

INTERNATIONAL CONFERENCE ON VEHICLE AERODYNAMICS 2018

Institution of
**MECHANICAL
ENGINEERS**

Automobile Division
Conference

16-17 October 2018
Hyatt Regency Birmingham, Birmingham

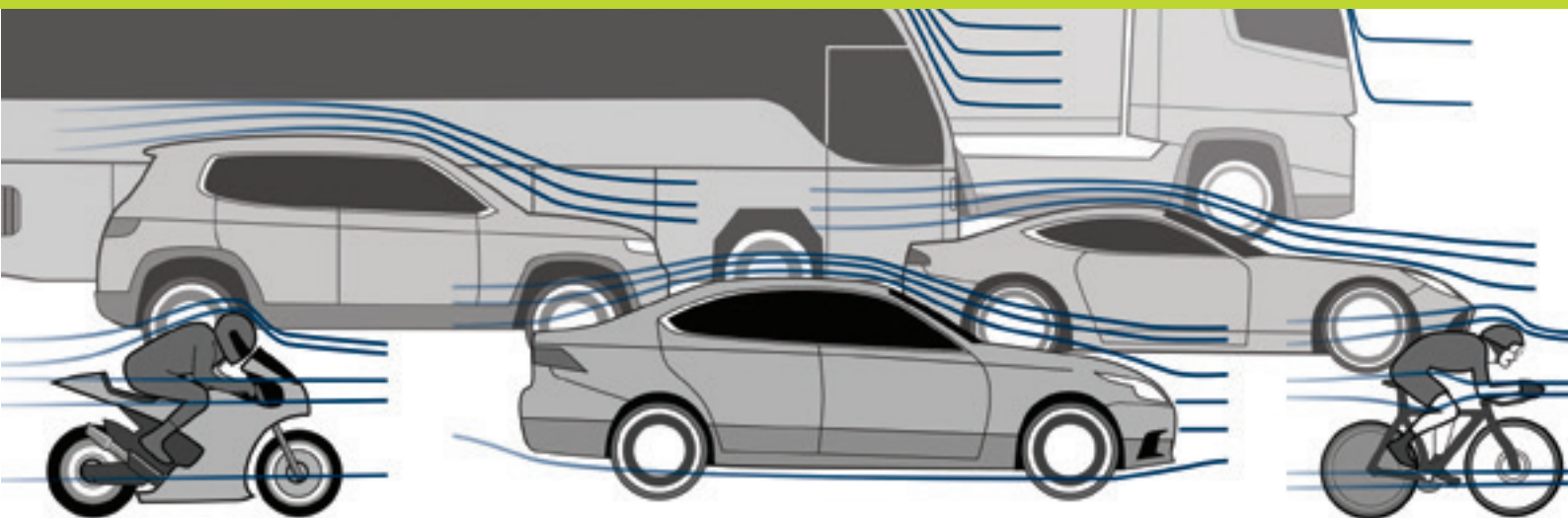
KEY SPEAKERS INCLUDE:

Willem Toet, Former Head of Aerodynamics
Ferrari F1

Ron Ayers, Chief of Aerodynamics
Bloodhound SSC

Thomas Wolf, Manager Aerodynamics R&D
Porsche AG

Fortunato Nucera, Aerodynamics Engineer
Honda R&D Co. Ltd



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INTERNATIONAL CONFERENCE ON VEHICLE AERODYNAMICS 2018

16-17 October 2018, Hyatt Regency Birmingham, Birmingham

REDUCE DRAG AND GAIN INDUSTRY GUIDANCE ON HOW TO ACHIEVE THIS WHILE MEETING BOTH GOVERNMENT AND CUSTOMER EXPECTATIONS.

Attend the International Conference on Vehicle Aerodynamics 2018 to access peer-reviewed presentations on all the key issues around aerodynamics from the prominent OEMs, designers and researchers involved.

Improve the management of the customer-centric elements in your vehicles, including **handling, stability, wind noise and robustness against environmental water**. Hear how the growing presence of autonomous vehicles will affect aerodynamic design requirements. Understand how recent developments in both wind tunnel facilities and numerical simulation methods can **enhance your organisation's testing processes**.

