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33
AACHEN
COLLOQUIUM
SUSTAINABLE MOBILITY
EUROGRESS AACHEN,
GERMANY
OCTOBER 7th-9th, 2024

33. AACHEN COLLOQUIUM
SUSTAINABLE MOBILITY

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Note: This document is a digital program booklet. Accordingly, it is updated regularly. The current version of this document can always be found on the Colloquium website:
https://www.aachener-kolloquium.de/en/information/program/lecture-program.html

Foreword

Presentations

Information

Foreword

Shaping Sustainable Mobility:
Transformations in the Automotive Industry.

The automotive industry is undergoing a significant transformation, driven by the urgent need to address climate change and contribute to a sustainable future. This year's event comes at a pivotal time as we navigate through some of the most pressing and exciting developments in the field.

Strategic planning in the automotive industry is essential to navigate these technological advancements, regulatory landscapes, and market demands, ensuring a sustainable and competitive future. **Environmental Protection and Sustainability** remain central to our mission. We are focusing on reducing CO2 emissions, adopting circular economy principles, and exploring the variety of powertrain solutions with **Fuel Cells and H2 ICE**'s as well as **Electrification and E-Mobility** as key topics. For BEVs advancements in battery technology, expanded charging infrastructure, and improved range and efficiency driving our transition to a low-carbon future.

Our urban environments are evolving with **Smart Cities** and **Micromobility**, such as e-scooters and e-bikes, enhancing mobility and reducing congestion. **Connectivity and Digitalization** are critical, with advancements in V2X communication, cybersecurity for connected cars and data analytics improving vehicle and global mobility safety.

Furthermore, **Autonomous Driving** technology is revolutionizing the way we think about transportation: At the Colloquium we will also present breakthroughs in LiDAR technology and AI. Furthermore we will address the User Experience, the latest Simulation Methods as well as the development of X-by-Wire technologies and other topics for a holistic view on future vehicles.

Welcome to the
Aachen Colloquium Sustainable Mobility 2024!

The selected lecture program offers over **100 technical presentations and discussions** on the above-mentioned, highly relevant topics. The program includes top-class plenary sessions with industry leaders such as **Sabine Klauke (Airbus S.A.S.), Shunichi Inamijima (Nissan), Holger Klein (ZF Group), Stephan Durach (BMW), Ralf Herrtwich (NVIDIA)** and **Nikolai Ardey (Volkswagen AG)**.

The **technical exhibition** of international companies presenting their latest technical advances and products perfectly complements the presentations. The latest research results from international universities will be presented in a **poster session** within this exhibition.

Outside of the Eurogress Aachen, you can experience mobility yourself at our **driving event** where outstanding vehicles with a roadlegal are available for a tour around Aachen.

In addition to the opening evening on Monday and the traditional banquet in Aachen's old city center on Tuesday, the coffee and lunch breaks will provide **plenty of opportunities for networking**.

The Aachen Colloquium is accessible both **in person or via our eventapp**, allowing participants from all over the world to attend presentations, ask questions and network digitally via our event app.

We look forward to welcoming you to the 33rd Aachen Colloquium Sustainable Mobility!

Univ.-Prof. Dr.-Ing.
Lutz Eckstein
Director
ika, RWTH Aachen University

Univ.-Prof. Dr.-Ing.
Stefan Pischinger
Director
tme, RWTH Aachen University

Foreword

Once again, experts from all around the world will present their newest innovations and bring forward the most recent solutions regarding sustainable mobility at the 33. Aachen Colloquium in 2024. As Aachen's mayoress, I am especially proud to welcome national and international researchers and other specialists alike, who are at the heart of paving the way to reaching our climate objectives through a more sustainable mobility.

Just recently, Aachen reached a new milestone in our efforts of the EU mission "100 climate-neutral and smart cities by 2030" with more than 130 regional companies, universities, and non-profit associations signing the "Climate City Contract". Together, we are aiming to establish Aachen as a model city and a shining example for others to follow on our way to becoming climate neutral. In this, sustainable mobility represents one main supporting column.

This year's colloquium addresses all major use cases of sustainable mobility. In more than 100 presentations, industry's top experts will discuss their take on recent innovations in the field of hydrogen powered engines, the latest updates regarding present-day and future battery systems as well as AI's impact on automated driving.

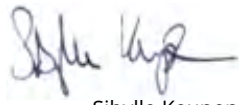
Listen and get together with pioneers in automotive strategy, European champions looking to revolutionize commercial aviation and leading experts on hardware as well as automotive software solutions.

All this is accompanied by technical exhibitions, where you can get a first look at state-of-the art research and application examples provided by well-known national and international companies.

The colloquium concludes with the traditional festive evening in one of the numerous restaurants in the city center of Aachen. Here, you will not only get the chance to experience the city's historic heritage, but keep up the networking with other like-minded visitors and experts.

Change starts with people. I am very happy that you will get the chance to hold interesting conversations, exchange ideas and find new possibilities of collaboration to further support our shared goal of a more sustainable mobility.

After all, sustainable mobility is – literally – what drives each and every one of us to a better future.



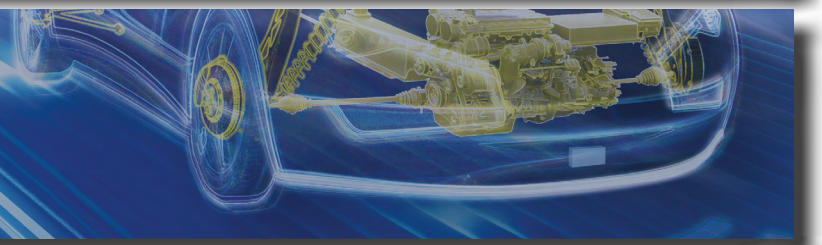
Sibylle Keupen
Lord Mayor of the City Aachen

SESSION OVERVIEW

KEYNOTE SPEAKERS

POSTER PRESENTATIONS

TECHNICAL PRESENTATION PROGRAM



SPEAKERS & SESSION CHAIRS

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Conference Agenda

	Europa	Berlin	Lissabon	Brüssel	K1 Aachen
Monday, October 7th, 2024					
18:00	Lobby: Welcome Reception & Opening of the Technical Exhibition				
Tuesday, October 8th, 2024					
08:30	Opening Plenary Session				
10:30	Break				
11:00	Fuel Cells I	Strategy I	Battery Systems I	ADAS / AD	Trends for Combustion Engines
12:30	Lunch Break				
14:00	Fuel Cells II	Strategy II	Battery Systems II	Software Defined Vehicles	V2X and Powertrain Solutions
16:00	Break				
16:30	Thermal Management	Strategy III	Battery Systems III	User Experience	FVV
Wednesday, October 9th, 2024					
08:30	H2-ICE I	Sustainability I	ePowertrain I	LiDAR Testing	Chassis - Heavy Duty
10:00	Break				
10:30	H2-ICE II	Power Electronics	ePowertrain II	Verification and Validation	Chassis - Vehicle Dynamics
12:30	Lunch Break				
14:00	H2-ICE III - Emissions	Sustainability II	Electric Drive Systems	Simulation Methods	Chassis - Emissions
15:30	Break				
15:40	Closing Plenary Discussion				

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

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- Plan your individual program
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- Find out more about the exhibitors
- Arrange your meetings
- Chat with fellow participants
- Download the conference proceedings

SCAN ME!

