Program booklet 32nd Aachen Colloquium

Europress Aachen, Germany

October 9th-11th, 2023
FOREWORD

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Session Overview

Keynote Speakers

Technical Presentation Program

Speakers & Session Chairs

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Driving Experience: Circus Minimus

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Outlook 2024

General Information
The world of mobility is changing.

The increasing climate challenge that our society is facing dominates every day's news. Undiscussable, one very important part of the influencing factors is the transport and mobility sector. Therefore, politicians are intensively discussing mobility strategies of the future. It is obvious, we need to be innovative and must drive various technologies in order to meet the diverse demands of different users and markets. And this is where we come in as mobility experts and engineers from research and industry. Since this challenge is a worldwide task that we can only solve together, we are looking forward to this year's international exchange at the 32nd Aachen Colloquium Sustainable Mobility.

The 32nd Aachen Colloquium Sustainable Mobility

The selected lecture program offers insights into various topics in more than 100 technical presentations and discussions. The speakers will present research results and innovations from diverse fields, such as drive technologies, digitalization, automation, complete vehicle, mobility concepts and driving dynamics. Discussions will be sparked by dedicated strategy sessions and new interaction formats.

The opening and closing plenary sessions frame the program with high-level representatives from selected companies. We are looking forward to welcoming Arnd Franz, CEO of MAHLE, Gürcan Karakas, CEO of TOGG, Frederik Zohm, Executive Board Member for Research and Development at MAN and Atsushi Ogawa, COO at Honda Motor R&D at the opening plenary session. Matthias Jurytko, CEO of Cellcentric, Peter Laier, Member of the Board of ZF Group and Gerrit Marx, CEO of IVECO group and further invited guests will join the plenary discussion on the topic "Sustainable Transport under ESG Perspective" which will round up the Colloquium on Wednesday.

The latest research results from universities will be presented in the poster session. The speakers will upload a pitch in our event app which is available during the Colloquium and the posters will be part of the exhibition.

Between the lectures, you will have time to visit the technical exhibition. More than 40 international companies will present their products, services and ideas. Get personally in touch with the exhibitors and experience new innovations first hand.

Outside of the event location, you can experience mobility yourself in our Circus Minimus where you can drive and test novel vehicle concepts. Moreover, outstanding vehicles with a street licence are available for a tour around Aachen. Besides the technical program, the event offers various opportunities to network and exchange ideas with speakers, exhibitors and fellow participants, for example during the opening evening on Monday or the traditional banquet in the historic city center of Aachen on Tuesday.

The Aachen Colloquium takes place not only in Aachen, but worldwide online. Participants from all over the world can easily follow the lectures, ask questions and connect with the attendees digitally.

We are very much looking forward to your participation at the 32nd Aachen Colloquium Sustainable Mobility!
The important topics of sustainability and the mobility of the future are the focus of the 32nd Aachen Colloquium Sustainable Mobility. As Lord Mayor, I am particularly pleased about this, because here on site we are working intensively on the mobility turnaround. Only if we implement it can we achieve the climate protection targets.

Our mobility should be safe, convenient and affordable for everyone. It should be quiet, clean and emission-free. We bear responsibility for future generations.

Aachen is part of the EU mission “100 climate-neutral and smart cities by 2030” and was recently awarded funding together with the cities of Münster and Mannheim. This gives us in Aachen a huge push forward in the implementation of climate neutrality. Therefore mobility is a very important building block in this.

You can learn about the latest research results and developments for sustainable, environmentally friendly mobility in the numerous presentations at the 32nd Aachen Colloquium Sustainable Mobility. Topics include automated driving, the latest battery systems, electric drives and strategies & concepts of the automotive industry.

The traditional event, which is a flagship for the city of Aachen, is jointly organized by Professor Stefan Pischinger and Professor Lutz Eckstein.

In order to achieve the common goal of sustainability, the focus is on networking. In the trade exhibition, there will be the opportunity to make contacts and exchange ideas in person. The Start-Up Area in the Eurogress, which has been created in cooperation with the digitalHUB, also invites visitors to do so.

Those who want to experience vehicle concepts live will be in good hands at the vehicle presentations and the “Circus Minimus”. For example, one can marvel at small, compact e-scooters that can be used to quickly and effortlessly traverse the city center, e-motors that rely on the amplification of muscle power, and actuators that revolutionize maneuvering through dense city traffic. The event will conclude with a plenary discussion on “Sustainable Transport under ESG Perspective.”

