20th International VDI Congress

June 24 and 25, 2020, Bonn, Germany

Main topics:

- New series solutions from international OEs
- Integration of regulatory measures in the development
- Optimized mechanical components for hybrids and electric drives
- Concepts for conventional and electrified drives
- Data optimized development methods
- Challenges in systemic integration

Plenary discussion on the topic “2020 – 2025 – 2030: Challenges for technology, market and society” with representatives from the energy sector, automotive industry, science and municipal level

Lecturer companies amongst others

Accompanying events

- 6th International VDI Conference: Powertrain Systems in Mobile Machines
- 3rd International VDI Conference: EDrive

Dritev interactive
- DritevLab
- Speakers Corner
- Dritev Summer Night
- Car Presentation

www.dritev.com
# Program – Overview

## Workshops

**Tuesday, June 23, 2020, Maritim Hotel Bonn**

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>09:00</td>
<td>Hochdrehzahlantriebe zur Realisierung hoher Leistungsdichten</td>
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<td>10:30</td>
<td>Chancen für die agile Systementwicklung durch ASD-Agile Systems Design</td>
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<tr>
<td>12:00</td>
<td>NVH im E-Antriebsstrang</td>
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## 1st Congress Day

**Wednesday, June 24, 2020**

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<th>Time</th>
<th>Event</th>
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<tr>
<td>07:45</td>
<td>Registration</td>
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<tr>
<td>08:30</td>
<td>Welcome address and plenary speeches</td>
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<td>10:40</td>
<td>Coffee break and visit to the exhibition</td>
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<tr>
<td>11:30</td>
<td>Dritev Accompanying conferences</td>
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<tr>
<td>13:00</td>
<td>Lunch and visit to the exhibition</td>
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<tr>
<td>14:30</td>
<td>Dritev</td>
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<tr>
<td>16:00</td>
<td>Coffee break and visit to the exhibition</td>
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<tr>
<td>16:45</td>
<td>Plenary discussion (Room New York)</td>
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<td>18:00</td>
<td>End of the 1st congress day</td>
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<td>18:30</td>
<td>Dritev Football Summer Night</td>
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2nd Congress Day
Thursday, June 25, 2020

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<th>Room New York</th>
<th>Room Nairobi</th>
<th>Room Wien</th>
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08:45 - Dritev Accompanying conferences
- New series solutions
- Drive solutions
- Regulations
- EDrive
- Powertrain Systems in Mobile Machines

10:15 - Coffee break and visit to the exhibition

11:00 - Plenary speeches (Room New York)

12:30 - Lunch and visit to the exhibition

14:00 - Dritev Accompanying conferences
- Powertrain concepts
- Drive solutions
- Methods
- EDrive
- Powertrain Systems in Mobile Machines

16:05 - Conclusions
16:15 - Awarding of the Best Presentation Award for Junior Engineers
16:30 - Closing remarks and end of the congress

This is your international technology congress for powertrain developers in Bonn!
1st Congress Day
Wednesday, June 24, 2020

07:45 Registration

08:30 Opening and welcome address
Dipl.-Ing. Matthias Zink, CEO Automotive, Schaeffler AG, Bühl, Germany

Plenary speeches

09:00 Models for urban mobility of the future in Hamburg
- Field tests of the vehicle industry and mobility service providers in Hamburg
- Hamburg Takt: largest mobility offensive in public transport
- Plans for the expansion of the transport infrastructure
Director of the Senate Martin Huber, Director-General of Transportation and Highways, Ministry of Economic Affairs, Transportation and Innovation, Free and Hanseatic City of Hamburg, Germany

09:25 xEV – state and outlook Europe
- Current registration/sales figures of passenger cars in Europe – Can 2021 targets be achieved – and how?
- EV outlook: EU, China, US, world until 2030 (passenger cars and commercial vehicles)
- Outlook Alternatives: Fuel cells, eFuels
Dr. Wolfgang Bernhart, Senior Partner, co-authors: Dr. Christian-Simon Ernst, Stefan Riederle, all Roland Berger GmbH, Munich, Germany

09:50 100% electrified by 2024 – How Opel becomes an electric brand
- 2020: The year in which e-mobility will take off
- E-mobility requires offers in small car segment
- Flexible multi-energy platforms of Groupe PSA as significant enabler for comprehensive electrification
- Many years of in-field experience with Ampera and Ampera-e as a foundation
- What is next or what will complement? View on fuel cell and synthetic fuels
Dipl.-Ing. Christian Müller, Managing Director Engineering, Opel Automobile GmbH, Rüsselsheim, Germany

10:15 Machine intelligence for construction site 4.0
- Climate protection and emission regulation
- Energy supply (diesel, battery, fuel cell, Power-to-X)
- Increased efficiency through assistance systems and digitalization
Martin Lehner, CEO and Chairman of the Executive Board, Wacker Neuson SE, Munich, Germany

10:40 Be interactive – Meet & Greet in the exhibition area, DritevLab and car presentation

11:25 Change to the parallel lecture series
11:30  Ford mach-e electric drive unit
- In-line battery electric vehicle primary drive unit
- Advanced propulsion technology
- Compact in-line primary drive unit for an all new electric vehicle architecture

Gregory Gardner, M. Sc., Chief Engineer Transmission and Driveline Engineering, Ford Motor Company, Michigan, USA

