INTERNATIONAL CONFERENCE ON TURBOCHARGERS AND TURBOCHARGING ASIA PACIFIC 2019

12 PDUs approved by Professional Engineers Board (PEB)

8–9 May 2019
PARKROYAL on Beach Road Singapore, Singapore

Powertrain Systems and Fuels Group Conference

KEY SPEAKERS INCLUDE:
Carl William Burrell, Chief Designer – Concept Engines Geely Powertrain Research Institute
Peter Davies, Senior Director Powertrain Garrett - Advancing Motion
Koen Kramer, Chief Engineer Turbocharger Department Great Wall Motors Engine R&D
Azmi Osman, Head of Advanced Engineering Proton
Calogero Avola, Senior Technology System Engineer General Motors

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Book your place today: www.imeche.org/turboasia
THE ASIA PACIFIC AUTOMOTIVE TURBOCHARGER MARKET WILL POSE OVER 8% CAGR BETWEEN 2017 AND 2024 OWING TO TIGHTENING FUEL ECONOMY TARGETS ACROSS ASIA

With this in mind, 2019 will see the Institution of Mechanical Engineers hold the inaugural conference on Turbochargers and Turbocharging Asia Pacific in Singapore. Attend to hear how leading OEMs in this region are preparing for the future of the turbocharging market, reflecting the growth of the hybrid and electric vehicle market and regulatory changes.

Featuring speakers from China, Japan, Malaysia, Singapore and Europe, this is a key forum to discuss the different technical developments and solutions to manage common engineering challenges.

Gain insight into the latest turbocharger design trends and research into turbocharger components, together with state-of-the-art performance testing and heat recovery systems to enhance your powertrain systems.

Network and discuss the future of the turbocharger including e-boosting with representatives from automotive and turbocharger manufacturers, research organisations and testing and design solution providers.

KEY PROGRAMME HIGHLIGHTS:

- **Garrett- Advancing Motion** provide a technical presentation of their electrified turbocharger and latest applications
- **Lloyd’s Register** give a classification society view of turbochargers for the marine industry
- **IHI Corporation** outline the next generation of variable geometry turbochargers
- **IAVF Karlsruhe** share ways to improve turbocharger performance and durability when oil specification and duty cycles are changing
- **MHI Engine & Turbocharger Ltd.** cover their two-stage boosting system using a 48 volt electric compressor

WHAT TO EXPECT IN 2019:

- 17+ hours of technical presentations with opportunities for questions to the speaker panel
- 20 presenting authors from 19 companies including 4 keynote addresses
- 8 pioneering automotive OEMs share latest developments, including Geely, Great Wall Motors, Proton, Honda and General Motors
- Benefit from an international panel of speakers across the region
- 9+ hours of networking time
- Peer reviewed by industry experts and academic thought leaders
- Build your network of contacts and meet representatives and researchers

ORGANISING/ADVISORY COMMITTEE:

Powertrain Systems and Fuels Group
Institution of Mechanical Engineers

MEMBERS CREDITS:

- Ricardo Martinez-Botas (Imperial College)
- Ennio Codan (ABB)
- Michael Dolton (Cummins Turbo Technologies)
- Peter Davies (Garrett-Advancing Motion)
- Dietmar Flisnger (IHI)
- Seiichi Ibaraki (Mitsubishi Heavy Industries Limited)
- Rogier Lammers (Mitsubishi Turbocharger and Engine Europe B.V.)
- Takashi Otobe (Honda R&D)
- Kian Banisoleiman (Lloyd’s Register EMEA)
- Nathan McArdle (BorgWarner)
- Takashi Mori (IHI Corporation)
- Takahiro Bamba (IHI Corporation)
- Xin Shi (Beijing Institute of Technology)
- Alessandro Romagnoli (Nanyang Technological University)
- Mingyang Yang (Shanghai Jiao Tong University)
## Programme