I wish all participants an interesting exchange about opportunities, experiences and ideas. Discuss and use the technologies and concepts for a future-oriented mobility and let us shape the way to an emission-free future together!

Sibylle Keupen
Lord Mayor of the City Aachen
SESSION OVERVIEW

KEYNOTE SPEAKERS

TECHNICAL PRESENTATION PROGRAM

SPEAKERS & SESSION CHAIRS

Program booklet 32nd Aachen Colloquium

Overview Presentations
### Conference Agenda

**Monday, October 9th, 2023**

- **18:00** Lobby: Welcome Reception & Opening of the Technical Exhibition

**Tuesday, October 10th, 2023**

- **08:30** Opening Plenary Session
- **10:30** Break
- **11:00**
  - Battery Systems I
  - New ICE Engines
  - Strategy I
  - Current trends in AD - A Start-up View
- **12:30** Lunch Break
- **14:00**
  - Battery Systems II
  - Fuel Cells I
  - Strategy II
  - Level-2-Hands-off
- **16:00** BREAK
- **16:30**
  - Battery Systems III
  - Fuel Cells II
  - Mobility & Sustainability - Concepts & Strategies
  - Architectures for AD

**Wednesday, October 11th, 2023**

- **08:30**
  - EDU I
  - Concept Development
  - Sustainability in Mobile Propulsion I
  - Software Defined Vehicles
  - Vehicle Dynamics
- **10:00** BREAK
- **10:30**
  - H2-ICE II
  - Electrification of Commercial Vehicles
  - Emission Concepts
  - SW and Development of AD
  - Steer-by-Wire
- **12:30** Lunch Break
- **14:00**
  - Sustainability in Mobile Propulsion II
  - EDU II Components
  - Digital Twin
  - Verification and Validation
  - Chassis
- **15:30** BREAK
- **15:40** Closing Plenary Session
After studying business administration, Arnd Franz started his career in 1992 with Deutsche Industrie-Holding GmbH & Co. KG, Frankfurt am Main, initially in Group Controlling and then as Commercial Director of several subsidiaries. He was then Commercial Director with TEV GmbH, Erlensee and Director Finance with Magna Seating Systems Europe GmbH, Lohr am Main. Franz, who was born in Stuttgart, joined MAHLE Tennex North America Inc., Murfreesboro (USA) as Managing Director in 2001. In subsequent years, he held various positions at the Stuttgart headquarters of the MAHLE Group: he was Director Controlling of MAHLE Filtersysteme GmbH from 2004, Member of the MAHLE Management Committee responsible for Aftermarket from 2006 and Member of the MAHLE Management Board responsible for Sales and Application Engineering and Aftermarket from 2013 to 2019 before becoming CEO of LKQ Europe.

Arnd Franz is committed to clean, safe, affordable mobility. He supports fair competition between the best technologies for a carbon-neutral future mobility. In his current role as MAHLE CEO he has launched a new strategy for the technology group. MAHLE 2030+ comprises three strategy fields: electrification, thermal management and efficient internal combustion engines that can run on hydrogen and other non-fossil fuels, such as e-fuels. Applying all available technologies is the fastest way to climate neutrality.
Gürcan Karakaş
Chief Executive Officer
TOGG

M. Gürcan Karakaş was born in Antalya in 1965 and grew up in Germany. In 1988 he graduated from Middle East Technical University (METU) with a degree in mechanical engineering. In the same year he joined Aselsan in Ankara. In 1990 he started his career at Bosch. In 2002 he joined the executive board and in 2004 he was promoted to CEO of Bosch Türkiye. In 2007 he took over the management of global sales and the Bosch Car Service network at the Bosch Automotive Aftermarket division in Karlsruhe. In 2011, he took over the management of marketing and sales and automotive strategies at Bosch headquarters. In 2013 he returned to active operational business and became a member of the Board of Directors of the Electrical Drives division with global responsibilities with a focus on the NAFTA and Asia markets.

After a long and successful career at Bosch, on September 1, 2018, he took over responsibility as CEO of the Turkish mobility technology and ecosystem provider TOGG.

