

Visit to the
HORIBA
Europe GmbH
Testing Lab

14th International CTI Conference

Exhaust Systems

23 – 25 May 2016 | Frankfurt am Main | Germany

→ Conference: 24 – 25 May 2016

→ Introductory Seminar “Basics of Exhaust Systems”: 23 May 2016

*Excellent mix
of basic research and
system optimization.*

Dr M. Weirich, Daimler AG

THE FOLLOWING TOPICS WILL BE DISCUSSED:

- Energy and powertrains for CO₂-free mobility
- International emission legislation
- Challenges relating to NO₂-pollution and Real Driving Emissions
- The European Commission's new simulation tool VECTO
- Large-scale PEMS testing in Europe: A 1,000 vehicle case study
- New challenges relating to SCR and DPF
- Development of innovative components
- Sensors, control and OBD

LISTEN TO PRESENTATIONS FROM REPRESENTATIVES OF:

Bosch Engineering GmbH • BRACE Automotive • Deutsche Umwelthilfe e.V. • ebm-papst St. Georgen GmbH & Co.KG • European Commission • Faurecia • HORIBA Europe GmbH • IBIDEN Porzellanfabrik Frauenthal GmbH • IFP Energies nouvelles • NGK Europe GmbH • Emissions Analytics • Roben Automotive • Röchling Automotive SE & Co. KG • SOLVAY • Technical University of Kaiserslautern • Treibacher Industrie AG • Vida Fresh Air Corp.

CTI

an **informa** business



Simultaneous Translation
German ◀▶ English
English proceedings!

INTRODUCTORY SEMINAR**Basics of Exhaust Systems**

Monday, 23 May 2016



CHAIRMAN: Prof. Dr. Werner Müller,
Former Professor at the Internal Combustion Engines
Department, Technical University of Kaiserslautern, Germany

Seminar goals:

The seminar uses several practical examples to convey the basics of current key technical concepts relating to exhaust gas technology. After attending the seminar, you will be familiar with the control concepts and systems for exhaust gas after-treatment, and understand the context of the systems.

SCHEDULE

8.30 Introductory seminar begins
12.00 Lunch
5.00 Introductory seminar ends

Two flexible
coffee breaks

1. Basic information

- Diesel engine process
- Working procedure
- Engine parameters
- Engine performance maps
- Cooling
- Charging
- Exhaust gas recirculation
- Fuels

2. Emissions

- Exhaust gas composition
- CO₂ emitters

3. Emissions legislation

- Passenger car
- Commercial vehicle
- Off-highway
- What next?

4. Test cycles

- Passenger car
- Commercial vehicle
- Off-highway

5. Exhaust gas analysis

- Nitrogen oxides NO_x
- Particles
- Portable systems (PEMS)

6. DeNO_x systems

- Overview
- Adsorption catalysts (NAC, LNT)
- SCR system

7. Particle filters

- Principle
- Regeneration
- Ash

CONFERENCE DAY 1**Exhaust Systems**

Tuesday, 24 May 2016

8.30 – 9.00 Reception

9.00 – 9.15 Welcome address and opening



CHAIRMAN: Prof. Dr. Werner Müller,
Former Professor at the Internal Combustion Engines
Department, Technical University of Kaiserslautern, Germany

Future mobility

9.15 – 9.45

Energy and powertrains for CO₂-free mobility

- Targets and scenarios of greenhouse gas emissions
- CO₂ emissions of passenger cars and long-range transport
- Renewable fuels for a sustainable mobility



Dr Rolf Leonhard, Chairman of the Advisory Board, Bosch
Engineering GmbH, Germany

International emission legislation

9.45 – 10.15

Measuring CO₂ emissions and fuel consumption from Heavy Duty Vehicles (HDVs) with the European Commission's new simulation tool VECTO.

- Latest developments regarding legislation for the CO₂ emissions of HDVs
- Why the simulation tool is the preferred option for measuring CO₂ and fuel consumption from trucks and buses
- Future steps



Dr Dimitrios Savvidis, Policy Officer,
European Commission, Belgium

10.15 – 10.35 Discussion

10.35 – 11.05 Refreshment break

Pollution control

11.05 – 11.35

Challenges relating to NO₂ pollution and Real Driving Emissions (RDE)

- Brief presentation of the DUH and its work in this topic area
- Health impact of high NO₂ levels
- Need for effective RDE regulation and future design of the type approval



Dorothee Saar, Director Traffic & Air Pollution Control,
Deutsche Umwelthilfe e.V., Germany

