



16th International Conference

# Commercial Vehicles 2021

– Truck, Bus, Van, Trailer –

September 7 - 8, 2021, Linz, Austria



**VDI-BERICHTE**

Editor:

VDI Wissensforum GmbH

**Bibliographische Information der Deutschen Nationalbibliothek**

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliographie; detaillierte bibliographische Daten sind im Internet unter [www.dnb.de](http://www.dnb.de) abrufbar.

**Bibliographic information published by the Deutsche Nationalbibliothek (German National Library)**

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliographie (German National Bibliography); detailed bibliographic data is available via Internet at [www.dnb.de](http://www.dnb.de).

**© VDI Verlag GmbH · Düsseldorf 2021**

All rights reserved, including reprinting, reproduction (photocopying, microcopy), storage in a retrieval system, and use of the information on this website are reserved.

Data processing equipment and the translation, in whole or in part.

The VDI report, which contains the presentations of the conference, appears as unedited manuscript print.

The individual contributions give the views and experiences of the respective participants based on personal insights lecturers or authors again. Printed in Germany.

ISSN 0083-5560

ISBN 978-3-18-092380-2

<https://doi.org/10.51202/9783181023808-1>

Generiert durch IP "13.59.136.217", am 06.05.2024, 06:23:00.

Das Erstellen und Weitergeben von Kopien dieses PDFs ist nicht zulässig.

# Content

## ► Ways to achieve Zero Emission

---

<b>ZF E-Mobility products and software for commercial vehicles</b> . . . . .	1
D. Morgenweck, M. Großmann, W. Fakler, M. Lamke, F. Bitzer, ZF Friedrichshafen AG, Friedrichshafen	
<b>Thermoelectric generators for heavy-duty vehicles as an economical waste heat recovery system</b> . . . . .	17
L. Heber, J. Schwab, T. Knobelspies, German Aerospace Center (DLR e.V.), Institute of Vehicles Concepts, Stuttgart	
<b>Hybridization of heavy duty trucks – Market analysis and technology for high voltage as well as low voltage solutions.</b> . . . . .	33
M. Holzer, F.-D. Speck, ZF Group, Friedrichshafen	

## ► Development processes and methods

---

<b>Lightweight construction and cost reduction – a lean, agile MSCDPS® product development process</b> . . . . .	43
J. Ebert, Cornelia Keller-Ebert, Ebertconsulting GmbH, Köln	
<b>eDrive &amp; Fuel Cell powertrain systems engineering for commercial vehicles</b> . . . . .	55
H. Ulmer, M. Rothschuh, F. Brinkmann, R. Wascheck, T. Delebinski, IAV GmbH, Gifhorn	
<b>Fatigue development of a 10x10 commercial vehicle frame using dynamic and/or strength simulation, virtual iteration and component testing together with measurement data acquisition</b> . . . . .	73
T. Mrazek, K. Puchner, D. Übellacker, Engineering Center Steyr GmbH & Co KG, St. Valentin, Austria	
<b>Data-driven selection of vehicle variants for the E/E integration test – Increasing variants and complex technology versus test coverage</b> . . . . .	81
T. Schulz, S. Herrmann, Volkswagen AG, Wolfsburg	

## ► Hydrogen propulsion

---

- High performance and efficiency hydrogen engine using westport fuel systems'  
Commercially available HPDI fuel system . . . . .** 97  
S. Baker, S. Munshi, J. Huang, Westport Fuel Systems Inc, Vancouver, Canada
- E/E architecture and operating strategy for fuel-cell trucks –  
Challenges and solutions for energy- and cost-efficient operation . . . . .** 117  
J. Pell, I. Müller, W. Gruber, A. Schilk, AVL CDTE, Steyr, Austria

## ► Transport efficiency

---

- Tire contribution to truck sustainability – Roadmap to 2030. . . . .** 135  
J. F. Beaupère, F. Domprobst, Michelin, Clermont-Ferrand, France
- Consumption-optimized planning of transport missions using virtual drives. . . . .** 149  
C. Biedinger, T. Halfmann, M. Speckert, Fraunhofer ITWM, Kaiserslautern;  
C. G. Berges, P. Cuny, Collecte Localisation Satellites, Ramonville Saint-Agne, France
- Concept study of a commercial vehicle suspension with optional electric machines . . . . .** 167  
L. Matthies, C. Frey, University of Applied Sciences and Arts  
Hildesheim/Holzminden/Göttingen (HAWK)
- The chassis remains the backbone of road transport → smart & light . . . . .** 179  
H. Bublies, ZF Friedrichshafen AG, Stemwede,  
T. Dieckmann, ZF Group, Commercial Vehicle Control Systems, Hanover

