

VDI



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Electrics/Electronics for Mobile Machines 2024

Main Topics:

- Automation and Autonomy
- Software-Defined Mobile Machines
- Cloud Computing Enhancing Offroad Applications
- Electrification
- (Smart) Sensors and Algorithms

Special Highlights: Keynote Speeches from

- Jahmy Hindman, Ph.D., Senior Vice President & Chief Technology Officer, John Deere
- Dipl.-Ing. Matthias Dieter, Managing Director/CEO, Hydac International

+ Free Entrance to the parallel Event ELIV 2024

+ Networking at the joint Coffee Breaks & Evening Event

+ Extensive Exhibition

Meet international Experts from:

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CLAAS



dSPACE



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An event organized by VDI Wissensforum GmbH
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October 16-17, 2024,
World Conference Center Bonn, Germany

1st Congress Day
Wednesday, October 16, 2024

07:45 Registration

Plenary Lectures

Moderation: Dr. Rolf Zöller, Porsche AG and Porsche Digital, Weissach

08:40 **Opening of the Congress, Current Market Situation & Highlights of the Congress**

Dr. Rolf Zöller, Director Smart Connected Vehicle Porsche AG and Managing Director Porsche Digital, Chairman of the Program Committee ELIV & **Dr.-Ing. Carsten Hoff**, CEO, dSPACE GmbH, Chairman of the Program Committee Mobile Machines

09:00 **Insights into BMW's Future E/E Architecture and its Semiconductor Requirements**

- Challenges in the automotive industry as a driver for continuous innovations
- E/E Architecture in the past, today and in the future, focusing on BMW's approach of 3 level architecture (HPC, Zones, etc.)
- Semiconductor requirements for the future E/E Architecture
- Semiconductor technology and standardization enabling higher system integration

Dr. Fathi El-Dwaik, Vice President BMW Group E/E Systems, BMW AG, Munich

09:30 **Generative AI & Conversational AI – The Future of In-Car Assistants**

- Market dynamics
- Inflection point: GenAI – creating an immersive, conversational experience
- Generative, LLM-powered conversational experiences

Dr. Stefan Ortmanns, Chief Executive Officer, Cerence, Aachen

10:00 Coffee break, Exhibition and Start-up Area visit

10:45 **Future Perspectives and Technical Challenges in Mobile Machines**

- Megatrends
- What do they mean for NRMM and supplies?
- Automation, digitalization and electrification
- How to navigate through transformation

Dipl.-Ing. Matthias Dieter, Managing Director/CEO, Hydac International GmbH, Sulzbach



Automation and Autonomy

Moderation: Prof. Dr.-Ing. Thomas Herltzius, Technische Universität Dresden

11:15 **Automation Levels for Mobile Working Machines**

- Introducing a New Framework for Automation Levels
- Distinguishing Automation and Autonomy
- Focus on Driving vs. Work Process Automation
- Importance of Connectivity and Sensors for High Automation

Dr.-Ing. Simon Schätzle, Group Leader, Innovation Center, Co-Authors: Dr. Pablo Aguirre, Stefan Lang, all of Innovation Center, Sensor-Technik Wiedemann GmbH, Kaufbeuren

11:45 **From Co-Pilot to Auto-Pilot – Autonomy in Agriculture**

- Why Automation & Autonomy are Highly Relevant for Farming
- Agricultural Robots vs. Autonomized Tractors
- Needed Evolution on Common Industry Standards

Dr.-Ing. Arne Bohl, Vice President – Group Product Strategy, CLAAS KGaA mbH, Harsewinkel

12:15 Lunch, Exhibition and Start-up Area visit



Software-Defined Mobile Machines

Moderation: Dipl.-Ing. Ralf Leinenbach, Hydac Electronic GmbH

13:45 **New Electronic Architectures Enabling Software-Defined Mobile Machinery Electronic Architecture**

- High Performance Computing
- Cloud and Connectivity
- Algorithms and AI

Dipl.-Ing. Andreas Locatelli, Senior Product Manager ADAS, Product Development, Co-Author: Janosh Fauster, both of TTCControl GmbH, Vienna, Austria

