VDI

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25th International VDI-Congress

July 9 and 10, 2025, Baden-Baden, Germany

Dritev

The leading international congress for electrified powertrains, systems, components and methods

Main topics:

- Architecture and design of vehicle propulsion systems
- E-motor, power electronics, energy storage and supply
- Sustainability and CO_2 neutrality
- Thermal management, operating behavior, acoustics
- Simulation, Digitalization and AI
- Transmission systems and fluids

Dritev interactive

Poster exhibition | Speakers Corner | Dritev Summer Night | Car presentation | Workshops

Meet international experts from:

ADAC, ARRK, Audi, AVL, BorgWarner, Bosch, Continental Engineering Services, FEV, FKFS Research in Motion, FVA Software & Service, FZG, GKN Automotive, Ghofer powertrain, Maschinenbau IMS We engineer future, Infineon Technology, IPEK Institut für Produktentwicklung, TU Graz Graz University of Technology, Lubrizol, Magna, Ovako, Petronas, Schaeffler, SKF, Traton, Tremec, University of Stuttgart Germany, VDA Verband der Automobilindustrie, VisIC Technologies, Volkswagen Group Components, Volvo, WZL RWTH Aachen University, ZF

Workshops (in German)

- Künstliche Intelligenz im Antriebssystem
- Schwingungs- und Geräuschverhalten von Antriebssträngen

Accompanying event

9th International VDI Conference

Drivetrain Solutions for Commercial Vehicles

Program Overview

Only held in German!

Workshops
Tuesday, July 8, 2025, Kongresshaus Baden-Baden, Germany

09:00 - 17:00	Künstliche Intelligenz im Antriebssystem: Entwicklung, Betrieb und Bewertung (01ST805025)	Schwingungs- und Geräuschverhalten von Antriebssträngen (01ST808025)

1st Congress Day
Wednesday, July 9, 2025

09:10	Welcome address				
09:20	Plenary speeches with subsequence discussion (Auditorium) 				
11:20	Coffee break and visit of the exhibition				
12:00	Electric drives	Customer, market, sustainability	Inverter	Accompanying conference **Drivetrain Solutions for Commercial Vehicles 2025** Challenges in electrification of heavy-duty transport	
13:00	Lunch and visit of the exhibition				
14:30	Electric drives	Thermal management	Hybrid transmissions	Optimization of the electric drivetrain	
16:00	Coffee break and visit of the exhibition				
16:45	Development of drive concepts	Battery	Digitalisation & AI	Zero emission powertrain: Future of mobility	
18:15	End of the 1st congress day				
18:45	Dritev Summer Night				

2nd Congress Day
Thursday, July 10, 2025

08:30	Simulation & Testing	Lubricants	Market, customer, regulations, environment, sustainability	Accompanying conference **Drivetrain Solutions for Commercial Vehicles 2025** E-axle: Efficiency and innovation for electric mobility	
09:30	Simulation & Testing	Transmission components	Inverter	E-axle: Efficiency and innovation for electric mobility	
10:30	Coffee break and visit of the exhibition				
11:15	Gear manufacturing	E-machine	NVH	Advanced PTO solutions	
12:45	Lunch and visit of the exhibition				
14:15	Plenary speeches with subsequence discussion (Auditorium) 			Efficient zero emission propulsion technologies	
16:00	Awarding of the Best Presentation Award for Young Engineers (Auditorium)				
16:05	Closing remarks				
16:15	End of the congress				

Program

1st Congress Day
Wednesday, July 9, 2025

08:00 Registration

Auditorium – Plenary

09:10 Opening and welcome address

Dipl.-Ing. Thomas Pfund, President Business Unit E-Motors, Schaeffler Automotive Buehl GmbH & Co. KG, Germany

Plenary speeches
Dipl.-Ing. Thomas Pfund, Schaeffler Automotive Buehl GmbH

09:20 Insights into MMA – Mercedes Modular Architecture for BEV and HEV

- MMA - Mercedes Modular Architecture as the upcoming vehicle architecture from Mercedes-Benz with two innovative powertrains: Highly efficient electric drive and an economical hybrid
- Electric drive unit (EDU 2.0) is the first of a new generation of electric drive units from Mercedes-Benz
- 48 V hybrid drive system with the new electrified eight-speed dual-clutch transmission 8F-eDCT

Dipl.-Inf. Daniel Hopp, Senior Manager Electric Powertrain eATS 2.x, Mercedes-Benz AG, Stuttgart, Germany

09:45 Vision Motorsport

- General opinion of the ADAC on the topic of drive technology and electrification
- Motorsport as a development platform for production technology

Thomas Voss, Managing Director, GTM GmbH, Motorsport Director, ADAC e.V., Munich, Germany

10:10 TRATON – On the road to zero emission transport

- Tratons focus on BEV and why hydrogen is seen as a complementary technology
- Modularity and flexibility for a global truck portfolio: Technical designs and future development directions in battery technology
- Boundary conditions for a sustainable transformation: Megawatt charging and infrastructure requirements

Dipl.-Phys. Ulrich Zimmer, Senior Vice President TRATON GROUP R&D Battery & Charging, Nuremberg, Germany

10:35 Volvo group's roadmap to sustainable transport

- Key insights from Volvo Group as the market leader in electromobility for commercial vehicles
- BEV trucks – today's challenges in global markets: Infrastructure, product cost, portfolio complexity
- Technology enablers and outlook for BEV trucks: Energy storage, charging, electric drive

Dipl.-Ing. Heimo Schreier, Director Electromobility Product & Range Management, Volvo Group Technology, Gothenburg, Sweden

11:00

Plenary discussion
Dipl.-Ing. Thomas Pfund, Schaeffler Automotive Buehl GmbH

11:20 Meet & Greet – Coffee break in the exhibition area and car presentation

12:00 Change to the parallel sessions

Dritev

Your international technology congress for powertrain developers in Baden-Baden, Germany!

VDI

Program

Electric drives
Dipl.-Ing. Udo Sommerhalter,
Valeo Powertrain GmbH

Customer, market, sustainability
Dipl.-Ing. Georg Bednarek,
Stellantis N.V.

