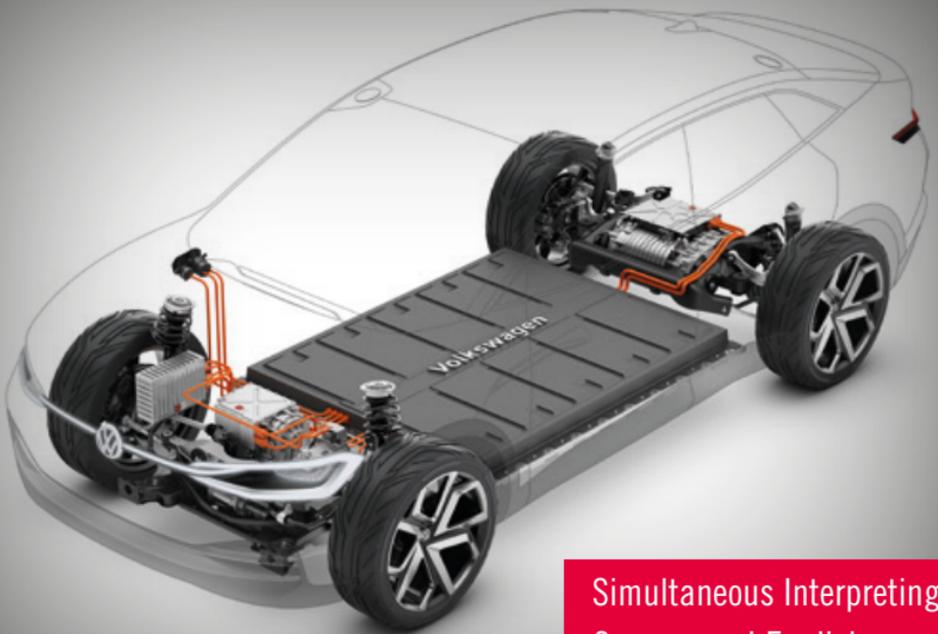


The Powertrain of Tomorrow

Consistent Advancement of Diversification

13th International MTZ Conference on Future Powertrains
23 and 24 January 2019 | Frankfurt/Main | Germany



Simultaneous Interpreting
German and English

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INTERNAL COMBUSTION ENGINES

Partners in
electrification

ELECTRIFICATION

Low-voltage
to high-voltage

FUEL CELLS

Integration
into the powertrain

/// PANEL DISCUSSION **How much powertrain diversity can we afford?**

/// KEYNOTE LECTURES **Otmar Bitsche**, Dr. Ing. h.c. F. Porsche AG |
Manfred Homm, Schaeffler Group | **Dr. Peter Schögl**, AVL List GmbH

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The Powertrain of Tomorrow

WELCOME

At the last MTZ Conference on “The Powertrain of Tomorrow” held in January 2018, we found a powertrain mix that can ensure mobility with carbon-neutral emissions and without further pollution of the atmosphere. This broad range of powertrains was made up of internal combustion engines operated with or without regenerative liquid or gaseous fuels, hybrid and plug-in hybrid drive systems, and fuel cell systems. In 2019, we will evaluate these powertrains once again at our 13th MTZ Conference to provide orientation for the conference participants.

But do we need this diversity of powertrains in order to achieve the climate protection and air quality targets? What role will combustion engines play in electrified powertrains? Has the combination of an internal combustion engine and an electric motor become established? How can their interaction be further perfected in the powertrain system? Do we need different solutions for private transport compared to those for urban environments or delivery vehicles? Who is taking the opportunity to create competitive advantages with these powertrains: the industry’s established companies or new players?

On behalf of all those involved as well as our partners Schaeffler and Volkswagen, I would like to cordially invite you to attend the 13th International MTZ Conference on “The Powertrain of Tomorrow” on 23 and 24 January 2019 in Frankfurt am Main, Germany. You will find the very latest information on the state of the art in powertrain development.

We look forward to an interesting dialogue with you.

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 23 JANUARY 2019

- 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 **The drivetrain of tomorrow – an optimization with many influencing parameters**
Manfred Homm, Senior Vice President R&D E-Mobility,
G. Rathke, C. Jung, Schaeffler Group
- 10:00 **800 V – the future of fast charging**
Otmar Bitsche, Director E-Mobility, Dr. K. Rechberger,
Dr. Ing. h.c. F. Porsche AG
- 10:30 **Design of driving characteristics with virtual methods**
Dr. Peter Schögggl, Skill Area Manager, Attributes,
Virtual Vehicle, ADAS/AD and Racing, M. Oswald,
E. Bogner, AVL List GmbH, Austria
- 11:00 Refreshment break with coffee and tea in the exhibition area

POWERTRAIN CONCEPTS I

Moderator: Carsten Weber, Manager Research & Advanced Engineering, Engine & Powertrain Systems, Ford-Werke GmbH

