Program

8th Int. Symposium on Development Methodology
12th - 13th of November 2019, Kurhaus Wiesbaden, Germany
A joint event of AVL and Prof. C. Beidl – Technical University Darmstadt
FOREWORD

On November 12th and 13th, 2019, the 8th International Symposium on Development Methodology will take place, focusing on the field of vehicle and powertrain development. The event is organized by AVL together with the Institute for Internal Combustion Engines and Powertrain Systems of the Technical University Darmstadt.

New Times and New Challenges – this describes the current situation the powertrain development industry is facing. How will individual mobility look like in the coming years and what types of powertrain concepts will coexist? What are the right methodical approaches to master these challenges? RDE and the increasing electrification of powertrains are the main drivers in technological development, what will come in addition and where will it lead us?

We also experience dynamic developments in the commercial vehicle and offroad sector. One thing is for sure – Methods will play an essential role for all solutions. Therefore we choose New Times! New Challenges! New Methods?! as the theme for the 2019 symposium.

Learn more about the new development methods in practice. Leading OEMs, suppliers and universities present new approaches from the development areas of ADAS & Connectivity, Electrification, Big Data as well as RDE & ICE! In addition, you can expect numerous speakers from the companies BMW, Continental, Daimler, Ford, Honda, JLR, John Deere, Mahle, Nvidia, Porsche, Punch, Ricardo, Robert Bosch, Toyota, Valeo Siemens, VW as well as from the universities of Aachen, Berlin, Darmstadt, Hamburg, Kempten and many more.

We are looking forward to meeting you!

Your program committee

PROGRAM COMMITTEE

Prof. Christian Baiddi
Technical University Darmstadt

Roland Jeutter
AVL Deutschland GmbH

Prof. Christian Beidl
Technical University Darmstadt

Dr. Wolfgang Puntigam
AVL List GmbH

Christopher Christ
AVL List GmbH

Thorsten Kniesa
Opel Automobile GmbH

Peter Renninger
Daimler AG

Dieter Gundel
Volkswagen AG

Dr. Michael Kordon
AVL Commercial Driveline & Tractor Engineering GmbH

Prof. Bernhard Schick
Kempten University of Applied Sciences

Dr. Olaf Hermann
DENSO Automotive Germany GmbH

Eike Martini
Valeo Siemens eAutomotive GmbH

Dr. Olaf Herrmann
DENSO Automotive Germany GmbH

Dr. Wolfgang Puntigam
AVL List GmbH
GOOD REASONS FOR YOUR VISIT

• Tailor-made event: A unique event with target-oriented issues and practical experiences in the areas of RDE & ICE, electrification, Big Data as well as ADAS & Connectivity. For people involved with development methodology in vehicle and powertrain development.

• Find out about approaches of other organisations for current legislative or technology issues, e.g. RDE, electrification or ADAS.

• Comprehensive and compact: Get up-to-date in just two days and find out about new trends and developments in development methodology.

• Theory and practical knowledge at first hand: Learn about new development methods and how you can adapt the methods to changing requirements directly from the users.

• Meet specialists and executives in the development methodology and expand your personal network.

• Take a time-out to collect ideas and impulses for your career.

„In the field of methodology one of the best events with the latest development topics, first-class lectures and networking at the highest level.“

Dr. Sven Christian Fritz, MTU Friedrichshafen GmbH, Specialist for DoE, method development, testbed automation and virtual testbeds
CONFERENCE PROGRAM – TUESDAY, NOVEMBER 12, 2019

08.45 Welcome and Opening of the 8th International Symposium on Development Methodology
   Prof. H. List – AVL List GmbH

Session 1: Keynote; Chairman: Prof. C. Beidl, Technical University Darmstadt
09.00 Why Now?
   M. Forissier – Valeo Powertrain Systems
09.30 Climate Protection + the Transport Sector - New Approaches
   F. Loogen – e-mobil BW GmbH

10.00 Coffee break

Session 2: New Times! – New Methods?!; Chairman: Prof. C. Beidl, Technical University Darmstadt
10.30 RDE – From Road to Rig
11.00 Steady-State Measurements in DoE – an Obsolete Heritage of the Past?!
   S. Scheidel, M.-S. Gande, P. Williams, A. Wagner, H. P. Grassberger – AVL List GmbH
11.30 Continuous Model-Based Validation of Electric TrACTION Drives
   S. Boog, Dr. S. Görhardt, R. Müller, Dr. A. Elsaßer – MAHLE International GmbH
12.00 Machine Learning in Vehicle Development: Methods and Use Cases
   Dr. K. Jonas, F. Noering – Volkswagen AG
12.30 Lunch

