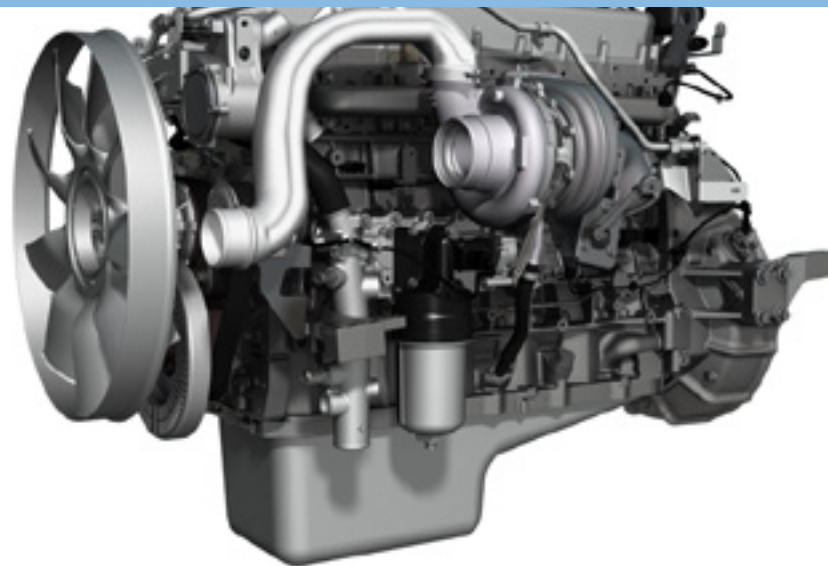


# THE 13TH INTERNATIONAL CONFERENCE ON TURBOCHARGERS AND TURBOCHARGING

Institution of  
**MECHANICAL  
ENGINEERS**

Powertrain Systems and Fuels Group  
**Conference**

16-17 May 2018  
Twickenham Stadium, London



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# THE 13TH INTERNATIONAL CONFERENCE ON TURBOCHARGERS AND TURBOCHARGING

17-18 May 2018,  
Twickenham Stadium, London

**JOIN THE 13TH EDITION OF THE ACCLAIMED INTERNATIONAL CONFERENCE ON TURBOCHARGERS AND TURBOCHARGING. THIS UNIQUE EVENT ATTRACTS OVER 240 ATTENDEES FROM COUNTRIES INCLUDING UK, FRANCE, GERMANY, CHINA, JAPAN, USA AND MANY MORE.**

Downsizing and downspeeding development for spark ignition, compression ignition and hybrid engines will be the focus for 2018, as these are the fundamental ways to meet current emission legislations and environmental trends for reducing CO<sub>2</sub>. Focusing on air management solutions and improvements in overall engine reliability, durability and compactness, this conference will examine the new systems developments being implemented.

## KEY PROGRAMME HIGHLIGHTS:

- E-Boosting Systems, Fuel Cells, Transient Response and Altitude Performance, Interaction with Hybrid
- Compressors: Aerodynamics and Flow Analysis of CFD, Optimisation and Multi-Physics
- Improved Strength, Fatigue Life, Bearing Design, Rotodynamic and Materials
- Simulation Modelling, Cost Effective Optimisation
- Turbine: Aerodynamics and Flow Analysis of CFD, Optimisation, Multi-Physics and T/C CHT
- Novel Testing/Masurement Methods and Validation for Simulation
- Single, Two-Stage, VTG, Supercharged, Parallel/Sequential, Turbo-Compound, WHR, EGR and Cylinder Deactivation Systems

## WHAT TO EXPECT IN 2018:

- 9+ hours of networking time
- 17+ hours of technical presentations with opportunities for questions to the speaker panel
- 42 presenting authors from 28 companies and 2 keynote addresses
- International audience - 15 different countries attended in 2016
- Peer reviewed by industry experts and academic thought leaders