Future passenger car drivetrains
- Update on fundamental regulations in the next 10 years in main markets
- Rationale of the modular transmission beginning of the 2020ies (CVplus Story)
- Market development scenarios end of the next decade and their probabilities?
- Possible OEM strategies for 2030 ff
- Characteristics of future products

Dr.-Ing. Michael Ebenhoch, Senior Vice President Car Powertrain Technology Development, co-author: Martin Grumbach, both ZF Friedrichshafen AG, Friedrichshafen, Germany

12:00  The front axle drive of the MEB - Volkswagen has expanded its Drive portfolio
- Volkswagen MEB
- Electrical drive
- Vehicle design
- Component design

Peter Lück, Head of Electrified Engines, co-authors: Dr. rer. nat. Karsten Bennewitz, Dr. Jonas Tousen, Dr. Johannes Peter, all Volkswagen AG, Braunschweig, Germany

e-FDU: Concept, develop & industrialization of a novel P4 powertrain
- e-FDU overview: working principle, layout and packaging
- Performances and main technical contents
- Disconnect system, controls and functional safety
- Industrialization and project implementation into production


12:30  Development of new control concept offering enhance drivability of i-MMD hybrid system
- Introduction of latest Honda i-MMD hybrid system
- Drivability strategy for serial hybrid mode
- Development of new i-MMD control concept that realizes both, driving force response and engine speed linearity

Haruhiko Miki, Development Engineer, Honda R&D Co. Ltd., Tochigi, Japan

Development of the new chain CVT for middle capacity
- Development concept of new chain CVT
- Specification overview and features
- Improvement of fuel consumption through wide ratio coverage and reduction of mechanical loss
- Improvement of dynamic quality with NVH and driving performance

Kentaro Sakai, M. Eng., Senior Engineer, Transmission Design Dept., SUBARU CORPORATION, Tokyo, Japan

Rolling into the future – Bearings for e-mobility
- Bearing with integrated position sensor
- Current shunt and current insulation
- New bearing types for locating/non-locating arrangement
- Solutions for friction reduction

Dr.-Ing. Franz Völkel, Vice President R&D BD Transmission Systems, co-authors: Andreas Ziegler, Alexander Schamin, all Schaeffler Technologies AG & Co. KG, Herzogenaurach, Germany

Sealing solutions for e-drivetrains/Radial shaft seal solutions for highest requirements in forward and revers operation
- Application – Interface e-motor reducer gearbox
- Bench testing methods – High speed test benches for component test
- Additional challenges – Comparison requirements conventional gearboxes vs reducer; gearbox – speed level/revers operation
- Solutions – Simmerring solutions. What is already possible today
- Additive features for dynamic seals – Grounding for bearing protection
- Outlook – gas lubricated mechanical face seal for highest requirements

Jens Hofmann, Head of Product Development, co-authors: Günter Hintentang, Vincent Wendel, all Freudenberg Sealing Technologies (FST) GmbH & Co. KG, Weinheim, Germany

Highly efficient clutch system for multispeed BEV
- Development and testing of an innovative highspeed clutch for speeds up to 30.000rpm
- Efficiency measurement of a novel latching system on the powertrain test bench
- Feasibility study of plain bearings as release bearings for high clutch speeds
- Validation of the clutch system with the XiL-Approach of IPEK

Hüseyin Gürbüz, Research assistant, co-author: Dipl.-Ing. Sascha Ott, both IPEK – Institute of Product Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany

13:00  Time for Business Lunch – Meet & Greet in the exhibition area, DritevLab and car presentation
Program

Room New York

14:30 Forming the transformation – How electrification changes the portfolio of transmissions
- Transformation of the powertrain
- P2 with micro torque converter (µTC)
- DHT damper including Internal Torque Limiter (ITL)
- Highly efficient electrical drive system
- Development of the Multi Mode hybrid transmission

Prof. Dr.-Ing. Peter Tenberge, Ruhr University Bochum

Room Nairobi

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Prof. Dr.-Ing. Peter Tenberge, Ruhr University Bochum

15:00 Affordable PHEV solution based on innovative dedicated hybrid transmission
- Plug in hybrid vehicle
- Dedicated hybrid transmission
- Smart dog clutch actuation
- Multipurpose electric drives

Dr.-Ing. Kiarash Sabzewari, Head of Searchfield Hybrid Electric Vehicle, co-authors: Magdalena Vieracker, Jörg Sagstetter, all Vitesco Technologies Germany GmbH, Regensburg, Germany

15:30 The highly integrated ModulED drive module: technology and design method
- Highly integrated electric drivetrain module
- Holistic drivetrain design
- Innovative technologies as GaN switches, injected magnets, high speed machine

Dipl.-Ing. Daniel Kieninger, Manager Drivetrain Systems, co-author: Jonas Hensens, M. Sc., both Institute of Automotive Engineering, RWTH Aachen University, Germany

Room Wien

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16:00 Be interactive – Meet & Greet in the exhibition area, DritevLab and car presentation

Room New York

15:00 Greenhouse gas emission from passenger cars – How electric motor engineers of Toyota are challenging this problem
- Toyota hybrid vehicle motor technology evolution
- The technology of THS downsizing and increasing the output density
- Motor loss reduction technology

Tomoyuki Sawada, M. Eng., Development Engineer, co-authors: Dr. Ali Mohammadi, Shinya Sano, M. Eng., Keiji Takizawa, M. Eng., all TOYOTA MOTOR CORPORATION, Aichi, Japan

