

SENSORS

for Exhaust Gas Cleaning and CO₂ Reduction

24 and 25 June 2015 | Nuremberg



+ Seminar: Basic principles of exhaust gas sensor technology
on 23 June 2015

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TOP ISSUES

- » Particulate matter and nitrogen oxide reduction by means of vehicle technology in modern cars
- » Physical surface analytics for characterisation of sensors in the exhaust gas system
- » New variants of thermoelectric exhaust gas sensors
- » Trends and future developments concerning O₂ sensors



Profit from our early bird registration until **30 April 2015** and **save 100 €!**



SPEAKERS, AMONGST OTHERS



Dr. Olaf Kiesewetter
UST Umweltsensor-
technik GmbH



Prof. Dr. Reinhard Kolke
ADAC Technik Zentrum
Landsberg am Lech



Pascal Mast
TÜV SÜD Auto Service
GmbH



Prof. Dr. Ralf Moos
University Bayreuth



Dr. Petra Neff
Robert Bosch GmbH



Dr. Alexander Sappok
Filter Sensing
Technologies Inc.

INCLUDING CONTRIBUTIONS BY

- » A&D Europe GmbH
- » ADAC Technik Zentrum Landsberg am Lech
- » Continental Engineering Services GmbH
- » Ecole des Mines de Saint-Etienne
- » Filter Sensing Technologies Inc.
- » IAV GmbH
- » Robert Bosch GmbH
- » SGS INSTITUT FRESENIUS GmbH
- » Stoneridge Inc.
- » Temperaturmeßtechnik Geraberg GmbH
- » TÜV SÜD Auto Service GmbH
- » UST Umweltsensortechnik GmbH

**SIMULTANEOUS
INTERPRETATION**





Eberhard Baur
eb-i Eberhard Baur Informatik



Pascal Mast
TÜV SÜD Auto Service GmbH



Dr. Jürgen Bredenbeck
A&D Europe GmbH



Prof. Dr. Ralf Moos
University Bayreuth



Arwed Graubner
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Marco Moser
IAV GmbH



Dr. Olaf Günnewig
SGS INSTITUT FRESENIUS GmbH



Dr. Petra Neff
Robert Bosch GmbH



Kayvan Hedayat
Stoneridge Inc.



Dr. Alexander Sappok
Filter Sensing Technologies Inc.



Torsten Herz
Zentrum Mikroelektronik Dresden AG



Prof. Dr. Jean-Paul Viricelle
Mines Saint-Étienne



Dr. Klaus Irrgang
Temperaturmeßtechnik Geraberg GmbH



Matthias Weber
Continental Engineering Services GmbH



Dr. Olaf Kiesewetter
UST Umweltsensortechnik GmbH



Dr. Steffen Ziesche
Fraunhofer IKTS



Prof. Dr. Reinhard Kolke
ADAC Technik Zentrum
Landsberg am Lech

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CONFERENCE CHAIR



Stefan Carstens
Managing Director
EngineSens Motorsensor GmbH

Stefan Carstens studied Industrial Engineering with Business Studies at the TH Darmstadt, focussing on Engineering Design in the field of mechanical engineering. After successfully completing his studies, he started his professional career in 1990 in an electrical engineering company, WISI KG, near Pforzheim. Three years later, he moved to the Heraeus Gruppe (Group) and passed through many departments in the company's "Sensorik" (Sensors) division, amongst others Production Planning and Control and Internal Sales, prior to taking charge of the Sales Office in Freiberg a.N. as the "Exhaust Gas Sensors" Key Account Manager. In March 2001, he entered the Management at a company for sensor technology. In May 2010, he founded the company EngineSens Motorsensor GmbH in Viernheim. One of its main focuses is the design and production of high-temperature sensors for use in the field of exhaust gases, and the application of further exhaust gas sensors for the purification of exhaust gas in combustion engines.