Atsushi Ogawa
Chief Executive Officer, Honda Motor R&D
Chief Operating Officer, Innovative Research Excellence

Mr. Atsushi Ogawa joined Honda in 1998. After assigned to Fundamental Technology Research Center in Wako, he was engaged in the development of aerodynamic performance and high-efficiency engine of HondaJet, aerodynamic performance of F1, and so on. In 2005, he transferred to Automobile Development Center and worked on aerodynamics development for mass-production vehicles and racing vehicles, then in 2019, he became a Senior Chief Engineer Head of Dynamics at Innovative Research Excellence and Automobile Center. In 2020, he was appointed as the COO of Innovative Research Excellence. After that, he was appointed as the Managing Officer in 2022. Which leads to now.

Honda R&D Co., Ltd. is a company that develops advanced technology for Honda Motor Co., Ltd. (commonly called Honda), a Japanese automobile manufacture. Honda pursues enhancement in safety and other performance and reduction of environmental impact in mobility products including automobiles and motorcycles based on innovative technologies. Honda R&D Co., Ltd. plays a vital role in Honda's technical development.
As Member of the Executive Board for Research and Development, Frederik Zohm strives for sustainable and fossil free transport solutions. The engineer with a doctorate from RWTH Aachen University has been working in the commercial vehicle industry for almost 20 years. Throughout his career, Frederik Zohm has worked at EvoBus, Mitsubishi Fuso Truck and Bus Corporation, Rolls-Royce Power Systems Holding, Daimler Truck and TRATON Group.

MAN Truck & Bus is one of Europe's leading commercial vehicle manufacturers and transport solution providers, with an annual revenue of more than 11 billion € (2022). The company's product portfolio includes trucks, buses/coaches, vans and diesel and gas engines along with services related to passenger and cargo transport. MAN Truck & Bus is a company of TRATON SE and employs approximately 33,000 people worldwide.

Dr. Matthias Jurytko is CEO of the cellcentric GmbH & Co. KG. Prior to his current position, Dr. Jurytko was Head of the Mercedes-Benz Wörth plant. He has a background in business engineering and studied at the Karlsruher Institute for Technology (KIT). He obtained his PhD at the University of Hohenheim.

Dr. Jurytko joined the former Mercedes-Benz AG in 1990. After various stations in Stuttgart, Kassel, South Africa and Rastatt, he took over the controlling and accounting department at Mercedes-Benz Engines in Mannheim from 2001, before taking over responsibility for controlling of the Powertrain Division Daimler Trucks in 2006. In 2009, Dr. Jurytko moved to Gaggenau and became Head of Product Areas incl. torque converters, cutting and shaping technology, equipment and tool construction as well as international logistics. In 2011, he was given responsibility for the Mercedes-Benz Gaggenau plant.
"Sustainability is deeply rooted within ZF DNA and manifests in our processes and technologies" states Dr. Peter Laier, Member of the Board of Management of the ZF Group with responsibility for Commercial Vehicle Solutions and Industrial Technology, Production and India Region.

After completing his studies in mechanical engineering, Dr. Laier began his professional career at Continental in 2000. At the same time, he completed his Ph.D. in 2001 at the University of Stuttgart, Germany. At Continental, he assumed various management roles in Germany and Japan until 2012. After holding Board positions at Osram and Benteler International, Dr. Laier joined Knorr-Bremse in 2016, where he was a member of the Board with responsibility for the commercial vehicle division until 2021. Dr. Laier has been a member of the ZF Group Board of Management since January 2023.

ZF is a global technology company supplying systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. ZF allows vehicles to see, think and act. In the four mtechnology domains of Vehicle Motion Control, Integrated Safety, Automated Driving, and Electric Mobility, ZF offers comprehensive product and software solutions for established vehicle manufacturers and newly emerging transport and mobility service providers. ZF electrifies a wide range of vehicle types. With its products, the company contributes to reducing emissions, protecting the climate and enhancing safe mobility.

With some 165,000 employees worldwide, ZF reported sales of €43.8 billion in fiscal 2022. The company operates 168 production locations in 32 countries.

Gerrit Marx has more than 20 years of experience in roles of increasing importance in different locations around the world and in a variety of industrial segments, with a specific in-depth focus on automotive industries. He holds a degree in Mechanical Engineering ("Diplom Ingenieur") and an MBA ("Diplom Kaufmann") from RWTH Aachen University, and a Doctorate in Business Administration from Cologne University.