KEY PROGRAMME HIGHLIGHTS:

- Hear insights from keynote speaker **Willem Toet former Head of Aerodynamics for Ferrari** about the specialist aerodynamics for F1 Aero
- **Porsche AG** share the aerodynamic development of the new Porsche Cayenne
- **FCA Italy (Fiat Chrysler Automobiles)** share their developments on an advanced multiphase simulation methodology for vehicle water soiling investigations
- **Honda R&D Co. Ltd** present their prediction method for snow ingress amount into an automobile air intake duct
- **Loughborough University** share strategies for drag reduction from a base cavity on the MIRA reference car

“““

A well organized event that offered plenty of opportunity for networking and learn the latest on vehicle aerodynamics.

**Senior Engineer,
Nissan Technical Centre Europe**

ATTEND THIS CONFERENCE TO:

- Hear latest approaches for the development of vehicle aerodynamics from key organisations including: **Jaguar Land Rover, PSA Peugeot-Citroen SA, Porsche AG, and Siemens**
- Gain insight into **drag reduction tools and techniques and fundamental flow structures** for road cars and commercial vehicles to implement in your organisation
- Develop an understanding of the **aerodynamics implications of autonomy and platooning** to ensure your vehicles are most efficient
- Gain an **awareness of advances in test and simulation techniques** to enhance your testing and design processes
- Engage with international key players sector including academics, researchers, design and aeroacoustics engineers from **automotive, commercial vehicle and motorsports industries**.

ORGANISING COMMITTEE:

Olivier Cadot, Professor, School of Engineering
Liverpool University

Jeff Howell, Technical Specialist in Aerodynamics,
Tata Motors European Technical Centre
TMETC

Simon Croucher, Aerodynamicist
Aston Martin

Martin Passmore, Head of Department, Aeronautical and Automotive Engineering
Loughborough University

Nicholas Oettle Technical Group Leader, NVH
Aeroacoustics
Jaguar Land Rover

Kevin Chow, Senior Engineer
HORIBA MIRA

Robert Dominy, Professor of Automotive Engineering
Head of Department
**Mechanical & Construction Engineering,
Northumbrian University**