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08:30

Welcome reception, including coffee and tea
Hand-out of the conference material



09:00

Welcome and opening words by:
Andras Hetenyi, Project Manager Automotive,
Süddeutscher Verlag Veranstaltungen GmbH and
Stefan Carstens, Managing Director,
EngineSens Motorsensor GmbH

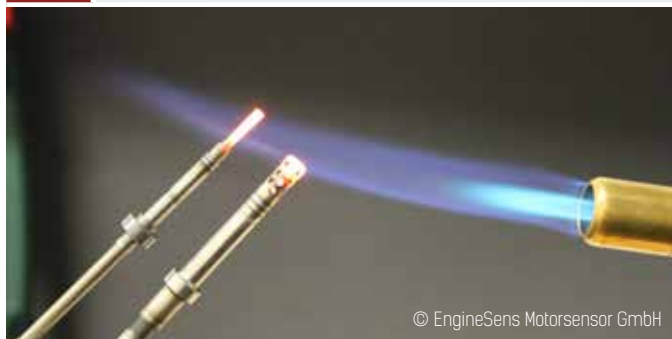
09:15

Particulate matter and nitrogen oxide reduction by means of vehicle technology in modern cars

- » Necessity of particulate matter and nitrogen oxide reduction
- » Measurements on cars and necessity of reduction
- » Consideration of realistic drive cycles
- » EcoTest and Green NCAP
- » Experiences with AdBlue and other technologies for diesel

Prof. Dr. Reinhard Kolke

Head of Test and Technology, ADAC Technik Zentrum Landsberg am Lech
Andrea Gärtner
Special Advisor Technology, ADAC Technik Zentrum Landsberg am Lech



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Exhaust gas measurement

09:45

Using physical surface analytics for the characterisation of sensors in the exhaust gas system

- » Functional principles of selected sensors in the exhaust gas system and the possible influences on the surface characteristics which might lead to functional impairment
- » Description of innovative methods of physical surface analytics for the assessment of sensors and their components
- » Selected examples of physical surface analysis of exhaust gas-relevant sensor components

Dr. Olaf Günnewig, Branch Manager, SGS INSTITUT FRESENIUS GmbH

10:15

New variants of thermoelectric exhaust gas sensors

- » Constructional designs (disk sensors)
- » Possibilities for self-diagnosis
- » Dynamic and static sensor corrections

Dr. Klaus Irrgang, Managing Director, Temperaturmeßtechnik Geraberg GmbH

10:45

Discussion and time for questions

11:00

Coffee break and opportunity for networking



Oxygen sensors

11:30

Trends and future developments in the area of O₂ sensors

- » Legislation
- » Technical developments
- » System requirements

Dr. Petra Neff, Group Supervisor, Robert Bosch GmbH

Sensors for CO₂ reduction

12:00

Pressure Sensing Applications & Requirements @ Exhaust

- » Pressure sensing technologies (overview)
- » Pressure-based sensing applications @ exhaust systems
- » System-level-requirements (interfaces; operational conditions)
- » Future trends & challenges

Arwed Graubner, Key Account & Biz. Development Sensing Asia and the Americas, Zentrum Mikroelektronik Dresden AG
Torsten Herz, Application Engineering Team Manager, Zentrum Mikroelektronik Dresden AG

12:30

Discussion and time for questions

12:45

Lunch and opportunity for networking



New technologies

14:30

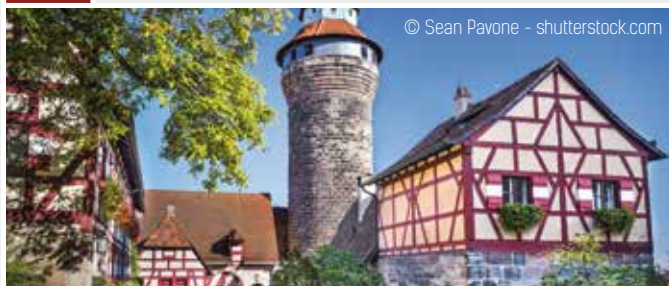
Robust and temperature-stable sensors for automotive applications

- » (Multi-layer) ceramics as technology platform for robust, temperature-stable sensors
- » Trends in material, material structure, deposition, sinter technology and ceramic-compatible construction and connection technologies
- » Ceramic-based physical and chemical sensors (examples)

