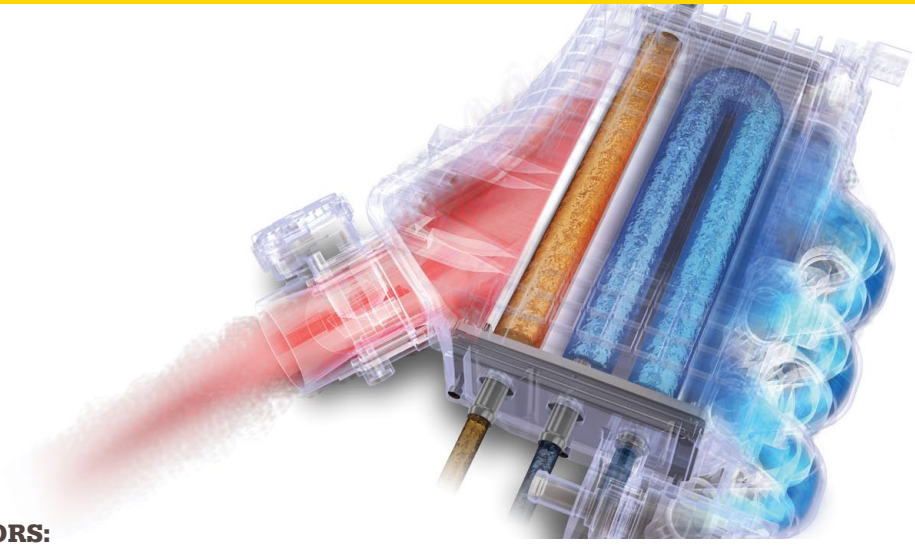
VTMS 12
VEHICLE THERMAL MANAGEMENT SYSTEMS CONFERENCE AND EXHIBITION

Institution of MECHANICAL ENGINEERS

10-13 May 2015
East Midlands Conference Centre, Nottingham
www.imeche.org/VTMS

CEFG/Automobile Division
Conference



EXHIBITORS:

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VTMS 12

10-13 May 2015, East Midlands Conference Centre, Nottingham

VTMS 12 WILL COVER THE LATEST RESEARCH AND TECHNOLOGICAL ADVANCES IN THE FIELD OF HEAT TRANSFER, ENERGY MANAGEMENT, THERMAL COMFORT AND THE EFFICIENT INTEGRATION AND CONTROL OF ALL THERMAL SYSTEMS WITHIN THE VEHICLE.

BENEFITS OF ATTENDANCE:

- **Hear** the latest developments in research on heat exchangers and components
- **Understand** the new trends and associated challenges for manufacturing
- **Study** powertrain thermal management for IC engines, HEV and EV
- **Consider** thermal management for the entire vehicle, including heating and cooling systems as well as air flow management
- **Network** with thought-leaders and companies at the forefront of VTMS technology

EVENT PARTNERS:

Racecar Engineering

IHS

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LowC VP – low carbon vehicle partnership

ORGANISING COMMITTEE:

Darren Butler (Chair), Nissan
David Bridge, MIRA
Jon Caine, Ford Motor Company
Richard Davies, Calsonic Technology Centre Europe
Bernd Gruenenwald, MAHLE Behr
Thomas Heckenberger, Delphi
Morgan Heikal, University of Brighton
Paul Hillman, Calsonic Technology Centre Europe
Clive Hughes, Tata Motors European Technical Centre
Steve Jones, Bentley Motors
Christophe Petitjean, Valeo
Cedric Rouaud, Ricardo
Paul Shayler, University of Nottingham
Chris Wheelans, Jaguar Land Rover
Peter White, Coventry University
Ben Wicksteed, Jaguar Land Rover

VTMS 12 EXHIBITION & SPONSORSHIP

There will be an exhibition supporting the conference, which delegates will be free to attend throughout Monday to Wednesday, plus the welcome reception on Sunday evening. There is also an exhibition reception on Monday evening for which delegates can purchase tickets.

EXHIBITORS INCLUDE:

Aleris
ANSYS
Exa
SOLVAY – asking more from chemistry®
GT Gamma Technologies
KULI software – ENERGY MANAGEMENT OPTIMIZATION
ThermoAnalytics
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SPEAKERS AND CONTRIBUTORS

DARREN BUTLER CONFERENCE CHAIR

MANAGER, CLIMATE SYSTEM DESIGN, NISSAN TECHNICAL CENTRE EUROPE

Darren Butler began his career at Ricardo Consulting Engineers in the field of powertrain thermal and structural analysis. Following a move to the Research Group for Thermal Analysis, he was appointed Senior Project Engineer for Powertrain Thermal Systems in 1997, and went on to lead the Vehicle Thermal Management Systems group at Ricardo Vehicle Engineering from 2001. During his career, Darren has worked on a wide variety of thermal management projects, including published research for new vehicle thermal simulation methods to support shorter development lead times, and an advanced cooling system for reduced fuel consumption.

DR SIMON EDWARDS KEYNOTE SPEAKER

GLOBAL DIRECTOR, TECHNOLOGY, RICARDO

Simon Edwards started his career at LeylandDAF Trucks in 1982. He joined Ricardo in 1993, working on engine development and research projects, firstly in the UK and latterly, after a UK Royal Academy of Engineering fellowship with DaimlerChrysler, in Stuttgart, Germany. Between 2006 and 2012, Simon was Head of Advanced Engineering, Engine Cooling at Behr in Stuttgart. In July 2012, Simon rejoined Ricardo and is currently Global Director, Technology, responsible for the research and collaboration portfolio of the company.

DR BOB JOYCE AFTER-DINNER SPEAKER

EXECUTIVE DIRECTOR, PRODUCT CREATION AND DELIVERY, JAGUAR LAND ROVER

Bob Joyce has over 35 years of experience, which began at Ricardo Consulting, leading the development of 6/8/12/16 cylinder engines called the F Series. Bob joined Rover in 1991 and was responsible for the design and development of Rover's innovative new K series engine. Following the sale of Rover, Bob was recruited by Ford Motor Company to become Engineering Director – Land Rover. In 2007, under Tata ownership, Bob became Group Engineering Director responsible for the UK's third largest engineering team.

RESEARCH FORUM PANEL:

DR ANTHONY BAXENDALE

MANAGER FOR FUTURE TRANSPORT TECHNOLOGIES AND RESEARCH, MIRA

Anthony Baxendale joined MIRA in 1991 after five years at the Aircraft Research Association. From 1997 to 2004 he was responsible for MIRA's Fluids Engineering department. Since 2004 he has been MIRA's Research Manager, responsible for MIRA's future transport technology strategy and the operational management and development of the programme to deliver this. The key themes of this programme are low-carbon vehicle technologies, intelligent mobility technologies and autonomous ground vehicle technologies.

DR ANDREAS EILEMANN

ADVANCED ENGINEERING, LIGHT VEHICLE, MAHLE BEHR

Andreas Eilemann studied Physics at the Universities of Düsseldorf and Göttingen in Germany, receiving his PhD in Physics from Göttingen University with a thesis in Psychological Acoustics. Joining Behr in 1995, he worked in different functions within Advanced Engineering Air Conditioning, before three years as Chief Engineer Air Conditioning at Behr America in Michigan, USA. After his return he took responsibility for development of heat exchangers. Since 2009, Andreas has been responsible for Pre-Development Engine Cooling Light Vehicles within the business unit, Thermal Management of Mahle.

PROFESSOR DAVID GREENWOOD

ADVANCED PROPULSION SYSTEMS, WMG, UNIVERSITY OF WARWICK

David Greenwood is Professor of Advanced Propulsion Systems at WMG, University of Warwick, where he is responsible for powertrain research activities with a particular focus on the automotive industries. David joined WMG in 2014 with over 20 years' industrial experience in new technology development for the automotive and related industries. Following university, he joined engineering consultancy Ricardo UK, where he stayed for over 20 years. Beginning work as a technical software writer, David then worked in Powertrain and Vehicle research, and then led the Vehicle Thermal Management department before moving back into an Advanced Technology role as UK Product Group Head, finally running the UK Hybrid and Electric Systems business.

CONFERENCE OVERVIEW

MONDAY 11 MAY 2015		
09.30-10.00	Opening Ceremony	
10.00-10.30	Keynote Address	
10.30-11.00	Networking Refreshments & Exhibition	
11.00-12.30	**Session 1A: Heat Exchange I**	**Session 1B: Alternative Powertrain**
12.30-14.00	Networking Lunch & Exhibition	
14.00-15.30	**Session 2A: Heat Exchange II**	**Session 2B: Engines**
15.30-16.00	Networking Refreshments & Exhibition	
16.00-17.30	**Session 3: Simulation/Energy Management I**	

TUESDAY 12 MAY 2015		
09.30-10.30	**Session 4A: Waste Heat Recovery**	**Session 4B: Heat & A/C I**
10.30-11.00	Networking Refreshments & Exhibition	
11.00-12.30	**Session 5A: Heat Exchange III**	**Session 5B: Simulation/Energy Management II**
12.30-14.00	Networking Lunch & Exhibition	
14.00-15.30	**Session 6A: Heat Exchange IV**	**Session 6B: Waste Heat Recovery**
15.30-16.00	Networking Refreshments & Exhibition	
16.00-17.30	Research Forum Panel	

WEDNESDAY 13 MAY 2015		
09.00-10.30	**Session 7A: Underhood & Simulation I**	**Session 7B: Heat & A/C II**
10.30-11.00	Networking Refreshments & Exhibition	
11.00-12.30	**Session 8A: Heat Exchange V**	**Session 8B: Underhood & Simulation II**
12.30-14.00	Networking Lunch & Exhibition	
14.00-15.30	**Session 9A: Heat Exchange VI**	**Session 9B: Simulation/Energy Management III**
15.30-16.00	Networking Refreshments & Exhibition	
16.00-16.30	Closing Ceremony & Awards	

PROGRAMME

SUNDAY 10 MAY 2015	
17.00-19.00	**Welcome Exhibition Reception** Please indicate if you would like to attend the welcome reception on the booking form at the back of this brochure.

MONDAY 11 MAY 2015	
09.30	**Opening Ceremony**
10.00	**Keynote Address** Dr Simon Edwards, Global Director, Ricardo
10.30	**Networking Refreshments & Exhibition**
11.00-12.30	**SESSION 1A: HEAT EXCHANGE I**
	Optimising the Cost of Thermal Management Components by Using High-Performance Engineering Polymer (HPEP) M Wright, Solvay Specialty Polymers, UK
	High-Temperature Polyamides: the Latest Developments for High-Temperature Applications E Spini, Radici Plastics, Italy
	Plastic Material Development for Lightweight Exchanger and Climate Control Parts P Havet, A Tanghe, Valeo Thermal Systems – Powertrain Thermal Systems, France
11.00-12.30	**SESSION 1B: ALTERNATIVE POWERTRAIN**
	Efficient and Integrated Thermal Management for Electric Vehicles B Jiang, HVACR & Heat Transfer Research Group, University of Nottingham, UK & Hefei University of Technology, China; Q Wang, Y Yana, HVACR & Heat Transfer Research Group, University of Nottingham, UK
	Improving Electric Vehicle Energy Efficiency with Co-Simulation of Cooling System, HVAC System and Electric Drivetrain D Dvorak, Austrian Institute of Technology, Austria; C Rathberger, A Lichtenberger, MAGNA, Engineering Centre Steyr, Austria
12.30	**Networking Lunch & Exhibition**
14.00-15.30	**SESSION 2A: HEAT EXCHANGE II**
	Taking the Best of Polyamide Engineering Materials for Cooling and Air Intake Systems Components T Landtmeters, Toyota Motors Europe, Belgium; N Delon-Anik, Solvay Research and Innovation, France; A Guiu, Solvay Engineering Plastics, France
	High-Heat Resistant Polyamides for the Air Intake System M Hoffmann, O Thomas, A Bayer, B Hoffmann, EMS-CHEMIE, Switzerland
	Plastic Material Development for New Charge Air Cooler Exchanger in the Low-Pressure Exhaust Gas Recirculation Loop Z Ahmed, G Cairnie, M Ndiaye, J Rodriguez, A Sankar, AVL Powertrain, UK
14.00-15.30	**SESSION 2B: ENGINES**
	The Split-Cycle Engine and Its Impact on the Vehicle Cooling System RE Morgan, G Dong, MR Heikal, Centre for Automotive Engineering, University of Brighton, UK
	To be announced
	Development of a High-Efficiency Liquid-Air Engine For Cooling, Heat Recovery and Power N Owen, H Clarke, Dearman Engine Company; D Charters, MIRA, UK; J Trembley, Air Products, UK; C Garner, S Mohr, A Williams, H Zhao, Loughborough University, UK
15.30	**Networking Refreshments & Exhibition**
16.00-17.30	**SESSION 3: SIMULATION/ENERGY MANAGEMENT I**
	Thermal Gasoline Concept Vehicle, Simulation and Control X Liu, R Rastelli, BorgWarner, USA
	Assessment of the Benefits from an Electric Coolant Pump by Means of Dual Numerical Simulations, Comprising a Model of the Thermal System Coupled with the Model of a Plug-In Hybrid Concept E Andrès, V Mazet, S Bruck, Renault SAS, Alliance Systems Engineering Division, France
	Charge Air Aubcooling for Improved Transient Response N Fraser, I Reynolds, J Miller, MAHLE Powertrain; P Wieske, M Warth, MAHLE International; A Eilemann, MAHLE Behr & Co. KG
17.45	**Exhibition Reception** Canapés and drinks will be served among the exhibition stands. To reserve a place at the reception please complete the relevant section on the booking form.

TUESDAY 12 MAY 2015

09.30-10.30	**SESSION 4A: WASTE HEAT RECOVERY**
	Modelling and Optimisation of Thermoelectric Generator Systems A Agurto-Goya, Jaguar Land Rover, UK; S Chiwanga, European Thermodynamics, UK; P Shayler, University of Nottingham, UK
	A New Approach for Predicting the Maximum Fuel-Saving Potential of an Automotive Thermoelectric Generator in its Early Development Stage A Bauknecht, M Rexeis, RA Almbauer, Graz University of Technology, Austria
09.30-10.30	**SESSION 4B: HEAT & A/C**
	Effects of Heated Seats on Thermal Comfort and Heater Energy Consumption in Vehicle H Oi, Nissan Motor Company, Japan; Y Tochihara, Kyushu University, Japan
	Comprehensive Thermal Comfort Assessment Using Simplified Thermoregulatory Bio-Heat Equation within CFD A Dixit, U Gade, A Kandekar, Tata Technologies, India
10:30	**Networking Refreshments & Exhibition**
11.00-12.30	**SESSION 5A: HEAT EXCHANGE III**
	Aluminium Heat Exchanger and Brazing – Review and Outlook of Successful Symbiosis M Tuerpe, B Gruenenwald, MAHLE Behr, Germany
	Electrochemical Study of Aluminium Extruded Tubes for Brazed Condenser I Portal, C Casenave, M Wainer, L Aubanel, M Phillippe, V Renault, AG Villemiane, Valeo Thermal Systems, France
	A Mechanistic Study of Aluminium Brazing Systems DK Hawksworth, Diomedea, Canada; DP Sekulic, University of Kentucky, USA & Harbin Institute of Technology, China; H Fu, University of Kentucky, USA; RA Westergård, Gränges, Sweden
11.00-12.30	**SESSION 5B: SIMULATION/ENERGY MANAGEMENT II**
	Heavy-Duty Vehicle Cooling System Auxiliary Load Management Control: A Comparison of Advanced Control Strategies S Sermeno, E Bideaux, T Morgan, INSA de Lyon & Renault Trucks SAS, France
	Next Generation of Thermal Management System for 2018 Applications T Singh, R Nolte, A Calamiello, General Motors Engineering, Germany & Italy; C Rouaud, K Heffer, S Porteous, Ricardo, UK
	An Integrated System Approach to Thermal Management on the BorgWarner Thermal Gasoline Concept Vehicle A Sutherland, E Sharpe, X Liu, BorgWarner, USA
12:30-14:00	**Networking Lunch & Exhibition**
14.00-15.30	**SESSION 6A: HEAT EXCHANGE IV**
	Reaction Behaviour of Mixtures of Non-Corrosive Flux and Non-Corrosive Flux Containing Zn During Brazing H Kumagai, N Yamashita, UACJ Corporation, Japan
	Recent Work on Low Melting Clad for Heat Exchanger Products A Schlegel, B Jacoby, S Kirkham, A Buerger, Aleris Rolled Products, Germany
14.00-15.30	**SESSION 6B: WASTE HEAT RECOVERY**
	Electrical Heat-Assisted Lean NOx Trap System for NOx Emissions Reduction in Diesel Engines Z Ahmed, G Cairnie, M Ndiaye, J Rodriguez, A Sankar, AVL Powertrain, UK
	A Novel Working Fluid for Organic Rankine Cycle (ORC) AS Panesar, RE Morgan and MR Heikal, Centre for Automotive Engineering, University of Brighton, UK
15.30	**Networking Refreshments & Exhibition**
16.00	**Research Forum Panel Discussion:** **Thermal Management for the 2020s: Challenges, Opportunities and Hanging Requirements** **Panellists:** **David Skipp**, Manager, UK Technical Strategy & Business Office, Research & Advanced Engineering, Ford, UK; **Prof David Greenwood**, Advanced Propulsion Systems, University of Warwick, UK; **Dr Anthony Baxendale**, Manager for Future Transport Technologies and Research, MIRA, UK; **Dr Andreas Eilemann**, Advanced Engineering, Light Vehicle, MAHLE Behr, Germany
17.30	**Close of Technical Session**
18.30	**Conference Dinner: Nottingham Castle** **After-Dinner Speaker** Dr Bob Joyce, Executive Director, Product Creation and Delivery, Jaguar Land Rover, UK **Sponsored by Dana** Please note places at the dinner are limited and will be reserved for delegates on a first come first served basis. Please complete the relevant section on the booking form. **DINNER SPONSOR:** DANA

WEDNESDAY 13 MAY 2015

09.00-10.30	**SESSION 7A: UNDERHOOD & SIMULATION I**
	Drive Cycle Simulation of a Tiered Cooling Pack Using Non-Uniform Boundary Conditions W Jansen, Jaguar Land Rover, UK
	Cooling Airflow Virtual Component Characterisation D Wellman, S Wakelam, Jaguar Land Rover Thermal and Aerodynamic Systems Engineering & EXA, UK
	Predicting Cooling System Transient Performance Utilising 3D Simulation and a Simplified Cooling Package and Powertrain System Model A Price, Bentley Motors, UK; E Tate, Z Yang, Exa Corporation, USA; V Staelens, Exa Corporation, UK
09.00-10.30	**SESSION 7B: HEAT & A/C II**
	Prediction of Vehicle Interior Warm-Up and Cool-Down using CAE Techniques KS Sandhu, Jaguar Land Rover, UK
	Simulative Comparison of Conventional and Secondary Loop Automotive Refrigeration Systems JC Menken, JE Koerner, TA Weustenfeld, K Strasser, Audi, Germany; J Koehler, Institute of Thermodynamics, University of Braunschweig, Germany
10:30	**Networking Refreshments & Exhibition**
11.00-12.30	**SESSION 8A: HEAT EXCHANGE V**
	Development of Continuous Cast Aluminium Fin Stock for a Smaller, Lighter and More Efficient Radiator T Kokubo, T Anami, Nippon Light Metal Company, Japan; H Teramoto, S Teshima, T Toyama, Japan
	Analysis of Unsteady Flow for Vortex Generator Development for Heat Exchangers J Hara, M Iwasaki, Calsonic Kansei, Japan; I Honda, University of Hyogo, Japan
	Development of Advanced Multi-clad Aluminium Sheets Solutions for Charge Air Cooler Applications L Peguet, B Chehab, M Perrier, H Noui; Constellium Technology Center, France
11.00-12.30	**SESSION 8B: UNDERHOOD & SIMULATION II**
	Simulation Approach for Bumper Integrated Tailpipe Finisher SK Sivasankaran, W Jansen, Jaguar Land Rover, UK; V Staelens, Exa, France
	Dual-Use Heater Core – Increase in Trailer Tow Capacity and Analysis of Control Set-Points with Active Grill Shutters S Uppuluri, A Naiknaware, Computational Sciences Experts Group, USA
	Thermal Transient Soak Modelling Validation in the Tata Nano Vehicle
12:30	**Networking Lunch & Exhibition**
14.00-15.30	**SESSION 9A: HEAT EXCHANGE VI**
	Next-Generation Header Materials for Corrosion-Resistant Heat Exchangers V Sass, G Bermig, H Janssen and S Schlueter, Hydro Aluminium Rolled Products, Germany
	To be announced
14.00-15.30	**SESSION 9B: SIMULATION/ENERGY MANAGEMENT III**
	Energy Flow Rate Based Thermal Management for Electric Vehicles Using a Secondary Loop Heating and Cooling System TA Weustenfeld, W Bauer-Kugelmann, JC Menken, K Strasser, AUDI, Germany; J Koehler, Institute of Thermodynamics, University of Braunschweig, Germany
	A Process for Battery Thermal Design E Tate, J Han, A Velivelli, Z Yang, Exa Corporation, USA; W Jansen, I Hughes, Jaguar Land Rover, UK
	Effects of Variable Accelerations on a PHP-based cooling system M Manzoni, M Mameli, University of Bergamo, Italy; M Marengo, University of Bergamo, Italy & University of Brighton, UK; C de Falco, L Areneo, Politecnico di Milano, Italy; S Filippeschi, University of Pisa, Italy
15.30	**Networking Refreshments & Exhibition**
16.00-16.30	**Closing Ceremony & Awards**

THURSDAY 14 MAY 2015

10.00-12.00	**Technical Visit to Rolls Royce Heritage Trust** The Rolls-Royce Heritage Trust exhibition houses an extensive collection at our Light Alloy Foundry (LAF) site on Osmaston Road, where you can see the largest collection of aero engines in the country, ranging from World War I era piston engines, the famous Merlin, up to modern day jet engines. The collection also includes examples across Rolls-Royce's product range including marine and industrial applications. To reserve a place please complete the relevant section on the booking form.

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

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

BOOKING FORM

EVENT CODE: C1400AB

VTMS 12
10-13 May 2015
East Midlands Conference Centre, Beeston Lane, The University of Nottingham, Nottingham NG7 2RJ

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FEES AND CHARGES Please complete the appropriate box.

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

	PRICE	VAT	TOTAL
Member, Institution of Mechanical Engineers	£660.00	£132.00	£
Member, supporting organisation	£660.00	£132.00	£
Non-member	£864.00	£172.80	£
Student/retired	£275.00	£55.00	£
Presenting Author	£440.00	£88.00	£
Conference Dinner - Attendee	£60.00	£12.00	£
Welcome Exhibition Reception	£20.00	£4.00	£
Technical Visit to Rolls-Royce Heritage Centre:	£25.00	£5.00	£

Please indicate which sessions you would like to attend:

Monday 11 May
☐ 1A/1B ☐ 2A/2B

Wednesday 13 May
☐ 7A/7B ☐ 8A/8B ☐ 9A/9B

Tuesday 12 May
☐ 4A/4B ☐ 5A/5B ☐ 6A/6B

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.

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

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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.

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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.

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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

East Midlands Conference Centre, Beeston Lane, The University of Nottingham, Nottingham NG7 2RJ

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.

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OTHER EVENTS TO LOOK FOR:

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www.imeche.org/EMS2015

23 April 2015
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MANAGING YOUR WAY TO F1 SUCCESS

Andy Cowell, Managing Director, Mercedes AMG High Performance Powertrains, will explore how to manage a fast-paced, technically advanced organisation and stay in control.

www.imeche.org/events/L6217

16 June 2015
Coventry

BEYOND CONVENTIONAL POWERTRAIN: SVT 2015

SVT 2015 will explore technologies being developed for future sustainable powertrains and examine the behaviour of these in real-world driving situations.

www.imeche.org/events/C6188

INFORMATION AND BOOKINGS

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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.

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

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