

PROGRAM

# CONNECTIVITY - KEY TO FUTURE EMISSION AND CONSUMPTION REDUCTION?

In Vehicle and Powertrain

30<sup>th</sup> International AVL Conference "Engine & Environment"

7<sup>th</sup>-8<sup>th</sup> of June 2018, Helmut-List-Halle, Graz, Austria

6<sup>th</sup> OF JUNE!  
TEST DRIVES



ANNIVERSARY CONFERENCE

MOTOR & UMWELT – ENGINE & ENVIRONMENT

The Trend Conference in Graz

AVL 

## FOREWORD



Public discussion is currently mainly focused on the subject of pollutant emissions and the long-term future of the combustion engine, but the true automotive revolution is taking place in connecting the vehicle with its environment. The much-cited topic of "autonomous driving" only represents the tip of the iceberg of technical possibilities for rendering the operation of vehicles safe and environmentally friendly. "Advanced Driver Assistance Systems" are increasingly becoming a sales-relevant differentiating factor. On the one hand, connectivity enables predictive and adaptive management of energy and emissions with advantages regarding energy consumption, emissions, wear and durability thanks to the online monitoring of all relevant system parameters. On the other hand, the sub-

ject "Online Vehicle" necessitates stricter requirements being placed on data security and also causes a paradigm shift in the development and validation of vehicles. Connectivity requires a dramatic increase in the extent of the development and validation envelope, such as has occurred in emissions development where "Real Driving Emissions" has led to a shift from exactly defined test bed cycles towards statistical probabilities. This essentially equates to a check under all conceivable operating conditions. The questions "what does networking make possible, what is meaningful, and how do we control the corresponding risks" pose quite possibly the most intriguing range of topics in automotive development today.

Prof. Dr. h.c. Helmut List  
Chairman and CEO  
AVL List GmbH

Dr. Robert Fischer  
Executive Vice President, Engineering and  
Technology Powertrain Systems, AVL List GmbH

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Please see attachment for  
registration and hotel  
reservation.

Subject to modifications.

## GENERAL INFORMATION

**Conference Office:** AVL List GmbH,  
Hans-List-Platz 1, A-8020 Graz,  
Tel.: +43 (316) 787 927,  
E-Mail: event@avl.com

**Conference Venue:** Helmut-List-Halle,  
Waagner-Biro-Straße 98a, A-8020 Graz

**Registration:** In the Helmut-List-Halle on  
Thursday, June 7<sup>th</sup>, 2018

**Conference Fee:** € 1.190,- plus 20 % tax,  
Students € 110,- plus 20 % tax,  
Free of charge for members of the press.  
Fees include proceedings, 2 lunches and  
snacks, social evening events.

**Conference Languages:** German and English  
(simultaneous translation)

**Conference Documents:** An order form for  
additional conference documents is available  
online and at the registration desk.  
(price: € 140,- plus 10 % tax)

**Hotel Reservation:** Please see the reservation  
form attached.

**Arrival:** By plane: Graz-Thalerhof,  
by train: Graz Main Station,  
by car: see map of Graz (page 11)

**Evening Program:**  
June 6<sup>th</sup>, 15:00: AVL Test Track in Gratkorn with  
Welcome Reception at 19:00.  
June 7<sup>th</sup>: 19:30 Social Evening at the  
Aula of the Karl-Franzens-University

**Partners' Program:**  
Excursion to Herberstein Garden Palace and  
Animal World.

## PRESENTING AUTHORS



### CONFERENCE AND SESSION CHAIRMAN

**Dr. Robert Fischer**, Executive Vice President Engineering and Technology Powertrain Systems, AVL List GmbH

**Prof. Dr. h.c. Helmut List**, Chairman and CEO, AVL List GmbH  
**Shizuo Abe**, Executive General Manager, TOYOTA MOTOR CORPORATION

**Dr. Henning Baumgarten**, Group Vice President Gasoline Powertrains, FEV Group GmbH

**Dr. Rolf Bulander**, Member of the Board of Management Robert Bosch GmbH, Chairman Business Sector Mobility Solutions, Robert Bosch GmbH

**Chaozhuo Chen**, Vice President of Marketing and Strategy, ZongMu Technology

**Prof. Dr. Lutz Eckstein**, Chair and Director, Institut für Kraftfahrzeuge, RWTH Aachen University

**Dr. Claus Ehlers**, Director of Mercedes-Benz Cars Strategy Powertrain, CO<sub>2</sub> & eRange, Modules and Innovation, DAIMLER AG

