

# Heavy-Duty, On- and Off-Highway Engines 2021

The future of the internal combustion engine and alternative powertrains

1 – 2 December 2021

Rostock, Germany

or virtually via live stream

**HYBRID EVENT**

Alternatively  
bookable virtually  
as a live stream!

## KEYNOTE SPEAKERS

Prof. Dr. Bert Buchholz, University of Rostock

Dr. Karsten Wilbrand, Shell

Dr. Markus Schwaderlapp, DEUTZ AG

# The future of the internal combustion engine and alternative powertrains

## / NEW ENGINES FOR ALTERNATIVE FUELS

Development trends and solutions

## / ULTRA-LOW EMISSIONS IN DIESEL ENGINES

New engine concepts and exhaust gas aftertreatment

## / ELECTRIFIED POWERTRAINS

Concepts and solutions

### HIGHLIGHT

**On-site visit to Neptun Werft Rostock  
(subject to pandemic situation)**



**Dr. Alexander Heintzel**  
Editor-in-Chief ATZ | MTZ Group  
Springer Nature

## Welcome

Manufacturers of heavy-duty engines and their components have to meet increasing demands regarding the performance of their units, while at the same time achieving further reductions in fuel consumption and emissions. Meeting the climate goals of the Paris Agreement requires a holistic view of the entire life cycle of the product, the energy source, and the infrastructure in the transportation sector.

The international MTZ Conference “Heavy-Duty, On- and Off-Highway Engines” is an ideal platform for the developers and designers of engines for commercial vehicles, mobile machines, ships, and stationary applications to gather information on the very latest developments. This year, the program will focus not only on heavy-duty engines for alternative fuels, hydrogen engines, and electrified powertrains, but also on reoccurring topics such as exhaust gas aftertreatment and solutions for ultra-low emissions. The conference also includes a trade exhibition and a visit to Neptun Werft Rostock.

I look forward to your participation in the conference.

On behalf of the Scientific Advisory Board

## Your Corona protection concept

In order to ensure that this ATZlive conference is safe and successful for all participants, even in times of Corona, we have drawn up a wide-ranging hygiene protection concept and are making detailed arrangements with the event partners. If you would prefer to participate virtually in the event for health reasons or due to travel restrictions, this year we will offer you a live stream with Q&A function, 1:1 video chat with participants and other useful functions in parallel.

## Heavy-Duty, On- and Off-Highway Engines

Manufacturers of large engines and related components face mounting pressures: they are expected to meet rising demands for engine output, while also reducing fuel consumption, emissions and assembly space.

New concepts for engines, emissions reduction and drivetrain optimization are called for in order to overcome these challenges. Combining presentations, in-depth discussions and networking possibilities, the international MTZ Conference “Heavy-Duty, On- and Off-Highway Engines” offers you the ideal platform.



## Scientific Advisory Board

Our Scientific Advisory Board, which is made up of prominent experts in their respective fields, provides support during the planning phase of the conference and helps to identify suitable topics.

With its expertise the board has made a valuable contribution to the choice of themes for the lecture program.



**Prof. Dr. Peter Eilts**  
Technical University  
of Braunschweig

Scientific Director of the Conference

**Detlev Baudach**  
Tenneco GmbH

**Rolf Brück**  
Vitesco Technologies Emitec GmbH

**Dr. Heiner Bülte**  
DEUTZ AG

**Bernd Danckert**  
ICCL Ltd.

**Dr. Alexander Heintzel**  
Editor-in-Chief ATZ | MTZ Group

**Dr. Michael Krüger**  
Robert Bosch GmbH

**Werner Kübler**  
MAN Truck & Bus SE

**Dr. Rainer J. Lehnen**  
Eberspächer Exhaust Technology  
GmbH & Co. KG

**Dr. Andreas Lingens**  
Woodward L'Orange GmbH

**Börge Nielsen**  
Daimler Truck AG

**Prof. Dr. Gerhard Reiff**  
KST-Motorenversuch GmbH & Co. KG

**Dr. Hans-Josef Schiffgens**

**Dr. Martin Teigeler**  
Rolls-Royce Power Systems AG

**Dr. Ioannis Vlaskos**  
Winterthur Gas & Diesel Ltd.

**Prof. Dr. Georg Wachtmeister**  
TU Munich

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

**Dr. Marco Warth**  
MAHLE GmbH

**Ulrich Weiss**  
Liebherr Machines Bulle SA

08:45 **Welcome and opening of the conference**  
Dr. Alexander Heintzel, Editor-in-Chief ATZ | MTZ Group

