PRESENTATION PROGRAM OVERVIEW

Monday, October 5th, 2026

	GROßER SAAL	LESESAAL	KONDITOREI	ERFRISCHUNGSRAUM
18:00	Welcome Reception & Opening Exhibition in the Kurhaus		Poster Presentation online and 1st Floor at Kurhaus	

Tuesday, October 6th, 2026

	GROßER SAAL	LESESAAL	KONDITOREI	ERFRISCHUNGSRAUM
08:30	Opening Plenary Session			
10:45	ICE I	Advanced E/E Platforms	AI Trends in Mobility	Commercial Vehicles
13:30	Plenary Discussion: Where is AI Really Driving the Automotive Industry?			
14:35	Strategy I	H2 ICE	AI based Development	Drive Systems I
16:35	ICE II	Strategy II	AI Application	Automotive Start-Ups

Wednesday, October 7th, 2026

	GROßER SAAL	LESESAAL	KONDITOREI	ERFRISCHUNGSRAUM
08:00	Charging & Battery Systems I	Autonomous Shuttle	AI in Fleet	Sustainability
10:00	Future Powertrains	Fuel Cell I	AI driven Functions I	Drive Systems II
11:05	Plenary Session			
13:45	Fuel Cell II	Battery Systems II	AI driven Functions II	Hybrid Powertrains
15:50	Closing Plenary Discussion: From Hype to Impact: AI in Automotive Development and Organizations			

CONFERENCE SCHEDULE

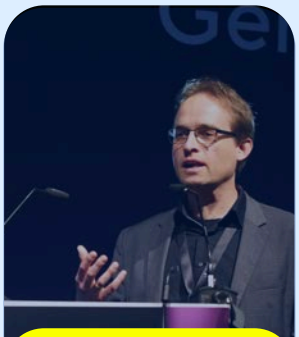
Welcome & Introduction to the 35th Colloquium

08:30

Univ.-Prof. Dr. rer. nat. Dr. h.c. mult
ULRICH RÜDIGER
Rector
RWTH Aachen University

Univ.-Prof. Dr.-Ing
LUTZ ECKSTEIN
Institute Director
ika, RWTH Aachen University

Univ.-Prof. Dr.-Ing
STEFAN PISCHINGER
Institute Director
tme, RWTH Aachen University



Univ.-Prof. Dr.
SEBASTIAN TRIMPE
Executive Director
AI Center, RWTH Aachen University

