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23rd International Conference

Eurotyre

Linking Tyre – Chassis – Road

Key Topics:

- **Vehicle Dynamics**
- **Tyres Wear Emissions**
- **Tyre Wear & Property Prediction**
- **Innovative Chassis**
- **Virtualization and Verification**
- **Tyre Road Interaction**
- **Innovative Development Methods**

Conference Chair
Prof. Dr.-Ing. Burkhard Wies, ITEC (Institute for Technical Engineering Consulting)

+ Best Paper Award

+ Exhibition

THE conference for exchange of innovation, technology and interactions on highest scientific level for the Tyre, Car manufacturers & Road Industry & related Academia & Suppliers in Europe

With Experts from:

Applus + IDIADA | Continental | Formula Student Germany | Fraunhofer ITWM | German Aerospace Centre (DLR) | KIT | Leibniz University Hannover | Michelin | NVH Consulting | Pirelli Deutschland | RWTH Aachen University | Team Sonnenwagen | TRE | TU Berlin | TU Braunschweig | TU Ilmenau | Volkswagen

An event organized by VDI Wissensforum GmbH
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September 29-30, 2026
Garbsen near Hanover, Germany

Conference Day 1
Tuesday, September 29, 2026

08:00 Registration

08:45 **Welcome and Opening of the Conference**
Prof. Dr.-Ing. Burkhard Wies, ITEC (Institute for Technical Engineering Consulting)

Keynote

09:00 **K&C as a Virtual Tuning Instrument – Shaping Chassis Characteristics Prior to First Test Drives**
- Early virtual chassis tuning with K&C test rigs
- Simulation-based design of wheel guidance and steering characteristics
- Reduced testing effort and higher vehicle maturity before first drive tests

Boris Kirchner, Managing Director, TRE GmbH, Neustadt an der Weinstraße

Vehicle Dynamics
Moderation: **Dr.-Ing. Thomas Kersten,** Volkswagen AG

09:30 **Dynamic Chassis Control Pro – Suspension Control Reaching Next Level with Dual Valve Technology**
- New dual valve dampers in McPherson strut and volume market
- New level on comfort and driving dynamics
- Roll-out in platform MQB-evo
- Differences in functions of single valve and dual valve system

Dipl.-Ing. Stefan Kukla, Senior Project Manager DCC systems, Development Chassissystems, Verticaldynamics, Co-Authors: Dipl.-Ing. Christoph Weber, Dipl.-Ing. Frank de Beer, all of Volkswagen AG, Wolfsburg

10:00 **Vehicle Dynamics Modelling for Virtual Estimation of Dynamic Wheel Loads**
- Infrastructure-independent estimation of dynamic wheel loads using onboard vehicle dynamics models
- Development of computationally efficient real-time models for passenger cars and heavy-duty trucks within a virtual simulation framework
- Scalable approach for digital twin roads through continuous vehicle-based infrastructure monitoring

Ventseslav Yordanov, M. Sc., Specialist Intelligent Wheels, Vehicle Dynamics & Acoustics, Co-Author: Lionel B. Pouansi M., M. Sc., both of Institute for Automotive Engineering, RWTH Aachen University

10:30 Coffee break and exhibition visit

Tyre Wear Emissions
Moderation: **Prof. Dr.-Ing. Günter Leister,** twms consulting

11:00 **Influence of Inner City Driving Maneuvers on the Distribution of Tyre Abrasion Particles**
- Tyre Road Wear Particles
- Computational Fluid Dynamics
- Discrete Phase Modelling
- Traffic Control

Tamara Borodina, M. Sc., Research Assistant, Chair of Automotive Engineering, Co-Author: Prof. Dr.-Ing. Thomas Bachmann, both of TU Ilmenau

11:30 **A Method for Predicting Tyre Wear Rates Based on Measurements and Simulations**
- Development of compressed, mobility-data-based test procedures for C2 tyres to ensure reproducible wear analysis under defined conditions
- Validation of the physical CDTyre simulation model using measurement data gathered from inner drum test bench (GRIPS) experiments
- Practical implementation of realistic load scenarios on the GRIPS inner drum test bench and demonstration of the abrasion testing process
- Discussion of scientific and technical challenges in generating test sequences to enable reproducible tyre wear rate analysis under realistic operating conditions

Philipp Bühler, M. Sc., Research Associate, Department of Automotive Engineering, Institute for Vehicle Systems Engineering (FAST), Co-Authors: Dr.-Ing. Martin Gießler, both of Karlsruhe Institute of Technology, Dr.-Ing. Christoph Burkhart, Fraunhofer-Institut für Techno- und Wirtschaftsmathematik ITWM, Kaiserslautern

12:00 **Investigating Tyre Wear Particle Behaviour from Laboratory Testing to Convoy-Based Approaches**
- Tyre Wear Particle measurement
- Computational Fluid Dynamics analysis
- Tyre Wear Particle methodologies on lab and convoy conditions
- On-road Tyre Wear Particle measurements