Please note that the event platform can also be accessed conveniently via the browser. An app installation is not required.

Dr. Sabine Klauke

CTO
Airbus

Sabine Klauke has been Chief Technology Officer for Airbus and Executive Vice President Engineering of the Commercial Aircraft business since 1 January 2024 and is a member of the Company's Executive Committee. In this role, Sabine drives the Company's ambition behind delivering bold and breakthrough technologies to build the future of aerospace. She leads a team of more than 13,000 employees across the globe who design, develop, certify and ensure continuing airworthiness of all Commercial Aircraft products and services.

In addition to her Airbus CTO mission, Dr. Klauke serves as: Co-Chair of the Clean Aviation Joint Undertaking, VP Aviation for the German Aerospace Industries Association (BDLI), Chairwoman of the supervisory board of Premium Aerotec GmbH, and she is member of the Supervisory Board of Airbus GmbH.

Previously, Dr. Klauke was Head of Engineering within Airbus Defence and Space and a member of the Division's Executive Committee. In this capacity, she was responsible for all engineering activities within the Defence and Space division and in charge of its product and services portfolio. Prior to this position, she served as Head of Programmes Customer Services: a responsibility she held for the A330/A340 programmes since 2015. Dr. Klauke joined Airbus in 2002, where she has held positions of increasing responsibility within manufacturing engineering, production, product development programs, development processes and change and innovation projects within the Airbus Commercial Aircraft division. Dr. Klauke holds a PhD in Mechanical Engineering from the Dresden University of Technology (TU Dresden). From 1998 to 2002 Dr. Klauke worked at DELMIA, a brand of Dassault Systèmes, where she carried out the deployment of digital manufacturing software as well as consulting projects with customers in the automotive and the aerospace industries worldwide.

Dr. Holger Klein

CEO
ZF Group

Driven by passion for innovation, Holger Klein is dedicated to making mobility safe and sustainable. As the CEO of ZF, he knows the importance of innovation and a strong ecosystem are key to developing cutting-edge technologies that promote sustainability. From bikes to passenger cars, from small to large trucks and buses, construction machinery and even wind turbines – ZF's expertise extends across various mobility segments.

Dr. Holger Klein holds a Ph.D. in Technology Management and is a trained engineer. With many years of experience from McKinsey & Company's automotive practice and global engagement in Europe and North America, he joined the ZF Group in 2014. After heading the integration management upon the acquisition of TRW Automotive, Dr. Klein took over the role as leader of the Car Chassis Technology division in 2017. He has been a Member of the Board of Management of the ZF Group since 2018 and led the Asia-Pacific and India regions from Shanghai, China, until the end of 2022. He also managed the business of the Car Chassis Technology and Aftermarket divisions and was responsible for group-wide production. Since January 2023 he is the Chief Executive Officer of the ZF Group and responsible for Sales, Research and Development, System House Autonomous Mobility Systems as well as the Aftermarket division.

Shunichi Inamijima

Corporate Vice President
Nissan

Mr. Shunichi Inamijima is the Corporate Vice President at Nissan Motor Co., Ltd., where he currently leads the Powertrain & EV Engineering Division.

He joined Nissan in 1987 after graduated Mechanical Engineering from Keio University and dedicating approximately 23 years to advancing powertrain components and systems, including a significant period in North America. In 2010, he was appointed as General Manager of the Powertrain Engineering Division, and then he had taken on the role of Division General Manager and Alliance Global Director of the Powertrain & EV Engineering Division in 2020, where he played a crucial role in strategic initiatives with Renault. In 2022, he became Vice President and Alliance Global Vice President of the same division.

Recently, in 2024, he was further elevated to Corporate Vice President, maintaining his oversight of the Powertrain & EV Engineering Division. Since November 2022, he has also served as an outside director at VEJ Japan Co., Ltd., adding to his responsibilities within the automotive industry.

Keynote Speakers

Ruiping Wang

CEO
Aurobay

Ruiping Wang's extensive career includes positions such as CEO at Aurobay Sweden since 2023, Senior Vice President at Zhejiang GEELY Auto Group since 2011, General Manager of BU Powertrain at Great Wall Motor from 2005 to 2011 and Senior Technical Manager at Zhengzhou Nissan Motor from 1984 to 2001. She holds a Master's degree in Vehicle Engineering from Concordia University, Canada, and a Bachelor's degree in Internal Combustion Engines (ICE) from Xi'an Jiaotong University, China.

Ms. Wang is also Chairwoman of the Advanced Propulsion System (APS) at China SAE and President of the Specialist Committee on Powertrain of Passenger Car (SCP) at CSICE.

Her major achievements include leading the development of more than 20 powertrain products with cumulative sales of over 13 million units.

Ms. Wang has been honored with several awards, including the first prize of "China Automotive Science and Technology Progress Awards" for the development of "1.5TD+ 7DCT/H" high efficiency powertrain platform, the first prize of "China SAE Science and Technology Awards" for the development of "Leishen" intelligent hybrid platform, and the "Global New Energy Vehicles Innovative Technology" award for the development of "High Performance Drive Hybrid Platform Technology".

Ms. Wang's extensive experience and remarkable achievements in the automotive industry make her a key figure in advancing automotive technologies and innovations.

Participants of the closing plenary discussion

Stephan Durach

Senior Vice President
in the Connected Company Development
BMW

Stephan Durach's extensive experience in the field of digital products at BMW positions him as a key figure in the development of Software Defined Vehicles. Here, software plays a crucial role in vehicle functionality and user experience. Mr. Durach's leadership in BMW's digitalization, highlights his essential role in integrating artificial intelligence and advanced digital technologies into the automotive industry, driving innovation and connectivity.

After graduating in electrical engineering at the Technical University of Karlsruhe, Stephan Durach joined BMW Group in Munich in 1998. He started his career in software processes and methods and ran through various stations in the electronics division. In 2008 he became Head of Technology Office Palo Alto/Mountain View in USA. Back at BMW headquarters in 2011 he took over the department for Entertainment, Mobile Devices and App Centers before leading the Electronics department in the BMW product line for the luxury class. He joined the purchasing and supplier network division in 2015 leading the purchasing for Information and Communications electronics and ConnectedDrive. Also, in 2015 he extended his responsibility to the complete electric/electronic portfolio with the BMW Group. From April 2017 to September 2020 Stephan Durach was Senior Vice President Purchasing and Supplier Network Digital at BMW Group. As of 2020, he has taken the role as Senior Vice President in the Connected Company Development, creating the vision for BMW's future digital experiences.

Participants of the closing plenary discussion

Prof. Dr. Ralf G. Herrtwich

Senior Director Automotive Software
NVIDIA

Ralf G. Herrtwich runs automotive software development for NVIDIA in Europe. He currently focuses on artificial intelligence for autonomous vehicles and new automotive computing architectures. During his career, Dr. Herrtwich also managed the Automotive and Services Business Units of HERE Technologies and developed self-driving vehicles for Mercedes-Benz. In 2013, his team made an S-Class reenact the world's first overland drive, covering the historic 65-miles Bertha Benz Memorial Route while operating autonomously in regular traffic conditions.