Inverter
Dr.-Ing. Gerd Rösel,
Vitesco Technologies GmbH

12:00

The electric drive Plattform SELECT – most efficient and compact solutions for future primary and secondary drives
- Electric drive platform
- Primary and secondary drives
- Building blocks (inverter, electric motor and reducer)

Dr. Christoph Sasse, Head of Advanced Development Electrified Powertrain Technology, Co-author: Dr. Martin Berger, both ZF Friedrichshafen, Schweinfurt, Germany

Path to ZERO – How to decarbonize a steel-based supply chain
- Ovako's journey towards a zero-emission steel production
- Product carbon footprint of long steel products and its importance with regard to ETS and CBAM regulations
- CO_2e as measurable parameter to be included in product specifications

Nicklas Magnusson, M. Sc., Decarbonization Manager, Ovako AB, Stockholm, Sweden, Co-authors: Dipl.-Ing. Stefan Czeczor, Christoph Gallo, M. Sc., both Ovako GmbH, Erkrath, Germany

Ultimate EV efficiency with D³GaN – next level automotive inverter solutions
- Highest inverter efficiency over drive cycle measured on AVL test bench
- VisIC D³GaN technology achieved lowest switching losses vs SiC
- High Voltage D³GaN on Silicon will allow affordable EV solutions
- HV GaN Technology robustness in traction inverters is proven – the technology needs to be designed for

Dr. Wolfgang Wondrak, Strategic Advisor Automotive, VisIC Technologies Ltd., Nes Ziona, Israel, Co-author: Dipl.-Ing. (FH) Werner Ness, VisIC Technologies Austria GmbH, Wien, Austria

12:30

Disconnect systems in Battery electric vehicles
- Various driveline layouts from a system perspective using disconnect
- Comparison solutions for disconnect systems
- Efficiency gain opportunities as well as safety aspect
- Pros and cons for monostable and bistable actuation systems

Rudolf Fitz, M. Sc., Chief Engineer Systems Development, Co-authors: Holger Seidl, Thomas Messner, all GKN Driveline International GmbH, Lohmar Germany

Potential for the sustainability of traction motors through recycling of active materials
- Current market situation and legal requirements, particularly with regard to rare earth elements
- Opportunities and challenges of the circular economy of end-of-life traction motors
- Technical feasibility of recycling of permanent magnets

Jula Lanzer, B. Eng., Development engineer, Pre-development Drive Units & Mechatronics, Mercedes-Benz AG, Stuttgart, Germany

AI-assisted surrogate models for multi-objective optimization of the inverter – Intelligent control of traction inverters through deep reinforcement learning for lifetime and efficiency optimization
- A reliable multi-objective optimization framework based on AI-assisted surrogate modeling
- Optimization of the inverter components through the developed framework
- Neural network models for efficient temperature and power loss estimation
- Intelligent control of traction inverters using deep reinforcement learning

Dr.-Ing. Nima Tashakor, Senior Development Engineer, AI Expert, Technical Development E-Drives, Power Electronics & Transmission, Group Components, Volkswagen AG, Baunatal, Germany, Co-authors: Ben Esser, Jessica Yu, both Volkswagen AG, Kassel, Germany

13:00 **Time for Business Lunch** – Meet & Greet in the exhibition area with car presentation

Electric drives
Dr.-Ing. Carsten Gitt,
Mercedes-Benz AG

Thermal management
Dr.-Ing. Jens Lüder,
Robert Bosch GmbH

Hybrid transmissions
Prof. Dr. Ing. Karl Viktor Schaller,
Technical University of Munich

14:30

AVL high efficiency EDU
- 94 % average EDU cycle efficiency
- Technology transfer from R&D to the customer application
- From virtual target verification to vehicle testing

Dipl.-Ing. Christian Schmidt, Project Manager, Co-authors: Nathan De Kerpel, Inigo Garcia de Madinabeitia Merino, all AVL List GmbH, Graz, Austria

Optimizing eMotor thermal management in early design phase
- This presentation tackles the challenge of evaluating and selecting the most effective cooling solutions for eMotors
- BorgWarner's eMotor Thermal System Analysis (EMTSA) software tool, which simulates and compares a diverse range of cooling concepts during the early design phase. Based on 1-D thermal networks and bill-of-material cost models, EMTSA can easily analyze hundreds of configurations, assessing both performance and cost metrics
- In our study, we evaluate forty eight cooling options, and explore how eMotor size, application conditions, and material costs affect optimal cooling choices. The options include a new high surface area stator cooling concept, developed by BorgWarner, which can improve continuous performance by 25-30 %

David Fulton, M. Sc., Engineering Director, Co-author: Michael Bradfield, both BorgWarner Inc., Indiana, USA

8G-eDCT – Intelligent hybridization for the MMA architecture
- Innovative hybrid drive in the new MMA architecture. The heart of the hybrid drive is the newly developed 48V-electrified 8-speed dual-clutch transmission
- The P2 hybrid architecture enables recuperation and electric driving in all 8 forward gears as well as in reverse gear

Dipl.-Ing. Jan Becker and **Robin Ditton, M. Sc.,** both Mercedes-Benz AG, Stuttgart, Germany

Program

15:00

An optimized lightweight and compact EDU for A-segment vehicles

- Electric drive unit (EDU)
- Lightweight, compact EDU
- Frontloading and system engineering

Dr. Simon Klacar, Principal Engineer, Hardware and System, InfiMotion Technology Europe AB, Gothenburg, Sweden

Improved battery performance through immersive thermal management

- Latest abuse test results with immersive battery thermal management
- Performance comparison of immersive and indirect thermal concepts
- Durability of immersive battery thermal management

Dr. Volker Null, Technology Manager Thermal & Dielectric Fluids, Shell Global Solutions Germany GmbH, Hamburg, Germany

Optimized range extended four-speed two-drive-powertrain

- Two electric motors with high overload capacity for high efficiency at low power demands
- Four mechanical speeds with dog clutches with seamless shifting
- Increased range through a parallel-serial connection of a CNG internal combustion engine
- Measurements on the test bench to validate the simulations and assembly of a prototype

Aaron Kappes, M. Sc., Research Associate, Co-author: Prof. Dr.-Ing. Stephan Rinderknecht, both Institut for Mechatronic Systems (IMS), Technical University of Darmstadt, Germany

15:30

TREMEC 500hp EDU, ready for intensive track usage

- 500 hp in a compact package
- High continuous performance without thermal derate
- Designed with flexibility to meet customer needs – single or dual motor, disconnect or park lock integration, ratio flexibility, integrated or remote mounted inverter

Jonas Bally, M. Sc., System Engineer, TREMEC, Zedelgem, Belgium

Designing predictive battery heating systems for an electric vehicle by utilizing cloud data

