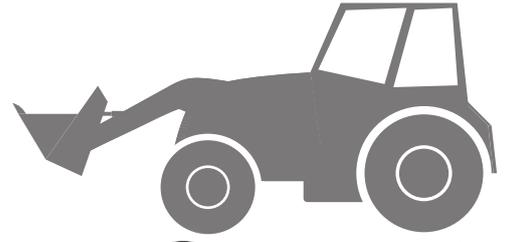


3rd International Conference

NEXT GENERATION OFF-HIGHWAY ENGINES 2013



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**Upcoming regulations – Advanced engine concepts –
Improvements in efficiency & emission reduction**

26 – 28 June 2013 | Grand Elysée Hamburg, Germany

With companies and institutes such as:

- Steyr Motors GmbH, Austria
- FEV GmbH, Germany
- Johnson Matthey Plc, UK
- Bosch Rexroth AG, Germany
- IFEU- Institute for Energy and Environmental Research Heidelberg GmbH, Germany
- Umicore AG & Co. KG, Germany
- TÜV Nord GmbH, Germany
- ProDessus, Belgium
- Hochschule Osnabrück, University of Applied Sciences, Germany
- TU Dresden, Germany
- Karlsruhe Institute for Technology, Germany
- CLAAS KGaA mbH, Germany
- Konecranes GmbH, Germany
- Zetor Tractors a.s., Czech Republik
- University of Applied Sciences Munich, Germany

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Hear about first-hand experiences and best practices on the following issues:

- Learn about **EU legislation on NRMM**, the next steps & industry reaction
- Gain insight into the **new STEYR Motors 2-Cylinder diesel engine**
- Explore latest approaches to **improve efficiency and reduce CO₂ emissions** of off-road diesel engines
- Find out about **electric energy recovery** to better define results of **prototype testing**
- Discover the **potential of NOx after treatment systems** in light of Tier 4 final and Stage IV legislation

Learn from these experts:



Dipl.-Ing. Michael Aschaber,
Head of Research and
Development,
Steyr Motors GmbH



Radim Dundálek,
Senior Research and
Development Worker,
Zetor Tractors a.s.



Prof. Dr.-Ing. habil.
Thomas Herlitzius,
Professorship for Agricultural
Systems Technology,
TU Dresden



