

SIMULATION AND MODELLING 2017 INTEGRATION, OPTIMISATION AND VALIDATION INITIATIVE

Institution of
**MECHANICAL
ENGINEERS**

12–13 September 2017
National Motorcycle Museum, Birmingham

More details available at
www.imeche.org/simulation2017

KEY SPEAKERS INCLUDE:

Steve Fletcher, Global CoE Director – CAE
Tata Technologies

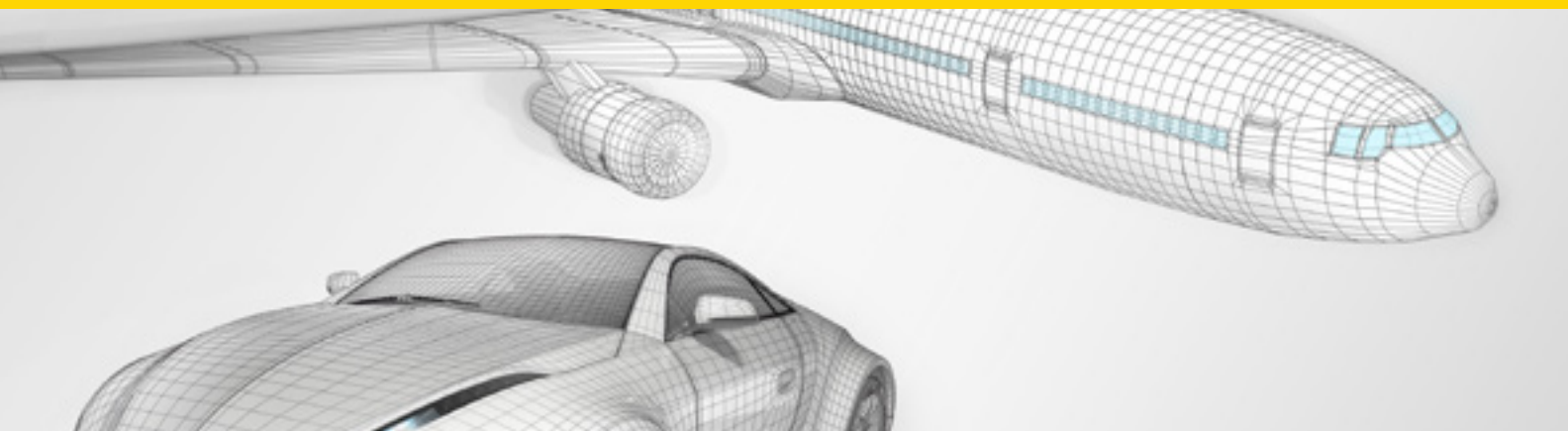
Adrian Gaylard, Technical Specialist for
Aerodynamics
Jaguar Land Rover

Ray Thornton, Systems Engineer
BAE Systems

Felix Dux, Lead Systems Modelling Architect
London Underground

Akin Keskin, Chief of Virtual Engine Design System
Rolls Royce plc

Conference



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www.imeche.org/simulation2017

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12–13 September 2017

National Motorcycle Museum, Birmingham

THE DIGITISATION OF MANUFACTURING AND THE USAGE OF HIGH PERFORMANCE COMPUTING (HPC) IS REVOLUTIONISING HOW PRODUCTS ARE DESIGNED, TESTED AND MANUFACTURED. WITH PIONEERS ACROSS THE AUTOMOTIVE AND AEROSPACE INDUSTRIES INTEGRATING SIMULATION INTO THEIR PROCESSES, FIND OUT HOW THESE HAVE IMPROVED THE EFFICIENCY OF DEVELOPING NEW PRODUCTS AND SYSTEMS.

Simulation and Modelling 2017 will provide a unique opportunity to discuss the latest developments being made with computer aided and virtual engineering techniques and technologies. Explore the advances being made with integration, optimisation and validation, from the design stage right through to manufacturing. Attend to engage with colleagues and peers and take away best practice from engineering thought leaders across the transport industries. Plus take the opportunity to meet simulation software and hardware providers in our exhibition space and networking sessions.

Join one of our specialist parallel sessions to tailor your event experience for your needs in **manufacturing, structural analysis, powertrain engineering or systems and control**. Hear about the latest **projects in design, development and testing** across the different engineering sectors.

