Developing Solutions Together

The Aachen Colloquium Sustainable Mobility celebrates its 30th anniversary this year. Under the scientific management of Prof. Dr. techn. Franz Pischinger and Prof. Dr.-Ing. Jürgen Helling, the first “Aachen Colloquium Automobile and Engine Technology” took place in 1987. The underlying idea of treating the two topics of engine and automobile together and searching for solutions in joint efforts generated great enthusiasm among the international participants.

Today, more than 30 years later, we are expanding the basic idea of interdisciplinary collaboration, as it has proven to be right and important. At this year’s Aachen Colloquium, we are not only looking at the automobile and its engine, but at the topic of mobility as a whole, with findings from research and industry. An important focus is the development of sustainable solutions for efficient, safe and environmentally friendly mobility of the future.

The 30th Aachen Colloquium Sustainable Mobility

This year, you can look forward again to 100 specialist presentations from renowned companies and institutes. In our detailed program overview you will find innovative topics as mobility and vehicle concepts of tomorrow, automated and connected driving, fuel cells, battery systems and electric drive units. This is rounded off by the red-hot subject of hydrogen, zero-impact emissions, life cycle analyses and strategy considerations in the automotive industry.

The plenary lectures by selected experts will be a special highlight of the event. Markus Duesmann, chairman of the board of AUDI AG, will speak on the topic of electromobility as an opportunity and driver for growth. Dr.-Ing. Stefan Hartung, member of the board of management of Robert Bosch GmbH, will give an outlook on the mobility of the future in his presentation. Prof. Dr. Ralf G. Herrtwich, Senior Director of NVIDIA, will deal with the intelligence of cars and Dr. Ahn, Senior Vice President, will offer an insight into the future vision of electric vehicles at Hyundai Mobis.

Outside of the lecture halls, you can expect numerous well-known companies who will personally present their innovations and answer your questions. As in each year, the Aachen Colloquium offers various opportunities for discussion and direct exchange with experts from all over the world. For the 30th anniversary, you can also look forward to other interesting program items.

We look forward to your participation in the anniversary event 30th Aachen Colloquium Sustainable Mobility!
Many organizations have a vision. We have already put ours into action.

The demands placed on mobility and sustainability have grown exponentially. There can be little doubt that the automotive industry as a whole is entering a new era. In times of transition, it is good to know that reliability and innovation are available from a single source. As a leading technology group with a global reach, we offer pioneering solutions for any type of drive concept. Alongside steadily evolving lightweighting expertise that can be applied to any drive system, we supply components for lithium-ion batteries. Through our new joint venture EKPO Fuel Cell Technologies, we offer high-performance fuel cell stacks and components. In doing so, we are helping to shape the future of mobility.

www.elringklinger.com
SUSTAINABLE MOBILITY

Overview Presentations

CONFERENCE AGENDA

Technical Presentation Program

KEYNOTE SPEAKERS

Speak & Session Chairs
# Program Booklet 30th Aachen Colloquium

## Conference Agenda

### Monday, October 4th, 2021

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>18:00</td>
<td>Lobby: Welcome Reception &amp; Opening of the Technical Exhibition</td>
</tr>
<tr>
<td>18:45</td>
<td>Poster presentations</td>
</tr>
</tbody>
</table>

### Tuesday, October 5th, 2021

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td>Opening Plenary Session</td>
</tr>
<tr>
<td>10:00</td>
<td>Break</td>
</tr>
<tr>
<td>10:30</td>
<td>Battery Systems</td>
</tr>
<tr>
<td>11:00</td>
<td>Automotive Strategy Concepts I</td>
</tr>
<tr>
<td>11:30</td>
<td>Thermal Management</td>
</tr>
<tr>
<td>12:00</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>13:30</td>
<td>Fuel Cells I</td>
</tr>
<tr>
<td>13:45</td>
<td>Life Cycle Assessment</td>
</tr>
<tr>
<td>14:30</td>
<td>Transmission Concepts for Electrified Drives</td>
</tr>
<tr>
<td>15:30</td>
<td>Sensor Technologies for Automated Driving</td>
</tr>
<tr>
<td>16:30</td>
<td>Zero Impact Emission Concepts</td>
</tr>
<tr>
<td>17:00</td>
<td>Battery Cooling</td>
</tr>
<tr>
<td>17:30</td>
<td>Heavy Duty Emission Concepts</td>
</tr>
<tr>
<td>18:00</td>
<td>Mobility &amp; Vehicle Concepts I</td>
</tr>
<tr>
<td>19:00</td>
<td>Chassis Systems</td>
</tr>
</tbody>
</table>

### Wednesday, October 6th 2021

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td>Hybrid &amp; Range-Extender-Concepts</td>
</tr>
<tr>
<td>09:00</td>
<td>Application of Alternative Fuels</td>
</tr>
<tr>
<td>10:00</td>
<td>Break</td>
</tr>
<tr>
<td>11:00</td>
<td>New Engine Technologies</td>
</tr>
<tr>
<td>11:45</td>
<td>Automotive Strategy Concepts II</td>
</tr>
<tr>
<td>12:00</td>
<td>Fuel Cells II</td>
</tr>
<tr>
<td>12:30</td>
<td>Verification &amp; Validation of Automated Driving</td>
</tr>
<tr>
<td>13:00</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>14:00</td>
<td>Hydrogen Combustion Engine</td>
</tr>
<tr>
<td>14:30</td>
<td>48V Technologies</td>
</tr>
<tr>
<td>15:00</td>
<td>Commercial Vehicle &amp; All-Wheel Drive Technologies</td>
</tr>
<tr>
<td>15:30</td>
<td>Data for Automated Driving</td>
</tr>
<tr>
<td>16:00</td>
<td>Closing Plenary Session</td>
</tr>
</tbody>
</table>
Markus Duesmann was born on June 23, 1969 in Heek, North Rhine-Westphalia. In 1991, he completed his studies of mechanical engineering at Steinfurt University of Applied Sciences with a degree in engineering. He began his career in 1992 as a design engineer for a V12 series-production engine at Mercedes-Benz in Stuttgart. In 1995, he moved to the development service provider FEV GmbH in Aachen, where he held various positions, the last of which was head of the engine mechanics division.

In 2004, he took over the position of main department manager for new diesel engines at DaimlerChrysler AG in Stuttgart, and in 2005 became head of Formula 1 development at Mercedes-Benz in Brixworth in the United Kingdom.

In 2007, Markus Duesmann moved to BMW AG as head of Formula 1 powertrain. After holding several responsible positions at that company, he was Board of Management Member for Purchasing and Supplier Network at BMW AG from October 2016 until July 2018.

The Supervisory Board of AUDI AG appointed Markus Duesmann as Chairman of the Board of Management of AUDI AG effective April 1, 2020. Since then, he has also had Board of Management responsibility for Volkswagen Group Research and Development. Additionally he is entrusted with responsibility for the China business of the AUDI AG and with Board of Management responsibility for Product Lines at AUDI AG.

Dr. Stefan Hartung has been a member of the board of management of Robert Bosch GmbH since January 2013. Since January 2019, he has been chairman of the Mobility Solutions business sector, and responsible for the Powertrain Solutions and Electrical Drives divisions. Prior to this, he was responsible for the Energy and Building Technology as well as the Industrial Technology business sectors, in addition to the Bosch Connected Industry business unit.

Born in Dortmund in 1966, Stefan Hartung is married and has two children. He studied mechanical engineering, specializing in manufacturing technology, at RWTH Aachen, where he also submitted his PhD on quality management methods in 1993.

He joined Bosch und Siemens Hausgeräte GmbH in Munich in 2004. Before that, he worked for the Fraunhofer Society and the management consultants McKinsey & Company in Düsseldorf.
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. Past assignments in Dr. Herrtwich's career include managing the Automotive and Services Business Units of HERE Technologies as well as developing self-driving vehicles for Mercedes-Benz. In 2013, his team made an S-Class re-enact the world's first overland drive, covering the historic 65-miles Bertha Benz Route autonomously in regular traffic.

