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

DELEGATE BADGE AND LANYARD SPONSOR:

EXHIBITORS:

SUPPORTING ORGANISATIONS:

EVENT PARTNER:

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 Flisinger
  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
- Xin Shi
  Beijing Institute of Technology
- Alessandro Romagnoli
  Nanyang Technological University
- Mingyang Yang
  Shanghai Jiao Tong University

12 PDUs approved by Professional Engineers Board (PEB)
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<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td>REGISTRATION AND REFRESHMENTS</td>
<td></td>
</tr>
<tr>
<td>09:00</td>
<td>CHAIR'S OPENING REMARKS</td>
<td>Dietmar Filsinger, Engineering Division, IHI Charging Systems International GmbH</td>
</tr>
<tr>
<td>09:10</td>
<td>LATEST TURBOCHARGER DESIGNS FOR GREATER EFFICIENCY</td>
<td><strong>Keynote</strong> &lt;br&gt; ROLE OF TURBOCHARGERS WITHIN NEXT GENERATION PASSENGER CAR POWER GENERATION PRODUCTS &lt;br&gt; Carl William Burrell, Chief Designer – Concept Engines, Geely Powertrain Research Institute</td>
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<tr>
<td>09:40</td>
<td>THE NEXT GENERATION OF VARIABLE GEOMETRY TURBOCHARGERS FROM IHI</td>
<td>Kenichi Segawa, Manager, Product Development Group, IHI Corporation</td>
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<tr>
<td>10:05</td>
<td>HOW TO IMPROVE TURBOCHARGER PERFORMANCE AND DURABILITY WHEN OIL SPECIFICATION AND DUTY CYCLES ARE CHANGING</td>
<td>Kurt Kirsten, Head of Advanced Engineering and Innovation, APL Group and Andreas Jäger, Officer, IAVF Karlsruhe</td>
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<tr>
<td>10:30</td>
<td>QUESTIONS AND ANSWERS SESSION</td>
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<td>10:45</td>
<td>NETWORKING REFRESHMENT BREAK</td>
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<tr>
<td>11:15</td>
<td>OPTIMISATION OF RADIAL-INFLOW TURBOEXPANDERS FOR MOBILE ORGANIC RANKINE CYCLE (ORC) APPLICATIONS</td>
<td>Miles Robertson, Research Associate in the Turbo Group, Imperial College London</td>
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<tr>
<td>11:40</td>
<td>AERODYNAMIC OPTIMISATION OF COMPRESSORS AND TURBINES FOR ENGINE BOOSTING</td>
<td>Chris Robinson, Managing Director, PCA Engineers</td>
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<tr>
<td>12:05</td>
<td>UNSTEADY RESPONSE OF CENTRIFUGAL COMPRESSOR PERFORMANCE TO PULSATING BACKPRESSURE</td>
<td>Mingyang Yang, Associate Professor in Mechanical Engineering School, Shanghai Jiao Tong University</td>
</tr>
<tr>
<td>12:30</td>
<td>GRADIENT-FREE AND GRADIENT-BASED OPTIMISATION FOR AUTOMOTIVE TURBOCHARGER</td>
<td>Tadashi Kanzaka, Senior Researcher, MHI</td>
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<tr>
<td>12:55</td>
<td>QUESTIONS AND ANSWERS SESSION</td>
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<tr>
<td>13:15</td>
<td>NETWORKING LUNCH</td>
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<tr>
<td>14:15</td>
<td>KEYNOTE</td>
<td>Calogero Avola, Senior Technology System Engineer, General Motors</td>
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<tr>
<td>14:45</td>
<td>STATE-OF-THE-ART PERFORMANCE MEASUREMENT TESTING AND ANALYSIS</td>
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<td>15:10</td>
<td>EXPERIMENTAL AND COMPUTATIONAL OUTLOOK FOR COMPONENT-TO-SYSTEM LEVEL TURBOCHARGER PERFORMANCE ASSESSMENTS</td>
<td>Srithar Rajoo, Director, UTM Centre for Low Carbon Transport</td>
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<tr>
<td>15:35</td>
<td>QUESTIONS AND ANSWERS SESSION</td>
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<tr>
<td>15:50</td>
<td>NETWORKING REFRESHMENT BREAK</td>
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<tr>
<td>16:20</td>
<td>MECHANICAL DEVELOPMENT OF TURBOCHARGERS USING “VIRTUAL TURBOCHANGER”</td>
<td>Mustafa Duyar, Product Manager, Virtual Dynamics, FEV Software and Testing Solutions</td>
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<tr>
<td>16:45</td>
<td>QUESTIONS AND ANSWERS SESSION</td>
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<tr>
<td>17:20</td>
<td>CHAIR'S CLOSING REMARKS</td>
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### THURSDAY 9TH MAY 2019