WITH THANKS TO OUR TECHNICAL ADVISORY COMMITTEE:

Tim Morris
Chief Executive
NAFEMS

Akin Keskin
Chief of Virtual Engine Design System
Rolls-Royce

Riccardo Parenti
Head of Concept Development
Lamborghini

Mike Blundell
Professor of Vehicle Dynamics and Impact,
Centre for Mobility and Transport
Coventry University

ATTEND THIS CONFERENCE TO:

- Hear from leading companies using simulation and modelling including **BAE Systems, Williams Advanced Engineering, Changan UK, Caterpillar UK, Jaguar Land Rover, and London Underground**
- Join new **speed networking opportunities** and engage with colleagues, peers and industry innovators from across the transport industries in one location
- **Design your own experience** by taking advantage of our specialist parallel session on both conference days
- Hear directly from suppliers and get an update on the **latest technologies** in our exhibition space

KEY TOPICS INCLUDE:

- Plenary session on day one addressing simulation in design and innovation from **Bloodhound SCC, Tata Technologies** and **Jaguar Land Rover**
- Specialist streams focusing on powertrain engineering, systems and control, full vehicle body modelling, stress and structural analysis from **BAE Systems, Stirling Dynamics, Williams Advanced Engineering, Ricardo UK** and **Rolls Royce**
- Streamlining the manufacturing process and reducing structural challenges in the products from the **Manufacturing Technology Centre** and **Ford Motors**
- Plenary session on day two addressing the validation, optimisation and integration of software, and its role in product validation from **D2H Aero, Rolls Royce plc** and **Lamborghini**

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TERMS AND
CONDITIONS
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PROGRAMME

| TUESDAY 12 SEPTEMBER 2017 | |
|---|---|
| 08:30 | REGISTRATION |
| 09:00 | CHAIR'S OPENING REMARKS Tim Morris, Chief Executive, NAFEMS |
| SIMULATION IN DESIGN AND INNOVATION | |
| 09:10 | SIMULATION AND MODELLING FOR COST REDUCTION AT DESIGN STAGE Steve Fletcher, Global CoE Director – CAE, Tata Technologies |
| 09:35 | EXTERNAL AIRFLOW SIMULATION IN AUTOMOTIVE ENGINEERING DEVELOPMENT: CURRENT PRACTISE, FUTURE PROSPECTS Adrian Gaylard, Technical Specialist for Aerodynamics, Jaguar Land Rover |
| 10:00 | THE INDUSTRIALISATION OF HIGH-ORDER FLUX RECONSTRUCTION METHODS Andrei Cimpoeru, CFD Engineer, The Centre for Modelling & Simulation, CFMS |
| 10:20 | QUESTION AND ANSWER SESSION |
| 10:35 PANEL | DOES THE SPECIFICATION FIT THE NEED? James Barth, Lead Aerodynamicist, Reaction Engines Ltd Roberto Della Ratta Rinaldi, Senior CFD Engineer, Williams Advanced Engineering Panellists to be announced |
| 11:05 | NETWORKING REFRESHMENT BREAK |
| SIMULATION FOR ENGINE AND POWERTRAIN DESIGN | |
| 11:35 | SIMULATION AND TESTING OF COMPLEX ENGINE BOOSTING SYSTEMS Richard Burke, Senior Lecturer, University of Bath |
| 12:00 | VULCAN: A SIMULATION TOOL FOR ITERATIVE CALCULATION OF ENGINE THERMAL BOUNDARY CONDITIONS Tom Deighan, Principal Engineer, Ricardo UK |
| 12.25 | WHOLE MACHINE SIMULATION FOR OFF-ROAD VEHICLE DRIVETRAIN DESIGN Igor Strashny, Engineering Manager, High Efficiency Machine Research, CATERPILLAR UK |
| 12:50 | QUESTION AND ANSWER SESSION |
| 13:05 | NETWORKING LUNCH |
| SIMULATION FOR ENGINE DEVELOPMENT | |
| 14:05 | SIMULATION AND ANALYSIS OF COMPLEX SYSTEMS AND COMPONENTS WITHIN AN ENGINE Yogesh Kumar, Senior Powertrain CAE Engineer, Changan UK R&D Centre |
| 14:30 | SIMULATING SABRE: DESIGNING AND MODELLING A NOVEL AEROSPACE ENGINE AS AN SME James Barth, Lead Aerodynamicist, Reaction Engines Ltd |
| 14:55 | QUESTION AND ANSWER SESSION |
| 15:05 | NETWORKING REFRESHMENT BREAK |
| SYSTEMS AND CONTROL ACROSS TRANSPORT | |
| 11:35 | MODELLING THE EFFECTS OF ENERGY EFFICIENT GLAZING ON CABIN THERMAL ENERGY AND VEHICLE EFFICIENCY Alessandro Picarelli, Chief Engineer, Claytex |
| 12:00 | EARLY LIFECYCLE SYSTEM-OF-SYSTEM MODELLING OF AIRCRAFT MECHANICAL AND FLUID SYSTEMS Craig Hoyle, Section Leader - Air Vehicle Systems Modelling & Simulation, BAE SYSTEMS – Military Air & Information Ray Thornton, Senior Systems Engineer, BAE SYSTEMS – Military Air & Information |
| 12.25 | USING SIMULATION MODELLING TO MAXIMISE THE CAPACITY OF A BUSY METRO SYSTEM Felix Dux, Lead Systems Modelling Architect, London Underground |
| 12:50 | QUESTION AND ANSWER SESSION |
| FULL VEHICLE BODY MODELLING AND MODELLING APPROACHES | |
| 14:05 | ANALYTIC OPTIMISATION FOR HYBRID VESSEL PROPULSION CATERPILLAR UK |
| 14:30 | MODELLING APPROACHES FOR AIRCRAFT SYSTEM DESIGN Nadjib Hammoudi, Senior Engineer, Modelling and Simulation, Stirling Dynamics |
| 14:55 | QUESTION AND ANSWER SESSION |

