about this event? ☐ Direct mail ☐ Website ☐ Colleague ☐ Other

We would like to keep you informed of relevant services that may be of benefit to you. Please tick the boxes below to let us know what you're interested in:

- ☐ Events and training opportunities
- ☐ News and updates from the Institution
- ☐ Services and offers from our preferred partners

FEES AND CHARGES Please complete the appropriate box.

Registration fees include entry to the sessions, refreshments, lunch and a copy of the event proceedings.

	STANDARD RATE	VAT	TOTAL
Member, Institution of Mechanical Engineers	£260.00	£52.00	£
Member, supporting organisation	£260.00	£52.00	£
Non-member	£290.00	£58.00	£
Student/retired	£90.00	£18.00	£

PAYMENT DETAILS

Payment must accompany this registration form. Registration will be confirmed only on receipt of full payment.

PLEASE INDICATE METHOD OF PAYMENT:

☐ **Cheque** Cheques should be made payable to IMechE and crossed. Please note international delegates may pay only by credit card, BACS or banker's draft. A copy of the draft must accompany this form. It is the delegate's responsibility to pay any bank charges.

☐ **Credit Card**
Card type: ☐ Visa ☐ MasterCard (please note we cannot accept American Express, Diners Club or Maestro)
Card No Valid From / Expiry Date /
Name of Cardholder
Billing Address of Cardholder (if different from above)
Postcode
Amount to be Deducted Signature

☐ **BACS** BACS bank transfers can be made to:
IMechE Current Account, NatWest Charing Cross Branch.
Sort Code: **60-40-05** Acc No: **00817767**
Swift Code: **NWBKGB2L** IBAN Code: **GB96NWBK60400500817767**
A copy of the draft must accompany this form.

☐ **Invoice (UK residents only)** Delegates wishing to be invoiced must provide an order number. If your company does not use order numbers please include a formal request for invoicing on your company's letterhead. A charge of £10 +VAT will be made to cover additional administration costs. Invoices are payable on receipt and no alterations to these terms will be accepted.

Order No
Contact Name
Name and Address for Invoicing
Postcode
Tel Fax

FIVE WAYS TO BOOK

- 1 Online:
www.imeche.org/smartsatellites
- 2 Email:
eventenquiries@imeche.org
- 3 Phone:
+44 (0)20 7973 1258
- 4 Post completed booking form to:
**Event Registrations
Institution of Mechanical Engineers
1 Birdcage Walk
London SW1H 9JJ**
- 5 Fax:
+44 (0)20 7304 6845

Please read the information listed below as each booking is subject to the Institution's standard terms and conditions.

CONDITIONS OF BOOKING

Completed application forms should be returned to the address above, along with the correct payment. Attendance at the event will be confirmed on receipt of the full balance. All participants are advised to bring a copy of their confirmation with them on the day, to ensure the fastest possible entry.

SPECIAL REQUIREMENTS

Please inform us of any special requirements, ie dietary or access, on the relevant section of this form.

CANCELLATION

For a refund (minus £25+VAT admin charge), cancellations must be received at least 14 days prior to the event. Replacement delegates are welcome at any time. The Institution reserves the right to cancel any event. In this case, the full fee will be refunded unless a mutually convenient transfer can be arranged. In the event that the Institution postpones an event for any reason and the delegate is unable or unwilling to attend on the rescheduled date, they will receive a full refund of the fee paid.

The Institution is not responsible for any loss or damage as a result of a substitution, alteration or cancellation/postponement of an event. The Institution shall assume no liability whatsoever if this event is cancelled, rescheduled or postponed due to a fortuitous event, Act of God, unforeseen occurrence or any other event that renders performance of this conference impracticable, illegal or impossible. For the purposes of this clause, a fortuitous event shall include, but not be limited to: war, fire, labour strike, extreme weather or other emergency.

Please note that while speakers and topics were confirmed at the time of publishing, circumstances beyond the control of the organisers may necessitate substitutions, alterations or cancellations of the speakers and/or topics. The Institution reserves the right to alter or modify the advertised speakers and/or topics if necessary without any liability to you whatsoever. Any substitutions or alterations will be updated on the event's webpage as soon as possible.

