

VDI

2nd International VDI Conference Electrified Off-Highway Machines

March 03-04, 2020, Dusseldorf, Germany

- New Electrification Solutions for increased Efficiency and lower Emissions
 - Hybridization of Off-Highway Machines
 - Developments in Battery Technology
 - Well-to-Wheel: Alternative Fuels and Powertrain Solutions
 - Practical Experiences and Use Cases
- + Panel Discussion on „Net Zero - Carbon-free Economy“

Meet international Experts from:



An event organized by VDI Wissensforum GmbH
www.vdi-international.com/01K0934020



08:30 Registration & Welcome Coffee

10:00 Chair's Welcome and Opening Address

I. Electrification Trends and Developments

10:15 New Electrification Solutions: Higher Performance and lower Emissions

- Hydraulic and electric solutions for the mobile equipment industry
- Mega trends leading to global changes in regulation and technology shift towards electrification
- Capabilities and challenges of different technologies
- Introduction of electrification case studies

Simon Nielsen, Senior Systems Engineer, co-author: Markus Plassmann, Manager, Electric Drive Systems, both: Danfoss Power Solutions, Germany

10:45 Construction Machine Electrification: Applications & Requirements

- Relevant trends and how they influence manufacturers and users
- Influence of emissions regulations on the operation of construction machines
- The right degree of electrification for different applications and duty cycles
- Advantages for operators and TCO

Ralf Blum, Product Manager, FEV Europe GmbH, Germany

11:15 Drive and Motion Engineering Strategies at the Tipping Point for Electrification

- Impacts of electrification on off-highway drive and motion technologies
- Energy sources, electrified systems and energy management systems
- Lessons learned from light- and commercial-vehicle applications
- Balancing a system approach with distinct duty-cycle requirements
- Development case study: Compact electrified vehicle

Johnnie Rask Jensen, Director, Global Markets & European Sales, Dana Incorporated, Denmark

11:45 Electrification Trends in Underground Mining Equipments

- Driving factors for electrification in underground mining
- Battery electric equipment and fleet development
- Battery chemistry and cells preferred by the underground mining industry
- Battery electric equipment charging strategy
- Challenges associated with Electrification in Underground Mining

Souvik Mahanti, Engineering Manager Electrical, Komatsu Mining Corporation, India

12:15  Lunch

13:45 Mobile Market: Off-Highway Machines Electrification

- Wide-ranged requests demanding for flexibility on the mechanic/electric side
- Electric motor/kit version for specific customer applications and requirements
- EHP concept: An optimised solution thanks to many parameters to adjust
- GVI inverters to provide customers with a complete electrified system

Bruno Jouffrey, Market Development Manager - Mobile Europe, Parker Hannifin Manufacturing, France

II. Electrified Powertrain Use Cases

14:15 Fendt e100 Vario – Chances and technical Challenges

- Concept of the Fendt e100 Vario
- Challenges for a battery driven tractor
- Chances for the future

Wolfgang Breu, R&AE / Project Lead Electrification & **Christian Noess**, R&AE / Software Engineering, both: AGCO GmbH, Germany

14:45 Assessment of a 3.5t compact Excavator Electrification using Simulation

- Low emission zones, workplace emissions regulations, StageV below 19kW
- System simulation is a key asset for supporting electrification
- Enabling to identify electrical system requirements
- Supporting the pre-sizing of electric motor, power electronics and battery
- Addressing validation of components development vs system requirements

Christopher Helbig, PreSales Solutions Consultant, co-author: Romain Nicolas, Business Developer Off-Highway, both: Siemens Digital Industries Software, Germany/ France

15:15  Networking & Coffee Break

III. Hybridization of Off-Highway Machines

15:45 Mild-hybrid Powertrain: Engine Downsize on specialty Tractors

- Mild hybrid powertrain development to downsize internal combustion
- Engine downsize to reduce geometry impact linked to aftertreatment installation
- Optimized support for diesel engine overloads thanks to smart boost function
- Fuel consumption minimization

Giacomo Fiocchi, Powertrain & Control Systems Director, co-author: Fabio Gallo, Driveline Application, Project Management & Prototypes Director, both: Carraro S.p.a., Italy

16:15 Rapid Hybrid System Optimisation for Off-Highway Electrification

- Fuel savings through hybridization, considering vehicle parameters & duty cycle
- Modular hybrid systems to bring advantages across a range of machines
- Ricardo Architecture Independent Modelling (AIM) to identify the optimum hybrid system for each machine and duty cycle

Pascal Reveareault, Principal Engineer, Simulation and Digitalisation, Ricardo, UK, *Live Broadcast*

16:45 End of Conference Day 1



Get-together

At the end of the first conference day we kindly invite you to use the relaxed and informal atmosphere for in-depth conversations with other participants and speakers.

Wednesday, March 04, 2020

2nd day

IV. Battery Development and Technology

09:00 Light Vehicle Battery Trends - Implications for electrified Non-Road Machines

- Trends in automotive battery cost, performance and pack size
- Global units and capacity
- Capacity constraints

Adam Panayi, Managing Director, Rho Motion, UK

09:30 Design2Cost: Large Batteries at small Scales

- Today's limited competitiveness of electric commercial vehicles
- What are a battery's identity and value?
- Universal battery kit: Who profits from common specifications? What would these look like?