For the most up-to-date and detailed programme for the event, please visit:
www.imeche.org/simulation2017

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

PROGRAMME

| | |
|-------------------------|--|
| | DEVELOPMENT AND TESTING |
| 15:35 | VIRTUAL REALITY DEMONSTRATION Paul Dainty, Account Manager and VR Specialist, ESI UK Ltd |
| 16:00 KEYNOTE | BLOODHOUND SCC: THE ROLE OF SIMULATION AND MODELLING IN DEVELOPMENT AND TESTING Mark Chapman, Chief Engineer, Bloodhound SCC |
| 16:30 | QUESTION AND ANSWER SESSION |
| 16:45 PANEL | DEMOCRATISATION AND USABILITY Akin Keskin, Chief of Virtual Engine Design System, Rolls Royce plc Chris Hebert, Engineering Director, D2H Aero Panellists to be announced <ul style="list-style-type: none"> Overcoming the challenges in simulation and modelling adoption across the engineering disciplines Improving software usability for the different engineering functions How can engineers and CAE experts work together for improved democratisation? |
| 17:15 | CHAIR'S CLOSING REMARKS |
| 17:25 | END OF DAY ONE |

WEDNESDAY 13 SEPTEMBER 2017

| | | |
|-----------------------|--|--|
| 08:30 | REGISTRATION | |
| 09:00 | CHAIR'S OPENING REMARKS | |
| | OPTIMISATION, INTEGRATION AND VALIDATION | |
| 09:10 | INTEGRATION OF SYSTEMS AND SOFTWARE FOR SEAMLESS WORKFLOWS Akin Keskin, Chief of Virtual Engine Design System, Rolls Royce plc | |
| 09:35 | ACCELERATED OPTIMISATION AND VALIDATION FOR HIGH PERFORMANCE BRAKE DESIGN Chris Hebert, Engineering Director, D2H Aero | |
| 10:00 | QUESTION AND ANSWER SESSION | |
| 10:10 PANEL | ENSURING RIGOROUS SIMULATED TESTING IN CONJUNCTION WITH PHYSICAL TESTING Adrian Gaylard, Technical Specialist for Aerodynamics, Jaguar Land Rover Riccardo Parenti, Head of Concept Development, Lamborghini Akin Keskin, Chief of Virtual Engine Design System, Rolls Royce plc | |
| 10:40 | NETWORKING REFRESHMENT BREAK | |
| | SIMULATION FOR POWERTRAIN VALIDATION AND ANALYSIS | STREAMLINING THE MANUFACTURING PROCESS |
| 11:10 | AN INTEGRATED APPROACH IN THERMO-FLUID DYNAMIC SIMULATION OF HIGH PERFORMANCE ELECTRIC VEHICLES Roberto Della Ratta Rinaldi Senior CFD Engineer, Williams Advanced Engineering | CREATING A DIGITAL TWIN TO REDUCE PRODUCT DEVELOPMENT TIME AND COSTS Jon Parsons, Future Programmes Systems Design Capability Lead, Rolls-Royce plc |
| 11:35 | CONFIDENCE IN OPTIMALITY FOR COMPLEX ELECTRIFIED POWERTRAINS THROUGH SYNTHESIS AND SELECTION Jonathan Wheels, Chief Engineer – Innovation, Ricardo UK | MODELLING APPLICATIONS FOR STREAMLINING HIGH VALUE MANUFACTURING Anas Yaghi, Senior Research Engineer Design and Simulation, Manufacturing Technology Centre |
| 12:00 | ROBUST HEAD GASKET DESIGN IN A COMPACT DIESEL ENGINE - USING PREDICTION AND CORRELATION OF INTER-BORE DISTORTION Ian Pennington, Technical Specialist Engine Engineering, Ford Motors Anthony Hughes, Supervisor, CAE and Test Methods, Ford Motors | PAIRING SIMULATION PROCESSES THROUGH COMPANIES Riccardo Parenti, Head of Concept Development, Lamborghini |
| 12:25 | QUESTION AND ANSWER SESSION | QUESTION AND ANSWER SESSION |
| 12:40 | NETWORKING LUNCH | |