Opening Plenary Session

08:40

Dr.
MANFRED HARRER
President & Head of R&D Division
Hyundai Motor Group

CARSTEN HELBING
Co-CEO and COO
Rivian and Volkswagen Group
Technologies

TAKASHI UEHARA
President Powertrain
Toyota

PRESENTATIONS

Tuesday, October 6th, 2026

	GROßER SAAL	LESESAAL	KONDITOREI	ERFRISCHUNGSRAUM
	ICE I	Advanced E/E Platforms	AI Trends in Mobility	Commercial Vehicles
10:45 - 11:15	Lamborghini Temerario GT3, pure racing soul of a biturbo V8 engine D. Bizzarri, L. Bombace, L. Rizzi, P. Scarpato, A. Staine, E. Ursitti Automobili Lamborghini	The intelligent Car M. Tietze BMW Group	Causal Continuity: The Role of Domain-shifted Foundation Models in the Automotive Industry F. Wegner Mistral AI	Development of Hydrogen Engine Vehicles Integrated with Toyota's Hybrid System for Light Commercial Vehicles Y. Ikeda, Y. Haruna, K. Ito, M. Toya, H. Ueura Toyota Motor Corporation
11:15 - 11:45	Contributing to the Environment through Negative Emissions using ICEs with a Simple Exhaust System K. Harada Mazda Motor Corporation	Next evolution of a versatile iDM platform with high value 5th generation inverter M. Ishihara BorgWarner. Inc	AI-driven forecasting of electric vehicle DC fast charging behavior R. Doel, A. Chandra, W. Jones, C. Kersov, K. Rieger-Grothaus, A. Yerudkar Shell Research	Multi-objective Optimization of Electric Drivetrains regarding Commonality Aspects for Diverse Truck Portfolios P. Hätscher Daimler Truck AG
11:45 - 12:15	Improved Creep Life Prediction of Turbocharger Turbine Wheels Using Measured Operating Temperature and Grain Size Effect A. Asano Toyota Motor Corporation	Design of a PCB-Embedded GaN Power Module and Its Application in Next-Generation Hybrid Powertrains Y. Ma, P. Hu, C. Yu, C. Lin, L. Guo, H. Wei, F. Zhao Horse Powertrain Ltd.	FEV GenAISys: A Multi-Objective AI-Integrated Platform for Use-Case-Driven Virtual BEV Concept Development C. Wellmann RWTH Aachen University B. Chen, X. Klingbeil, T. Plum, R. Savelsberg, L. Schäfers, M. Struth, A. Kothari - FEV J. Andert - MMP, RWTH Aachen University	Humanoid Chauffeur L. Eckstein - VDI.eV. C. Peters - VDI.eV. S. Klaudt - fka GmbH

PRESENTATIONS

Tuesday, October 6th, 2026

	GROßER SAAL	LESESAAL	KONDITOREI	ERFRISCHUNGSRAUM
13:30 - 14:30	**Plenary Discussion: Where is AI Really Driving the Automotive Industry?** **TIM GUTHEIT** VP Technology & Innovation Automotive Infineon **WILL VAN DER AALST** Chief Scientist Celonis **ANTONIO KRÜGER** CEO DFKI			
14:35 - 15:05	Strategy I	H2 ICE	AI based Development	Drive Systems I
	The digital transformation of the automotive sector - how can Europe get back in a lead position M. Lemke European Commission	The Pre-ignition Experimental Development of a Cummins 6.7L Spark Ignited Direct Injection Hydrogen Engine L. Liu CUMMINS	Simulation Technology and Its Application to xEV Driving Control Development with AI Support T. Kaminaga, H. Kaneko, T. Morikawa Toyota Motor Corporation	Huawei DriveONE: Full-stack solution for new energy vehicle power domain J. Ghosh, C. Shi Huawei Technologies Duesseldorf GmbH C. Chen, X. Shi Huawei Technologies Co, Ltd.
15:05 - 15:35	Germany's Productivity Imperative: Where AI and Advanced Tech Create Real Shopfloor Leverage H. Engelstädter, T. Braun, S. Huber Oliver Wyman GmbH	Injecton System Design for Homogeneous and Lean Combustion in Hydrogen Engines A. Yamaguchi, J. Weber, D. Queck, J. Zanger DENSO CORPORATION	Next-Generation CAE: Leveraging Data-Driven Workflows for Virtual Development M. Blomberg, D. Lückmann, B. Morcinkowski - FEV Europe GmbH H. Habib - Key Ward GmbH M. Lückerath - tme, RWTH Aachen University	Challenges in Drive System Development for Autonomous Vehicles – Illustrated by the Volkswagen Nutz-fahrzeuge ID. Buzz AD N. Hartnack, M. Bigalke, C. Grothe M. Schendel, W. Siebert Volkswagen Nutzfahrzeuge
15:35 - 16:05	A new compass - New Business Models for Automotive Suppliers C. Koehler H&Z Group	SubZero Cold Start of a Novel 6.6L H2 PFI V8 Engine: Experimental Assessment of Coordinated Ignition and Injection Strat R. Russo, R. Aprosio, G. Gallo, B. Maisola, M. Ravazzolo, N. P. Sacco, T. Spedicato, G. Stirpe, A. Zingariello - Dumarey Automotive Italia A. Di Nieri - Dumarey Softronix Srl	How Expensive Is AI Coding? Measuring Energy and Emissions L. Casella, T. N. Vartziotis, M. Herrnberger, M. Keckeisen TWT GmbH Science & Innovation	Permanent magnet synchronous machine with amorphous core and heavy-rare-earth free magnets for traction applications M. Schröder, D. Gerstgarbe - FEV H. Currimbhoy - mmp, RWTH Aachen University T. Migita, K. Aimuta, T. Nishiuchi - Proterial