Dr. Eberhard Nacke,
Head of Product Strategy,
CLAAS KGaA mbH

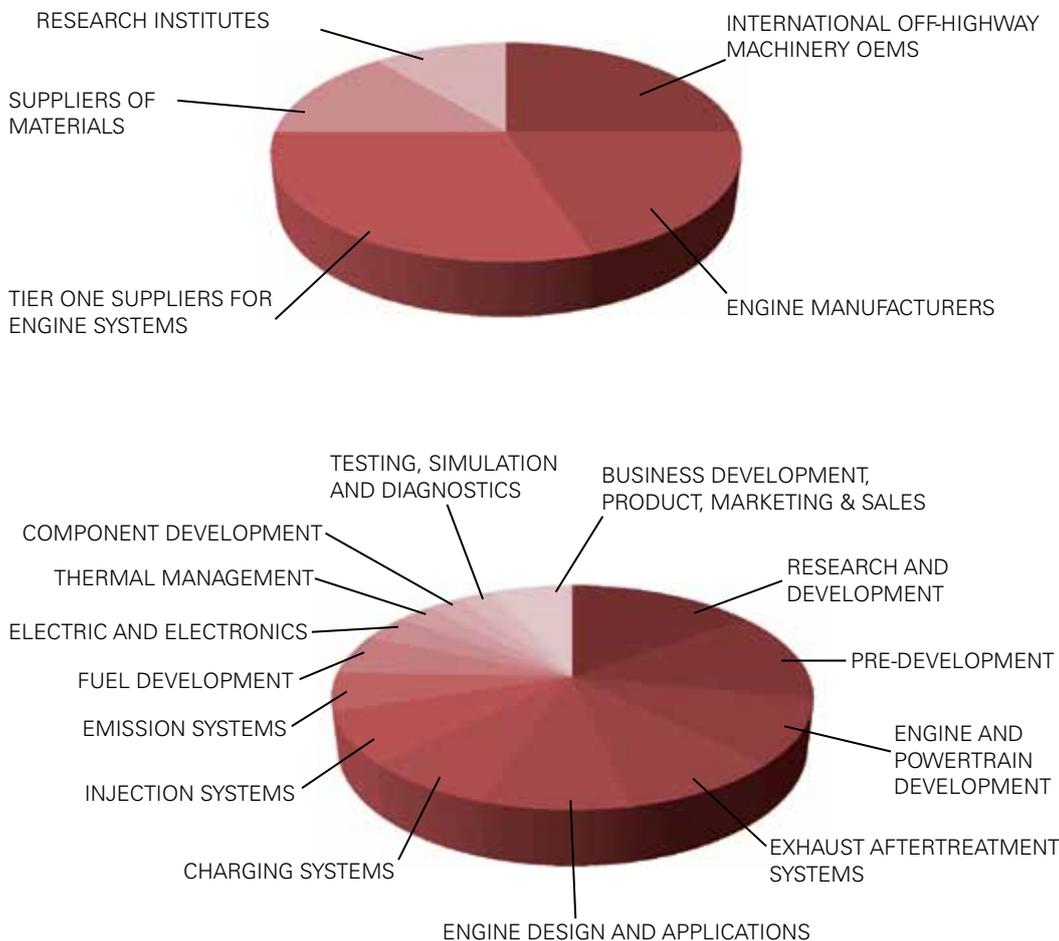
Benefit from our full day interactive workshops:

09:00 – 12:00 Uhr **B | Exhaust aftertreatment technology for off-highway engines**

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Who you will meet – recent delegate profile:



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NEXT GENERATION OFF-HIGHWAY ENGINES 2013

Conference Day One | Wednesday, 26 June 2013

08:30 Registration & welcome coffee

09:00 Chairman's welcome & opening address



Dr. Claus Görsmann,
Technology Strategy Manager,
Johnson Matthey Plc, United Kingdom

Future perspectives: Emission legislation for off-highway engines

09:10 **EU legislation on NRMM & next steps**

- EU Legislation on NRMM
- Issues still to be resolved
- Portable Emissions Measurement Systems (PEMS) Influence
- Industry reaction
- Next steps



Vasileios A. Chrysafidis, Consultant,
ProDessus, Belgium

09:50 **Environmental impact of off-highway engines in Germany and effects of potential future regulations**

- National emissions from off-highway compared to on-highway engines in Germany – Methods and Results
- Contribution of off-highway engines to urban and local air pollution
- Effect of emission reduction measures by OEM and retrofit regulations
- Evaluation of the cost – benefit effects by retrofit options



Christoph Heidt, Research Assistant Transport and Environment,
IFEU- Institute for Energy and Environmental Research Heidelberg GmbH, Germany

10:30 **Network session**

The perfect opportunity to speak directly with your peers and network effectively. Maximise your time at this event by participating in this interactive networking session. Don't forget your business cards.



11:10 Refreshment break & networking

Optimised engine concepts

11:40 **Approaches to improve efficiency and reduce CO₂ emissions of off-road diesel engines**

- Portfolio of technologies for CO₂ reduction
- Influence of individual technologies on efficiency
- Holistic analysis of engine-internal measures and exhaust aftertreatment

Vinod Rajamani, Project Manager Commercial, Industrial and Large Bore Engines, FEV GmbH in Aachen, Germany

Highlight

12:20 **The new STEYR Motors 2-Cylinder diesel engine**

- The main features of the base engine
- The "multi fuel" capability approach
- The possibilities for a range extender application



Dipl. Ing. Michael Aschaber, Head of Research and Development,
Steyr Motors GmbH, Austria