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| | STRESS AND STRUCTURAL ANALYSIS | OVERCOMING STRUCTURAL CHALLENGES IN MANUFACTURING |
|----------------|---|--|
| 13:40 | DYNAMICS AND TRIBOLOGY IN EFFICIENCY AND NVH Stephanos Theodossiades, Professor of Non-Linear Dynamics, Loughborough University | TOPOLOGY OPTIMIZATION OF A STAMPING DIE FOR MANUFACTURING EFFECTS Mehmet Burak Yegin, Senior Durability Engineer, Ford |
| 14:05 | STRUCTURAL SIMULATION IN PRELIMINARY ENGINE DESIGN Adele Nasti, Structural Design System Lead, Virtual Engine Design Systems, Rolls Royce plc | SIMULATION FOR ANALYSIS OF MANUFACTURING STRESSES Amit Visroliya, ECL, Manufacturing Process Simulation, National Composites Centre UK |
| 14:30 | QUESTION AND ANSWER SESSION | QUESTION AND ANSWER SESSION |
| 14:45 | NETWORKING REFRESHMENT BREAK | |
| | BEST PRACTICE | |
| 15:15 PANEL | DEVELOPING BEST PRACTICE ACROSS THE ENGINEERING INDUSTRIES Anas Yaghi, Senior Research Engineer, Design and Simulation, Manufacturing Technology Centre Felix Dux, Lead Systems Modelling Architect, London Underground More panellists to be announced | |
| 15:55 | CHAIR'S CLOSING REMARKS | |
| 16:10 | END OF CONFERENCE | |

WHO SHOULD ATTEND?

ALL INDUSTRY PROFESSIONALS WITH A DIRECT OR INDIRECT INTEREST IN SIMULATION ENGINEERING. RANGING FROM DIRECTOR TO DEVELOPING ENGINEER AND IN ROLES INCLUDING, BUT NOT LIMITED TO:

- CFD and Fluid Dynamics
- CAE
- Modelling, Simulation and Testing
- Advanced Vehicle Development and Programmes
- Analysis and Verification
- Virtual Engineering
- Design and Development
- Research and Development
- Calculation Methods
- Engineering and Technology
- Aerodynamics and Aeroacoustics
- Digital Prototyping
- Manufacturing
- Process

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CONTACT THE SPONSORSHIP TEAM ON:

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HOW TO BOOK YOUR PLACE

FEES AND CHARGES

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

| Fees and charges | Standard Rates |
|--|----------------|
| Member, IMechE/supporting organisation | £399 + VAT |
| Non-member | £599 + VAT |
| Student/Retired | £249 + VAT |

THREE WAYS TO BOOK

- 1 Online:
www.imeche.org/simulation2017
- 2 Email:
eventenquiries@imeche.org
- 3 Phone:
+44 (0)20 7973 1251

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 the booking form or email eventenquiries@imeche.org

Cancellation

For a refund (minus £25+VAT admin charge), cancellations must be received at least 30 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.

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

National Motorcycle Museum
Coventry Road
Bickenhill
Birmingham
B92 0EJ

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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.

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OTHER EVENTS TO LOOK FOR



TRIBOLOGY MODELLING: FRICTION AND WEAR PREDICTION ACROSS THE SCALES

13 September 2017, Birmingham

Address the latest key developments in modelling for tribology and gain insight into the methods and approaches in predicting friction and wear in tribological systems.

www.imeche.org/tribologymodelling



INTERNATIONAL EV BATTERIES 2017

21-22 November 2017, London

Discuss the critical engineering challenges being faced by electric vehicle OEMs globally and the latest innovations that cost-effectively increase range, performance and durability.

www.imeche.org/evbatteries

The Institution of Mechanical Engineers organises over 120 events a year, including free-to-attend lectures as well as conferences, seminars, annual luncheons and dinners. Please visit www.imeche.org/events for the complete list of events.

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