- Predictive battery heating: Introducing an intelligent system that minimizes battery heating energy demand by predicting driving needs and adapting to current conditions
- Energy savings through cloud data integration: Using cloud data to predict driving profiles and optimize battery heating, resulting in a 4.3 % reduction in energy consumption in urban areas
- Versatile use: The system could be applied to various tasks, such as eco-driving, reducing charging time, increase performance, or overall energy management
- Simulation & validation: Testing the predictive battery heating strategy (PBHS) approach in a simulation environment to verify adaptibility and potential application in real-world scenarios

René Schilling Johnson, M. Sc., PhD Candidate and Simulation Engineer, Volkswagen AG, Wolfsburg, Co-author: Prof. Dr.-Ing. Markus Henke, Technical University of Braunschweig, Germany

The next-gen two-speed Dedicated Hybrid Transmission for B- and C-class vehicles: Highly energy efficient DHT-P13

- 2-speed P1 + P3 Dedicated Hybrid Transmission
- Capable of multi mode operation
- Base architecture used as platform for different markets and segments

Dr. Mathias Lutz, Senior Consultant BU Systems, hofer powertrain, Nürtingen, Germany

16:00 **Meet & Greet** – Coffee break in the exhibition area with car presentation

Development of drive concepts

Dr.-Ing. Florian Mulzer,
AGCO GmbH

Battery

Prof. Dr.-Ing. Stephan Rinderknecht,
Technical University Darmstadt

Digitalisation & AI

Jens Saberi, M. Sc.,
Magna PT Software Systems Solutions GmbH

16:45

BorgWarner's next generation electric drive unit development based on multiphysics numerical analysis

- High-fidelity, physics-based numerical tool facilitating efficient product design
- Analytical System Development (ASD) plan, a globally unified process for product development
- Complex multi-physics models including co-simulation within a multi-point energy transfer system
- Reduced Order Models (ROM) for high-frequency power electronics and low-frequency vehicle domains

Dr. Pascal David, Senior Engineering Manager Advanced Systems Innovation Electric Drives, Co-author: Eric Bourniche, Eng., both BorgWarner Luxembourg Automotive Systems S.A., Hautcharage, Luxembourg

Prospects for battery technology for freight and commercial vehicles

- Advantages and disadvantages of current and future battery technologies (NMC/LFP/Na-Ion, etc.)
- Dimensioning of batteries for commercial vehicles with regard to performance and service life
- Operating strategy for heterogeneous battery systems and hybrid systems
- Service life of battery systems for heavy-duty applications

David Wasylowski, M. Sc., Chief Engineer Battery System Technology and Vehicle Integration, Co-authors: Prof. Dr. rer. nat. Dirk Uwe Sauer, Dr.-Ing. Florian Ringbeck, all RWTH Aachen University, Germany

Optimization of the drivetrain design of modular wheel hub driven vehicles for fleets in urban areas

- Optimization of the drivetrain of wheel hub driven vehicles to reduce fuel consumption
- Real driving data for the creation of representative driving cycles to map the various tasks of the vehicles
- Comparison of the consumption of specific and standardized powertrain design of modular wheel hub driven vehicles in fleets in urban areas

Tobias Matthias Peichl, M. Sc., Research Associate, Co-author: Prof. Dr.-Ing. Stephan Rinderknecht, both Institute for Mechatronic Systems (IMS), Technical University of Darmstadt, Germany

Program

17:15 **Multi-system-integration trend in modern drivetrain design**

- Highlight on financial and functional benefits of integrating various systems in electric vehicles
- Discussion on increased complexity and need for careful coordination when integrating multiple components
- Space and cost savings are evaluated in comparison with a 3-in-1 system
- It is pointed out how integration simplifies assembly, minimizes errors, and enhances vehicle performance

DI (FH) Wilhelm Vallant, Senior Product Manager Electric Driveline Systems & Transmission, AVL List GmbH, Graz, Austria

Sustainable batteries: From scalable module design for new cell chemistries to intelligent BMS and the optimal series product

- Scalable module design and fast development methods
- Intelligent BMS architectures for enhanced safety, flexibility, and real-time monitoring
- Holistic approach to system integration for improved efficiency, longevity, and adaptability

David Wollschläger, Head of Battery and Electronics Development, hofer powertrain GmbH, Nürtingen, Germany

Utilizing unsupervised learning for the detection of current sensor faults in electric Vehicle drivetrains

- Importance of accurate current sensing in electric vehicle drivetrains
- Data generation using simulation model and data preprocessing
- Design of LSTM autoencoder for anomaly detection

Johannes Sautter, M. Sc., Research Assistant, Co-authors: Prof. Dr. Andre Casal Kulzer, both Institute of Automotive Engineering (IFS), University of Stuttgart, Philipp Wagner, Robert Bosch GmbH, Schwieberdingen, all Germany

17:45 **Holistic, multi-criteria synthesis and optimization of electric drive units**

- Necessity for tools to synthesize and optimize powertrains
- Challenges in the holistic approach
- Presentation of the development platform based on selected result
- Next steps to expand the development platform

Christopher Reus, M. Sc., Research Associate, Vehicle-Systems, Institut for Mechatronic Systems, Technical University Darmstadt, and **Patrick Strobl, M. Sc.,** Team Leader Electromechanical Drivetrain, Institute of Machine Elements, Gear Research Center (FZG), TUM School of Engineering and Design, Technical University of Munich, Garching, Germany

Cloud-based battery analytics, prediction and optimization

- Connected solutions establishing digital twins of batteries provide a powerful tool to discover deviations early and apply improvement measures accordingly
- We will give an insight into our approaches and present how utilizing hybrid algorithms as a fusion of big data, machine learning and electrochemical models enables an in-depth analysis, prediction and optimization of high-voltage batteries
- Based on vehicle telemetry data state of health, aging, stress factors and anomalies are calculated and evaluated in the cloud. Optimized operation parameters can be derived individually per battery – e.g. fast charging profiles
- Out of this quality risks can be detected early, quality costs can be reduced, the asset value of the battery and vehicle improved over lifetime and digital services can be enabled

Dipl.-Ing. Stephan Schade, Director Connected Services, Vehicle Health, Robert Bosch GmbH, Schwieberdingen, Germany

Agile electric powertrain development by AI-based design optimization

- AI-based digital development from requirements to optimal designs
- Rapidly obtain attractive designs covering numerous conflicting KPIs
- Agility by fast and optimal responses to project change requests

