Berlin Powertrain Symposium

Program
November 30 and December 1, 2017, ewerk, Berlin

Top speakers from OEMs, suppliers and politics

Further information and registration at
www.iav.com/symposium
The growing complexity of demands from society and policymakers as well as the many possible technical solutions are presenting huge challenges for us as vehicle developers. The powertrain is embedded in an environment that has never been as complex as it is today. This means we can no longer view the development of combustion engine, e-motor and transmission in isolation of each other because clever combinations are resulting in developments, some of which are moving in entirely new directions.

How do we find the right layout for our engines and transmissions in this new context? And what does this growing complexity mean for our future development processes? Will the complex decision-making process as well as the broader demands of validation and homologation slow us down or will the use of new technologies in development make us faster?

These are the questions that will be answered at the Berlin Powertrain Symposium. Be part of it, we look forward to seeing you there.

Matthias Kratzsch, IAV
Executive Vice President for Powertrain Systems Development
– Conference Director –

Gerhard Buschmann, IAV
Executive Vice President for Powertrain & Power Engineering

Matthias Schultalbers, IAV
Executive Vice President for Powertrain Mechatronics

Winfried Schultalbers, IAV
Executive Vice President for Powertrain & Power Engineering

Wolfgang Reimann, IAV
Executive Vice President for Powertrain & Power Engineering
“Sometimes the framework conditions differ significantly on the various local markets. BMW is responding to this with a variety of drive systems which, however, still largely need to be accommodated on the basis of existing investment in production facilities.”

“Audi

“The biggest challenge in developing future vehicles lies in integrating all of the powertrain variants needed into tomorrow’s electronics architecture.”

Josef Bast
Head of Powertrain Electronics

Dr. Christian Landerl
Head of Gasoline Engine Development

Prof. Dr. Christian Schwarz
Head of Gasoline Engine Advance Development

BMW

“BMW has been including the driving behavior of ‘normal’ customers into its validation processes for many years – a trend that is set to become more pronounced in the future.”

Daimler

“We have deliberately not opted for one drive type but for customized solutions. This will let us cover all customer needs in the future too.”

Peter Lückert
Head of Diesel Engine Powertrain and Injection

Dr. Norbert Merdes
Head of Powertrain Electronics

“We are open to any potential technology that can help to improve the efficiency of our drive systems.”
“A further challenge lies in choosing and realizing the right solution from all possible concepts for a particular application that provides the best possible cost-benefit ratio.”

Max Löffler
Head of Projects and Services in Electrics/Electronics Development

Berlin University of Technology

“What is clear though is that as far as combustion engines are concerned – whether with or without hybridization – the future will not only be about foreseeable CO₂ targets but, increasingly, about further reducing real-driving pollutant emissions.”

Prof. Dr. Dietmar Göhlich
Head of the Methods of Product Development and Mechatronics Section

Porsche

“The increasing extent to which functions are interconnected is of huge significance in this context. This means that development cannot merely focus on individual components but must instead embrace the entire drive system from the early development phase to SOP.”

Martin Kerkau
Head of Engine/Transmission Electronics

Volkswagen

“Besides this, however, the focus remains on the target of continuing to reduce CO₂. New engine concepts, increasing electrification and using alternative and regenerative fuels will leverage further potential.”

Dr. Wolfgang Demmelbauer-Ebner
Head of Gasoline Engine Development

“Far more virtual methods will be used in product development to overcome the complexity involved. Not only will digitization and big data have a pronounced influence on the methods of software development and permit updates in shorter intervals but also repercussions on the methods of hardware development.”

Dr. Axel Heinrich
Head of Group Research
1. Framework conditions
What are the demands from policymakers and society?
• Energy policy roadmap
• Carbon-neutral mobility
• Technological trends
• Emission legislation and local regulations

2. The overall system
How will combustion engine, transmission and e-machine change in the overall system?
• Technical challenges
  – Energy sources and infrastructure
  – Integration into new vehicle concepts
  – Development and production costs
• Technical solutions and innovations
  – Architectures of the overall powertrain
  – Impacts on combustion engine, transmission, e-motor
  – Individualization

3. The development process
How will we develop the new complexity? Will be become slower or faster?
• Concept formulation and development times
• Opportunities and risks of new development processes
• Digital development methods and validation demands
• Coping with layout complexity
• New forms of work organization
• Future roles in the OEM / development service provider / supplier network
• New stakeholders and other industries

What will future powertrains look like for passenger cars and commercial vehicles? There are millions of combinations.