Dr. Steffen Zische, Group Supervisor Microsystems LTCC and HTCC, Fraunhofer IKTS

15:15

Guided city tour including "imperial specialties"



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18:00

Dinner and opportunity for networking



22:00

Return to hotel

08:00 Welcome and opening words by: **Stefan Carstens**,
Managing Director, EngineSens Motorsensor GmbH

12:00 Lunch and opportunity for networking



NO_x Sensors

Exhaust gas analysis via PEMS

08:15 Development of NO_x gas sensors for exhaust



- » YSZ mixed potential based sensor
- » Improvement of NO_x selectivity
- » Composite electrode material

Prof. Dr. Jean-Paul Viricelle, Researcher, Mines Saint-Étienne

13:15 PEMS and RDE change the world of emissions

- » RDE
- » WLTP
- » Correlation to the roll

Pascal Mast, Head of Department, TÜV SÜD Auto Service GmbH

08:45 New gas sensor systems for measuring nitrogen oxides and ammonia in exhaust gas systems

- » Requirements for sensors in exhaust gas systems
- » Sensor concept – Measurement/detection principle, sensor design, AVT and signal processing
- » Test results on sensitivity, selectivity, interferences
- » Conclusions and potential for the development of large series products

Dr. Olaf Kieseewetter, Managing Director, UST Umweltsensortechnik GmbH

13:45 Exhaust gas analysis utilizing FTIR technology

- » Introduction to FTIR technology/Adaptation for use in the vehicle
- » Advantages of the FTIR in comparison to conventional exhaust gas analysis devices
- » Comparison of FTIR measurements using conventional methods and using test stand results

Dr. Jürgen Bredenbeck, Managing Director, A&D Europe GmbH

Soot sensors

09:15 Robust DPF Diagnostics Enabled with Resistive PM Sensor



- » Resistive PM sensor performance characteristics
- » PM sensor required diagnostics to meet regulations
- » PM sensor trends

Kayvan Hedayat, Director Advanced Technologies, Stoneridge Inc.

09:45 Coffee break and opportunity for networking



10:15 Real-Time Particulate Filter Soot and Ash Sensors



- » Soot and Ash Measurements in DPF/GPF
- » Sensor Performance Data
- » Applications and After-treatment Optimization

Dr. Alexander Sappok, President, Filter Sensing Technologies Inc.



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Integration of sensor technology in OBD systems

10:45 Sensor tolerances of the EA with regard to the OBD-robustness

- » Influence of sensor tolerances on OBD-robustness
- » Cumulated influence of linked tolerances
- » SW tool chain for OBD-robustness analysis

Marco Moser, Design Engineer Diesel Exhaust Aftertreatment, IAV GmbH

11:15 The influence of the efficiency increase of drives on the diagnosis of the exhaust gas system

- » CO₂ reduction by means of more efficient drives
- » Influence on the diagnosis (OBDII)
- » Cloud-based diagnosis strategies

Matthias Weber, Business Development Powertrain Solutions, Continental Engineering Services GmbH

11:45 Discussion and time for questions

New technologies

14:45 Status of the microwave-supported catalyst condition recognition

- » New and direct ways of measuring catalysts without detours
- » Electrical characteristics of the catalyst component during operation
- » Replacement system for soot sensors, O₂ sensors, NO_x sensors or NH₃ sensors?

Prof. Dr. Ralf Moos, Head of the Faculty, Bayreuth Engine Research Center (BERC), University Bayreuth

15:15 Monitoring system for sensor data in test stands, stationary engines, vehicle testing

- » Communication and energy management
- » Visualization and potential

Eberhard Baur, Managing Director, eb-i Eberhard Baur Informatik

15:45 Final discussion/End of the specialist conference

BASIC PRINCIPLES OF EXHAUST GAS SENSOR TECHNOLOGY

TUESDAY | 23 JUNE 2015

BASIC PRINCIPLES OF EXHAUST GAS SENSOR TECHNOLOGY

Professional supervision

Stefan Carstens, Managing Director,
EngineSens Motorsensor GmbH



Objective

This seminar mediates the basic essentials regarding the most important sensors and their functions. Stefan Carstens underpins theory with numerous practical examples so that, subsequent to this introduction day, you will know the main terminology and interrelations, and will be up to date on the science and technology concerned.