PRESENTATIONS

Tuesday, October 6th, 2026

16:35 - 17:05

GROßER SAAL

ICE II

The new Mercedes-Benz V8 M177 Evo: Concept and Engineering Features of a High-Performance V8 to Meet Future Emission Reg

F. Weinert, H. Buchfink, T. Eder, S. Henke, W. Holly, S. Müller, S. Schlegel, S. Schmitt, R. Weller, F. Weinert, M. Werner
Mercedes-Benz AG

LESESAAL

Strategy II

Humanoid Robots 2.0

J. Zinn, W. Bernhart, C.-S. Ernst, T. Kirschstein
Roland Berger GmbH

KONDITOREI

AI Application

From Software to Intelligent Experience: Agentic AI and Virtualization Accelerating SDVs

F. Bankoley
Robert Bosch GmbH

ERFRISCHUNGSRAUM

Automotive Start-Up

Start-Up Pitches and discussion featuring contributions from:

Building an Agentic Intelligence Layer for Industrial Robotics
C. Susen - Athenyx Robotics GmbH

Beyond Generative AI: The emerging role of Industrial AI to Solve Complex Physical Engineering Challenges
S. Shepherd - Monumo

From Vehicle Fault Data to Preventive Action: AI and Knowledge Graphs in Catena-X
J. Kukulies - textelligence GmbH

Accelerating Open-Source Innovation in Automated Driving
T. Woopen
Thinking Cars GmbH

Lithium Metal Anodes for Next-Generation Batteries
H. Minis Pai - Skellium

Cost Efficient Hybrid with Variable Transmission Ratio for Small Offroad Vehicles
M. Jakoby - NAIXT Solutions GmbH

New Dimension Driving Experience
K. Graf - Race-by-Wire GmbH

Structural Cooling for a New Kind of Battery Architecture
D. Ruf - leitspalt GmbH

17:05 - 17:35

Boxer meets Battery – The Next Stage of the 9A3 Engine Family in the new 911 Turbo S

M. Wunder, T. Fruth, C. Pleuß, F. Steimle, T. Wasserbäch, M. Wessels, M. Wunder
Dr. Ing. h.c. F. Porsche AG

China's Fast Lane vs Europe's Engineering: How AI Could Redraw the Race

M. Nievelstein
strato7

Large-Scale Demonstration and AI – Taking the next steps on automated driving in Europe

A.Etemad
Volkswagen AG

17:35 - 18:05

The Effect of Mid-Level Ethanol Blends on Fuel Economy, Performance, Emissions, Reliability, and Well-to-Wheel CO2

N. Matsubara, M. Aoki, K. Kodama, M. Kojima, T. Koyama, Y. Ochi, K. Sugata, K. Tomoda
Toyota Motor Corporation

Transformation by Design: Shaping Human-Centric R&D Organizations, Augmented by AI