Educated as a computer scientist, Dr. Herrtwich started his career in academia at TU Berlin and UC Berkeley. He then held management positions with IBM and several telecommunication start-ups before joining Daimler in 1998 to manage its Advanced Engineering Centers on Telematics & Infotainment and, later, Driver Assistance & Chassis Systems. Since 2009, he has also served as honorary professor for vehicle information technology at the Technical University of Berlin. In recognition of his contributions to computing innovations in the car industry, he received the Fellow of the German Computer Science Society distinction in 2019.

NVIDIA is the world leader in accelerated computing. Within the automotive industry, the company delivers breakthrough hardware and software solutions for artificial intelligence and computer graphics. From creating digital twins used in vehicle development and training to optimizing entire vehicle production lines and factory planning — NVIDIA Omniverse can speed up development time, improve efficiencies, and deliver greater safety. The NVIDIA DRIVE AV platform uses generative AI for vehicle automation and enhancing in-car experiences. It builds software factories that continuously improve through machine learning, allowing over-the-air updates to enrich the user experience in connected vehicles over time.

Nikolai Ardey

Executive Director
VW Group Innovation

After finishing his Diploma in mechanical engineering and his PHD in thermodynamics at Technical University of Munich, Nikolai Ardey joined BMW powertrain development in 1998, where he gained several leading positions in combustion engine development, software development, powertrain integration and innovation and EV-powertrain.

Furthermore, he expanded his scope to vehicle project management and whole vehicle development. In 2017, Nikolai Ardey changed to AUDI as head of powertrain engineering.

Since 2020 he leads Volkswagen Group Innovation, an international research team supporting all passenger car brands of the group in regard to sustainability, mobility and digital platform innovations. As head of the IAV supervisory board, Nikolai Ardey contributes to the development of the engineering supplier business since 2020.

Poster Presentations

Poster 1
Katrin Himmelseher, RWTH Aachen University
Optimization of emission behavior for a hydrogen combustion engine

Poster 2
Sakura Akahoshi, University of Tsukuba
Designing a human-machine mediator that encourages control transitions under conditional driving automation

Poster 3
Lotte Wagner-Douglas, RWTH Aachen University
User Requirements for HMI and Vehicle Behavior of an Automated Vehicle in Degraded Operation

Poster 4
Robin Reimann, TH Köln - University of Applied Sciences
A comparison of SRM drive units with commercially available electric vehicle drive systems, focusing on efficiency

Poster 5
Matt Smith, University of Bath
Platform Evaluation for Fuel Cell Air Handling Systems

Poster 6
Serhiy Kapustyan, Forschungszentrum Jülich GmbH
Techno-economic comparison of hydrogen technology in non-road mobile machinery

Poster 7
Tobias Otto, Forschungszentrum Jülich GmbH
Long-Haul Heavy-Duty Trucks Powered by Hydrogen – A Techno-Economic Assessment

Poster 8
Giuseppe Castellano, Politecnico Di Torino
The PHOENICE project: a new life for the ICE

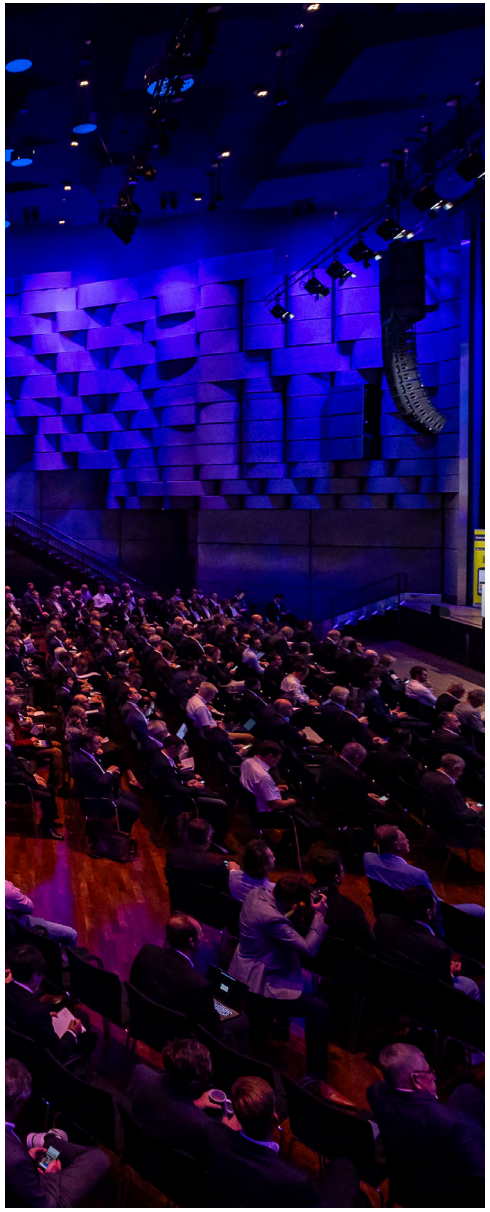
Poster 9
Edgar Jungblut, Forschungszentrum Jülich GmbH
Driving profiles and operational strategies as key for cost-efficient level 4 automated trucking

Poster 10
Kai von Schulz, Furtwangen University
Measures to optimize the efficiency, weight and noise emissions of a gearbox for electric light commercial vehicles

Poster 11
Harold Schock, Michigan State University
Jetfire® Ignition: Results and Implications from a Single-Cylinder Demonstrator with Fuel Cell Comparison

Poster 12
Manuel Löwer, University of Wuppertal
Cooperative Product Development in Automotive Engineering

The poster presentations can be found on the 1st floor.



Opening plenary session in the Europa Hall

08:30 Welcome

Univ.-Prof. Dr. rer. nat. Dr. h.c. mult.
Ulrich Rüdiger
Rector, RWTH Aachen University

Introduction to the 33rd Aachen Colloquium

Univ.-Prof. Dr.-Ing.
Lutz Eckstein
Institute Director, ika, RWTH Aachen University

Univ.-Prof. Dr.-Ing.
Stefan Pischinger
Institute Director, tme, RWTH Aachen University

08:40 From Tarmac to Troposphere: High-tech for Future Flight

Dr. Sabine Klauke
CTO, Airbus

09:00 Driving Sustainable Innovation @ZF

Dr. Holger Klein
CEO, ZF Group

09:20 Nissan's strategic challenge towards carbon neutrality

Shunichi Inamijima
Corporate Vice President, Nissan

09:40 Aurobay - Powering a hybrid future

Ruiping Wang
CEO, Aurobay

10:00 Plenary discussion

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Technical Presentations Program Tuesday, October 8th, 2024 Session 1