## ORGANISING/ADVISORY COMMITTEE:

Powertrain Systems and Fuels Group  
**Institution of Mechanical Engineers**

## MEMBERS CREDITS:

Prof Ricardo Martinez-Botas <b>Imperial College</b>	Jan-Christoph Haag <b>MAN Trucks UK</b>
Prof Joerg Seume <b>Leibniz Universitaet Hannover</b>	Prabhu Ramasamy <b>Perkins</b>
Dr Colin Copeland <b>University of Bath</b>	Takashi Otobe <b>Honda R&amp;D</b>
Prof Roland Baar <b>Technische Universität Berlin</b>	Per-Inge Larson <b>SCANIA Power Train Sweden</b>
Prof Stephen Spence <b>Queen's University Belfast</b>	Dr Elias Chebli <b>Porsche</b>
Dr Ennio Codan <b>ABB</b>	Bernd Wietholt <b>Volkswagen AG</b>
Michael Dolton <b>Cummins Turbo Technologies</b>	Andrew Banks <b>Ricardo</b>
Steve Birnie <b>BorgWarner</b>	Dr Kian Banisoleiman <b>Lloyd's Register EMEA</b>
Peter Davies <b>Honeywell</b>	Nathan McArdle <b>Borgwarner</b>
Dr Dietmar Filsinger <b>IHI</b>	Steve Johnson <b>Ford Motor Company</b>
Dr Seiichi Ibaraki <b>Mitsubishi Heavy Industries Limited</b>	Alan Baker <b>Jaguar Land Rover</b>
	Takashi Mori <b>IHI</b>

