

# The Powertrain of Tomorrow

Hybrid and Electric Powertrain Concepts

11th International MTZ Conference on Future Powertrains

25 and 26 January 2017 | Frankfurt/Main | Germany



@ AVL

Now International  
with Simultaneous Interpreting  
German and English

## REQUIREMENTS

Legislation and  
customer expectations

## DRIVE SYSTEMS

Components and  
systems

## CONTROL SYSTEMS

Energy and  
thermal management

## /// KEYNOTE LECTURES

**Prof. Dr. Peter Gutzmer**, Schaeffler | **Prof. Dr. Ferit Küçükay**, TU Braunschweig |  
**Dr. Christian Landerl**, BMW | **Dr. Oliver Maiwald**, Continental

# SCIENTIFIC ADVISORY BOARD



**Dr. Norbert Alt**  
FEV GmbH



**Prof. Dr. Michael Bargende**  
University of Stuttgart



**Dr. Ulrich Dohle**  
Rolls-Royce  
Power Systems AG



**Dr. Hans-Jörg Domian**  
ZF Japan Co., Ltd.



**Friedrich Eichler**  
Volkswagen AG



**Prof. Dr. Bernhard Geringer**  
TU Vienna



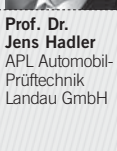
**Prof. Dr. Uwe Dieter Grebe**  
AVL List GmbH



**Bernhard Heil**  
Daimler AG



**Dr. Christian Landerl**  
BMW Group



**Prof. Dr. Jens Hadler**  
APL Automobil-  
Prüftechnik  
Landau GmbH



**Dr. Johannes Liebl**  
Editor-in-Charge  
ATZ | MTZ |  
ATZelektronik  
Scientific Director  
of the Conference



**Dr. Peter Sauermann**  
BP Europa SE



**Dr. Andreas Schamel**  
Ford  
Forschungszentrum  
Aachen GmbH



**Dr. Oliver Maiwald**  
Continental  
Automotive GmbH



**Uwe Wagner**  
Schaeffler Technologies  
AG & Co. KG



**Dr. Marco Warth**  
MAHLE  
International GmbH

**Prof. Dr. Ulrich Seiffert**  
WiTech  
Engineering GmbH



**Dr. Wolfgang Warnecke**  
Shell Global Solutions  
(Deutschland) GmbH

# The Powertrain of Tomorrow

## WELCOME

More stringent legislation on CO<sub>2</sub> emissions and new, tougher test cycles involving real-life driving situations are leading to a paradigm shift within the industry. Advances are being made in the field of electrification and powertrains are increasingly being designed as integrated systems consisting of combustion engines, gear-boxes and electric motors. As a result of these changes and with the help of the Scientific Advisory Board, we have cautiously taken the well-established MTZ conference “The Powertrain of Tomorrow”, which has been held for more than 10 years, in a noticeably new direction. We will be meeting for the first time in Frankfurt and the conference will have an even more international focus.

The main theme will be the synthesis of powertrains, with an emphasis on components and integration in vehicles, because the interdependencies are increasingly complex. Digitization is becoming more widespread, a range of different markets are opening up and we are facing many challenges that also represent interesting new opportunities. This is clearly reflected in the lectures that you can attend at the congress. A system-based approach, intelligent management and new development methods will be the key features.

The friendly atmosphere of the event remains unchanged. Our long-term partners Schaeffler and Volkswagen have supported and helped to define the new direction taken by the congress and we would like to thank them very much. I would like to invite you to attend the 11th International MTZ Conference “The Powertrain of Tomorrow”. We are looking forward to some interesting discussions!

On behalf of the Scientific Advisory Board

Dr. Johannes Liebl  
Editor-in-Charge ATZ | MTZ | ATZelektronik



## PARTICIPANTS

The MTZ Conference “The Powertrain of Tomorrow” is aimed at managers and experts in powertrain development and electrification. It is a must-attend event for engine and vehicle manufacturers, their suppliers and development partners, teaching staff and engineers from universities, representatives from authorities and associations, and technicians active in this field.