P. Glusk
FEV Consulting

Autonomous Driving in Europe: From testing to type-approval

F. Clos
TÜV Rheinland Kraftfahrt GmbH

PRESENTATIONS

Wednesday, October 7th, 2026

	GROßER SAAL	LESESAAL	KONDITOREI	ERFRISCHUNGSRAUM
	Charging & Battery Systems I	Autonomous Shuttle	AI in Fleet	Sustainability
08:00 - 08:30	Thermal Optimisation Approaches to Reduce Heat Losses during Fast Charging J. Krings, S. Beisser, P. Steinmetz, P. Ziegler - Daimler Truck H.-C. Reuss - FKFS Stuttgart	xCritic: A Learned Scene-Agnostic Critic for Autonomous Driving Evaluation M. Gier Zoox	Battery Foundation Models and Agentic AI for Scalable E-Bus Fleet Optimization U. Genc, C. Kurtulus, C. Yavas Eatron Technologies	The strategic momentum of circularity – how it reshapes the automotive industry A. Klos EFESO MANAGEMENT CONSULTANTS
08:30 - 09:00	Megawatt Charging Experience D. Liebig, A. Chmura, F. Heider Shell Global Solutions (Deutschland) GmbH	From Heilig's Blechle to the Container: How Virtual Testing Bridges Vehicle and Cloud N. Eckstein, A. Osterrieder Bertrandt Group	Holistic TCO-Based Optimization for Mixed ICEV/BEV/FCEV Heavy-Duty Fleet Operations T. Koch, L. Eckstein Ika, RWTH Aachen University	Mastering the EU powertrain transformation: new business opportunities and ramp-up strategies. L. Mauler, L. Hoffmann, C. Prié Porsche Consulting GmbH
09:00 - 09:30	High Voltage, High Risk? Safety in 800 V+ Systems L. Fautz, M. Balah, G. Bilkei-Gorzo fka GmbH	Small but mighty - Closing the gaps in your mobility network M. Zwick INYO MOBILITY GMBH	A re-calibration of Robotaxi: operational model, technical breakthrough, and supply chain Y. Yang - Yole Group	Challenges and Opportunities in Hydrogen Fuel Cell Technology : Insights from Real-World Data D. Kim HYUNDAI MOTOR COMPANY

PRESENTATIONS

Wednesday, October 7th, 2026

	GROßER SAAL	LESESAAL	KONDITOREI	ERFRISCHUNGSRAUM
	Future Powertrains	Fuel Cell I	AI driven Functions I	Drive Systems II
10:00 - 10:30	Technology Scaling in xEV Electrification K. Jang HYUNDAI MOTOR COMPANY	Key factors for a high performance FC stack – efficiency & robustness as drivers for reliable systems up to 500 kW J. Kraft, A. Beeckmann, F. Claß, P. Epple, N. Zsiga EKPO Fuel Cell Technologies GmbH	Multi Attribute Optimization of an Electric Vehicle Chassis Architecture for Dynamics, Durability, and NVH Performance A. Carlitz, S. Chakraborty, K. Krishnamoorthi, D. Lickfold, M. Siddegowda Lucid Motors	The all new Electric Drivetrain from Mercedes-AMG D. Blanusa, T. Gödecke, J. Cierullies Mercedes-AMG GmbH
10:30 - 11:00	Intelligent Efficiency and Maximum Performance of the Mercedes-Benz EQS M. Weiss, O. Vollrath, G. Paul, L. Henle, N. Waldbüßer, D. Hopp, C. Dörr Mercedes-Benz AG	The all new FC system for HD trucks: Significant TCO improvements due to its dedicated long-haul truck layout & design T. Braun, J. Blum, N. Held, S. Hollnaicher, N. Loughlan, N. Weidler cellcentric	AI and Camera-Based In-Cabin Sensing: Shaping the Future of Vehicle Interiors T. Rehfeld Aptiv	Temperature sensor virtualization to improve cost-effectiveness of electric machines C. Hahn, D. Gross, M. Gupta, R. Keck, S. Paulus, M. Schenk, Y. Xu Robert Bosch GmbH

