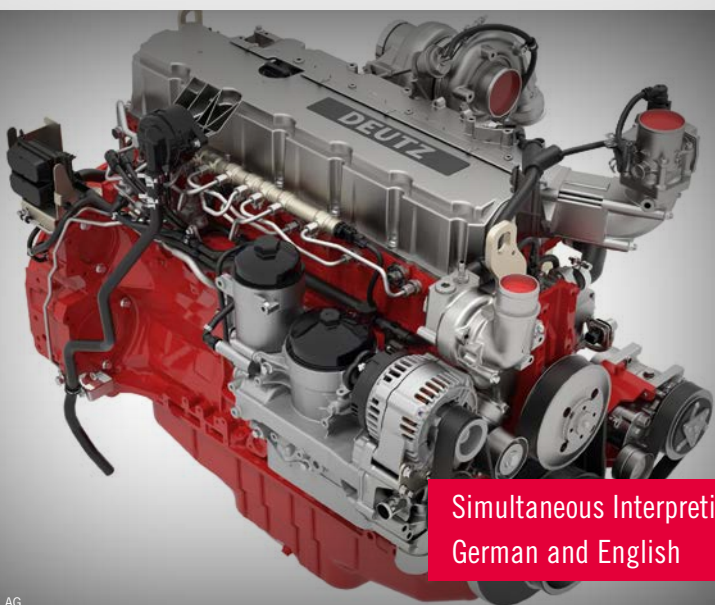


# Heavy-Duty, On- and Off-Highway Engines

Future Challenges

13th International MTZ Conference on Heavy-Duty Engines  
6 and 7 November 2018 | Cologne | Germany



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Simultaneous Interpreting  
German and English

## NEW DIESEL, GAS, AND DUAL-FUEL ENGINES

Heavy-duty engines  
from all power  
segments

## POWERTRAIN CONCEPTS

On- and off-highway  
solutions

## SYSTEMIC COMPONENT DEVELOPMENT

Engine and  
component design

/// KEYNOTE LECTURES **Dr. Markus Schwaderlapp**, DEUTZ |  
**Werner Seifried**, Liebherr-Hydraulikbagger | **Thomas Böck**, CLAAS

/// FACTORY TOUR **DEUTZ AG**

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

## WELCOME

In order to comply with increasingly low emissions thresholds and in some cases to meet the requirement to produce no local emissions, the manufacturers of heavy-duty engines and their suppliers are adopting a wide range of different powertrain concepts with a focus on both current and future standards. For this reason, this year's theme of the annual MTZ Conference "Heavy-Duty, On- and Off-Highway Engines" is "Future Challenges". This successful ATZlive event is the ideal platform for engineers in the field of heavy-duty engine development to find out in detail about current technical developments and future trends. It also offers the opportunity to take part in discussions with other experts.

The conference is keeping pace with developments in the field of engines. As a result, this year parallel sessions are being held for the first time, which allows us to offer more presentations and cover new subjects during the course of the two days. The key themes in 2018 are new diesel and gas engines, reducing emissions, powertrain concepts for on- and off-highway vehicles, fuel injection, and developing components in the context of an entire system. At the end of the first day DEUTZ AG has invited the conference participants to visit its engine plant in the Porz district of Cologne. In addition, the conference is accompanied by a technical exhibition.

Don't miss this chance to expand your network and make new and valuable contacts. The evening event on 6 November is the ideal opportunity for doing this in a relaxed atmosphere. I look forward to seeing you at the conference.

On behalf of the Scientific Advisory Board

Wolfgang Siebenpfeiffer

Editor-in-Charge ATZ | MTZ | ATZelektronik



## 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.

## PROGRAM

TUESDAY 6 NOVEMBER 2018

- 8:45 **Welcome and opening of the conference**  
Wolfgang Siebenpfeiffer,  
Editor-in-Charge ATZ | MTZ | ATZelektronik

### KEYNOTE LECTURES

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Moderator: Prof. Dr. Peter Eilts, Director of the Institute of Internal Combustion Engines (ivb), TU Braunschweig