15:30 Scalable and efficient P3 hybrid transmission for light commercial vehicles
- Design of the 5BHT425 transmission for P3 hybrid
- Scalability from MHEV to PHEV
- Results from vehicle testing
- Comparison to available solutions in the market

Dipl.-Ing. Roland Nasdal, Director PD Core & Advanced Engineering, Getrag Ford Transmissions GmbH, Cologne, Germany

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16:00 Be interactive – Meet & Greet in the exhibition area, DritevLab and car presentation

Room Wien

15:00 Twin drive pump – Emission reduction through hybridization of oil pumps
- Minimizing losses in transmissions through optimization of hydraulic supply system
- Efficiency and power density increase through hybridization
- Reduction of number of transmission components through mechatronic integration
- Hybrid operation of the oil pump

Dipl.-Ing. Oscar Sarmiento, Head of Advanced Development, co-authors: Dipl.-Ing. Alexander Schalja, Dipl.-Ing. Christian Böhm, all Vitesco Technologies Germany GmbH, Nuremberg, Germany

16:00 Be interactive – Meet & Greet in the exhibition area, DritevLab and car presentation
Room New York
Plenum

Plenary discussion

16:45  2020 – 2025 – 2030: Challenges for technology, market and society

- **Dr. Marie-Luise Wolff**, CEO, Entega, Darmstadt, Germany

- **Christian Müller**, Managing Director Engineering, Opel Automobile GmbH, Rüsselsheim, Germany

- **Dr. Wolfgang Bernhart**, Senior Partner, Roland Berger, Stuttgart, Germany

- **Director of the Senate Martin Huber**, Director-General of Transportation and Highways, Ministry of Economic Affairs, Transportation and Innovation, Free and Hanseatic City of Hamburg, Germany

- **Prof. Dr.-Ing. Lutz Eckstein**, Director Institute of Automotive Engineering (ika), RWTH Aachen University, Aachen, Germany

**Moderator:** Guido Reinking, technical journalist

18:00  End of the 1st congress day

18:30  Dritev Football Summer Night

You can look forward to a wonderful evening under the sign of the European Football Championship. Join in the excitement of the last group game of the German soccer team. Enjoy the evening with good food and music. Make new contacts in an informal setting and meet old colleagues and friends!
### Program

#### 2nd Congress Day

**Thursday, June 25, 2020**

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<td><strong>New series solutions</strong>&lt;br&gt;Dipl.-Ing. Georg Bednarek, Opel</td>
<td><strong>Drive solutions</strong>&lt;br&gt;Dr.-Ing. Rainer Link, GKN</td>
<td><strong>Regulations</strong>&lt;br&gt;Dr. Markus Nussbaumer, BMW</td>
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**08:45 Consistently quattro**
- 40 years of quattro – from past to present
- Concepts of electric driving systems
- Sporty. Save. Consistent. – The future of electric mobility

_Dipl.-Ing. (FH) Ludwig Wittmann_, Head of R&D BEV-Transmissions, co-authors: Dipl.-Ing. (FH) Maximilian Wolf, Dr.-Ing. Michael Wein, all Audi AG, Ingolstadt, Germany

**09:15 Advanced integrated eDrive system for premium global OEM**
- New system provides zero-emissions plug-in hybrid capability to a new 2020 OEM premium PHEV
- eDrive system provides up to 2900Nm of additional torque at rear axle
- World-first eDrive disconnect application in combination with a park lock system allowing full zero-emissions operation
- New System features lighter, more compact, more efficient GKN Automotive technologies for brand-aligned AWD performance

Dr.-Ing. Thomas Pullen, Chief Engineer, Hybrid & eDrive | GKN ePowertrain, co-authors: Achim Schmeink, Colin Zaers, all GKN Driveline International GmbH, Lohmar, Germany

**09:45 Evolution of the drivetrain and high voltage system in the new Corsa-e**
- Essential technical changes from Ampera-e to Corsa-e
- Optimized HV system
- Industrialization strategy for higher production volume
- Energy use cases for the new Corsa-e

Dr.-Ing. Peter Ramminger, Chief Engineer and Program Manager, Opel Automobile GmbH, Rüsselsheim, Germany

**10:15 Be interactive** – Meet & Greet in the exhibition area, DritevLab and car presentation

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**Thoughts about future technologies for dedicated hybrid transmissions**
- Further efficiency improvements in order to minimize losses
- Technical de-contenting in an holistic drivetrain approach to maintain competitiveness
- Modular design and perpetuation of flexibility for being able to quickly adapt to market changes
- Increase affordability and market penetration through aforementioned measures

_Dipl.-Ing. (FH) Wolfgang de Loth_, Director Research & Development, co-author: Philippe Ramet, both PUNCH Powerglide Strasbourg SAS, Strasbourg Cedex, France

**New high efficiency CVT for middle class FWD vehicle**
- Concept for continuous variable transmission for middle class FWD vehicles
- Maximize the ratio coverage to improve the acceleration performance and fuel economy of vehicle
- Improve packaging of CVT through optimizing CVT structure
- Improve CVT efficiency through chain belt and several element technology

Kwanghun Kim, Development Engineer, co-authors: Lee Byungmin, Kim Jinwoo, all HYUNDAI TRANSYS, Hwaseong, Corea

