15TH STUTTGART INTERNATIONAL SYMPOSIUM

AUTOMOTIVE AND ENGINE TECHNOLOGY
17TH AND 18TH MARCH 2015 | HAUS DER WIRTSCHAFT, STUTTGART

PROGRAM
Lightweight Champion.
The new C-Class Estate: built with lightweight technology.

www.mercedes-benz.com/c-class-estate
From alternative automobile engines and driving assistance systems through topics such as aerodynamics and lightweight construction, emissions, production and assembly – there are many starting points on the path to sustainable mobility in the advancement of automobiles. One of the central aspects in this context is networked cars that are linked to the internet, transport infrastructure and their surroundings.

With the focus area titled “Connected Cars – how individualized does the car of the future still need to be”, the 15th International Stuttgart Symposium for Automotive and Engine Technologies is undoubtedly approaching a future-oriented issue that is sure to gain increased attention in the coming years. For this reason, I am very glad to sponsor this event being organized by the Research Institute for Automotive Engineering and Vehicle Engines in Stuttgart.

Cars that are able to communicate with one another in order to avoid accidents, recognize traffic signs or, for example, notify the driver about excessive speeds or report damages to a repair shop via an online service – car networking can make driving safer, more comfortable and more affordable. Connected cars can likewise serve as the centerpiece of intelligent networking for various modes of transport and become the key to sustainable mobility in the future.

I am convinced that the Stuttgart International Symposium, as one of the most important discussion forums in the area of automotive and engine development, provides a suitable framework for discussing opportunities related to expanded vehicle networking. However, the challenges related to this must also be dealt with considering the fact that expanded data usage and the opening up of previously closed systems increase demands for the dependability and safety of these applied concepts. Apart from identifying the opportunities and the challenges of increased vehicle networking, this year’s symposium will surely serve as a basis for generating new ideas.

I would personally like to give my heartfelt thanks to everyone who contributed to organizing and executing this event. I also hope that all participants will benefit from exciting discussions, take part in interesting lectures and leave with new ideas for their work.

Winfried Kretschmann
Prime Minister of the State of Baden-Wuerttemberg
Mobility practices in our society are changing hand in hand with the demands on automobiles. In an era of increasing air pollution, growing scarcity of fossil fuels, their rising prices and expanding digitalization, current automobile concepts are changing and advancing. The car of the future has to be efficient, environmentally friendly, safe, comfortable, digitally networked and automated. At the same time, it also has to satisfy individual needs, appeal to the driver emotionally and provoke a desire to embrace a car as one’s own. All of this entails a balancing act that is posing a great challenge for the automotive industry.

Experts from the industry and the research sector will report on and discuss these and many more issues at the 15th Stuttgart International Symposium for “Automotive and Engine Technologies” on 17 – 18 March 2015.

One of the updates for the 2015 symposium is the expansion of the previous focus areas of automotive technology, automobile engines and automobile electronics. The Fraunhofer Institute for Manufacturing Engineering and Automation IPA participates at the Symposium with a series of events on the topic of automotive process and production technologies for the first time. With this, the program will span the entire process of automobile production from research and development to manufacturing itself.

The Symposium will provide plentiful opportunities for exchanging technical and professional ideas, be it at the discussion rounds within the sessions, at the podium discussion, at the accompanying professional exhibition or in a social context during breaks and the evening event.

We look forward to welcoming you in Stuttgart, the birthplace of the automobile, and wish you an exciting, interesting and memorable time at the 15th Stuttgart International Symposium.

Prof. Dr.-Ing. Michael Bargende

Prof. Dr.-Ing. Hans-Christian Reuss

Prof. Dr.-Ing. Jochen Wiedemann
The FKFS is pleased to announce:

10TH FKFS-CONFERENCE
PROGRESS IN VEHICLE AERODYNAMICS
29th – 30th September 2015 | University of Stuttgart

10TH CONFERENCE ON GASEOUS FUEL POWERED VEHICLES
PROPULSION SYSTEMS TOWARDS A SUSTAINABLE FUTURE
20th - 21st October 2015 | Haus der Wirtschaft, Stuttgart

16TH STUTTGART INTERNATIONAL SYMPOSIUM
AUTOMOTIVE AND ENGINE TECHNOLOGY
15th and 16th March 2016 | Haus der Wirtschaft, Stuttgart
### OVERALL VIEW