08:00

Welcome reception, including coffee and tea
Hand-out of the conference material



08:15

Start of the seminar and moderation

Stefan Carstens, Managing Director,
EngineSens Motorsensor GmbH

08:30

Application of exhaust gas sensors

- » When to use which sensor
- » Gasoline engines with stratified charge and NO_x trap
- » Diesel with NO_x trap and DPF
- » Diesel with DPF and SCR

09:15

Exhaust gas temperature sensor systems

- » PT200 sensors in combined thin-film and thick-film technology
- » NTC sensors: Special features of the characteristic curve
- » Thermo elements function
- » Characteristics of test stand applications
- » Thermo elements type N in series vehicles, especially suitable for high-temperature applications with more than 1000 degrees Celsius

10:15

Coffee break



10:45

Oxygen sensors

- » Step-response lambda sensor: From the finger-shaped sensor to planar technology
- » Lambda sensors based on zirconia
- » Broadband lambda sensor: basic functions
- » Super-fast-light-off technology

12:15

Lunch break



13:15

Nitrogen oxide sensors

- » Can NO_x be measured in rich exhaust gas?
- » Pump currents Ip1 and Ip2
- » Cross-sensitivities and restrictions during application

14:30

Pressure sensor systems for particle filter monitoring

- » Differential pressure sensors – The state-of-the-art today?
- » Absolute pressure sensors – Too imprecise for Euro 6-2?

15:15

Soot sensor systems

- » Which concepts are possible?
- » Three different concepts
- » Already in mass production: The resistive soot sensor: Design and function

16:00

Discussion and time for questions

16:15

Departure (by bus) to the guided company tour at HE System Electronic GmbH & Co. KG

Manufacturer of automotive sensor solutions: Hydrogen Sensors, Ion Current Ignitions, Glow Plug Control
www.he-system.com

© HE System Electronic GmbH & Co. KG



18:30

Casual dinner at a restaurant



21:00

Return to the Congress Hotel Mercure Nürnberg an der Messe

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Practical Seminar Emissions Legislature and Analysis

in the automobile industry
(including practical session at test stand)

**24 and 25 February 2015 | Heimsheim
or 22 and 23 April 2015 | Pfungstadt**

Seminar chair:

Stefan Carstens, Managing Director
EngineSens Motorsensor GmbH



Pascal Mast,
Senior Head of Emissions Department
TÜV SÜD Auto Service GmbH



CORE TOPICS

- » Exhaust gas composition in gasoline and diesel engines
- » EU exhaust gas legislature: NEDC, WLTC, EURO6b and EURO6c
- » US exhaust gas legislation: CARB, EPA, LEV-III
- » Test stands in the vehicle and engine measurement technology

SEMINAR CONTENTS

This is the first seminar of its type in Germany regarding emission legislature and analysis with an integrated practical session on a test bench. This unique offer is made possible thanks to the close cooperation of TÜV SÜD (Technical Inspectorate, Southern Germany) Auto Service GmbH, EngineSens Motorsensor GmbH and Süddeutscher Verlag Veranstaltungen GmbH.

Over two days, special topics regarding exhaust gas composition, national and international exhaust gas legislature and the current test bench technology will be addressed. The program is supplemented and rounded off by the practical elements: NEDC, WLTP and measurement technology on a roller test bench.

LEARNING OBJECTIVES

Following this seminar, you will know about the exhaust gas composition for gasoline and diesel engines and will be up to date on the exhaust gas legislation in the EU and the USA. You will learn about the differences between NEDC and WLTP, especially the shifting point calculation.

Furthermore, you will receive an introduction into test benches for vehicle and engine measurement technology. The main focus in February is on the roller test benches. The main focus in April is on the engine test benches. Increase your knowledge and expand your wealth of experience with experts from your branch.