**Real-driving based comparison of the eco-impact of powertrain concepts using a data-driven optimization environment**
- Holistic optimization environment to identify the ecological potential of powertrain concepts and creating a uniform basis for the comparison
- Compressed representation of fleet driving and environmental data for the real-driving optimization
- Comparative assessment of the ecological potential of future drive concepts
- Comparison of the results: real-driving optimization vs. WLTP

Arved Esser, M. Sc., Research Associate, co-authors: Tobias Eichenlaub, M. Sc., Prof. Dr.-Ing. Stephan Rinderknecht, all Institute for Mechatronic Systems im Mechanical Engineering, TU Darmstadt, Germany

**Concept of 10R80MHT**
- Modular rear wheel drive hybrid transmission
- Advanced propulsion technology
- Hybridization without compromising other vehicle attributes

Gregory Gardner, M. Sc., Chief Engineer Transmission and Driveline Engineering, Ford Motor Company, Michigan, USA

**Automotive industry in Europe: Delivering on the Green Deal**
- Major transformative forces at work: electric, connected, automated and shared
- Suppliers embrace the challenge while striving for sustainable economic growth
- Success depends on wide variety of actors working closely together
- Society needs the conditions to let companies manufacture and employ in Europe

_Sigrid de Vries_, Secretary General, CLEPA – European Association of Automotive Suppliers, Brussels, Belgium

**Virtual RDE: Ensuring RDE conformity of hybridized powertrains in the early stage of the development process**
- RDE conformity
- Challenges and necessity of virtual RDE
- Combined physics-data-based approach application example

Dr.-Ing. Michael Grill, Head of 0D/1D simulation, Research Institute of Automotive Engineering and Vehicle Engines, Stuttgart, Germany
11:00 Audi Denkwerkstatt: Which learnings could be transferred from agile start-ups to powertrain world?
- Audi Denkwerkstatt - the idea behind
- Development conditions for radical innovation
- Examples of different products which were developed by crossfunctional teams within 23 weeks
- Learnings from start-ups, agile working and requirements for leadership

Dr.-Ing. Matthias Brendel, Head of Audi Denkwerkstatt, Audi AG, Berlin, Germany

11:30 Future trends on battery systems – Ready for the next generation
- Changes in the automotive industry
- History of Volkswagens e-mobility
- Requirements on next battery systems
- The new modular kit, the MEB

Dr.-Ing. Holger Manz, Head of Development Energy Supply and High Voltage systems, Volkswagen AG, Wolfsburg, Germany

12:00 BP energy outlook and low carbon roadmaps
- BP’s outlook of energy demand to 2040: energy demand and reduction of overall carbon emissions (scenarios, key uncertainties)
- Lower carbon roadmap options for energy, fuel and lubricant products

Dr. David Hall, Distinguished Advisor, Advanced Technology Products, BP International Limited, Pangbourne, Great Britain

12:30 Time for Business Lunch – Meet & Greet in the exhibition area, DritevLab and car presentation

Room New York

Powertrain concepts
Dipl.-Ing. Matthias Zink, Schaeffler

Drive solutions
Prof. Dr.-Ing. Karl-Viktor Schaller

Room Nairobi

The new 8DCL900h High-performance DCT by Magna
- State-of-the-art technology for high-performance supersport cars
- Improved torque density, shiftability, race track capability
- All-new integrated hydraulics for cooling, actuation and lubrication
- Synergies for large-volume transmissions

Dr. Jörg Gindele, Sr. Director Engineering Transmission Systems, Magna Powertrain, Magna PT Holding GmbH, Untergruppenbach, Germany

Room Wien

Methods
Dr.-Ing. Michael Ebenhoch, ZF Friedrichshafen

Generic optimization environment and knowledge-based guided evolutionary algorithms for automated transmission calibration
- Presentation of a generic optimization environment
- Generating a knowledge base through impact analysis
- Knowledge-based guidance of stochastic algorithms

Thomas Korb, Advanced Development Longitudinal Transmissions, co-authors: Dr.-Ing. Markus Nussbaumer, both BMW AG, Munich, Prof. Dr.-Ing. Stephan Rinderknecht, Institute for Mechatronic Systems im Mechanical Engineering, TU Darmstadt, Germany

14:00 Development of a shift control for an innovative highspeed powertrain using motor-related control
- Gearchange of a dualmotor, multispeed, highspeed powertrain with dogclutches
- Motor-related, FPGA-based angular position control for fast and comfortable gearchanges
- Modelling and simulation of an electrical highspeed powertrain for testing control algorithms
- HIL-simulation to validate real-time ability

Daniel Schöneberger, M. Sc., Research associate, co-authors: Prof. Dr.-Ing. Stephan Rinderknecht, both Institute for Mechatronic Systems im Mechanical Engineering, TU Darmstadt; Dominik Reitmeier, M. Sc., Prof. Dr.-Ing. Axel Mertens, both Leibniz University Hannover, Germany
14:30 48V eDRIVE Modularity: An answer to e-mobility complexity?
- eMobility complexity: Market segmentation/multiplicity of mobility solutions
- System specifications per segment
- Modularity drivers: cost/robustness/performance/time to market
- Description of the technical platform approach – applied solutions and vehicle benefits

Dipl.-Ing. Matthias Zink, Schaeffler

15:00 P2i: a family of modular, scalable and integrated hybrid drive modules
- Scalable and modular P2 architecture for MHEV to HEV
- Component optimization based on a system approach
- Specific high integrated inverter development

Christopher Spangler, M. Sc., Technical Specialist, BorgWarner Transmission Systems, Ketsch, Germany

15:30 Shift system using one-way dog-clutches in transmissions with dual e-motors
- Dual one-way dog clutch
- Clutch actuator
- Shift-simulation and shift-Control
- Speed-overlay planetary gears

Prof. Dr.-Ing. Peter Tenberge, Head of Chair, co-author: Ahmad Alnahlaui, M. Sc., both Chair of Industrial and Automotive Drivetrains, Ruhr University Bochum, Germany

16:00 Switch to plenum, Room New York
16:05 Conclusion of the congress
16:15 Awarding of the Best Presentation Award for Junior Engineers
16:30 End of the congress
**Room Bangkok**

6th International VDI Conference

**“Powertrain Systems in Mobile Machines”**

*Main topics:*
- European regulations in the off-highway sector: emissions, technical rules, examples
- Opportunities for electrified off-road applications: Li-ion battery, fuel cell, hybrid systems
- Modular solutions for traction and process drives
- Increased efficiency through digitization: real-time data acquisition, predictive maintenance, driving analysis
- Smart driving strategies through AI
- Field reports on innovative drive systems

*Chairman:*

Prof. Dr. Ludger Frerichs, Director, Institute of mobile machinery and industrial vehicles, TU Braunschweig

*With presentations given by:*

*Further details and the final program can be found here*

www.vdi-wissensforum.de/en/0TTA07020

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**Room Addis Abeba**

3rd International VDI Conference

**“EDrive”**

*Main topics:*
- Electrified powertrains in series
- Electric motor design and integrated battery design
- Switching concepts for electric drives
- Challenges in system integration
- Next-Gen E-Drive

*Chairman:*

Dr. Andreas Schamel, former Director Global Powertrain Research & Advanced, Ford Research Center, Aachen

*With presentations given by:*
- BorgWarner | Ford | GKN | Honda | IAV | Opel | Ruhr University Bochum | Schaeffler | Toyota | TU Darmstadt | Valeo

*Further details and the final program can be found here*

www.vdi-wissensforum.de/en/0TTA05020

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**Accompanying VDI Conferences**

**June 24 and 25, 2020, World Conference Center Bonn**

Free of charge for the participants of the Congress “Dritev”
Hochdrehzahntriebe zur Realisierung hoher Leistungsichten

Ihre Leitung: Dipl.-Ing. Sascha Ott, Mitglied der Institutsleitung und Geschäftsführer, IPEK – Institut für Produktentwicklung und KIT-Zentrum Mobilitätsysteme, Karlsruher Institut für Technologie (KIT)

Zielsetzung

Inhalte des Spezialtages
• Chancen und Risiken beim Einsatz hochdrehender Antriebe
• Veränderung der Ursachen-Wirkungsketten durch hohe Drehzahlen
• Veränderung von Anforderungen an verschiedenen Komponenten des Antriebssystems
• NVH-Verhalten und Geräuschproblematiken

Mehr Details unter: www.vdi-wissenforum.de/02ST231001

Chancen für die agile Systementwicklung durch ASD-Agile Systems Design

Ihre Leitung: Florian Marthaler, M. Sc., Leiter, Forschungsgruppe, Entwicklungsmethodik und Entwicklungsmanagement, IPEK – Institut für Produktentwicklung, Karlsruher Institut für Technologie (KIT)

Zielsetzung

Inhalte des Spezialtages
• Agilität in der Antriebstechnik: Chancen, Herausforderungen und Lösungen für die Praxis durch ASD – Agile Systems Design
• Veränderung der Ursachen-Wirkungsketten durch hohe Drehzahlen
• Veränderung von Anforderungen an verschiedenen Komponenten des Antriebssystems
• NVH-Verhalten und Geräuschproblematiken

Mehr Details unter: www.vdi-wissenforum.de/02ST385001

NVH im E-Antriebsstrang

Ihre Leitung: Mario Schwalbe, Teamleiter NVH, IAV GmbH, Stollberg

Zielsetzung

Inhalte des Spezialtages
• NVH in der Fahrzeugakustik
• Anregung, Schwingungsentstehung und Übertragungspfade im Elektromotor und in der Verzahnung
• Mehrkörpersimulation zur Berechnung von körperschalrelevanten Größen
• Finite Elemente Methode zu Bestimmung von luftschallrelevanten Größen
• Anregung, Schwingungsentstehung und Übertragungspfade im Elektromotor und in der Verzahnung

Mehr Details unter: www.vdi-wissenforum.de/01ST022001
**DritevLab**

**Gather hands-on experience in the powertrain world!**

Over the last two years our hands-on area “DritevLab” has established itself as one of the major attractions at the event. Study individual drive and gear parts of the respective exhibitors, get an overview of the interaction of the different components and compare their design and processing. An expert from the company in question will be on hand at their exhibit and help attendees with any questions they may have.

The following drive modules will be exhibited, stripped down into subassemblies (February 2020):

- Porsche Taycan two-speed transmission
- Opel 6 speed manual transmission MB6
- Audi e-tron Schaeffler rear-axle drive EQ400-1K
- ZF hybrid transmission 8P75PH

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**Dritev Football Summer Night**

**Your networking hotspot for the international powertrain community**

This is where the who’s-who of the international developer community meets. Meet old colleagues and project partners and use the informal atmosphere to get to network anew.

Enjoy summery food and drinks and fever together with the German National team in the last group match of the European Football Championship.

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**Speakers Corner**

**Direct any questions you might have to the drive system experts**

Do you still have any unresolved questions? You are welcome to turn to our speakers who will address your concerns at the speakers corner following the sessions. It is located on the Rhine floor – straightforward, subject-specific, instantaneously.

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**Car Presentation**

**Powertrain systems with an emotional appeal**

Be it a standard vehicle, a fancy roadster or a real headturner – they all need to be presented to their audience in their own specific way, no matter how perfect the drive unit. Learn about current vehicle concepts and ask the experts at the congress about the vehicles’ characteristic features and how the specific drive solutions have been integrated.
Dritev, the international congress of drivetrain experts, is one of the world’s best specialist congress for powertrain engineering. Illustrating the whole supply chain for drivetrains in mobile applications (passenger cars, commercial vehicles, mobile machines) the exhibition becomes a cross-industry information platform for requirements on transmission and powertrain (conventional transmissions, hybrid concepts, electrified drivetrains). In addition to the exhibitors at Dritev, representatives of the accompanying conferences EDrive and Powertrain Systems in Mobile Machines will be presented.

**Sponsorship**

For individual sponsoring offers please contact:
Vanessa Schwarz
Project Consultant Exhibition & Sponsorship
Phone: 49 211 6214-917
Email: schwarz@vdi.de

**Exhibition**

Get some information about exhibition opportunities:
Vanessa Ulbrich
Project Consultant Exhibition & Sponsorship
Phone: +49 211 6214-918
Email: ulbrich@vdi.de

**The participants – Your customers**

<table>
<thead>
<tr>
<th>Function</th>
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<tbody>
<tr>
<td>Specialists</td>
<td>37 %</td>
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<tr>
<td>Head of department</td>
<td>21 %</td>
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<tr>
<td>CEOs/Managing director</td>
<td>14 %</td>
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<tr>
<td>Project manager/Team leader</td>
<td>19 %</td>
</tr>
<tr>
<td>Others</td>
<td>9 %</td>
</tr>
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</table>

Attendees by company type in 2019

- System and component suppliers: 45%
- OEs: 20%
- Construction and mechanical engineering: 14%
- Engineering services: 15%
- Metal processing industry: 6%
GKN Automotive is the world’s leading supplier of automotive driveline technology and components. It operates through 54 locations in 21 countries, employing over 29,000 people. GKN Automotive develops, builds and supplies an extensive range of automotive driveline technologies – for use in the smallest ultra-low cost cars to the most sophisticated premium vehicles showcasing advanced driving dynamics. GKN Automotive’s driveline technologies, its proven software development and vehicle integration expertise and a complete range of scalable solutions make GKN Automotive the industry’s number one partner for CVJ, AWD, transaxle and eDrive systems.

Contact
GKN Driveline | Hauptstraße 130 | 53797 Lohmar, Germany | Phone: +49 (0) 224 610 022 65 | Fax +49 (0) 224 610 022 93 | Email: info@gkndriveline.com | Internet: www.gkndriveline.com

Magna Powertrain, an operating unit of Magna International, is a premier supplier for the global automotive industry with full capabilities in powertrain design, development, testing and manufacturing. Our innovations contribute to the overall performance of the vehicle, while providing technologies that improve fuel economy, make the vehicle safer, reduce weight and provide value to our global customer base.

As one of the world’s largest suppliers of transmission and all-wheel-drive systems, as well as powertrain subsystems and transmission components for passenger cars and light commercial vehicles, Magna Powertrain has a unique market position. With our extensive expertise in drivetrain electrification, Magna Powertrain has developed scalable platform concepts to help the global automotive industry both meet CO₂ targets and enhance vehicle performance. Magna Powertrain is well prepared to meet each car manufacturer’s individual needs of today and the future.

Contact
Magna Powertrain | Hermann-Hagenmeyer-Straße 1 | 74199 Untergruppenbach, Germany | Phone: +49 (0) 713 164 440 | Email: tatjana.rausch@magna.com | Internet: www.magna.com

ZF is a global technology company and supplies systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. With its comprehensive technology portfolio, the company offers integrated solutions for established vehicle manufacturers, mobility providers and start-up companies in the fields of transportation and mobility. ZF continually enhances its systems in the areas of digital connectivity and automation in order to allow vehicles to see, think and act. In 2018, ZF achieved sales of € 36.9 billion. The company has a global workforce of 149,000 with approximately 230 locations in 40 countries. ZF invests over six percent of its sales in research and development annually.

Contact
ZF Friedrichshafen AG | Graf-von-Soden-Platz 1 | 88046 Friedrichshafen, Germany | Phone: +49 (0) 754 177 0 | Fax: +49 (0) 754 177 908 000 | Email: postoffice@zf.com | Internet: www.zf.com

Castrol is the lubricant specialist within the BP Group – one of the leading global oil companies. With more than 100 years experience in the development and production of lubricants Castrol is a partner of many passenger car, commercial vehicle and transmission/axle manufacturers and stands for leading technology, competence, innovation and premium product qualities. Castrol is – often as a market leader – represented in more than 140 countries worldwide with a very strong brand awareness. Within the Global Driveline Technology Centre in Hamburg Castrol is developing high performance driveline lubricants in close co-operation with leading international OEM’s. In a tight network with their blend plants Castrol is producing transmission fluids and setting global milestones due to its innovative production processes. For keeping the technical standards and production capabilities at its highest level the ISO/TS 16949 certification is a clear pre-requisite.