#### TUESDAY, 17TH MARCH 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>Registration/Signing-in</td>
</tr>
<tr>
<td>9:00</td>
<td>Welcome by Prof. Jochen Wiedemann, Chairman of the Board FKFS, Managing Director IVK, University of Stuttgart</td>
</tr>
<tr>
<td>9:15</td>
<td>Keynote by Prof. Dr. Thomas Weber, Vorstandsmitglied der Daimler AG, Konzernforschung &amp; Mercedes-Benz Cars Entwicklung</td>
</tr>
<tr>
<td>10:30</td>
<td>Coffee break</td>
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<tr>
<td>11:00</td>
<td>Motorsports (KÖNIG-KARL-HALLE 2nd floor)</td>
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<tr>
<td>11:00</td>
<td>Hybrid I (MEIDINGER-SAAL 1st floor)</td>
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<tr>
<td>11:00</td>
<td>Automotive Process and Production Technologies I (BERTHA-BENZ-SAAL 1st floor)</td>
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<tr>
<td>11:00</td>
<td>Driving Dynamics I (REUTLINGEN ROOM 2nd floor)</td>
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<tr>
<td>11:00</td>
<td>Networking and Architecture (KARLSRUHE ROOM 1st floor)</td>
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<tr>
<td>11:00</td>
<td>Small Engines and Testing (MANNHEIM ROOM 1st floor)</td>
</tr>
<tr>
<td>13:00</td>
<td>Lunch break</td>
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<tr>
<td>14:00</td>
<td>Testing I – Driving Dynamics (MEIDINGER-SAAL 1st floor and KÖNIG-KARL-HALLE 2nd floor)</td>
</tr>
<tr>
<td>14:00</td>
<td>Diesel Engines (KARLSRUHE ROOM 1st floor)</td>
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<tr>
<td>14:00</td>
<td>Automotive Process and Production Technologies II (MANNHEIM ROOM 1st floor)</td>
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<tr>
<td>14:00</td>
<td>Diagnostics and Testing (KARLSRUHE ROOM 1st floor)</td>
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<tr>
<td>14:00</td>
<td>Aerodynamics (MEIDINGER-SAAL 1st floor)</td>
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<tr>
<td>14:00</td>
<td>Hybrid II (KARLSRUHE ROOM 1st floor)</td>
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<tr>
<td>15:30</td>
<td>Coffee break</td>
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<tr>
<td>16:00</td>
<td>E-Mobility I (MEIDINGER-SAAL 1st floor)</td>
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<tr>
<td>16:00</td>
<td>Vehicle Technology I (MEIDINGER-SAAL 1st floor)</td>
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<tr>
<td>16:00</td>
<td>Automotive Process and Production Technologies III (MANNHEIM ROOM 1st floor)</td>
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<tr>
<td>16:00</td>
<td>Turbo Charging (KARLSRUHE ROOM 1st floor)</td>
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<tr>
<td>16:00</td>
<td>Engine Thermal Management (MANNHEIM ROOM 1st floor)</td>
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<tr>
<td>16:00</td>
<td>Sensor and Actuator Technology (MEIDINGER-SAAL 1st floor)</td>
</tr>
<tr>
<td>18:00</td>
<td>End of the parallel sections</td>
</tr>
<tr>
<td>19:00</td>
<td>Social evening to take place in the »Alte Stuttgarter Reithalle«</td>
</tr>
</tbody>
</table>

#### WEDNESDAY, 18TH MARCH 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>8:30</td>
<td>Testing II – Aerodynamics (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
</tr>
<tr>
<td>8:30</td>
<td>Plug-In Hybrid Electric Powertrains (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
</tr>
<tr>
<td>8:30</td>
<td>Automotive Process and Production Technologies IV (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
</tr>
<tr>
<td>8:30</td>
<td>Driving Dynamics II (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
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<tr>
<td>8:30</td>
<td>Exhaust Gas Aftertreatment (KARLSRUHE ROOM 1st floor)</td>
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<tr>
<td>8:30</td>
<td>FVV Projects (MANNHEIM ROOM 1st floor)</td>
</tr>
<tr>
<td>10:00</td>
<td>Coffee break</td>
</tr>
<tr>
<td>10:30</td>
<td>Advanced Driver Assistance Systems (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
</tr>
<tr>
<td>10:30</td>
<td>Electric Motorsports (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
</tr>
<tr>
<td>10:30</td>
<td>Arena 2036 (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
</tr>
<tr>
<td>10:30</td>
<td>Engine Components (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
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<tr>
<td>10:30</td>
<td>E-Mobility II (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
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<tr>
<td>10:30</td>
<td>Vehicle Acoustics (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
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<tr>
<td>12:30</td>
<td>Lunch break</td>
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<tr>
<td>13:30</td>
<td>Future IC Engines (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
</tr>
<tr>
<td>13:30</td>
<td>Vehicle Technology II (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
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<tr>
<td>13:30</td>
<td>Engine Control Beginn: 13:00 Uhr (MEIDINGER-SAAL 1st floor, BERTHA-BENZ-SAAL 1st floor, and KARLSRUHE ROOM 2nd floor)</td>
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<tr>
<td>13:30</td>
<td>Vehicle Thermal Management (KARLSRUHE ROOM 1st floor)</td>
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<td>13:30</td>
<td>Software Processes (MANNHEIM ROOM 1st floor)</td>
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<tr>
<td>13:30</td>
<td>Railway Vehicles (KARLSRUHE ROOM 1st floor)</td>
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<tr>
<td>15:00</td>
<td>Coffee break</td>
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<tr>
<td>15:30</td>
<td>Panel discussion »Das Auto der Zukunft – Ein Smartphone auf Rädern?«</td>
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<tr>
<td>15:30</td>
<td>Participants:</td>
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<tr>
<td>15:30</td>
<td>» Prof. Dr. Thomas Bauernhansl, Director of Fraunhofer Institute for Manufacturing Engineering and Automation IPA</td>
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<tr>
<td>15:30</td>
<td>» Horst Leonberger, Head of the Connected Car business unit, Deutsche Telekom</td>
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<td>15:30</td>
<td>» Prof. Dr. Peter Pleus, CEO Automotive, Schaeffler AG</td>
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<tr>
<td>15:30</td>
<td>» Stephan Wolfsried, Vice President Vehicle Functions and Chassis, Daimler AG</td>
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<tr>
<td>15:30</td>
<td>Moderation:</td>
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<tr>
<td>15:30</td>
<td>» Johannes Winterhagen, Redaktionsbüro delta eta</td>
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<tr>
<td>16:30</td>
<td>Keynote by Silke Krebs, Minister in the State Ministry Baden-Wuerttemberg</td>
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<tr>
<td>16:45</td>
<td>Closing remarks by Prof. Dr. Hans-Christian Reuss, Board of Directors FKFS, Professor of Automotive Mechatronics IVK, University of Stuttgart</td>
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</tbody>
</table>
### PROGRAM TUESDAY, 17TH MARCH 2015