A computer scientist by education, 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 also is 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 was named Fellow of the German Computer Science Society in 2019.

Dr. Byung-Ki Ahn, born in 1963, studied Mechanical Engineering at the Seoul National University in Korea. In 1991, Dr. Ahn moved to the USA, where he obtained his doctoral degree at Virginia Tech, followed by occupations as Senior Research Scientist at the Pacific Northwest Nat'l Lab and as Senior Engineer at UTC Fuel Cells.

In 2004, he returned to Korea to begin his career at Hyundai MOBIS as Chief Researcher. From 2006 until 2017, Dr. Ahn directed the Fuel Cell and Eco-friendly vehicle Performance Development groups at Hyundai Motor, before returning to Hyundai MOBIS.

Currently, Dr. Ahn fulfills the position as Senior Vice President of the Electric Powertrain BU at Hyundai MOBIS in Korea.
Our Vision for a Digital Future!

...and we keep innovating mobility for the next 40 years

software defined cars     sustainability     driving pleasure

CREATING IDEAS & DRIVING INNOVATIONS

fka

www.fka.de/en/ack2021
Poster presentations Monday, October 4th 2021, 18:45

Session chair of the poster presentation
Prof. Dr. Hermann Rottengruber, IMS, Otto-von-Guericke University

**Poster 1**
Lukas Laarmann, FH Aachen

Human Hybrids, Shared Vehicle and Airtaxis – Facing Sustainable Future with Mobility Thinking

**Poster 2**
Prof. Dr. Andreas Lohner, TH Köln

eWheel2Car - A New Approach of Retrofitting Cars

**Poster 3**
Prof. Dr. Vinod Rajamani, FH Dortmund

Lifecycle Analysis of the Hydrogen Combustion Engine and its Technology Enablers

**Poster 4**
Tobias Brinkmann, VKA RWTH Aachen

Traffic-efficient and Energy-Optimized Longitudinal Control of an Autonomous Vehicle Using Deep Reinforcement Learning

**Poster 5**
Swantje Konradt, Otto-von-Guericke-Universität Magdeburg

Energetic Optimization of a PEM Fuel Cell Vehicle

**Poster 6**
Pia Sophie Charlotte Dautzenberg, ika, RWTH Aachen

Identification and Evaluation of Trust-Relvant Driving Situations for Automated Driving (SAE Level4/5)
Opening Plenary Session at the Europa Hall

08:30  Welcome
Univ.-Prof. Dr. rer. nat. Dr. h.c. mult.
Ulrich Rüdiger
Rector, RWTH Aachen University

08:40  Introduction to the 30th Aachen Colloquium
Univ.-Prof. Dr.-Ing. Stefan Pischinger
Director, VKA, RWTH Aachen University

08:40  Introduction to the 30th Aachen Colloquium
Univ.-Prof. Dr.-Ing. Lutz Eckstein
Director, ika, RWTH Aachen University

09:00  Electromobility – Opportunity and Driver for Growth
Dipl.-Ing.
Markus Duesmann
Chairman of the Board of Management and Board of Management Member for Product Lines at AUDI AG

09:20  Future of Mobility
Dr.-Ing.
Stefan Hartung
Member of the Board of Management, Robert Bosch GmbH

09:40  Plenary Discussion
## Technical Presentations Program Tuesday, October 5th, 2021 Session 1

### Session Chair
**Prof. Dr. Henning Wallentowitz**
ika, RWTH Aachen University

### Session Chair
**Dr. Jens Kotte**
ika GmbH

### Session Chair
**Dr. Christoph Menne**
FEV Europe GmbH

### Session Chair
**Prof. Andre Seeck**
Bundesanstalt für Straßenwesen (BASt)

### Session Chair
**Univ.-Prof. Dr.-Ing. Christian Schindler**
ifs, RWTH Aachen University

---

### Battery Systems

#### Europa

**Ultra-Fast Charging Urban Delivery Vehicles**
M. Bassett, J. Hall – MAHLE Powertrain Ltd.
P. Wilson – Allotrope Energy Ltd.

---

**Future Battery Systems – Affordable, Safe and Highly Integrated**
M. Teuber, M. Stapelbroek, R. Beykirch – FEV Europe GmbH
C. Kürten, O. Lück, H. Wenzel – FEV Vehicle GmbH

---

**Next Generation Batteries for Mobility in Korea: Technical Trends, Patent Filings and Legal Issues**
S.-E. Kim, I.A. Kwon – Kim & Chang

---

### Berlin

**Smartphones on Wheels – How OEMs and Suppliers can Win the Race for Software Domination**
C. Koehler, A. Neumann – Strategy Engineers GmbH & Co. KG

---

**Future Automotive Value Creation Strategies**
J. Berxing, S. Schnurrer, M. Gavrila, B. Schoenberger – Oliver Wyman

---

**Vehicle Platforms for Future Mobility – Convergence or Divergence of Architectures?**
C. Burkard, C. Harter, I. Olschewski – ika GmbH
L. Eckstein – ika, RWTH Aachen University

---

### Lissabon

**Multiphysics Design and Analysis of Electric Vehicles**
W. Seeley, K. Illa, K. Voonna, F. Ross – Siemens Digital Industries Software
F. Bet – InDesA GmbH

---

**Integrated Thermal Management System for Battery Electric Vehicles (BEV)**
L. Art, M. Boger, M. Jung – MAHLE Behr GmbH & Co. KG

---

**Self-Adapting Comfort Models for Comfort-Based HVAC Control0**
S. Möller, A. Rauch, A. Kospach, M. Waltenberger – VIRTUAL VEHICLE research GmbH

---

### Brüssel

**UNICARagil – Agile Development of Self-Driving Vehicles**
R. van Kempen, T. Woopen, L. Eckstein – ika, RWTH Aachen University

---

**Integration of a Vehicle Operating Mode Management into UNICARagil’s Automotive Service-oriented Software Architecture**
I. Jatzkowski, T. Stolte, M. Maurer – TU Braunschweig
M. Buchholz, K. Dietmayer – Ulm University
A. Kampmann, B. Alrifaee – RWTH Aachen University

---

### K1 Aachen

**Systematic Integration of Simulation and Driving Test to Evaluate Rollover Behavior of SUVs**
F. Chang, M. Frost, C. Schimmel – AUDI AG

---

**Frequency-Dependent Categorization of Vehicle Vertical Dynamics Regard to Subjective Human Perception**
J. Kreibich, L. Mahlknecht m. Lienkamp – TU München
K. Riedel – CARIAD SE
A. Noll – AUDI AG

---

**Model Based Quality Management FOR Virtual Prototypes considering Uncertainties**
D. Frerichs, S. Schultz, K. M. Hahn, S. David – Stellantis
### Technical Presentations Program Tuesday, October 5th, 2021 Session 2

<table>
<thead>
<tr>
<th>Session Chair</th>
<th>Session Chair</th>
<th>Session Chair</th>
<th>Session Chair</th>
<th>Session Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ.-Prof. Dr.-Ing. Lutz Eckstein</td>
<td>Prof. Dr. Jan-Welm Biermann</td>
<td>Prof. Dr. Thomas Form</td>
<td>Prof. Dr. Dirk Abel</td>
<td>Prof. Dr. Pim van der Jagt</td>
</tr>
<tr>
<td>ika, RWTH Aachen University</td>
<td>RWTH Aachen University</td>
<td>Volkswagen Commercial Vehicles</td>
<td>IRT, RWTH Aachen University</td>
<td>AB Dynamics Europe GmbH</td>
</tr>
</tbody>
</table>

#### Fuel Cells I

- **Toyota’s Strategy for Fuel Cell Technology and the Progress in the Second Generation Mirai**
  - T. Paquet, T. Hayashi – Toyota Motor Europe

- **Hydrogen Powertrain Designs for European Long-Haul Trucks**
  - K. Godard, L. Chauvin, C. Vaquier, T. Justin – Symbio
  - G. Queeny – Faurecia

