

PROGRAM

ZERO-IMPACT MOBILITY

EMISSIONS AND LIFECYCLE CO₂: NO LONGER A CONFLICT?

32nd International AVL Conference "Engine & Environment"
28th-29th May 2020, Helmut-List-Halle, Graz, Austria



MOTOR & UMWELT – ENGINE & ENVIRONMENT

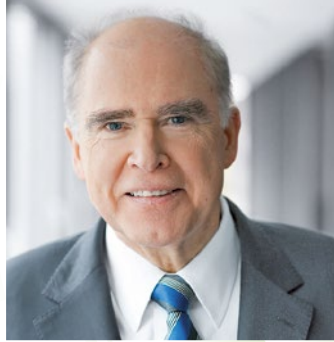
The Trend Conference in Graz

AVL 



27th MAY 2020
TEST DRIVES

FOREWORD



2019 saw a global decline in the sales of passenger cars and the reluctance to purchase can be explained by a certain sense of uncertainty on the part of the buyers. As vehicles are usually kept by the same owner for a longer period of time, the buying decision has long-term consequences. Under such conditions, it is an almost impossible task for vehicle buyers to take the boundary conditions into account for many years in advance.

This uncertainty, however, also affects vehicle manufacturers. Will enough customers be willing to buy electric vehicles? If yes, at what price? Or will more customers be convinced once

more to buy a diesel engine that contributes significantly to CO₂ reduction? Should vehicle development then indeed focus on electric vehicles or do manufacturers have to invest in combustion engine development once more? Which role will the different hybrid concepts play and will the fuel cell in particular meet its high expectations? Furthermore, will legislation allow CO₂ trading in the automobile industry in order to accelerate e-fuel development?

The conference offers its participants a suitable setting for an exchange concerning these questions.

A handwritten signature in black ink, appearing to read 'List'.

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

A handwritten signature in black ink, appearing to read 'Fischer'.

Prof. 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, May 28th, 2020

Conference Fee: € 1,190.– + 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:
May 27th, 2020, 15:00: AVL Test Track in
Gratkorn with Welcome Reception at 19:00
May 28th, 2020 19:30 Social Evening at aiola
im Schloss St. Veit

Partners' Program: Excursion to Austrian
Sculpture Park

PRESENTING AUTHORS



CONFERENCE AND SESSION CHAIRMAN

Prof. 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

Dr. Nikolai Ardey, Executive Director Group Innovation, Volkswagen AG

Dr. Georg Bäuml, Head of Environmental Product, Volkswagen AG

Dirk F. Becker, Head of Design & Fuel Cell, AVL List GmbH

Otmar Bitsche, Director E-Mobility, Dr. Ing. h.c. F. Porsche AG

Günter Butschek, CEO/Managing Director, Tata Motors Ltd

Prof. Dr. Helmut Eichlseder, Head of Institute, Graz University of Technology

Nicolas Fremau, Expert for the "Hybrid Traction Energy Architecture" Sub-Domain of the "CO₂ & Vehicle Environmental Technology", RENAULT

Philippe Hamon, CTO, Valeo Siemens eAutomotive

Ralph Illenberger, Senior Manager Engine Design & Mechanics, Mercedes-AMG GmbH

Jürgen Jablonski, Director Development Fuel Cell, Audi AG

Phillip Lindsay Lake, Powertrain Director, Vinfast

Dr. Jens Ludmann, Chief Operating Officer, McLaren Automotive

Dr. Christian Martin, Product Manager Gasoline Engine Powertrain Systems Passenger Car, AVL List GmbH

Ralf Mittermayr, CEO, Saubermacher Dienstleistungs AG

Dr. Hermann Pengg-Bührlen, Head of Project Management e-fuels, Managing Director Audi e-gas Betreibergesellschaft, Audi AG



Ingo Scholten, Vice President, Geely PT
Heiko Weller, Senior Vice President, Engineering, Powertrain,
Passenger Cars, Robert Bosch GmbH
Surya Kiran Yadla, M.Sc., Team Leader – Powertrain Concepts,
FEV Europe GmbH