**KÖNIG-KARL-HALLE 2nd floor**

**9:15**  Plenary session (see Overview pg. 7)

**10:30**  Coffee break

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**MEIDINGER-SAAL 1st floor**

**Hybrid I**  Chairperson: Prof. Karl-Ernst Noreikat

- **11:00**  PERSIST – A scalable SW architecture for the control of various automotive hybrid topologies  
  Johannes Richenhagen, A. Schloßer, FEV GmbH; H. Venkitachalam, S. Pischinger, VKA, RWTH Aachen University

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**BERTHA-BENZ-SAAL 1st floor**

**Automotive Process and Production Technologies I**  Chairperson: Carsten Glanz

- **11:00**  Introduction to the Automotive business unit at the Fraunhofer IPA  
  Ivica Kolaric, Fraunhofer IPA

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**KÖNIG-KARL-HALLE 2nd floor**

**Motorsports**  Chairperson: Prof. Dr. Günter Hohenberg

- **11:00**  Formula 1: The Show must go on?  
  Friedrich Indra, TU Wien

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**11:30**  The Audi V6 TDI for Le Mans  
  Ulrich Baretzky, H. Diel, W. Kotauschek, S. Dreyer, A. Schneider, P. Kuntz, M. Mühlmeier, AUDI AG

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**11:30**  Predictive Operation Strategy for Hybrid Vehicles  
  Jue Wang, H. Koch-Gröber, Hochschule Heilbronn

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**Testing I - Driving Dynamics**  Chairperson: Prof. Dr. Jochen Wiedemann

**Diesel Engines**  Chairperson: Prof. Dr. Helmut Eichlseder

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**15:50**  Investigations in using higher FAME-blends in DI-CR-Dieselengines  
  Clemens Rölböth, P. Hofmann, B. Geringer, IFA, TU Wien

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**15:00**  Design and construction with multi-materials  
  Christoph Birenbaum, Fraunhofer IPA

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**15:30**  Coffee break
11:00 MBS-integrated control of longitudinal and lateral dynamics for riding comfort simulation
Michael Herrnberger, V. Fäßler, TWT GmbH Science & Innovation

11:30 Advanced model-based control functions to design the longitudinal vehicle dynamics in passenger cars
Christoph André Malonga Makosi, F. Uphaus, F. Kirschbaum, J. Pillas, Daimler AG

12:00 Methodological approaches for the development of a test facility to represent system dynamic aspects in automotive engineering
Kay Büttner, A. Stoller, G. Prokop, TU Dresden

11:00 A Methodology for the Optimized Design of an E/E Architecture Component Platform
Sebastian Graf, M. Glaß, J. Teich, University of Erlangen-Nürnberg; D. Platte, AUDI AG

11:30 EcoGuru - A system for the integrated management of electrified mobility systems
Dionysios Satikidis, K. Sivarasah, K. Lehmann, I. Hoffmann, G. Scheffler, Fraunhofer IAO

12:00 Security for automotive networks with remote connectivity
Armin Happel, Vector Informatik GmbH

11:00 Advantages and challenges of lean operation of 2-stroke-engines for hand-held power tools

11:30 Quality characteristics of hydraulic injection quantity measurements – Transferability of external engine tests to real system applications
Kerstin Rensing, F.-P. Gulde, T. Hergemöller, Daimler AG

12:00 System control of a dual injection system for future emission standards

14:00 Big Measurement Data – Opportunities and Challenges in Vehicle Calibration
Bernd Graef, M. Stuckert, M. Jakob, B. Hartmann, Bosch Engineering GmbH