# PROGRAMME

<b>DAY 1 WEDNESDAY 16 MAY 2018</b>	
08:30	REGISTRATION AND REFRESHMENTS
09:00	<b>CHAIR'S OPENING REMARKS</b> Dr Kian Banisoleiman, Lloyd's Register EMEA
09:15 KEYNOTE	<b>GILLES SIMON, TECHNICAL DIRECTOR, FIA</b>
09:45	<b>KEYNOTE QUESTION AND ANSWER</b>
	<b>E-BOOSTING SYSTEMS, FUEL CELLS, TRANSIENT RESPONSE AND ALTITUDE PERFORMANCE, INTERACTION WITH HYBRID</b> Session Chair: Prof Joerg Seume, Leibniz Universitaet Hannover
09:55	<b>TWO-STAGE FUEL CELL ELECTRIC COMPRESSOR</b> Gee, Mark; Mason, John; Matsuzaki, Ryoken; Eguchi, David; Lotterman, Jefferey; Donato, Brent; Beresewicz, Patrick, Honeywell Transport Systems, USA
10:15	<b>PRELIMINARY DESIGN OF A PARTIAL ADMISSION TURBINE FOR WASTE HEAT RECOVERY IN FUEL CELLS</b> Fischer, Tore; Willers, Ole W; Seume, Joerg R, Institute of Turbomachinery and Fluid Dynamics, Germany
10:35	<b>QUESTION AND ANSWER SESSION</b>
10:50	NETWORKING REFRESHMENT BREAK
11:20	<b>COMPARATIVE SYSTEM LEVEL ASSESSMENT OF DIFFERENT ELECTRIC BOOSTING ARCHITECTURES</b> Vankayala, Sujeet, Honeywell Technology Solution Lab Pvt Ltd, Roux, Jean Sebastien; Jeckel, Denis; Davies, Peter, Honeywell Transportation systems, Thaon-Les-Vosges, France and Haug, Peter, Honeywell Transportation systems, Torrance, USA
11:40	<b>ANALYSIS OF A HIGHLY DOWNSIZED GASOLINE ENGINE OPERATING AT LAMBDA 1</b> Bassett, Michael; Vogler, Christian; Taylor, James; Hall, Jonathan; Gray, Kevin, MAHLE Powertrain Limited, United Kingdom
12:00	<b>TURBOCHARGER COMPRESSOR DEVELOPMENT FOR UNMANNED AERIAL VEHICLES</b> Chen, Hua, Dalian Maritime University, People's Republic of China
12:20	<b>QUESTION AND ANSWER SESSION      QUESTION AND ANSWER SESSION</b>
12:35	NETWORKING LUNCH
	<b>COMPRESSORS: AERODYNAMICS AND FLOW ANALYSIS OF CFD, OPTIMISATION AND MULTI-PHYSICS</b> Session Chair: Michael Dolton, Cummins Turbo Technologies
	<b>IMPROVED STRENGTH, FATIGUE LIFE, BEARING DESIGN AND ROTODYNAMIC AND MATERIALS</b> Session Chair: Steve Birnie, BorgWarner
13:35	<b>VARIABLE GEOMETRY COMPRESSOR DEVELOPMENT TO IMPROVE OPERATING RANGE AND EFFICIENCY FOR AUTOMOTIVE TURBOCHARGER</b> Fujiwara, Takashi; Bamba, Takahiro; Numakura, Ryuusuke; Sasaki, Yuuji; Yokoyama, Yusei, Vehcular Turbochager Business Unit/IHI Corporation, Japan
	<b>THERMAL HYDRAULIC COUPLING OF FLOATING RING BEARINGS IN TRANSIENT RUN-UP SIMULATIONS</b> Baldauf, Michael; Tuzcu, Dr. Sedat; Klaus, Dr. Michael, Continental Automotive GmbH, Germany; Rienäcker, Prof. Adrian, University Kassel, Germany
13:55	<b>FLOW RANGE OF VARIABLE CROSS-SECTION COMPRESSORS</b> Fischer, Tore; Kleine Sextro, Thorsten; Seume, Joerg R, Institute of Turbomachinery and Fluid Dynamics, Germany and Flinte, Jan Eilts, Peter, Institute of Internal Combustion Engines, Germany
	<b>REDUCTION OF ON-ROAD TURBOCHARGER SUB-SYNCHRONOUS RESPONSE USING TAPERED AND LOBED BEARINGS</b> Ashton, Zachary; Bischof, Kenneth, BorgWarner Turbo, USA
14:15	<b>NUMERICAL INVESTIGATION OF COMPRESSOR WHEEL AND INLET DUCT GEOMETRY INFLUENCE ON TURBOCHARGER COMPRESSOR SURGE</b> Eißler, Werner; Bamberg, Stephan; Rusche, Stefan, Hochschule RheinMain University of Applied Sciences, Germany
	<b>STABILITY OPTIMISATION OF TURBOCHARGER ROTOR-FLOATING RING BEARING SYSTEM: A COMBINATION OF LINEAR AND NONLINEAR APPROACHES</b> Tian, Liang; Wakelin, Matthew; Lancaster, Craig Cummins Turbo Technologies, United Kingdom: Lu, Yi, Wuxi Cummins Turbo Technologies, People's Republic of China and Ramamoorthy, J.M., Cummins Turbo Technologies, India