CHAIRMEN

Prof. Dr. Helmut Eichlseder, University of Technology Graz
Prof. Dr. Robert Fischer, AVL List GmbH
Prof. Dr. Bernhard Geringer, Austrian Society of Automotive
Engineers
Prof. Dr. Ferit Küçükay, University of Technology Braunschweig

PANEL DISCUSSION

Moderator: Ulrich Walter M.A.
Dr. Nikolai Ardey, Executive Director Group Innovation,
Volkswagen AG
Otmar Bitsche, Director E-Mobility, Dr. Ing. h.c. F. Porsche AG
Dr. Günter Fraidl, Senior Vice President Powertrain Systems
Passenger Cars, AVL List GmbH
Ralph Illenberger, Senior Manager Engine Design &
Mechanics, Mercedes-AMG GmbH
Ralf Mittermayr, CEO, Saubermacher Dienstleistungs AG

CONFERENCE PROGRAM - WEDNESDAY, MAY 27th, 2020

15:00	Welcome Reception at the AVL Test Track in Gratkorn Test Drive Start 15:00, Opening Address Start 19:00
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CONFERENCE PROGRAM - THURSDAY, MAY 28th, 2020

Conference and Session Chairman: Prof. Dr. Robert Fischer, Executive Vice President, Engineering and Technology Powertrain Systems, AVL List GmbH	
09:00 - 09:10	Welcome Address , Prof. Dr. h.c. Helmut List, Chairman and CEO, AVL List GmbH
09:10 - 09:20	Welcome , Representative of the City of Graz
09:20 - 09:30	Opening of the Conference , Hermann Schützenhöfer, Governor of the Province of Styria
09:30 - 10:00	To Bur the Footprint of Mobility – A Holistic Approach Dr. Nikolai Ardey, Executive Director Group Innovation, Volkswagen AG
10:00 - 10:30	McLaren Automotive Propulsion Engineering Trends Dr. Jens Ludmann, Chief Operating Officer, McLaren Automotive
10:30 - 11:15	Coffee Break
11:15 - 11:45	A Developing Country Transition to Low Carbon Mobility Phillip Lindsay Lake, Powertrain Director, Vinfast
11:45 - 12:15	India Mobility – A Challenge of Sustainability Günter Butschek, CEO/Managing Director, Tata Motors Ltd
12:15 - 12:45	Electrified Propulsion Strategy – Geely's Path to Zero Impact Emissions Ingo Scholten, Vice President, Geely PT
12:45(c.t.) - 14:30	Lunch

CONFERENCE PROGRAM - THURSDAY, MAY 28th, 2020

Chairman: Prof. Dr. Helmut Eichlseder, University of Technology Graz	
14:30 - 15:00	Charging Ecosystem Taycan Otmar Bitsche, Director E-Mobility, Dr. Ing. h.c. F. Porsche AG
15:00 - 15:30	M139 – The New Four-Cylinder Engine from AMG Ralph Illenberger, Senior Manager Engine Design & Mechanics, Mercedes-AMG GmbH
15:30 - 16:00	The Global Carbon Cap – A Legislation for Cost Efficient CO₂ Reduction Dr. Hermann Pengg-Bührlen, Head of Project Management e-fuels, Managing Director Audi e-gas Betreibergesellschaft, Audi AG
16:00 - 16:30	Coffee Break
16:30 - 17:00	Zero Impact ICE – A Vision? Prof. Dr. Helmut Eichlseder, Head of Institute, Graz University of Technology
17:00 - 17:30	Affordable Climate Protection / Zero Impact Emission – The ICE as a Key Element Dr. Christian Martin, Product Manager Gasoline Engine Powertrain Systems Passenger Car, AVL List GmbH
17:30 - 18:00	H₂ as Future Energy Carrier Jürgen Jablonski, Director Development Fuel Cell, Audi AG
19:30	AVL Social Evening at aiola im Schloss St. Veit