Ph.D. Pedro Trechera Ruiz, Emissions R&D Specialist, Powertrain Hybrid Fuel Cell, Co-Authors: Juan Jesús García, Rosa Delgado, Joan Puig, all of Applus+ IDIADA, Santa Oliva, Tarragona, Spain

12:30 Lunch break and exhibition visit

Tyre Wear & Property Prediction
Moderation: **Prof. Dr.-Ing. Thomas Bachmann,** TU Ilmenau

14:00 **ZEDU – Next Generation: From Research Demonstrator to Series Production Vehicle**
- ZEDU 1 Validation: Encapsulated brake/tyre systems with integrated suction for complete brake emission prevention
- Series Transfer: TRL increase from 4-5 to 6-7 with focus on space, energy, and cost constraints
- Key Technologies: Flow-optimized suction design and adaptive control for energy-efficient operation

Sven Reiland, M. Eng., Head of System and Vehicle Validation, Vehicle energy concepts, Institute of Vehicle Concepts, Co-Authors: Joschka Kieser, M. Sc., Fabius Epple, M. Sc., all of German Aerospace Centre, Stuttgart

14:30 **A Fully Physical Thermo-Mechanical Framework for Predicting Temperature-Dependent Tyre Behavior**
- Tyre
- Thermal
- Friction
- Rolling Resistance

Francesco Calabrese, M. Sc., Research Assistant, Mathematics for Vehicle Engineering, Co-Authors: Manfred Bäcker, Axel Gallrein, Christoph Burkhart, Tobias Ruhwedel, all of Fraunhofer ITWM, Kaiserslautern

15:00 Coffee break and exhibition visit

Innovative Chassis

Moderation: Dr.-Ing. Christoph Elbers, ZF Friedrichshafen AG

15:30 The 12-Month Vehicle: From Rules to Racing in Formula Student

- Turning a rulebook into a running prototype vehicle within one development season
- Evaluation of international student teams through engineering judging, technical inspection and dynamic track events
- Formula Student Germany with electric vehicles, autonomous driving disciplines and real competition conditions
- Simulation, tyre-road interaction and chassis behavior becoming visible on track

Hannes Zimmermann, B. Eng., Organizer Engineering Design Event, Project Manager, Formula Student Germany, Bad Abbach

16:00 Innovations & Simulation in Solar Racing!

- Solar Endurance Racing
- Drag Reduction Design
- Simulation in racing

Luke Morad, B. Sc., Team Lead, Mechanics, Co-Author: Jonas Merten, both of Team Sonnenwagen, Aachen

16:30 Guided tours: „Experience Technology“

A brief introduction to the Institute of Dynamics and Vibration at Leibniz University Hannover will be given, along with an overview of the guided tour program. The guided tours will then take place, featuring visits to the following test facilities and demonstrators: High Speed Linear Friction Tester, Climate Chamber “Snow Production”, REPTIL, Formula Student Car, Highly Dynamic Drum Test Rig, Robovib, Micro- and Mesocosms, Wave Channels, and Aquariums with Controllable Environmental Parameters.

Dr.-Ing. Matthias Wangenheim & Prof. Dr.-Ing. Burkhard Wies

18:45 Get-together

To conclude the first day of the conference the VDI Wissensforum invites you to a get-together. Take advantage of the relaxed atmosphere to expand your network and have in-depth discussions with other participants and speakers.

Conference Day 2

Wednesday, September 30, 2026

Keynote

Moderation: Prof. Dr.-Ing. Burkhard Wies, ITEC (Institute for Technical Engineering Consulting)

08:30 Tyre NVH and Ride Comfort: Critical Review of Testing Methods through the Lens of Tyre-Road Interaction – Strategies, Surfaces, Pros, Cons, and Pathways Forward

- Divergent Testing Methods Lead to Inconsistent Results
- Critical Role of Tyre-Road Interaction
- Pros and Cons of Common Testing Strategies
- Pathways Forward

Dipl.-Ing. Johann Pankau, M. Sc., Founder & CTO, NVH Consulting LLC, Shelby TWP, USA

Advanced Modeling, Simulation & Sustainability

Moderation: Dr.-Ing. Christian Hartweg, Stellantis

09:00 Designing Polyvalent and Variant Robust Chassis through a Comprehensive and Integrated Simulation Ecosystem

- Integrated Simulation Ecosystem for Chassis Robustness
- Extension of Standard Tyre Models Beyond Classical Handling
- Physically Consistent Modeling Across Conditions
- Enabler for Polyvalent and Optimized Chassis Design

Dipl.-Ing. Frédéric Spetler, Head of MICHELIN SIMIX, Simulation Services, Co-Authors: Dipl.-Ing. Anthony Kopec, Dipl.-Ing. Frédéric Leymin, all of Michelin, Clermont Ferrand, France

09:30 Analysis of the Degradation Behaviour of Tyre Wear Particles in Aquatic Systems under Various Material and Environmental Conditions