RDE

11.35 – 12.05

**Large-scale PEMS testing in Europe:
A 1,000 vehicle case study**

- Real-world performance in Europe
- Applying data to improve emissions
- Introducing NO_x monitoring



Nick Molden, OEM,
Emissions Analytics, Great Britain

12.05 – 1.30 Lunch & networking break

Challenges relating to SCR and DPF

1.30 – 2.00

New developments in Ti-W-V catalysts for the challenging complexity of current and future aftertreatment systems

- Improvement of SCR performance
- Optimisation of welcome side effects
- Reduction of unwanted side effects
- Validation in real diesel exhaust



Dr Irene Begsteiger, Director for Applied Technology,
IBIDEN Porzellanfabrik Frauenthal GmbH, Austria

2.00 – 2.30

**Exhaust systems for Euro 6.c diesel engines:
close coupled integration of PNA and SCRF**

- Selection of the individual parts that make up the system for targeted performance:
Partial NO_x absorber, mixing device, SCRF
- Modelling catalytic reactions in the PNA and SCRF
- Development of a simulator adapted to control purpose
- Development of control algorithms for NO_x reduction by SCR and DOC exotherm for filter regeneration



Dr Stéphane Raux,
Project Manager Exhaust aftertreatment systems,
IFP Energies nouvelles, France

2.30 – 2.50 Discussion

2.50 – 3.20 Refreshment break

3.20 – 3.50

Fuel borne catalysts to address the various market requirements for diesel

- Integration of multi-functionalities into fuel borne catalysts to address local fuel quality issues: Low ash FBC, deposits control, corrosion inhibition, sulfur content, biodiesel feedstock and blending
- DPF regeneration efficiency with limited energy requirements (fuel savings)

- Support the various worldwide control solutions for exhaust emissions (Euro-6c, India, China, South America) with fuel efficiency and cost-saving
- New concepts in global vehicle integration



Dr Antoine Lacarriere, R&I Project Leader,
SOLVAY – Special Chem, France

3.50 – 4.20

Novel catalytic active materials for exhaust system components

- Overview of catalytic active materials currently used in exhaust system components (emphasis on TWC, SCR, DPF and SCR-F)
- Latest developments in catalytic active materials used in exhaust systems
- Characteristics and scope of application of the newly developed materials



Dr Karl Schermanz, Head of Department of Chemistry,
Treibacher Industrie AG, Austria

4.20 – 4.40

Discussion

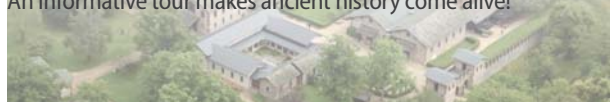
4.40

Travel to HORIBA Oberursel
and to SAALBURG Bad Homburg**Visit to the HORIBA Exhaust Gas Emissions Lab**

The state-of-the-art HORIBA Test Centre in Oberursel near Frankfurt am Main, Germany, is equipped with the latest measurement and testing technology. Qualified personnel with long-standing application know-how conduct complex test runs independently or – if requested – in conjunction with the customers. The Test Centre also serves as an in-house development tool and enables research as well as verification of the very latest HORIBA systems.

**Visit to the SAALBURG Bad Homburg**

Discover the past where history was made: at the world's only reconstructed Roman fort and archaeological museum. This fort is part of the UNESCO World Heritage Site Limes, the frontier between the Roman Empire and the Germanic tribal territories. On your trip through time, you'll get a vivid picture of the history, culture and customs of an era whose heritage – although almost two thousand years old – still shapes our world today. An informative tour makes ancient history come alive!



At the end of the day, CTI invites you to a dinner at the Saalburg. Take the opportunity to expand and strengthen your network in an informal and relaxed atmosphere.

CONFERENCE DAY 2 Exhaust Systems

Wednesday, 25 May 2016

8.15 – 8.45 Reception with business breakfast – bring plenty of business cards and and follow up on your networking!

8.45 – 9.00 Welcome address and opening
Prof. Dr Werner Müller

Development of innovative components

9.00 – 9.30

Novel pumping principle for SCR application

- Requirements for SCR pumps and former pump solutions
- New pumping principle for SCR applications
- Pump design, simulation and optimization
- Pump characterization



Jens Löffler, Team Manager System Development,
ebm-papst St. Georgen GmbH & Co.KG, Germany

9.30 – 10.00

New corrosion rig for life time estimation of exhaust silencers

- Automotive exhaust system
- Function and challenges
- Corrosion testing methods
- Why is component testing necessary?



