

# E/E for Commercial Vehicles



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**Innovative technologies for energy efficiency and enhanced safety**

21st – 23rd March 2011 | Hilton Nürnberg | Germany

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- Explore cutting-edge **hybrid technologies** for commercial vehicles and discuss **first experiences**
- Gain insight into **energy management** for hybrid commercial vehicles and define technical limits
- Learn about **economic** and **legislative trends** to meet future demands
- Identify the requirements **ISO 26262** brings to safeguard functional safety for the E/E system
- Hear about **advanced E/E system architecture** for hybrid commercial vehicles and discuss **operating strategies**

## TOPIC HIGHLIGHTS:

### Hybrid technology for commercial vehicles: Potential and limits – first experiences

Giorgio Mantovani, Advanced Engineering Manager,  
**Iveco ALTRA S.p.A., Italy**

### E/E Systems for hybrid commercial vehicles

Thomas Karer, Head of Electric/Electronics, Andreas Eglseer,  
**Magna Powertrain, Engineering Center Steyr GmbH & Co. KG, Austria**

### The key to Class 8 truck hybrid success – exhaust energy recovery

Jonathan McGuire, Technical Director,  
**Bowman Power Group Ltd., UK**

## INTERACTIVE WORKSHOP DAY | Monday, 21st March 2011

- A** Software architecture and AUTOSAR for automotive control systems
- B** Interface design of diverse dynamics E/E systems in theory and practice
- C** ISO 26262: How to resolve the new challengers?
- D** Advanced driver assistance systems (ADAS) – Trends & challenges

# E/E for Commercial Vehicles



Innovative technologies for energy efficiency and enhanced safety

Dear colleague,

The main challenge for today's commercial vehicle industry is the **optimisation of energy efficiency**. Since the full optimisation potential of the traditional combustion engine in commercial vehicles is tapped, manufacturers are looking for new opportunities.

**Hybrid technology**, though it certainly has its limits, seems to be a very promising way to go. However, hybrid technology is not only compelling but also demanding, especially for the commercial vehicle sector. It involves a lot of challenges for the **battery**, the **energy management** and the **electrical system** of the vehicle as a whole.

The other main field of innovation are new technologies for **enhanced safety**. New technologies are pushed by the need to meet legal standards. In this respect it is important that legal requirements make the Emergency Brake Assist compulsory from 2012/13 on.

To address these challenges efficiently and benefit from best practice and cutting-edge case studies do not miss our

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This conference has been designed for the commercial vehicle industry, with the purpose of providing valuable insight into the issues currently being faced. By attending, you will have the chance to network with regional and international experts who will report about first-hand experiences and latest developments in E/E systems for commercial vehicles.

Kind regards,

Dr. Klaudia Malowitz  
Project Manager

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- Product Managers
- Project Leaders

#### Departments:

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- Vehicle Control
- Safety & Driver assistance systems
- Powertrain
- Hybrid Drive Train
- Business development
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# E/E for Commercial Vehicles



INTERACTIVE WORKSHOP DAY | Monday, 21st March 2011

Workshop A  
10:00 – 13:00

## Software architecture and AUTOSAR for automotive control systems

Automotive **vehicle networks** are getting more and more complex. Nowadays luxury cars contain **more than 70 single control** units connected with different bus systems. Most OEMs have severe problems to master this huge amount of control units. To stop this growth, more functions have to be integrated into one control unit. But **integrating functions** only shifts the **complexity** from the **network** level to the **software level**. Therefore new **methodologies** are necessary to handle the **software complexity** inside the control units. **AUTOSAR**, an open and standardized automotive software architecture, is a key enabling technology to manage the growing software complexity inside and across control units. It tries to disconnect the software from the hardware and hence allows moving around software in the ECU network.

The workshop focuses on the following aspects:

- Handling **complexity**
- **Software** layers
- What is AUTOSAR
- AUTOSAR software architecture
- From **ECU oriented development** to **function** oriented development
- AUTOSAR methodology
- Software components and interfaces
- How to use AUTOSAR to develop a tire pressure monitoring system
- AUTOSAR toolbox

Prof. Dr. Dieter Nazareth, Department of Computer Sciences, **Landshut University of Applied Sciences, Germany**

Workshop B  
10:00 – 13:00

## Interface design of diverse dynamics E/E systems in theory and practice

Interface design in E/E system is not about following a simple rule. General ideas and know-how have to be adopted to the "culture" of the system and the organisation behind. **Wildly grown systems** usually show a variety of approaches which **need to be synchronised** and **migrated** to a **target system**. **AUTOSAR** only provides a language, dialects and phrases form the common understanding which can be different within each system.