- 11:30 **The electric drivetrain system in the new Audi e-tron**
Dr. Joachim Doerr, Head of Electric Machine Design and
Electric Axle Drive Design, Dr. N. Ardey, Dr. G. Mendl,
G. Fröhlich, R. Straßer, T. Laudenschach, AUDI AG
- 12:00 **MEET, the urban demonstrator from MAHLE under real driving conditions**
Daniel Rieger, Project Manager Corporate Advanced
Engineering Mechatronics, M. Foisel, Dr. M. Warth,
Dr. O. Scharrer, MAHLE International GmbH
- 12:30 **eCULT – a lifestyle, purist, lightweight urban vehicle**
Wolfgang Kriegler, Senior Lecturer, Dr. M. Gossar,
Automotive Engineering, FH Joanneum, Austria; D. Hofer,
MAGNA STEYR Fahrzeugtechnik AG & Co KG, Austria
- 13:00 Lunch in the exhibition area

POWERTRAIN CONCEPTS II

Moderator: Prof. Dr. Uwe Dieter Grebe, EVP, AVL List GmbH, Austria

- 14:30 **Diesel PHEV – electrifying efficiency**
Thomas Körfer, Group Vice President Diesel Powertrains, FEV Group GmbH; B. Lindemann, J. Schaub, M. Schönen, FEV Europe GmbH; M. Kötter, H. Busch, ALCTC-CU
- 15:00 **The hybrid model of the new hydrogen internal combustion engine as an efficient powertrain of tomorrow**
Thomas Korn, CEO and Founder, A. Sousa, Keyou GmbH
- 15:30 **Hybrid drive system with a methane engine – the consistent evolution**
Carsten Weber, Manager, Research & Advanced Engineering, Engine & Powertrain Systems, H. Stoffels, Ford-Werke GmbH
- 16:00 Refreshment break with coffee and tea in the exhibition area

INTRODUCTORY PRESENTATION AND PANEL DISCUSSION

Moderator: Dr. Johannes Liebl, and Dr. Alexander Heintzel, Editor-in-Chief ATZ | MTZ | ATZelektronik | lightweight.design

- 16:30 **Introductory presentation: Mobility and energy mean prosperity – on the basis of physics from the past to the future**
Wolfgang Maus, Managing Director, WM Engineering & Consulting GmbH
- 17:00 **Panel discussion: How much powertrain diversity can we afford?**
Participants: **Dr. Norbert Alt**, Executive Vice President, FEV Europe GmbH
Prof. Dr. Michael Bargende, Director Automotive Powertrains, IVK, University of Stuttgart
Wolfgang Maus, Managing Director, WM Engineering & Consulting GmbH
Thomas Pfund, President Business Unit E-Systems, Schaeffler Group / LuK GmbH & Co. KG
Peter Stein, MdB, i.a. Rapporteur for Transport and Construction in the Committee for Economic Affairs and Energy
Dr. Wolfgang Warnecke, Chief Scientist Mobility, Shell Global Solutions (Deutschland) GmbH

approx.

- 18:00 End of the first day of the conference
-

- 19:30 **Networking dinner at the Museum for Communication**
Enjoy a delightful evening and interesting conversations over dinner with colleagues and speakers.

PROGRAM

THURSDAY 24 JANUARY 2019

ELECTRIC MOBILITY

Moderator: Prof. Dr. Bernhard Geringer, Director, Institute for Powertrains and Automotive Technology (IFA), Vienna University of Technology, Austria

- 9:00 **Environmental impact of electric vehicles: potential of the circular economy**
Anika Regett, Research Associate, Prof. Dr. U. Wagner, Prof. Dr. W. Mauch, Forschungsstelle für Energiewirtschaft e. V. (FfE)
- 9:30 **Requirements for establishing a public infrastructure of charging pools for electric vehicles**
Dr. Philipp Ehring, attorney-at-law, Güneş & Hamdan Rechtsanwälte PartGmbH
- 10:00 **A comparative evaluation of state-of-health estimation methods for lithium-ion batteries of electric vehicles**
Hong Yao, Battery Management System Engineer, A. Ichinose, S. Iwano, Keihin Corporation, Japan
- 10:30 Refreshment break with coffee and tea in the exhibition area

FUEL CELL

Moderator: Dr. Norbert Alt, Executive Vice President, FEV Europe GmbH

- 11:00 **Methodical design of a fuel-cell powertrain**
Dr. Dennis Backofen, Team Leader, C. Palavinkas, K. Schütte, R. Wascheck, IAV GmbH
- 11:30 **Dynamic multi-parameter sensitive modeling of a PEM fuel cell system for BEV range extender applications**
Johannes Höflinger, Project Assistant, Prof. Dr. P. Hofmann, Prof. Dr. B. Geringer, Institute for Powertrains and Automotive Technology (IFA), Vienna University of Technology, Austria
- 12:00 Lunch in the exhibition area