	Europa	Berlin	Lissabon	Brüssel	K1 Aachen
	Session Leader Prof. Dr.-Ing. Harry Hoster ZBT, University of Duisburg-Essen	Session Leader Dipl.-Kfm. Max Brandt fka GmbH	Session Leader Dr. Christoph Menne FEV	Session Leader Prof. Dr.-Ing. Klaus Dietmayer Universität Ulm	Session Leader Prof. Dr.-Ing. Bernhard Geringer ifa, TU Wien
	Fuel Cells I	Strategy I	Battery Systems I	ADAS/AD	Trends for Combustion Engines
11:00	Next generation fuel cell stack module for heavy-duty applications, a one stack-one system approach J. Kraft, F. Claß, A. M. Damjanovic, M. Eckardt, S. Hemmer, N. Zsiga - EKPO Fuell Cell Technologies	Mastering the perfect strom - How supplier create profitable business models for 2030 C. Koehler - H&Z Group	A highly reliable 12V Battery Management System for safe, autonomous Vehicles M. Bischoff- Eatron Technologies	Data from Space: Opportunities and Challenges for Copernicus in Mobility J. Hiller, F. Cziudai-Sonntag - BASt Bundesanstalt für Straßenwesen	Contributing to the Environment with Internal Combustion Engines towards Carbon Neutrality – Research for a new direction H. Yamashita, H. Hidaka, D. Shimo, T. Yamamoto - Mazda Motor Corporation
11:30	Enabling zero emission heavy-duty truck mobility with fuel cell electric powertrains A. Elsaesser , M. Auer - MAHLE International GmbH	Supplier financial transformation J. Giebels, J. Berking, M. Majic, S. Schnurrer - Oliver Wyman GmbH	Global battery development & production network of Merecedes-Benz U. Keller - Mercedes-Benz AG	Using Scenarios for Data-Driven Assessment of Automated Driving Systems C. Glasmacher, A. Klöker, L. Vater - ika, RWTH Aachen University	Development of high thermal efficiency methanol engine H. Wei - Aurobay
12:00	Opportunities to enhance the performance of fuel cell systems M. Walters, S. Lauer, A. Schlosshauer, M. Mally, M. Schmitz, M. Thewes - FEV	Mega Casting - Business case opportunities and threads along the value chain C. Harter - fka GmbH A. Klos - Tsetinis Consulting Deutschland GmbH	Electric Maserati - challenges and sports car-specific solutions for charging and battery systems M. Boeckl - STELLANTIS S. Zin - Maserati M. Rudolph, M. Stapelbroek - FEV	Cooperative ADAS-Functions with V2X Communication M. Kremer, S. Christiaens, C. Granrath - FEV.io	PHINIA 500bar Gasoline direct injection (GDi) system from development to serial production B. Gomot, N. Cezon, G. Dober, W. F. Piock, O.Trotignon, L. Zhou - PHINIA

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Technical Presentations Program Tuesday, October 8th, 2024 Session 2

	Europa	Berlin	Lissabon	Brüssel	K1 Aachen
	Session Leader Univ.-Prof. Dr.-Ing. Stefan Pischinger tme, RWTH Aachen University	Session Leader Christian Kleinhans Valmet Automotive	Session Leader Univ.-Prof. Dr.-Ing. Lutz Eckstein ika, RWTH Aachen University	Session Leader Prof. Dr.-Ing. Adrian Zlocki fka GmbH	Session Leader Prof. Dr. rer. nat. Rumpe
	Fuel Cells II	Strategy II	Battery Systems II	Software Defined Vehicles	V2X and Powertrain Solutions
14:00	Industrialization of Fuel Cell for Heavy Duty Long-Haul Applications L. Johannson - cellcentric GmbH & Co.KG	Global Powertrain Outlook - Road to Net Zero W. Hossenally - S&P Global	A novel and versatile test bench for safety testing of lithium-ion cells S. Beschnitt, A. Averberg, C. Herget, H. Löbberding, M. Rudolph, M. Stapelbroek - FEV	Principles and Use-Cases of the Live Digital Twin of Traffic in the AUTOtech.agil Project F. Thomsen, L. Eckstein, R. van Kempen, B. Lampe, T. Woopen, L. Zanger - ika, RWTH Aachen University	Approach towards efficient vehicle energy management R. Puts, B. Aust, B. van Moergastel, K. Norgel, S. Visser - DENSO Automotive
14:30	Application-specific Component Dimensioning for Heavy-Duty Fuel Cell Trucks based on real Driving Data M. Pietruck, L. Eckstein, A. Rozum, G. Witham - ika, RWTH Aachen University	Driving the CO2 footprint of the global ICE car park down to zero emissions in one generation B. Middendorf, B. Lorentz - Deloitte Consulting GmbH C. Hochfeld - Agora Verkehrswende	The vital role of digitalisation and BMS in transitioning to e-mobility M. van Schijndel-de Nooij, T. Donkers, H. J. Bergveld, M. Sheikh - Eindhoven University of Technology	Navigating the Shift: Principles and Challenges of Software-Defined Vehicles W. Said, R. Biurrun - Porsche Consulting GmbH	Field test data based electrification of commercial vehicle fleets J. Bahlmann, O. Voßen - fka GmbH
15:00	Driving Towards a Zero-emission Future: The Latest Generation Fuel Cells and their Role in Heavy-Duty Mobility B. Oz - Ballard Power Systems	VW Group – Strategic technology approach for enabling affordable EVs N. A. Wolff - Volkswagen AG	Next-gen battery strategies 2027+: Potentials & challenges for future battery designs & diversity of product portfolios M. Hackmann, B. Satvat, M. Schäfer - P3 group GmbH	Iveco eS-Way: Software-defined zero emission truck platform E. Corte - IVECO	Nissan's Strategy and Technologies for V2X (Vehicle-toHome/Grid) M. Kubo - Nissan Motor Co., Ltd.
15:30	The fuel cell propulsion system of the Stellantis large vans M. Alt, T. Hahne, C. Tonelli, C. Wieser - Stellantis	Battery cost as existential challenge to automotive OEMs D. Gallus - Roland Berger GmbH	48V mHEV batteries – Motivation and example for a P2 application H. Mettlach - Stellantis/Opel Automotive	Leveraging Generative-AI in Software-Defined Vehicles J. Richenhagen, B. Mrohs, S. Kriebel - FEV.io G. Laoutoumai - FEV M. Engelhard - FEV Consulting	Advancing Urban Electric Vehicles: Powertrain Innovations for Enhanced NVH Performance P. Kauffmann - Johnson Electric

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Technical Presentations Program Tuesday, October 8th, 2024 Session 3

	Europa	Berlin	Lissabon	Brüssel	K1 Aachen
	Session Leader Prof. Dr.-Ing. Reinhold Kneer WSA, RWTH Aachen University	Session Leader Dr.-Ing. Jens Kotte fka GmbH	Session Leader Dr. Norbert Alt FEV	Session Leader Prof. Dr.-Ing. Peter Urban ika, RWTH Aachen University	Session Leader Martin Nitsche FVV e.V.
	Thermal Management	Strategy III	Battery Systems III	User Experience	FVV
16:30	Data-driven simulation approach for the thermal management of battery electric vehicles S. Pfund, F. Döring, T. Fiala - BMW Group J. Köhler, N. Lemke - Technische Universität Braunschweig	Systems Engineering is a must in Automotive to secure competitiveness and time to market C. Foltz, H. Güthner ,T. Schadt - PwC Strategy& (Germany) GmbH	UNI Technology: Unrivaled flexibility and scalability M. Skutari, I. Babić, D. Cindrić, R. Merz - Rimac Technology	ZF Eco Control 4 ACC – Sustainable way to increased comfort T. Wehlen, M. Arzner - ZF Friedrichshafen AG	TWC Reactions under High-frequency Lambda Switching J. Kusaka - Waseda University O. Deutschmann - Karlsruhe Institute of Technology
17:00	Identification of Relevant Thermal System Design Scenarios for Scenario-Based Development P. Muhl - Porsche AG	The odds of outperforming central product architectures with capable development systems U. Guddat, M. Hart, S. Langkau - Strategy Engineers	Optimizing battery range & thermal comfort for Battery Electric Vehicles (BEVs) with CFD & System Model Co-Simulation R. Dontham, A. Colleoni, H. Li, C. Luzzato, V. Nagarajan, C. Wei - Dassault Systémes	The Role of Human Factors in Current and Future European Whole Vehicle Type Approval E. Schmidt, R. Gerlach, T. Wexel - TÜV Rheinland	The Generic Stack - A platform for Testing and System R&D J. Scholta, F. Häußler, M. Hölzle, L. Jörissen - ZSW
17:30	A comprehensive approach for Integrated Thermal Management Module development A. Savi - Saleri TMS Competence Center GmbH	Strategies for EV Power Electronics: Balancing Performance, Profitability and Sustainability N. Almohammed, K. Krüger, B. Knobloch, H. Wegner - FEV Consulting	Meaningful and sustainable electromobility for Europe powered by CATL M. Zentgraf - CATL GmbH	From a means of transport to a health product M. Dittrich - CARIAD SE	Benchmark Platform for Scale Resolving Simulations B. Böhm, A. Dreizler - RSM, TU Darmstadt C. Hasse - STFS, TU Darmstad