- 9:00 **Powertrain solutions for a CO<sub>2</sub>-free future in construction machinery**  
Dr. Markus Schwaderlapp, Senior Vice President  
Research and Development, J. van Zadelhoff, DEUTZ AG

- 9:30 **Why I love my diesel so much – ... and nevertheless flirt with other drives**  
Werner Seifried, Managing Director, M. Schmid,  
Liebherr-Hydraulikbagger GmbH

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

### POWERTRAIN CONCEPTS

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Moderator: Dr. Hans-Josef Schiffgens

- 10:30 **How do you define the best powertrain solution for your off-highway customers**  
William Missions, Chief Engineer Commercial Vehicle and Off-Highway Market Sector, A. Skipton-Carter, P. Reverault, Ricardo UK Ltd
- 11:00 **Next generation high-speed engines paving the way for the highest engine efficiency**  
Dr. Günter Figer, Business Development Manager Large Engines, K. Schmidleitner, T. Kammerdiener, M. Schoenbacher, AVL List GmbH, Austria
- 11:30 **Efficiency improvements for commercial vehicles by dynamic electronic horizon**  
Dr. Gareth Milton, Lead Engineer Disruptive Technologies, Ricardo Innovations, UK; Dr. A. Noble, Dr. P. Fussey, Ricardo UK Ltd
- 12:00 **Layout and integration of a range extender in a medium-duty truck**  
Stefan Wedowski, Senior Project Manager Diesel Powertrains, Dr. M. Ehrly, K. Vogt, Dr. G. Birmes, FEV Europe GmbH; J. Maiterth, C. Marten, Institute for Combustion Engines (VKA), RWTH Aachen University
- 12:30 Lunch in the exhibition area

## EMISSIONS

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Moderator: Dr. Michael Krüger, Senior Vice President Engineering,  
Market Segment Commercial and Off-Road Vehicles,  
Robert Bosch GmbH

13:45 **European real driving emission requirements – lowering emissions of diesel-powered on-highway vehicles**

Werner Christl, Senior Manager Engineering Power Train Systems, Exhaust Gas Aftertreatment Systems Commercial Vehicles, D. Naber, Dr. C. Barba, Dr. A. Kufferath, Dr. M. Krüger, Dr. H. Schumacher, Robert Bosch GmbH

14:15 **Improving the quality of in-service compliance based on advanced statistical approaches**

Daechul Jeong, Project Engineer Diesel Powertrains, M. Smeets, H. G. Petry, M. Netterscheid, I. Pörgye, FEV Europe GmbH

14:45 **Emission simulation as a tool for the evaluation of future emission concepts of commercial vehicles**

Dr. Heike Többen, Specialist Emission Concepts Advanced Engineering Commercial Vehicle, P. Weinmann, L. Zimmermann, Dr. M. Henzler, Eberspächer Exhaust Technology GmbH & Co. KG

15:15 Refreshment break with coffee and tea in the exhibition area

15:45 Bus transfer followed by a **tour of the DEUTZ AG plant**



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In the engine museum at the DEUTZ AG Technical Center, which covers an area of 600 m<sup>2</sup>, you will have the chance to inspect the company's atmospheric gas engine and the first four-stroke engine from 1867 and 1876 respectively. They are still fully functioning and can be seen in operation. You can then compare them with today's technology when you take a special guided tour through the visitors' gallery of the production area. You can follow the various stages in the engine manufacturing process from the delivery of the materials to the collection of the finished engines.

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19:30 **Evening of encounters at Peters Brauhaus**

Enjoy a delightful evening and interesting conversations over dinner with colleagues and speakers.

## PROGRAM

WEDNESDAY 7 NOVEMBER 2018 – MORNING

### >> PARALLEL SESSIONS

You will find more detailed information about the parallel sessions on the following pages of the program.