14:30 Highest measurement and calibration performance through cooperation of OEM,Tier1, µC, Tool-Supplier
Alfred Kless, Vector Informatik GmbH

15:00 ETAS LABCAR-XiL: Bridging the Gap between Development Phases by Harmonizing Concepts and Tools
Corina Mitrohin, C. Stöerner, ETAS GmbH

15:00 Upgrade of the Full-Scale Aeroacoustic Wind Tunnel of Stuttgart University by FKFS
Armin Michelbach, R. Blumrich, FKFS

15:00 Modelling of the electrical dc-link in fuel cell vehicles for DC-DC converter control design
Conrad Sagert, O. Sawodny, ISYS, University of Stuttgart; M. Walter, Daimler AG
KÖNIG-KARL-HALLE 2nd floor

E-Mobility I
Chairperson: Prof. Johann Tomforde

16:00 Generation 2 Lithium – ion battery systems: Technology trends and KPIs
Holger Fink, Robert Bosch Battery Systems GmbH

16:30 E-Mobility Voltage Classes
Edmund Erich, Delphi

17:00 Conception and Realisation of a Charging Station for Electric Busses in Public Transportation
Stefan Büchner, M&P GmbH; S. Klausner, M. Engel, Fraunhofer IVI

MEIDINGER-SAAL 1st floor

Vehicle Technology I
Chairperson: Prof. Dr. Frank Gauterin

16:00 Worldwide Harmonized Light-Vehicles Test Procedure (WLTP) and Real Driving Emissions (RDE) - current status of discussion and first test results
Helge Schmidt, TÜV NORD Mobilität GmbH & Co. KG

16:30 Reduction of CO₂ emissions: vehicle versus fleet
Michael Martin, MAGNA STEYR Engineering AG & Co KG

17:00 Measuring the stress level of elderly drivers - first results of a field test
Toralf Trautmann, P. Rogge, J. Camin, M. Degenkolbe, HTW Dresden

BERTHA-BENZ-SAAL 1st floor

Automotive Process and Production Technologies III
Chairperson: Dr. Michael Hilt

16:00 Innovative approach to resource efficiency in car body painting
Oliver Tiedje, Fraunhofer IPA

16:30 Design of functional automotive components with requirements for cleanliness
Markus Rochowicz, Fraunhofer IPA

17:00 Managing of quality and safety continuously through development into production
Stefan Gerstmayer, Fraunhofer IPA

17:30 Simulation and New Correlation Method of Crash Sensor Signals in Misuse Tests
Robert Murmann, L. Harzheim, Adam Opel AG; S. Dominico, Frankfurt University of Applied Sciences

18:00 Finish
FROM 19.00: FESTIVE EVENING RECEPTION IN THE »ALTE STUTTGARTER RIDING HALL«

Tuesday, 17th March 2015 | 19:00: Festive Evening Reception in the »Alte Stuttgarter Riding Hall«
Maritim Hotel | Seidenstraße 34 | 70174 Stuttgart
Experience an exceptional evening of amusing entertainment.
Program: 19:00 Champagne Reception
Welcome:
Professor Michael Bargende, FKFS Board and Professor of vehicle propulsion of The Institute for Combustion Engines and Automotive Engineering, IVK University of Stuttgart
Followed by dinner

Live Act: THE ELVIS XPERIENCE
Reception ends around 23.00
KÖNIG-KARL-HALLE 2nd floor

Testing II - Aerodynamics
Chairperson: Prof. Dr. Jochen Wiedemann

8:30 Modern chassis development as a result of skillfully combining testing and simulation
Stefan Gies, T. Kersten, Volkswagen AG

9:00 The new aerodynamic and aero-acoustic Windtunnel of Porsche AG

9:30 A modern continuous development process – an example of interaction between computer/test stand/road for thermal management
Raimund Siegert, Daimler AG

MEIDINGER-SAAL 1st floor

Plug-In Hybrid Electric Powertrains
Chairperson: Prof. Dr. Stefan Pischinger

8:30 Next generation PLUG-IN Hybrid with 4-cyl. gasoline engine
Uwe Keller, N. Ruzicka, Schmiedler, F. Nietfeld, C. Kühner, Daimler AG

9:00 Investigation of the exhaust measurement system configuration for testing Plug-In Hybrid Vehicles
Matthias Schröder, H. Kurz, P. Baumann, HORIBA Europe GmbH; U. Strehl, HORIBA Europe Automation Division GmbH

9:30 Analysis of Serial Plug-In Hybrid-DriveTrain by Connection of Component-Specific Simulation Tools
Andreas Schmidt, M. Grimm, FKFS; H.-C. Reuss, FKFS/IVK, University of Stuttgart

BERTHA-BENZ-SAAL 1st floor

Automotive Process and Production Technologies IV
Chairperson: Dr. Bernhard Budaker

8:30 Hybrid additive light-weight construction – new product concepts by efficiently utilizing 3D-printing and CFK light-weight technology
Steve Rommel, Raphael Geiger, Fraunhofer IPA

