VDI

8th International VDI Conference

Connected Off-Highway Machines

From Smart Sensors to Smart Systems

April 24-25, 2023, Dusseldorf, Germany

- Autonomous Mobile Machinery
- Cyber Security for Connected Off-Highway Machines
- Data-Driven Business and Technologies
- Wireless Connectivity for Vehicles
- Digital Solutions for Fleet Management

+ International Best Practices
+ Interactive World Café Session

Meet international Experts from:

ASI AGRICULTURE · Bosch Engineering BOSCH Invented for Life · dSPACE · Fraunhofer IESE · LIEBHERR · MIC 4.0 MACHINES IN CONSTRUCTION · MRE | RWTH AACHEN UNIVERSITY · OECONOS · SATEL · SIEMENS · Sontheim · VOLVO

An event organized by VDI Wissensforum GmbH
www.vdi-international.com/ 01KO902023

09:00   Registration & Welcome Coffee

10:00   Chair's Welcome and Opening Address

Opening Keynote Sustainable Machinery

10:15   R9XX H2 - The First Hydrogen-Powered Crawler Excavator from Liebherr
- Reduced CO2 footprint
- Equipment presentation
- Infrastructure and refueling in the field

Benjamin Künstle, Managing Director, Technical & Quality Department & **Henrik Weitze**, Project Manager / Engineering - Process, both: Liebherr France, France

I. Autonomous Mobile Machinery

10:45   Lessons in Fielding Autonomy via a common Technology Platform in Mining, Ag, Logistics, and Landscaping
- Leveraging ROS 2 for integrating 3rd party equipment manufacturers
- Common Functional Safety threads across applications
- Challenges experienced because of the differences between applications
- Reuse made possible through common hardware and software platform building blocks

Mel Torrie, CEO Autonomous Solutions Inc. (ASI), USA

11:15   Real (-time) Challenges for Autonomous Off-Highway Tracked Vehicle Simulation including Soft Soil Effects
- SIL and HIL test environments for autonomous off-highway vehicles
- Real-time off-highway simulation including soft-soil mechanisms
- Terrain interaction of tracked vehicles

Frank Schulte, Application Engineer, Automated Driving & Software Solutions - Simulation Models & Scenarios, dSPACE GmbH, Germany

11:45   Towards Vehicle Devops
- Highlight current challenges for in-vehicle software development
- Introduce the concept of Vehicle Devops
- Discuss approaches to increase engineering effectiveness

Michael Fait, Software Developer, Consultant, and Head of AV Tech Germany, Thoughtworks, Germany

12:15   🍽 Lunch

II. Cyber Security for Connected Off-Highway Machines

13:45   Fight against Cyberthreats - An Overview of current Developments in Cybersecurity
- Cyberthreats and cyberattacks
- Current standards and regulations on cybersecurity
- „Light" - CSMS
- Cyber Resilience Act

Dr. Christa Hoffmann, Partner, oeconos GmbH, Germany,
co-author: Prof. Dr. Roland Haas, International Institute of Information Technology Bangalore, India

14:15   Cybersecurity for Autonomous Construction Machines
- Autonomous construction vehicles and their application
- Security requirements derived from autonomous construction machines
- Threat Analysis and Risk Assessment

Philipp Gmaehle, Expert for Cybersecurity Robotics und Cloud Services, Bosch Engineering GmbH, Germany

14:45   Challenges and Solution Approaches Regarding the Safety Assurance of Systems with Machine Learning Components
- Existing challenges regarding the safety assurance (safety and also security) of systems with machine learning components
- Overview of possible solutions
- Presentation of current research on how to deal with uncertainties regarding the output of machine learning components

Daniel Schneider, Department Head Safety Engineering, Fraunhofer-Institut für Experimentelles Software Engineering (IESE), Germany

15:15   ☕ Networking & Coffee Break

Interactive Session: World Café

15:45   Join us for interactive round table discussions with industry experts. Share and address challenges within your sector, identify problems and needs, and explore solutions. Bring your own experiences and cases to the table. Don't miss out on this chance to connect with your industry colleagues.

17:15   End of Conference Day One

17:30 Get-together:
At the end of the first day we kindly invite you to use the relaxed and informal atmosphere for in-depth conversations with other participants and speakers

09:25 Chair's Opening

III. Data-Driven Business and Technologies

09:30 MiC 4.0 – One Digital Language
- Common understanding of data and its meaning
- Manufacturer-independent and machine-independent
- Individual solutions of singular manufactures are no longer desired by the users
- Open and usable for every interested company

Dr. Darius Soßdorf, Machines in Construction (MiC) 4.0, VDMA, Germany

10:00 Edge Computing: Opportunities and Challenges in the Construction Equipment Domain
- Edge Computing as enabler for on-site solutions in construction equipment domain
- Opportunities and challenges analyzed from different perspectives
- Edge computing is a location sensitive concept of distributed computing

Dr. Michael Schwall, Emerging Technologies / Research Engineer, Volvo Construction Equipment, Germany

10:30 Recap World Café Session
We will be reviewing the results and key takeaways gained from the diverse perspectives shared by our participants. This is an opportunity to reflect on the ideas and solutions generated during the World Café and to gain a deeper understanding of the challenges and opportunities facing our industry.