- **Fuel Cell Freeze Start – From Simulation and Benchmarking to System Optimization**
  - M. Zubel, M. Walters – FEV Europe GmbH
  - M. Schmitz – VKA, RWTH Aachen University

- **The EXPO NM 12 Stack Module – A Modular Stack Platform for HD-Applications**
  - J. Kraft – EXPO Fuel Cell Technologies

#### Life Cycle Assessment

- **The Carbon Footprint of Volvo XC40 BEV and ICE – Presented With Transparency**
  - R. Palm, I. Råde, C. Krewer, K.-H. Hagdahl, A. Egeskog – Volvo Cars
  - L. Bolin – Polestar
  - L. Dahlhof – N. Swedish Environmental Research Institute

- **Life Cycle Assessment of Electric Vehicles**
  - M. Y. Song, W. B. Lee, J. W. Choung – Hyundai Motors
  - D. H. Kim, G. Han, T. Hur – Konkuk University

- **Holistic Evaluation of Components & Systems for xEV – Life Cycle Assessment as Decision Factor in the Innovation Process?**
  - A. Busse – fka GmbH
  - D. Thirunavukkarasu, G. Witham, L. Eckstein – ika, RWTH Aachen University

- **Green NCAP, Evaluation of the Exhaust Gas Behaviour and the Energy Efficiency of Modern Cars under Demanding Conditions**
  - A. Damyanov – Vienna University of Technology
  - U. Ellmers – Federal Highway Research Institute (BAS)

#### Transmission Concepts for Electrified Drives

- **New CVT Products, Valuable Solutions for the Diversified Powertrain Future**
  - G.-J. M. van Spijik, F. Van der Sluis, Z. Cai – Bosch Transmission Technology
  - A. D. L. de Lima, F. Van der Sluis – Bosch Transmission Technology

- **Modular Propulsion System Design as Cornerstone for Agility for Global Electrified Platforms**
  - G. Bismans – Punch Powertrain

- **Development of a Shiftable High-Speed E-Drive with a Complex-Compound Planetary Gear Set**
  - F.-T. Mitterer, R. Subramanian – MAHLE ZG Transmissions GmbH
  - G. Witham, J. Hemsen – ika, RWTH Aachen University

- **2DHT – The Answer to Highest Requirements on Sustainable Drivetrains for HEV/PHEV**
  - J. Trumpff – GETEC Getriebe Technik GmbH

- **Real-Time Traffic Environment Perception by Using LiDAR Sensors and AI Software**
  - Y. Ji, F. Frauendorfer – LiangDao GmbH

#### Sensor Technologies for Automated Driving

- **LiDAR Sensor Calibration without the Need of Physical Targets**
  - A. Engelbert, J. Poppe – HORIBA Europe GmbH
  - T. Ost – DEKRA SE

- **How to Build a Highly Accurate Digital Twin – Intelligent Infrastructure in the Corridor for New Mobility – ACCorD**

- **Brake Wear Particle Emissions – An Emerging Challenge**
  - M. Huber, P. Fischer – FG, TU Graz
  - G. Steiner, A. Mamakos, A. Klug, G. Steiner – AVL List GmbH

#### Brake Systems

- **Operating Strategy for Autonomous Vehicles in Case of Failures in the Brake System**
  - H.C. Schlimme – Volkswagen AG
  - J. Iatropoulos, J. Sterthoff, R. Henze – IFF, TU Braunschweig

- **Optimization of the Brake-Stability using an Electronically Controlled Limited Slip Differential (eLSD)**
  - D. Mertens, L. Lohn – HMETC GmbH
  - L. Lohn, M. Reke – FH Aachen

- **Brake Wear Particle Emissions – An Emerging Challenge**
  - M. Huber, P. Fischer – FG, TU Graz
  - G. Steiner, A. Mamakos, A. Klug, G. Steiner – AVL List GmbH

- **How to Build a Highly Accurate Digital Twin – Intelligent Infrastructure in the Corridor for New Mobility – ACCorD**

- **Accuracy Requirements for the Road Friction Estimation of a Friction-adaptive Automatic Emergency Brake (AEB)**
  - M. Schmitz – VKA, RWTH Aachen University
## Technical Presentations Program Tuesday, October 5th, 2021 Session 3

### Zero Impact Emission Concepts

**Europa**
- **Aftertreatment Technologies Supporting the Path Towards Zero-Impact Emissions**
  - D. Rose, T. Bager, P. Nicolin, F. Jung – Corning GmbH
  - T. A. Collins, R. I. Ogunwumi – Corning Inc.

**Berlin**
- **How Battery Pack Safety can be Improved with an Innovative Fluid for Thermal Management**
  - N. Champagne – TOTAL

**Lissabon**
- **Future Regulatory Technology Options to Reduce Risk in Application for Heavy-Duty Diesel Engines**
  - C. Webb, P. Stephenson, M. Meijer, A. Coumans – PacCar Technical Center
  - J. Kramer, R. Brueck – Vitesco Technologies Emitec GmbH

**Brüssel**
- **Development of an Autonomous Family Vehicle using a Scenario-Based Design Approach**

**K1 Aachen**
- **Steer-by-Wire – Experience, Potentials and Solutions for Future Mobility**
  - H. Hügle, M. Dann – Schaeffler Paravan Technologie GmbH & Co. KG

### Battery Cooling

**Europa**
- **Thermal Management System Tipping Points for High Power Charging of Battery Electric Vehicles**
  - J. Wong, R. Pearson, J. Saikeld – bp
  - T. Rachow, D. Schwarzmann – Bosch

**Berlin**
- **Challenges for CV Powertrains Meeting Strict Future Low-Emission Regulations – Will Electrification Be the Solution?**

**Lissabon**
- **Innovative Battery Cooling System Using Immersion Cooling for Mainstream BEV**
  - C. Rouaud – RICARDO
  - M. Lashbrook – M&I Materials Ltd.
  - S. Charmer – WMG, University of Warwick

**Brüssel**
- **Ultra-Low NOx Emissions with Close-Coupled Emission Control System on a Heavy-Duty Truck Application**
  - P. Mendoza, J. Demuynck, D. Bosteels – AECC aisbl
  - T. Wilkes, L. Robb, P. Recker – FEV Europe GmbH

**K1 Aachen**
- **Impact of Tyre Modelling on Vehicle Soiling**
  - D. Mutlyashki, T. Linden – 3DS

### Heavy Duty Emission Concepts

**Europa**
- **Zero Impact Pollutant Emissions and 50 % Real-World Efficiency – The Future of CI Powertrains**
  - C. Menne, M. Ehrly, R. Zegers, P. Recker – FEV Europe GmbH
  - T. Köfer, H. Busch – FEV Group GmbH

**Berlin**
- **How Battery Pack Safety can be Improved with an Innovative Fluid for Thermal Management**
  - N. Champagne – TOTAL

**Lissabon**
- **Future Regulatory Technology Options to Reduce Risk in Application for Heavy-Duty Diesel Engines**
  - C. Webb, P. Stephenson, M. Meijer, A. Coumans – PacCar Technical Center
  - J. Kramer, R. Brueck – Vitesco Technologies Emitec GmbH

**Brüssel**
- **Development of an Autonomous Family Vehicle using a Scenario-Based Design Approach**

**K1 Aachen**
- **Steer-by-Wire – Experience, Potentials and Solutions for Future Mobility**
  - H. Hügle, M. Dann – Schaeffler Paravan Technologie GmbH & Co. KG

### Mobility & Vehicle Concepts I

**Europa**
- **Modelling of Exhaust Emissions from a PHEV Hybrid Vehicle**
  - S. Loussaief, M. Groisil – Siemens Industry Software

**Berlin**
- **How Battery Pack Safety can be Improved with an Innovative Fluid for Thermal Management**
  - N. Champagne – TOTAL

**Lissabon**
- **Challenges for CV Powertrains Meeting Strict Future Low-Emission Regulations – Will Electrification Be the Solution?**

**Brüssel**
- **A Matrix-Based Model for the Systematic Transfer of Requirements into Vehicle Modules and Functions**
  - A. Riddoch, T. Roß, A. Twer, H. Gronau – AUDI AG
  - F. Mantwill – Helmut Schmidt Universität Hamburg