11:05 - 12:35 Plenary Session

SHEN YUAN
Vice President and CTO
Geely

PRAKASH RAO MALATHKAR
Head of Product Development
Mahindra

ANDREAS NAUERZ
CPO
IONOS

PRESENTATIONS

Wednesday, October 7th, 2026

	GROßER SAAL	LESESAAL	KONDITOREI	ERFRISCHUNGSRAUM
	Fuel Cell II	Battery Systems II	AI driven Functions II	Hybrid Powertrains
13:45 - 14:15	Customer Use Cases that Verify Market Need for New Technology at Scania T. Sandberg Scania CV AB	Luce: The Heart of Ferrari's Electric Future – Battery Technology as a Performance Enabler E. Ligabue Ferrari	Intelligent AI in Safety-Critical Embedded Software Development B. O'Steen, S. Judge, N. Reinke, M. Story, O. Tosh Nexteer Automotive	GHG and local emission assessments for a democar running with a MtG fuel, a Hybrid Powertrain and an innovative ATS C. Chaillou, C. Chaillou, E. Laigle, T. Sarica - Aramco V. Gaste - AVL LMM M. Olteanu - HORSE Technologies O. Coureau - RENAULT SAS
14:15 - 14:45	Collaborating to Advance Hydrogen Fuel Cell Technology V. Chomel Beyond Aero	AI for Efficient Traction Battery Lifecycle Development and Diagnostics O. Breuer, F. Eitel, M. Gianoglio Bernardi, J. Michaelis Opel Automobile GmbH / Stellantis	Reshaping ADAS Organizations for an End-to-End AI World: Aligning Regulation, Partnerships, and Technology L. Bublitz P3 Consulting GmbH	The Evolution of Blue Core: Integrating High-Efficiency Combustion with Advanced Electrification G. Kirkpatrick Changan UK R&D Centre
14:45 - 15:15	H2 Coach - Technology carrier: First Setra touring coach powered by fuel cell D. Portmann Daimler Buses GmbH H. Mayer Daimler Buses GmbH	Advancing Battery and EV Technology: Hyundai's Strategic Innovation J. Seo HYUNDAI MOTOR COMPANY	From Words to World: Leveraging the Power of AI for Scenario Generation P. Peltzer, S. Klaudt fka GmbH	High Efficiency Range Extender (REX) and Dedicated Hybrid Engine (DHE) Solutions for Passenger Cars and Heavy Duty Vehicles M. Wieser AVL List GmbH
15:15 - 15:45	Experimental and simulative investigation on PEM Fuel Cell degradation mechanisms under automotive freeze start endurance M. Schwarz, A. Albert - BMW Group R.-A. Eichel -Forschungszentrum Jülich GmbH, RWTH Aachen University	Analysis of a Lithium-Metal Battery Cell for eVTOL Applications S. Beschnitt, S. Payandeh A. Averberg, J. Küpper, H. Löbberding, M. Rudolph, M. Stapelbroek FEV Europe GmbH	Transfer Virtual Validation from AD/ADAS to Powertrain J. Pannek, N. Schade - ITL, TU Braunschweig S. Ehlers, T. Seel, B. Volkmann - IMES, Leibniz University Hannover	Learning Powertrain Intelligence: AI-driven REEV Control over Hardware Complexity M. Sens, A. Fandakov, J. Mickeleit, P. Stracke IAV GmbH

CLOSING PLENARY SESSION

Closing Plenary Discussion:
From Hype to Impact: AI in Automotive Development and Organizations

15:50

MARCO LICCARDO
Chief Technology & Digital Officer
IVECO

FRANK KALECK
Director Industry Advisory Automotive
Microsoft

PETER WALDMANN
VP Automated Driving
BMW AG

Dr.
PETER HOLDMANN
Chief Technical Officer
ZF

Closing Remarks

Univ.-Prof. Dr.-Ing
LUTZ ECKSTEIN
Institute Director
ika, RWTH Aachen University

Univ.-Prof. Dr.-Ing
STEFAN PISCHINGER
Institute Director
tme, RWTH Aachen University

End of Colloquium

16:55

POSTER PRESENTATIONS

1 ANTJE MUNTZINGER

Hochschule für Technik Stuttgart

Teaching AI to Respect Physics: Robust Perception via Physics-Guided Learning

Modern perception systems for automated driving are highly capable, but AI models can still produce physically implausible outputs in challenging scenarios. This contribution presents a physics-guided learning approach to improve the robustness and reliability of camera-based environment perception for automotive applications.