**Wednesday 8th May 2019**

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<tr>
<th>Time</th>
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<tr>
<td>08:30</td>
<td>Registration and Refreshments</td>
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<tr>
<td>09:00</td>
<td>Chair’s Opening Remarks</td>
<td>Dietmar Filsinger, Engineering Division, IHI Charging Systems International GmbH</td>
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| 09:10 | Keynote | ROLE OF TURBOCHARGERS WITHIN NEXT GENERATION PASSENGER CAR POWER GENERATION PRODUCTS  
Carl William Burrell, Chief Designer – Concept Engines, Geely Powertrain Research Institute |
| 09:40 | The Next Generation of Variable Geometry Turbochargers from IHI | Kenichi Segawa, Manager, Product Development Group, IHI Corporation |
| 10:05 | How to Improve Turbocharger Performance and Durability When Oil Specification and Duty Cycles Are Changing | Kurt Kirsten, Head of Advanced Engineering and Innovation, APL Group and Andreas Jäger, Officer, IAVF Karlsruhe |
| 10:30 | Questions and Answers Session |  |
| 10:45 | Networking Refreshment Break |  |
| 11:15 | Optimisation of Radial-Inflow Turboexpanders for Mobile Organic Rankine Cycle (ORC) Applications | Miles Robertson, Research Associate in the Turbo Group, Imperial College London |
| 11:40 | Aerodynamic Optimisation of Compressors and Turbines for Engine Boosting | Chris Robinson, Managing Director, PCA Engineers |
| 12:05 | Unsteady Response of Centrifugal Compressor Performance to Pulsating Backpressure | Mingyang Yang, Associate Professor in Mechanical Engineering School, Shanghai Jiao Tong University |
| 12:30 | Gradient-Free and Gradient-Based Optimisation for Automotive Turbocharger | Tadashi Kanzaka, Senior Researcher, MHI |
| 12:55 | Questions and Answers Session |  |
| 13:15 | Networking Lunch |  |
| 14:15 | Keynote | OPPORTUNITIES IN TAILORED DESIGN OF DIESEL ENGINE CHARGING SYSTEMS  
Calogero Avola, Senior Technology System Engineer, General Motors |
| 14:45 | State-of-the-Art Performance Measurement Testing and Analysis |  |
| 15:10 | Experimental and Computational Outlook for Component-to-System Level Turbocharger Performance Assessments | Srithar Rajoo, Director, UTM Centre for Low Carbon Transport |
| 15:35 | Questions and Answers Session |  |
| 15:50 | Networking Refreshment Break |  |
| 16:20 | Mechanical Development of Turbochargers Using “Virtual Turbocharger” | Mustafa Duyar, Product Manager, Virtual Dynamics, FEV Software and Testing Solutions |
| 16:45 | Questions and Answers Session |  |
| 16:50 | Panel Discussion | THE CHALLENGE OF MEETING FUEL ECONOMY TARGETS AND HOW TO GET THERE  
• How can the industry as a whole work together to meet the new fuel economy targets in Asia?  
• How can turbochargers be designed to meet these targets?  
• How can we manage the impact of China VI combining emissions and fuel consumption targets? |
| 17:20 | Chair’s Closing Remarks |  |
| 17:30 | End of Day One |  |
THURSDAY 9TH MAY 2019

08:30  REGISTRATION AND REFRESHMENTS

THE FUTURE OF THE TURBOCHARGER WITH THE GROWTH OF FUEL CELLS

09:10  KEYNOTE
Koen Kramer, Chief Engineer Turbocharger Department, Great Wall Motors Engine R&D

09:40  AIR SUPPLY SYSTEM FOR HONDA FUEL CELL VEHICLE
Tatsuya Sugawara, Assistant Chief Engineer, Honda

10:05  RESEARCH ON KEY TECHNOLOGIES OF ELECTRIC TURBO COMPRESSOR FOR FUEL CELL ENGINES
Weilin Zhuge, Associate Professor, Department of Automotive Engineering, Tsinghua University

10:30  QUESTION AND ANSWER SESSION
10:45  NETWORKING REFRESHMENT BREAK

DEVELOPMENTS IN ELECTRICALLY ASSISTED TURBOCHARGING

11:15  TWO STAGE BOOSTING SYSTEM USING A 48 VOLT ELECTRIC COMPRESSOR
Naomichi Shibata, Senior Engineer, Turbocharger Division, MHI Engine & Turbocharger Ltd.