VENUE

Hilton Leicester Hotel,
21 Junction Approach, Leicester.
LE19 1WQ

LIABILITY

The organisers do not accept liability for any injuries or losses of any nature incurred by delegates and/or accompanying persons, nor for loss or damage to their luggage and/or personal belongings.

ENQUIRIES

For event enquiries please call
+44 (0)20 7973 1258 or email
eventenquiries@imeche.org

The Institution of Mechanical Engineers is a registered charity (no 206882)
VAT No GB299930493.

FORWARD THINKING

We are the market leader among professional engineering bodies. We've been supporting engineers since 1847 and have 111,000 members in over 140 countries, working in the world's most dynamic and important industries. Our comprehensive events programme brings you the latest research and best practice from industry and academia.

ON DEMAND

Watch it wherever, whenever

Part of IMechE.org, On Demand is the new digital web platform that gives you access to the latest technical industry content including videos, news, reports, interviews, event highlights and more.

So, what are you waiting for? Explore it now at www.imeche.org/ondemand



OTHER EVENTS TO LOOK FOR:



15-17 April 2015
University of Warwick, Coventry
ESSENTIAL MANAGEMENT SKILLS 2015

Over three days this conference will improve your ability to manage yourself, projects and teams as well as motivate you to take control of your own development.

www.imeche.org/EMS2015

INFORMATION AND BOOKINGS

CALL: +44 (0)20 7973 1258

EMAIL: eventenquiries@imeche.org

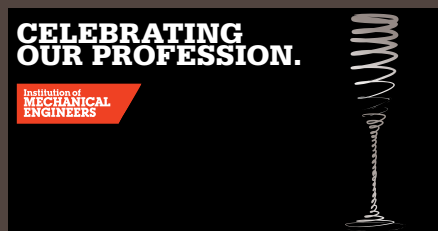
VISIT: www.imeche.org/events



9 June 2015
University of Leeds
SURFACE ENGINEERING IN AUTOMOTIVE AND AEROSPACE INDUSTRIES

Hear how surface engineering is a valuable tool in achieving both better environmental sustainability and reduced whole life-cycle costs in the automotive and aerospace industries.

www.imeche.org/events/S6222



19 November 2015
The Dorchester, London
ANNUAL DINNER 2015

The Institution's Annual Dinner will be returning to London's Dorchester hotel to celebrate the engineering profession, including a keynote address from Prof Richard Parry-Jones and after-dinner entertainment.

www.imeche.org/annualldinner

JOURNALS

The Journals of the Institution of Mechanical Engineers are published by SAGE. The leading title the Proceedings of the IMechE now comprises sixteen Journals covering a broad range of engineering disciplines. Our journals can be accessed via uk.sagepub.com/imeche_home.sp as well as through Scitopia, and other leading scholarly search services.

To find out more contact **Subscriptions** on +44 (0)1952 214050 or email subscriptions@imeche.org

MEMBERSHIP

Whether you're a student, apprentice, graduate, qualified engineer or just have an interest in engineering, Institution membership offers the highest professional prestige. Professional registration is a valuable investment for any engineer who is serious about their career.

Find out which level you're best suited for at www.imeche.org/membership or email us on membership@imeche.org

GET INVOLVED

Whether you're new to the profession or well established, volunteering is a great way to gain new skills, knowledge and experience. As an Ambassador you have the chance to represent your profession and give something back to the engineering community as well as inspiring the next generation.

See www.imeche.org/volunteering for more information or go to <http://nearyou.imeche.org>

**Institution of
MECHANICAL
ENGINEERS**

1 Birdcage Walk
Westminster
London
SW1H 9JJ

T +44 (0)20 7222 7899

www.imeche.org

**Keep up
your CPD**

Continuing Professional Development (CPD)

Our online Career Developer tool can help you:

- **Plan** Create an Action Plan and identify targets
- **Record** Download a record of your learning activities
- **Review** Reflect on your professional development

Register for Career Developer and get more from your career www.imeche.org/careerdeveloper

For tailored advice contact cpd@imeche.org

Improving the world through engineering