PARALLEL SESSION 3A
New Challenges in Electrification; Chairman: E. Martini, Valeo Siemens eAutomotive Germany GmbH
13.45 Method to Transfer High Dynamic Driving Maneuvers with Electric Drives on a Powertrain Test Bench
   L. Nigl, Dr. J.-M. Birkhold – Dr. Ing. h.c. F. Porsche AG; K. Bause – IPEK – Institut für Produktentwicklung am KIT
14.15 Transition and Reuse of ICE Testing Tools and Methods to Ensure a Competitive Fuel Cell Development
   H. P. Grassberger, Dr. R. Neubauer, T. Krauss – AVL List GmbH
14.45 Paradigm Change in Application-Methods for Electrical-Drive-Controllers: From-Self-Commissioning for Industrial Drives to Map-Measurement-Based Identification-Methods for Electrical Traction Drives of EVs
   Dr. A. Rambetius, M. Steinmüller – Valeo Siemens eAutomotive Germany GmbH
15.15 Coffee Break

PARALLEL SESSION 3B
New Methods! Existing Data; Chairman: P. Renninger, Daimler AG
13.45 Machine Learning Approach for the Control of Dynamic Systems in the Air Path of Diesel Engines
   M. O. Wagner – Daimler AG
14.15 Structured Data Management & Analytics Solution
   Barney Nefcy – Ford Motor Company
   Prof. G. Kronberger, C. Haider, Dr. M. Kommenda – University of Applied Sciences Upper Austria; S. Scheidel – AVL List GmbH; Dr. M. Kordon – AVL Commercial Driveline & Tractor Engineering GmbH
15.15 Coffee Break
PARALLEL SESSION 3A
New Challenges in Electrification; Chairman: Prof. G. Hohenberg, IVD Prof. Hohenberg GmbH

15.45 Drive Inverter Testing with Virtual E-motors Using Power Hardware-in-the-Loop Emulation Concept
Dr. A. Schmitt, Dr. P. Winzer, Dr. M. Schnarenberger, H. Hammerer – SET Power Systems GmbH

16.15 To Charge, or not to Charge
M. Bersac – Valeo Siemens eAutomotive France SAS

16.45 Optimization of a Scenario-Based Thermal Management for a Battery Electric Vehicle Through Automated Mission Profile Simulation
A. Kowallik – BMW AG; Prof. C. Beidl – Technical University Darmstadt

17.15 ThermoLab for Battery Electric Vehicle – Thermal Development on Testbeds
A. Koller, Dr. H. Raiser – Dr. Ing. h.c. F. Porsche AG; C. Mayr, M. Walcher – AVL List GmbH; D. Ciglar – AVL-AST d.o.o.

18.30 Transfer to the Evening Event
19.00 Welcome Cocktail followed by Dinner

PARALLEL SESSION 3B
New Methods! Existing Data; Chairman: D. Gundel, Volkswagen AG

15.45 Artificial Intelligence for the Parametrization of Advanced Powertrain Control Systems
Dr. H.-J. Wiehoff, A. Brandl, M. Kausche, M. Wütz, T. A. Gargiso

16.15 Virtual Prototype Management – Continuous validation in the vehicle development process
Dr. J. Zehetner, S. Forstner – AVL List GmbH; A. Kikamatsu – AVL Japan K.K.

16.45 Fast Analysis of Worldwide Distributed Endurance Run Data
Dr. T. Adnho, D. Boja – NorCom Information Technology GmbH & Co. KGaA

17.15 Virtual Commissioning for Ex-Ante Data Analytics Within the Production of Electric Drive Systems
T. Möller, Prof. A. Kampker, S. Wessel, P. Teichel – RWTH Aachen University

CONFERENCE PROGRAM – WEDNESDAY, NOVEMBER 13, 2019

PARALLEL SESSION 4A
New Methods RDE; Chairman: Dr. M. Kordon, AVL Commercial Driveline & Tractor Engineering GmbH

09.00 Optimization of Cold Start Emissions on 4x4 Powertrain Testbed – a Key to RDE Emission Compliance
F. Duchi, S. Koch – AVL List GmbH; Dr. D. Buch – AVL Deutschland GmbH

09.30 Optimization of Dynamics and Start Behavior on the RDE Engine Test Bench by Using a Real-Time Tool Chain in CoSimulation
T. Steinhaus, H. Zlojo, Prof. C. Beidl – Technical University Darmstadt; M. Conin – IVD Deutschland GmbH

10.00 Digitalization of Powertrain Calibration – Hardware-in-the-Loop and its Opportunities
S.-Y Lee, Prof. J. Andert – RWTH Aachen University; Dr. J. Schaub, M. Kötter, T. Körfer, Dr. H. Neises, S. Ghetti, B. Lindemann – FEV Europe GmbH

10.30 Coffee Break

PARALLEL SESSION 4B
New Challenges! ADAS & Connectivity; Chairman: Prof. Schick, Kempten University of Applied Sciences

09.00 Connected Testing of ADAS and Powertrain Functions on Integration Test Beds
Dr. F. Pfister – IPG Automotive GmbH; S. Hakuli – Continental Engineering Services GmbH

09.30 Steering at the Powertrain Test Bench – A New Validation Method for Highly Automated Systems up to the Limits of Vehicle Dynamics
A. Hartwecker, O. Al-Saidi, Prof. S. Müller – Technical University Berlin

10.00 Homologation and Validation of Automated Driving Functions – It’s all About an Efficient Methodology and Process!
C. Gnandt – TÜV SÜD Auto Service GmbH; Dr. T. Dürer – AVL Deutschland GmbH

10.30 Coffee Break
**PARALLEL SESSION 4A**

New Methods RDE; Chairman: Dr. O. Herrmann, DENSO Automotive Germany GmbH

11.00 New Approaches for Virtualized Diesel Powertrain System Development
B. van Moergastel, S. Visser, K. Norgel, Dr. O. Herrmann – DENSO Automotive Germany GmbH

11.30 Utilising Deep Neural Network Models to Calibrate in Engine Control Units
Dr. F. Mohd Azmin, Dr. J. Seabrook – Ricardo UK Ltd.