CONFERENCE PROGRAM – FRIDAY, MAY 29th, 2020

Chairman: Prof. Dr. Ferit Kügükay, University of Technology Braunschweig	
09:00 -09:30	Zero Impact Emission Vehicle Surya Kiran Yadla, M.Sc., Team Leader – Powertrain Concepts, FEV Europe GmbH
09:30 - 10:00	E-tech: How to Merge Electric Drive Feeling and Fuel Consumption! Nicolas Fremau, Expert for the “Hybrid Traction Energy Architecture” Sub-Domain of the “CO ₂ & Vehicle Environmental Technology”, Renault
10:00 - 10:45	Coffee Break
10:45 - 11:15	Synthetic Diesel Production – A Sector Coupling Approach for Decarbonizing Future Mobility Dirk F. Becker, Head of Design & Fuel Cell, AVL List GmbH
11:15 - 11:45	On the Way to Zero CO₂ Mobility Dr. Georg Bäuml, Head Environmental Product, Volkswagen AG
11:45 (c.t.) - 13:00	Lunch

CONFERENCE PROGRAM – FRIDAY, MAY 29th, 2020

Chairman: Prof. Dr. Bernhard Geringer, Austrian Society of Automotive Engineers	
13:00 - 13:30	Closing the Loop – Li-Ion Traction Batteries Recycling Ralf Mittermayr, CEO, Saubermacher Dienstleistungs AG
13:30 - 14:00	The Heart of Electric Vehicles Philippe Hamon, CTO, Valeo Siemens eAutomotive
14:00 - 14:30	Future Powertrain Mix for Passenger Cars Heiko Weller, Senior Vice President Engineering, Powertrain, Passenger Cars, Robert Bosch GmbH
14:30 - 14:45	Coffee Break

14:45 - 16:00	Panel Discussion, Moderator: Ulrich Walter M.A., Members (in alphabetical order):
	Dr. Nikolai Ardey, Executive Director Group Innovation, Volkswagen AG Otmar Bitsche, Director E-Mobility, Dr. Ing. h.c. F. Porsche AG Dr. Günter Fraidl, Senior Vice President Powertrain Systems Passenger Cars, AVL List GmbH Ralph Illenberger, Senior Manager Engine Design & Mechanics, Mercedes-AMG GmbH Ralf Mittermayr, CEO, Saubermacher Dienstleistungs AG
16:00 - 16:15	Closing Remarks Prof. Dr. Robert Fischer, Conference and Session Chairman, AVL List GmbH

EXPERIENCE GRAZ



Graz enjoys a rich history, yet is at the same time bursting with modern life. It would not be an exaggeration to describe Graz as a city of opposites: its magnificent buildings bear witness to over 850 years of architecture in the city, such as the Landhaus, also home to the Styrian Armoury and its 30,000 weapons and suits of armour, the cathedral and the mausoleum, Schloss Eggenberg and the Grazer Burg with its double-spiral staircase. These ancient edifices merge in unique harmony with state-of-the-art works by internationally renowned architects, some from the Graz School, such as for example the Kunsthaus Graz, Joanneumsviertel, MUMUTH or the greenhouses in the Botanical Gardens.

