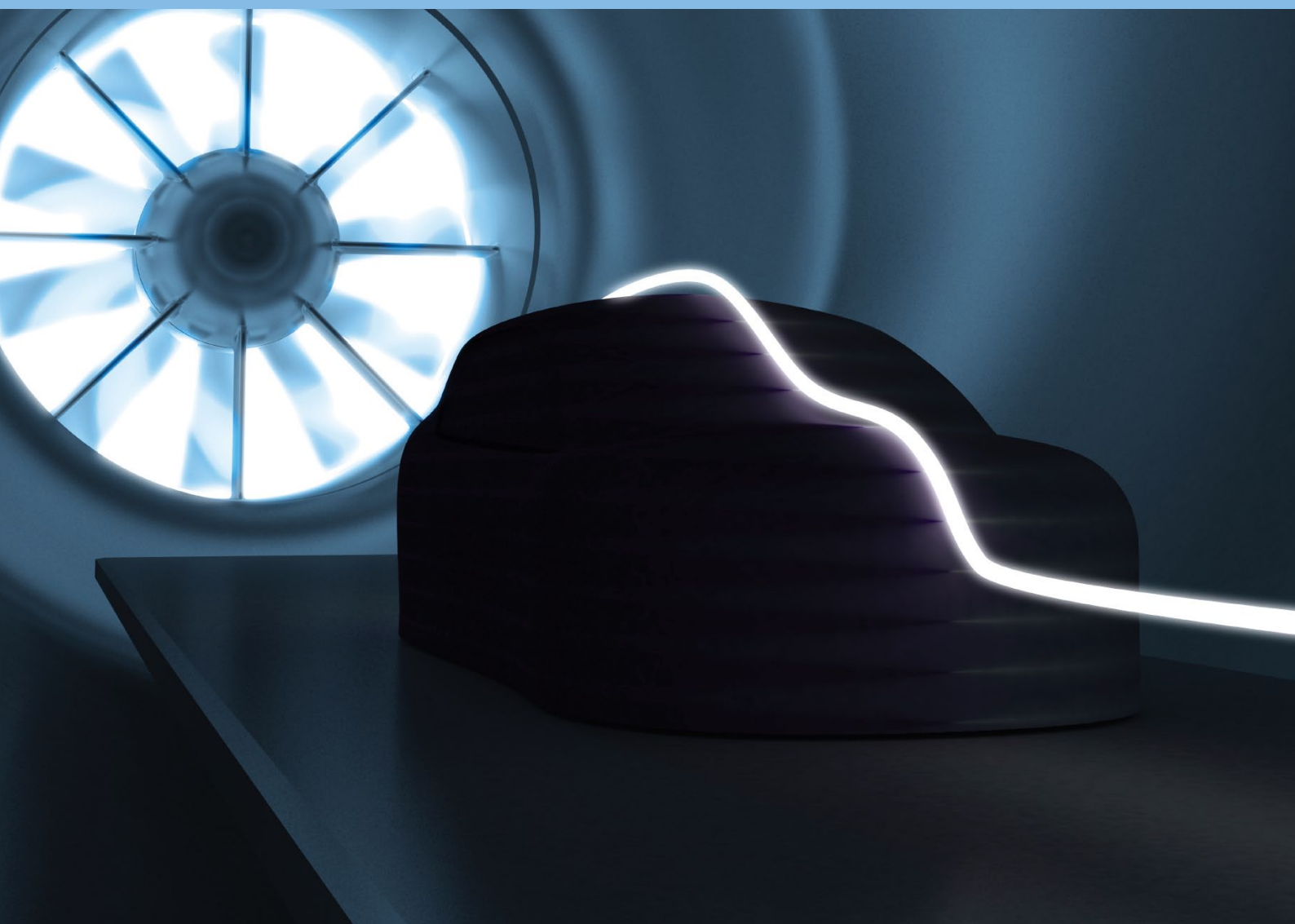


INTERNATIONAL VEHICLE AERODYNAMICS CONFERENCE 2014

Institution of
**MECHANICAL
ENGINEERS**

Automotive Division
Conference

14-15 October 2014
Holywell Park, Loughborough.
www.imeche.org/events/C1385



INTRODUCTION

Aerodynamics is key to the development of cars, commercial vehicles, motorbikes, trains and human powered vehicles. Driven by the need for energy efficiency and a legislative need for the reduction in carbon dioxide emissions, aerodynamics has never been more fundamental in vehicle design.