# PROGRAM

WEDNESDAY 25 JANUARY 2017

9:15 **Welcome and opening of the conference**

Dr. Johannes Liebl, Editor-in-Charge ATZ | MTZ | ATZelektronik

## KEYNOTE LECTURES

---

Moderator: Dr. Johannes Liebl, Editor-in-Charge ATZ | MTZ | ATZelektronik

9:30 **Future global powertrains from a supplier's perspective**

Prof. Dr. Peter Gutzmer, Deputy CEO, Chief Technology Officer, Schaeffler AG

10:00 **The petrol engine – obsolete or fit for the future?**

Dr. Christian Landerl, Director Development Petrol Engine, BMW Group

10:30 **Predictive energy management – further potential for CO<sub>2</sub> reduction in micro and mild hybrids**

Dr. Oliver Maiwald, Senior Vice President, B. Klein, F. Graf, Continental Automotive GmbH

11:00 Refreshment break with coffee and tea in the exhibition area

## SYSTEM REQUIREMENTS

---

Moderator: Dr. Marco Warth, Director Corporate Advanced Engineering, MAHLE International GmbH

11:30 **Strategic optimization of powertrain technology portfolios by means of market simulation**

Nils R. Neumann, Research Assistant, J. Bavendiek, Prof. Dr. L. Eckstein, ika, RWTH Aachen University

12:00 **Dimensioning of battery electric vehicles in accordance with legal standards and manufacturers' and customers' requirements**

Dr. Fabian Schüppel, Project Engineer, M. Schlüter, Dr. J. Gacnik, IAV GmbH

12:30 Lunch in the exhibition area


## DRIVE SYSTEMS I

---

Moderator: Prof. Dr. Bernhard Geringer, Director, IFA, Vienna University of Technology, Austria

14:00 **48V – where to place the e-machine?**

Thomas Pels, Head of Advanced Systems Engineering and Powertrain Electrification, AVL SCHRICK GmbH; Dr. R. Ellinger, V. Davydov, Dr. W. Schöffmann, AVL List GmbH, Austria

- 
- 14:30 **Synthesizing different hybrid powertrains**  
Andreas Englisch, President Business Unit Hybrid Drives,  
T. Pfund, D. Reitz, M. Rauch, Dr. C. Lauinger,  
Schaeffler Technologies AG & Co. KG
- 15:00 **Tailored diesel engines for electrical propulsion systems or tailored electrification for future diesel powertrains**  
Thomas Körfer, Group Vice President, W. Bick, B. Lindemann,  
Dr. T. Hülshorst, J. Ogrzewalla, FEV GmbH
- 15:30 Refreshment break with coffee and tea in the exhibition area

## ENERGY MANAGEMENT

---

Moderator: Prof. Dr. Jens Hadler, CEO,  
APL Automobil-Prüftechnik Landau GmbH

- 16:00 **The intelligent operating strategy of the Mercedes-Benz plug-in hybrid electric vehicles**  
Dr. Daniel Görke, Development Engineer, J. Strenkert,  
S. Schmiedler, T. Schürmann, Daimler AG
- 16:30 **Thermal management of a fuel-cell range-extended electric vehicle**  
Johannes Höflinger, Project Assistant, Prof. Dr. P. Hofmann,  
IFA, Vienna University of Technology, Austria

## PANEL DISCUSSION

---

Moderators: Dr. Alexander Heintzel, Editor-in-Chief, and  
Martin Westerhoff, Vice Editor-in-Chief MTZ

- 17:00 **CO<sub>2</sub> and air quality – do we need new powertrains?**  
Participants: Prof. Dr. Uwe Dieter Grebe, AVL List GmbH  
Prof. Dr. Peter Gutzmer, Schaeffler AG  
Prof. Dr. Jens Hadler, APL Group  
Dr. Christian Landerl, BMW Group  
Dietmar Winkler, asp/AUTOHAUS

- 
- 19:30 **Evening of encounters at the “Gesellschaftshaus Palmengarten”**  
Enjoy a delightful evening and interesting conversations  
over dinner with colleagues and speakers.