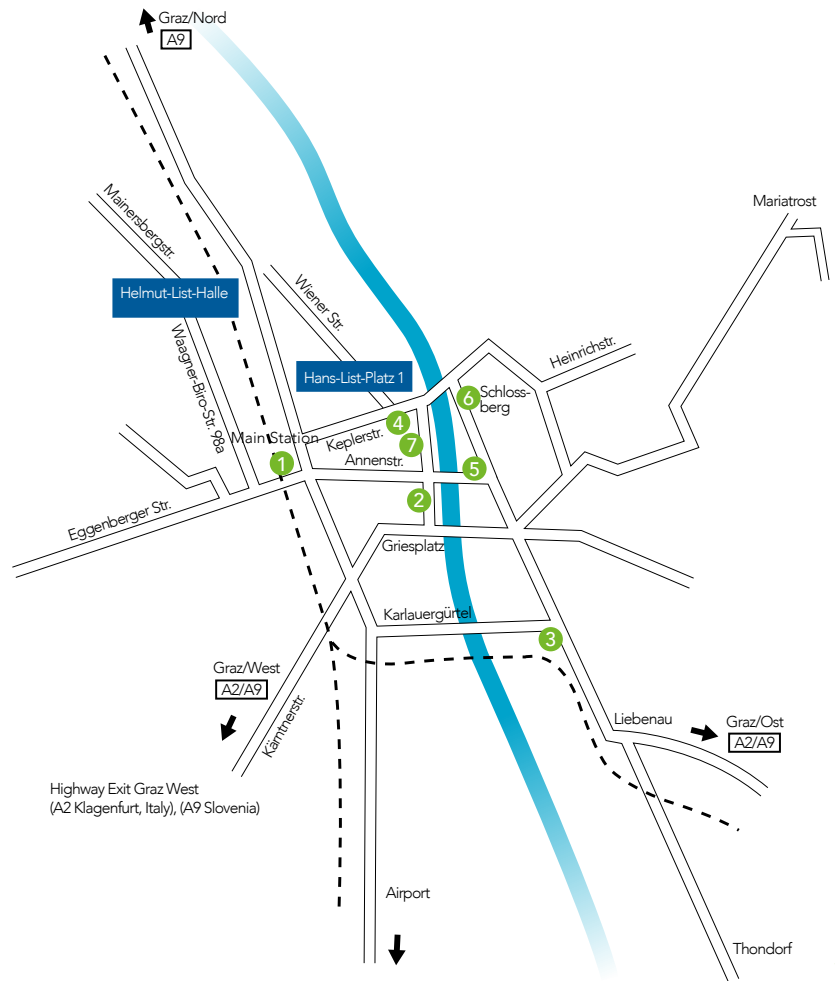
And contrasts can also be seen in areas other than the buildings: the annual styriarte festival in June is dedicated to classical music, while the steirischer herbst festival focuses on avant-garde arts.

Six universities, the biggest medieval historic city centre in Europe (a UNESCO World Heritage site), a lively cabaret and comedy scene, outstanding restaurants and bars, casino, the Grazer Messe trade fair centre and much more.

Photos: © Graz Tourismus /
from left to right: Markus
Spenger, Harry Schiffer,
Werner Krug, Harry Schiffer



Highway Exit Graz North (A9 Salzburg, Linz, Germany)



Hotel:

- 1 Hotel Daniel
- 2 Hotel Weitzer,
Hotel Wiesler
- 3 Best Western
Plus Amedia
- 4 Mercure Graz City
- 5 Palais-Hotel Erzherzog Johann
- 6 Schlossberghotel
- 7 Hotel Feichtinger

Taxi:

- Tel.: +43 (316) 28 01
- Tel.: +43 (316) 878
- Tel.: +43 (316) 889



TEST DRIVES AND WELCOME RECEPTION

WEDNESDAY, MAY 27th, 2020

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 32nd International AVL Conference "Engine & Environment".

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



SOCIAL PROGRAM

THURSDAY, MAY 28th, 2020

PARTNERS' PROGRAM

The intention of the Austrian Sculpture Park, founded in 2003, is to show contemporary Austrian sculptures with an international context as well as the mutual relationship between nature, art and people.

After visiting the sculpture park, a joint lunch is planned.

Meeting point: 10:00 Helmut-List-Halle

Expected End: Approximately 15:00

With sufficient demand: May 29th, 2020, 3-hour Graz sightseeing tour

THURSDAY, MAY 28th, 2020

SOCIAL EVENING

aiola im Schloss St. Veit

If you are looking for something special, you will find one of the most beautiful venues in the north of Graz. The 19th-century castle and attached restaurant is one of the city's most popular locations. In the half-open kitchen of the restaurant, guests can watch the chefs processing regional specialties. A special highlight are the beautiful green areas, which offer a wonderful view over the city center of Graz.

