

Program

# E-MOTIVE

by FVA



13th International Expert Forum:

## E-MOTIVE

### The Online Conference for Electric Mobility

21-23 September, 2021 | Online Live Event

[e-motive.net](https://e-motive.net)

Supported by



DAY 1 > 2021-09-21

**Applications and Experience**

9:00 **Opening**  
Dr. Tobias Böhm, Volkswagen AG

**Keynote**

9:10 **Study AiW III – Vehicle Electrification and transformation of the industry**  
Dr. Michael Wittler, FEV Consulting GmbH / Kai Krüger, FEV Consulting GmbH

9:40 **FUCHS latest generation dielectric thermal management fluids for direct and immersion cooling: battery packs, traction motors and power electronics**  
Thomas Kraft, Fuchs Schmierstoffe GmbH

10:05 **Break**

10:10 **Vehicle-level efficiency optimization for BEVs on the example of a Mercedes EQC 400**  
Timo Wehlen, ZF Friedrichshafen AG

10:35 **Break**

10:40 **Highly Efficient 2-Speed Shifting Device for Cruising Range Extension for EVs**  
Akihiro Yamamoto, NSK Ltd.

11:05 **Break**

11:10 **Holistic development of autonomous bus shuttles with electric drives**  
Dr.-Ing. Frank Adam, TU Dresden, Institute of Lightweight Engineering and Polymer Technology (ILK)

11:35 **Lunch break**

**Drive System I**

12:30 **Objectives for the NVH development of electric powertrains from a vehicle perspective**  
Hendrik Ruppert, FEV Europe GmbH / Katja Fröhlingdorf, RWTH Aachen University, Institute for Combustion Engines (VKA)

12:55 **Break**

13:00 **Traction Drives with SiC Inverters: Optimized Modelling and Design / Electrical Machines and Filter Configurations**  
M.Sc. Hedieh Movagharnjad, Leibniz University Hannover, Institute for Drive Systems and Power Electronics (IAL)

13:25 **Break**

13:30 **Heat sink design for direct double-sided liquid cooling of SiC power semiconductors**  
M.Sc. Simon Cepin, OWL University of Applied Sciences and Arts, Institute Future Energy (iFE)

13:55 **Break**

14:00 **Freewheels in E-Motive Drive Systems**  
Dipl.-Ing. Thomas Heubach, RINGSPANN GmbH

14:25 **Coffee break**

**DAY 1 > 2021-09-21**

**Battery I**

- 15:00 **SiCWell – the impact of fast-switching SiC power semiconductors on vehicle battery lifetime**  
Michael Schlüter, TU Berlin, Department of Power Electronics
- 15:25 **Break**
- 15:30 **Immersion Cooled Battery Systems for High Power Charging and Long Battery Lifetime**  
André Loges, MAHLE International GmbH
- 15:55 **Break**
- 16:00 **Foreign Object Detection on High-Voltage Batteries**  
Simon Rünzi, SICK AG
- 16:25 **Break**
- 16:30 **Battery Era – Enabling E-Mobility and Value Chain Implications**  
Srinath Renegarajan, Oliver Wyman GmbH / Simon Schnurrer, Oliver Wyman GmbH
- 16:55 **Event end 1. day**

**DAY 2 > 2021-09-22**

**E-Motor**

- 9:00 **Inverter coupled FEM simulation of permanent magnet synchronous machines with variable switching frequency**  
Robin Krüger, Mercedes-Benz AG / Samar Singh, Mercedes-Benz AG
- 9:25 **Break**
- 9:30 **A novel electric machine with direct conductor cooling for very high current densities**  
Dennis Jahnke, Fraunhofer Institute for Manufacturing Technology and Advanced Materials (IFAM)
- 9:55 **Break**
- 10:00 **Optimization of Hairpin End Turn Connections for Additive Manufacturing**  
M.Sc. Lasse Berling, Additive Drives GmbH / Dr. Jakob Jung, Additive Drives GmbH
- 10:25 **Break**
- 10:30 **Reduced order electrical machine models in multi-body noise and vibration analysis of electric drive trains**  
Dr.-Ing. Enno Lange, Dassault Systèmes
- 10:55 **Break**
- 11:00 **How to select the right insulation material for eMobility motors**  
Dipl.-Ing. Mario Kuschnerus, ELANTAS Europe GmbH
- 11:25 **Lunch break**

DAY 2 > 2021-09-22

**Production**

- 12:30      **No E-mobility without heat treatment: Review from a supplier's perspective**  
Dr. Klaus Buchner, Aichelin Holding GmbH
- 12:55      **Break**
- 13:00      **Overcoming challenges in battery manufacturing with high brightness center mode fiber lasers**  
Dr.-Ing. Peter Kallage, Coherent Inc.
- 13:25      **Break**
- 13:30      **System design for reliable and robust laser-welding of copper in automotive series production**  
Dipl.-Ing. Stefan Mücke, Scansonic MI GmbH
- 13:55      **Break**
- 14:00      **Reliable and Quick Leak Testing in E-Mobility**  
Patrick Reich, ZELTWANGER Dichtheits- und Funktionsprüfsysteme GmbH
- 14:25      **Coffee break**