9:00 Assistive technologies for workers in the automotive industry
Conrad Hochberg, Urban Daub, Fraunhofer IPA

10:00 Coffee break

Advanced Driver Assistance System
Chairperson: Prof. Dr. Hans-Christian Reuss

10:30 Electronic horizon: Flexible implementation of predictive driver assistance features
Jürgen Ludwig, Elektrobit Automotive GmbH

11:00 Robust Estimation of Sideslip Angle from Variables Measured by Electronic Stability Control Systems
Mario Milanesi, I. Gerlero, Modelway srl; C. Novara, Politecnico di Torino

11:30 Application of Haptic Signals for Driver to Car Communication during Autonomous Driving
Christoph Liedecke, IVK, University of Stuttgart; G. Baumann, FKFS; H.-C. Reuss, FKFS/IVK, University of Stuttgart

12:00 Exploiting the potential of eye movements analysis in the driving context
Enkelejda Kasneci, T. Kübler, W. Rosenstiel, University of Tübingen; C. Braunagel, W. Stolzmann, Daimler AG

Electric Motorsports
Chairperson: Prof. Dr. Christian Beidl

10:30 Design and Optimization of an Electric Racing Motorcycle for the Isle of Man TT Zero Race
Marcello Canova, A. Bonnell-Kangas, P. Brodsky, J. Cline, N. Lord, The Ohio State University

11:00 Venturi Formula E Team in the 100 % Electric New FIA Championship
Nicolas Mauduit, G. Pastor, Venturi Automobiles

11:30 The fastest electric vehicles on earth: a history of electric land speed racing and of the Venturi Buckeye Bullet program
Giorgio Rizzoni, D. Cooke, The Ohio State University; G. Pastor, Venturi Automobiles

12:00 Meeting the challenge of a high performance four-wheel drive race car
Benedikt Bauersachs, D. Mitrovic, S. Schmidt, Greenteam Uni Stuttgart e.V.

Arena 2036
Chairperson: Ivica Kolaric

10:30 Arena 2036 – The Fourth Industrial Revolution in the Automotive Industry
Thomas Bauernhansl, Fraunhofer IPA

11:00 Robots as enabler for versatility
Martin Naumann, Fraunhofer IPA

11:30 Changeable and Reconfigurable Assembly Systems
Petra Foith-Förster, Fraunhofer IPA

12:00 Reorganizing production logistics for automobile manufacturing
K.-H. Wehking, IFT, University of Stuttgart

12:30 Lunch break
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
<th>Chairperson</th>
<th>Presentations</th>
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</thead>
<tbody>
<tr>
<td>8:30</td>
<td>An effective method to identify thermodynamic tire characteristics through driving maneuvers</td>
<td>RAUM REUTLINGEN 2nd floor</td>
<td>Dr. Andreas Wagner</td>
<td>Michael Unterreiner, P. Bortolussi, Dr. Ing. h.c. F. Porsche AG, F. Büttner, FKFS</td>
</tr>
<tr>
<td>9:00</td>
<td>Valid vehicle dynamics prediction by objective description of tyre behavior under real operating conditions</td>
<td>RAUM REUTLINGEN 2nd floor</td>
<td>Dr. Andreas Wagner</td>
<td>Sebastiaan van Putten, G. Prokop, IAD, TU Dresden, S. Einsle, A. Wagner, AUDI AG</td>
</tr>
<tr>
<td>9:30</td>
<td>Dynamic measurements and simulation of road surface characteristics</td>
<td>RAUM REUTLINGEN 2nd floor</td>
<td>Dr. Andreas Wagner</td>
<td>Marcos Manuel Sánchez, W. Ressel, University of Stuttgart; K. Tejkl, kosima GmbH</td>
</tr>
<tr>
<td>8:30</td>
<td>Experimental investigation of heat transfer characteristics of urea spray impingement in diesel SCR</td>
<td>RAUM KARLSRUHE 1st floor</td>
<td>Prof. Dr. Thomas Koch</td>
<td>Yujun Liao, P. Dimopoulos Eggen-schwiller, A. Spiteri, EMPA, Swiss Federal Laboratories for Materials Science and Technology; L. Nocivelli, Politecnico di Milano</td>
</tr>
<tr>
<td>9:00</td>
<td>Influence of metal-based additives in gasoline fuel on the exhaust gas emission system components</td>
<td>RAUM KARLSRUHE 1st floor</td>
<td>Prof. Dr. Thomas Koch</td>
<td>Wolfgang Reiser, D. Wiese, A. Blinde, Abgasszentrum der Automobilindustrie (ADA)</td>
</tr>
<tr>
<td>9:30</td>
<td>Impacts of Diesel-HEVs on exhaust gas aftertreatment systems for future emission legislations</td>
<td>RAUM KARLSRUHE 1st floor</td>
<td>Prof. Dr. Thomas Koch</td>
<td>Christoph Rathgeber, C. Beidl, VKM, Darmstadt; P. Spurk, U. Gübel, Unimac AG &amp; Co. KG</td>
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<tr>
<td>10:00</td>
<td>Coffee break</td>
<td>RAUM KARLSRUHE 1st floor</td>
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<td>11:00</td>
<td>The impact of the introduction of DoIP and Ethernet for the development of electric vehicles – use cases and benefits</td>
<td>RAUM MANNHEIM 1st floor</td>
<td>Dr. Karl Kollmann</td>
<td>Thomas Kotschenreuther, A. Rupalla, RA-Consulting GmbH</td>
</tr>
<tr>
<td>11:30</td>
<td>Aspects of engine start/stop comfort</td>
<td>RAUM MANNHEIM 1st floor</td>
<td>Dr. Karl Kollmann</td>
<td>Christoph Steffens, G. Eisele, F. Wolter, FEV GmbH; T. Wellmann, K. Govindswamy, FEV Inc.</td>
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<tr>
<td>11:00</td>
<td>Testing a battery management system (BMS) using a battery cell simulator and test automation</td>
<td>RAUM MANNHEIM 1st floor</td>
<td>Dr. Karl Kollmann</td>
<td>Anita Athanassak, K. Athanassak, comemso GmbH</td>
</tr>
<tr>
<td>11:30</td>
<td>Determination of Acoustic Contributions of Car Components to the Far Field Using Transfer Functions</td>
<td>RAUM MANNHEIM 1st floor</td>
<td>Dr. Karl Kollmann</td>
<td>Alexander Rabofsky, T. Eggerer, W. Reinalter, Magna Steyr Engineering</td>
</tr>
<tr>
<td>12:00</td>
<td>Integration of modularized battery technology into a stationary storage for electric vehicles</td>
<td>RAUM MANNHEIM 1st floor</td>
<td>Dr. Karl Kollmann</td>
<td>Felix Gottwald, HTW Dresden</td>
</tr>
<tr>
<td>12:00</td>
<td>Hybrid TPA Method Applying Measurement and Simulation</td>
<td>RAUM MANNHEIM 1st floor</td>
<td>Dr. Karl Kollmann</td>
<td>Alexander Rabofsky, T. Eggerer, W. Reinalter, Magna Steyr Engineering</td>
</tr>
</tbody>
</table>
PROGRAM WEDNESDAY, 18TH MARCH 2015