**Oliver Frosch**, Executive Chief Engineer Vehicle, AVL List GmbH

**Gilles Le Calvez**, Vehicle Program Manager, VEDECOM

**Dr. Stephan Neugebauer**, Chairman, ERTRAC (European Road Transport Research Advisory Council)

**Larry T. Nitz**, Global Transmissions and Electrification Executive Director, General Motors

**Günter Schiele**, Head of Function & Application Development for Automated Driving, Audi AG

**Dr. Peter Schöggel**, Head of Vehicle, Vice President Business Field Racing and Vehicle, AVL List GmbH

**Dr. Florian Stegmann**, Head of Department, Staatsministerium Baden-Württemberg

**Yoichi Sugimoto**, Senior Chief Engineer, Honda R&D Co., Ltd.

**Kumar Prasad Telikepalli**, Master of Technology, IIT Bombay, Head – Electronics CoE & EV Applications, Mahindra & Mahindra Limited

**Ralf Traub**, Manager Connectivity Systems MB Truck Advanced Engineering, Daimler AG

**Dr. Dirk Wisselmann**, Senior Expert Automated Driving, BMW AG

### CHAIRMEN

**Prof. Dr. Michael Bargende**, Research Institute of Automotive Engineering and Vehicle Engines Stuttgart

**Prof. Dr. Helmut Eichlseder**, University of Technology Graz

**Dr. Robert Fischer**, AVL List GmbH

**Prof. Dr. Ferit Küçükay**, University of Technology Braunschweig

**Prof. Dr. Hans Peter Lenz**, Austrian Society of Automotive Engineers

### PANEL DISCUSSION

**Moderator: Ulrich Walter M.A.**

**Dr. Claus Ehlers**, Director of Mercedes-Benz Cars Strategy Powertrain, CO<sub>2</sub> & eRange, Modules and Innovation, DAIMLER AG

**Dr. Christian Landerl**, Director Development Petrol Engine, BMW Group

**Dr. Stephan Neugebauer**, Chairman, ERTRAC (European Road Transport Research Advisory Council)

**Dr. Peter Schöggel**, Head of Vehicle, Vice President Business Field Racing and Vehicle, AVL List GmbH

**Dr. Florian Stegmann**, Head of Department, Staatsministerium Baden-Württemberg



CONFERENCE PROGRAM - WEDNESDAY, JUNE 6<sup>TH</sup>, 2018

15:00	<b>Welcome Reception</b> at the AVL Test Track in Gratkorn <b>TEST DRIVE START 15:00</b> , Opening Address Start 19:00
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CONFERENCE PROGRAM - THURSDAY, JUNE 7<sup>TH</sup>, 2018

Conference and Session Chairman: Dr. Robert Fischer, Executive Vice President Engineering and Technology Powertrain Systems, AVL List GmbH	
09:00 - 09:10	<b>Welcome Address</b> , Prof. Dr. h.c. Helmut List, Chairman and CEO, AVL List GmbH
09:10 - 09:20	<b>Welcome</b> , Representative of the City of Graz
09:20 - 09:30	<b>Opening of the Conference</b> , Repesantative of the Province of Styria
09:30 - 10:00	<b>“Connected Propulsion – The Future Is Now”</b> Larry T. Nitz, Global Transmissions and Electrification Executive Director, General Motors
10:00 - 10:30	<b>The Future Direction of the Electrified Vehicle »Utilizing of Big Data«</b> Shizuo Abe, Executive General Manager, TOYOTA MOTOR CORPORATION
10:30 - 11:15	Coffee Break
11:15 - 11:45	<b>Potentials of Connectivity and Automation for the Mobility of the Future</b> Prof. Dr. Lutz Eckstein, Chair and Director, Institut für Kraftfahrzeuge, RWTH Aachen University
11:45 - 12:15	<b>From Now to (i)Next – BMW Roadmap Automated Driving</b> Dr. Dirk Wisselmann, Senior Expert Automated Driving, BMW AG
12:15 - 14:00	Lunch