- Degradation behaviour of tyre wear particles
- Simulation of aquatic ecosystems
- Quantitative Assessment of Degradation Effects

Robin Bähre, M. Sc., Research Associate, PhD candidate, Material Testing, Institute for Plastics and Circular Economy (IKK), Co-Authors: Dr. Florian Bittner, Prof. Dr.-Ing. Hans-Josef Endres, all of Leibniz University Hannover, Garbsen

10:00 Coffee break and exhibition visit

Tyre Road Interaction

Moderation: Dr.-Ing. Christian Bachmann, fka GmbH

10:30 Virtual Co-Development – Benefits for an Advanced Testing Vehicle

- Advanced testing capabilities – Wheel individual traction and braking
- Virtual test and control development for real world application
- Fully automatable testing procedure and data postprocessing

Stefan Pyrek, M. Sc., Specialist Simulation & Modeling, Virtual Development, Pirelli Deutschland GmbH, Breuberg

11:00 The Role of Tyre Tread Interlocking on Road Surfaces

- Tread pattern facilitates mechanical interlocking to road asperities creating additional friction
- FE based simulations and experiments used to identify interlocking effects
- Novel statistical approach used for separation of friction mechanisms in traction force signals

Dr.-Ing. Matthias Wangenheim, Deputy Director, Institute of Dynamics and Vibrations, Co-Authors: Prof. Dr.-Ing. Burkhard Wies, both of Leibniz University Hannover, Garbsen, Klaus Wiese, Continental Reifen Deutschland AG, Hanover

11:30 Predictive Tyre Robustness Assessment via FEM with Integrated Tyre-Vehicle Interaction Modeling

- Tyre Impact Robustness
- FEM Simulation
- Tyre-Vehicle-Interaction Modeling
- Validation

Dr.-Ing. Christian Gerendt, Senior Engineer Tyre Simulation, R&D, Co-Authors: Dr.-Ing. Tobias Helmich, Dr. Andreas Topp, all of Continental Reifen Deutschland GmbH, Hanover

12:00 Lunch break and exhibition visit

Innovative Development Methods

Moderation: Prof. Dr.-Ing. Burkhard Wies, ITEC (Institute for Technical Engineering Consulting)

13:15 Rack Force Estimation for Electric Power Steering Using Data-Driven Modeling and HIL Test Bench Measurements

- Data-driven rack force estimation using LSTM neural networks for electric power steering systems
- Integration of EPS signals and vehicle dynamic states for rack force estimation
- Model training and validation using an EPS Hardware-in-the-Loop test bench
- Potential applications in virtual steering system development

Qiao Zhang, M. Sc., Ph. D. Student, Automotive Engineering, Co-Author: Prof. Dr.-Ing. Steffen Müller, both of TU Berlin

13:45 Development of a Steering Torque Model for Dynamic Driving Simulators based on HiL Measurement Data

- Characterization of real steering systems via Hardware-in-the-Loop test bench measurements
- Extraction of steering feel fingerprints for implementation into Simulink models
- Real-time steering torque calculation based on vehicle dynamics
- Improving driving simulator realism through high-fidelity feedback actuator data

Hendryk Lausch, M. Sc., Research Associate/Ph.D. Candidate, Institute of Automotive Engineering, Co-Authors: Jannes Iatropoulos, M. Sc., Prof. Dr.-Ing. Roman Henze, all of TU Braunschweig

14:15 Simulation of Tyre Interaction with Deformable Terrain Using the Material Point Method

- MPM enables stable tyre–terrain simulation under extreme deformations
- Validated snow material model reproduces real block–snow interaction behavior
- Tyre simulations capture footprint formation and extend to snow and sand terrains

Dr.-Ing. Fursan Hamad, Development and software engineer, Mechanics and Simulation, Co-Authors: Dipl.-Ing. Klaus Wiese, Dr.-Ing. Peter Lenz, all of Continental AG, Hanover

14:45 Best Paper Award & Closing Words

15:00 End of Conference

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www.vdi.de/fvt

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Dr.-Ing. Stefan Ullmann, Audi AG

Best Paper Award

The best presentation by a young scientist (max. 33 years of age) will be honored with the Best Paper Award of the conference "Eurotyre".

The prize is endowed with 500 EUR and can only be accepted in person at the end of the conference. Presenters who would like to take part in this competition are requested to include their date of birth with their contact details. Reports from current research projects are welcome.

Guided tours: „Experience Technology"

Following the presentations, participants will have the opportunity to experience test and validation methods at Leibniz University Hannover / IDS Garbsen.

Guided tours of the following test facilities and demonstrators:

- High Speed Linear Friction Tester
- Climate Chamber "Snow Production"
- REPTIL
- Formula Student Car
- Highly Dynamic Drum Test Rig
- Robovib
- Micro- and Mesocosms
- Wave Channels
- Aquariums with Controllable Environmental Parameters

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