11:40  ELECTRICALLY ASSISTED TURBOCHARGING AND HYBRID TURBOCHARGERS
Peter Davies, Senior Director Powertrain, Garrett - Advancing Motion

12:05  QUESTION AND ANSWER SESSION
12:20  NETWORKING LUNCH

METHODS TO IMPROVE THE DURABILITY AND PERFORMANCE OF THE TURBOCHARGER

13:20  KEYNOTE
Azmi Osman, Head of Advanced Engineering, Proton

13:45  MULTI-INJECTION TURBINE HOUSING: AN EXPERIMENTAL VALIDATION FOR A NOVEL TIP-LEAKAGE MITIGATION CONCEPT
Alessandro Romagnoli, Assistant Professor, Nanyang Technological University

14:10  QUESTION AND ANSWER SESSION
14:20  NETWORKING REFRESHMENT BREAK

14:50  TURBINE RESEARCH UPDATE
Tatsuya Kuboyama, Associate Professor, Chiba University

15:15  PANEL DISCUSSION
THE FUTURE OF BOOSTING SYSTEMS IN LIGHT OF THE ELECTRICAL REVOLUTION
Panellists:
Koen Kramer, Chief Engineer Turbocharger Department, Great Wall Motors Engine R&D
Peter Davies, Senior Director Powertrain, Garrett - Advancing Motion
Weilin Zhuge, Associate Professor, Department of Automotive Engineering, Tsinghua University

• How can we manage the impact the future hybrid technologies will have on the adoption of the turbocharger?
• What support is needed for the hybrid car market?
• How can the turbocharger be incorporated into the electrical revolution?

16:25  CHAIR’S CLOSING REMARKS
16:30  END OF CONFERENCE
FEEDBACK FROM 13TH INTERNATIONAL CONFERENCE ON TURBOCHARGERS AND TURBOCHARGING CONFERENCE:

“THANKS FOR THE GREAT EVENT!”
Chief Engineer, Great Wall Motors Engine R&D

“EXCELLENT ENVIRONMENT TO SEE THE TURBOCHARGING INDUSTRY AT WORK”
Technical Director, National Laboratory of Engine Turbocharging Technology, China

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

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
- Powertrain Manager
- Principal Engineer
- Aerodynamics Engineer
- Mechanical Design Engineer
- Global Strategies Manager
- Turbocharging Development Engineer
- Programme Manager
- Performance Engineer
- Systems Engineer
- Aerodynamicist
- Data Systems Engineer
- Product Engineer
- Advanced Processing Engineer
- Research and Development Engineer

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TERMS AND CONDITIONS APPLY
HOW TO BOOK YOUR PLACE

FEES AND CHARGES

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

<table>
<thead>
<tr>
<th>Delegate Type</th>
<th>STANDARD RATE</th>
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<tbody>
<tr>
<td>Member, IMechE/supporting organisation</td>
<td>£520 + VAT = £624</td>
</tr>
<tr>
<td>Non-member</td>
<td>£620 + VAT = £744</td>
</tr>
<tr>
<td>Student/Retired</td>
<td>£200 + VAT = £240</td>
</tr>
<tr>
<td>Networking Reception and Dinner</td>
<td>£30 + VAT = £36</td>
</tr>
</tbody>
</table>

THREE WAYS TO BOOK

1. Online: www.imeche.org/turboasia
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

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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.

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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

PARKROYAL on Beach Road Singapore 7500 Beach Rd Singapore 199591

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OTHER EVENTS TO LOOK FOR

VEHICLE THERMAL MANAGEMENT SYSTEMS CONFERENCE AND EXHIBITION - VTMS 14

5-6 June 2019, London

The latest research and technological advances in the field of heat transfer, energy management, thermal comfort and the integration of all thermal systems within the vehicle.

www.imeche.org/vtms

INTERNAL COMBUSTION ENGINE AND POWERTRAIN SYSTEMS FOR FUTURE TRANSPORT

11 -12 December 2018, West Midlands

The 2019 conference will cover the key issues facing the internal combustion engine market and reflect the impact of alternative powertrains on the propulsion industry.

www.imeche.org/icengines

www.imeche.org/vtms

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1 Birdcage Walk Westminster London SW1H 9JJ
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