The ability to design vehicles that can meet these exacting technical challenges is based on fundamental scientific and engineering knowledge, as well as wind tunnel and computational fluid dynamics technology.

The 2014 International Vehicle Aerodynamics Conference 2014 is the latest event in the successful series initiated by the Royal Aeronautical Society in 1994 and continued by MIRA between 1996 and 2010. This prestigious conference provides an ideal opportunity for engineers, designers, academics and researchers to present the latest developments across an extensive range of aerodynamics topics.

WHEN	14-15 October 2014
WHERE	Holywell Park, Loughborough.
BOOK ONLINE	www.imeche.org/events/C1385

BENEFITS OF ATTENDANCE:

- Network with the international vehicle aerodynamics community
- See some of the latest developments in CFD and aerodynamic testing
- Learn about current and future aerodynamic theories from international industry specialists
- Get the latest updates from software, service and consultancy providers
- Evaluate current industry standards against legislative requirements

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PROGRAMME TUESDAY 14 OCTOBER

	09:00	REGISTRATION
	09:30	CHAIR'S OPENING REMARKS
	09:40	KEYNOTE ADDRESS: AUTOMOTIVE AERODYNAMICS: SOLVE PROBLEMS RIGHT OR SOLVE THE RIGHT PROBLEMS? Professor Jochen Wiedemann, Chair of Automotive Engineering, Institut für Verbrennungsmotoren und Kraftfahrwesen (IVK)
REAL WORLD CONDITIONS PART 1	10:20	REAL WORLD DRAG CO-EFFICIENT - IS IT WIND AVERAGED DRAG? S. Windsor, Jaguar Land Rover
	10:40	AERODYNAMIC DRAG IN A WINDY ENVIRONMENT J. Howell, Tata Motors European Technical Centre
	11:00	REFRESHMENT BREAK
REAL WORLD CONDITIONS PART 2	11:30	EXPERIMENTAL INVESTIGATION ON AERODYNAMIC EFFECTS DURING OVERTAKING AND PASSING MANOEUVRES A. Kremheller, Nissan Technical Centre
	11:50	EXPERIMENTS ON THE INFLUENCE OF YAW ON THE AERODYNAMIC BEHAVIOUR OF REALISTIC CAR GEOMETRIES C. Nayeri, D. Wieser, H-J Schmidt, C. Strangfeld, O. Paschereit, Technische Universität Berlin, Hermann-Föttinger Institut
FLOW STRUCTURES	12:10	INVESTIGATION OF THREE-DIMENSIONAL FLOW SEPERATION PATTERNS AND SURFACE PRESSURE GRADIENTS ON A NOTCHBACK VEHICLE S. Bonitz, L. Löfdahl, L. Larsson, Chalmers University of Technology, A. Broniewicz, Volvo Cars Corporation
	12:30	COMPUTATIONAL STUDY OF WAKE STRUCTURE AND BASE PRESSURE ON A GENERIC SUV MODEL D. Forbes, G. Page, M. Passmore, Loughborough University, Aeronautical and Automotive Engineering Department, A. Gaylard, Jaguar Land Rover
	12:50	LUNCH BREAK
EXPERIMENTAL TECHNIQUES	13:50	INVESTIGATION OF VEHICLE RIDE HEIGHT AND WHEEL POSITION INFLUENCE ON THE AERODYNAMIC FORCES OF GROUND VEHICLES A. Vdovin, L. Löfdahl, Applied Mechanics, Chalmers University of Technology, S. Sebben, T. Walker, Volvo Car Corporation
	14:10	TRAVERSING UNIT EFFECT ON THE FLOW STRUCTURES BEHIND A PASSENGER VEHICLE L. Sterken, Prof. L. Löfdahl, Chalmers University of Technology, Department of Applied Mechanics S. Sebben, T. Walker, Volvo Car Group, Environment and Fluid Dynamics Centre
	14:30	ON THE APPLICABILITY OF TRAPPED VORTICES TO GROUND VEHICLES A. Bouferrouk, Department of Engineering Design and Mathematics, University of West of England
	14:50	REFRESHMENT BREAK
CFD TECHNIQUES 1	15:20	APPROACH TO A COUPLED THERMAL AND AERODYNAMIC DESIGN PROCESS FOR PRODUCTION CARS S. Huber, T. Indinger, N. Adams, Technical University Munich, Institute of Aerodynamics and Fluid Mechanics, M. Jaroch, Audi AG
	15:40	INVESTIGATION INTO THE PREDICTIVE CAPABILITY OF ADVANCED REYNOLDS-AVERAGED NAVIER-STOKES MODELS FOR THE DRIVER AUTOMOTIVE MODEL N. Ashton, A. Revell, A. Stefanescu, University of Manchester, School of Mechanical, Aerospace and Civil Engineering
WHEELS AND TYRES	16:00	THE INFLUENCE OF ROTATING WHEELS ON THE EXTERNAL AERODYNAMIC PERFORMANCE OF A VEHICLE R. Lewis, M. Cross, D. Ludlow, TotalSim Ltd
	16:20	CLASSIFICATION OF AERODYNAMIC TYRE CHARACTERISTICS F. Wittmeier, T. Kuthada, N. Widdecke, P. Willey, IVK / FKFS
	16:40	STUDY OF DIFFERENT TYRE SIMULATION METHODS AND EFFECTS ON PASSENGER CAR AERODYNAMICS T. Hobeika, L. Löfdahl, Applied Mechanics, Chalmers University of Technology, S. Sebben, Volvo Car Corporation
	17:00	CLOSING REMARKS
	17:10	END OF DAY 1
	19:00	NETWORKING DRINKS AND DINNER The conference dinner will be held at Prestwold Hall. Attendees will enjoy a drinks reception followed by a three-course meal, while reflecting on the day. Delegates must register in advance on the registration form. An additional charge applies, places are limited.