CONFERENCE PROGRAM - THURSDAY, JUNE 7<sup>TH</sup>, 2018

Chairman: Prof. Dr. Helmut Eichlseder, University of Technology Graz	
14:00 - 14:30	<b>Baden-Württemberg – Birthplace of the Automobile – Land of Innovative Ideas for the Future</b> Dr. Florian Stegmann, Head of Department, Staatsministerium Baden-Württemberg
14:30 - 15:00	<b>The New Audi A8 – ADAS Next Level</b> Günter Schiele, Head of Function & Application Development for Automated Driving, Audi AG
15:00 - 15:30	<b>Driver Assistance and Autonomous Driving: Chances, Challenges and Solutions</b> Dr. Peter Schögggl, Head of Vehicle, Vice President Business Field Racing and Vehicle, AVL List GmbH
15:30 - 16:15	Coffee Break

Chairman: Prof. Dr. Ferit Küçükay, University of Technology Braunschweig	
16:15 - 16:45	<b>Technological Scenarios for the Decarbonization of Road Transport</b> Dr. Stephan Neugebauer, Chairman, ERTRAC (European Road Transport Research Advisory Council)
16:45 - 17:15	<b>Shared Mobility in China</b> Chaozhuo Chen, Vice President of Marketing and Strategy, ZongMu Technology
17:15 - 17:45	<b>Honda’s Initiative on Connected and Automated Driving</b> Yoichi Sugimoto, Senior Chief Engineer, Honda R&D Co., Ltd.
19:30	AVL Social Evening at the Aula of the Karl-Franzens-Universität

## CONFERENCE PROGRAM – FRIDAY, JUNE 8<sup>TH</sup>, 2018

Chairman: Prof. Dr. Michael Bargende, Research Institute of Automotive Engineering and Vehicle Engines Stuttgart	
09:00 - 09:30	<b>MB Truck Connectivity Is Changing</b> Ralf Traub, Manager Connectivity Systems MB Truck Advanced Engineering, Daimler AG
09:30 - 10:00	<b>Connectivity – Transforming the Drive Experience</b> Kumar Prasad Telikepalli, Master of Technology, IIT Bombay, Head – Electronics CoE & EV Applications, Mahindra & Mahindra Limited
10:00 - 10:30	<b>The Challenges Related to Massive Deployment of Sustainable Mobility</b> Gilles Le Calvez, Vehicle Program Manager, VEDECOM
10:30 - 11:15	Coffee Break
11:15 - 11:45	<b>New Lambda 1 Gasoline Powertrains for Clean Real Driving</b> Dr. Henning Baumgarten, Group Vice President Gasoline Powertrains, FEV Group GmbH
11:45 - 12:15	<b>Connectivity – Enabler for New Vehicle Solutions</b> Oliver Frosch, Executive Chief Engineer Vehicle, AVL List GmbH
12:15 - 13:45	Lunch

## CONFERENCE PROGRAM – FRIDAY, JUNE 8<sup>TH</sup>, 2018

Chairman: Prof. Dr. Hans Peter Lenz, Austrian Society of Automotive Engineers	
13:45 - 14:15	<b>Mobility of the Future – Connected, Autonomous, Shared, Electric</b> Dr. Claus Ehlers, Director of Mercedes-Benz Cars Strategy Powertrain, CO <sub>2</sub> & eRange, Modules and Innovation, DAIMLER AG
14:15 - 14:45	<b>The Connected Vehicle Is the Better Vehicle!</b> Dr. Rolf Bulander, Member of the Board of Management Robert Bosch GmbH, Chairman Business Sector Mobility Solutions, Robert Bosch GmbH
14:45 - 15:15	Coffee Break

15:15 - 16:30	<b>Panel Discussion, Moderator: Ulrich Walter M.A., (Members in alphabetical order):</b>  Dr. Claus Ehlers, Director of Mercedes-Benz Cars Strategy Powertrain, CO <sub>2</sub> & eRange, Modules and Innovation, DAIMLER AG Dr. Christian Landerl, Director Development Petrol Engine, BMW Group Dr. Stephan Neugebauer, Chairman, ERTRAC (European Road Transport Research Advisory Council) Dr. Peter Schögggl, Head of Vehicle, Vice President Business Field Racing and Vehicle, AVL List GmbH Dr. Florian Stegmann, Head of Department, Staatsministerium Baden-Württemberg
16:30 - 16:45	<b>Closing Remarks</b> Dr. Robert Fischer, Conference and Session Chairman, AVL List GmbH



## THE PLEASURES OF GRAZ



Graz is indeed a striking beauty, to the point of rendering one sleepless. Self-confidently, the city presents itself both with new, fascinating landmarks and historic monuments, among them entire districts such as the Old City centre, honored and protected as a UNESCO World Cultural Heritage Site or the designation City of Design.