Rob Lewis, Managing Director
TotalSim

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PROGRAMME

TUESDAY 16TH OCTOBER 2018

08:30	REGISTRATION AND REFRESHMENTS
09:00	CHAIR'S WELCOME AND INTRODUCTION Adrian Gaylard, Technical Specialist, Computational Aerodynamics & WDM, Thermal Aerodynamic Systems Engineering, Jaguar Land Rover
09:10	KEYNOTE ADDRESS: TAMING THE BLACK ART OF F1 AERO Willem Toet, Former Head of Aerodynamics, Ferrari F1 <ul style="list-style-type: none">• Cooling challenges add to the fun• Fundamental flow control regimes used• Aerodynamics limits overtaking – predictable, but fixable
09:40	KEYNOTE QUESTION AND ANSWER SESSION
	SESSION 1: SPORTING APPLICATIONS / PERFORMANCE CARS
09:45	A FULL-SCALE VS MODEL SCALE COMPARISON OF ENDPLATE DESIGN CONFIGURATIONS FOR THE RADICAL SR3-RSX Jenny C Holt, School of Aerospace, Transport and Manufacturing, Cranfield University
10:05	A METHODOLOGICAL APPROACH AND SIMULATIONS OF TRANSIENT AERODYNAMICS TO FURTHER IMPROVE THE ACCURACY OF THE OVERALL AEROMAP Josep M Carbonell Oyonarte, László Könözsy and Clive Temple, Centre for Advanced Vehicle Engineering, Cranfield University
10:25	LAP TIME BASED AERODYNAMIC SENSITIVITY ANALYSIS Nick Martin and Robert Dominy, Northumbria University
10:45	QUESTION AND ANSWER SESSION
11:00	NETWORKING REFRESHMENT BREAK
	SESSION 2: VEHICLE TO VEHICLE AERODYNAMIC INTERACTION/STABILITY
11:30	DESIGN IMPLICATIONS OF AERODYNAMICS FOR ADVANCED PLATOONING CONFIGURATIONS: NTDC PROJECT SUMMARY Geoff Le Good, Max Resnick, Peter Boardman and Brian Clough Coventry University
11:50	THE AERODYNAMICS OF AUTONOMOUS VEHICLES TRAVELLING IN A PLATOON David Soper, School of Engineering, University of Birmingham
12:10	ANALYSIS OF THE SURFACE PRESSURE AND POWER CONSUMPTION EXPERIENCED BY FULL-SCALE VEHICLES IN PLATOON Hesham Ebrahim, Robert Dominy, Pak Leung and Nicholas Martin, Northumbria University
12:30	QUESTION AND ANSWER SESSION
12:45	NETWORKING LUNCH
	SESSION 3: FUNDAMENTAL FLOW REGIMES AND STRUCTURES
13:45	THE EFFECTS OF A RIM'S CONFIGURATION ON A WHEEL'S FLOW PHYSICS Michael Bolzon, Simone Sebben and Alexander Broniewicz, Department of Mechanics and Maritime Sciences, Chalmers University of Technology
14:05	INVESTIGATION OF THE EFFECTS OF WHEELS ON THE WAKE DYNAMICS BEHIND A SIMPLIFIED SQUARE-BACK VEHICLE Giancarlo Pavia and Martin Passmore, AAE Department, Loughborough University
14:25	WAKE INSTABILITY OF A REAL MINIVAN CAR Olivier Cadot, School of Engineering, Liverpool; Guillaume Bonnavion, ENSTA-ParisTech; Vincent Herbert, Groupe PSA Peugeot-Citroen SA; Sylvain Parpais, Groupe Renault and Rémi Vigneron, GIE S2A
14:45	QUESTION AND ANSWER SESSION
15:00	NETWORKING REFRESHMENT BREAK
	SESSION 4: DRAG REDUCTION
15:30	DRAG REDUCTION FROM A BASE CAVITY ON THE MIRA REFERENCE CAR Jeff Howell, Loughborough University
15:50	AERODYNAMICS OF A TREADED TIRE WITH GROUND CONTACT Peter Altmann and Frederick J. Ross, Siemens
16:10	OPTIMISING THE VEHICLE SHAPE THROUGH PROPER ORTHOGONAL DECOMPOSITION Magnus Urquhart, Chalmers University of Technology
16:30	QUESTION AND ANSWER SESSION
16:45	CHAIR'S CLOSING REMARKS FOR DAY ONE

PROGRAMME

17:00 **END OF CONFERENCE DAY ONE**

18:00 **DRINKS RECEPTION**
(Registration required)

19:00 **NETWORKING DINNER**
(Registration required)

WEDNESDAY 17TH OCTOBER 2018

08:30 REGISTRATION AND REFRESHMENTS

09:00 **CHAIR'S WELCOME AND INTRODUCTIONS**

09:10 **KEYNOTE ADDRESS: THE AERODYNAMIC DESIGN OF TRANSONIC AND SUPERSONIC CARS**

Ron Ayers, Chief of Aerodynamics, Bloodhound SSC

- Research, design, build and running of Thrust SSC
- Lessons learned from Thrust SSC
- Applying these lessons to the design of Bloodhound SSC

09:40 **KEYNOTE QUESTION AND ANSWER SESSION**

SESSION 5: DRAG REDUCTION

09:45 **ALTERNATIVE ROUTE TO A LOW-DRAG AUTOMOBILE: REVISITED**

Geoff Le Good, G L Aerodynamics Ltd, Jeff Howell, Loughborough University and Steve Windsor, Jaguar Land Rover

10:05 **CAN PLASMA STREAMWISE VORTEX GENERATORS BE USED FOR FLOW SEPARATION CONTROL AND DRAG REDUCTION ON TRUCKS?**

Julie A Vernet, Ramis Örlü, David Söderblom, Per Elofsson and Henrik Alfredsson, Linné FLOW Centre, KTH Mechanics

10:25 **A WAKE ANALYSIS OF FOUR DRIVER CONFIGURATIONS: ON THE EXPERIMENTAL MEASUREMENTS USING TOTAL PRESSURE RAKE**

Renan F Soares, Jenny Holt and Kevin P Garry, Applied Aerodynamics Group, Cranfield University