Highlight

13:00 Networking luncheon

14:30 **Hydraulic drives in off highway machines**

- Hydrostatic drives in mobile machinery - status of technologies and functions
- Optimization and power management perspectives
- Load and functional requirements of future drive systems
- Hydraulic hybrid potentials and solutions



Roland Friedl Dipl.-Ing. (FH), Application Engineer,
Telescopic Handlers, Backhoe Loaders, Skid Steer Loaders,
Bosch Rexroth AG, Germany



Dr. Thomas Anderl, Systems Engineering – Team Leader,
Bosch Rexroth AG, Germany

Highlight

Exhaust aftertreatment technology for off-highway engines

15:10 **REC – Retrofit Emission Control**

- UN/ ECE initiative for retrofit of exhaust after-treatment systems
- Technology neutral provisions for PM and NO_x reducing REC
- Introduction into the draft regulation document
- Scope and applicability
- General approach and actions



Leif-Erik Schulte, Division Manager Engines / Commercial vehicles / Mobile Machinery,
TÜV Nord GmbH, Germany

15:50 Refreshment break & networking

16:20 **NO_x after treatment systems in light of Tier 4 final and Stage IV legislation**

- System requirements
- Exhaust system options referenced to EU VI technologies
- Addressing packaging constraints by higher integrated systems
- Potential of SDPF and DOC free solutions
- Reliability of exhaust systems in the field



Dr. Marco Lopez, Manager System Integration,
Umicore AG & Co. KG, Germany

17:00 **Zetor engines and stage IV emission level**

- Portfolio of Zetor tractors
- Challenges and advantages of Zetor engines
- Injection system used on Stage IV engines
- Stage IV aftertreatment



Radim Dundálek, Senior Research and Development Worker,
Zetor Tractors a.s., Czech Republic

OEM-insight

17:40 **Deep dive – IDDI**



IDDI-Sessions are "Interactive Discussions to Drive Innovation"! They are designed to brainstorm and challenge the hot topics introduced by the Keynote Talks. The objective is to build Think Tanks that empower the participants to address challenges and opportunities in open discussions and – as a result – to dare new ways to succeed.

What are the challenges of optimising engine concepts in off-highway engines?

How difficult is it to find the perfect aftertreatment system?

Emission legislation for off-highway engines – where are the limits?

18:10 Closing remarks of the chairman Dr. Claus Görsmann

18:20 End of conference day one



We invite you to an evening event following the first conference day at the Restaurant "Parlament" at the Hamburg City Hall.

This is an excellent opportunity for you to meet the other attendees (also of the co-located conference "Emission Control for Seagoing Ships") and to make new business contacts in a relaxed atmosphere.

Time: **19:00** Meeting Point Galerie Spiegelsaal
19:30 Dinner at the "Parlament"

NEXT GENERATION OFF-HIGHWAY ENGINES 2013

Conference Day Two | Thursday, 27 June 2013

08:30 Registration & welcome coffee

09:00 Chairman's welcome & opening address



Dr. Claus Görsmann,
Technology Strategy Manager,
Johnson Matthey Plc, United Kingdom

Raising efficiency within mobile machines

09:10 **Electrical energy recovery in straddle carriers**

- Introduction of straddle carrier
- Description of straddle carrier drive system
- Hydraulic energy recovery; introduction of system
- Electric energy recovery; introduction of system and prototype setup
- Results of prototype testing

Jens Wachsmuth,
Manager Straddle Carrier Operations,
Konecranes GmbH, Germany

OEM-insight

09:50 **Speakers' corner**



Be an active part of the conference. With your questions and comments you will actively steer the direction of the conference.