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Technical Presentations Program Wednesday, October 9th, 2024 Session 1

	Session Leader Prof. Dr.-Ing. Helmut Eichlseder ivt, TU Graz	Session Leader Alexander Nase FEV	Session Leader Prof. em. Dr. Michael Bargende Universität Stuttgart	Session Leader Dr.-Ing. Axel Gern Aeva Technologies, Inc.	Session Leader Peter Kramer DAF Trucks N.V.
	H2-ICE I	Sustainability I	ePowertrain I	LiDAR Testing	Chassis - Heavy Duty
	Europa	**Berlin**	**Lissabon**	**Brüssel**	**K1 Aachen**
08:30	Simulation-based development of engine management and hermodynamics of the Deutz TCG 7.8 H2 B. Nork, A. Qriqra - DEUTZ AG	Modeling Potential CO_2 Reductions Using Heavy-light-duty and Medium-duty Range-extended Electric Trucks J. McDonald, B. Ellies - U.S. EPA; P. Bhagdikar, S. Bhattacharjya, P. Chambon, G. Conway, K. Hoag, R. Mitchell, T. Reinhart, K. Whitney - Southwest Research Institute; S. Ahmed, K. Knehr, J. Kubal - Argonne National Laboratory	Thermal simulation to reduce heat loss of the CCS charging inlet of electric vehicles at high charging currents J. Krings, P. Ziegler, P. Steinmetz - Daimler Truck AG H.-C. Reuss - FKFS Stuttgart	LiDAR technologies: need for harmonised test methods A. Sakpal - fka GmbH	Linear Guidance with Camber Compensation (LinCC) – An independent suspension solution designed for longhaul heavy-duty K. Hergenröther - ika, RWTH Aachen University
09:00	Retrofitability Potential of an Off-Road Diesel Engine for DI Hydrogen Operation: Experimental and Numerical Studys F. Millo, A. Scalambro, A. Piano - Politecnico di Torino A. Dhongde, B. Jagodzinski , R. Loiodice, F. Mallamo, - FEV N. Scinicariello, W. Lodi - Kohler	A Study on LCA Environmental Impact of Passenger Car by Power Sources : Focusing on the global warming potential K.J. Hwang, S.W. Choi,S.J. Hong, J.H. Kim, Y.G. Kim, D.N. Moon, J.H. Seo, S.B. Jo - Hyundai Motor Company	RT's Next-Gen E - Axle Platform V. Bhatia, M. Šramek, A. Martinčić - Rimac Technology	Meeting the future needs of Autonomous Driving with SingleChip FMCW LiDAR Technology G. Schunk, J. Wang - Scantinel Photonics GmbH	A disruptive approach to electromobility for heavy commercial vehicles J. Ebert - Aberg Axles GmbH J.-C. Ebert - Ebertconsulting GmbH
09:30	Hydrogen Powertrain Solutions for HD-Trucking P. Albrecht, A. Broda, F. Lindner, S. Schraml - MAN Truck & Bus SE	Sustainable Energy Imports and Synthetic Fuels - Strategies and Chances S. Kahlbau, A. Schwindt, L. Yorck von Wartenburg, M. Kittler - C4D GmbH	Enhancing Sustainability and Efficiency in Jaguar Land Rover's Electric Drive Unit Through Advanced Thermal Management A. Sadrfaridpour, M. Spenley - Jaguar Land Rover	LiDAR for Level 4 Automated Trucks N. Heußner - Torc Robotics	Next Generation Charging - Mobile Battery Swapping Station S. Steinwascher - GTSystem GmbH

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

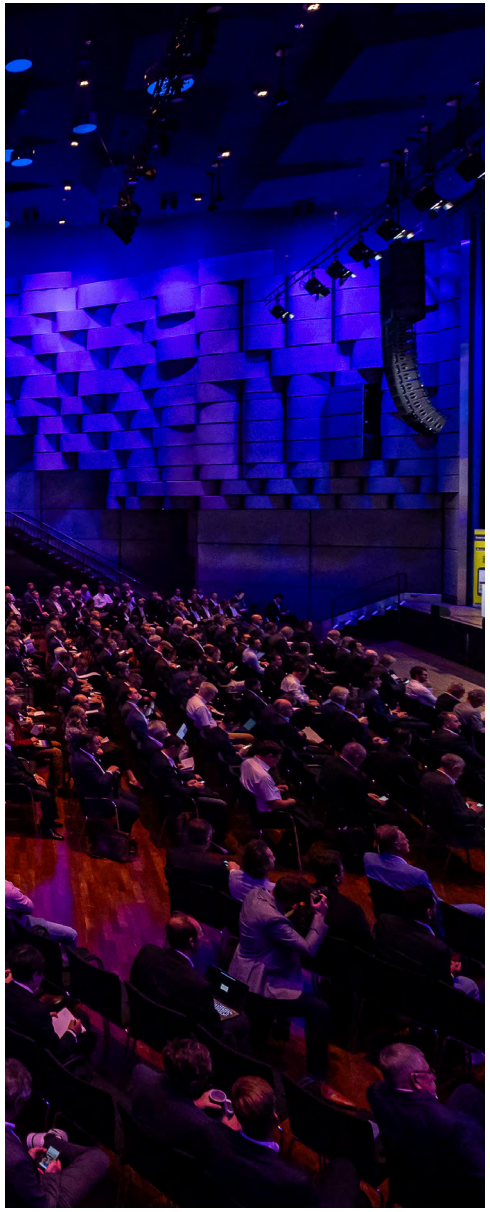
Technical Presentations Program Wednesday, October 9th, 2024 Session 2