Dipl.-Ing. Dr.techn. Martin Hofstetter, Head of E-Mobility and Alternative Drivetrains Research Group, Co-author: Dipl.-Ing. Dr.techn. Dominik Lechleitner, all Institute of Automotive Engineering, Graz University of Technology, Graz, Austria

18:15 **End of the 1st congress day**

18:45 **Dritev Summer Night at Kurhaus Baden-Baden – The place you have to be!**
Evening speech:
Gear up for the future: FEV's 10-speed gearbox motor for e-bikes
Dr. Gereon Hellenbroich, Manager E-Drive and Transmission, FEV Europe GmbH, Aachen, Germany

Program

2nd Congress Day
Thursday, July 10, 2025

Simulation & Testing
Dr.-Ing. Gerd Rösel,
Vitesco Technologies GmbH

Lubricants
Prof. Dr. -Ing. Karsten Stahl,
Technical University of Munich

Market, customer, regulations, environment, sustainability
Dipl.-Ing. Andreas Deimel, AUDI AG

08:30

End-to-End – Virtual release for power-train-components and Systems
- Application and development of virtual prototypes to save time and reduce costs (SW/HW)
- Digital twins as a consolidation platform for measurement and simulation data as well as models
- DevOps for standardizing and scaling model releases and model integrations
- AI to reduce computation times and to be used as virtual sensors

René Honcak, Head of Digital Twin | Powertrain, ZF Friedrichshafen AG, Munich, Germany

Pushing the boundaries of Electric Vehicle (EV) Lubrication – How low can you go? Pushing viscosity boundary limits
- Protecting copper electrical components
- Fluid thermal efficiency improvement
- Enhanced cooling of motor windings

Megan Jones, Product Manager, Co-authors: Dr. Amanda Eastwood, Dr. Michael Gahagan, all Lubrizol Limited, Derbyshire, UK

Driveshaft design for sustainability
- Sustainability in product development
- Net shape manufacturing
- Constant velocity joint for passenger car driveshaft
- Life cycle analysis

Dipl.-Ing. (TH) Arne Berger, Chief Engineer Advanced Engineering, Co-author: Dipl.-Ing. (FH) Orkan Eryilmaz, both GKN Driveline Int. GmbH, Lohmar, Germany

09:00

Advantages of combining simulation and testing in vibration analysis using the example of an e-Drive
- Comparison of the simulations using experimental vibration analysis
- Reduction of testing time and costs through virtual testing
- Optimization of simulation models by incorporating test data

Jonas Latsch, M. Sc., PhD student – Technical Development E-Drives, Power Electronics & Transmission, Group Components, Volkswagen AG, Baunatal, Co-authors: Dr. Hendrik Frisch, Volkswagen AG, Kassel, Prof. Dr. Ralf Kiran Schulz, University of Kassel, all Germany

Unlocking the future: Identifying key formulation levers for next-gen high-efficiency axle oils
- Next generation HD axle oil development program
- Investigating the impact of lowering viscosity and different chemical formulation levers
- Understanding which operating conditions are impacted by formulation change
- Improving CO_2 footprint

Dipl.-Chem. Emanuele Verda, B.A., Global Technology Manager Driveline & BEV Fluids, Petronas Lubricants International, Santena, Italy, Co-authors: Lars Leonhardt, Dr. Dirk Schwaebisch, both Petronas Lubricants International, Heilbronn, Germany

Minimizing scope 3 emissions by electric powertrain design optimization
- Scope 3 emissions minimization of electric axle drives in a multi-objective manner
- Obtain attractive solutions covering sustainability, performance, package and cost
- Consideration of different supply chain options with respective cost and carbon footprint

Dipl.-Ing. Dr.techn. Dominik Lechleitner, Senior Researcher, Co-authors: Dipl.-Ing. Dr.techn. Martin Hofstetter, Assoc. Prof. Dr. Mario Hirz, all Institute of Automotive Engineering, Graz University of Technology, Graz, Austria

Simulation & Testing
Dr.-Ing. Gerd Rösel,
Vitesco Technologies GmbH

Transmission components
Prof. Dr. -Ing. Karsten Stahl,
Technical University of Munich

Inverter
Dipl.-Ing. Alexander Krick,
Volkswagen AG

09:30

Steering on the cyber-physical test bench for complete vehicle tests of automated vehicles
- State of the Art: Steering on the full vehicle test bench
- Requirements for steering solutions at a full vehicle test bench
- Possible variable concept for steering at the full vehicle test bench

David Fischer, M. Sc., Research Associate, Co-authors: Jonas Freyer, M. Sc., Dipl.-Ing. Katharina Bause, all IPEK – Institute of Product Engineering at KIT (Karlsruhe Institute of Technology), Karlsruhe, Germany

Innovation that slows down: Research approaches in the context of wet vehicle brakes
- Potential of wet brakes
- Challenges
- Drag torque
- Friction behavior

Dr.-Ing. Katharina Völkel, Development Engineer, Clutches and electro-mechanical drivetrains, Co-author: Prof. Dr. Karsten Stahl, both Institute of Machine Elements, Gear Research Center (FZG), TUM School of Engineering and Design, Technical University of Munich, Garching, Germany

Multi-level inverter for traction drive application from BorgWarner
- BorgWarner's multi-level inverter approach
- It proposes a full three-level inverter and a combined two-/three-level inverter with T-Type topology
- Design of the power module, DC link capacitor and commutation cell
- Inverter characteristic

Andreas Apelsmeier, M. Eng., Manager Inverter Hardware Innovation and Advanced development, BorgWarner Systems Engineering GmbH, Nuremberg, Germany, Co-authors: Dipl. Wirt.-Ing. Joel Deussen, Andreas Mayer, both BorgWarner PDS Inc., Auburn Hills MI, USA

10:00

Thermography for condition monitoring of electric machines on test benches
- Thermal condition monitoring on test benches
- Use of thermography
- AI for early detection of damage to electric machines

Stephanie Schamberger, M. Sc., Scientific Assistant Co-authors: Prof. Dr.-Ing. Hans-Christian Reuss, Mathias Jaksch, M. Sc., all FKFS – Research Institut for Automotive Enineering and Powertrain Systems, Stuttgart, Germany

Development of an asymmetric Limited Slip Differential (LSD) for enhanced vehicle performance and compatibility with electric vehicles
- LSDs improve vehicle characteristics and increase vehicle safety
- Asymmetric LSDs can generate different locking values in drive and coast modes
- An adjustable initial torque contributes to vehicle stability in steady state driving manoeuvres