09:00 – 10:30

KEYNOTE LECTURES

Moderation: Prof. Dr. Peter Eilts, Director, Institute of Internal Combustion Engines (ivb), Technical University of Braunschweig, Germany

**KEYNOTE**  
09:00 **Fuels as the key for greening HD engines – challenges and opportunities for science and research**  
Prof. Dr. Bert Buchholz, Head of Chair, LKV, University of Rostock, Germany

**KEYNOTE**  
09:30 **Energy options for the transition in transportation**  
Dr. Karsten Wilbrand, Senior Principal Scientist, Shell Global Solutions (Deutschland) GmbH, Germany

**KEYNOTE**  
10:00 **Solutions for CO<sub>2</sub>-free powertrains for mobile machinery**  
Dr. Markus Schwaderlapp, Senior Vice President Product Development, DEUTZ AG, Germany

10:30 Refreshment break with coffee and tea in the exhibition area

11:00 – 13:00

LARGE ENGINES FOR ALTERNATIVE FUELS

Moderation: Dr. Andreas Lingens, Vice President, Woodward L'Orange GmbH, Germany

11:00 **Development of the WinGD 12X92DF, the most powerful Otto-cycle engine ever built**  
Patrik Printz, Senior Project Manager, R&D, Winterthur Gas & Diesel Ltd., Switzerland

11:30 **MAN 35/44 GTS – frequency restoration reserve and hydrogen applications**  
Dr. Georg Tinschmann, Senior Manager, Performance & Emissions, MAN Energy Solutions SE, Germany

12:00 **Analysis and optimization of the combustion process on a medium-speed dual-fuel single-cylinder research engine using highly fluctuating fuel gas qualities**  
Karsten Schleef, Team Lead Large Engines, LKV, University of Rostock [in cooperation with FVTR GmbH], Germany

12:30 **Analyzing the process chain of e-fuel combustion in large diesel engines**  
Benjamin Stengel, Research Engineer, FVTR GmbH [in cooperation with LKV, University of Rostock], Germany

13:00 Lunch in the exhibition area

14:30 – 16:00

HYDROGEN ENGINES

Moderation: Dr. Hans-Josef Schiffgens


14:30 **Hydrogen large bore engine technology – more than a bridging technology**  
Dr. Harald Schlick, Lead Engineer Performance & Emissions, AVL List GmbH, Austria

15:00 **Assessment of a direct-injection, spark-ignited, hydrogen-fuelled combustion system for a heavy-duty engine**  
Trevor Downes, Chief Engineer Engines & Emissions Controls, Ricardo Automotive & Industrial [in cooperation with University of Brighton], UK

15:30 **Hydrogen combustion engine – a suitable concept for decarbonization in the offroad sector**  
Dr. Bouzid Seba, Predevelopment Senior Manager, Liebherr Machines Bulle SA, Switzerland

16:00 Refreshment break with coffee and tea in the exhibition area

**HIGHLIGHT**  
16:30 **On-site visit to Neptun Werft Rostock (subject to pandemic situation)**

19:30 **Networking dinner at the Engine Shed in Rostock's City Harbor**  
 Enjoy a pleasant evening and interesting conversations over dinner with colleagues and speakers.

08:30 – 10:00

DIESEL ENGINES FOR ULTRA-LOW EMISSIONS

Moderation: Dr. Michael Krüger, Senior Vice President Engineering Commercial and Off-Road Vehicles, Robert Bosch GmbH, Germany

- 08:30

**Near zero emission combustion engines as a solution for off-highway applications in cities**

Dr. Markus Ehrly, Team Leader Diesel Powertrain, FEV Europe GmbH, Germany
- 09:00

**Advanced heavy-duty Euro VII development: from concept to series calibration**

Dr. Reza Rezaei, Manager, Commercial Vehicle Powertrain, IAV GmbH, Germany
- 09:30