**K1 Aachen**
- **Impact of Tyre Modelling on Vehicle Soiling**
  - D. Mutlyashki, T. Linden – 3DS

### Chassis Systems

**Europa**
- **Thermal Management System Tipping Points for High Power Charging of Battery Electric Vehicles**
  - J. Wong, R. Pearson, J. Saikeld – bp
  - T. Rachow, D. Schwarzmann – Bosch

**Berlin**
- **Challenges for CV Powertrains Meeting Strict Future Low-Emission Regulations – Will Electrification Be the Solution?**

**Lissabon**
- **Innovative Battery Cooling System Using Immersion Cooling for Mainstream BEV**
  - C. Rouaud – RICARDO
  - M. Lashbrook – M&I Materials Ltd.
  - S. Charmer – WMG, University of Warwick

**Brüssel**
- **Ultra-Low NOx Emissions with Close-Coupled Emission Control System on a Heavy-Duty Truck Application**
  - P. Mendoza, J. Demuynck, D. Bosteels – AECC aisbl
  - T. Wilkes, L. Robb, P. Recker – FEV Europe GmbH

**K1 Aachen**
- **Modular and Scalable System Integration for Electric Vehicles: The Integrated Axle Module (IAM) by BENTELER and Bosch**
  - M. Kollmeier, U. Hammelmaier – Benteler Automobiltechnik GmbH

- **Participatory Development of an Mobility Station- A Real-Lab Approach in a Residential Neighbourhood in Zwickau.**
  - E. Höhne, S. Leonhardt – Stadt Zwickau

- **Impact of Tyre Modelling on Vehicle Soiling**
  - D. Mutlyashki, T. Linden – 3DS
# Technical Presentations Program

## Wednesday, October 6th, 2021
### Session 1

<table>
<thead>
<tr>
<th>Europa</th>
<th>Berlin</th>
<th>Lissabon</th>
<th>Brüssel</th>
<th>K1 Aachen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hybrid &amp; Range-Extender-Concepts</strong></td>
<td><strong>Application of Alternative Fuels</strong></td>
<td><strong>Reports from FVV-Projects</strong></td>
<td><strong>Electric Motors</strong></td>
<td><strong>HMI &amp; User Experience</strong></td>
</tr>
<tr>
<td><strong>Overview Presentations Information</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Technical Presentations Program

### Wednesday, October 6th, 2021

**Session 2**

<table>
<thead>
<tr>
<th>New Engine Technologies</th>
<th>Automotive Strategy Concepts II</th>
<th>Fuel Cells II</th>
<th>Verification &amp; Validation of Automated Driving</th>
<th>Power Electronics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Europa</strong></td>
<td><strong>Berlin</strong></td>
<td><strong>Lissabon</strong></td>
<td><strong>Brüssel</strong></td>
<td><strong>K1 Aachen</strong></td>
</tr>
<tr>
<td>Weight Reduction and Functional Improvement of Future ICEs with Additive Manufacturing and Composite Materials</td>
<td>Battery vs. Fuel Cell</td>
<td>Air Management for Fuel Cells: Key for Long-Term Durability</td>
<td>Waymo Safety Assurance</td>
<td>400 V Powerelectronic for Highest Efficiency Demands</td>
</tr>
</tbody>
</table>
### Technical Presentations Program Wednesday, October 6th, 2021 Session 3

<table>
<thead>
<tr>
<th>Time</th>
<th>Region</th>
<th>Session Chair</th>
<th>Topic</th>
<th>Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>Europa</td>
<td></td>
<td>Hydrogen Combustion Engines</td>
<td>PUNCH H2-ICE &amp; Flybrid KERS for Decarbonizing Off-Highway Applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prof. Dr. Helmut Eichlseder</td>
<td></td>
<td>S. Scalabrini – PUNCH Hydrocells</td>
</tr>
<tr>
<td>14:30</td>
<td>Berlin</td>
<td>Prof. Dr. Rupert Niethammer</td>
<td>48V Technologies</td>
<td>Mild Hybrid Solutions, Concepts and CO₂ Effects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daimler Truck AG</td>
<td></td>
<td>G. Cariccia, S. Brandin – DAYCO EUROPE SRL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>t.b.a</td>
<td></td>
<td>A. Tonoli – Politecnico di Turin</td>
</tr>
<tr>
<td>15:00</td>
<td>Lissabon</td>
<td>Unv.-Prof. Dr.-Ing. Stefan Kowalewski</td>
<td>Commercial Vehicle &amp; All-Wheel Drive Technologies</td>
<td>Hydrogen Combustion Engine for Commercial Vehicle Applications – New Requirements for Combustion Simulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>i11, RWTH Aachen University</td>
<td></td>
<td>T. Ebert, R.-F. Nobile, D. Leimann – KEYOU GmbH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. Rupert Niethammer</td>
<td>Design of an Electric Drive Axle for Heavy Distribution Traffic</td>
<td>Valve Train System for P0 and P1 Hybrid Powertrains</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daimler Truck AG</td>
<td></td>
<td>T. Werblinski, W. Christgen, C. Schroeder, P. Traversa</td>
</tr>
<tr>
<td></td>
<td></td>
<td>t.b.a</td>
<td>Highly Accurate Scenario and Reference Data for Automated Driving</td>
<td>– Schaeffler Technologies AG &amp; Co. KG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. Rupert Niethammer</td>
<td>Info Bee at UNICARagil: Support From Above for Automated Driving</td>
<td>G. Sandkühler – FAUN Umwelttechnik GmbH &amp; Co. KG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daimler Truck AG</td>
<td></td>
<td>Learning Delta Policies for Automated Driving via Reinforcement Learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>t.b.a</td>
<td></td>
<td>M. Templer, J. Kaste, P. Hochrein, B. Mennenga – Volkswagen AG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. Rupert Niethammer</td>
<td>UrbanT – An Autonomous Delivery Robot for the Last Mile</td>
<td>Automated Statistical Validation using Big Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daimler Truck AG</td>
<td></td>
<td>M. Pavelka, M. Jonis, T. Kletecka, P. Krejci, J. Šilina, M. Zima – Valeo</td>
</tr>
<tr>
<td>15:00</td>
<td>K1 Aachen</td>
<td>Univ.-Prof. Dr.-Ing. Tobias Kühnimhof</td>
<td>Mobility &amp; Vehicle Concepts II</td>
<td>GKN’s Highly Efficient Components for Future AWD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Isb, RWTH Aachen University</td>
<td></td>
<td>J. Haupt, C. Chatenay, T. Gassmann, S. Herber – GKN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>t.b.a</td>
<td></td>
<td>Highly Accurate Scenario and Reference Data for Automated Driving</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. Rupert Niethammer</td>
<td></td>
<td>L. Vater, R. Krajewski, L. Eckstein – ika, RWTH Aachen University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daimler Truck AG</td>
<td></td>
<td>T. Moers, J. Bock – ika GmbH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>t.b.a</td>
<td></td>
<td>Automated Statistical Validation using Big Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. Rupert Niethammer</td>
<td></td>
<td>M. Pavelka, M. Jonis, T. Kletecka, P. Krejci, J. Šilina, M. Zima – Valeo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daimler Truck AG</td>
<td></td>
<td>UrbanT – An Autonomous Delivery Robot for the Last Mile</td>
</tr>
</tbody>
</table>
Closing Plenary Session in the Europa Hall

16:00  What it Takes to Make Cars More Intelligent
Prof. Dr.  
Ralf G. Herrtwich  
Senior Director Automotive Software, NVIDIA, Berlin

16:20  Mobis, a Reliable Partner to Share the Future Vision of xEVs
Dr.  
Byung-Ki Ahn  
Senior Vice President Electric Powertrain BU, Hyundai MOBIS, Korea

16:40  Plenary Discussion

17:00  Closing Address
Univ.-Prof. Dr.-Ing.  
Stefan Pischinger  
Director, VKA, RWTH Aachen University

