

Vienna Motor Symposium 2024

45th International Vienna Motor Symposium 24 – 26 April 2024

- ▶ Transition / Strategic Development
- ▶ Electric Powertrains / Electric Vehicles & Charging Innovations
- ▶ Battery Systems – Recycling
- ▶ E-Fuels / Direct Air Capture
- ▶ New PHEV & BEV Powertrains
- ▶ H2 Fuel Cell & H2 Engines for Commercial Vehicles
- ▶ Emission Reduction
- ▶ H2 Engine – New Developments & Maximum Performance Solutions
- ