

# SUSTAINABLE VEHICLE TECHNOLOGIES: DRIVING THE GREEN AGENDA.

Institution of  
**MECHANICAL  
ENGINEERS**

Automobile Division  
**Conference**

14-15 November 2012  
Gaydon, Warwickshire  
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## WHY YOU SHOULD BE THERE

### **SVT 2012's innovative programme examines the latest technological advances, exploring the consequences of carbon dioxide reduction over the entire vehicle lifecycle.**

Technical papers from senior industry figures will examine all aspects of the finite resources available for vehicle production, operation and recycling.

This conference maintains the high standard of presentations from the 2009 Low Carbon Vehicle conference, which focused primarily on powertrain technology. SVT 2012 instead considers all areas of environmental pollution, in addition to the goals for delivering low-carbon vehicles.

#### **Conference Chairman's Message**

Low-carbon vehicles have now moved from research concepts into mainstream products. This conference will address a major concern that the life time emissions and sustainability of low-carbon technologies need to show improvements compared with conventional IC engines over the whole life of the entire product cycle.

Professor Richard Folkson

## BENEFITS OF ATTENDANCE:

- Understand the latest weight reduction technology using lightweight or high-strength materials
- Explore alternative propulsion systems including hybrids, electric and mechanical systems
- Discuss hydrogen and fuel cells
- Evaluate engine downsizing and power-pack design
- Learn more about lifetime CO<sub>2</sub> analysis
- Debate low CO<sub>2</sub> processes for product development

**WHEN** 14-15 November 2012  
**WHERE** The Heritage Motor Centre, Banbury Road,  
Gaydon, Warwickshire, CV35 0BJ  
**BOOK ONLINE** [www.imeche.org/events/C1324](http://www.imeche.org/events/C1324)

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## SPEAKERS AND CONTRIBUTORS



### BOB JOYCE

GROUP ENGINEERING DIRECTOR,  
JAGUAR LAND ROVER

Bob is responsible for ensuring that Jaguar Land Rover maintain the right focus on technology and innovation. At JLR he has overseen the development of the complete range of new vehicles including Range Rover, Discovery 4, Range Rover Sport, Freelander 2, Jaguar XK, XF, XJ and the new Land Rover Evoque.



### NEVILLE JACKSON

CHIEF TECHNOLOGY & INNOVATION  
OFFICER, RICARDO PLC

Neville Jackson is responsible for developing the future global vision of automotive and energy technology at Ricardo and for the strategy, planning and execution of research and development. He is also Chairman of the UK Low Carbon Vehicle Partnership, Deputy Chair of the UK Automotive Council Technology Group, a member of the UK Energy Research Partnership and a member of the Strategic Advisory Network for the UK's Engineering and Physical Sciences Research Council (EPSRC).

## PROGRAMME

<b>DAY 1</b> <b>WEDNESDAY</b> <b>14/11</b>	<b>9:00</b>	<b>REGISTRATION</b>
	<b>9:40</b>	<b>KEYNOTE PRESENTATION</b> Bob Joyce, Group Engineering Director, Jaguar Land Rover
<b>SESSION 1</b> <b>LCA</b> <b>CHAIRD BY</b> <b>RICHARD</b> <b>FOLKSON, UK</b>	<b>10:10</b>	<b>ADOPTING LOW CARBON TECHNOLOGIES: CONSIDERING THE WIDER INFLUENCES AND CONSEQUENCES</b> S Wrigley, Ricardo, UK
	<b>10:30</b>	<b>ENERGY DEMAND ASSESSMENT OF ELECTRIFIED DRIVETRAINS IN MATERIAL EXTRACTION AND SYSTEM MANUFACTURING</b> C S Ernst, M Hans, L Eckstein, Institute for Automotive Engineering, RWTH Aachen University, Germany
	<b>10:50</b>	<b>Q&amp;A</b>
	<b>11:10</b>	<b>BREAK</b>
<b>SESSION 2</b> <b>LCA</b> <b>CHAIRD BY</b> <b>JAMES</b> <b>MARCO,</b> <b>CRANFIELD</b> <b>UNIVERSITY,</b> <b>UK</b>	<b>11:40</b>	<b>EVALUATING AND PRIORITISING SUSTAINABLE VEHICLE TECHNOLOGIES: COMPLIANCE, COMPETITION, CONSERVATION AND CONTEXT</b> I H Ellison, Jaguar Land Rover, UK
	<b>12:00</b>	<b>A LIFE CYCLE ASSESSMENT COMPARISON OF RAPESEED BIODESEL AND CONVENTIONAL DIESEL</b> M Stow, M C McManus, C Bannister, University of Bath, UK
	<b>12:20</b>	<b>IMPROVING THE SUSTAINABILITY OF ALUMINIUM SHEET</b> A Tautscher, Jaguar Land Rover, UK
	<b>12:40</b>	<b>Q&amp;A</b>
	<b>13:00</b>	<b>LUNCH BREAK</b>
<b>SESSION 3</b> <b>PANEL</b> <b>DISCUSSION</b>	<b>14:00</b>	<b>WHAT ARE THE MAJOR CHALLENGES OF PRODUCING SUSTAINABLE VEHICLES FOR MANUFACTURERS AND FUEL PRODUCERS IN THE MEDIUM TO LONG TERM?</b> Panel includes Richard Pearson, BP, Mark Stanton, Jaguar Land Rover and Jonathan Horsley, Lead Technologist, Technology Strategy Board
	<b>15:20</b>	<b>BREAK</b>
<b>SESSION 4</b> <b>FUELS</b> <b>CHAIRD BY</b> <b>RICHARD</b> <b>PEARSON, BP</b>	<b>15:50</b>	<b>AMMONIA AS A HYDROGEN ENERGY CARRIER AND ITS APPLICATION TO INTERNAL COMBUSTION ENGINES</b> M Koike, H Miyagawa, T Suzuoki, K Ogasawara, Toyota Central R&D Labs., Inc., Japan
	<b>16:10</b>	<b>EVOLUTIONARY DECARBONISATION OF TRANSPORT: A CONTIGUOUS ROADMAP TO AFFORDABLE MOBILITY USING SUSTAINABLE ORGANIC FUELS FOR TRANSPORT</b> J W G Turner, R J Pearson, Lotus Engineering, UK; P Harrison, A Marmont, R Jennings, Air Fuel Synthesis Limited, UK; S Verhelst, J Vancoulli, L Sileghem, Ghent University, Belgium; M Pecqueur, K Martens, Karel de Grote University College, Belgium; P P Edwards, University of Oxford, UK
	<b>16:30</b>	<b>HIGH PRESSURE GRID CNG: THE LOW CO<sub>2</sub> OPTION</b> J Baldwin, R M McKeon, CNG Services Ltd. UK
	<b>16:50</b>	<b>MATERIALS HANDLING VEHICLES; AN EARLY MARKET SECTOR FOR HYDROGEN FUEL CELLS WITHIN EUROPE</b> I Mansouri, RK Calay, School of Engineering & Technology, University of Hertfordshire, UK
	<b>17:10</b>	<b>Q&amp;A</b>
	<b>17:30</b>	<b>NETWORKING RECEPTION</b> Motor Museum The Heritage Motor Centre is home to the world's largest collection of British cars, with nearly 300 cars spanning the classic, vintage and veteran eras; a mecca for car enthusiasts.  An additional charge applies for attending the reception – see the booking form on page 6. You must register in advance to attend.
<b>DAY 2</b> <b>THURSDAY</b> <b>15/11</b>	<b>9:10</b>	<b>KEYNOTE PRESENTATION</b> Neville Jackson, Chief Technology & Innovation Officer, Ricardo plc, UK
<b>SESSION 5</b> <b>DUTY CYCLE</b> <b>CHAIRD BY</b> <b>CHRIS BRACE,</b> <b>UNIVERSITY</b> <b>OF BATH, UK</b>	<b>9:30</b>	<b>ELECTRIC VEHICLE EFFICIENCY MAPPING</b> S Carroll, C Walsh, Cenex, UK; C Bingham, University of Lincoln, UK; R Chen, M Lintern, Loughborough University, UK
	<b>9:50</b>	<b>DEPENDENCE ON TECHNOLOGY, DRIVERS, ROADS, AND CONGESTION OF REAL-WORLD VEHICLE FUEL CONSUMPTION</b> N E Ligterink, T C Kraan, A R A Eijk, TNO Delft, The Netherlands
	<b>10:10</b>	<b>Q&amp;A</b>

## SPEAKERS AND CONTRIBUTORS



### RICHARD PEARSON

AUTOMOTIVE ENGINEERING ADVISOR,  
RESEARCH AND TECHNOLOGY GROUP,  
BP FUELS AND LUBRICANTS

After working as a Design Engineer at Ricardo Consulting Engineers Richard carried out post-graduate studies at the University of Manchester Institute of Science and Technology where he was awarded M.Sc. and Ph.D. degrees in modelling of the thermodynamics and gas dynamics of internal combustion engines. Richard subsequently worked as a research associate and a lecturer at UMIST before joining Lotus Engineering in 1998 where he became a Senior Technical Specialist in the Advanced Concepts group, working on low carbon powertrain, fuel, and vehicle technologies. Richard joined BP in 2012.



### MARK STANTON

DIRECTOR VEHICLE ENGINEERING,  
JAGUAR LAND ROVER

Mark began his career at Ford Motor Company and worked in various roles in Chassis and Vehicle Engineering before becoming Chief Program Engineer for small cars. 6 years ago he moved to Jaguar Land Rover to take up his current role of Director of Vehicle Engineering running a team of over 500 engineers. He is also the Executive Champion for all our JLR Virtual activities and the Executive Champion for the increasingly important China market.

## PROGRAMME

	10:30	<b>BREAK</b>
<b>SESSION 6 ENERGY USAGE REDUCTION CHAIRD BY CHRIS WHEELANS, LOTUS ENGINEERING</b>	11:00	<b>THE ENVIRONMENTAL CASE FOR BESPOKE DOUBLE DECK TRAILERS</b> L A Curtis, Gray & Adams Ltd, UK
	11:20	<b>AERODYNAMIC DRAG REDUCTION FOR LOW CARBON VEHICLES</b> J P Howell, Tata Motors European Technical Centre, UK
	11:40	<b>VEHICLE LIGHT WEIGHTING USING A NEW CAE TOOL FOR PREDICTING THIN FILM DEFECTS IN HIGH STRENGTH CASTINGS</b> M A Buckley, Jaguar Land Rover, UK; N J Humphreys, University of Birmingham, UK
	12:00	<b>VEHICLE OPTIMISATION FOR REGENERATIVE BRAKE ENERGY MAXIMISATION</b> M T Von Srbik, R F Martinez-Botas, Imperial College London, UK
	12:20	<b>Q&amp;A</b>
	12:40	<b>LUNCH BREAK</b>
<b>SESSION 7 PROPULSION 1 (ENERGY EFFICIENCY) CHAIRD BY MIKE RICHARDSON, JAGUAR LAND ROVER, UK</b>	13:40	<b>DIRECT HEAT RECOVERY FROM THE ICE EXHAUST GAS</b> R Cipollone, D Di Battista, A Gualtieri, Department of Mechanical Engineering, Energy and Management, University of L'Aquila, Italy
	14:00	<b>HYBOOST: AN INTELLIGENTLY ELECTRIFIED OPTIMISED DOWNSIZED GASOLINE ENGINE CONCEPT</b> J King, M Heaney, E Bower, N Jackson, N Owen, Ricardo, UK; J Saward, A Fraser, Ford Motor Company, UK; G Morris, P Bloore, Controlled Power Technologies, UK; T Cheng, J Borges-Alejo, M Criddle, Valeo, France
	14:20	<b>Q&amp;A</b>
	14:40	<b>REFRESHMENTS</b>
<b>SESSION 8 PROPULSION 2 CHAIRD BY GEORGE HARITOS, UNIVERSITY OF HERTFORD- SHIRE</b>	15:00	<b>DEVELOPMENT OF A RANGE EXTENDED ELECTRIC VEHICLE DEMONSTRATOR</b> M D Bassett, J Hall, T Cains, G Taylor, M Warth, MAHLE Powertrain Ltd., UK; C Vogler, Dresden University of Technology, Germany
	15:20	<b>MODELLING AND SIMULATION OF A FUEL CELL POWERED MEDIUM DUTY VEHICLE PLATFORM</b> R Felix Moreno, J T Economou, K Knowles, Intelligent Propulsion and Emissions Laboratory (IPEL), Cranfield University Defence Academy, UK
	15:40	<b>AUXILIARY POWER UNITS FOR RANGE EXTENDED ELECTRIC VEHICLES</b> N Powell, M Little, J Reeve, J Baxter, Ricardo UK; S Robinson, A Herbert, Jaguar Land Rover, UK; A Mason, P Strange, Tata Motors European Technical Centre, U.K; D Charters, MIRA Ltd, UK; S Benjamin, S Aleksandrova, Coventry University, UK
	16:00	<b>Q&amp;A</b>
	16:20	<b>CHAIRMAN'S CLOSING COMMENTS</b>

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

### Automobile Division organising committee:

Richard Folkson (Chairman)	Consultant
Lisa Bingley	MIRA
Chris Brace	University of Bath
George Haritos	University of Hertfordshire
Jon Hilton	Flybrid Systems
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Mark Stanton	Jaguar Land Rover
Chris Wheelans	Lotus Engineering

### The committee would like to thank the following supporters:

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15-16 May 2013, Coventry Technocentre

#### **VTMS11 (VEHICLE THERMAL MANAGEMENT SYSTEMS)**

Whether contributing to achieving vehicle CO<sub>2</sub> targets, or maximising electric vehicle range, optimised thermal energy management is key to vehicle development programmes. This conference series provides an unrivalled opportunity to hear the latest research and advances from industry and academia.

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27-28 November 2013, London

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AUTOMOBILE DIVISION  
**SUSTAINABLE VEHICLE TECHNOLOGIES:  
DRIVING THE GREEN AGENDA.**  
14-15 NOVEMBER 2012  
C1324

Please complete and return this form to:

## EVENT REGISTRATIONS

Institution of Mechanical Engineers  
1 Birdcage Walk, London SW1H 9JJ

Fax +44 (0)20 7222 9881

For registration enquiries call  
**Tina Churcher** on +44 (0)20 7973 1258  
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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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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. As such, 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.

### SUPPORTING ORGANISATIONS

SMMT, LowCVP, FISITA. Members of supporting organisations can register at members' rates.

### VENUE

This event will be held at The Heritage Motor Centre, Banbury Road, Gaydon, Warwickshire, CV35 0BJ

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Author	£250.00	£50.00	£300.00	_____

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