10:30 Refreshment break & networking

11:00 **Traction optimisation for Tractor-Trailer combinations**

- Tractor-Trailer combinations
- Traction
- Top-Cylinder
- Passive and active control

Boris Marx, Research Associate at the Laboratory for
Agricultural Machinery and Non-road Mobile Machinery,
Hochschule Osnabrück University of Applied Sciences,
Germany



Concepts toward CO₂ reduction for mobile machines

11:40 **CO₂ efficient engines and beyond**

- Emission stages and climatic challenges
- CO₂ targets for future emission stages?
- Efficiency potential
- Engine, machine, and process optimisation



Dr. Eberhard Nacke,
Head of Product Strategy,
CLAAS KGaA mbH, Germany

OEM-insight

12:20 Networking luncheon

13:50 **Open mic stage**



What is the optimal concept to reduce CO₂?

The "The stage is yours! Session" is a unique opportunity to maximize the outcome of your conference participation on a very individual level. Make the most out of the time you spend with industry experts. These interactive sessions are crafted to ensure that you will get to the heart of the most critical issues and uncover proven practical solutions.

With selected speakers of the day

14:30 **Changes of mobile machine concepts as enabler of future economical and ecological sustainability**

Highlight

- In the last decades the development of combines was characterised by the improvement of productivity and efficiency driving an increase of size and weight of the machines and the application of growing engine capacity
- The requirements to further increase machine performance within a legally limited space at soil preserving vehicle weight is demanding creative solutions that are even challenging the vehicle concept
- Reduced input of fuel per ton harvested biomass or per hectare treated field in order to reduce CO₂ output is the next requirement to be expected after Tier 4 final emission regulations
- Process automation and farm operation optimisation have the highest potential of CO₂ reduction
- Machine concept changes and the application of robotic technologies will help to keep economics and ecology in balance



Prof. Dr.-Ing. habil. Thomas Herlitzius,
Professorship for Agricultural Systems Technology,
TU Dresden, Germany

Driver assistance systems raising efficiency

15:10 **Active steering assistance in a long timber vehicle**

- The driver's influence on the working process
- Challenges in long timber haulage
- Support of the driver by automatic functions
- Impact of the driver assistance system in a long timber vehicle



Dipl.-Ing. Tristan Reich,
Research Associate,
Karlsruhe Institute for Technology, Germany

15:50 Closing remarks of the chairman Dr. Claus Görsmann

16:00 End of conference & Farewell coffee and networking

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NEXT GENERATION OFF-HIGHWAY ENGINES 2013

INTERACTIVE WORKSHOP DAY | Friday, 28 June 2013

08:30 Registration & welcome coffee

10:30 Refreshment break & networking

B | 09:00 – 12:00

Exhaust aftertreatment technology for off-highway engines

The workshop follows up on the corresponding conference session on June 26. A brief introduction on the physico-chemical basics of exhaust aftertreatment processes and currently implemented technologies will be given to sum up the preceding conference session. Since there are efforts to **utilize exhaust waste heat in small Rankine – and Organic Rankine Cycles**, respectively, current developments in this area will also be introduced in a short overview.

The participants will then have the opportunity to exchange experiences and discuss challenges.

Since **emission control standards in the EU become tighter**, an insight into **technological challenges of pushing the current limits of emission control standards further** might be an interesting outcome of the workshop. Another interesting aspect might be the existence of a **design conflict between increasing efficiency and reducing carbon dioxide emissions and increasing fuel consumption** due to the increasing energy demand of the emission control process.



Prof. Dr. Andreas Gubner

Lecturer of Thermodynamics, Fluid Mechanics, Heat Transfer

University of Applied Sciences Munich, Germany

12:00 End of workshop day

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26 – 28 June 2013 | Grand Elysée Hamburg, Germany

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<input type="checkbox"/> Gold Package 2 day conference plus 1 workshop	€ 2.849,- + VAT
<input type="checkbox"/> Bronze Package 2 day conference	€ 2.399,- + VAT

Every registration includes a complimentary membership to Automotive IQ

Please indicate your choice of workshop on 28 June 2013

Workshop B

B: Exhaust aftertreatment technology for off-highway engines

Only one discount applicable per person.

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Documentation will be sent 6 weeks after the event

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