2 GREGORIUS KRISNA CAHYANTO

Esslingen University of Applied Sciences

Optimization of emission behavior for a hydrogen combustion engine

Early concept decisions for high-performance vehicles rely heavily on KPIs such as acceleration performance and track capability, often before detailed development data is available. This paper presents a digital development process combining public competitor data, physics-based simulations, and machine learning to enable rapid KPI estimation and competitor benchmarking in early vehicle development.

3 VINCENT QUAST

IMSE, RWTH Aachen University

Retrieving information from system architectures in model-based systems engineering.

As the complexity of modern cyber-physical systems increases, model-based systems engineering (MBSE) is becoming essential for managing development processes and system information. This study presents an AI-based chatbot using a GraphRAG approach to access and utilize information stored in MBSE system models, improving accessibility and reducing complexity for stakeholders.

4 MATTHIAS MAY

IMSE, RWTH Aachen University

Bridging Requirements and Verification: An AI-Based Tool for Automated Test Case Generation

The development of automotive systems is becoming increasingly complex, making the transformation of requirements into robust test cases a major challenge. This contribution presents an AI-based tool that automatically extracts test-relevant information from requirements and MBSE system models to accelerate and improve the generation of structured, traceable test cases.

5 SIMON DEHN

IMSE, RWTH Aachen University

AI-based Formalization of Requirements and Generation of SysML v2 System Architectures

The increasing complexity of automotive systems and unstructured requirements creates significant manual effort in requirements engineering and system modeling. This work presents an AI-based methodology that transforms natural language requirements into consistent SysML v2 system architectures, enabling faster, more traceable, and automated MBSE workflows for automotive development.

6 MICHAEL PALOCZ-ANDRESEN

Leuphana Universität

Decreasing Emissions and Fuel Consumption by coupling OBD and OBM data with AI

The Euro 7 standard requires continuous real-world emissions monitoring over the vehicle lifetime, creating new challenges for cost-effective sensor systems. This contribution presents a hybrid AI-based approach combining MOX sensor signals, vehicle operating data, and machine learning to enable precise and economically attractive on-board monitoring of nitric oxide emissions and fuel consumption.

POSTER PRESENTATIONS

7 SEMIH AKBULUT

IMSE, RWTH Aachen University

Robust NVH-Design of EDUs

Electrified powertrains introduce new challenges for noise, vibration and harshness design. In contrast to conventional combustion engine drivetrains, electric drive units are characterized by high frequency tonal excitations from the electric machine and gear mesh, which can disturb the customer and influence the purchase decision. Therefore, the NVH behavior of EDUs must be considered during product development. However, detailed simulation and optimization loops are time consuming and difficult to integrate into early design phases. Therefore, design guidelines are needed to support robust EDU designs without extensive optimization studies.

8 ANDRÉ KULZER

IFS, Universität Stuttgart

Predictive Powertrain Health Care

Modern powertrains are becoming increasingly complex, making it more difficult to identify aging or faulty components that affect efficiency and emissions. Intelligent monitoring systems based on data science methods can help detect failures early, classify system conditions, and enable predictive maintenance or adaptive control interventions. Potential applications include SCR systems, turbochargers, batteries, and other powertrain components. Digital twins based on physical, semi-physical, or data-driven models can be used for condition monitoring and fault detection. The project aims to evaluate suitable AI and data science approaches with regard to prediction quality, computational effort, scalability, and transferability. Selected methods will then be applied exemplarily to specific components in order to predict maintenance needs and identify complex fault patterns.