Steps in the workshop will be:

- Introduction to **design criteria**
- Judging importance of **principles**
- Guiding through a **design process**: a step-by-step example

Dr. Marc Poppner, Managing Director, **ZIELPULS GmbH, Germany**  
Philipp Rottgardt, Senior Consultant, **ZIELPULS GmbH, Germany**

Workshop C  
14:00 – 17:00

## ISO 26262: How to resolve the new challenges?

The workshop will give a brief overview on the **standard**. It will highlight **new key issues of the standard** and give advice on **possible solutions**. In the workshop an outlook is given on recent developments, and on the **expected impact** of the standard on the industry. The workshop gives possibility of questions and interactive discussions to facilitate the exchange of experience among the participants.

Planned topics to cover:

- Important milestones
- Overview of ISO 26262
- Hazard analysis, risk assessment, and ASIL
- **Safety concept** and **system design**
- Distributed development and organisational preconditions
- Challenges for the **hardware safety architecture** (e.g. new vs. old metrics)
- Challenges in **software design** (e.g. SW testing)
- Summary and outlook
- Discussion/exchange of experience with and among participants

Dr. Tomislav Lovric, Safety Assessor Braking EU & AP, **TRW Automotive LucasVarity GmbH, Germany**

Workshop D  
14:00 – 17:00

## Advanced driver assistance systems (ADAS) – Trends & challenges

Traffic density is ever increasing and more complex situations arise for an aging driver population. In order to support the driver and to enhance traffic safety, new technologies and systems are developed. These **"advanced driver assistance systems"** can help to manage critical situations by **sensing the surrounding environment** of the car or truck and **providing the driver with the necessary information** or **warning**. When the driver is no longer able to handle the situation, the systems can **intervene** and **mitigate** or even **prevent an accident**. To achieve these goals, ADAS use and cooperate very closely with the actuators of the car, such as **braking** and **steering system, drive train** and **suspension**.

After an overview of the **state of the art**, the workshop will be focused around the following questions:

- How can ADAS successfully be developed and introduced into the market
- Discussion of trends and challenges

Prof. Jürgen Wrede, Head of Laboratory of Vehicle Mechatronics, **Pforzheim University of Applied Sciences, Germany**

# E/E for Commercial Vehicles



CONGRESS DAY ONE | Tuesday, 22nd March 2011

09:00 Registration & coffee

09:30 Chairman's welcome & opening address

## Exploring new E/E technologies & new markets for commercial vehicles

### 09:45 Future commercial vehicle industry – market trends and technological solutions

- Future economic and legislative trends and their impact on the commercial vehicle industry
- The development of emerging and saturated markets – risks and opportunities
- Assessment of key technological trends and their potential to meet future demands

Markus Thoennes, Strategy and Process Development, **Forschungsgesellschaft Kraftfahrwesen mbH Aachen, Germany**

## Enhancing safety for commercial vehicles

### 10:30 RSDS for commercial vehicle application

Case Study

- Presentation of the RSDS sensor (HW, functionality)
- Truck features such as BlindSpotDetection & RearCrossTrafficAlert

Dr. Tiemo Ehlers, Systems Engineer, **Delphi Deutschland GmbH, Germany**

11:15 Refreshment break & networking

### 11:45 Implementation of ISO 26262 within TRW

Case Study

- Overview on TRW solutions to the implications of ISO 26262
- TRW overall safety organisational structure as backbone of any safety process implementation
- Outlining of the TRW safety lifecycle as evolved from previous standards (IEC 61508)
- Safety infrastructure as support for the projects
- Amplify experience and lessons learned from the introduction of ISO 26262 within TRW

Dr. Tomislav Lovric, Safety Assessor Braking EU & AP, **TRW Automotive Lucas Varity GmbH, Germany**

### 12:30 Insulation monitoring in high voltage systems for hybrid and electric vehicles

Case Study

- Get a more reliable vehicle with high ohmic insulation monitoring
- International standards and regulations
- How to locate insulation faults in high voltage systems
- Plugs in hybrid and fully electric vehicle: What about Residual DC-Current in the system?
- Protection of charging stations with Residual Current Monitoring Type B