8:30 **SESSION I – GAS ENGINES I**  
**ROOM 02 / HEUMARKT**

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8:30 **SESSION II – SYSTEMIC COMPONENT DEVELOPMENT I**  
**ROOM 14 / KÖLN**

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

10:30 **SESSION I – GAS ENGINES II**  
**ROOM 02 / HEUMARKT**

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10:30 **SESSION II – SYSTEMIC COMPONENT DEVELOPMENT II**  
**ROOM 14 / KÖLN**

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12:00 Lunch in the exhibition area

## >> SESSION I

Room 02 / Heumarkt

### GAS ENGINES I

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Moderator: Dr. Ioannis Vlaskos

8:30 **DEUTZ G2.2 – the new 3-cylinder gas engine for non-road mobile machinery**

Dr. Heiner Bülte, Head of Performance and Emissions,  
C. Funke, K.-P. Bark, K. Tedsen, DEUTZ AG

9:00 **A high efficiency lean-burn mono-fuel heavy-duty natural-gas engine for achieving Euro VI emissions legislation & beyond – part 2**

Andre Barroso, Principal Engineer, R. Pickett, M. Keenan,  
P. Ferrero Giacominetto, J. Manuelyan, A. Auld, Ricardo UK Ltd

9:30 **Improving fuel flexibility: new GE gas engine versions with high power density for gases with high carbon dioxide content**

Stefan Prankl, Lead Engineer Performance Engineering,  
Dr. R. Böwing, H. Schaumberger, R. Wilson, D. Heintschel,  
T. Elsenbruch, GE Jenbacher GmbH & Co OG, Austria

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

### GAS ENGINES II

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Moderator: Dr. Heiner Bülte, Head of Performance and Emissions,  
DEUTZ AG

10:30 **Effective use of ethanol for GHG emissions reduction in a dual-fuel engine**

Dr. Vinícius Pedrozo, Research Assistant, Dr. I. May, W. Guan,  
Prof. H. Zhao, Centre for Advanced Powertrain and Fuels,  
Brunel University London, UK

11:00 **Real-time capable combustion simulation of a dual-fuel engine for hardware-in-the-loop application**

Stefan Kraft, Pre-Development & Sensors, Dr. M. Moser,  
MAN Diesel & Turbo SE; Prof. Dr. C. Büskens,  
Dr. M. Echim, Center for Industrial Mathematics (ZeTeM),  
University of Bremen

11:30 **Formulating to meet the lubrication challenges of modern gas engines to prolong oil life and maximise engine protection**

Dr. Jonathan M. Hughes, Technologist – Lubes Product  
Development EMEA, Infineum UK Ltd.

12:00 Lunch in the exhibition area

## >> SESSION II

Room 14 / Köln

### SYSTEMIC COMPONENT DEVELOPMENT I

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Moderator: Manfred Pister, Head of Combustion Engine Development, Liebherr Machines Bulle S.A., Switzerland

8:30 **Integration of manufacturing aspects into the development of heavy-duty engine cast components**

Dr. Götz Hartmann, Director, MAGMA GmbH;  
J. Heger, Heger-Guss GmbH

9:00 **Flow-optimized cooling gallery concept for laser-welded steel pistons to enable reduction of oil flow**

Dr. Daniel Hrdina, Head of HD PCU Technology Europe, Product Development, Dr. W. Yang, MAHLE GmbH;  
G. Marinov, MAHLE Powertrain GmbH; Dr. A. Loch, MAHLE International GmbH

9:30 **Development methodology for valve spindles and seat rings tailored to future large bore engines**

Oliver Lehmann, Head of Research and Development, Märkisches Werk GmbH

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

### SYSTEMIC COMPONENT DEVELOPMENT II

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Moderator: Børge Nielsen, Director Engine Design, Testing and R&D Platform Management, Daimler AG

10:30 **Combined LP/HP EGR system for HD diesel engines for optimum fuel consumption and lowest raw NO<sub>x</sub> emissions**

Dr. Simon Schneider, Project Manager, Corporate Advanced Engineering, MAHLE International GmbH; R. Lutz, MAHLE Behr GmbH

11:00 **Electric-assisted turbocharger to increase the agility of engines in off-highway applications**

Rudi Rappsilber, Project Manager Special Purpose Engine, J. Thiesemann, Dr. J. Kech, MTU Friedrichshafen GmbH

11:30 **Holistic design process for new commercial application engine concepts**

Sören Franke, Team Manager NVH Simulation (1D MBS), C. Schreiter, Dr. M. Stöcker, T. George, IAV GmbH