The city's 'lifeline' is the broad river Mur, providing a relaxed atmosphere to the rhythm of flowing water. But Graz is above all a melting pot of cultures. For centuries, musicians, writers, architects and designers have set the tone in this, the European Cultural Capital 2003.

So how do you go about exploring this impressive cultural heritage site? The answer is simply 'at your leisure'. Most of its many sights are located within easy reach of elegant coffee houses, fine restaurants, colorful country markets and trendy bars. Graz can be discovered and rediscovered time and time again. A noble flair reigns, as in the arcaded courtyard of the Landhaushof, a masterpiece of the Italian Renaissance.

Have no second thoughts about visiting the attractions: Eggenberg Palace, the Museum of Contemporary Art (Kunsthau), Island in the Mur, Schlossberg, Opera and all the rest, the 'compulsory' tourist program in Graz is a pure pleasure.

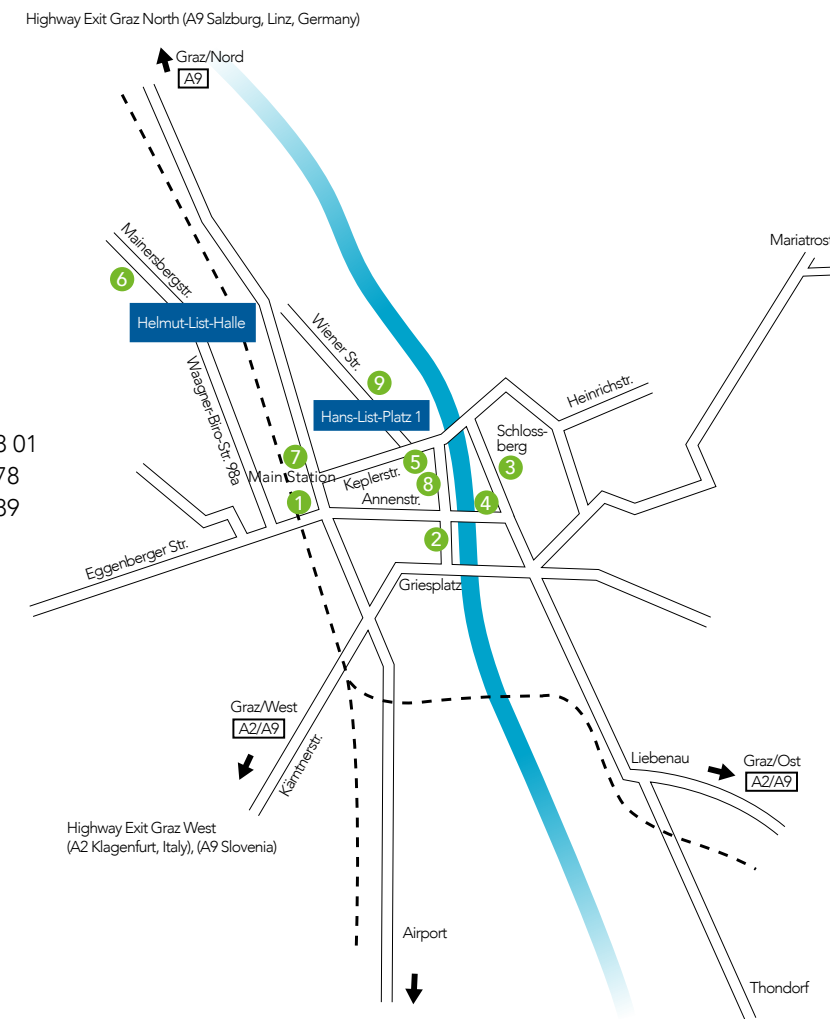
Photos:  
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### Hotel:

- 1 Hotel Daniel
- 2 Hotel Weitzer,  
Hotel Wiesler
- 3 Schlossberghotel
- 4 Hotel Erzherzog Johann
- 5 Mercure Graz City
- 6 Hotel Bokan
- 7 Hotel Ibis
- 8 Hotel Feichtinger
- 9 Lendhotel

### Taxi:

Phone: +43 (316) 28 01  
Phone: +43 (316) 878  
Phone: +43 (316) 889



## TEST DRIVES AND WELCOME RECEPTION



**WEDNESDAY, JUNE 6<sup>TH</sup>, 2018**

### WELCOME RECEPTION AT THE AVL TEST TRACK IN GRATKORN

Introduced in 2015 for the first time, the test drives with AVL vehicles on the AVL test track turned out to be a real highlight of the conference program. This year the participants will once again have the unique opportunity to drive demonstrator vehicles. Not only solutions for challenges, but also available technology for enthusiasts will be shown. Look forward to a fascinating, exciting and innovative start into our 30<sup>th</sup> International AVL Conference "Engine & Environment".