Andreas Mair, M. Sc., Director Mechanical Engineering, Engineering ePowertrain, GKN Automotive, Bruneck, Italy, Co-author: Yousuke Kawai, GKN Driveline Japan Limited, Tochigi, Japan

3D EMC simulation in power electronics development for e-drive
- Virtual methods: Use of a 3D FEM model in CST Studio Suite to improve the EMC of power electronics.
- Hybrid approach: Coupling the 3D FEM model with a circuit simulation that provides detailed representation of high-frequency interferences and parasitic field couplings.
- Geometric investigations: Utilizing the virtual prototype for investigations regarding zone concept

Felix Petrossow, M. Sc., Development Engineer, Technical Development E-Drives, Power Electronics & Transmission, Group Components, Volkswagen AG, Baunatal, Germany

Program

10:30 **Meet & Greet** – Coffee break in the exhibition area with car presentation

Gear manufacturing

Daniel Borowitza, M.Eng.,
BMW Group

11:15 **Global sensitivity analysis of transmission manufacturing tolerances for electric vehicles**

- Transmission design process for electric vehicles
- Global sensitivity analysis of the impact of manufacturing tolerances
- Relevance of manufacturing deviations with regard to selected transmission characteristics
- Outlook: Development of a fast prediction model to map the influence of tolerances

Florian Oberneder, M. Sc., Research Associate, Co-authors: Thomas Papadopoulos, M. Sc., Patrick Strobl, M. Sc., Dr.-Ing. Michael Otto, Prof. Dr.-Ing. Karsten Stahl, all Institute of Machine Elements, Gear Research Center (FZG), TUM School of Engineering and Design, Technical University of Munich, Garching, Germany

11:45 **Superfinished tooth flank surfaces – Potential evaluation of efficiency advantages**

- Increasing focus on the efficiency of drive trains through electrification
- Surface quality of tooth flanks has an influence on gearbox efficiency
- Load-dependent meshing losses can be calculated as a function of roughness
- Absolute additional mileage of a vehicle depends on driving cycle

Alexander Mann, M. Sc., M. Sc., Research Associate, Gear Department – Gearbox NVH, Co-authors: Christian Westphal M. Sc., Prof. Dr.-Ing. Christian Brecher, all Laboratory for Machine Tools and Production Engineering WZL of RWTH Aachen University, Chair of Machine Tools, Aachen, Germany

12:15 **Geometry calculation and design of forged differential bevel gears**

- Geometry calculation of forged gears based on a spherical involute
- Local tooth contact simulation based on FEM influence coefficients
- Design and evaluation of tooth root geometry of forged gears

Dipl.-Ing. Frederik Mieth, Development Engineer, FVA-GmbH, Frankfurt am Main, Germany

E-machine

Prof. Dr.-Ing. Yves Burkhardt,
Technical University of Darmstadt

Exploring the potentials of virtual (pre-) development in software applications: From thermal 1D simulation to a neural network-based E-machine temperature model

- Physical 1D offline lumped parameter Thermal network (LPTN) incorporating inputs from 3D fluid and temperature field simulations
- Transfer methodology: Pre-training the Thermal Neural Network (TNN) with 1D simulation data for virtual parameterization
- Validation of the physical 1D LPTN and the online TNN based on measurements and model adaptation using transfer learning
- Reduction of virtual and real testing efforts via design of experiments (DoE) optimized load profiles, utilizing Latin Hypercube Sampling (LHS) and Genetic Algorithms (GA)

Niels Wiese, M. Sc., Testing and application of electric drives and **Dr.-Ing. Peer-Ole Gronwald,** both Volkswagen AG, Isenbüttel, Germany

How to design the optimal bearing concept for rotor and input shafts of an electric powertrain?

- Challenges and requirements of modern E-Drive bearings
- From system analysis to the optimal bearing configuration
- How to overcome parasitic currents in high voltage e-Axles?

Dipl.-Ing. (FH) Sebastian Schweins, Application Engineer, SKF GmbH, Schweinfurt, Germany

Advancements in electric powertrain technologies: A focus on stator and winding technologies

- Coil build structure/winding technology
- Slot fill factor
- High efficiency
- Continuous performance

Neil Cheeseman, Segment Chief Engineer, Driveline & Electrification, Co-authors: Adrian Mrozek, both Continental Engineering Services, Lichfield, UK, Andre Marques Silva, Continental Engineering Services, Porto, Portugal

NVH

Dr. Norbert Alt,
FEV Group GmbH

Acoustics of the electric powertrain: Optimized design as an enabler for active sound design

- Presentation of methods for acoustic simulation to predict and optimize noise behavior
- Active acoustic design of the electric drivetrain
- Example of a holistic design process

Maximilian Zinner, M. Sc., Leading Expert Powertrain, Co-authors: Dr. Jan Reger, both ARRK Engineering GmbH, Munich, Germany, Annika Rotteveel, MdynamiX AG, Benningen, Germany

The key to superior NVH: Understanding the damping behavior of electric machines

- Damping calculation: Development of a linearized damping model for electrical machines
- Measurement method: Optimal measurement point placement in the context of 3D-Scanning-Laser-Doppler-Vibrometry
- Experimental validation: Modal analyses on components and assemblies
- Integration and system validation: Integration of the damping models into a system model for predicting the acoustics of electrical machines

Dr.-Ing. Marius Franck, Team Manager Simulation E-Drive and Transmission, FEV Europe GmbH, Aachen, Germany

From the test bench to the virtual twin: NVH-appropriate controller design

- The increasing quality requirements for electric vehicles require optimised NVH performance (noise, vibration, harshness)
- The large number of factors influencing the minimisation of natural mode excitation over the entire speed range harbours risks but also opportunities for the development
- With the help of an innovative workflow, NVH problems can be identified through multi-body simulation and solved through targeted adjustments to the control system of the electrical machine
- The virtual verification presented reduces development time and costs and provides important impetus for the acceptance of electric vehicles

Mark Janousek, Simulation and support engineer, Co-authors: Dr. Denis Werner, both AVL Deutschland GmbH, Munich, Germany, Michael Schrottner, AVL List GmbH, Graz, Austria

12:45 **Time for Business Lunch** – Meet & Greet in the exhibition area with car presentation

Program

Auditorium – Plenary
Dipl.-Ing. Thomas Pfund, Schaeffler Automotive Buehl GmbH & Co. KG