14:15 **GEN AI – Refining Off-highway Industry**

- Embracing the Potential of Gen-AI
- How to employ Gen-AI tool, methodology, and philosophy to optimize Off-Highway Product development and validation
- Gen-AI Use Cases and Applications in the Off-Highway Industry
- Virtualization Next frontier for product testing & validation

Swapnil Tandel, Delivery Head, Trucks and Off-Highway, Co-Author: Prabhakar Pandit, both of L&T Technology Services, Edison, USA

14:45 **DevSecOps and AI-Based Cyber Security Solutions for Mobility**

Jonathan Legkov, Product Manager, Argus Cyber Security, Ramat Gan, Israel

15:15 **From the Freeway to the Field – How Hardware-in-the-Loop (HiL) Testing Can Accelerate the Development of Autonomous Machinery**

- Comprehensive validation and verification of complex systems in realistic environments
- Time and cost efficiency of HiL testing
- Continuous development for automated work processes
- Data strategy to manage increasing number of sensor technology

Dr. Karsten Krügel, Head of Business Development, Strategic Product Management, Co-Author: Marco Buller, M. Sc., both of dSPACE GmbH, Paderborn

15:45 Coffee break, Exhibition and Start-up Area visit

16:30 **Lightning Talks – 22 Rapid-Fire Two-Minute Pitches**



Cloud Computing Enhancing Offroad Applications

Moderation: Dr.-Ing. Georg Kormann, John Deere GmbH & Co. KG Intelligent Solutions Group

17:15 **Novel Connectivity Solutions for Edge-Cloud Continuum Applications in Rural Agricultural Machinery Operations**

- Integration of Edge and Cloud Computing in Agricultural Machinery
- Utilization of Virtualization for Dynamic Resource Allocation
- Challenges of Networking in Rural Environments for Edge and Cloud Computing
- Impact of Network Connection Technologies and Topologies on System Operation

Alexander Wagner, M. Sc., Product Engineer PhD Cand., External Relations, John Deere GmbH & Co. KG, Kaiserslautern, Co-Authors: Dipl. Ing., Andreas Locatelli, TTCControl GmbH, Vienna, Austria, Prof. Dr. Peter Pickel, John Deere GmbH & Co. KG, Kaiserslautern

17:45 **AI Based Battery Health Monitoring from Concept to In-Use for Better BEV Performance**

- Battery Health prediction from Concept to SOP
- Predictive Maintenance for reduced warranty costs
- Anomaly detection for shorter test times
- BMS Model parametrization

Dr. Christian Mayr, Program Manager AI & ML, Co-Author: Dipl.-Ing. Gerhard Schagerl, both of AVL List GmbH, Graz, Austria

18:15 Data-Driven Predictive Maintenance from Sensor Networks in Customer Fleets under Compliance with New Legislation Aspects and Open System Architectures

- Data-driven Product Engineering as key to effective Predictive Maintenance
- Open System Architectures reduce complexity in Automated Operations
- Examples to meet latest legislation aspects for customer operations

Dr.-Ing. Andreas Griesing, Head of Product Engineering, Estino.Labs, Co-Author: Jakob Riebe, both of Estino GmbH, Dresden

18:45 End of the 1st Congress Day

19:00 Night of Electronics on the MS RheinMagie

The VDI invites all participants, speakers, sponsors and exhibitors to join the "Night of Electronics" aboard Europe's largest event liner, the MS RheinMagie (former MS RheinEnergy). This evening reception is the perfect opportunity to network and continue the discussions of the first congress day in a relaxed atmosphere. Meet your peers and business partners and enjoy a varied entertainment program.