KÖNIG-KARL-HALLE 2nd floor

Future IC Engines
Chairperson: Prof. Dr. Michael Bargende

13:30 Driving with Fire – Ways to CO2 free Mobility
Rolf Leonhard, Robert Bosch GmbH

14:00 The Future of the Diesel Engine as a Means of Propulsion in Passenger Cars
Fritz Steinparzer, W. Stütz, P. Nefischer, BMW Motoren GmbH

14:30 The new generation of rear-wheel-drive transmissions at Mercedes-Benz
Ralf Koesling, T. Gödecke, K. Mühlebach, A. Franke, Daimler AG

13:30 The new generation of rear-wheel-drive transmissions at Mercedes-Benz
Ralf Koesling, T. Gödecke, K. Mühlebach, A. Franke, Daimler AG

14:00 The Future of the S.I-Engine
Günter Fraidl, P. Kapus, AVL List GmbH

14:30 Optimization of DPF regeneration with a cylinder pressure based combustion control
Nikolaus Held, T. Betz, F. Duvinage, P. Lückert, Daimler AG

14:00 Quality assurance of adhesive processes in the body shop
Jaan Mattes Reiling, P. Middendorf, IFB, University of Stuttgart; M. Sindel, AUDI AG

14:30 Next Generation Car (NGC) – Lightweight Design Through Function Integration In Vehicle Structures
Gundolf Kopp, S. Brückmann, M. Kriescher, M. Ruff, H. E. Friedrich, The German Aerospace Center – Institute of Vehicle Concepts

14:00 Trigger wheel based misfire detection for sports cars with eight or more cylinders
Christoph Junker, H. Schmid, Bosch Engineering GmbH

14:30 Intelligent Control of automated calibration for engine management systems by use of a new process schedule
Sven Meyer, IAV GmbH

15:00 Coffee break

KÖNIG-KARL-HALLE 2nd floor

15:30 Plenary Session and Panel Discussion (see Overview pg. 7)