From 1999 to 2007, Mr Marx worked at the global consulting firm McKinsey & Company, focusing on operational improvement programmes in the automotive and aerospace industries in Europe, Brazil, and Japan.

He joined Daimler AG in 2007 to head the global controlling function for vehicle and powertrain component projects, as well as market-entry / mergers and acquisitions for three truck brands in North America, Europe, and Asia. This led him to the role of President and Chief Executive Officer at Daimler Trucks China in 2009 and subsequently, President of Skoda China with Volkswagen AG, overseeing imports and joint venture business relations in both roles.

In 2012 Mr Marx joined the European leadership team of Bain Capital as a member of their portfolio group, driving and leading transformational change programs. This role also encompassed due diligence and merger and acquisition activities, with specific focus on automotive and industrial assets, and also included interim roles such as Chief Executive Officer of Wittur Group, a global Tier-1 supplier to the elevator industry.

Gerrit Marx joined CNH Industrial in January 2019 as President of Commercial and Specialty Vehicles.

Since the spin-off of Iveco Group from CNH Industrial on 1st January 2022, Mr Marx has served as Chief Executive Officer of the newly formed Company.
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<th>Automotive Safety Approach for Air Taxis</th>
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<td>Poster 3</td>
<td>Ventseslav Yordanov, RWTH Aachen University</td>
<td>The Chassis as a Data Source for the Digital Twin of the Road System</td>
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<td>Poster 4</td>
<td>Alexander Lampkowski, FH Dortmund</td>
<td>Acceleration behavior of commercial vehicles with regard to appending norms and guidelines for body and cargo security</td>
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<td>Poster 5</td>
<td>Saud Sattar, Coventry University</td>
<td>Real-Time In-situ Optical Analysis For Detecting Electrolyte Degradation In Li-ion Pouch Cells</td>
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<td>Poster 6</td>
<td>Stefan Kraus, Forschungszentrum Jülich (IEK-3)</td>
<td>Model-based scenario for a defossilized German transport sector</td>
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<td>Poster 7</td>
<td>Fabio Fatigati, University of L’Aquila</td>
<td>Development of an innovative Low Speed Sliding Rotary Vane Pump for Heavy duty Internal Combustion Engine cooling</td>
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<td>Poster 8</td>
<td>Václav Jirovský, Czech Technical University in Prague</td>
<td>Sustainable approach to car-sharing services</td>
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<td>Poster 9</td>
<td>Harold Schock, MSU Michigan State University</td>
<td>High-Efficiency, HigDilute Active Turbulent Jet Engine Enabled by Mechanical Prechamber Air Control</td>
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<tr>
<td>Poster 10</td>
<td>Shantanu Pardhi, Vrije Universiteit Brussel (VUB)</td>
<td>Integrated multi-objective energy management of long-distance plug-in series hybrid coach</td>
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<td>Poster 11</td>
<td>Daniel Sigmund, Technische Hochschule Köln</td>
<td>Testing &amp; Evaluation of a Low Voltage Inverter for In-Wheel Switched Reluctance Machines for Motorcars on a Testbench</td>
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Poster presentations as a pitch in our event app and in the on-site exhibition.
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<td>Welcome</td>
<td>Ulrich Rüdiger (Rector, RWTH Aachen University)</td>
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<td></td>
<td><strong>Introduction to the 32nd Aachen Colloquium</strong></td>
<td>Stefan Pischinger (Institute Director, TME, RWTH Aachen University)</td>
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<td>Lutz Eckstein (Institute Director, ika, RWTH Aachen University)</td>
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<tr>
<td>08:40</td>
<td><strong>Efficiency in Motion – Holistic Efficiency Improvements with Solutions from MAHLE</strong></td>
<td>Arnd Franz (CEO, MAHLE)</td>
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<td>09:00</td>
<td>t.b.d.</td>
<td>Mehmet Gürcan Karakaş (CEO, TOGG)</td>
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<td>09:20</td>
<td><strong>Honda’s Challenge: Carbon Neutrality, Zero Accidents, and New Mobility Areas Leveraging</strong></td>
<td>Atsushi Ogawa (COO, Innovative Research Excellence, Honda Motor R&amp;D)</td>
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<td>09:40</td>
<td><strong>MAN on the way to CO2-free transportation</strong></td>
<td>Dr. Frederik Zohm (Executive Board Member for Research &amp; Development, MAN)</td>
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<td>10:00</td>
<td><strong>Plenary discussion</strong></td>
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## Technical Presentations Program Tuesday, October 10th, 2023  Session 1