Program:

- 19:00 – Boarding of the "MS RheinMagie"
- 20:00 – Opening & Dinner
- 20:00 – 22:00 Cruise across the Rhine
- 22:00 – Arrival at the jetty and possibility to disembark
- 22:00 – Opening of the dance floor
- 00:00 – End of the Night of Electronics/disembarkation from the ship



Source: Köln Düsseldorf Deutsche Rheinschiffahrt GmbH

2nd Congress Day
Thursday, October 17, 2024



Electrification

Moderation: Dr.-Ing. Steffen Mutschler, Bosch Rexroth AG

08:30 Electrification of Mobile Construction Machines – An OEM Perspective

- Battery driven mobile machines.
- System architecture of mobile machines
- Possible applications for battery driven machines
- Alternative drivetrains

Dipl.-Ing. Timo Löw, Head of Engineering Systems, Engineering Systems, BOMAG GmbH, Boppard

09:00 Charging Technology for Off-Highway Applications

- Specific challenges and requirements for charging of high voltage batteries in Off-Highway applications
- Integration of OBCs into the vehicle architecture, considering communication protocols such as UDS and CAN J1939
- Functional safety in accordance with ISO 13849
- Future trends and market drivers (Standards, V2X)

Sylvain Roure, Senior Sales Strategy, Project & Product Manager Electrics/Electronics for Mobile Machines, Co-Author: Markus Helfrich, both of Bosch Rexroth AG, Ulm

09:30 How to Survive in a Pure-electric World?

- Electrification of mobile machinery
- Analysis of use-cases for electrification
- Definition of robust portfolio strategies
- Achieving profitability

Kai Krüger, Principal, Co-Authors: Dr. Michael Wittler, Daniel Becker, all of FEV Consulting GmbH, Aachen

10:00 Flexible and Feature Driven eDrive Development

- eDrive scaling possibilities and challenges
- Feature driven inverter development
- Solution for a flexible inverter architecture

Dipl.-Ing. Sascha Kümmel, Head of Technology, Electric Drive Systems, eMoveUs GmbH, Kitzingen



10:30 Coffee break, Exhibition and Start-up Area visit

11:15 Bridging the World of R&D and IT – From Tool Provider to Solution Architect

- How R&D and IT change Hardware and SW development in automotive together
- Software lifecycle management in automotive End-2-end
- Learnings from modern software development concepts for hardware development

Matthias Schneider, Vice President IT RD, Security & Data, Mercedes-Benz AG, Böblingen



(Smart) Sensors and Algorithms

Moderation: Dr.-Ing. Carsten Hoff, dSPACE GmbH

11:45 Breakthrough in the Development of Automation Functions

- 4D point cloud – how radar technology is advancing machine automation
- Comparison to LiDAR sensor technologies
- Use case specific interpretation of the radar based point cloud
- Radar SLAM example application

Camille Marbach, B. Eng., Product Manager Perception, Bosch Engineering GmbH, Abstatt

12:15 Butterfly Mower Maps Weed with AI/Tensorflow

- AI based detection of weed plant
- Generate application map with weed location
- Support for further field applications

Dipl.-Ing. Florian Ott, System Engineer, GEE Electronic Development, CLAAS Salgau GmbH, Bad Salgau

12:45 Innovative Environment Perception Solutions – Key Steps on the Path to safe Mobile Machines Automation

- Multi sensing technology based environment perception functions
- Sensor fusion, comprehensive environment model
- Advanced Driver Assistance system & Autonomous driving
- Non automotive mobile machines applications (Agriculture, Mining, Construction, etc.)

Yannick Frisoni, M. Eng., Senior Business Development Manager, Driver Assistance & Autonomous Driving Segment, Continental Automotive France SAS, Toulouse, France, Co-Authors: Alexander Stoff, Senior Manager Environment Modelling & Fusion, Continental Engineering Services GmbH, Frankfurt, Bertrand Godreau, Camera Perception group leader, Continental Automotive France SAS, Toulouse, France



13:15 Lunch, Exhibition and Start-up Area visit



Plenary Speeches and Award Ceremony

Moderation: Dr. Rolf Zöller, Porsche AG and Porsche Digital, Weissach



14:30 Why Autonomy, Why Now?

- Necessary Technologies
- Application Feasibility
- Customer Reactions & Benefit
- The future, now, or both?

Jahmy Hindman, Ph.D., Senior Vice President & Chief Technology Officer, Engineering & Technology, John Deere, Moline, USA

15:00 How to Increase Efficiency and Reduce Time2Market Leveraging SDV

Gilles Mabire, CTO – Continental Automotive, Software and Central Technologies, Continental Automotive Technologies GmbH, Frankfurt/Main

15:30 Conclusions of the Congress

Management Summary of the Sessions: The most important take-aways presented by members of the Program Committee

16:00 Award Ceremony "Auto Electronic Excellence Award 2024" and "Best Start-up"

16:15 End of the Congress

Program Committee

Putting together this world-class agenda requires decisions to be taken long before the call for papers is published. This job is the responsibility of Electrics/Electronics for Mobile Machines 2024 program committee.