9 JANINA FICHTNER

ika, RWTH Aachen University

Framework for Targeted Sampling for Testing Automated Driving Functions

Scenario-based testing has become the standard for validating automated driving systems (ADS). Sampling methods are used to generate test scenarios for the simulation-based testing of ADS. Sampling results in a result space that, based on the simulation tests, can be divided into pass and fail regions separated by the pass/fail boundary. The structure of the result space is unknown prior to sampling for both rule-based and AI-based ADS. A conceptual framework is presented to approximate the fail regions using defined criteria and, on this basis—as well as through an efficient combination of exploration and exploitation—to identify the pass/fail boundary. Since the presented framework is a concept based on a systematic analysis of the state of the art, the framework must be implemented and validated in a subsequent step.

10 LENNART REIHER

ika, RWTH Aachen University

Taking University Research to the Road: How ika is developing, testing, and operating the karl. Research Vehicle

The Institute for Automotive Engineering (ika) has recently built a new research vehicle for automated and connected driving nicknamed karl. Operating an automated research vehicle is inherently difficult, especially for an academic institution: an automated driving software stack has to be developed, its functionalities have to be tested, a research vehicle has to be built, a testing approval has to be obtained, efficient operation processes have to be in place, etc.; all in a continual manner and revolving around modern software engineering practices. With this presentation, we plan to give honest insights into how ika as a university institute is developing, testing, and operating karl. and its automated driving system, from simulation over test tracks to public road traffic.

POSTER PRESENTATIONS

11 OLAF GOEBEL

Hochschule Hamm-Lippstadt

Increasing the resilience of the energy sector though BEVs with REX

When a significant proportion of a country's passenger car fleet consists of BEVs, this fleet also accounts for a significant proportion of the country's electricity consumption. When there is a dark doldrums period (in German: “Dunkelflaute”) in winter, BEVs worsen the electricity shortage. Therefore, electricity suppliers must maintain additional capacity of gas-fired power plants for BEVs, which only run for a few hours a year and have correspondingly high electricity production costs.

12 ROBIN REIMANN

TH Köln

AI based development of wheelhub motors for cars

When designing electric motors specifically for use as wheel hub motors in passenger cars, it is important to focus on various aspects in order to create the best motor for the respective application. For example, you might want to achieve a semi-suspended design for use in comfort applications or simply optimise for maximum torque. We have developed a process that uses AI to optimise a specific type of rim and brake system and automatically makes an AI-supported statement about the best design parameters in the available installation space. Another advantage of AI-supported development is the significant saving in simulation resources, as a precise forecast can be made on the basis of the training data. The possibility of a semi-suspended machine reduces the unsprung mass in the wheel, which enables better driving safety and stability and thus makes it easier to retrofit into an existing installation space.

13 TOBI ROCKSTROH

Shell

Shell Triple 10 Concept Car

On June 22nd, Shell unveiled its Triple 10 concept car, a ground-breaking proof-of-concept vehicle designed to establish a new design philosophy for the next generation of battery electric vehicles (BEVs). The vehicle meets three ambitious goals that Shell believe will underpin future mass-market electric mobility: Charge Faster - a sub 10-minute charge time, Go Further - 10-km/kWh economy, Drive Cleaner - a life cycle 10-tonne CO2e footprint
The key to the Triple 10 car’s performance is Shell EV-Plus thermal fluid. Unlike traditional cooling systems that use water-ethylene-glycol, Shell’s dielectric fluid allows for direct immersion cooling of the battery and powertrain. Thanks to its unique properties the fluid can make direct contact with electrical components eliminating thermal bottlenecks and safely unlocking ultra-fast charging speeds of up to 24.5 km of range added per minute.