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BP Europa SE Lubricants International | Überseeallee 1 | 20457 Hamburg, Germany | Phone: +49 (0) 40 395 5389 | Email: kundenservice@castrol.com | Internet: www.castrol.com

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Exhibitor list 2020

(February 2020)
AAM – American Axle & Manufacturing
ACTech GmbH
Aichelin Holding GmbH
Altair Engineering GmbH
Aluwag AG
ATESTEO GmbH & Co. KG
AVL List GmbH
Bakker Magnetics B.V.
BorgWarner
Brand KG
Castrol
COB PRECISION PARTS INC.
Curtiss-Wright Surface Technologies
Dana Incorporated
Dassault Systemes Deutschland GmbH
Dontyne Gears
EDT GmbH & Co. KG
EKK Eagle Industry Co., Ltd.
Elgeti Engineering GmbH
ElingKüngler AG
Eltro GmbH

EnginSoft GmbH
Ensinger GmbH
ERNST GROB AG
Felss Group GmbH
FEV Europe GmbH
Freudenberg Sealing Technologies GmbH & Co. KG
GKN Driveline International GmbH
H. Kleinknecht & Co. GmbH
hGears
Hilite International
HOERBIGER Antriebstechnik Holding GmbH
hofer powertrain
Hyundai Transys Inc.
IAV GmbH
KACO GmbH + Co. KG
KISSsoft AG
Konzelmann GmbH

Miba Group
Oerlikon Friction Systems (Germany) GmbH
PMG Group (Powertrain Europe)
Pulstec Industrial Co., Ltd.
Punch Powerglide Strasbourg S.A.S
Punch Powertrain N.V.
Romax Technology Ltd.
Saint-Gobain Performance Plastics L+S GmbH
Schaeffler Engineering GmbH
Schaeffler Technologies AG & Co. KG
Schondelmaier GmbH Presswerk
Schunk Sinter Metals
SEG Automotive Germany GmbH
Shell Deutschland Oil GmbH
SHW Schwäbische Hüttenwerke Automotive GmbH
Smart Manufacturing Technology Ltd., UK
TREMEC Corporation
Vitesco Technologies GmbH
Wieland-Werke AG
WUXI SHINDEN MODERN INTELLIGENT TECHNOLOGY CO., LTD.
ZF Friedrichshafen AG
Zoerkler Gears GmbH & Co. KG

The current list can be found below
www.vdi-wissensforum.de/en/dritev/exhibition-and-sponsoring/
In light of the growing electrification in the powertrain, first and foremost all components from the field of electronics, semi-conductors, software and e-motors play a key role. At the special exhibition “EDrive” meet those businesses, that form a crucial part along the value-added-chain in these fields.

Learn more about the players! Extend your network!
Scientific support of the congress

**VDI Society Product and Process Design**

The VDI Society Product and Process Design (VDI-GPP) and its technical divisions provide all sectors with verified knowledge on the design of products and processes and their optimization in terms of quality and the time- and cost-benefit ratio.

This verified knowledge covers the entire product lifecycle, from the product idea and product development, marketing and service to recycling using optimized methods, tools and systems, including the necessary information technology.

This ensures the successful connection of market and technology for the purpose of sustainable growth and profit. The VDI-GPP – as the largest technical division in the VDI – provides a platform for specialist discussion and cooperation ranging from the technological state of the art and continuous improvement to trends in development.

The task of the VDI-GPP is to concentrate the extensive range of services of the VDI in these fields, display them in summary and constantly improve them. This also includes the lively exchange of ideas with other VDI societies.

The activities of the society are planned and coordinated by an advisory board staffed with decision-makers working on an honorary basis. The secretariat is located in the VDI building in Düsseldorf. Besides the main secretariat, the regional chapters, which take care of the VDI members in their own areas, include work groups active in the field of product and process design.

**VDI Society Automotive and Traffic Systems Technology**

The VDI Society for Vehicle and Transport Technologies, VDI-FVT in short, has around 28,000 members that are affiliated to at least one of its 8 technical sections. This makes it the second biggest of the VDI's dedicated societies. VDI-FVT is the community for engineers working in the vehicle industry, as well as for engineers dealing with transport and traffic outside manufacturing industries.

Traditionally, a majority of members work in automotive. VDI-FVT is the German affiliate of the world federation of automotive engineers' societies, FISITA, and it is the intellectual sponsor of many big conferences on automotive technology and thus fosters exchange and knowledge transfer both nationally and internationally. It also sponsors Formula Student Germany, awarding VDI membership to all German participants, and promotes other student competitions for transport engineers. VDI-FVT has recently reconstituted technical sections for rail and marine technologies, as well as space and aircraft. It is putting a strong focus on transport and traffic in general and aims to mediate between technology and society.

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Highly committed and with great passion to succeed, the program committee – consisting of 20 experts from industry and research – draws up the congress agenda every year. In terms of lectures they lay particular emphasis on high quality, profound technical expertise and degree of innovation – which is quality management at the highest level.