10:45 **QUESTION AND ANSWER SESSION**

10:55 NETWORKING REFRESHMENT BREAK

11:25 **FACTORS INFLUENCING DRAG ON A SIMPLIFIED MODEL WITH AND WITHOUT WHEELS**

Max Varney, Martin Passmore, Applied Aerodynamics Group, Department of Aeronautical and Automotive Engineering and Jeff Howell, Loughborough University

SESSION 6 : AERODYNAMIC DEVELOPMENT

11:45 **THE AERODYNAMIC DEVELOPMENT OF THE NEW PORSCHE CAYENNE**

Thomas Wolf, Porsche AG

12:05 **A SMART COMBINATION OF 1D AND 3D CFD METHODS TO ADDRESS THE IMPACT OF ACTIVE GRILLE SHUTTERS ON VEHICLE FUEL ECONOMY AND UNDERHOOD THERMAL MANAGEMENT**

Peter Altmann, Siemens Industry Software GmbH, Tani Masaya, Siemens Industry Software K.K and Benoit Honel, Siemens Industry Software S.A.S.

12:25 **NOVEL HIGH-EFFICIENCY BRAKE COOLING DESIGN**

Chris Hebert, d2H Aero

12:45 **QUESTION AND ANSWER SESSION**

13:00 NETWORKING LUNCH

SESSION 7: ADVANCES IN WIND TUNNEL DESIGN AND CAPABILITIES

14:00 **A COMPARISON OF WIND TUNNEL ARRAY-BASED AEROACOUSTIC MEASUREMENT TECHNIQUES**

Reinhard Blumrich and Matthias Riegel, FKFS, Nicholas Oettle and Harriet Vickers, Jaguar Land Rover and Bart Verrecas, Siemens

SESSION 8 : SURFACE CONTAMINATION

For the most up-to-date and detailed programme for the event, please visit:

www.imeche.org/ICVA2018

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

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14:20	ANALYSIS OF REAR SURFACE CONTAMINATION UNSTEADY MECHANISMS ON A SIMPLIFIED GEOMETRY Sébastien Chaligné and Adrian Gaylard, Thermal & Aerodynamic Systems Engineering (TASE), Jaguar Land Rover
14:40	PREDICTION METHOD OF SNOW INGRESS AMOUNT INTO AN AUTOMOBILE AIR INTAKE DUCT EMPLOYING AN ACCUMULATION MODEL Fortunato Nucera, Kunihiko Yoshitake and Naoshi Kuratani, Honda R&D Co. Ltd
15:00	QUESTION AND ANSWER SESSION
15:15	NETWORKING REFRESHMENT BREAK
15:45	DEVELOPMENT ON AN ADVANCED MULTIPHASE SIMULATION METHODOLOGY FOR VEHICLE WATER SOILING INVESTIGATIONS Andrea Piovano, Laura Loreface, Nicola Paola and Luca Miretti, FCA Italy – Fiat Chrysler Automobiles and Matteo Allocco, Politecnico di Torino
16:05	AN INVESTIGATION INTO THE EFFECT OF RIDE HEIGHT AND ROOF TAPER ON BASE CONTAMINATION Graham Hodgson and Martin Passmore, AAE Department, Loughborough University
16:25	QUESTION AND ANSWER SESSION
16:30	CHAIR'S CLOSING REMARKS
16:45	END OF CONFERENCE

WHO SHOULD ATTEND?

Aerodynamics engineers, researchers, research students, academics, engineering managers and designers from automotive, commercial vehicle and motorsports industries.

- Design Engineers
- Aerodynamicist
- Aerodynamics Engineer
- Aerodynamics Team Leader
- Aeroelasticity Specialist
- Aeroelasticity & Vibration Specialist
- Aerodynamics Analyst
- Aerodynamics Attribute Team Leader
- Aerodynamics Design Engineer
- Senior Engineer Thermal and Aero
- Engineering Manager
- Lead Engineer

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FEES AND CHARGES

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

Delegate Type	Standard Rate
Member, IMechE/supporting organisation	£660 + VAT = £792
Non-member	£840 + VAT = £1,008
Student/Retired	£330 + VAT = £396
Networking Dinner	£50 + VAT = £60

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- 1 Online:
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- 2 Email:
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- 3 Phone:
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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 the booking form or email eventenquiries@imeche.org

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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.

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.

CONFERENCE VENUE

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2 Bridge Street
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