# PROGRAM

THURSDAY 26 JANUARY 2017

## KEYNOTE LECTURE

---

Moderator: Uwe Wagner, Senior Vice President R&D Automotive and Industrial, Member of the Management Boards Automotive and Industrial, Schaeffler Technologies AG & Co. KG

- 8:30    **Highly fuel-efficient gearbox and powertrain concepts**  
Prof. Dr. Ferit Küçükay, Director, L. Li, A. Lange,  
Institute of Automotive Engineering (IAE), TU Braunschweig

## COMPONENTS

---

Moderator: Andreas Englisch, President Business Unit Hybrid Drives, Schaeffler Technologies AG & Co. KG

- 9:00    **Innovative e-machines for the electric powertrain of the future**  
Dr. Martin Braun, Director, R. Schmid, Dr. S. Usbeck,  
Robert Bosch GmbH
- 9:30    **Improved performance and packaging with bi-stable tensioner design for mild-hybrid accessory belt drives**  
Ron Farewell, Design Group Supervisor, T. Neudorf,  
Litens Automotive Group, Canada
- 10:00   **Protection for HV battery systems – humidity control**  
Dr. Michael Harenbrock, Business Development Manager,  
J. Kosicki, MANN+HUMMEL GmbH
- 10:30   Refreshment break with coffee and tea in the exhibition area

## DEVELOPMENT METHODS I

---

Moderator: Dr. Norbert Alt, CEO, FEV GmbH

- 11:00   **Battery-electric vehicle efficiency potential assessment and thermal aging investigation**  
Alessandro Colla, Analysis Engineer, Dr. F. Diwoky,  
AVL List GmbH, Austria; K. Walter, AVL Software and  
Functions GmbH; T. Kutrašnik, LICeM, University of Ljubljana,  
Slovenia
- 11:30   **Methodical synthesis and simulation-assisted analysis of electrified vehicle concepts**  
Hendrik Piechottka, Doctoral Candidate, Dr. S. Grams,  
AUDI AG; Prof. Dr. F. Küçükay, IAE, TU Braunschweig
- 12:00   Lunch in the exhibition area

## DEVELOPMENT METHODS II

---

Moderator: Prof. Dr. Michael Bargende, Director,  
Chair in Automotive Powertrains, IVK, University of Stuttgart

13:00 **A comprehensive methodology for improving the efficiency of petrol engines with intake manifold fuel injection in hybrid powertrains**

Harry Hamann, Doctoral Candidate, Dr. D. Munning,  
Dr. M. Zillmer, Volkswagen AG; Prof. Dr. P. Eilts, ivb,  
TU Braunschweig

13:30 **The interaction between tribology and emissions under real driving conditions (RDE)**

Christian Lensch-Franzen, Head of Engineering,  
Prof. Dr. J. Hadler, Dr. M. Gohl, Dr. J. Becker, T. Mink,  
J. Wang, APL Automobil-Prüftechnik Landau GmbH

14:00 **Real-time capable model environment for developing and testing hybrid and battery electric vehicles**

Dr. Christian Donn, Business Development Manager  
Powertrain, V. Bensch, IPG Automotive GmbH

14:30 Refreshment break with coffee and tea in the exhibition area

## DRIVE SYSTEMS II

---

Moderator: Prof. Dr. Uwe Dieter Grebe, Executive Vice President  
Global Business Development, Sales and International Operations,  
AVL List GmbH, Austria

15:00 **Dynamic downsizing gasoline demonstrator**

Dr. Mike Bassett, Chief Engineer, J. Hall, T. Cains,  
Dr. S. Borman, S. Reader, MAHLE Powertrain Limited, UK

15:30 **Potential of the hybrid operating modes of the plug-in hybrid powertrain concept “Two-Drive Transmission with Range Extender” (DE-REX)**

Sebastian Fischer, Research Assistant,  
Prof. Dr. C. Beidl, VKM, A. Viehmann, R. König,  
Prof. Dr. S. Rinderknecht, IMS, TU Darmstadt