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<th>Battery Systems I</th>
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<th>Strategy I</th>
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<td>t.b.d.</td>
<td>60 years of Porsche flat-six engines</td>
<td>Future vehicle HMI – Trends and implications for automotive OEMs, suppliers and tech players</td>
<td>Vay's teledrive-first approach to autonomous driving</td>
<td>Scenario-based development and verification environment for thermal management systems</td>
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<td>L. Eckstein - Ika, RWTH Aachen University</td>
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<td>Future role of Sodium-Ion technology to provide cost efficient battery packs</td>
<td>Unlocking the Potential of Future Vehicle Architectures – Challenges and Implications</td>
<td>Cross-site Continuous Development and Testing in Automotive: Delivering the Software-Driven Vehicle</td>
<td>Simulation of cooling oil flow in electrical machines using a 3D CFD/CHT approach</td>
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<td>Usecases for LTO batteries in public transportation</td>
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<td>J. Roth, F. Šťastný - EBZ nano power s.r.o.</td>
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<td>The New Aurobay 250 PS, 2.0 L Miller Engine</td>
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<td>Electro-thermal Pre-design of a Dual-star e-Drive for Electric Vehicle Application</td>
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<td>M. Sanchez-Torres, M. Petit, A. Lievre- Valeo</td>
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### Technical Presentations Program Tuesday, October 10th, 2023  Session 1

#### Key Dates
- Technical Presentations Session 1:
  - 11:00:00 - 12:00:00
- **Lunch Break**
- Session 2:
  - 14:00:00 - 17:00:00

#### Sessions

- **Battery Systems I**
- **New ICE Engines**
- **Strategy I**
- **Current trends in AD - A Start-up View**
- **Thermal Management I**

#### Venue
- **Europa**
- **Berlin**
- **Lissabon**
- **Brüssel**
- **K1 Aachen**

### Program Highlights
- **Future role of Sodium-Ion technology to provide cost efficient battery packs**
  - H. Löbberding, M. Stapelbroek, M. Rudolph, A. Averberg, K. Poch, T. Ludiger - FEV
- **Unlocking the Potential of Future Vehicle Architectures – Challenges and Implications**
  - M. Redhead, C. Burkard, A. Busse, I. Olschewski - fka GmbH
- **Cross-site Continuous Development and Testing in Automotive: Delivering the Software-Driven Vehicle**
  - N. Wiechowski - Mindmotiv GmbH
- **The Future of Autonomous Shuttle Transportation Services: A Roadmap for Successful Implementation in the United States**
  - H. Braun - Guident Corp
- **Scenario-based development and verification environment for thermal management systems**
  - P. Muhl - Porsche AG  
  - L. Eckstein - Ika, RWTH Aachen University

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Program booklet 32nd Aachen Colloquium  
Technical Presentations Program
## Technical Presentations Program