**New off-highway engine family delivering improvements in performance, emissions and operating cost**

David Bennet, Chief Engineer Heavy Duty Propulsion, Ricardo plc, UK [in cooperation with YTO Technical Centre Co. Ltd, China]

10:00 Refreshment break with coffee and tea in the exhibition area

10:30 – 11:30

EXHAUST GAS AFTERTREATMENT FOR DIESEL ENGINES

Moderation: Rolf Brück, Vice President Catalysts & Filters, Vitesco Technologies Emitec GmbH

- 10:30

**Meeting future NO<sub>x</sub> emissions limits with improved total fuel efficiency**

Thomas Harris, Senior Technical Specialist, Tenneco Inc. [in cooperation with Eaton and Southwest Research Institute], USA
- 11:00

**CatVap, the efficient heating technology for future exhaust gas aftertreatment systems**

Robert Szolak, Head of Group Process Development Hydrogen Technologies, Fraunhofer Institute for Solar Energy Systems (ISE), Germany [in cooperation with ICCL, Integrated Consulting Company Ltd., Cyprus]

11:30 Lunch in the exhibition area

12:30 – 13:30

COMPONENTS FOR FUTURE POWERTRAINS

Moderation: N. N., Ricardo plc, UK

- 12:30

**Engine component development for H<sub>2</sub> combustion engines**

Hannes Marlok, Project Manager Predevelopment, MAHLE GmbH, Germany
- 13:00

**Cooling systems for future powertrains**

Rainer Lutz, Senior Expert Truck Cooling Systems, Mahle Behr GmbH & Co. KG, Germany

13:30 Refreshment break with coffee and tea in the exhibition area

14:00 – 16:00

ELECTRIFIED POWERTRAINS

Moderation: Dr. Marco Warth, Global Director Product Development Engine Systems and Components, MAHLE GmbH, Germany

- 14:00

**MAN Smart Hybrid Experience – characterization and system behavior**

Georg Silberhorn, Function Development Engineer e-Mobility Off-Highway, Thomas Eichinger, Function Development Engineer e-Mobility Off-Highway, MAN Truck & Bus SE, Germany
- 14:30

**Fuel cell system integration for heavy-duty applications**

Dr. Stephan Schnorpfeil, Technology Leader, Propulsion System Specification, Segula Technologies GmbH; Eike Weiß, Head of Projects, E-Cap Mobility GmbH [in cooperation with Clean Logistics GmbH], Germany
- 15:00

**Modularization of fuel cell systems for CV applications**

Dr. Dennis Backofen, Team Manager, Fuel Cell & Hydrogen Mobility, IAV GmbH, Germany
- 15:30

**The electric powertrain of the new Mercedes-Benz eActros**

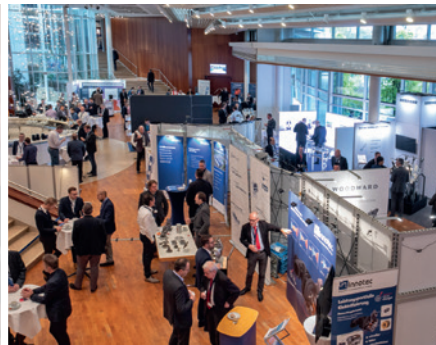
Helge Frank Müller, Senior Manager, Concept & Validation ePowertrain, Daimler Truck AG, Germany

16:00

**Closing remarks**

Dr. Alexander Heintzel, Editor-in-Chief ATZ | MTZ Group





### Ricardo

Ricardo is a global engineering, environmental and strategic consultancy. We also manufacture and assemble low-volume, quality performance products. We develop advanced virtual engineering tools for conventional and electrified powertrains as well as for complex physical systems. Our ambition is to be the world's pre-eminent organisation focused on the decarbonisation of global transport and energy sectors. Committed to a sustainable zero carbon future, we are the trusted global engineering services partner for clean, efficient, integrated propulsion and energy solutions for our global transportation customers.

In the field of heavy-duty and large engines Ricardo provides low-emission, efficient and powerful propulsion systems for conventional and electrified powertrains. Ricardo has developed a wide range of solutions for exhaust aftertreatment to meet European, Japanese and US legislation, and low-cost solutions for emerging markets.