With presentations by:
Audi
BMW
Bosch
German Federal Ministry of Economic Affairs and Energy
Daimler
Faraday Future
Hewlett Packard
innogy
MAN
Porsche
Potsdam Institute for Climate Impact Research
Berlin University of Technology
German Environment Agency
Volkswagen

Content Focus
General Information

Date:
November 30 and December 1, 2017

Venue:
ewerk
Wilhelmstrasse 43
10117 Berlin

Charges:
Participants: € 1,190 plus VAT
Speakers: Free of charge

Organization:
UNIVERSAL Kongress & Event Marketing GmbH
Giesebrechtstrasse 10
10629 Berlin

Claudia Böckermann
cboeckermann@universal-berlin.de
Phone +49 30 31018550

Event organizer:
For organizational matters:
Lars Gamasin
lars.gamasin@iav.de
Phone +49 30 3997-89095

For aspects of subject matter covered:
Matthias Kratzsch
matthias.kratzsch@iav.de
Phone +49 30 3997-89700

Presentation languages and duration:
German and English with simultaneous interpretation.
20 minutes will be allocated per presentation, followed by time for discussion.

Accompanying exhibition:
Take advantage of this opportunity to present your services and products within the event’s theme to a high-profile audience. Please contact us if you are interested in exhibiting.

Evening event

November 30, 2017, 7 p.m.

We invite you to join us in reviewing the impressions and talks of the day in the Arminius Market Hall, giving you the opportunity to strengthen existing contacts and broaden your network in an inspiring ambience.

Dinner speech

Minister-President Stanislaw Tillich

Stanislaw Tillich has been Minister-President of the Free State of Saxony since May 2008. He sees the basis for an innovative and successful economy in the attributes of hard work, drive and inventive talent.
Berlin is a center of technology and science, the hub for start-ups, the creative metropolis. In short – Berlin is concentrated energy.

Our symposium is taking place in a former power station at the heart of Berlin. Between the Brandenburg Gate, Potsdamer Platz square and Friedrichstraße we would like to invite you a dialog that not only reinforces the key part played by the powertrain but also takes it forward.

Be part of the dialog on tomorrow’s demands and join us in taking a look at the underlying framework, the overall system and the development process itself.
### Thursday, November 30, 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8.00 a.m.</td>
<td>Registration</td>
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<tr>
<td>9.00 a.m.</td>
<td>Opening</td>
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<td>Welcoming address</td>
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<tr>
<td>9.15 a.m.</td>
<td>Keynote: Why We Need a Global Decarbonization of Energy Supply</td>
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<td>Prof. Dr. Anders Levermann, Potsdam Institute for Climate Impact Research</td>
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<tr>
<td>9.35 a.m.</td>
<td>Keynote: German Government’s Energy Policy Roadmap</td>
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<td>Thorsten Herdan, German Federal Ministry for Economic Affairs and Energy</td>
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<td>9.55 a.m.</td>
<td>Keynote: Future Demands on Climate Protection and Air Pollutants</td>
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<td>Martin Schmied, German Environment Agency</td>
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<td>10.15 a.m.</td>
<td>Keynote: Energy Supply and Infrastructure</td>
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<td>Stephan Stollenwerk, innogy</td>
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<td>10.35 a.m.</td>
<td>Panel discussion on the keynotes</td>
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<td>11.15 a.m.</td>
<td>Coffee break</td>
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<td></td>
<td>Session 1: Overall System – Powertrain I</td>
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<td>Direction: Dr. Norbert Merdes, Daimler</td>
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<tr>
<td>11.45 a.m.</td>
<td>Keynote: An LCA Comparison of Different Powertrains and Fuels</td>
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<td>Benjamin Plaga, Volkswagen</td>
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<td>Today and 2030</td>
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<td>12.15 a.m.</td>
<td>Keynote: 75 g CO₂/km – Powertrain Concept and Configuration of Powertrain Components</td>
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<td>Dr. Mirko Leesch, IAV</td>
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<td>12.45 a.m.</td>
<td>Keynote: Functional Vehicle Architecture – an End-to-End Approach to Optimizing the Powertrain</td>
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<td>Markus Schweiker, Bosch</td>
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<td>13.15 a.m.</td>
<td>Lunch</td>
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Session 2: Development Processes I
Direction: Martin Kerkau, Porsche