**Tuesday, October 10th, 2023   Session 2**

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<th>Strategy II</th>
<th>Level-2-Hands off</th>
<th>Thermal Management II</th>
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| 14:00 | Factorial Energy: Transformational Semi-Solid-State Technology  
R. Koerver - Factorial Energy | Fuel cell powertrain adoption for heavy duty vehicles; Reducing cost and simplifying integration  
R. Mishra, D. Lamb, B. Hibberd, B. Todd - Ballard Motive Solutions | Not bigger but smarter – How to right-size electric vehicles and their batteries  
C. Koehler, T. Stahl - Strategy Engineers GmbH & Co. KG | BMW Highway Assist – first Level 2 Hands-Free System incl. Hands-Free-Lane Change in Germany  
R. Krüger - BMW | Holistic Thermal Management using a R744 heat pump system  
D. Wolf, M. Flack, M. Göckler- Schaeffler Technologies |
| 14:30 | S-BEV – Launch of a modular Battery Swapping Station Solution with tailored Logistic Vehicle Platform  
S. Steinwascher - GETEC Getriebe Technik GmbH | Fuel cell aging prediction and mitigation for commercial vehicle applications  
t.b.d.  
t.b.d. | | Ford BlueCruise  
P. Nold - Ford of Europe  
P. Zegelaar - Ford-Werke GmbH | Thermal Management Systems for Future Truck Powertrains  
R. Lutz, L. Art, M. Jung - MAHLE Behr GmbH & Co. KG |
| 15:00 | Observing and prolonging the battery lifetime via cloud monitoring and a digital twin  
M. Kuipers, K.-P. Kairies, G. Angenendt - ACCURE Battery Intelligence GmbH | Ageing of Fuel Cell Systems under Heavy-Duty and Bus Applications  
t.b.d.  
t.b.d. | | The L2H-off project: Addressing potential challenges for hands-free monitoring  
J. Josten - fka GmbH | Innovative cooling method for a power dense e-motor with phase changing material  
R. Dircks - Eagle Simrak B.V.  
| 15:30 | AI-powered BMS for better, safer and greener batteries  
U. Genc, C. Kurtulus, U. Yavas - Eaton Technologies | Development of an integrated fuel cell system simulator for multi-purpose application  
S. Hasegawa, M. Kageyama, M. Kawase - Department of Chemical Engineering, Kyoto, Y. Ijogi - Toyota Motor Corporation, S. Kim - Tokyo University of Agriculture and Technology | European Powertrain Outlook – Road to Net Zero  
W. Herrmann - S&P Global | Driver Monitoring as an Essential Building Block for System Safety  
D. Manstetten, M. Meyer - Robert Bosch GmbH | Status of legal regulation in EU for PFAS – Influence on Thermo Management Systems of BEVs and PHEVs  
R. Heckt, F. Wieschollek - HANON Systems Deutschland GmbH |
### Technical Presentations Program

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<th>Mobility &amp; Sustainability - Concepts &amp; Strategies</th>
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<td>Investigating the effect of battery swelling in a lithium-ion battery module</td>
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<td>Future of Automotive Mobility</td>
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<td><strong>PEM-FC cold start simulation</strong> M. Bahr - Zentrum für Brennstoffzellen Technik GmbH M. Schmitz - TME, RWTH Aachen University</td>
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<tr>
<td>C. Stoker, Y. Hahn - Dassault Systemes</td>
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<td>What might mobility providers' role be in tomorrow's value chain S. Pfieffe, B. Middendorf, I. Schmuckall - Deloitte Consulting GmbH</td>
<td>AUTOtech.agil - Architektur und Technologien zur Orchestrierung automobiltechnischer Agilität R. van Kempen, T. Woopen, L. Eckstein - ika, RWTH Aachen University</td>
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<td>Field experience and future potential of fuel cell propulsion systems</td>
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<td>M. Alt, C. Wieser, R. Fontaine, K. Baron, R. Matthe - Stellantis</td>
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Technical Presentations Program Wednesday, October 11th, 2023  Session 1

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<th>EDU Concept Development I</th>
<th>Sustainability in Mobile Propulsion I</th>
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<td>Hydrogen Combustion Engine: challenges and solutions towards industrial applications</td>
<td>Identification and Update of Thermal Models in Digital Twins of ePowertrain Motor</td>
<td>Life Cycle Based Powertrain Concept Development in a Sustainable World</td>
<td>Vehicle APIs as enabler of the software-defined vehicle</td>
<td>Improved Lateral Dynamics of BEVs – Alternatives to Torque Vectoring</td>
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<td>Light Commercial Vehicle with a H2 Engine Hybrid Powertrain</td>
<td>Accurate reduced motor models for powertrain systems optimization</td>
<td>Towards a Sustainable Vehicle Concept Part 2: Extreme Cost Reduced EDU with high efficiency and sustainability</td>
<td>E/E industrialization with MBSE for Series Development of Software Defined Vehicles</td>
<td>Torque Management Solutions for Battery Electric Vehicles</td>
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**Technical Presentations Program**