Europa	Berlin	Lissabon	Brüssel	K1 Aachen
Session Leader Prof. Dr.-Ing. Thomas Koch IFKM, Kalsruher Institut für Technologie (KIT)	Session Leader Prof. Dr.-Ing. André Casal Kulzer FKFS, University of Stuttgart	Session Leader Prof. Dr.-Ing. Jakob Andert MMP, RWTH Aachen University	Session Leader Prof. Dr.-Ing. Stefan Kowalewski i11, RWTH Aachen University	Session Leader Univ.-Prof. Peter Fischer Hochschule Osnabrück
H2-ICE II	Power Electronics	ePowertrain II	Verification & Validation	Chassis - Vehicle Dynamics
10:30				
Supercharger Boosting on H2 ICE for Heavy Duty application N. Adrisani, B. Nilesh - Eaton srl	2/3-Level SiC/GaN 800 V Power Converter Topologies for High Performance Electric Sportscars T. Velic, L. Heuken - Porsche AG N. Parspour - iew, University of Stuttgart	Long Life e-Axle Drive for BEV- and Fuel Cell Applications H. Schneeweiß - eAx solutions GmbH	Scenario.center: Providing Scenarios for the Validation of Automated Driving Systems M. Schuldes, L. Eckstein, C. Glasmacher - ika, RWTH Aachen University	The Influence of Vehicle Electrification on Chassis Design P. Zandbergen
11:00				
Hydrogen Combustion Engine for commercial vehicle applications : challenges and solutions for various use cases J. Op de Beek, M. Carvalho-Barreto, J. Costa, N. Harbil, B.-D. Lahmoum, K. Potaczek - OPmobility	Evaluation of Multi-Level Inverter Topologies for Electrical Traction Drives A. Wörndle - FEV M.Ezzine, R.Goswam, P.Igic, W.Jamal, S. Shepherd - Coventry University R. Cremer, P. Bäuerle - FEV	Efficient, lightweight, cost-effective: Innovative electric drive unit with dual rotor electric machine and SiC inverter G. Hellenbroich, V. Shapovalov - FEV V. Berger, A. Rosen, Z. Weicherding - DeepDrive GmbH	Research Needs in Teleoperation - An Overview on the Technical Report E. Shi - BASt Bundesanstalt für Straßenwesen	Steer by Wire - Requirement development to enable authentic steering feel and advanced driving stabilization functions J. Schubert - AVL List GmbH
11:30				
HyMot: H2 Engine optimized for Light Commercial Vehicle Applications with Near-Zero Emissions J.-B. Leroy - BOSCH O. Coureau - Renault Group N. Perrot - Ecole Centrale de Nantes L. Heckmann - Bosch Engineering France	1500 Volts? Optimal Voltage Levels for Next-Gen E-Mobility C. Danzer, V. Ambrosius, M. Clauss , A. Fandakov, H. Georgi, A. Heghmanns, A. Hoffmann, K. Müller, H. Rabba, D. Schlabe, M. Sens, H. Ulmer - IAV GmbH	Innovative Concept of an integral Steering and Drive Module for BEV T. Dittmar - ika, RWTH Aachen University	The SUNRISE Project – A Comprehensive Framework for Enhancing Safety Assurance J. Beckmann - ika, RWTH Aachen University	Vehicle Motion Control on Electric Vehicles – Capabilities on connecting Chassis and Powertrain Features T. Voßhall, M. Dorn, T. Reckeweg - FEV
12:00				
H2-ICE, A route to rapid decarbonisation with air quality co-benefits, for the NRMM sector R. Ballard, T. Beamish - J C Bamford Excavators Ltd	NanoLam DC Link Capacitors for high- efficient Commutation Systems M. Breuer, K. Grimm, M. Glogasa - Rheinmetall Polycharge Mika Nuotio - California Tech Center Rheinmetall Automotive	48V Electric Powertrain Development for Toyota's Paris 2024 Olympic and Paralympic Games Accessible People Mover APM A. Mohammadi - Toyota N. Pandey - FEV	Statistical Validation of the BMW Personal Pilot L3 N. Kämpchen - BMW AG	Steer-by-Wire Development Methods and Verification D. Wegener, L. E. Fautz - fka GmbH J. Pelzer - ika, RWTH Aachen University

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Technical Presentations Program Wednesday, October 9th, 2024 Session 3

	Europa	Berlin	Lissabon	Brüssel	K1 Aachen
	Session Leader Prof. Dr.-Ing. Christian Beidl vkm, Technische Universität Darmstadt	Session Leader Dr. Johannes Scharf FEV	Session Leader Univ.-Prof. Thomas Bachmann Fahrzeugtechnik TU Ilmenau	Session Leader Prof. Dr. Ralf Guido Herrtwich NVIDIA / TU-Berlin	Session Leader Dr.-Ing. Thomas Hüsemann Porsche
	H2 ICE III - Emissions	Sustainability II	Electric Drive Systems	Simulation Methods	Chassis - Emissions
14:00	Towards zero emissions solution with hydrogen and ammonia combustion engines Pierre Gobin - Liebherr Machines Bulle SA	eFuels as a Net Zero Enabler: The Way Forward to Create a New Industry L. Mauler - Porsche Consulting GmbH	MAHLE technology kit for electric traction motors: Shaping the future role of Externally Excited Synchronous Machines L. Lorenz, H. Oechslen, C. Uibeleisen - MAHLE International GmbH	Verification & Validation approach for Dynamic Driving Simulators towards a Human-Centered Safety Assurance Process F. Russ - ika, RWTH Aachen University	Non-exhaust emissions: Challenges from an overall system development perspective P. Bühler - KIT - Karlsruher Institut für Technologie; A. Albers, M. Fischer, L. Jedelsky - Institut für Produktentwicklung am KIT; P. Bühler, E.-M- Knoch, F. Gauterin - Institut für Fahrzeugsystemtechnik am KIT
14:30	Aftertreatment of H_2 engine: a novel approach focusing on the specific attributes of the H_2 engine and cost optimisation E. Georgiadis, J. E. Bebe, M. Pfeifer, T. Wolff - Dinex A/S	The flexible use of lower carbon intensity fuels in non-road applications P. Moore - Caterpillar Inc	Redefine mobility Experience A. Duran - Togg	Novel method for the quantification of subjective full vehicle ride comfort phenomena on a Dynamic Driving Simulator S. Strößer, A. Wagner - IFS, University of Stuttgart C. Angrick, T. Zwosta - AUDI AG J. Neubeck - FKFS, University Stuttgart	Investigating tire wear and tire missions on an enclosed drum bed dynamometer L. Schubert, , P. Fischer, D. E. Heuberger, M. P. Huber, C. Lex - TU Graz
15:00	Investigating Hydrogen-Air Mixing in the Intake Manifold and Mitigating Abnormal Combustion through CFD Modelling P. Paramasivam, K. R. Karthikeyan, N. Reddy, V. Kirubaharan, H. Satya Vishnu, C. Vijay Ram, S. K. Pandey, Y. Bolar, K. Sadagopan - Ashok Leyland Ltd.	Enhancing Sustainability in Automotive Design: A Case Study on Reducing CO_2 Emissions from BorgWarner's eXD L. Gren, J. Brorsson - BorgWarner Sweden V. Heinz - BorgWarner Heidelberg	Next Gen Power Unit for Power Sport Vehicles M. Schermann, T. Feichtinger, H. Frühwirth, T. Krenek, G. Pusch - BRP-Rotax Vienna GmbH	Merging the Virtual World and Reality on the Vehicle-inthe-Loop Test Bench P. Piecha - IPG Automotive GmbH P. Rautenberg - FAST, Karlsruhe Institute of Technology	Development of new Standards and Regulations on Tyre Abrasion L. Netsch, K. Baltruschat - TÜV SÜD Product Service GmbH



15:40 Plenary Discussion - The Use of Artificial Intelligence in Automotive Applications

Stephan Durach
Senior Vice President Connected Company Development
BMW

Prof. Dr. Ralf G. Herrtwich
Senior Director Automotive Software
NVIDIA

Nikolai Ardey
Executive Director
VW Group Innovation

16:40 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

16:45 End of Colloquium

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Thank you for the support to our Program Advisory Board!