## ► Automated Driving

---

- Intelligent automated driving features for refuse collection vehicles. . . . .** 189  
T. Mauthner, G. Hasenbichler, AVL List GmbH, Graz, Austria;  
B. Henriques M.Sc., AVL SFR, Regensburg

## ► IOT, Connectivity and Digitalisation

---

- Towards the standardization of a high speed truck-trailer data connection. . . . .** 205  
K. Feyerabend, A. Goers, ZF Group,  
Commercial Vehicle Control Systems, Hanover, Germany

► **Urban Traffic in tomorrow's World – Public transport**

---

**Automated and networked city buses – Optimized, demand-oriented service through intelligent use of data . . . . . 215**  
N. Rossel, M. Sommer, E. Sax, Karlsruhe Institute of Technology, Karlsruhe

**Health & safety in public transport – Better climate and optimized hygiene in times of COVID-19 . . . . . 229**  
C. Glöggler, C. Neuschl, A. Zaiser, D. Denzel, Daimler Buses, EvoBus GmbH, Neu-Ulm

**MAN Truck & Bus SE – Shaping the future of mobility . . . . . 245**  
S. Schönherr, T. Bergmaier-Trede, MAN Truck & Bus SE, Munich

► **IOT, Connectivity and Digitalisation (II)**

---

**Simply connected – The central, configurable control system for full interlinking across systems for trucks, busses and light commercial vehicles . . . . . 271**  
O. Treichel, XTRONIC GmbH, Böblingen

**Standardized body builder network with cloud connection . . . . . 283**  
H. Zeltwanger, CAN in Automation e. V., Nuremberg

## ► Program Committee

---

Dipl.-Ing. Matthias Bengl, Iveco Magirus AG, Ulm, Germany

Dr. Thomas Dieckmann, ZF Group/Commercial Vehicle Control Systems, Hanover, Germany

Prof. Dr.-Ing. Jörg Ebert, Ebertconsulting GmbH, Cologne, Germany

Dipl.-Ing. Christof Kerkhoff, VDI e. V., Dusseldorf, Germany

Torsten Klein, Volkswagen AG, Wolfsburg, Germany

Dipl.-Ing. Jörg Lützner, Continental Automotive GmbH, Schwalbach, Germany

Jack Martens, DAF Trucks N.V., Eindhoven, The Netherlands

Dr. Karl Masser, Magna Powertrain Engineering Center Steyr GmbH & Co. KG, St. Valentin, Austria

Herbert Mozer, ZF Group, Friedrichshafen, Germany

Dipl.-Ing. Thomas Nickels, MAN Truck & Bus SE, Munich, Germany

Ing. Wolfgang Prokopp, Daimler Buses - EvoBus, Ulm, Germany

Dipl.-Ing. Uwe Sasse, Fahrzeugwerk Bernard Krone GmbH, Werlte, Germany

Prof. Dr.-Ing. Karl Viktor Schaller, Munich, Germany

Dr. Jürgen Wagner, MAN Truck & Bus SE, Munich, Germany

Enrico Wohlfarth, Daimler Truck AG, Esslingen, Germany





**INGENIEUR.de**  
TECHNIK - KARRIERE - NEWS

powered by VDI Verlag

# Starten Sie durch – auf INGENIEUR.de!

**Das TechnikKarriereNews-Portal für  
Ingenieure und IT-Ingenieure.**

Was immer Sie für Ihre Karriere brauchen – Sie finden es auf ingenieur.de:  
Auf Sie zugeschnittene Infos und Services, Stellenangebote in der Jobbörse,  
Firmenprofile, Fachartikel, Gehaltstest, Bewerbungstipps, Newsletter und alles  
zu den VDI nachrichten Recruiting Tagen.

<https://doi.org/10.51202/9783181023808-1>

Generiert durch IP "13.59.136.217", am 06.05.2024, 06:23:00.

Das Erstellen und Weitergeben von Kopien dieses PDFs ist nicht zulässig.