PROGRAMME WEDNESDAY 15 OCTOBER

	09:00	REGISTRATION
	09:30	CHAIR'S OPENING REMARKS
	09:40	KEYNOTE SPEAKER: AERODYNAMICS IN HILLCLIMBING AND FORMULA 1 Willem Toet, Head of Aerodynamics, Sauber Motorsport AG
MOTORSPORT	10:20	INVESTIGATION OF FORCING BOUNDARY LAYER TRANSITION ON A SINGLE-ELEMENT INVERTED WING IN GROUND EFFECT L. Roberts, J. Correia, M. Finnis, K. Knowles, Cranfield University, Aeromechanical Systems Group
	10:40	INVESTIGATION INTO THE EFFECT OF THE WAKE FROM A GENERIC FORMULA 1 CAR ON A DOWNSTREAM VEHICLE J. Newbon, R. Dominy, D. Sims-Williams, Durham University, School of Engineering and Computing Sciences
	11:00	AERODYNAMIC CHARACTERISTICS OF A MONOPOSTO RACING CAR FRONT WING OPERATING IN HIGH TURBULENCE CONDITIONS J. Correia, L. Roberts, M. Finnis, K. Knowles, Aeromechanical Systems Group, Cranfield University, Defence Academy of the UK
	11:20	REFRESHMENT BREAK
CFD TECHNIQUES 2	11:50	SHAPE OPTIMISATION FOR AERODYNAMIC PERFORMANCE USING ADJOINT METHODS A. Wade, M. Keating, ANSYS UK Ltd
	12:10	OPTIMISED PRE-PROCESSING OF TENS OF BILLIONS OF GRIDS IN A FULL-VEHICLE AERODYNAMIC SIMULATION ON THE K-COMPUTER K. Onishi, RIKEN Advanced Institute for Computational Science, M. Tsubokura, Hokkaido University Graduate School of Engineering/RIKEN Advanced Institute for Computational Science
COMMERCIAL VEHICLES	12:30	DRAW-REDUCTION SYSTEMS TO IMPROVE THE AERODYNAMIC EFFICIENCY OF CLOSE-COUPLED LARGE GOODS VEHICLES A. Barnard, Z. Wang, Y. Chung, School of Engineering, University of Warwick
	12:50	LUNCH BREAK
AEROACOUSTICS	13:50	OPEN SOURCE AUTOMOTIVE AEROACOUSTIC SIMULATION AT ASTON MARTIN LAGONDA A. McAllister, D. Coe, Aston Martin Lagonda
	14:10	INTERACTIONS BETWEEN UNDERBODY AERODYNAMICS AND AEROACOUSTICS C. Kounenis, D. Sims-Williams, R. Dominy, A. Berson, University of Durham, School of Engineering and Computing Sciences, N. Oettle, Jaguar Land Rover
	14:30	THE APPLICATION OF SPHERICAL BEAMFORMING TECHNIQUES TO LOCALISE AEROACOUSTIC SOUND SOURCES IN THE VEHICLE CABIN B. Verrecas, A. McQueen, Siemens, N. Oettle, Jaguar Land Rover
	14:50	CLOSING REMARKS
	15:00	END OF CONFERENCE