# PROGRAMME

14:35	<b>ON THE EFFECT OF ENGINE PULSATIONS ON THE PERFORMANCE OF A TURBOCHARGER COMPRESSOR</b> Barrera-Medrano, Maria Esperanza; Martinez-Botas, Ricardo F, Imperial College London, United Kingdom and Tomita, Isao; Ibaraki, Seiichi, Mitsubishi Heavy Industries Ltd	<b>DURABILITY PREDICTION TECHNIQUE FOR HIGH ROTATIONAL SPEED COMPRESSOR WHEEL IN AUTOMOTIVE TURBOCHARGERS</b> Akamoto, Keigo; Fujita, Yutaka, Mitsubishi Heavy Industries, Ltd., Japan And Ebisu, Motoki, Mitsubishi Heavy Industries Engine And Turbocharger, Ltd., Japan
14:55	<b>QUESTION AND ANSWER SESSION</b>	<b>QUESTION AND ANSWER SESSION</b>
15:10	NETWORKING REFRESHMENT BREAK	
15:40	<b>INDUCER DESIGN OF CENTRIFUGAL IMPELLERS</b> Hazby, Hamid; Robinson, Chris PCA Engineers Ltd., United Kingdom	<b>DEVELOPMENT OF HIGH TEMPERATURE MATERIAL CONSTITUTIVE MODEL FOR THERMO-MECHANICAL FATIGUE (TMF) LOADINGS IN TURBOCHARGERS</b> Kulkarni, Avadhoot, Honeywell, USA: Rajkumar, G; Honeywell, USA and Kannusamy, Ragupathy; Kumar, Amit Honeywell Tech Solutions Lab Pvt Ltd, India
16:00	<b>FURTHER DEVELOPMENT OF A HIGH-EFFICIENCY COMPRESSOR STAGE SUITED TO POST EURO VI EMISSIONS AND FUEL ECONOMY LEGISLATION</b> Lotz, Robert; Andrews, David; McHenry, Joseph; VanSaun, Daniel; Watson, John, Borg Warner Turbo Systems, USA	<b>THE TRIBOLOGICAL PERFORMANCE OF COATED AND NON-COATED MATERIALS IN HIGH TEMPERATURE ENVIRONMENTS</b> Chinchilla Adell, Raul Francisco; Proprentner, Daniela; Shollock, Barbara, Warwick Manufacturing Group, The University of Warwick, Coventry, United Kingdom: Burkinshaw, Michael; Lindsay, Martin, Cummins Turbo Technologies (CTT), Huddersfield, United Kingdom
16:20	<b>AUTOMATED TURBOCHARGER COMPRESSOR DEVELOPMENT AT DAIMLER TRUCKS</b> Wöhr, Michael; Palenschat, Torsten; Schneid, Markus; Dillmann, Andreas; Harsha, Vivek; Markus, Müller, Daimler Ag, Germany	<b>THE DEVELOPMENT OF A LEAD-FREE CORROSION RESISTANT BEARING SYSTEM FOR TURBOCHARGER APPLICATIONS</b> Burkinshaw, Michael; Franks, Louise; Quayle, Rachel, Cummins Turbo Technologies, United Kingdom
<b>SIMULATION MODELLING, COST EFFECTIVE OPTIMISATION</b> Session Chair: Takashi Otohe, Honda R&D		
16:40	<b>IMPLEMENTATION OF HEAT TRANSFERS IN TURBOCHARGER MODELS IN A SYSTEM SIMULATION CONTEXT</b> Sanguinetti, Thomas; Thomas, Vincent, Siemens Industry Software S.A.S., France: Chesse, Pascal; Perrot, Nicolas, Ecole Centrale de Nantes, France and Talon, Vincent, Renault Nissan Alliance, France	<b>THE APPLICATION OF ADDITIVE MANUFACTURING TO TURBOMACHINERY</b> Burkinshaw, Michael, Cummins Turbo Technologies, United Kingdom, and Boig, Charlotte Amelia; Todd, Iain, University Of Sheffield, United Kingdom
17:00	<b>QUESTION AND ANSWER SESSION</b>	<b>QUESTION AND ANSWER SESSION</b>
17:15	<b>CHAIR'S CLOSING REMARKS</b>	
	Kian Banisoleiman, Lloyd's Register	
17:30	CLOSE OF CONFERENCE DAY ONE	
18:30	EVENING DRINKS RECEPTION (registration required)	
19:30	NETWORKING DINNER (registration required)	