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

17:15  End of Colloquium
We support you with our expertise in the development of alternative powertrain concepts

Your engineering partner for:
> Complete and partial electrification of powertrains
> Battery technology and battery management systems
> Hydrogen fuel cells
> Hydrogen internal combustion engines
> CO\textsubscript{2}-neutral and regenerative fuels
  > Power-to-X
  > including fuels based on biomass

www.zero-co2-mobility.com
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirk Abel</td>
<td>IRT, RWTH Aachen University</td>
<td><a href="mailto:d.abel@irt.rwth-aachen.de">d.abel@irt.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Markus Baum</td>
<td>Roland Berger GmbH</td>
<td><a href="mailto:markus.baum@rolandberger.com">markus.baum@rolandberger.com</a></td>
</tr>
<tr>
<td>Christian Burkard</td>
<td>fka GmbH</td>
<td><a href="mailto:christian.burkard@fka.de">christian.burkard@fka.de</a></td>
</tr>
<tr>
<td>Pia Sophie Charlotte Dautzenberg</td>
<td>ika, RWTH Aachen</td>
<td><a href="mailto:pia.dautzenberg@ika.rwth-aachen.de">pia.dautzenberg@ika.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Dirk Adamczyk</td>
<td>ZF Friedrichshafen AG</td>
<td><a href="mailto:dirk.adamczyk@zf.com">dirk.adamczyk@zf.com</a></td>
</tr>
<tr>
<td>Christian Beidl</td>
<td>vkm, TU Darmstadt</td>
<td><a href="mailto:beidl@vkm.tu-darmstadt.de">beidl@vkm.tu-darmstadt.de</a></td>
</tr>
<tr>
<td>Alexander Busse</td>
<td>fka GmbH</td>
<td><a href="mailto:Alexander.Busse@fka.de">Alexander.Busse@fka.de</a></td>
</tr>
<tr>
<td>Thomas Ebert</td>
<td>KEYOU GmbH</td>
<td><a href="mailto:thomas.ebert@keyou.de">thomas.ebert@keyou.de</a></td>
</tr>
<tr>
<td>Tim Ahrenhold</td>
<td>Institut für Fahrzeugtechnik</td>
<td><a href="mailto:t.ahrenhold@tu-bs.de">t.ahrenhold@tu-bs.de</a></td>
</tr>
<tr>
<td>Johannes Berking</td>
<td>Oliver Wyman</td>
<td><a href="mailto:johannes.berking@oliverwyman.com">johannes.berking@oliverwyman.com</a></td>
</tr>
<tr>
<td>Gianluca Cariccia</td>
<td>DAYCO EUROPE SRL</td>
<td><a href="mailto:gianluca.cariccia@dayco.com">gianluca.cariccia@dayco.com</a></td>
</tr>
<tr>
<td>Helmut Eichlseder</td>
<td>ivt, TU Graz</td>
<td><a href="mailto:eichlseder@ivt.tugraz.at">eichlseder@ivt.tugraz.at</a></td>
</tr>
<tr>
<td>Norbert W. Alt</td>
<td>FEV Group GmbH</td>
<td><a href="mailto:alt@fev.com">alt@fev.com</a></td>
</tr>
<tr>
<td>Ralf Bey</td>
<td>FEV Europe GmbH</td>
<td><a href="mailto:bey@fev.com">bey@fev.com</a></td>
</tr>
<tr>
<td>Christian Carstensen</td>
<td>paragon electrodrive GmbH</td>
<td><a href="mailto:christian.carstensen@paragon.ag">christian.carstensen@paragon.ag</a></td>
</tr>
<tr>
<td>Peter Eilts</td>
<td>ivb, TU Braunschweig</td>
<td><a href="mailto:p.eilts@tu-bs.de">p.eilts@tu-bs.de</a></td>
</tr>
<tr>
<td>Jakob Andert</td>
<td>VKA, RWTH Aachen University</td>
<td><a href="mailto:andert@vka.rwth-aachen.de">andert@vka.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Jan-Welm Biermann</td>
<td>RWTH Aachen</td>
<td><a href="mailto:janwelm.biermann@post.rwth-aachen.de">janwelm.biermann@post.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Nicolas Champagne</td>
<td>TOTAL</td>
<td><a href="mailto:nicolas.champagne@total.com">nicolas.champagne@total.com</a></td>
</tr>
<tr>
<td>Andre Engelbert</td>
<td>HORIBA Europe GmbH</td>
<td><a href="mailto:andre.engelbert@horiba.com">andre.engelbert@horiba.com</a></td>
</tr>
<tr>
<td>Laurent Art</td>
<td>MAHLE Behr GmbH &amp; Co. KG</td>
<td><a href="mailto:laurent.art@mahle.com">laurent.art@mahle.com</a></td>
</tr>
<tr>
<td>Gunther Bismans</td>
<td>Punchpowertrain</td>
<td><a href="mailto:gunther.bismans@punchpowertrain.com">gunther.bismans@punchpowertrain.com</a></td>
</tr>
<tr>
<td>Fan Chang</td>
<td>AUDI AG</td>
<td><a href="mailto:fan.chang@audi.de">fan.chang@audi.de</a></td>
</tr>
<tr>
<td>Christian Foltz</td>
<td>PwC Strategy&amp;(Germany) GmbH</td>
<td><a href="mailto:christian.foltz@strategyand.pwc.com">christian.foltz@strategyand.pwc.com</a></td>
</tr>
<tr>
<td>Johannes Barckmann</td>
<td>EDAG</td>
<td><a href="mailto:johannes.barckmann@edag.com">johannes.barckmann@edag.com</a></td>
</tr>
<tr>
<td>Tobias Brinkmann</td>
<td>Lehr- und Forschungsgebiet für Mechatronik in mobilen Antrieben</td>
<td><a href="mailto:brinkmann@vka.rwth-aachen.de">brinkmann@vka.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Zhiqian Chen</td>
<td>Tula Technology</td>
<td><a href="mailto:chenz@tulatech.com">chenz@tulatech.com</a></td>
</tr>
<tr>
<td>Thomas Form</td>
<td>Volkswagen Commercial Vehicles</td>
<td><a href="mailto:thomas.form@volkswagen.de">thomas.form@volkswagen.de</a></td>
</tr>
<tr>
<td>Michael Bargende</td>
<td>IFS, Universität Stuttgart</td>
<td><a href="mailto:michael.bargende@fkfs.de">michael.bargende@fkfs.de</a></td>
</tr>
<tr>
<td>Aleksandar Damyanov</td>
<td>ifa, Vienna University of Technology</td>
<td><a href="mailto:aleksandar.damyanov@ifa.tuwien.ac.at">aleksandar.damyanov@ifa.tuwien.ac.at</a></td>
</tr>
<tr>
<td>Dirk Frerichs</td>
<td>Stellantis</td>
<td><a href="mailto:dirk.frerichs@stellantis.com">dirk.frerichs@stellantis.com</a></td>
</tr>
<tr>
<td>Michael Bassett</td>
<td>MAHLE Powertrain Limited</td>
<td><a href="mailto:mike.bassett@mahle.com">mike.bassett@mahle.com</a></td>
</tr>
<tr>
<td>Karsten Bronowski</td>
<td>XenomatiX</td>
<td><a href="mailto:karsten.bronowski@xenomatix.com">karsten.bronowski@xenomatix.com</a></td>
</tr>
<tr>
<td>Aleksandar Damyanov</td>
<td>ifa, Vienna University of Technology</td>
<td><a href="mailto:aleksandar.damyanov@ifa.tuwien.ac.at">aleksandar.damyanov@ifa.tuwien.ac.at</a></td>
</tr>
<tr>
<td>Bernhard Geringer</td>
<td>Technische Universität Wien</td>
<td><a href="mailto:bernhard.geringer@tuwien.ac.at">bernhard.geringer@tuwien.ac.at</a></td>
</tr>
<tr>
<td>Michael Bassett</td>
<td>MAHLE Powertrain Limited</td>
<td><a href="mailto:mike.bassett@mahle.com">mike.bassett@mahle.com</a></td>
</tr>
<tr>
<td>Zhiqian Chen</td>
<td>Tula Technology</td>
<td><a href="mailto:chenz@tulatech.com">chenz@tulatech.com</a></td>
</tr>
<tr>
<td>Thomas Form</td>
<td>Volkswagen Commercial Vehicles</td>
<td><a href="mailto:thomas.form@volkswagen.de">thomas.form@volkswagen.de</a></td>
</tr>
<tr>
<td>Dirk Frerichs</td>
<td>Stellantis</td>
<td><a href="mailto:dirk.frerichs@stellantis.com">dirk.frerichs@stellantis.com</a></td>
</tr>
<tr>
<td>Bernhard Geringer</td>
<td>Technische Universität Wien</td>
<td><a href="mailto:bernhard.geringer@tuwien.ac.at">bernhard.geringer@tuwien.ac.at</a></td>
</tr>
<tr>
<td>Mutlyashki Daniel</td>
<td>3DS</td>
<td><a href="mailto:dmi6@3ds.com">dmi6@3ds.com</a></td>
</tr>
<tr>
<td>Speaker</td>
<td>Company/Institution</td>
<td>Email Address</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Peter Geskes</td>
<td>MAHLE Filtersysteme GmbH</td>
<td><a href="mailto:peter.geskes@mahle.com">peter.geskes@mahle.com</a></td>
</tr>
<tr>
<td>Hubert Hügle</td>