14:15 Driving the Future: Audi's path to the software-defined vehicle

- Adapting to a Changing Market: Balancing electrification, digitalization, and customer needs
- Beyond Hardware: Why SDV is more than just software – the evolution of vehicle architectures
- The Future of Driving: How Audi will enhance the user experience through continuous innovation

Geoffrey Bouquot, Member of the Board of Management for Technical Development, AUDI AG, Ingolstadt, Germany

14:45 The climate-neutral and digital mobility of the future: Challenges and opportunities

- Transformation of the German Automotive Industry
- Necessary framework conditions for a successful transformation
- Measures to accelerate the transformation

Hildegard Müller, President of the German Association of the Automotive Industry (VDA), Berlin, Germany

15:15 Vehicle energy management and thermal system solutions for future electrified mobility (A potential analysis for BEV and PHEV)

- Future BEVs and Hybrids
- Enhance energy efficiency, reduce environmental impact, affordability
- Holistic Vehicle Energy Management (VEM)
- Advanced and future-proof thermal system solutions

Dipl.-Ing. Martin Krüger, Senior Vice President System Engineering, Robert Bosch GmbH, Schwieberdingen, Germany

15:45 Plenary discussion
Dipl.-Ing. Thomas Pfund, Schaeffler Automotive Buehl GmbH & Co. KG

16:00 Awarding of the Best Presentation Award for Junior Engineers

16:05 Closing remarks

16:15 End of the congress

Scientific support of the congress

The VDI Society Product and Process Design (GPP)

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.

www.vdi.de/gpp

The VDI Society Automotive and Traffic Systems Technology (FVT)

The VDI Society Automotive and Traffic Systems Technologies (FVT) with its five Technical Divisions offers a home for engineers from a wide range of disciplines in the fields of "road", "rail", "air" and "water" transport. Through active interplay with the working groups of the VDI Regional Associations, the students and young engineers as well as the other VDI Technical Societies, the VDI FVT is networked nationally and internationally with other cooperation partners. The stated task of the VDI FVT is to strengthen the perception of the engineering profession and to establish the VDI as a technical-scientific opinion leader in professional circles, politics and society. The aim here is to promote the interaction of the various mobility areas and to provide technical impetus, as well as to develop perspectives for cross-sectional topics relating to "People and Mobility" and "Means of Transports and Infrastructure".

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Poster Exhibition*

Machine Learning-based Generation and Automated Optimization for Electrified Vehicle System-level Topology Design
Prof.dr.ir. Theo Hofman, Group leader, Professor Eindhoven University of Technology, Eindhoven, The Netherlands

Lubricants and cleaners for the production of cylindrical and prismatic battery cell casings
Moritz Ziffling, Business Unit Sales Manager E-Mobility, Zeller + Gmelin GmbH & Co. KG, Eilingen/Fils, Germany

From concept to implementation: the role of rapid control prototyping in the development of electric machines
Andreas Fiedler, M. Sc., Product Manger, dSPACE GmbH, Paderborn, Germany

Sustainable modularization of dritev systems: Adaptability for technological innovations, dynamic customer needs, and changing market conditions for maximizing usability in different usage phases
Rüdiger Fehrenbacher, M. Sc., Doctoral Reaseacher, STFS System Tribology: Friction and Sliding Systems, IPEK – Institute of Product Engineering at KIT (Karlsruhe Institute of Technology), Karlsruhe, Germany

Structural assessment of printed circuit board assemblies under consideration of static-, vibrational- and thermal loads based on finite element methods
Dr. Walter Hinterberger, Lead Engineer Component Acoustics Analysis, Engineering Center Steyr GmbH & Co. KG, St. Valentin, Austria

Steering on the cyber-physical test bench in the contect of automated driving
David Fischer, M. Sc., Reseach Associate, Automated and Connected Mobility, IPEK – Institute of Product Engineering at KIT (Karlsruhe Institute of Technology), Karlsruhe, Germany

Concept of determining the reliability of lubricants in rolling bearings under constant electrical load
Julian Wald, M. Eng., Senior Application Engineer, TUNAP GmbH & Co. KG, Wolfratshausen, Germany

Simulation, testing and road compliance of a novel series-parallel truck drivetrain
Geir Brudeli, M. Sc., CTO & Founder, Brudeli Green Mobility AS, Hokksund, Norway

Automation potential in digital powertrain design for electric commercial vehicles using Matlab Simulink
Michael Siegel, M. Eng, Research Associate, Faculty of Mechanical and Civil Engineering, Hochschule Landshut, University of Applied Sciences, Landshut, Germany

High Power Charging: Design and use of CCS charging interfaces in utility vehicles
Dipl.-Ing. Rik Stellbrink, Product Manager Automotive Systems, Phoenix Contact E-Mobility GmbH, Schieder-Schwalenberg, Germany

The digital twin in small series production
Lukas Anderl, M. Eng., Research Associate, Faculty of Mechanical and Civil Engineering, Hochschule Landshut, University of Applied Sciences, Landshut, Germany

Urban mobility of the future – 48 V traction drive with 35 kW
Stefan Rossner, M. Sc., Project Manager Drive Development, MOLABO GmbH, Ottobrunn, Germany

Dynamic motor drive software provides 2% range increase on dual-axle PHEV with serial production launch in 2026
Dipl.-Ing. Jean Rosenzweig, Director Dynamic Motor Drive Programs, TULA Technology, Inc., San Jose, California, USA

*February 2025

Speakers Corner

Ask the drive system experts

Do you still have questions? You are welcome to meet our speakers in the speakers corner following the sessions. Straightforward, subject-specific and instantaneously.

Dritev Summer Night

Your networking hub for the international powertrain community

Your networking spot for the international powertrain community: Meet colleagues and project partners and use the informal atmosphere to get to network anew.

Car Presentation

Powertrain systems with an emotional appeal

Whether it's a serial production vehicle, a fancy roadster or an eyecatcher – even the best drive unit needs its customised appearance. Experience the latest vehicle concepts and find out more from experts on site about the special features of the vehicles and the integration of the different drive solutions.