19:30 Social Evening at the aiola im Schloss St. Veit

ABOUT THE CONFERENCE

The concept of sustainability is having an increasing level of influence on our lives. A circular economy is on the advance in the foodstuff and packaging sector. The automotive industry will experience massive changes. The reduction of greenhouse gases down to zero to limit global warming and the avoidance of pollutant emissions to improve local air quality will result in significant changes to the portfolio and a widening of the viewpoint to include the total lifecycle.

Environmentally-neutral mobility and the consequent measures will require the issue of emissions to be viewed in its entirety with the simultaneous examination of the individual steps of energy generation and provision, production, in-use and finally recycling to identify specific areas of improvement.

While the USA and Japan have taken the first important step towards holistic evaluation with the consideration of CO₂ emissions during electricity generation, Europe and China will continue to legislate only for the in-use phase. This results in potential short and medium-term improvements present in all



technology paths not being optimally used and hence not able to contribute to CO₂-free mobility.

The complex interactions and interdependencies of emissions originating from vehicle production and recycling, from the generation, storage, transport and distribution of energy (well-to-tank) and the storage and conversion in a vehicle must be considered in their entirety.

The exploitation of many small steps is decisive. It begins with the efficient use of renewable energy such as wind and solar energy and its needs-based storage in electro-chemical and chemical form. Hydrogen and synthetic fuels provide relevant paths for future defossilization. These measures also include the sustainable use of raw materials, environmentally-friendly production and designing components to ensure simple recycling.

This results in a fascinating competition over the entire lifecycle with many different strategies on the road to a climate-neutral powertrain.

AVL LIST GMBH



AVL is the world's largest independent company for the development, simulation and testing of powertrain systems (hybrid, combustion engine, transmission, electric drive, batteries, fuel cell and control technology) for passenger cars, commercial vehicles, construction, large engines and their integration into the vehicle.

The company has decades of experience in the development and optimization of powertrain systems for all industries. As a global technology leader, AVL provides complete and integrated development environments, measurement and test systems as well as state-of-the-art simulation methods.

As a pioneer in the field of innovative solutions, such as diverse electrification strategies for powertrains, AVL is increasingly taking on new tasks in the field of autonomous driving, especially on the basis of subjective human sensations (driveability, connectivity, ADAS, etc.). In the competition of technologies – internal combustion engine, battery/electric drive and fuel cell – and their combinations, AVL is working intensively and with the same priorities.

AVL has digitized the vehicle development process with state-of-the-art and highly scalable IT, software and technology platforms, and creates new customer solutions in the areas of big data, artificial intelligence, simulation and embedded systems in an agile and integrated development environment.

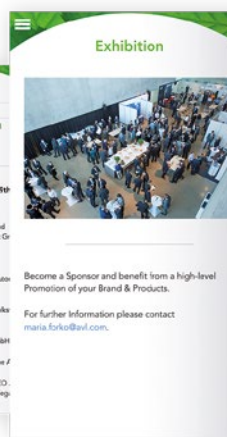
AVL founded the "Engine & Environment" conference as an independent platform in 1988 with the goal of promoting interdisciplinary discussion of the crucial questions concerning engine and vehicle technology in a broad social context including environmental and energy-related issues. At that time it was 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.

"ENGINE & ENVIRONMENT" APP THE ENTIRE CONFERENCE IN YOUR HAND

The "Engine & Environment" App keeps you up-to-date with everything to do with the conference, featuring information on speakers and presentations and the latest conference news. The app is an indispensable multimedia companion. Download the newly designed app now onto your smartphone or tablet.

Features:

- quick-and-easy registration
- overview of the speakers and topics
- agenda updates
- sharing function
- multimedia conference review



Scan the QR Code to access the "Engine and Environment" App