12:00 Lunch in the exhibition area



## PROGRAM

### WEDNESDAY 7 NOVEMBER 2018 – AFTERNOON

#### FUEL INJECTION

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Moderator: Prof. Dr. Georg Wachtmeister, Head of the Institute of Combustion Engines (LVK), TU Munich

- 13:00 **Dynamic rate shaping – one diesel common-rail injector for all combustion strategies**  
David Needham, Chief Engineer CV Fuel Injection Systems,  
D. Mellors, T. Williams, M. Graham, T. Cawkwell, S. Tullis,  
Delphi Technologies Ltd, UK
- 13:30 **The new Liebherr LI1 common-rail injector platform**  
Norbert Schöfbänker, Project Leader,  
Liebherr-Components Deggendorf GmbH
- 14:00 **Next generation of smart injectors for future diesel and dual-fuel applications**  
Dr. Andreas Lingens, President / CEO, H. Schneider,  
C. Senghaas, Dr. M. Willmann, L'Orange GmbH
- 14:30 Refreshment break with coffee and tea in the exhibition area

#### ENERGY MANAGEMENT

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Moderator: Andy Skipton-Carter, Head of Commercial Vehicle, Off-Highway, Defence, and Industrial Market Sector – Europe, Ricardo UK Ltd

- 15:00 **eWHR box approach: from component development to system testing in the real world / synergies with future drive trains**  
Hannes Marlok, Project Manager, Pre-Development,  
MAHLE GmbH
- 15:30 **Development of an ORC turbo-pump for waste heat recovery from the coolant of an HD truck**  
Pascal Smague, R&D Engineer, P. Leduc, P. Pagnier,  
IFP Energies nouvelles, France; G. Leveque, N. Holaind,  
G. Henry, A. Leroux, ENOGIA, France
- 16:00 **Keynote lecture I Challenges for the power pack system from the perspective of a global agricultural equipment manufacturer**  
Thomas Böck, Member of the Group Executive Board –  
Group President/CTO, CLAAS KGaA mbH
- 16:30 **Closing remarks**  
Wolfgang Siebenpfeiffer,  
Editor-in-Charge ATZ | MTZ | ATZelektronik



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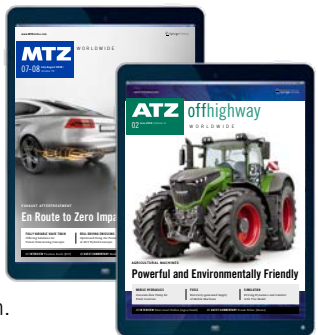
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## REGISTRATION FEE

€ 1,395.– plus VAT

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

## VENUE

Maritim Hotel Köln  
Heumarkt 20 | 50667 Cologne | Germany

## HOTELS

The following hotels have blocks of rooms at reduced prices for the participants. **Please reserve your room by 1 October 2018 (Mercure Hotel Severinshof Köln City), 5 October 2018 (Motel One Köln-Waidmarkt) or 8 October 2018 (Maritim Hotel Köln) at the latest, quoting the reference “Heavy-Duty”.**

### **Maritim Hotel Köln**

Heumarkt 20 | 50667 Cologne | Germany  
Phone +49 221 2027-849  
reservierung.kol@maritim.de  
€ 139.– Single room, includes breakfast

### **Mercure Hotel Severinshof Köln City**

Severinstraße 199 | 50676 Cologne | Germany  
Phone +49 221 2013-555  
H1206-RE@accor.com  
€ 128.– Single room, includes breakfast

### **Motel One Köln-Waidmarkt**

Tel-Aviv-Straße 6 | 50676 Cologne | Germany  
Phone +49 221 272595-0  
koeln-waidmarkt@motel-one.com  
€ 78.50 Single room, includes breakfast

The conference venue, the Maritim Hotel Köln, is within walking distance of the Mercure Hotel Severinshof Köln City and the Motel One Köln-Waidmarkt.

## LANGUAGES USED IN THE PRESENTATIONS

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

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# ATZ live

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