The following vehicles will be shown*:

- MAN Truck
- Opel
- Tremec
- TU Darmstadt – Hyundai Ioniq
- Tula EESM DMD – Tesla Model 3

*February 2025

Program of the accompanying Conference

Drivetrain Solutions for Commercial Vehicles 2025

Visit for free

Chair: Dipl.-Ing. Thomas Landsherr, Vice President, Engineering Driveline, MAN Truck & Bus SE, Munich, Germany

1st Conference day
Wednesday, July 9, 2025

09:10 **Plenary speeches with Mercedes-Benz, ADAC, TRATON GROUP R&D Battery & Charging, Volvo Group Technology**
(Details on page 3)

11:00 **Plenary discussion**

11:20 **Meet & Greet – Coffee break**

11:55 **Opening of VDI Conference Drivetrain Solutions for Commercial Vehicles**
Dipl.-Ing. Thomas Landsherr, MAN Truck & Bus SE

Challenges in electrification of heavy-duty transport

12:00 **Electrification of heavy-duty transport: Challenges for power infrastructure**
Dipl.-Volksw. Eric Ahlers, Netze BW GmbH

12:30 **Pioneering megawatt-charging and bidirectional energy transfer for battery electric trucks**
Dr.-Ing. Fabian Schweizer, MAN Truck & Bus SE & **Benjamin Langer, B. Eng.,** AVL Software and Functions GmbH

13:00 **Time for Business Lunch**

Optimization of the electric drivetrain

14:30 **Innovative system functions for electrified MD/HD powertrains**
Dr.-Ing., Dipl.-Phys. Michael Guyenot, Robert Bosch GmbH

15:00 **Next generation CV-E-powertrain concept for flexible vehicle installation in heavy duty applications**
Dipl.-Ing. René Kockisch, IAV GmbH

15:30 **Multi-criterial operating strategies for electric truck drives under consideration of brake particle emissions**
Alexander Koss, M. Sc., Institute for Automotive Engineering (ika), RWTH Aachen University

16:00 **Meet & Greet – Coffee break**

Zero emission powertrain: Future of mobility

16:45 **Hydrogen Technologies as a short-term solution for decarbonizing heavy transport: Evaluating Hydrogen ICE and fuel cells in the transition to zero emission**
Dipl.-Ing. Florian Lindner, MAN Truck & Bus SE

17:15 **Electric powertrain solutions for emergency vehicle – More than just an electric drive in commercial vehicles**
Dipl.-Ing. Markus Schachner, Rosenbauer International AG

17:45 **Using a fast digital twin in the cloud to optimize energy request, range prediction an aging of the battery of BEV trucks**
DI Michael Glensvig, AVL List GmbH

18:15 **End of the 1st conference day**

18:45 **Get-together: Dritev Summer Night**

2nd Conference day
Thursday, July 10, 2025

E-axle: Efficiency and innovation for electric mobility

08:30 **Affordable powertrain with multi speeds powershift reducer for LCV electrified axle**
Dipl-Ing. Loïc Vassieux & **Dipl.-Ing. Elie Geffroy,** VALEO POWER

09:00 **Process innovation in powertrains: A path to CO_2 reduction**
Dipl.-Ing. Florian Ziefle, Schaeffler Automotive Buehl GmbH & Co. KG

09:30 **The eaxle for an efficient, electrical long-haul truck**
Dipl.-Ing. Bertram Wunderlich, Daimler Truck AG

10:00 **Innovative shiftable electric axle for the electrification of trailers**
Adel Turic, M. Sc., Institute for Mechatronic Systems, Darmstadt University of Technology

10:30 **Meet & Greet – Coffee break**

Advanced PTO solutions

11:15 **Driving with activated hot shift PTO on AMT gearbox**
Fredrik Borgström, M. Eng., Scania CV AB

11:45 **ePTO – Evolution of power take-offs for electrified commercial vehicles**
Dipl.-Ing. Christian Titz, MAN Truck & Bus SE

12:15 **Multifunctional converter for bidirectional energy transfer in commercial vehicles**
Marco Wolf, B. Sc., ZF Friedrichshafen AG

12:45 **Time for Business Lunch**

Efficient zero emission propulsion technologies

14:15 **Highly efficient electric propulsion system development using digital twin and AI**
Rahul Sagar Plavullathil, M. Sc. Automotive Systems Engineering, FPT Industrial S.p.A.

14:45 **Zero emission hybrid for commercial vehicle: Comparison of FCS and H2-ICE based powertrains for long haul application**
Dr.-Ing. Christoph Schörghuber, AVL List GmbH

15:15 **Hybrid BEV – A suitable concept for commercial vehicles?**
Dr.-Ing. Joschka Schaub, FEV Europe GmbH

15:45 **Closing remarks**
Dipl.-Ing. Thomas Landsherr, MAN Truck & Bus SE

Joint plenary session

16:00 **Awarding of the best presentation for junior engineers**

16:05 **Common closing remarks**

16:15 **End of the International VDI congress**

Sign up and details
www.vdiconference.com/01TA809025

Program Committee

The brains behind the Congress – The Program Committee

1st row from left to right

Dr. Norbert Alt, COO & Executive Vice President, FEV Europe GmbH, Aachen, Germany

Dipl.-Ing. Georg Bednarek, Director Regulations & Certification, Stellantis N.V., Rüsselsheim, Germany

Daniel Borowitza, M. Eng., Head of Advanced Development Chassis and Drive Systems, BMW AG, Munich, Germany

Prof. Dr.-Ing. Yves Burkhardt, Head of the Institute for Electrical Energy Conversion – Electrical Drive Systems, Technical University of Darmstadt, Germany

Dr.-Ing. Thomas Casper, Manager Combustion- & Hybrid-Drivetrain-system, Transmission and Hybridcomponents, Dr. Ing. h.c. F. Porsche AG, Weissach, Germany

Dipl.-Ing. (FH) Andreas Deimel, Head of Transmission/Powertrain Development, Audi AG, Ingolstadt, Germany

Dr.-Ing. Thomas Hackl, Chief Technical Officer, Hofer AG, St. Ulrich bei Steyr, Austria

Dr.-Ing. Keiwan Kashi, Vice President Engineering – ePowertrain, GKN Automotive, Lohmar, Germany

Dipl.-Ing. Alexander Krick, Head of Technical Development E-Drive, Power Electronics & Transmission, Volkswagen AG, Group Components, Kassel, Germany

Dipl.-Ing. Thomas Landsherr, Vice President, Engineering Driveline, MAN Truck & Bus SE, Munich, Germany

2nd row from left to right

Dr.-Ing. Jens Lüder, Vice President Engineering, Robert Bosch GmbH, Stuttgart, Germany

Dr.-Ing. Florian Mulzer, AGCO Transmission Specialist, AGCO GmbH, Marktoberdorf, Germany

Dipl.-Ing. Thomas Pfund, President Business Unit E-Motors, Schaeffler Automotive Buehl GmbH & Co. KG, Bühl, Germany (Chair)