Ricardo delivers concept development, simulation, design, product development and testing. Our facilities include more than 30 modern engine test beds for heavy-duty and large engines, battery, e-machine and powertrain testing. This enables us to develop the next generation of low-emission and efficient propulsion systems for commercial vehicles for on- and off-highway, marine, rail, clean energy and power generation applications and meet the standards for future emission and greenhouse gas legislation.

Cooperation partner



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

### KST-Motorenversuch GmbH & Co. KG

#### KST – Testing Powertrains to Move the Future

For more than 50 years, KST-Motorenversuch GmbH & Co. KG has been synonymous with competence and innovation.

We accompany our international customers on the path towards the mobility of the future. Our workforce of highly qualified employees masters the continuous and complex process of change in this sector of industry. We guide our customers in their validation process, through tailored R&D support and specific investments.

As a family-run, medium-sized business, we ensure that our customers benefit from fast decision making, lean operational procedures, and highly efficient services.

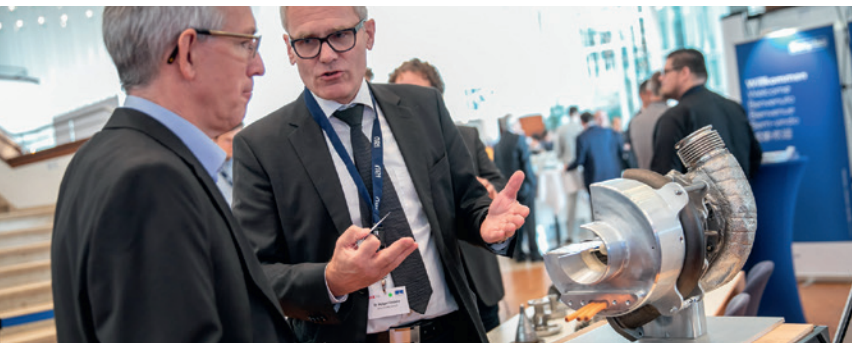
#### KST's range of services include the following areas:

- Electric / hybrid powertrains
- Power electronics / inverter
- Hydrogen-based powertrains
- Synthetic fuels / operating fluids
- Heavy-duty engines – industry / railway / marine
- Conventional drive technologies

Cooperation partner



[www.kst-motorenversuch.de](http://www.kst-motorenversuch.de)



### Your presentation platform

Take this opportunity to present your latest products and services to the specialist audience: as an exhibitor in our exclusive exhibition and/or as a sponsor with an attractive advertising presentation. Make use of this industry meeting place to make valuable contacts with customers. For information on the various presentation options, please contact:

Elke van Lon  
Phone +49 611 7878-320  
elke.vanlon@springernature.com

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### Media partners



### Registration fee

**On site:**  
€ 1,495.– plus VAT

**Virtually via live stream:**  
€ 995.– plus VAT

This includes the conference documentation, the catering during breaks, and the evening program on 01-12-2021. Virtual participation does not include the catering during breaks and the evening program.

### Date

1 – 2 December 2021

### Venue

HanseMesse Rostock or virtually via live stream  
Zur Hansemesse 1-2  
18106 Rostock, Germany

### Languages used in the presentations

On site: German and English with simultaneous interpreting  
(German – English / English – German)

Virtually via live stream: English

### Hotels

Some hotels have room blocks at reduced prices for the participants. You can find more information on the events page of our website.

### Further information and online registration:

[www.atzlive.de/en/heavyduty](http://www.atzlive.de/en/heavyduty)



### Participants

The MTZ Conference “Heavy-Duty, On- and Off-Highway Engines” is aimed worldwide at experts from engine and vehicle manufacturers in the fields of commercial vehicles, off-highway and marine applications, stationary engines, suppliers and development partners, teaching staff and research assistants from universities, representatives of authorities and associations and engineers active in these fields.

## Further information and online registration:



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### Your contact partner

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The organizer

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

Our events are firm fixtures in the diaries of automotive engineers and engine specialists. We offer a range of innovative conferences on the latest topics in the world of automotive engineering and engine technology, from the perspective of research, development and applications.

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.

Springer, with its automotive technology brands in the ATZ and MTZ Group, is part of Springer Nature, one of the world's leading publishing groups for scientific, educational and specialist literature.