

22nd International Conference

# Tire – Chassis – Road

Former: Reifen – Fahrwerk – Fahrbahn

## **Key Topics**:

- Tire Road Interaction
- Chassis Design
- Tire Wear
- Tire Performance
- NVH: Optimization and New Ideas
- Simulation vs. Reality

+ Best Paper Award

+ Drive Event "Experience Technology!"

+ Exhibition

Conference Chair Prof. Dr.-Ing. Stefan Gies, Automotive Consulting

### With Experts from:

AdV Automotive Engineering | Applus IDIADA | Auto Mobil Forschung Dresden (AMFD) | Calspan | Continental Reifen | Federal Highway and Transport Research Institute (BASt) | Fors Performance | Fraunhofer ITWM | Goodyear | IAV | Karlsruhe Institute of Technology | MdynamiX | RWTH Aachen University | Trigolign | TU Braunschweig | TU Ilmenau | University of Applied Sciences Kempten | Volkswagen

September 15-16, 2025 Esslingen, Germany



Mobil Forschung Dresden (AMFD) GmbH, Co-Authors: Dipl.-Ing. Steven Ernst, BMW Group, Munich, Prof. Dr.-Ing. Günther Prokop, TU Dresden

### 11:30 Comfort Potential of a Semi-active Anti-roll Bar Based on MR Technology

- Rotary MR-Damper as a controllable link between two passive torsion bar halves
- Variable stiffness of the semi-active anti-roll bar through different input currents and resulting changes in MR fluid viscosity
- Damping effects during one-sided wheel excitations via Rotary MR-Damper

• Improved vertical ride comfort achieved with variable stiffness **Thomas Bertram, B. Sc.,** Student, Vehicle Dynamics, MdynamiX AG, Benningen, Co-Authors: Prof. Dr. Peter Pfeffer, MdynamiX AG, Benningen/University of Applied Sciences Munich, Stefan Battlog, INVENTUS Development GmbH, St. Anton i. M., Austria

- 12:00 A Novel Hybrid Conventional/Air Sprung Suspension Concept with High Load Carrying Capacity and Improved Vehicle Dynamics Performance
  - Extension of payload capacity
  - Novel approach to high payload suspension tuning
  - No compromise for lightly laden performance

**Dipl.-Ing. Alex de Vlugt,** Senior Vehicle Dynamics Consultant, R&D, AdV Automotive Engineering, Inverleigh, Australia

### 12:30 Lunch Break and Exhibition Visit

### **Tire Wear**

Moderation: Prof. Dr.-Ing. Thomas Bachmann, TU Ilmenau

### 14:00 Semi-Trailer Tire Wear: A Practical Study of On-Road Influences for EURO 7

- Projectgoals
- MORE research vehicle
- First research results and outlook

 Follow-up: Setup of practical Semi-Trailer field tests
 Matthias Plante, M. Sc., Head of Innovation Management, Trigolign BV, Vaassen, Co-Author: Ad Oomen, M. Sc., HAN University of Applied Sciences, Arnhem, both from the Netherlands

### 14:30 Parameters Influencing Tire Wear: Current Challenges for

- Development under the Aspects of New Regulations
  Understanding tire wear phenomena is essential for fulfilling new
- regulations
- Tire wear is affected by multiple factors, including vehicle, route, pavement and tire
- Modelling approaches for tire wear and influencing factors
- Surface roughness and tire wear

**Dr. rer. nat. Pavel Ignatyev,** Expert Contact & Friction Physics, Innovation and Applied Research, Co-Authors: Jörg Buschmeier, Dr. Benjamin Oelze, all of Continental Reifen GmbH, Hanover

00 Coffee Break and Exhibition Visit

### **Tire and Brake Wear**

Moderation: Dipl.-Ing. Stephan Rau, wdk

### 15:30 Tire and Brake Wear in the Context of Regulatory Requirements and Technical Options for Reducing Emissions

- Measuring methods and fault effect analysis
- Results on tire and brake wear
- Emission levels and mitigation measures

**Prof. Dr.-Ing. Thomas Bachmann,** Director of Automotive Engineering Group, Department of Mechanical Engineering, Technical University of Ilmenau



### 16:00 Future Trends and Mitigation Strategies for Brake and Tire Particle Emissions Euro 7 Hardware Optimization: The initial focus is on enhancing brake friction materials and developing low-wear tires, with elec-

- trification and optimized friction materials crucial for compliance Future Regulatory Outlook: Anticipated regulations may address airborne tire particle emissions and incorporate RDE standards for non-exhaust emissions
- Advanced Mitigation Strategies: Future approaches may utilize CFD-based methods for particle characterization, alongside wear and emissions models. Model-predictive control strategies offer potential for optimizing vehicle movement

Dr.-Ing. Toni Feißel, Systems Engineer, Research & Development, Co-Authors: Mirco Augustin, Christian März, all of IAV GmbH, Munich

16:30 Presentation of Implemented Technologies in Exhibited and Test Vehicles

### Afterwards

17:00

### Introduction of Esslingen University and Overview of the Evening Event

Prof. Dr.-Ing. Jens Holtschulze, Faculty Mobility and Technology, University of Applied Sciences, Esslingen

#### 17:00 End of the 1st Conference Day

#### Star-Get-together Esslingen University & Visit of the Traffic Training ting Centre from

Get-together at Esslingen University of Applied Sciences with guided tours of a four-post test rig, a tire testing facility, and a VI-grade driving simulator. Take advantage of the relaxed atmosphere to expand your network and have in-depth discussions with other participants and speakers.