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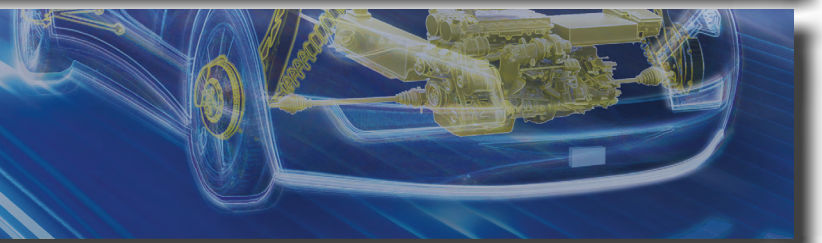
32. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Driving Experience

Technical Exhibition

Traditional Banquet



Outlook 2025

General Information

Driving Experience

The way we travel has always been in a constant state of change. Driven by a continuous development process, the mobility solutions are designed to get us from A to B faster, further, more comfortably and, for some time now, more sustainably and in line with our needs. Especially in urban areas, the call for new possibilities and solutions that meet current and future requirements is becoming louder, especially for individual transportation.

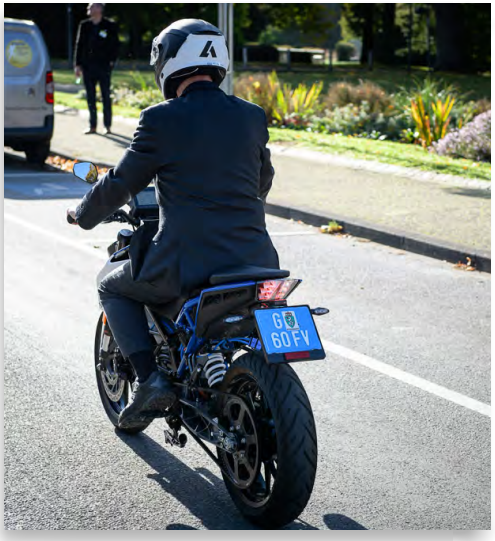
More information:

www.aachen-colloquium.com/test-track

Opening Hours:

Tuesday,
10.30 a.m. - 6.00 p.m.

Wednesday,
8.30 a.m. - 3.00 p.m.

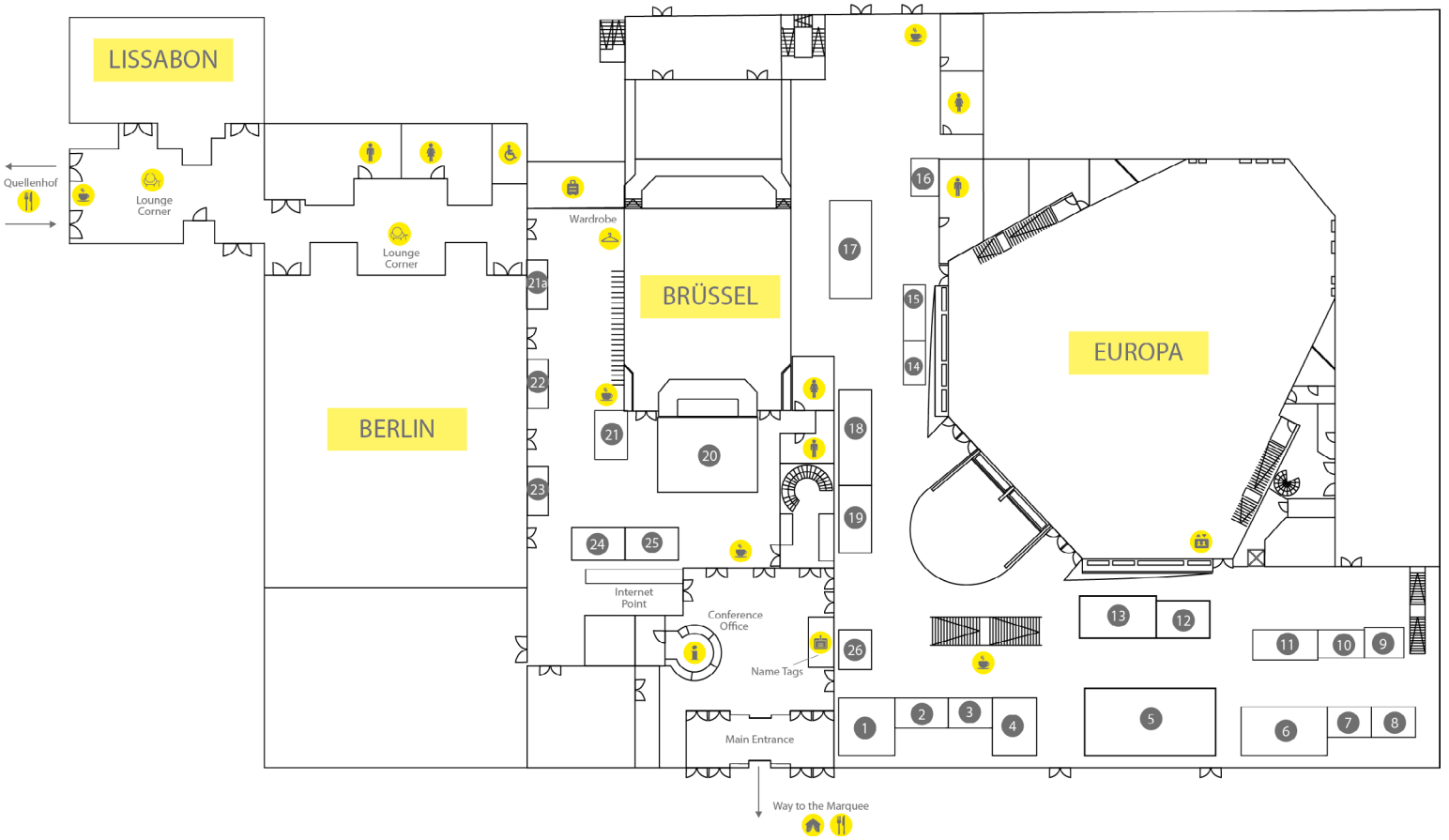


33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Exhibitor List - Ground Floor

At this year's technical exhibition you have the opportunity to get to know the latest mobility technologies and concepts. International companies present their innovations and are available for direct contact and exchange on site.