<td>Schaeffler Paravan Technologie GmbH &amp; Co. KG</td>
<td><a href="mailto:Hubert.Huegle@schaeffler-paravan.de">Hubert.Huegle@schaeffler-paravan.de</a></td>
</tr>
<tr>
<td>Roberto Klink</td>
<td>DENSO AUTOMOTIVE Deutschland GmbH</td>
<td><a href="mailto:r.klink@eu.denso.com">r.klink@eu.denso.com</a></td>
</tr>
<tr>
<td>Jens Kotte</td>
<td>fka GmbH</td>
<td><a href="mailto:jens.kotte@fka.de">jens.kotte@fka.de</a></td>
</tr>
<tr>
<td>Patrick Glusk</td>
<td>FEV Consulting GmbH</td>
<td><a href="mailto:glusk@fev.com">glusk@fev.com</a></td>
</tr>
<tr>
<td>Laurent Kloecker</td>
<td>ika, RWTH Aachen University</td>
<td><a href="mailto:laurent.kloecker@ika.rwth-aachen.de">laurent.kloecker@ika.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Stefan Kowalewski</td>
<td>i11, RWTH Aachen University</td>
<td><a href="mailto:kowalewski@embedded.rwth-aachen.de">kowalewski@embedded.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Kevin Godard</td>
<td>Symbio</td>
<td><a href="mailto:kevin.godard@symbio.one">kevin.godard@symbio.one</a></td>
</tr>
<tr>
<td>Frank Ickinger</td>
<td>Porsche AG</td>
<td><a href="mailto:frank.ickinger@porsche.de">frank.ickinger@porsche.de</a></td>
</tr>
<tr>
<td>Matthias Klöpfer</td>
<td>Mercedes-Benz AG</td>
<td><a href="mailto:matthias.kloepfer@daimler.com">matthias.kloepfer@daimler.com</a></td>
</tr>
<tr>
<td>Jürgen Kraft</td>
<td>EKPO Fuel Cell Technologies</td>
<td><a href="mailto:Juergen.Kraft@ekpo-fuelcell.com">Juergen.Kraft@ekpo-fuelcell.com</a></td>
</tr>
<tr>
<td>Dietmar Goericke</td>
<td>FVV e.V.</td>
<td><a href="mailto:goericke@fvv-net.de">goericke@fvv-net.de</a></td>
</tr>
<tr>
<td>In-Chan Kwon</td>
<td>Kim &amp; Chang</td>
<td><a href="mailto:ickwon@kimchang.com">ickwon@kimchang.com</a></td>
</tr>
<tr>
<td>Johannes Klütsch</td>
<td>VKA, RWTH Aachen University</td>
<td><a href="mailto:kluetsc@vka.rwth-aachen.de">kluetsc@vka.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Stefan Kraus</td>
<td>Forschungszentrum Jülich GmbH</td>
<td><a href="mailto:st.kraus@fz-juelich.de">st.kraus@fz-juelich.de</a></td>
</tr>
<tr>
<td>Jan Haupt</td>
<td>GKN</td>
<td><a href="mailto:jan.haupt@gknautomotive.com">jan.haupt@gknautomotive.com</a></td>
</tr>
<tr>
<td>Inga Jatzkowski</td>
<td>fr, TU Braunschweig</td>
<td><a href="mailto:jatzkowski@ifr.ing.tu-bs.de">jatzkowski@ifr.ing.tu-bs.de</a></td>
</tr>
<tr>
<td>Thomas Koch</td>
<td>IFKM, Karlsruher Institut für Technologie</td>
<td><a href="mailto:thomas.a.koch@kit.edu">thomas.a.koch@kit.edu</a></td>
</tr>
<tr>
<td>Julian Kreibich</td>
<td>FTM, TU München</td>
<td><a href="mailto:kreibich@ftm.mw.tum.de">kreibich@ftm.mw.tum.de</a></td>
</tr>
<tr>
<td>Konrad Herold</td>
<td>FEV Europe GmbH</td>
<td><a href="mailto:herold_k@fev.com">herold_k@fev.com</a></td>
</tr>
<tr>
<td>Yang Ji</td>
<td>LiangDao GmbH</td>
<td><a href="mailto:yang.ji@liangdao.de">yang.ji@liangdao.de</a></td>
</tr>
<tr>
<td>Christian Koehler</td>
<td>Strategy Engineers GmbH &amp; Co. KG</td>
<td><a href="mailto:cjk@strategyengineers.com">cjk@strategyengineers.com</a></td>
</tr>
<tr>
<td>Tobias Kuhnimhof</td>
<td>isb, RWTH Aachen University</td>
<td><a href="mailto:kuhnimhof@isb.rwth-aachen.de">kuhnimhof@isb.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Guy Hoffmann</td>
<td>BorgWarner Inc.</td>
<td><a href="mailto:herold_k@fev.com">herold_k@fev.com</a></td>
</tr>
<tr>
<td>Sun Jian</td>
<td>Great Wall Motor, China</td>
<td><a href="mailto:sun_jian@tju.edu.cn">sun_jian@tju.edu.cn</a></td>
</tr>
<tr>
<td>Anna-Lena Köhler</td>
<td>ika, RWTH Aachen University</td>
<td><a href="mailto:anna-lena.koehler@ika.rwth-aachen.de">anna-lena.koehler@ika.rwth-aachen.de</a></td>
</tr>
<tr>
<td>Ferit Küçükay</td>
<td>IFT, TU Braunschweig</td>
<td><a href="mailto:f.kuecuekay@tu-bs.de">f.kuecuekay@tu-bs.de</a></td>
</tr>
<tr>
<td>Jeroen Hogema</td>
<td>TNO</td>
<td><a href="mailto:jeroen.hogema@tno.nl">jeroen.hogema@tno.nl</a></td>
</tr>
<tr>
<td>Nina Kauffmann</td>
<td>BMW Group</td>
<td><a href="mailto:Nina.kauffmann@bmw.de">Nina.kauffmann@bmw.de</a></td>
</tr>
<tr>
<td>Marco Kollmeier</td>
<td>Benteler Automobiltechnik GmbH</td>
<td><a href="mailto:marco.kollmeier@benteler.com">marco.kollmeier@benteler.com</a></td>
</tr>
<tr>
<td>Sven Kureti</td>
<td>IEC, TU Freiberg</td>
<td><a href="mailto:kureti@iec.tu-freeberg.de">kureti@iec.tu-freeberg.de</a></td>
</tr>
<tr>
<td>Michael Huber</td>
<td>FFG, Technische Universität Graz</td>
<td><a href="mailto:michael.huber@tugraz.at">michael.huber@tugraz.at</a></td>
</tr>
<tr>
<td>Sung-Eun Kim</td>
<td>Kim &amp; Chang</td>
<td><a href="mailto:sekim@kimchang.com">sekim@kimchang.com</a></td>
</tr>
<tr>
<td>Swantje Konradt</td>
<td>Otto-von-Guericke-Universität Magdeburg</td>
<td><a href="mailto:swantje.konradt@ovgu.de">swantje.konradt@ovgu.de</a></td>
</tr>
<tr>
<td>Lukas Laarmann</td>
<td>FH Aachen</td>
<td><a href="mailto:laarmann@fh-aachen.de">laarmann@fh-aachen.de</a></td>
</tr>
<tr>
<td>Swantje Konradt</td>
<td>Otto-von-Guericke-Universität Magdeburg</td>
<td><a href="mailto:swantje.konradt@ovgu.de">swantje.konradt@ovgu.de</a></td>
</tr>
<tr>
<td>Jürgen Kraft</td>
<td>EKPO Fuel Cell Technologies</td>
<td><a href="mailto:Juergen.Kraft@ekpo-fuelcell.com">Juergen.Kraft@ekpo-fuelcell.com</a></td>
</tr>
<tr>
<td>Stefan Kraus</td>
<td>Forschungszentrum Jülich GmbH</td>
<td><a href="mailto:st.kraus@fz-juelich.de">st.kraus@fz-juelich.de</a></td>
</tr>
<tr>
<td>In-Chan Kwon</td>
<td>Kim &amp; Chang</td>
<td><a href="mailto:ickwon@kimchang.com">ickwon@kimchang.com</a></td>
</tr>
<tr>
<td>Jens Kotte</td>
<td>fka GmbH</td>
<td><a href="mailto:jens.kotte@fka.de">jens.kotte@fka.de</a></td>
</tr>
<tr>
<td>Roberto Klink</td>
<td>DENSO AUTOMOTIVE Deutschland GmbH</td>
<td><a href="mailto:r.klink@eu.denso.com">r.klink@eu.denso.com</a></td>
</tr>
<tr>
<td>Jens Kotte</td>
<td>fka GmbH</td>
<td><a href="mailto:jens.kotte@fka.de">jens.kotte@fka.de</a></td>
</tr>
<tr>
<td>Guy Hoffmann</td>
<td>BorgWarner Inc.</td>
<td><a href="mailto:herold_k@fev.com">herold_k@fev.com</a></td>
</tr>
<tr>
<td>Nina Kauffmann</td>
<td>BMW Group</td>
<td><a href="mailto:Nina.kauffmann@bmw.de">Nina.kauffmann@bmw.de</a></td>
</tr>
<tr>
<td>Marco Kollmeier</td>
<td>Benteler Automobiltechnik GmbH</td>
<td><a href="mailto:marco.kollmeier@benteler.com">marco.kollmeier@benteler.com</a></td>
</tr>
<tr>
<td>Sven Kureti</td>
<td>IEC, TU Freiberg</td>
<td><a href="mailto:kureti@iec.tu-freeberg.de">kureti@iec.tu-freeberg.de</a></td>
</tr>
<tr>
<td>Swantje Konradt</td>
<td>Otto-von-Guericke-Universität Magdeburg</td>
<td><a href="mailto:swantje.konradt@ovgu.de">swantje.konradt@ovgu.de</a></td>
</tr>
<tr>
<td>Lukas Laarmann</td>
<td>FH Aachen</td>
<td><a href="mailto:laarmann@fh-aachen.de">laarmann@fh-aachen.de</a></td>
</tr>
<tr>
<td>Swantje Konradt</td>
<td>Otto-von-Guericke-Universität Magdeburg</td>
<td><a href="mailto:swantje.konradt@ovgu.de">swantje.konradt@ovgu.de</a></td>
</tr>
</tbody>
</table>
Speakers & Session Chairs