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

# PROGRAMME

<b>DAY 2 THURSDAY 17 MAY 2018</b>			
08:30	REGISTRATION AND REFRESHMENTS		
09:00	<b>CHAIR'S OPENING REMARKS</b>		
09:10 KEYNOTE	<b>SPEAKER TO BE ANNOUNCED</b>		
09:40	<b>KEYNOTE QUESTION AND ANSWER SESSION</b>		
	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <b>TURBINE: AERODYNAMICS AND FLOW ANALYSIS OF CFD, OPTIMISATION, MULTI-PHYSICS AND T/C CHT</b>                      Session Chair: Peter Davies, Honeywell                 </td> <td style="width: 50%; vertical-align: top;"> <b>NOVEL TESTING/MEASUREMENT METHODS AND VALIDATION FOR SIMULATION</b>                      Session Chair: Dr Ennio Codan, ABB                 </td> </tr> </table>	<b>TURBINE: AERODYNAMICS AND FLOW ANALYSIS OF CFD, OPTIMISATION, MULTI-PHYSICS AND T/C CHT</b> Session Chair: Peter Davies, Honeywell	<b>NOVEL TESTING/MEASUREMENT METHODS AND VALIDATION FOR SIMULATION</b> Session Chair: Dr Ennio Codan, ABB
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# PROGRAMME

12:15	<b>VALIDATION OF MEANLINE PERFORMANCE PREDICTION METHOD FOR RADIAL AND MIXED FLOW TURBINE</b> Gao, Yang; Petrie-Repar, Paul, KTH Royal Institute of Technology, Sweden	<b>DESIGN AND TESTING OF A MECHANICALLY DRIVEN TURBOCHARGER FOR IMPROVED EFFICIENCY AND DRIVABILITY</b> Sherrill, Ryan; Brown, Jared; Waldron, Thomas, SuperTurbo Technologies, USA
12:35	<b>QUESTION AND ANSWER SESSION</b>	<b>QUESTION AND ANSWER SESSION</b>
12:50	NETWORKING LUNCH	
13:50	<b>TURBOCHARGER TURBINE AERODYNAMIC OPTIMIZATION FOR REDUCED FUEL CONSUMPTION AND CO2 EMISSIONS FROM HEAVY-DUTY DIESEL ENGINES: EXPERIMENTAL VALIDATION AND FLOW FIELD ANALYSIS</b> Ioannou, Eleni; Costall, Aaron William; Khairuddin, Uswah, Imperial College London, Mechanical Engineering Dept, London, United Kingdom and Ramasamy, Prabhu; Haigh, Edward, Industrial Power Systems Division, Caterpillar United Kingdom	<b>GASOLINE VTC – A NEW TREND FOR GASOLINE MILLER ENGINES?</b> Christmann, Ralf; Gugau, Marc; Weiske, Sascha, BorgWarner Turbo Systems, Germany
14:10	<b>CHT-SIMULATION ON A TURBOCHARGER TURBINE WITH RESOLUTION OF THE AMBIENT CONVECTIVE HEAT FLOW</b> Gao, Xunan; Savic, Bojan; Baar, Roland, Technical University of Berlin, Germany	<b>LOW LOAD OPTIMIZED AIR MANAGEMENT FOR LARGE 2-STROKE ENGINES</b> Ryser, Raphael; Mathey, Christoph, ABB Turbo Systems Ltd., Switzerland
14:30	<b>STEADY AND TRANSIENT CONJUGATE HEAT TRANSFER OF A TURBOCHARGER</b> Dimelow, Andrew, Cummins Turbo Technologies, United Kingdom	<b>VEHICLE APPLICATION OF A PARALLEL-SEQUENTIALLY TURBOCHARGED GASOLINE ENGINE, EQUIPPED WITH SWITCHABLE EXHAUST VALVES</b> Stoffels, Harald; Wojahn, Jens; Brinkmann, Franz; Grieser, Klemens; Hohenboeken; Konieczyn, Thomas; Weber, Carsten, Ford Werke GmbH, Germany
14:50	<b>QUESTION AND ANSWER SESSION</b>	<b>QUESTION AND ANSWER SESSION</b>
15:05	NETWORKING REFRESHMENT BREAK	
	<b>TURBINE: AERODYNAMICS AND FLOW ANALYSIS OF CFD, OPTIMISATION, MULTI-PHYSICS AND T/C CHT</b> Session Chair: Peter Davies, Honeywell	
15:25	<b>PERFORMANCE AND FLOW ANALYSIS OF A MIXED FLOW TURBINE WITH TWIN-ENTRY NOZZLED VOLUTE</b> Xue, Yingxian; Yang, Mingyang; Deng, Kangyao, Shanghai Jiao Tong University, People's Republic of China; Romagnoli, Alessandro, Nanyang Technology University, Singapore and Martinez-Botas, Ricardo, Imperial College London, United Kingdom	
15:45	<b>NUMERICAL STUDY OF THE QUASI-STEADY APPROACH APPLIED TO AN ASYMMETRIC TWIN-SCROLL VOLUTE TURBOCHARGER TURBINE FOR A HEAVY DUTY DIESEL ENGINE UNDER REALISTIC BOUNDARY CONDITIONS</b> Palenschat, Torsten; Cortell, Jose Francisco; Newton, Peter; Martinez-Botas, Ricardo F; Imperial College London, United Kingdom; Mueller, Markus, Daimler AG, Germany and Rajoo, Srithar, Universiti Teknologi Malaysia, Malaysia	
16:05	<b>AEROTHERMODYNAMICS AND EXERGY ANALYSIS OF A TURBOCHARGER RADIAL TURBINE INTEGRATED WITH EXHAUST MANIFOLD</b> Lim, Shyang Maw; Dahlkild, Anders; Mihaescu, Mihai; Competence Center For Gas Exchange (Ccgex), Linné Flow Centre (Flow), Mechanics Department, KTH Royal Institute Of Technology, Sweden	
16:25	<b>QUESTION AND ANSWER SESSION</b>	
16:40	<b>CLOSING REMARKS</b> Dr Kian Banisoleiman, Lloyd's Register EMEA	
17:00	CLOSE OF CONFERENCE	