### **Conference Day 2**

### Tuesday, September 16, 2025

## Keynote

Moderation: Prof. Dr.-Ing. Stefan Gies, Automotive Consulting

#### 08:30 The Volkswagen ID.7 Chassis - Focusing Efficiency and Sustainability

- · Relevance of energy efficiency and sustainability
- Relevant factors on efficiency of automobiles •
- Volkswagen's ID.7 chassis
- Chassis contributions to efficiency and the optimization of conflicting targets



Dipl.-Ing. Christoph Weber, Head of Vertical Dynamics, Volkswagen AG, Wolfsburg

### **Tire Performance**

Moderation: Prof. Dr.-Ing. Stefan Gies, Automotive Consulting

### 09:00 Measurement of Enhanced Tire Contact Patch Data and **Application in Racing Scenarios**

- Enhancement of test procedures to investigate horizontal forces on the (static) footprints
- Influence of camber and inflation pressure on contact behavior
- Lateral load characteristics in Racing scenarios
- Integration of pressure data into tire simulation models

Théo Ferry, M. Sc., Tire Science Leader, Fors Performance, Issoire, France, and Elaheh Derakhti, M. Sc., Research Assistant, Institute for Automotive Engineering, Co-Authors: Benjamin Schäfer, M. Sc., both of RWTH Aachen University, Mark Harris, M. Sc., fka GmbH, Aachen

### 09:30 Predicting Tire Performance Across Road Surfaces: A Data-Driven Framework for Adaptive Tire Modeling

- Replication of real road textures using mathematically generated indoor test surfaces
- Use of 3D road scans to model tire-road interactions across surfaces
- Data-driven mapping from indoor tests to real-world performance
- Validation through vehicle tests and integration into virtual workflows

Dr. Marco Furlan, Senior Modelling Engineer, Tire Research, and Henning Olsson M. Sc., Senior Director, Technology, Automotive, both of Calspan, Buffalo, NY, USA

### 10:00 A Targeted Approach to Applying Real Road Macro Texture to **Flat-Trac Testing**

- Comparison between laboratory (Flat-Trac) and real road measurements
- A new approach for more realistic tyre-road interaction under controllable boundary conditions
- High-resolution 3D scans for replicas of real road surfaces on tyre laboratory test rigs

Gunnar Böttcher, M. Sc., Research Assistant, Vehicle Dynamics & Acoustics, Institute for Automotive Engineering, RWTH Aachen University, Co-Authors: Christian Carrillo Vasquez, M. Sc., Dr.-Ing. Christian Bachmann, both of fka GmbH, Aachen

10:30 Coffee Break and Exhibition Visit



Simulator and real-world tests assess realism and vehicle dynamics
 Prof. Bernhard Schick, Head of Institute, Institute for Driving
 Assistance and Connected Mobility, Co-Author: Philipp Rupp,
 both of University of Applied Sciences Kempten, Benningen

## Bridging Simulation and Track: Improving Driver Perception on Simulator Through Physical Tire Modeling

- Physical tire model vs Parametric tire model
- Virtual Tire Performance in Real Time Driving Simulator
- + Subjective evaluation Real Vehicle vs Virtual Vehicle
- Limit Handling Non-Linear behavior

**Dr. Eduardo Martano,** Project Engineer, Vehicle Dynamics and Tire Characterization, Applus IDIADA, Santa Oliva, Tarragona, Spain, Co-Author: Dr. Benjamin Rieff, cosin scientific software AG, Munich

15:00 Best Paper Award & Closing Words

15:15 End of Conference

## Exhibition & Sponsorship



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### 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".



## **Conference Chair**

Prof. Dr.-Ing. Stefan Gies, Automotive Consulting

### **Program Committee**

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### **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 "Tire – Chassis – Road". The prize is endowed with 500 EUR and can only be accepted in person at the end of the conference.

## **Driving Event**

### "Experience Technology!" September 15, 2025

Our popular VDI test drive "Experience Technology!" is back again. On the nearby traffic training ground, you as a participant will get behind the wheel of current passenger cars and technology demonstrators. In various driving modules, you will explore different questions related to tires, chassis, and road surfaces. The driving event takes place after the presentations on the first day and runs in parallel with the evening program. There will be bus shuttles from the evening event (University of Applied Sciences Esslingen) to the traffic training ground.





### 22nd International Conference Tire - Chassis - Road

VDI Wissensforum GmbH | VDI-Platz 1 | 40468 Duesseldorf | Germany

### **High-level Discussions** on the Latest Trends, **Developments and** Perspectives

You need help? Please contact us!

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EUR 1.490,-			
	1111		

□ I will join the evening reception on Sunday, September 14, 2025

### □ I'm interested in Sponsoring and/or Exhibition.

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Conference Venue and Accommodation: Leonardo Hotel Esslingen, Grabbrunnenstrasse 19, 73728 Esslingen am Neckar A room contingent has been pre-reserved at the hotel for conference participants. Please book your room using the keyword "VDI". (Contingent is available until 6 weeks before the event, to guarantee each individual reservation, a valid credit card is required) Telephone: +49 6221 3608910

E-Mail: reservations.southwest@leonardo-hotels.com

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