**Program Wednesday, October 11th, 2023  Session 2**

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<th>10:30</th>
<th>11:00</th>
<th>11:30</th>
<th>12:00</th>
</tr>
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<tbody>
<tr>
<td><strong>H2-ICE II</strong></td>
<td><strong>Electrification of Commercial Vehicles</strong></td>
<td><strong>Emission Concepts</strong></td>
<td><strong>SW and Development of AD</strong></td>
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<tr>
<td>Challenges and Opportunities in developing a H2 High Specific Power Turbo-Charged Engine</td>
<td>Dynamic charging with eHighway - ready for roll-out</td>
<td>System &amp; product options to meet Euro 7 heavy-duty PN10 limits under challenging in-service operation</td>
<td>Optimization of a lateral driver assistance function by combining classical approaches and artificial intelligence</td>
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<tr>
<td>On the road experience with a LCV H2ICE: A practical path to eliminate emissions</td>
<td>Integration of Real Driving Data into the Electric Powertrain Design Process for Heavy Duty Trucks</td>
<td>Reaching Euro 7 targets with a with a burner-based diesel afttreatment system: an experimental study</td>
<td>Optimized Development Processes for Software-Defined Vehicles</td>
</tr>
<tr>
<td>Hydrogen ICE: State of the art and future potential for real-world application</td>
<td>Customized EDU systems from micromobility to heavy-duty applications</td>
<td>The Exhaust Aftertreatment for Future Worldwide Internal Combustion Engines; From Passenger Car up to Trucks</td>
<td>Flexible deployment of application software based on an end-Z-end API stack with a holistic mobility system</td>
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<td>Measuring Real-World Brake Wear Particle Emissions on Public Roads</td>
<td>Teleoperated Driving: Closing gaps to Automated Driving?</td>
</tr>
<tr>
<td>M. Herrmann - IPG Automotive GmbH</td>
<td>R. Brück, J. Hodgson, L. Pace, M. Presti - Vitesco Technologies Emitec GmbH</td>
<td>M. P. Huber, P. Fischer - TU Graz</td>
<td>F. Reimer - fka GmbH</td>
</tr>
<tr>
<td>Four Wheel Steering – Development of Corner Module and Driving modes for High Steering Angles</td>
<td>Flexible deployment of application software based on an end-Z-end API stack with a holistic mobility system</td>
<td>Safety concepts for a steer-by-wire superposition function at the stability limit of driving dynamics</td>
<td>L. Majade - ika, RWTH Aachen University</td>
</tr>
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<td>Robust position control of a steer-by-wire rack actuator</td>
<td>Four Wheel Steering – Development of Corner Module and Driving modes for High Steering Angles</td>
<td>Flexible deployment of application software based on an end-Z-end API stack with a holistic mobility system</td>
<td>Potential of differential braking as backup system for steering actuators</td>
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</tbody>
</table>
### Technical Presentations Program Wednesday, October 11th, 2023  Session 3

<table>
<thead>
<tr>
<th>14:00</th>
<th>Sustainability in Mobile Propulsion II</th>
<th>EDU II Components</th>
<th>Digital Twin</th>
<th>Verification and Validation</th>
<th>Chassis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Europa</td>
<td>Berlin</td>
<td>Lissabon</td>
<td>Brüssel</td>
<td>K1 Aachen</td>
</tr>
<tr>
<td>14:30</td>
<td>Overview on LONGRUN project results</td>
<td>Next Generation 800V SiC High-Speed E-Drive Technology for Electric Mobility</td>
<td>Cloud-based Digital Twin Solution for Predictive e-Mobility Applications</td>
<td>t.b.d.</td>
<td>Novel electrohydraulic displacement machine for use in active chassis of electrified vehicles</td>
</tr>
<tr>
<td>15:00</td>
<td>Sustainable electric powertrain at all levels – a deep dive into circular economy approach from Bosch</td>
<td>Efficiency trends for electric traction drives</td>
<td>Design of a virtual optimization environment for the simulation parameters of a powertrain test bench</td>
<td>SUNRISE: Safety Assurance Framework for Connected and Automated Mobility Systems</td>
<td>Experimental analysis of tire behavior in rollover-critical driving maneuvers at the overall vehicle and component</td>
</tr>
</tbody>
</table>
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15:40 Plenary Discussion - Sustainable Transport under ESG Perspective

Dr. Matthias Jurytko  
CEO, Cellcentric

Dr. Peter Laier  
Member of the Board, ZF Group

Gerrit Marx  
CEO, IVECO Group

16:40 Closing Address

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

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

16:45 End of Colloquium
We drive innovation to help the world evolve.

We love technology. And we understand it deeply. This enables us to pioneer ideas and shape strategies that keep our clients, partners and our people ahead of the game. Then we explore, challenge, test and learn — continually improving the solutions we implement and the ways we work together. This helps us develop world-class innovations — on and off the road. For a better future and a greater quality of life for everyone.
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Driving Experience: Circus Minimus

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.