16:00 **Plug-in fuel cell vehicles**

Jürgen Ogrzewalla, Vice President Electronics and  
Electrification, FEV GmbH; M. Walters, VKA,  
RWTH Aachen University

16:30 **Closing remarks**

Dr. Johannes Liebl, Editor-in-Charge ATZ | MTZ | ATZelektronik



## THE CONFERENCE IS SUPPORTED BY SCHAEFFLER AG

The Schaeffler Group is a globally active, integrated automotive and industrial supplier. Highest quality, outstanding technology, and strong innovative ability are the basis for the company's continuing success. In 2015, the number of patent registrations amounted to 2,334, making Schaeffler Germany's second most innovative company according to the German Patent and Trademark Office.

The Schaeffler Group makes a decisive contribution to "mobility for tomorrow" with high-precision components and systems in engine, transmission, and chassis applications as well as rolling and plain bearing solutions for a large number of industrial applications.

As a leading expert in the fields of innovation and technology, for seven decades Schaeffler has been playing an active part in shaping the relevant technical, social, and economic trends with its own research activities. Key trends are identified at an early stage and new technology standards are defined.

The corporate culture encourages innovation and is driving forward the research and development of innovative components, modules, and systems in focal areas such as energy efficiency, renewable energies, mechatronics, and electric mobility.

Customers all around the world value Schaeffler's operative excellence as well as its technology and systems expertise.

## YOUR PRESENTATION PLATFORM

Take the opportunity to present your latest products and services to the specialist audience in our exclusive exhibition or as a sponsor.

Make use of this meeting place to generate valuable business contacts!

For information on the various presentation options, please contact:

Elke van Lon

Phone +49 611 7878-320

[elke.vanlon@springer.com](mailto:elke.vanlon@springer.com)

# SCHAEFFLER

[www.schaeffler.com](http://www.schaeffler.com)





## THE CONFERENCE IS SUPPORTED BY VOLKSWAGEN AG

The Volkswagen Group with its headquarters in Wolfsburg is one of the world's leading automobile manufacturers and the largest car-maker in Europe.

Due to difficult market conditions in 2015, the number of Group vehicles delivered to customers dropped to 9.931 million (2014: 10.137 million). The share of the world passenger car market amounts to 12.3 percent.

In Western Europe, nearly one in four new cars (24.4 percent) is made by the Volkswagen Group. Group sales revenue in 2015 totaled € 213 billion (2014: € 202 billion).

The Group comprises twelve brands from seven European countries: Volkswagen Passenger Cars, Audi, SEAT, ŠKODA, Bentley, Bugatti, Lamborghini, Porsche, Ducati, Volkswagen Commercial Vehicles, Scania and MAN.

Each brand has its own character and operates as an independent entity on the market. The product spectrum ranges from motorcycles to low-consumption small cars and luxury vehicles. In the commercial vehicle sector, the products include ranges from pick-ups, buses and heavy trucks.

As of: 31.12.2015

**VOLKSWAGEN**

AKTIENGESELLSCHAFT

[www.volkswagen.de](http://www.volkswagen.de)

**MEDIA PARTNER**

**MTZ**

## REGISTRATION FEE

€ 1,295.– plus VAT

This includes the conference documentation, coffee breaks, soft drinks, two lunches and the evening reception.

## VENUE

Gesellschaftshaus Palmengarten  
Palmengartenstraße 11  
60325 Frankfurt am Main | Germany  
(Palmengarten parking lot, Siesmayerstraße 61)

## HOTELS

The hotels have room blocks at reduced prices for the participants.