Holger Potdevin, Key Account Manager OEM, **Bender GmbH & Co KG, Germany**

13:15 Networking lunch

## Enhanced E/E Architectures

### 14:45 E/E systems for hybrid commercial vehicles

Highlight

- E/E architecture for hybrid systems
- HCU – Hybrid Control Unit
- Operating strategy
- Hybrid commercial vehicle demonstrator: Facts and figures

Thomas Karer, Head of Electric/Electronics

Andreas Eglseer, Program Manager Hybrid Development, **Magna Powertrain, Engineering Center Steyr GmbH & Co. KG, Austria**

### 15:30 Interface design: Barrier between technology and people

Case Study

- Why complex systems still fail today
- Interface design within E/E infrastructure e.g. energy distribution
- Optimised interface design as challenge and opportunity
- Being prepared for the future: Connecting permanently with internet and infrastructure

Dr. Marc Poppner, Managing Director, **ZIELPULS GmbH, Germany**

16:15 Refreshment break & networking

## Cutting-edge hybrid technologies for commercial vehicles

### 16:45 First experiences with hybrid systems in buses

Case Study

- Market expectations for hybrid buses
- Design of the serial and the parallel hybrid system
- Field experiences with hybrid buses
- Layout of the hybrid components

Walter Rau, General Manager Business Development "Electric Drives", **Voith Turbo GmbH & Co. KG, Germany**

17:30 Panel Discussion:



### Explore energy efficiency technologies for commercial vehicles

Selected speakers of the day

18:00 End of congress day one and closing remarks from the chairman

**“Excellent mixture of broad topic field, competent speakers.”**

Dr. Rainer Kaufmann, Head of technical Engineering, Dt. ACCUotive



# E/E for Commercial Vehicles



CONGRESS DAY TWO | Wednesday 23rd March 2011

08:45 Registration & coffee

09:10 Chairman's welcome & opening address  
Joerg Luetzner, Head of Services & Commercial Vehicles,  
**Continental Automotive GmbH, Germany**

## Cutting-edge hybrid technologies for commercial vehicles

09:15 **Conception and design of an electrical bus used for the public transport system: Challenges & solutions**

Case Study

- Design of the power train
- Functional and electrical safety of the complete system
- Battery design und battery management
- Quick charging procedure

Sebastian Mathar, Group Leader Energy Systems,  
Electronics Department,

**Institut für Kraftfahrzeuge – RWTH Aachen University, Germany**

10:00 **Hybrid technology for commercial vehicles: Potential and limits – first experiences**

Highlight

- Extended field test experiences for hybrid daily and hybrid Eurocargo:
  - Architecture
  - Functionality
  - Performances
  - Availability
  - Reliability
  - Customers acceptance

Giorgio Mantovani, Advanced Engineering Manager,  
**Iveco ALTRA S.p.A., Italy**

10:45 Refreshment break & networking

11:15 **The key to Class 8 truck hybrid success – exhaust energy recovery**

Highlight

- Competing requirements for NOx and CO<sub>2</sub> compliance
- Comparing alternative technologies
- Readiness for market
- Vehicle integration

Jonathan McGuire, Technical Director,  
**Bowman Power Group Ltd., UK**

12:00 Panel Discussion:



**Hybrid technology for commercial vehicles: Opportunities and limits**

Selected speakers of the day

12:45 Networking lunch

14:15 **A new hybrid powertrain for garbage collection trucks**

Case Study

- Design of the power train
- Functional and electrical safety of the complete system
- Battery design und battery management
- Quick charging procedure

Georg Sandkühler,

**FAUN Umwelttechnik GmbH & Co. KG, Germany**

## Efficient energy management for hybrid commercial vehicles

15:00 **Lithium-Ionen batteries for commercial vehicles**

Case Study

- Lithium-Ionen battery technology today
- Store requirements for commercial vehicles
- Future potentials

Alexander Bodensohn, Regional Manager Central Europe,  
**European Batteries, Finland**

15:45 End of congress day two and closing remarks from the chairman

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- A:** Software architecture and AUTOSAR for automotive control systems  
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**C:** ISO 26262: How to resolve the new challengers?  
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