Dipl.-Ing. Georg Bednarek, Director Regulations & Certification, Opel Automobile GmbH, Rüsselsheim, Germany
Dr. Carsten Bünder, Director Global Product Management, Magna PT B.V. & Co. KG, Untergruppenbach, Germany
Dr. Thomas Casper, Manager Integration Transmission and Drivetrain, Dr.-Ing. h.c. F. Porsche AG, Weissach, Germany
Dr.-Ing. Michael Ebenhoeh, Senior Vice President Car Powertrain Technology, ZF Friedrichshafen AG, Kressbronn, Germany
Dipl.-Ing. Hans-Peter Fleischmann, Director Dual Clutch Transmission Development and Series Support Transmission, Audi AG, Ingolstadt, Germany
Dipl.-Ing. Volker Heinz, Director, Engineering, DualTronic® and Clutch Systems, BorgWarner Drivetrain Engineering GmbH, Ketsch, Germany
Prof. Dr.-Ing. Bernd-Robert Höhn, Retired Professor at the Institute for Machine Elements/FZG, Technical University of Munich, Garching, Germany
Thomas Landsherr, Vice President, Engineering Driveline Truck & Bus, MAN Truck & Bus SE, Munich, Germany
Dr. Thilo Leineweber, Senior Vice President Gasoline Systems Transmission Control, Robert Bosch GmbH, Schwieberdingen, Germany
Dr. Rainer Link, Senior Vice President Engineering, GKN Automotive ePowertrain, Lohmar, Germany

Thomas A. McCarthy, Director – Energy, Propulsion & Sustainability Research and Advanced Engineering, Ford Motor Company, Dearborn, USA
Dr.-Ing. Florian Mützer, Transmission Specialist, AGCO GmbH, Marktoberdorf, Germany
Dipl.-Ing. Konstantin Neß, Director Transmission & Electric Drivetrain, Mercedes-Benz AG, Stuttgart, Germany (Deputy Chairman)
Dr. Markus Nussbaumer, Head of Longitudinal Transmissions, Advanced Development, BMW Group, Munich, Germany
Prof. Dr.-Ing. Stephan Rinderknecht, Full professor and head of the Institute for Mechatronic Systems in Mechanical Engineering, TU Darmstadt, Germany
Dr. Gerd Rösel, Head of Hybrid Electric Vehicle, BU – Innovations and eProductHouse, Vitesco Technologies GmbH, Regensburg, Germany
Dipl.-Ing. Michael Schäfer, Head of Transmission Development, Volkswagen AG, Wolfsburg, Germany
Prof. Dr.-Ing. Karl Viktor Schaller, Munich, Germany
Prof. Dr.-Ing. Karsten Stahl, Full Professor and Director of the Institute for Machine Elements/FZG, Technical University of Munich, Garching, Germany
Prof. Dr.-Ing. Peter Tenberge, Director, Head of Chair of Industrial and Automotive Drivetrains, RuhrUniversity Bochum, Germany
Dipl.-Ing. Matthias Zink, CEO Automotive, Schaeffler AG, Büh, Germany (Chairman)
I will participate as follows for the price per person plus VAT:

- [ ] Congress/Conference, June 24 – 25, 2020
- [ ] Workshop, June 23, 2020

Please select one event only.

<table>
<thead>
<tr>
<th>Event</th>
<th>Participation Fee</th>
<th>Workshop</th>
<th>Package Price Congress/Conference + one Workshop</th>
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<tr>
<td>International VDI Congress “Dritev” (01TA805020)</td>
<td>1,740,–</td>
<td>1,040,–</td>
<td>2,290,–</td>
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<tr>
<td>VDI Conference “EDrive” (01TA105020)</td>
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<tr>
<td>VDI Conference “Powertrain Systems in Mobile Machines” (01TA807020)</td>
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Please select one workshop only. Workshops will only be held in German.

- [ ] Workshop “Hochdrehzahlantriebe zur Realisierung hoher Leistungsdichten” (02ST231001)
- [ ] Workshop “Chancen für die agile Systementwicklung durch ASD-Agile Systems Design” (02ST385001)
- [ ] Workshop “NVH im E-Antriebsstrang” (01ST022001)

Participation fee VDI-Members: Save € 50 for each event day. VDI membership no.: ____________________________

* For the price category 2, please state your VDI membership number

- [ ] I’m interested in sponsoring and/or the exhibition.

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Venues:
- Congress: World Conference Center Bonn, Platz der Vereinten Nationen 2, 53113 Bonn, Germany, Phone: +49 228 9267 0, Email: info@worldccbonn.com
- Workshop: Maritim Hotel Bonn, Godesberger Allee, 53175 Bonn, Germany, Phone: +49 228 8108-0, Email: info.bon@maritim.de

Accommodation: A limited number of rooms have been reserved for congress participants. A reservation form can be found at www.dritev.com.

More Hotels close to the congress venue may be found via our HRS service: www.vdi-wissensforum.de/hrs

Information: The price includes congress documents (e-book), coffee breaks, beverages during breaks, lunches and the evening reception (congress).

Workshops: The price includes beverages during breaks and lunch. The participants get the compendium at the venue.

Exclusive offer: All participants at this event are entitled to a free three-month trial VDI membership. (Offer applies exclusively to new members.)