High-level representatives of OEMs and leading suppliers accurately identify the latest megatrends without ignoring the enablers or the classic topics.



Prof. Dr.-Ing. Thomas Herlitzius, Chair of Agricultural Systems and Technology, Faculty of mechanical science and engineering, Technische Universität, Dresden



Dr.-Ing. Carsten Hoff, CEO, dSPACE GmbH, Paderborn (chair)



Dr.-Ing. Georg Kormann, Manager Engineering H&F, Technology Integration & Advanced Engineering, John Deere GmbH & Co. KG Intelligent Solutions Group, Kaiserslautern



Dipl.-Ing. Ralf Leinenbach, Head of Technical Sales, Hydac Electronic GmbH, Saarbrücken



Dr.-Ing. Steffen Mutschler, Director Sales & Product Management, Electrification Mobile Machines, Bosch Rexroth AG, Ulm

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 **Jasmin Habel**
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Exhibitors of the parallel ELIV Congress and E/E in Mobile Machines

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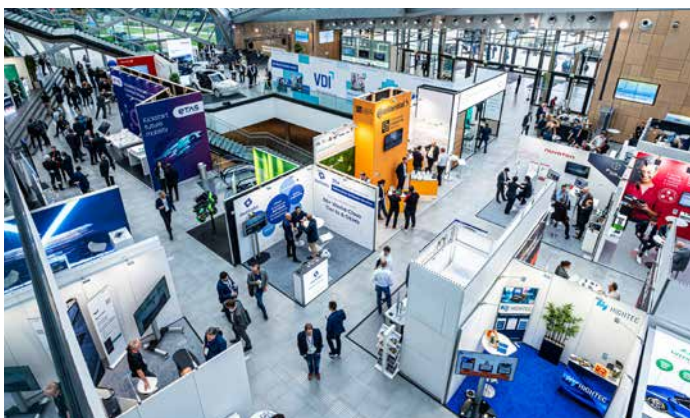


Start-up Area

We offer young companies the opportunity of presenting their latest developments and products in the start-up area. Get the chance to meet the exclusive, international group of participants consisting of decision-makers and specialists from vehicle manufacturers, suppliers, and service providers as well as representatives from universities! In addition to a full-service package with a 4 sqm booth space in the Start-up Area, a presentation slot on the Start-up Stage is also included.

Interested in taking part? To apply, request the registration documents for the Start-up Area. We are happy to provide assistance and further information:

 Elena Langenfels
Project Consultant
Exhibition & Sponsorship
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Parallel conference

International VDI Congress ELIV 2024

October 16 – 17, 2024, Bonn, Germany

Main Topics:

- AI Automotive
- Digital Homologation
- Software for the SDV
- Open Source Software
- Cockpit & Customer Experience
- E-Vehicle Mobility
- Automated Driving
- Mobility System Architecture
- Electronics Technologies
- Processes
- Cloud, Connect & Rust
- Security

Top Speakers:

Dr. Fathi El-Dwaik, BMW
Jahmy Hindman, Ph.D., John Deere
Gilles Mabire, Continental Automotive Technologies
Dr. Mirko Nentwig, AUDI
Dr. Stefan Ortmanns, Cerence
Matthias Schneider, Mercedes-Benz
Jim Tung, MathWorks
Dr. Rolf Zöller, Porsche

Further details: www.eliv-congress.com



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- Evaluation and question function
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- Digital Business Card: create your Digital Business Card
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- Meeting Arrangement: request appointments with other participants

Electrics/Electronics for Mobile Machines 2024

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E/E for Mobile Machines
2024 – Now part of ELIV!

You need help?
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Accommodation: A limited number of rooms have been reserved for congress participants. Please visit www.eliv-congress.com for further information.

More hotels close to the conference venue may be found via our HRS service, www.vdi-wissensforum.de/hrs



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