2.15 p.m. Development Processes at Faraday Future
Nick Sampson, Faraday Future

2.45 p.m. Volkswagen Worldwide: Development Network for Tomorrow’s Drive Systems
Dr. Wolfgang Demmelbauer-Ebner, Volkswagen

3.15 p.m. Digitization in the Powertrain – a Perspective from IT
Colin l’Anson, Hewlett Packard

3.45 p.m. Coffee break

4.15 p.m. Start of the theme-based café

Framework Conditions

1. What Do the Demands from Policymakers and Environment Mean for Us Powertrain Developers?
Facilitators: Prof. Dr. Dietmar Göhlich, Berlin University of Technology
Gerhard Buschmann, IAV

Development Processes

5. What Are the Benefits of Virtualization? Opportunities and Risks of New Development Processes
Facilitators: Martin Kerkau, Porsche
Dr. Norbert Merdes, Daimler

6. How is the Working World Changing? New Forms and Future Roles in the Development Network
Facilitators: Josef Bast, Audi
Max Löffler, MAN

Overall System

2. Competition between Drive Concepts
Facilitators: Prof. Dr. Christian Schwarz, BMW
Wolfgang Reimann, IAV

3. Handling Layout Complexity
Facilitators: Peter Lückert, Daimler
Matthias Kratzsch, IAV

4. Energy Sources and Infrastructure
Facilitators: Dr. Wolfgang Demmelbauer-Ebner, Volkswagen
Matthias Schultalbers, IAV

End of day 1

5.45 p.m. Get-together at the cocktail bar in ewerk

6.45 p.m. Shuttle bus to the evening event

7.30 p.m. Start of the evening event and dinner speech by Minister-President Stanislaw Tillich

Evening Event
Arminiusmarketthalle
Arminiusstrasse 2-4,
10551 Berlin

Opened in 1891, the market hall combines heritage and tradition with young ideas. We look forward to a great evening with you.
Friday, December 1, 2017

9.00 a.m. **Expert talks**

These pick up on the subject matter covered in the theme-based cafés and look to the future.

Session 3: **Future Energy Sources**
Direction: Gerhard Buschmann, IAV

9.45 a.m. Audi h-tron: One Way to CO₂-Neutral Mobility  
Jürgen Jablonski, Audi

10.15 a.m. Future Fuel Scenarios  
Dr. Wolfgang Warnecke, Shell Global

10.45 a.m. Technology for Low-Carbon Fuel  
Stephan Schmidt, Chemieanlagenbau Chemnitz

11.15 a.m. **Coffee break**

Session 4: **Powertrain Electrification**
Direction: Max Löffler, MAN

11.45 a.m. Drive Topologies – on the Way from Combustion Engine to All-Electric Drives  
Dr. Tobias Böhm, Volkswagen Group Research

12.15 p.m. Evolution and Adoption of 48V Systems in Passenger Cars  
Robert Inderka, Daimler

12.45 p.m. Audi 48V Mild Hybrid System Integration with Maximum Customer Benefit  
Walter Galli, Audi

13.15 p.m. **Lunch**

Session 5: **Overall System, Powertrain II**
Direction: Dr. Axel Heinrich, Volkswagen

14.15 p.m. Possibilities and Limits of Function Prognoses for Complex Powertrain Topologies  
Prof. Dr. Roland Baar, Berlin University of Technology

14.45 p.m. Powertrain Management – More than a Shifting Strategy  
Norbert Scharlach, MAN

15.15 p.m. Powertrain System Simulation  
Frank Uphaus, Daimler

15.45 p.m. **Coffee break**
### Session 6: Development Processes II

**Direction:** Josef Bast, Audi

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>16.15 p.m.</td>
<td>Use of HiL Simulation as a Digital Development Method in the Product Development Process</td>
<td>Heiko Junker, Porsche</td>
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<td>Thomas Staib, Porsche</td>
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<td>16.45 p.m.</td>
<td>Machine Learning and Artificial Intelligence for Powertrain Development</td>
<td>Dr. Mirko Knaak, IAV</td>
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<tr>
<td>17.15 p.m.</td>
<td>Virtualization Initiative at BMW for Developing Future Powertrains</td>
<td>Dr. Heiko Konrad, BMW</td>
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<td>17.45 p.m.</td>
<td>End of event</td>
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**Tip**

The event takes place at a time of the year when the magic of sparkling Christmas lights abounds. Why not spend an Advent weekend in Berlin after the symposium? Our city extends an invitation to meander through over 20 Christmas markets.