14 YUSA TOMBUL

mmp, RWTH Aachen University

Predictive Powertrain Health Care: From Data-Driven Component Analysis to System-Level Anomaly Detection

As electrified powertrains transition toward higher voltages and increasing system complexity, ensuring component and system reliability becomes critical. While data-driven modeling and machine learning methods show great promise, their applicability differs significantly across powertrain scales. This work investigates their potential through two distinct use cases: a component-level analysis of electric machine bearings and a system-level anomaly detection framework for fuel cell powertrains. At the component level, inverter-induced bearing currents pose a major risk to electric machine lifetime. A comprehensive framework combining test bench measurements with data-driven modeling is presented to capture stochastic bearing current behavior. Based on these insights, a control-based mitigation strategy utilizing a hybrid pulse-width modulation scheme is implemented and its effectiveness is experimentally validated.

REGISTRATION & CONFERENCE

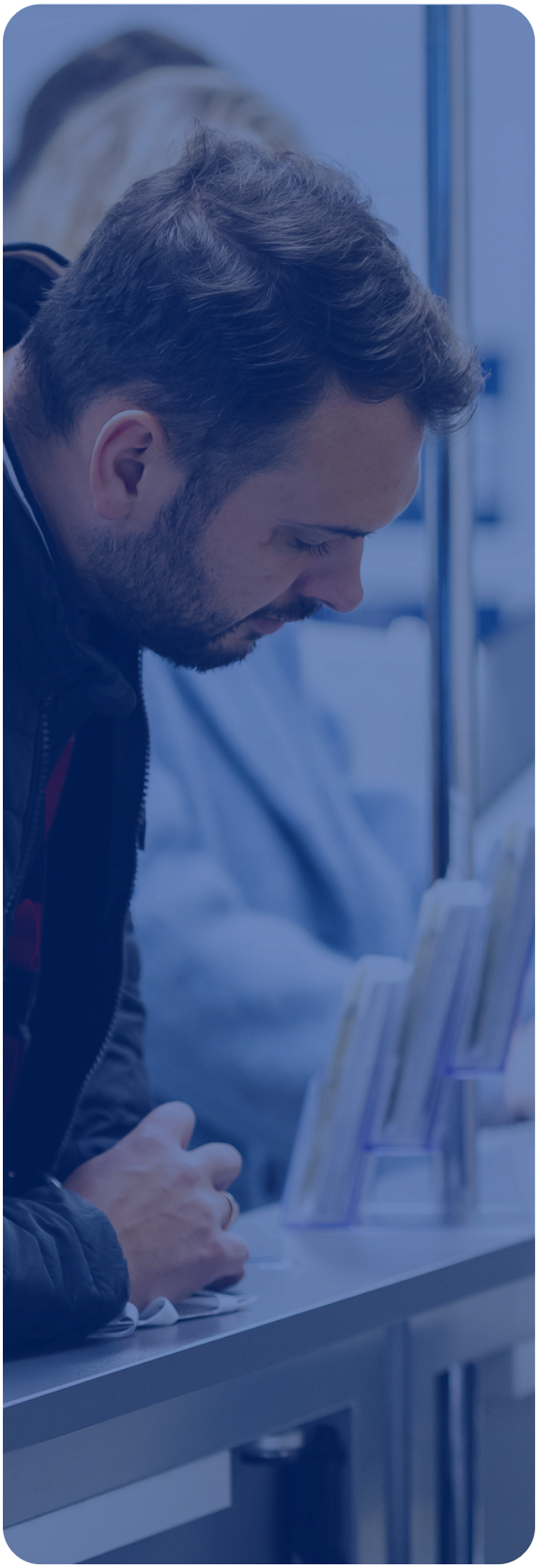
REGISTRATION PROCEDURE

1. Registration

   Get a 10% discount when you come as a group of five or more.

   www.aachen-colloquium.com/registration

2. Receive confirmation by e-mail
3. Settle the invoice
4. Registration completion after Receipt of payment



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CONFERENCE OFFICE

Monday, Oct. 5th, 2026	04:00pm - 07:00pm
Tuesday, Oct. 6th, 2026	07:30am - 06:00pm
Wed., Oct. 7th, 2026	07:30am - 05:00pm