12.00 RDE Evaluation by Efficient Fleet Data Management and Advanced Analytics
S. Bauer, Prof. C. Beidl – Technical University Darmstadt; Dr. K. Laubis – AVL Deutschland GmbH; Dr. N. Keuth – AVL List GmbH

12.30 Integration of the Virtual Engine Calibration into the Real Development Environment – How Important is the Human Factor in the Change Process?
Prof. H. Ihme-Schramm, Prof. T. Netzel – Hamburg University of Applied Sciences; A. Schramm – Consultant

13.00 Lunch

---

**PARALLEL SESSION 4B**

New Methods ADAS & Connectivity; Chairman: Dr. W. Puntigam, AVL List GmbH

11.00 AI in Cockpit and Autonomous Driving
J. Langenwalter – NVIDIA GmbH

11.30 Suitability Analysis for Cloud-Based Vehicle Functions
F. Milani, M. Foell – Robert Bosch GmbH; Prof. C. Beidl – Technical University Darmstadt

12.00 Customer on Stage – A Holistic and User-Centered Development Process for Connected Powertrains
S. Barth, Dr. M. Fischer – Honda R&D Europe GmbH

12.30 Optimal System-Level Design of a Hybrid Electric Vehicle Powertrain Using Neural Network-Based Component Models and Particle Swarm Optimization
C. Gletter – Daimler AG; Prof. J. Kallo – Ulm University; Prof. T. Winsel – Kempten University of Applied Sciences

13.00 Lunch

---

**PARALLEL SESSION 5A**

New Methods – Different Challenges?!; Chairman: C. Christ, AVL List GmbH

14.30 Rationalization of Stepped Transmission Calibration
P. Danckers – Punch Powertrain NV; Dr. T. Ebner, B. Wultsch, R. Schantl – AVL List GmbH

15.00 Efficiency Investigation of Tractor Systems by “Powertrain-in-the-Loop” Test Methodology
W. Stark, C. Pieke – John Deere GmbH & Co. KG; Dr. C. Schyr – AVL Deutschland GmbH

15.30 Break

---

**PARALLEL SESSION 5B**

New Challenges! ADAS & Connectivity; Chairman: Prof. B. Schick – Kempten University of Applied Sciences

14.30 The Art of Cyber Security Orchestration
C. Pohl, Dr. F. Stumpf, Dr. T. Wollinger, Dr. M. Wolf – ESCRYPT GmbH

15.00 Parametrized End-to-End Scenario Generation Architecture for Autonomous Vehicles
H. Schneider, M. Nager – AVL List GmbH

15.30 Break

---

**Final Keynotes; Chairman: C. Christ, AVL List GmbH**

15.40 What’s Coming? – Technical Scenarios for the Decarbonisation of Road Traffic
Dr. S. Neugebauer – European Road Transport Research Advisory Council (ERTRAC), BMW AG

16.10 DENSO’s Development Approaches for Sustainable Mobility in Future Society
K. Uchiyama, Dr. O. Herrmann – DENSO Automotive Germany GmbH

16.40 Closing Remarks
Prof. C. Beidl – Technical University Darmstadt; R. Jeutter – AVL Deutschland GmbH

17.00 End of Conference
GENERAL INFORMATION

DATE & VENUE
November 12 - 13, 2019, Kurhaus Wiesbaden, Germany

FEE
Registration fee  1.100,- Euro
Early bird (till July 26, 2019)    975,- Euro
University members        550,- Euro
Students      220,- Euro
Fees include proceedings, catering and evening event (plus 19 % VAT).

CONFERENCE LANGUAGES
German and English (simultaneous translation)

HOTEL RESERVATION
We have negotiated some attractive prices with a number of hotels in Wiesbaden. You find the hotel list at www.avl.com/symposium-development-methodology. Please book your accommodation directly at the hotel and settle your hotel bill at departure.

REGISTRATION AND FURTHER INFORMATION
www.avl.com/symposium-development-methodology

CONTACT
AVL Deutschland GmbH
Willi Klemens
Peter-Sander-Straße 32
55252 Mainz-Kastel
Phone: +49 6134 7179 453
E-Mail: entwicklungsmethodik@avl.com

STUDENT SPONSORSHIP
There is the possibility for students to apply for sponsored places by Daimler, Denso, Valeo Siemens, VW und AVL, which are free of charge. Information on this topic is available online at www.avl.com/symposium-development-methodology.

Many thanks to our Sponsors!