11:00 ☕ Networking & Coffee Break

IV. Wireless Connectivity for Vehicles

11:30 Wireless Communication in Mining - Development and Validation of 5G in an Underground Salt Mine
- Challenges of wireless communication technologies in underground mining
- Development, deployment and validation of a 5G network in an underground salt mine
- Investigation of various antenna technologies (beaming antenna, leaky-feeder-cables)

Johannes Emontsbotz, Senior Engineer, Institute of Mineral Resources Engineering, RWTH Aachen University, Germany

12:00 Learnings from the Field: 5G and WiFi as Wireless Connectivity for Off-Highway Machinery
- Key differences of the technologies for the real-life implementation
- Smart combination of the 5G/WIFi
- Antenna setup for the connectivity

Heikki Keränen, Head of Technology, Satel Oy, Finland

12:30 🍽 Lunch

14:00 Industrial 5G: Mobile Connectivity at its Best!
- Industrial needs and requirements of 5G technology
- Private networks combined with private spectrum ensure optimal data privacy
- Which industrial use cases are we able to tackle with 5G?

Jasmin Heller-Gambel, Sales Director of Industrial Wireless communication, Siemens AG, Germany

V. Fleet Management & Fleet Maintenance

14:30 Lifecycle of Connected Machines including Embedded Diagnostics and Fleet Management – Optimized for Off-Highway-Approach
- Integrated telemetry unit as the central gateway for secure access to the machine
- Implemented standardized and platform-independent remote diagnostics
- FOTA functionality for safe and easy updates of fleets
- Holistic lifecycle of the mobile machine, integrated in a state-of-the art fleet management system

Dipl.-Ing. Andreas Wehrmann, Product Manager IoT Services and OEM Diagnostic Applications, Sontheim Industrie Elektronik GmbH, Germany

15:00 Preparing for CASE 2.0 and Overcoming the Dependency on in-vehicle Hardware with Comprehensive Connectivity
- Full-lifecycle vehicle management from pre-production to end of life with full-vehicle FOTA/SOTA updates, data logging, and remote commands
- Future-proofing fleets to support the deployment of new features and product enhancements
- Ways to enable seamless workflows across engineering, development, and product teams
- The technological benefits to design, service, and customer experience Fleet Management Strategies and Solutions

Steve Schwinke, Vice President Customer Engagement, Sibros, USA

Out of the Box

15:30 Off-Highway UX Development Can Surpass Mainstream Automotive
- Dealing with data privacy
- Configurability and personalization
- From physical gauges to all digital displays – safety matters
- Outsourcing without losing control of your design

Jason Williamson, Vice President of Marketing, Altia, USA

16:00 Conference Chair's Closing Remarks

16:15 End of Conference
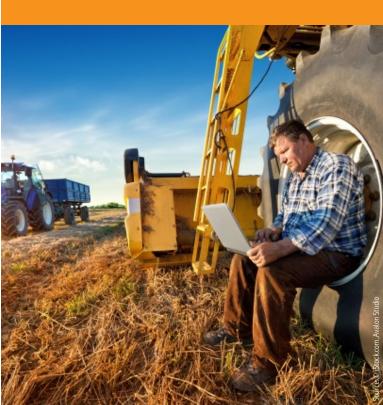
7th International VDI Conference
Smart Farming

Date and venue:
April 24-25, 2023
Dusseldorf, Germany

Renowned speakers will present their results on the following topics:

- Smart Implements – The Role of Advanced Technologies for Future Farming
- Farm Data Interoperability
- Challenges on the Way to AutonomyCrop Automation – Technology, Growers and Start-up Perspectives
- Decoupling Safety and Ag-Robotics Development

https://www.vdiconference.com/12KO100023

7th International VDI Conference
Autonomous Trucks

Date and venue:
April 24-25, 2023
Dusseldorf, Germany

Renowned speakers will present their results on the following topics:

- Drivetrain Solutions for Autonomous Trucks
- Data handling and data regulations
- LIDAR and sensor fusion
- Connectivity, vehicles control and on-board software
- Digital services for commercial vehicles

https://www.vdiconference.com/01KO915023

Exhibitors

3D Mapping Solutions GmbH
Arcure SA
dSPACE GmbH
NOFFZ Technologies GmbH
Sontheim Industrie Elektronik GmbH
Völkel Mikroelektronik GmbH

Supporting Experts

Dan Danford, Global Industry Relations Manager, CNH Industrial America LLC, USA
Martin Frank, Senior Specialist Smart Systems, Research Program Owner, Volvo Construction Equipment Germany GmbH, Germany
Michael Gomes, V.P., Strategic Business Development, Topcon Agriculture, USA
Eugen Schobesberger, Managing Director, Liebherr-EMtec GmbH, Germany

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Conference venue
Van der Valk Airporthotel Düsseldorf
Am Hülserhof 57
40472 Düsseldorf, Germany
Phone: +49 211/20063-0
Email: dusseldorf@valk.com

HRS Das Hotelportal

You will find more hotels close to the venue at www.vdi-wissensforum.de/hrs

Hotel room reservation:
A limited number of rooms has been reserved for the benefit of the conference participants at the Van der Valk Airporthotel Düsseldorf.
Please refer to "VDI Conference". For more hotels: www.vdi-wissensforum.

VDI Wissensforum service package: The conference package includes the conference documents (online), beverages during breaks, lunch and the get-together on April 24, 2023.

Conference attendance conditions and terms can be found on our website: www.vdi-wissensforum.de/en/terms-and-conditions/

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Please submit your topic to:
Annick Cathrin Pauwels
Product Manager International Business
Phone: +49 211 6214-8646
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Registration

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VDI

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Yes, I will participate as follows:

Participation Fee + VAT

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(01KO902023) **€ 1990**

☐ I am interested in sponsoring and/or exhibition

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