15:00 AVL Test Drives  
followed by 19:00 Welcome Reception

## SOCIAL PROGRAM

**THURSDAY, JUNE 7<sup>TH</sup>, 2018**

### PARTNERS' PROGRAM

**Off we go with a roar!**

Whether you love animals or flowers, are romantic or a fan of arts, there is something for every taste in this exciting excursion.

Take a safari through all the continents and watch about 700 animals almost like in their natural wild habitat. A relaxing lunch at a restaurant in the heart of Herberstein Animal World will be followed by a guided tour through the Herberstein Garden Palace, which is mysteriously hidden away in the wild & romantic Feistritzklamm. The magnificently blooming and scented historic rose gardens and a visit of the modern Gironcoli Museum, which captivates art connoisseurs and visitors with its fascinating steel & plastic constructions, complete this extraordinary tour.



Meeting point: 09:00 Helmut-List-Halle  
Expected End: 17:00

*With sufficient demand: 8<sup>th</sup> June, 2018, 3-Hour Graz Sightseeing Tour*



**THURSDAY, JUNE 7<sup>TH</sup>, 2018**

### SOCIAL EVENING

The University of Graz, which was founded in 1585, is Austria's second oldest university and one of the largest in the country. Many excellent scientists, amongst them six Nobel laureates, have taught and researched here.

We invite you to continue networking in the relaxed atmosphere of the ceremonial hall - the so called AULA.

19:30 Social Evening at the AULA of the  
Karl-Franzens-Universität



AVL is the world's largest independent company for the development of powertrains (engines, transmissions, e-motors, batteries and control systems) for passenger cars, commercial vehicles and industrial applications, as well as for instrumentation and test systems, with activities ranging from concept through to series development. Building on insights gained from its own research, AVL serves a global customer base by developing drive systems of all sizes and designs and integrating these into overall systems.

AVL founded the "Engine & Environment" conference as an independent platform in 1988 with the goal of promoting

interdisciplinary discussion of the crucial questions concerning engine and vehicle technology in a broad social context including environmental and energy-related issues. At that time it was not possible to predict the degree to which, within just three decades, the engine and the environment would be connected with each other. The original goal of this conference has remained the same of course, but the content has been significantly extended.

Although current discussion in the public domain is predominantly concerned with the topics of pollutant emissions and the future of the combustion engine, the real automotive revo-



lution is taking place in connecting the vehicle with its environment. This complete networking of the vehicle has become a key topic in the automotive industry. In-vehicle information and communication systems and, above all, autonomous driving functions permit completely new user profiles and innovative mobility concepts. Furthermore, "advanced driver assistance systems" are increasingly becoming sales-relevant differentiation criteria. The oft-cited "autonomous driving" is however only the tip of the iceberg representing a variety of technical possibilities which shape the operation of a vehicle and make it safer, more comfortable and more environmentally friendly.

The automotive emissions and fuel consumption legislation is currently going through a significant paradigm shift: from the certification in an artificial test bed environment to emissions conformity over the complete vehicle lifetime and under all scenarios of real road driving – away from exact reproduction of test bed tests towards the world of statistical probabilities. The new automotive legislation puts the vehicle in a real environment with its infinite variation of boundary conditions. As a consequence, RDE-real driving emission legislation is currently

being extended in Europe.

It is therefore appropriate to not only use the networking of the vehicle with the environment for autonomous driving functions and communication, but also to use the wealth of available information to operate the powertrain as close to the fuel consumption and emissions optimum as possible. Such a network enables predictive and adaptive energy and emissions management with the corresponding advantages regarding energy consumption, emissions, wear and lifetime together with an additional online monitoring of all relevant system parameters. However, the subject "vehicle online" also means significantly higher requirements on data security and also initiates a paradigm shift in the development and validation of vehicles.

The questions of what is possible thanks to networking, what is meaningful, how are the corresponding risks handled and how can the associated development and validation efforts be managed represent one of the currently most exciting range of topics in automotive development.





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