ORGANISATION AND REGISTRATION

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Additional SVV Announcements

The latest legal topics for automobile suppliers
03 - 04 March 2015 in Munich

International Trade Conference Automotive Electronics
10 - 11 March 2015 in Shanghai

10th Specialist Conference: Ramp Up – Launch management in the automobile production
17 - 18 March 2015 in Leipzig

3rd International Specialist Congress: Wiring systems in automobiles
24 - 25 March 2015 in Ludwigsburg

Seminar: Pricing – Profit lever no. 1
26 March 2015 in Munich
29 April 2015 in Stuttgart

6th Specialist Congress: Technical cleanliness in assembly and production processes
19 - 20 May 2015 in Steyr

19th International Specialist Congress: Advances in automobile electronics
23 - 24 June 2015 in Ludwigsburg

Specialist Conference: Robots in the automobile industry
27 - 28 October 2015 in Augsburg

DATE OF THE EVENT

Wednesday, 24 and Thursday, 25 June 2015

Additional offer: Seminar: Basic principles of exhaust gas sensor technology on 23 June 2015

VENUE

Congress Hotel Mercure Nürnberg an der Messe

Münchener Straße 283

90471 Nürnberg

Tel.: +49 911 9465-0

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Single room: from 125 € including breakfast

ACCOMODATION

Please book your room directly at the hotel, stating the key word "SVV".

Please observe:

A number of rooms are reserved for you until 27 April 2015. Reservation after this date will be subject to availability.

PARTICIPATION FEE

The participation fee for the International Specialist Conference Sensors for Exhaust Gas Cleaning and CO₂ Reduction without the introductory seminar is 1,695 € plus statutory VAT.

The participation fee for the International Specialist Conference Sensors for Exhaust Gas Cleaning and CO₂ Reduction plus the introductory seminar the day before is 2,295 € plus statutory VAT.

The following services are included in the participation fee:

- » Simultaneous interpretation English and German
- » Participation in the conference
- » Conference material as print out
- » Refreshments during the breaks
- » Lunch on both days
- » Evening event at a restaurant
- » Guided company tour at HE System Electronic GmbH & Co. KG on 23 June 2015*
- » Guided city tour in Nuremberg on 24 June 2015*

REGISTRATION

Please register using the attached registration form or via Internet under www.sv-veranstaltungen.de. After receipt of your written registration, you will be registered as a participant and will receive written confirmation and an invoice which is due prior to commencement of the event. (Event number 815.101.17)

In case of cancellation after the cancellation deadline (5 June 2015), or in case of non-attendance, the full participation fee shall be charged; however, a replacement participant may attend. Cancellations made prior to this date will be charged a € 150 administration fee. All cancellations must be made in writing.

The organizer reserves the right to move, change or cancel at short notice the complete event or individual parts thereof with regard to location and/or time.



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INFORMATION AND ORGANISATION

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23 June 2015
Seminar: Basic principles of exhaust gas sensor technology

24 and 25 June 2015
2nd International Specialist Conference: Sensors for Exhaust Gas Cleaning and CO₂ Reduction

Congress Hotel Mercure
Nürnberg an der Messe

Organization and Registration

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SV Veranstaltungen

Registration form I Online on www.sv-veranstaltungen.de or via email: register@sv-veranstaltungen.de

I hereby bindingly register for the Specialist Conference (815.101.17):

- ☐ 2nd International Specialist Conference: Sensors for Exhaust Gas Cleaning and CO₂ Reduction (24 + 25 June 2015) at the price of 1,695 € plus statutory VAT
- ☐ Seminar: Basic principles of exhaust gas sensor technology (23 June 2015) at the price of 895 € plus statutory VAT
- ☐ Seminar: Basic principles of exhaust gas sensor technology (23 June 2015) + 2nd International Specialist Conference (24 + 25 June 2015) at the price of 2,295 € plus statutory VAT
- ☐ We are interested in an on-site company presentation.
Please send us information material free of charge and without any obligation.

In addition, I register for the following events free of charge (limited number of participants):

- ☐ Company tour HE System Electronic GmbH & Co. KG (23 June 2015)
- ☐ City tour Nuremberg (24 June 2015)

Promotion Code: DieselNet
With this special promotion code you will receive **20% discount** of the regular fee by your registration!



Profit from our early bird registration until **30 April 2015** and **save 100 €!**

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