17:00 End of Conference
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<tr>
<th>Time</th>
<th>Session Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>13:00</td>
<td>Increase in Range of a Battery Electric Vehicle by Means of Predictive Thermal Management</td>
<td>Markus Auer, IVK, University of Stuttgart; T. Kuthada, FKFS; N. Widdecke, J. Wiedemann, FKFS/IVK, University of Stuttgart</td>
</tr>
<tr>
<td>13:30</td>
<td>Improving 1D simulations of thermal management systems with embedded 3D CFD</td>
<td>Christoph Janssen, M. Effenberger, R. Gneiting, A. Kleber, S. Larpent, R. Stauch, MAHLE Behr GmbH &amp; Co. KG</td>
</tr>
<tr>
<td>14:00</td>
<td>Impact of visual preconditioning on the comfort rating of the vehicle interior</td>
<td>Roland Mandel, T. Maier, IKTD, University of Stuttgart; J. Klarzyk, EDAG Engineering AG</td>
</tr>
<tr>
<td>14:30</td>
<td>Thermal management of Li-ion batteries and its influence on electrical performance</td>
<td>Daniel Werner, A. Loges, T. Wetzel, Karlsruhe Institute of Technology (KIT); O. Heeg, N. Sautter, A. Wiebelt, MAHLE Behr GmbH &amp; Co. KG</td>
</tr>
<tr>
<td>13:30</td>
<td>Model-based software development solutions for series software development</td>
<td>Oliver Schneider, T. Mindel, J. Liebmann, R. Gonzalez Ramos, ZF Friedrichshafen AG</td>
</tr>
<tr>
<td>14:00</td>
<td>From conductive charging to inductive charging - challenges for the software of the OnBoard Charger ECU</td>
<td>Dirk Großmann, Vector Informatik GmbH</td>
</tr>
<tr>
<td>14:30</td>
<td>Physical modeling of environment detection sensors, based on GPU-supported shader technology</td>
<td>Sebastian Hafner, TESIS DYNAware GmbH</td>
</tr>
<tr>
<td>13:30</td>
<td>Contactless Energy Transfer for Main-line Rail Vehicles</td>
<td>Sebastian Streit, The German Aerospace Center</td>
</tr>
<tr>
<td>14:00</td>
<td>BPLE - Brake Pipe Length Estimation (Detection of brake pipe consistency for freight trains)</td>
<td>Benjamin Kumpfe, Knorr Bremse Systeme für Schienenfahrzeuge GmbH</td>
</tr>
</tbody>
</table>

**Coffee break**

**KÖNIG-KARL-HALLE 2nd floor**

<table>
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<td></td>
</tr>
<tr>
<td>17:00</td>
<td>End of Conference</td>
<td></td>
</tr>
</tbody>
</table>
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› The name of the presenter and any co-authors, company address, Phone number and e-mail addresses
› Table of contents including a short summary (abstract, max. 1,500 characters)
› Assignment within one of the named topic areas
› Short entry about the innovative value of the presentation

DATES
Notification of acceptance: September 2015
Submission of presentation manuscript by: 20 January 2016
The symposium program will be available in November 2015

INFORMATION
FKFS Research Institute of Automotive Engineering and Vehicle Engines Stuttgart | Uta Fuchs | Pfaffenwaldring 12 70569 Stuttgart | Phone +49 711 70685-65628 | uta.fuchs@fkfs.de
www.fkfs.de

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The Stuttgart Symposium is targeted at automobile manufacturing professionals and their suppliers in the areas of research & development, development services, software companies and post-secondary schools.

PRESENTATION LANGUAGES
German and English with interpretation
Presentations with English titles will be held in English.

FOCUS TOPICS 2016

AUTOMOTIVE TECHNOLOGIES
› Aerodynamics/aeroacoustics
› Energy and thermo-management
› Driver models
› Vehicle and driving dynamics, running gear systems
› Vehicle concepts
› Vehicular safety
› Chassis technology and lightweight construction
› Noise, ventilation and harshness
› Tires and tire models

VEHICLE ENGINES
› Diesel, gasoline and natural gas engines
  Fuel injection technology, carburetion and burning;
  Load change and charging;
  Emissions and exhaust processing;
  Acoustics, mechanics, cooling and heat management
› Hybrid technologies
› Electric engines and traction batteries
› Transmissions, ancillary assemblies and components
› Measurement and testing technologies
› Alternative fuels and alternative engine concepts

AUTOMOTIVE ELECTRONICS AND SOFTWARE
› Driving assistance systems
› Electro-mobility, battery charging systems and strategies
› Power electronics and electrical systems
› Sensor and actuator technology
› Networking and architecture
› Diagnosis and tests
› Software and design methodologies

AUTOMOTIVE PROCESS AND MANUFACTURING TECHNOLOGIES
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On Tuesday and Wednesday, an accompanying exhibition will take place in the foyers of the event facilities. Manufacturers and suppliers to the automotive industry will present the latest developments in vehicle, engine and measurement technology.

Exhibition maps and detailed exhibitor profiles are available on site. Find out more about the exhibitors [www.fkfs-conferences.de](http://www.fkfs-conferences.de)

**Exhibition opening times:**
Tuesday 17th March 2015 | 8:00 – 18:00
Wednesday 18th March 2015 | 8:00 – 15:30

If you are also interested in attending the Symposium as an exhibitor at the symposium, please contact Philipp Sautter | Phone +49 711 4605376-7 | p.sautter@emendo-events.de

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- BorgWarner Ludwigsburg GmbH
- CD-adapco
- Controlled Power Technologies Ltd.
- D2T GmbH
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Information on arrival www.hausderwirtschaft.de/anfahrt
By public transport:
» Tram: lines S1 to S6, stop estelle city center (Stadtmitte)
» Metro: U9 and U14, stop Friedrichsbau/Exchange (Börse)
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Address for navigation system
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Taxi fare between Stuttgart Airport and Haus der Wirtschaft: approx. € 30
Taxi fare between Stuttgart Main Train Station and Haus der Wirtschaft: approx. € 7

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During the break times you are welcome to use one of the three catering stations. These can be found in the exhibition area of the Eyth and List hall and next to the König-Karl-Hall. Lunch, cold drinks and coffee breaks are included in the symposium fee.