The Circus Minimus of the Aachen Colloquium Sustainable Mobility offers you the opportunity to test such new vehicle concepts and innovative operating strategies, which for example rely on the amplification of muscle power through e-motors, actuators that revolutionize maneuvering through dense urban traffic, or simply small, compact e-scooters with which you can quickly and effortlessly cross the city center, directly in front of the Eurogress and thus gain an insight into the current state as well as future micromobility.

You will also have the opportunity to present your own concepts and discuss them with a broad audience of experts.

More information:
https://www.aachener-kolloquium.de/en/information/program/test-track.html
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.

- DENSO AUTOMOTIVE Deutschland GmbH
- Dassault Systemes Deutschland GmbH
- Forvia Faurecia
- SEI Automotive Europe GmbH
- FEV
- iwis mobility systems GmbH & Co KG
- VEMAC GmbH & Co. KG
- Freudenberg FST GmbH
- HORIBA Europe GmbH
- ACTech GmbH
- LONGRUN
- Tenneco
- BorgWarner Stuttgart GmbH
- MANSIO GmbH
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- Autocrypt Technologies GmbH
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- Emitec Technologies GmbH
- Magnet-Schultz GmbH & Co. KG
- t.b.d.
- Hyundaiwia
30  Sonceboz SA  
31  Springer Vieweg  
32  ATESTEO GmbH & Co. KG  
33  Shanghai Vehinfo Technologies Co., Ltd.  
34  Toshiba Digital Solutions Corporation  
35  ELTRO GmbH  
36  REALIS SIMULATION  
37  Saint-Gobain Performance Plastics Pampus GmbH  
38  Helbako GmbH  
39  PLASTIC OMNIUM  
40  Melecs EWS GmbH  
41  Blum-Novotest GmbH  
42  Garrett Motion  
43  EKK Eagle Industry Co., Ltd.  
44  CTS Corporation
Topics 2023:

» Functional Safety
» LiDAR Testing
» LevelXdata
» Steer by Wire

Find out more at www.fka.de
Traditional Banquet in Aachen

The traditional banquet on Tuesday evening offers culinary and musical delights in the historic buildings around the Aachener market place. Meet your business partners in a relaxed atmosphere to further deepen the impressions of the day together and use the opportunity to create new contacts.

For your agenda

Tuesday, October 10th, 2023
7.30pm Entrance
8.00pm Start
November 27 – 29, 2023
Aachen, Germany

Topics
Acoustics of Electric Drives and Hybrid Cars
Active Sound Design and Active Components
Drive Train Acoustics (Engine, Gearbox, Drive Shafts)
Infotainment in the Vehicle
Multi-Modality – Noise and Vibrations
Numerical Methods, Simulation, Virtual Reality
NVH Measurement, System-Analysis, Measurement Technology
Sound Quality, Trouble-Shooting, Sound Design
Vehicle Acoustics (Body, Mechatronic Components, Tire Road Noise)

PLENARY SPEAKERS

Prof. Dr. Jesko Verhey
Otto-von-Guericke University Magdeburg

Tobias Hillers
Dr. Ing. h.c. F. Porsche AG

www.aachen-acoustics-colloquium.com
Next year the Aachen Colloquium will take place for the 33rd 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 2023: https://www.aachener-kolloquium.de/en/

**Important Dates**

- **Deadline for abstracts**
  - February 2024

- **Notification of the authors**
  - from April 2024

- **Deadline for submission of the manuscripts for the conference proceedings**
  - August 2024

**34. Aachen Colloquium Sustainable Mobility**
- **October 7th – 9th, 2024**

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**Main Topics for 2024**

**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**

- Alternative Fuel Application
- Battery Systems, Management & Safety
- Vehicle Electrical Systems & 48V Technologies
- Fuel Cells
- Electrification & Hybridization
- 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
Registration

Since the beginning of May 2023

We recommend an early registration. The terms and conditions of the Aachen Kolloquium GbR are available on the event website: https://aachener-kolloquium.de/en/terms-and-conditions-gtc.html

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: 1310,- €*
Participation Online: 750,- €*

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

Conference Office

Monday, Oct. 9th, 2023 04:00pm - 07:00pm
Tuesday, Oct. 10th, 2023 07:30am - 06:00pm
Wed., Oct. 11th, 2023 07:30am - 05:00pm

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