**Power Electronics**

- 15:00      **Requirements on SiC-half-bridge assemblies – semiconductor, design, thermal management and materials – using the example of German public funded project BMBF-SiCool**  
Dr. Martin Rittner, Robert Bosch GmbH
- 15:25      **Break**
- 15:30      **3D power module concept with GaN HEMTs**  
M.Sc. Christian Voigt, Fraunhofer Institute for Reliability and Microintegration (IZM)
- 15:55      **Break**
- 16:00      **SiC Inverter for electric high-speed drivetrains**  
M.Sc. Dominik Reitmeier, Leibniz University Hannover, Institute for Drive Systems and Power Electronics (IAL)
- 16:25      **Break**
- 16:30      **Thermal Monitoring of Power Electronics in Electric Drive Trains**  
Sven Kalker, RWTH Aachen University, Institute for Power Electronics and Electrical Drives (ISEA)
- 16:55      **Break**
- 17:00      **Identification and Compensation of Parasitic Impacts on TSEP-Based Condition Monitoring**  
Daniel Herwig, Leibniz University Hannover, Institute for Drive Systems and Power Electronics (IAL)
- 17:25      **Event end 2. day**

DAY 3 > 2021-09-23

## Battery II

- 9:00 **Volume change characteristics of commercial lithium-ion battery cells during cycling obtained by pressure measurements with a mechanical press**  
Julian Engeser, Fraunhofer Institute for Solar Energy Systems (ISE)
- 9:25 **Break**
- 9:30 **Meaningful characterization of battery cells and systems with current pulses**  
Maximilian Bruch, Fraunhofer Institute for Solar Energy Systems (ISE)
- 9:55 **Break**
- 10:00 **Contribution to Safer Lithium Batteries**  
Peter Kritzer, Freudenberg Sealing Technologies
- 10:25 **Break**
- 10:30 **European cell production – current status and future developments**  
Dr.-Ing. Dipl.-Wirt. Ing. Heiner Heimes, RWTH Aachen University, Production Engineering of E-Mobility Components (PEM)
- 10:55 **Break**
- 11:00 **Replication of the thermal behaviour of lithium-ion cells? Substitute cells as a development tool**  
Philipp Seegert, Karlsruhe Institute of Technology (KIT), Institute of Technology Institute of Thermal Process Engineering (TVT)
- 11:25 **Lunch break**

## Fuel Cell

- 12:30 **Numerical analysis of a micro-environment concept for a Membrane Electrode Assembly production line**  
M.Sc. Ling Ma, Karlsruhe Institute of Technology (KIT), wbk Institute of Production Science
- 12:55 **Break**
- 13:00 **Modular Energy Storage System for Hybrid FCEV**  
Dr.-Ing. Andreas Viehmann, EDAG Engineering GmbH
- 13:25 **Break**
- 13:30 **Fuel Cell Stack Diagnostics: Overview and Industrial Application**  
Dr. Daniel Ritzberger, AVL List GmbH
- 13:55 **Break**
- 14:00 **HyFab: Research for the production of fuel cell stacks**  
Dr. Ludwig Jörissen, Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW)
- 14:25 **Coffee break**

**DAY 3 > 2021-09-23**

**Drive System II**

- 15:00 **Trends in powertrain development: Vehicle efficiency as a major success factor?**  
M.Sc. Jakob Groß, P3 automotive GmbH
- 15:25 **Break**
- 15:30 **Tool-independent simulation of electric drive systems with the E-Workbench**  
Meik Ehlert, Fraunhofer Institute for Mechatronic Systems Design (IEM)  
M.Sc. Matthias Kalla, Leibniz University Hannover, Institute for Drive Systems and Power Electronics (IAL)
- 15:55 **Break**
- 16:00 **Assessment of the NVH Behaviour of a Hyper-Highspeed Electric Drivetrain for Passenger Vehicles**  
Benjamin Schmelzle, AVL Deutschland GmbH
- 16:25 **Break**
- 16:30 **Application of High Performance Polymer Gears in Light Urban Electric Vehicle Powertrains**  
M.Sc. Stefan Reitschuster, TU Munich, Institute of Machine Elements / Gear Research Centre (FZG)
- 16:55 **Closing**  
Dr. Tobias Böhm, Volkswagen AG
- 17:15 **Event end 3. day**



**Conference Management**

Alexander Raßmann, T +49.69.6603-1820  
alexander.rassmann@vdma.org

**Conference Organisation**

Michelle Broller, T +49.69.6603-1189  
michelle.broller@fva-service.de

**Contents responsibility**

Forschungsvereinigung Antriebstechnik e.V. (FVA)  
Forschungsvereinigung Verbrennungskraftmaschinen e.V. (FVV),  
Lyoner Straße 18, D-60528 Frankfurt

**Organiser**

FVA GmbH, Lyoner Straße 18, D-60528 Frankfurt  
More information at [e-motive.net](http://e-motive.net)