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The registration desk is located in the foyer on the 1st floor.  
Opening times:  
Tuesday 17th March 2015 | 8:00 – 18:30 Uhr  
Wednesday 18th March 2015 | 7:30 – 17:30 Uhr  
Phone +49 711 4605376-8

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LANGUAGE

The official symposium language is German. All presentations will be simultaneously interpreted in both directions (except for presentations in the conference room Mannheim).

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2ND FLOOR

ULM ROOM  
EYTH-SAAL  
Exhibition  
REUTLINGEN ROOM

1ST FLOOR

KÖNIG-KARL-HALLE  
LIST-Saal  
Exhibition  
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GROUND FLOOR

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Restaurant/Bistro  
LOGO  
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The Stuttgart Symposium is aimed at managers and employees of car manufacturers and their suppliers in the fields of research and development, manufacturing, aerodynamics, simulation, drive and transmission, as well as development service providers, software companies and universities.

TERMS & CONDITIONS OF PARTICIPATION OF COMPANIES

1 General
The Research Institute of Automotive Engineering and Vehicle Engines Stuttgart FKFS, Pfaffenwaldring 12, 70569 Stuttgart is organising the 15th Stuttgart International Symposium on Automotive and Engine Technology 2015. These Terms & Conditions apply for the registration of the 15th Stuttgart International Symposium. Other agreements must be confirmed in writing by FKFS.

2 Registration and Confirmation
You can check the registration portal, log in via email, fax or mail. After your registration you will receive a written confirmation. Your data will be electronically stored in a database for internal purposes. It will not be passed on to third parties.

3 Cancellation of a participant
If cancellation occurs before 17 February 2015 a processing fee of € 50.00 will be charged. In case of cancellation before 3 March 2015, a processing fee in the amount of 50% of the bill will be charged. Subsequently the processing fee is equivalent to the amount of the registration fee. The same applies if the participant fails to appear. The cancellation must be in written form. Relevant for the term protection is the date of the postmark. We are happy to accept a substitute participant at no additional cost.

4 Cancellation by the organizer
For short-term default of a speaker due to force majeure, illness, accident or any other circumstances the FKFS is not responsible for. Already paid participation fees will then be refunded. Any further claim for reimbursement of expenses shall not exist.

5 Participation fee and conditions of payment
We ask for payment within 14 days after receipt of invoice. The participation fee for the complete conference includes access to all events on both days, the conference documentation, lunch at the venue each day, refreshments and participation in formal evening reception. When booking a day ticket the admission is limited to all events on a particular day. The remaining services are not affected by this restriction.

6 Copyright
The conference documentation may not be reproduced or distributed to third parties without written consent from FKFS. Audio and video recordings of the event are not allowed.

7 Applicable law and jurisdiction
German law applies. Jurisdiction is Stuttgart. These Terms and Conditions exist in German and English. In the event of a discrepancy or ambiguity, the German version is binding.

8 Other provisions
Should one or more provisions of the conditions be or become invalid, the validity of the remaining terms and conditions remain unaffected.
15TH STUTTGART INTERNATIONAL SYMPOSIUM

17TH AND 18TH MARCH 2015 | STUTTGART

EMENDO Event & Congress
Office Region Stuttgart
Esslinger Str. 1
73765 Neuhausen a.d.F.
Germany

By Fax to:
+49 711 46053769

The online registration for the symposium is available on the Website www.fkfs-conferences.de or simply scan the adjacent QR code.

REGISTRATION DETAILS

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Invoice Address (if different)

PARTICIPATION FEE

| University Staff
| € 995,– (excl. VAT) |
| University Staff
| € 495,– (excl. VAT) |

DAY TICKET

| Students
| € 595,– (excl. VAT) |
| University Staff
| € 395,– (excl. VAT) |

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Students

For students of the University of Stuttgart a limited number of free tickets are available. These can be collected upon presentation of the certificate of enrollment of: Institute for Internal Combustion Engines and Automotive Engineering IVK

For more information: symposium@fkfs.de

PARTICIPATION AT THE EVENING RECEPTION ON 17TH MARCH 2015

| yes | no |

PLEASE COMPLETE

I agree to my name and my employer’s name being printed on the official list of participants.

| yes | no |

I have read and accepted the terms and conditions on page 26 with my signature. I agree that my data will be stored for congress-related purposes.

Date, Signature

Within a few days after booking you will receive a confirmation e-mail and an invoice. Please enter your e-mail address legibly for this.
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