Dr Muhammad Yasir, Material Manager,
Faurecia Emissions Control Technologies, Germany

10.00 – 10.20 Discussion

10.20 – 10.50 Refreshment break

10.50 – 11.20

SCR tank system in injection molding technology

- Injection molding technology: weight savings, function integration, sloshing reduction and packaging optimization
- Strategies to reduce the sloshing noise in Adblue tank
- Filling system: trends and challenges. Different strategy for the flow rate and also different product development. Flow rate: from 10 L/min to 40 L/min. Component and testing to achieve the OEM specification
- Innovation to improve tank performance in the event of frozen DEF (Adblue): concept and design



Christoph Ganthaler, Product Manager,
Röchling Automotive SE & Co.KG, Italy

Sensors, control and OBD

11.20 – 11.50

Smart NO_x sensors: Operation principles and functionality in advanced diesel systems

- Development roadmap and outlook for NO_x sensors

- Pumped reference electrode operation
 - electrical characterisation – optimization
 - aging performance
- Rich/lean operation of NO_x sensor
- Outlook: Feedgas monitor (NH₃, NO₂, ...)



Dr Jens-Peter Eufinger, Product Manager Sensor Business,
NGK Europe GmbH, Germany

11.50 – 12.10

Risks and possibilities in the usage of delete kits for SCR, EGR & DPF

- Modification an aftertreatment system: OBD and legal aspects
- How a delete kit can sabotage your system
- How to protect against modifications



Matthias Weber, Managing Director,
Roben Automotive, Poland



Marcel Romijn, BRACE BV Brace Automotive,
Eindhoven, the Netherlands

12.10 – 12.30 Discussion

12.30 – 2.00 Lunch

2.00 – 2.30

Implementation of advanced vehicle development on test system solutions

- New emission legislation
- Fuel economy testing
- Impact of vehicle technologies



Dr Stefan Bender, General Manager Productline Engine,
Chassis & Powertrain, HORIBA Europe GmbH, Germany

2.30 – 3.00

Thermal and flow management of the catalytic converter with Cleanalytic™ technology

- Temperature and flow characteristics of the ceramic substrate can be altered through selective addition of insulating material into the body of the substrate.
- Application of the Cleanalytic™ technology improves the light-off and heat retention of the ceramic substrate while retaining substrate dimensions and improving the flow characteristics.
- Improved thermal and flow characteristics improve catalyst heating with potential fuel economy and emissions benefits.



Voislav Blagojevic, Chief Technology Officer,
Vida Fresh Air Corp., Canada

3.00 – 3.30

Discussion & closing remarks

3.30

End of the international CTI conference

Focus on exhaust technology – the importance of environmental protection

Never before has the subject of exhaust gas aftertreatment enjoyed as much attention as it did last year. It became clear that environmental protection is becoming increasingly important when evaluating technical products, and that vehicle manufacturers are called upon to provide solutions. The necessity to comply with current and future harmful substance limits while continuously reducing CO₂ emissions requires an interplay between in-engine measures and the aftertreatment of engine exhaust gases, which requires careful optimisation. Among other things, CO₂ reduction means improving the engine's efficiency, i. e. reducing the exhaust gas enthalpy loss. The immediate result of this is a decreasing exhaust gas temperature level, which has fatal consequences for catalytic aftertreatment – a classic conflict of objectives with extreme challenges for the developers, but which also provides opportunities for alternative solutions. Test cycles that are better adapted to vehicle operation on the roads are contributing to realistic evaluation of the effectiveness of exhaust gas aftertreatment. Tests with portable emissions measurement systems (PEMS) are also used for this purpose. CTI accompanied the key stages of this rapid and exciting development with its international conferences on exhaust systems. The optimisation of exhaust gas aftertreatment is far from complete in the traditional areas of application – private cars and commercial vehicles – and even less so in the off-highway sector. Changing framework conditions pose new challenges and require improved methods or alternative solutions. At the 14th International CTI Conference on Exhaust Systems, experts will provide up-to-date input and present innovative technologies, providing decision makers and developers with the basis for making well-informed choices regarding the application in question.

We are looking forward to discussing new important technical products with you and the speakers



Prof. Dr Werner Müller
Former Professor at the
Internal Combustion Engines Department,
Technical University of Kaiserslautern



Leonie Harmal
Conference Director
CTI Car Training Institute

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Exhaust Systems

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→ Conference Days 24 – 25 May 2016

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Conference and Introductory Seminar 23 – 25 May 2016 [M013]	€ 2,899.00*	€ 2,999.00*	€ 3,099.00*
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