#### PROGRAMME

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<tr>
<th>Time</th>
<th>Event</th>
<th>Presenter/Panelists</th>
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<tbody>
<tr>
<td>08:30</td>
<td>Registration and Refreshments</td>
<td></td>
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<tr>
<td>09:10</td>
<td><strong>The Future of the Turbocharger with the Growth of Fuel Cells</strong></td>
<td>Koen Kramer, Chief Engineer Turbocharger Department, Great Wall Motors Engine R&amp;D</td>
</tr>
<tr>
<td>09:40</td>
<td><strong>Air Supply System for Honda Fuel Cell Vehicle</strong></td>
<td>Tatsuya Sugawara, Assistant Chief Engineer, Honda</td>
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<tr>
<td>10:05</td>
<td><strong>Research on Key Technologies of Electric Turbo Compressor for Fuel Cell Engines</strong></td>
<td>Weilin Zhuge, Associate Professor, Department of Automotive Engineering, Tsinghua University</td>
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<tr>
<td>10:30</td>
<td><strong>Question and Answer Session</strong></td>
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<td>10:45</td>
<td>Networking Refreshment Break</td>
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<tr>
<td>11:15</td>
<td><strong>Developments in Electrically Assisted Turbocharging</strong></td>
<td>Naomichi Shibata, Senior Engineer, Turbocharger Division, MHI Engine &amp; Turbocharger Ltd.</td>
</tr>
<tr>
<td>11:40</td>
<td><strong>Electrically Assisted Turbocharging and Hybrid Turbochargers</strong></td>
<td>Peter Davies, Senior Director Powertrain, Garrett - Advancing Motion</td>
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<tr>
<td>12:05</td>
<td><strong>Question and Answer Session</strong></td>
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<tr>
<td>12:20</td>
<td>Networking Lunch</td>
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<tr>
<td>13:20</td>
<td><strong>Recent Progress in Simplified Split Cooling with Integrated Heat Recovery and Reuse</strong></td>
<td>Azmi Osman, Head of Advanced Engineering, Proton</td>
</tr>
<tr>
<td>13:45</td>
<td><strong>Multi-Injection Turbine Housing: An Experimental Validation for a Novel Tip-Leakage Mitigation Concept</strong></td>
<td>Alessandro Romagnoli, Assistant Professor, Nanyang Technological University</td>
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<tr>
<td>14:10</td>
<td><strong>Question and Answer Session</strong></td>
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<tr>
<td>14:20</td>
<td>Networking Refreshment Break</td>
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<tr>
<td>14:50</td>
<td><strong>Turbine Research Update</strong></td>
<td>Tatsuya Kuboyama, Associate Professor, Chiba University</td>
</tr>
<tr>
<td>15:15</td>
<td><strong>The Future of Boosting Systems in Light of the Electrical Revolution</strong></td>
<td>Panellists: Koen Kramer, Chief Engineer Turbocharger Department, Great Wall Motors Engine R&amp;D, Peter Davies, Senior Director Powertrain, Garrett - Advancing Motion, Weilin Zhuge, Associate Professor, Department of Automotive Engineering, Tsinghua University</td>
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<td></td>
<td>How can we manage the impact the future hybrid technologies will have on the adoption of the turbocharger?</td>
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<td>What support is needed for the hybrid car market?</td>
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<td></td>
<td>How can the turbocharger be incorporated into the electrical revolution?</td>
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<tr>
<td>16:25</td>
<td><strong>Chair’s Closing Remarks</strong></td>
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<td>16:30</td>
<td>End of Conference</td>
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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>
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<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

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

PARKROYAL on Beach Road Singapore
7500 Beach Rd
Singapore 199591

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• Improve perception of your brand
• Influence other organisations’ spending plans

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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 for the internal combustion engine market and reflect the impact of alternative powertrains on the propulsion industry.

www.imeche.org/icengines

PE

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