EMISSION CONTROL

Moderator: Christian Lensch-Franzen, Head of Engineering,
APL Automobil-Prüftechnik Landau GmbH

- 13:00 **Comparison of hybrid vehicle operation strategies and their usage for hybrid powertrain sizing**
Dr. Jianning Zhao, Project Engineer E-Drive & Hybrid Powertrain, Dr. F. Odeim, Dr. G. Birmes, FEV Europe GmbH; J. M. Maiterth, Institute for Combustion Engines (VKA), RWTH Aachen University
- 13:30 **Zero impact emission with 48 V – an affordable approach towards clean cities**
Gerald Teuschl, Senior Product Manager Electrified Powertrain, P. Kapus, M. Brendel, T. Pels, M. Weissbäck, AVL List GmbH, Austria
- 14:00 **Impact of hybridization on the pollutant emissions behavior of gasoline and diesel vehicles**
Sven Eberts, Doctoral Researcher, H.-J. Berner, Research Institute of Automotive Engineering and Vehicle Engines Stuttgart (FKFS); Prof. Dr. M. Bargende, Institute of Internal Combustion Engines and Automotive Engineering (IVK), University of Stuttgart
- 14:30 Refreshment break with coffee and tea in the exhibition area

POWERTRAINS FOR AUTOMATED DRIVING

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

- 15:00 **Fail-operational powertrain for future mobility**
Dr. Ahmet Kilic, Team Leader for Fail-operational Powertrain for Automated Driving in Corporate Sector Research and Advance Engineering, Dr. J. Fassnacht, T. Shen, Dr. C. Thulfaut, Robert Bosch GmbH
- 15:30 **Future automotive powertrain in a disruptive world**
Dr. Thomas Schlick, Senior Partner Automotive, Roland Berger GmbH
- 16:00 **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. Top quality, outstanding technology, and exceptionally innovative spirit form the basis for the continued success of the company. In 2017, the number of patent registrations amounted to nearly 2,400, making Schaeffler Germany's second most innovative company according to the German Patent and Trademark Office.

The Schaeffler Group is already shaping "Mobility for tomorrow" to a significant degree 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 more than 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.

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THE CONFERENCE IS SUPPORTED BY VOLKSWAGEN

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

In difficult market conditions, the number of Group vehicles delivered to customers rose to 10.741 million in 2017 (2016: 10.297 million). The global car market share rose slightly to 12.1 percent.

22.0 percent of the new cars in Western Europe originate in the production of the Volkswagen Group. Group sales revenue in 2017 totaled €231 billion (2016: €217 billion), while earnings after tax amounted to €11.6 billion (2016: €5.4 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 small cars and luxury vehicles. In the commercial vehicle sector, the products include ranges from pick-ups, buses, and heavy trucks.

The Group operates 122 production plants in 20 European countries and a further 11 countries in the Americas, Asia, and Africa. Every weekday, 642,292 employees worldwide produce around 44,170 vehicles, and work in vehicle-related services or other fields of business. The Volkswagen Group sells its vehicles in 153 countries.



Volkswagen

www.volkswagen.com

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MTZ

REGISTRATION FEE

€ 1,395.– 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
(Parking garage: “Palmengarten”, Siesmayerstraße 61)

HOTELS

The following hotels have blocks of rooms at reduced prices for the participants. **Please reserve your room by 11 December 2018 (Mercure) or 28 December 2018 (Hotel ibis) quoting the reference “The Powertrain of Tomorrow”.**

**Mercure Hotel & Residenz
Frankfurt Messe**
Voltastraße 29
60486 Frankfurt am Main
Germany
Phone +49 69 7926-0
Telefax +49 69 7926-2707
H1204@accor.com
www.mercure.com
€ 130.– Single room, incl. breakfast

**Hotel ibis
Frankfurt City Messe**
Leonardo-da-Vinci-Allee 40
60486 Frankfurt am Main
Germany
Phone +49 69 28607-0
Telefax +49 69 28607-777
H3682@accor.com
www.ibis.com
€ 78.– Single room, incl. breakfast

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www.frankfurt-tourismus.de/en

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Cancellations are possible until 2 January 2019. If a cancellation is made after this date, the full registration fee will be charged. 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 canceled altogether, we will of course refund the registration fee.

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ATZlive

// Spotlight on Powertrain and Vehicle Engineering //

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.

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CONFERENCE REGISTRATION

The Powertrain of Tomorrow

23 and 24 January 2019 | Frankfurt/Main | Germany

I have read the General Terms and Conditions* and I would like to register at a cost of € 1,395.– plus VAT.

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