Andreas Lohner
TH Köln
andreas.lohner@th-koeln.de

Stephan Maufroy
DENSOSTRUKT Automotive Deutschland
s.maufroy@eu.denso.com

Pablo Mendoza Villafuerte
AECC (Association for Emissions Control by Catalysts) ASIBL
pablo.mendoza-villafuerte@aecc.eu

Christoph Menne
FEV Europe GmbH
Menne@fev.com

Daniel Mertens
HMETC GmbH
dmertens@hyundai-europe.com

Franz-Thomas Mitterer
MAHLE ZG Transmissions GmbH
mitterer@zg-gmbh.de

Sebastian Möller
VIRTUAL VEHICLE research GmbH
sebastian.moeller@v2c2.at

Dieter Moormann
fsd, RWTH Aachen University
moermann@fsd.rwth-aachen.de

Frédéric Nicolas
IFP Energie Nouvelles
frederic.nicolas@ifpen.fr

Rupert Niethammer
Daimler Truck AG
Rupert.Niethammer@Daimler.com

Verena Nitsch
IAW, RWTH Aachen University
v.nitsch@iaw.rwth-aachen.de

Rei Palm
Volvo Car Corporation
rei.palm@volvocars.com

Thiebault Paquet
Toyota Motor Europe
Thiebault.Paquet@toyota-europe.com

Marek Pavelka
Valeo
marek.pavelka@valeo.com

Francesco C. Pesce
PUNCH Torino
francesco_concetto.pesce@punchtorino.com

Maximilian Pietruck
ika, RWTH Aachen University
maximilian.pietruck@ika.rwth-aachen.de

Vinod Rajamani
FH Dortmund
vinod.rajamani@fh-dortmund.de

Martin Reske
ika, RWTH Aachen University
martin.reske@ika.rwth-aachen.de

Angus Riddoch
Audi AG
angus.riddoch@audi.de

Dominik Rose
Corning GmbH
rosedw@corning.com

Gerd Rösel
Vitesco Technologies GmbH
gerd.roesel@vitesco.com

Hermann Rottengruber
IMS, Otto-von-Guericke Universität
hermann.rottengruber@ovgu.de

Cedric Rouaud
RICARDO
cedric.rouaud@ricardo.com

Georg Sandkühler
FAUN Umweltechnik GmbH & Co. KG
georgsandkuehler@faun.com

Stefano Scalabrini
PUNCH Hydrocells
stefano.scalabrini@punchtorino.com

Johannes Scharf
FEV Europe GmbH
scharf@fev.com

Univ.-Prof. Dr.-Ing. Christian Schindler
ifs, RWTH Aachen University
schindler@ifs.rwth-aachen.de

Hauke Christian Schlimme
Volkswagen AG
hauke.christian.schlimme@volkswagen.de

Stephan Schnorpeil
SEGULA Technologies GmbH
stephanjohannes.schnorpeil@segulagrp.de

Joachim Scholta
ZSW
joachim.scholta@zsw-bw.de

Hans-Peter Schönner
IFO-Consulting
hans-peter.schoener@gmx.net

Tobias Schräder
ifr, TU Braunschweig
schraeder@ifr.ing.tu-bs.de

Michael Schubert
Leadrive Technology Germany GmbH
michael.schubert@leadrive.com

Ulrich Schulmeister
Robert Bosch GmbH
ulrich.schulmeister@de.bosch.com

Andre Seeck
Bundesanstalt für Straßenwesen
seeck@bast.de
Warren Seeley
Siemens Digital Industries Software
warren.seeley@siemens.com