Dr. David Flaschenträger, Technical Manager Battery, Quantron AG, Germany

10:00 Optimization of BTMS System Operation in Off-Highway Applications

- Available BTMS operation modes/control strategies
- System design vs. application
- How to make Battery Thermal Management Systems more efficient?
- How can we further improve BTMS?
- Can we predict failures of BTMS?

Tomasz Turek, R&D Manager/BEV Segment Leader, co-author: Dr. Barbara Worsztynowicz, Thermal Management Engineer, both: Enterex Polska sp. z o.o., Poland, *Live Broadcast*

10:30  Networking & Coffee Break

11:00 **Panel Discussion:** Net Zero - Carbon-free Economy. Is it realistic? What Challenges are we facing? What are possible technical Solutions? What are Alternatives to Electrification?

12:00  Lunch

V. Well-to-Wheel: Alternative Powertrain Solutions

13:00 Future sustainable Fuels for Off-Highway Applications

Dr. Penny Atkins, Principal Research Fellow, Advanced Engineering Centre, University of Brighton, UK

13:30 First Zero Emission Drive Technology that beats Diesel

- Worldwide governments force the automotive industry to cut CO2 emissions
- Climate change – Customer requirements for new drive technologies
- The new emission-free hydrogen combustion engine – Sustainable, clean and uncompromising
- Comparison of alternative propulsion technologies
- HICE Applications: Example 12m bus & 18t truck

Alvaro Sousa, CTO, KEYOU GmbH, Germany

14:00  Networking & Coffee Break

14:30 An Alternative to Decarbonization

- Renewable diesel can reduce CO2 up to 90%
- Technical characteristics of renewable diesel
- Neste's renewable solutions in general

Peter Zonneveld, VP Sales Renewable Road Transport Europe & APAC, Neste S.A., Switzerland

15:00 Potential for Fuel Cells in Non-Road Applications

- Fuel cell technology pros and cons
- Architectures and scalability
- Performance characteristics

Ing.Bc. Joanna Richart MBA, Business Development Director, Intelligent Energy, UK, *Live Broadcast*

15:30 Closing Remarks

15:45 End of conference

5th International VDI Conference

Connected Off-Highway Machines

From smart Sensors to smart Systems

Date and Venue:

March 03-04, 2020

Van der Valk Dusseldorf, Germany

Following Topics will be discussed:

- Data-driven Business and Innovation
 - Coordinating Data Management across multiple Stakeholders
 - Remote Monitoring for enhanced Efficiency and Maintenance
 - Connected Vehicle Technologies and 5G
 - Automation on the Machine and on the Edge
- + Panel Discussion on „Changing Competencies due to Digitization“
+ Interactive World Café Sessions
+ Workshop on Machine Data

www.vdi-international.com/01K0902020

Participants
are eligible to
attend the parallel
conferences free of
extra charge



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4th International VDI Conference

Smart Farming

Date and Venue:

March 03-04, 2020

Van der Valk Dusseldorf, Germany

Following Topics will be discussed:

- When Digital meets Physical: An Automation Journey
 - Autonomous Tractors – A Short Term Reality?
 - How to create a digital Data Ecosystem with the Farmer at the Steer
 - Combining Flexible Agricultural Services and Data Sovereignty
 - Measuring the CO2 Impact of Agriculture
- + Interactive Round Table Discussions
+ Workshop on Turning Data into Value

www.vdi-international.com/12K0100020



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Alex Woodrow B.Eng., Managing Director, Knibb, Gormezano and Partners, UK

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Become a speaker at our international VDI Conferences. Make yourself known in the industry and discuss best practice examples with other international experts. We are looking for speakers on: Autonomous Trucks, Sensors for Off-Highway Machines, Alternative Powertrains for Commercial Vehicles

Please submit your topic to:

[Benedikt Rothhagen](#)

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Registration

Terms and Conditions

Registrations: Registrations for conference attendance must be made in writing. Confirmation of your registration and the associated invoice will be mailed to you. Please do not pay your conference attendance fee until you have received our invoice and its invoice number to be stated for transfer. Dutch VAT directives apply. Please state your VAT-ID with your registration.

Conference venue

Van der Valk Airporthotel Düsseldorf
Am Hülserhof 57
40472 Dusseldorf
Phone: +49 211/20063-0
Email: duesseldorf@valk.hrm



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.de/hrs

VDI Wissensforum service package:

The conference package includes the conference documents (online), beverages during breaks, lunch and the get-together on March 3, 2020.

Conference attendance conditions and terms: By way of your registration you accept the conference attendance conditions and terms of VDI Wissensforum GmbH as binding. Any cancellation of your registration must be made in writing. We will charge you only an administrative fee of € 50.00 plus German VAT if you cancel your registration earlier than 14 days ahead of the conference date. Any cancellation that reaches us after this deadline will entail the conference attendance fee as stated in our invoice to be charged in full. The date of the post office stamp of your written cancellation will be the decisive criterion. In that case, we will gladly mail you the conference documents on request. Subject to agreement, you may name a substitute participant. Individual parts and sections of conferences and seminars cannot be booked. You will be informed without delay if an event has to be cancelled for unforeseeable reasons. In that instance, you will be entitled only to a refund of your conference attendance fee if already paid. We reserve the right to exchange speakers and/or change the program sequence in exceptional cases. In any case, the liability of VDI Wissensforum GmbH is restricted exclusively to the conference attendance fee.

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Register online!

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VDI Conference 03.-04.03.2020
(01K0934020) € 1840

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