Organising committee:

- Adrian Gaylard, Jaguar Land Rover
- Jeff Howell, Tata Motors European Technical Centre
- Martin Jones, MIRA
- Geoff Le Good, G L Aerodynamics
- Robert Lewis, TotalSim Ltd
- Martin Passmore, Loughborough University
- David Sims-Williams, Durham University

Find out more about our speakers at www.imeche.org/events/C1385

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

BOOKING FORM

CONFERENCE CODE:
C1385AB

INTERNATIONAL VEHICLE
AERODYNAMICS CONFERENCE 2014
14-15 OCTOBER 2014
HOLYWELL PARK, LOUGHBOROUGH

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

FEEES AND CHARGES Please complete the appropriate box.

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

	FEE	VAT	TOTAL	£
Member, Institution of Mechanical Engineers	£600.00	£120.00	£720.00	
Member, supporting organisation	£600.00	£120.00	£720.00	
Non-member	£700.00	£140.00	£840.00	
Student/retired	£300.00	£60.00	£360.00	
Presenting author	£350.00	£70.00	£420.00	
Conference dinner	£25.00	£5.00	£30.00	
			TOTAL	

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:
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☐ **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.

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1

Online:
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2

Email:
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3

Phone:
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4

Post completed booking form to:
**Event Registrations
Institution of Mechanical Engineers
1 Birdcage Walk
London SW1H 9JJ**

5

Fax:
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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 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. 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.

VENUE
This event will be held in Holywell Park - Loughborough University Leicestershire LE11 3TD United Kingdom.

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.

ACCOMMODATION
IMechE has secured preferential delegate rates at Burleigh Court for £99 + VAT, which includes bed and breakfast. Subject to availability.

To book call **+44 (0) 01509 6330 33** quoting ref: **176163** Web: www.burleigh-court.co.uk

ENQUIRIES
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OTHER EVENTS TO LOOK FOR:

GASEOUS FUELS FOR ROAD VEHICLES

11 September 2014
London

This seminar will examine the application and use of gaseous fuels in vehicles. Delegates will be able to explore the different types of gases that can be used as fuels and gain an insight into the benefits gaseous fuels have over traditional liquid fuels. What difference can they make to emissions, CO₂ and fuel consumption? How can they be applied to passenger and commercial vehicles?

www.imeche.org/events/S1807

If you're interested in any of these events, please contact our enquiries team on +44 (0)20 7973 1258 or email eventenquiries@imeche.org

FUEL SYSTEMS FOR IC ENGINES: INJECT YOUR IDEAS, FUEL YOUR TECHNOLOGY

10-11 March 2015
London

The next conference in this successful series on fuel injection systems for internal combustion engines will focus on the latest technology for state-of-the-art system design, characterisation, measurement and modelling, addressing all technological aspects of diesel and gasoline fuel injection systems. This will range from fundamental fuel spray theory, component design, to effects on engine performance, fuel economy and emissions.

www.imeche.org/events/C1409

VTMS12 – VEHICLE THERMAL MANAGEMENT SYSTEMS CONFERENCE AND EXHIBITION

10-13 May 2015
Nottingham

VTMS 12 will cover the latest research and technological advances in the field of heat transfer, energy management, comfort and the efficient management of all thermal systems within the vehicle.

www.imeche.org/events/C1400

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GET INVOLVED

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See www.imeche.org/volunteering for more information or go to <http://nearyou.imeche.org> to find engineering events hosted by volunteers in your area.

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