Mi Yeon Song
HYUNDAI MOTORS
mysong@hyundai.com

Richard Tamba
SYTECH
ric@brtcorp.com.au

Maximilian Templer
Volkswagen AG
maximilian.templer1@volkswagen.de

Moritz Teuber
FEV Europe GmbH
teuber_m@fev.com

Joachim Trumpff
GETEC Getriebe Technik GmbH
joachim.trumpff@getec-gmbh.com

Yorihisa Tsuchiya
Nissan Motor Co., Ltd
yori-tsuchiya@mail.nissan.co.jp

Roland Uerlich
ika, RWTH Aachen University
roland.uerlich@ika.rwth-aachen.de

Marc Uhl
SEG Automotive Germany GmbH
Marc.Uhl@seg-automotive.com

Tolga Uhlmann
FEV Europe GmbH
uhlmann@fev.com

Peter Urban
ika, RWTH Aachen University
peter.urban@ika.rwth-aachen.de

Christoph van der Broeck
FEV Europe GmbH
broeck@fev.com

Pim van der Jagt
AB Dynamics Europe GmbH
pim.vanderjagt@abdyn.com

Raphael van Kempen
ika, RWTH Aachen University
raphael.vankempen@ika.rwth-aachen.de

Gert-Jan Van Spijk
Bosch Transmission Technology
Gert-Jan.vanSpijk@nl.bosch.com

Lennart Vater
ika, RWTH Aachen University
lennart.vater@ika.rwth-aachen.de

Trent Victor
Waymo LLC
trentvictor@waymo.com

Jonas Villforth
Dr. Ing. h.c. F. Porsche AG
jonas.villforth1@porsche.de

Nicolai Voget
fsd, RWTH Aachen University
voget@fsd.rwth-aachen.de

Henning Wallentowitz
ika, RWTH Aachen University
wallentowitz@ika.rwth-aachen.de

Cynthia Webb
Paccar
Cynthia.Webb@PACCAR.com

Nico Weber
Opel Automobile GmbH
nico.weber@ext.mpsa.com

Hendrik Weber
ika, RWTH Aachen University
hendrik.weber@ika.rwth-aachen.de

Thomas Werblinski
Schaeffler Technologies AG & Co. KG
thomas.werblinski@schaeffler.com

André Wiggerich
Bundesanstalt für Straßenwesen (BAST)
wiggerich@bast.de

Jason Wong
bp
jason.wong1@bp.com

Christian Wouters
VKA, RWTH Aachen University
wouters@vka.rwth-aachen.de

Kohei Yoshida
Toyota Motor Corporation
kohei.yoshida@mail.toyota.co.jp

Pauline Ziegert
Westsächsische Hochschule Zwickau
pauline.ziegert.hyv@fh-zwickau.de

Marius Zubel
FEV Europe GmbH
zubel@fev.com
Your participation at the 30th Aachen Colloquium

This year we are again planning a face-to-face event at the Eurogress Aachen. Of course, we prepared a hygiene concept and follow the latest regulations to ensure a safe visit to the event. The entire presentation program, the technical exhibition and the banquet will be part of the event. Unfortunately, the test track program will not take place this year.

In addition, we are offering online participation this year, so that participants who are affected by possible travel restrictions can also attend the Aachen Colloquium. For the online event, participants will receive access to an online platform on which the lectures will be streamed live. During the lectures and the following discussion round, questions can be asked via chat. Participants can also visit the exhibitors’ pages and get in touch with them. A chat tool offers the opportunity to exchange information and network with all participants on site and online.

This digital program booklet will be continuously updated and supplemented with news. The most recent version is always available on our [website](#).

Registration for participation in Aachen and online is possible on our [website](#). We recommend an early registration.

The organizing team is happy to answer your questions regarding your participation. We are looking forward to a successful Colloquium in Aachen and online!

[info@aachen-colloquium.com](mailto:info@aachen-colloquium.com)

---

Lowest Energy Consumption

Best in Class Solution for Valve Map Spreading

Directional Valve Technology

Customizable

www.rapa.com

The best address for smart valve technology

[www.rapa.com](http://www.rapa.com)
Exhibitor List – Ground level

01 DENSO AUTOMOTIVE Deutschland GmbH
02 MAHLE GmbH
03 Faurecia
04 FEV Europe GmbH
05 iwis motorsysteme GmbH & Co. KG
06 Tenneco
07 Ricardo
08a Emotors
08b Gates Industrial Europe
09 Hitachi Astemo
10 HUSCO Automotive Europe GmbH
11 HORIBA Europe GmbH
12 AVL List GmbH
13 Albonair GmbH
14 IAV
15 ElringKlinger AG
16 fka GmbH
17 innocam.NRW - Kompetenznetzwerk für automatisierte und vernetzte Mobilität NRW
18 Schaeffler Technologies AG & Co. KG
19 Felss Group GmbH
20 BorgWarner
21 M.TEC ENGINEERING GmbH
22 JB CarConcept GmbH

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.
Exhibitior List – 1st Floor

23 Dassault Systemes Deutschland GmbH
24 FH Aachen - Faculty of Aerospace Engineering
25 ELTRO GmbH
26 IHI Hauzer Techno Coating B.V.
27 IHS Markit
28 Leadrive Technology Germany GmbH
29 Celeroton AG
30 Freudenberg Performance Materials SE & Co. KG
31 ETO GmbH
32 Springer Vieweg | Springer Fachmedien Wiesbaden GmbH
33 LEE Hydraulische Miniaturkomponenten GmbH
34 SEGULA Technologies GmbH
35 Garrett Motion
36 VEMAC GmbH & Co. KG
37 Sonceboz SA
38 Freudenberg FST GmbH
39a Aurobay
39b t.b.a
40 KAMAX Automotive GmbH
41 Miba Group
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, 5th 2021
7.30pm Entrance
8.00pm Start
12th Aachen Acoustics Colloquium

Development and Research in Automotive Acoustics

November 22 – 24, 2021
Parkhotel Quellenhof 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)

www.aachen-acoustics-colloquium.com
Next year the Aachen Colloquium will take place for the 31st 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 2021: www.aachener-kolloquium.de

**Important Dates**

- **Deadline for abstracts**: February 2022
- **Notification of the authors from**: April 2022
- **Deadline for submission of the manuscripts for the conference proceedings**: July 2022

**Main Topics for 2022**

- Alternative Fuels and High Efficiency Combustion Processes
- Automated Driving (Level 3+), Databases & AI
- Battery Systems, Management & Safety
- Vehicle Electrical Systems & 48V Technologies
- Fuel Cells
- Dedicated Hybrid Engines & Transmissions
- Chassis, Vehicle Dynamics & Tire Technology
- Electric Drive Units & Electric Motors
- Energy & Thermal Management
- Driver Assistance & Connected Driving (ADAS)
- HMI & User Experience
- Sustainable Mobility Concepts (incl. Micro Mobility)
- Sustainability, LCA & Balances
- New Vehicles, Architectures & Interior Concepts
- Commercial & Offroad Vehicle Drive Technologies
- Sensors & Perception of Environment in Vehicles and Infrastructure
- Automotive Strategies
- Zero-Impact Emission Concepts
Registration
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.aachener-kolloquium.de/en)
2) Receive confirmation by e-mail
3) Wait and settle the invoice
4) Registration completion after Receipt of payment

Participation Fee
Participation in Aachen:
Participants 1050 € (plus VAT)
University members 525 € (plus VAT)

Participation online:
Participants 750 € (plus VAT)
University members 375 € (plus 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.aachener-kolloquium.de/en/conference-documents.html.

Conference Language
The lectures will be simultaneously translated into German and English. Headsets are available for free. The proceedings will be published in English only.

Conference Office
Monday, Oct. 4th, 2021 04:00pm - 07:00pm
Tuesday, Oct. 5th, 2021 07:30am - 06:00pm
Wednesday, Oct. 6th, 2021 07:30am - 05:00pm

Organizer
Aachener Kolloquium
Fahrzeug- und Motorentechnik GbR
P.O. Box 10 02 11
52002 Aachen, Germany

Scientific Management
Univ.-Prof. Dr.-Ing. Stefan Pischinger
Director VKA
RWTH Aachen University

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

Organization
Birgit Schaefer-Hamm
Eva Kaussen
Jonas Müller
Robert Maurer
Robin Stupp

Kerstin Uhing
Janice Sievers
Michaela Wacker
Sara Portz

Contact
+49 241 8861 251 (General)
+49 241 8861 120 (Registration)
+49 241 8048 020 (Presentation Program & Technical Exhibition)
info@aachen-colloquium.com