01	DENSO AUTOMOTIVE Deutschland GmbH
02	Sonceboz SA
03	Freudenberg FST GmbH
04	SEI Automotive Europe GmbH
05	FEV
06	iwis mobility systems GmbH & Co KG
07	RAPA Automotive GmbH & Co. KG
08	Siemens
09	Dassault Systemes Deutschland GmbH
10	Hidria d.o.o.
11	ACTech GmbH
12	GKN Automotive
13	Tenneco
14	MSG Mechatronic Systems GmbH
15	Realis Simulation Limited
16	Meta GmbH
17	AVL List GmbH
18	IAV
19	Aurobay
20	fka GmbH
21	ETO GRUPPE TECHNOLOGIES GmbH
21a	GROUP EMITECH
22	ADEKA Europe GmbH
23	Emitec Technologies GmbH
24	Handtmann Systemtechnik GmbH & Co. KG
25	Lee Hydraulische Miniaturkomponenten GmbH
26	dSpace GmbH



Poster Presentations

At the Aachen Colloquium 2024, all poster presentations will be located on the first floor. Participants can explore the latest research findings and innovations across a variety of topics. This space is designed to foster academic and professional growth through engaging and informative poster displays.

Meeting Area

In response to the requests of many participants, we are setting up a dedicated meeting area on the first floor. This comfortable and inviting space will enable attendees to engage in meaningful discussions, exchange ideas, and collaborate on various projects. It's the perfect spot to delve deeper into the topics presented and foster collaborative opportunities.

More Space for Networking

To further enhance the experience at the Aachen Colloquium 2024, we are providing additional space for networking. This expanded area is intended to facilitate connections among participants, allowing them to build relationships, share knowledge, and expand their professional networks. We believe that this will significantly contribute to the success and enrichment of the event, ensuring valuable interactions and collaborations.

Traditional Banquet in Aachen

The traditional banquet on Tuesday evening presents a feast of culinary delights set in the historic buildings around the Aachener marketplace. This enchanting evening offers a unique blend of exquisite cuisine and restaurants for every taste, providing the perfect backdrop for meaningful interactions. Join your business partners in a relaxed atmosphere, where you can reflect on the day's experiences and deepen your professional relationships. Additionally, this gathering offers an excellent opportunity to enhancing your business prospects and create new contacts.

For your agenda

Tuesday,
October 8th, 2024

7.00pm Entrance
7.30pm Start

November 25 – 27, 2024
Aachen, Germany

Register now!

AAC 2024

15TH AACHEN ACOUSTICS COLLOQUIUM

Development and Research in Automotive Acoustics

Topics

Discussion of vibroacoustic phenomena in applications:

- Vehicle NVH (e. g. Body, Mechatronic Systems, Tire Road Noise)
- Drive Train Vibration and Acoustics (Electric Drives, Engine, Gearbox, Drive Shafts, Hybrid Propulsion Systems)
- Sound Design, Sound Quality and Human Perception in (autonomous) Vehicles
- Infotainment and Communication in (autonomous) Vehicles
- Active Systems for Noise and Vibration Control

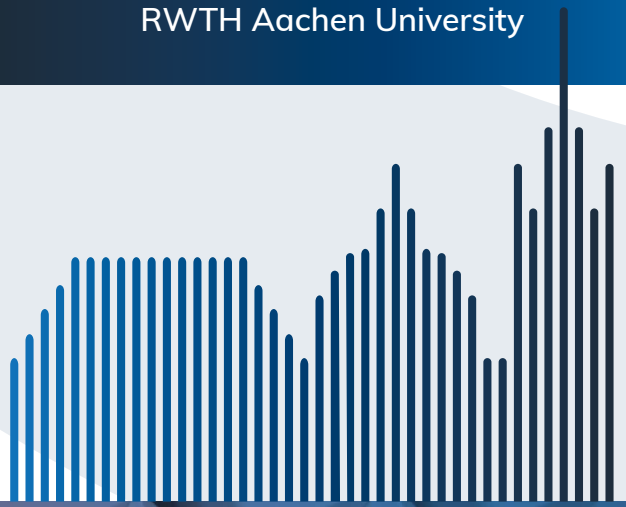
Digital engineering in vibroacoustic development process:

- Measurement Technology (e. g. Structural Analysis)
- Numerical Simulation and Modelling
- Hybrid Methods (Numerical Simulation, Measurement Technology, Machine Learning, AI)
- Integration of Models in the NVH Development Process (MBSE)
- Real-time Simulation (VR, AR and MR)

KEYNOTE SPEAKERS

Dr.-Ing. Stefan Heuer
MAN Truck & Bus SE

Prof. Dr.-Ing. Hermann Ney
RWTH Aachen University

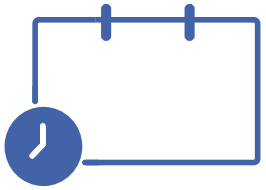


www.aachen-acoustics-colloquium.com

FEV fka HEAD acoustics IHTA RWTH AACHEN UNIVERSITY

Next year the Aachen Colloquium will take place for the 34th time. You are warmly invited to submit a lecture proposal on one of the main topics. You will find the submission form on our website from December 2024: www.aachen-colloquium.com

Important Dates



Deadline for abstracts
February 2025

Notification of the authors
from April 2025

Deadline for submission of the presentation
September 20th, 2025

34th Aachen Colloquium Sustainable Mobility
October 6th – 8th, 2025

Main Topics for 2025

Full Vehicle & Mobility Concepts

- Data-driven Development Processes: Processing, Use, Protection and Evaluation
- Chassis & Vehicle Dynamics
- Functional Safety
- Sustainability, Recycling, LCA & Balances
- New Vehicles, Architectures & Interior Concepts
- Strategies and Business Models of the Automotive Industry: Sustainable / Digital / Multimodal /...
- Zero-Impact Emission Concepts

Drive Technologies

- Battery Systems, Management & Safety
- E-Motors and Power Electronic
- Fuel Cell Technologies
- H2 ICEs and synthetic fuel combustion
- Electrification and Hybridazion
- 48V
- Energy & Thermal Management

Digitalization and Automation

- Automated Driving (Level 3+), Databases & AI
- Digital Development Process: Digital Twin, AI, Methods and Simulation
- Driver Assistance & Connected Driving (ADAS)
- Innovative E/E Vehicle Architectures
- Sensors & Perception of Environment in Vehicles and Infrastructure
- Software Development for the Automobile (incl. Cyber Security)
- Traffic Simulation and Scenarios

General Information

Registration

Since the beginning of May 2024

We recommend an early registration. The terms and conditions of the Aachen Kolloquium GbR are available on the event website:

https://aachen-colloquium.com/gtc

Procedure of Registration

1) Registration (only online via www.aachen-colloquium.com/registration
2) Receive confirmation by e-mail
3) Settle the invoice
4) Registration completion after Receipt of payment

Participation Fee

Participation Fee: 1490,- €*

Participation Online: 750,- €*

Day Tickets available since this year

Further information on the website

University Members 50 % Discount*

*All prices are exclusive of VAT.

Payment Delays

In accordance with the terms and conditions, the participant fees must be paid by the due date stated on the invoice and at the beginning of the event. Please contact us if you are unable to meet this requirement.

Conference Documents

Licences for single or multiple use of the complete conference proceedings as well as individual papers can only be ordered online via

www.aachen-colloquium.com/proceedings

Conference Language

The lectures will be will be given in English only. The proceedings will be published in English only.

Conference Office

Monday, Oct. 7th, 2024	04:00pm - 07:00pm
Tuesday, Oct. 8th, 2024	07:30am - 06:00pm
Wed., Oct. 9th, 2024	07:30am - 05:00pm

Organizer

Aachener Kolloquium
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Germany

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Univ.-Prof. Dr.-Ing. Stefan Pischinger
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