**Please make your reservation quoting the reference  
“The Powertrain of Tomorrow” by 13 December 2016 (Novotel)  
or 27 December 2016 (Motel One).**

### **Novotel Frankfurt City**

Lise-Meitner-Straße 2  
60486 Frankfurt am Main  
Germany  
Phone +49 69 79303-0  
Fax +49 69 79303-930  
H1049@accor.com  
www.novotel.com  
€ 109.– Single room,  
including breakfast

### **Motel One Frankfurt-Messe**

Europa-Allee 25  
60327 Frankfurt am Main  
Germany  
Phone +49 69 6612453-0  
Fax +49 69 6612453-10  
frankfurt-messe@motel-one.com  
www.motel-one.com  
€ 88.50 Single room,  
including breakfast

**Please find more hotels in Frankfurt under the following link:**  
[www.frankfurt-tourismus.de](http://www.frankfurt-tourismus.de)

## LANGUAGES USED IN THE PRESENTATIONS

German and English with simultaneous interpreting  
(German – English / English – German)

## THE NEW eMAGAZINES ATZworldwide AND MTZworldwide

As a participant in this conference you have the opportunity to read our new English-language eMagazines free of charge and without obligation. We offer you 30 days of free access.



## CONDITIONS

No cancellation charge is due if registration is cancelled by 27 December 2016. Cancellations made after that date will incur a charge of 35 % of the registration fee. For cancellations made after 3 January 2017 the full registration fee is payable. Cancellations must be made in writing. The date of the postmark will determine whether the deadline has been met. If you are unable to attend, we will be happy to accept a substitute participant.

Should a speaker be unable to attend at short notice by reason of force majeure, illness, accident or other circumstances for which ATZlive cannot be held responsible, another qualified person will be appointed to the exclusion of any claim for compensation. Should the event be cancelled altogether, we will of course refund the registration fee.

No conference documentation may be reproduced or transferred to third parties without the express written consent of ATZlive. Photographing the presentation slides and taking audio and video recordings of the event are not permitted.

The General Terms and Conditions of ATZlive apply, as published on the website [www.ATZlive.de/AGB](http://www.ATZlive.de/AGB)

Your personal details will be stored electronically in compliance with the German Data Protection Act. We will not disclose your address to third parties for advertising purposes. If you do not wish to receive information about our publishing products, please send an e-mail with your address details to [widerspruch.springerfachmedien-wiesbaden@springer.com](mailto:widerspruch.springerfachmedien-wiesbaden@springer.com).

Please send the registration form by post or fax to:

ATZlive | Springer Vieweg

Springer Fachmedien Wiesbaden GmbH

Marc Vestweber

Abraham-Lincoln-Straße 46 | 65189 Wiesbaden | Germany

Phone +49 611 7878-132 | Fax +49 611 7878-452

[ATZlive@springer.com](mailto:ATZlive@springer.com) | [www.ATZlive.de](http://www.ATZlive.de)



## THE ORGANIZER

**ATZlive**

**// Spotlight on Powertrain and Vehicle Engineering //**

**ATZ** live

ATZlive organizes its high-caliber conferences for vehicle and engine specialists together with key representatives from research and industry to ensure that they are tailor-made to the needs of the participants and address the very latest issues. Our close collaboration with the editorial teams of our specialist magazines ATZ and MTZ keeps us fully up-to-date on the latest topics and trends on the market.

ATZlive is part of the world's second largest scientific publishing group, Springer Science + Business Media.

# CONFERENCE REGISTRATION

## The Powertrain of Tomorrow

25 and 26 January 2017 | Frankfurt/Main | Germany

I have read the General Terms and Conditions\* and I would like to register at a cost of € 1,295.– plus VAT.

\* The General Terms and Conditions of ATZlive apply, as published on the website [www.ATZlive.de/AGB](http://www.ATZlive.de/AGB).

### Registration data

---

Family name

---

First name

---

Acad. title

---

Company / Institute

---

Department

---

Function

---

Street / P.O. box

---

Postal code / City

---

Country

---

Phone

---

Fax

---

E-mail of the participant

---

Invoice address (if different from above address)

---

---

VAT No.

**Please send my free trial access to ☐ ATZworldwide or ☐ MTZworldwide to the e-mail address above.**

---

Date, Signature

**FAX TO +49 611 7878-452 OR E-MAIL TO [ATZLIVE@SPRINGER.COM](mailto:ATZLIVE@SPRINGER.COM)**