Prof. Dr.-Ing. Stephan Rinderknecht, Professor and Head of the Institute for Mechatronic Systems in Mechanical Engineering, Technical University of Darmstadt, Germany

Dr.-Ing. Gerd Rösel, Head of Innovation, Electrification Solutions Division, Vitesco Technologies GmbH, Regensburg, Germany

Jens Saberi, M. Sc., Sr. Manager Software Systems Solutions, Magna PT Software Systems Solutions GmbH, Untergruppenbach, Germany

Dr. Christoph Sasse, Vice President Electrified Powertrain Technology, ZF Friedrichshafen AG, Friedrichshafen, Germany

Prof. Dr.-Ing. Karl Viktor Schaller, Honorary Professor, TUM School of Engineering and Design, Technical University of Munich, Garching, Germany

Dipl.-Ing. (FH) Udo Sommerhalter, MBA, Customer Chief Eng., Valeo Powertrain Systems Business Group, Bietigheim-Bissingen, Germany

3rd row from left to right

Prof. Dr.-Ing. Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Center (FZG), TUM School of Engineering and Design, Technical University of Munich, Garching, Germany

Sarah Tyslik, MBA, Director Electric Drive Systems, Mercedes-Benz AG, Stuttgart, Germany

Dr. Michael Wagner, Vice President Global Engineering and Product Management Drivetrain und Battery Systems, BorgWarner Drivetrain and Battery Systems Drivetrain Engineering GmbH, Heidelberg, Germany

Dipl.-Ing. Carsten Weber, Manager, Propulsion Systems Research & Advanced Engineering, Ford Werke GmbH, Cologne, Germany

Dr. Henning Wöhl-Bruhn, Head of Technical Development, Inverter Electric Drives, Volkswagen AG, Wolfsburg, Germany

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PM REVIEW

VDI-Workshops, Tuesday, July 8, 2025

9 a.m. - 5 p.m., Kongresshaus Baden-Baden

Workshops are only held in German!

Künstliche Intelligenz im Antriebssystem: Entwicklung, Betrieb und Bewertung

Ihre Leitung: Dipl.-Ing. Sascha Ott, Direktor in der Institutsleitung des IPEK – Institut für Produktentwicklung & Geschäftsführer des Zentrums Mobilitätssysteme am Karlsruher Institut für Technologie (KIT), Germany

Zielsetzung

Der VDI-Spezialtag „KI im Antriebssystem: Entwicklung, Betrieb und Bewertung" bietet Ingenieur*innen und Expert*innen der Antriebstechnik fundierte Einblicke in die Anwendung Künstlicher Intelligenz. Dabei werden grundlegende Themen wie Funktionsweisen, Nutzungspotenziale und Einsatzmöglichkeiten von KI behandelt. Zudem geht es um Methoden, die bei der Entwicklung und der Produktion eingesetzt werden können. Ergänzend werden neue KI-Ansätze zur Funktionsoptimierung und Automatisierung vorgestellt. Aspekte der Nachhaltigkeit durch System-of-Systems-Design und das Industrial Metaverse werden erläutert.

Inhalte des Spezialtages

- Erschließung neuer Anwendungsfelder für KI in der Antriebstechnik durch praxisorientierte Workshops
- Anwendung der Grundlagen und Funktionsweisen von KI in der Antriebstechnik
- Nutzung von KI zur Optimierung der Leistungsfähigkeit und Effizienz von Antriebssystemen
- Integration von Methoden zur Entwicklung und Produktion von KI-unterstützten Antriebslösungen
- Steigerung der Effizienz von Antriebssystemen durch Automatisierung und Funktionsoptimierung
- Förderung von Nachhaltigkeit und Effizienz durch System-of-Systems-Design und das Industrial Metaverse

Mehr Details unter: www.vdi-wissensforum.de/01ST805025

Schwingungs- und Geräuschverhalten von Antriebssträngen

Ihre Leitung: Prof. Dr.-Ing. Jens Bihr, Institut für Konstruktion und CA-Techniken, Fakultät Maschinenbau und Fahrzeugtechnik, Technische Hochschule Ulm, Germany

Zielsetzung

In diesem eintägigen Spezialtag lernen Sie die Grundlagen der Maschinendynamik, Techniken zur Messung von Schwingungen und Geräuschen an Antriebssträngen und Auslegungsmethoden für geräuscharme Stirnradverzahnungen. Unser Ziel ist es, Ihnen fundiertes Wissen über das Schwingungsverhalten von Stirnradgetrieben und die Auslegung geräuscharmer Verzahnungen zu vermitteln. Zudem analysieren wir das Geräuschverhalten elektrischer Maschinen. Nach dem Besuch des Spezialtages sind Sie in der Lage, Schwingungen und Geräusche an Antriebssträngen professionell zu analysieren. Sie können geräuscharme Stirnradverzahnungen auslegen und verstehen das Geräuschverhalten elektrischer Maschinen.

Inhalte des Spezialtages

- Grundlagen der Maschinendynamik
- Schwingungs- und Geräuschmessung
- Schwingungsverhalten von Stirnradgetrieben
- Auslegung geräuscharmer Stirnradverzahnungen
- Geräuschverhalten elektrischer Maschinen

Mehr Details unter: www.vdi-wissensforum.de/01ST808025

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A highlight of Dritev in Baden-Baden is the accompanying exhibition. Representing the entire supply chain for transmissions and drivetrains – including conventional transmissions, hybrid concepts, and electrified drivetrains - in the realm of mobile applications such as passenger cars, commercial vehicles, and mobile machinery, the Dritev exhibition serves as a cross-industry information platform. Congress participants will gain a comprehensive overview of key providers in the development, simulation, and production of drives, transmissions and components. In addition to the exhibiting companies at Dritev, the exhibition area also features products, simulations, and a parallel conference showcasing technologies and services in the field of drive technology for commercial vehicles.

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☐ **Congress/conference, July 9 - 10, 2025** **Please select one event only.**

☐ **International VDI-Congress „Dritev“** (01TA805025)	☐ **International VDI Conference "Drivetrain Solutions for Commercial Vehicles"** (01TA809025)

☐ **Workshop, July 8, 2025** **Please choose one workshop only.** Workshops will only be held in German.

☐ Workshop 1 **„Künstliche Intelligenz im Antriebssystem"** (01ST805025)	☐ Workshop 2 **„Schwingungs- und Geräuschverhalten von Antriebssträngen"** (01ST808025)

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

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