For the most up-to-date and detailed programme for the event, please visit [www.imeche.org/turbo](http://www.imeche.org/turbo)

- This programme is subject to change.
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## WHO SHOULD ATTEND?

**All engineers and professionals who are directly and indirectly involved with these technologies should attend, including:**

- Research Associate
- Head of Design
- Applications Engineer
- Performance Engineer
- Components Engineer
- General Manager Engineering
- Sales and Marketing Manager
- Technical Specialist
- Development Engineer
- Simulation Engineer
- Powertrain specialist
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## FEEDBACK FROM THE 2016 CONFERENCE:

“HIGHLY PRESTIGIOUS TURBOCHARGING CONFERENCE, WHICH IS FULLY SUPPORTED BY ALL MAJOR TURBOCHARGER MANUFACTURERS AND A GOOD MIX OF TURBOCHARGER CUSTOMERS.”

Chief Engineer, Ricardo

“THOROUGHLY ENJOYED THE EVENT, IT WAS VERY WELL PUT TOGETHER WITH A GOOD REPRESENTATION OF MANUFACTURES, ACADEMICS, TECHNOLOGY COMPANIES. IT WAS TIME AND MONEY VERY WELL SPENT TO COME AWAY WITH GREAT IDEAS AND THE CONTACTS TO MAKE THEM HAPPEN.”

Test Engineer, Cummins Turbo Technologies

“LONDON 2016 BROUGHT TOGETHER THE KEY INTERNATIONAL LEADERS AND RESEARCHERS TO DEBATE THE RECENT ADVANCES AND FUTURE CHALLENGES OF THE TURBO INDUSTRY.”

Senior Director Powertrain, Honeywell

“THIS IS THE FIRST TIME WHICH OUR COMPANY ATTEND TO THIS CONFERENCE. AND I REALIZED THAT THIS CONFERENCE IS USEFUL, HELPFUL, HIGH QUALITY. WE WOULD LIKE TO ATTEND NEXT YEAR IF WE CAN.

Mazda Motor Corporation

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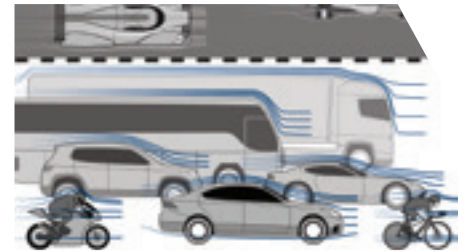
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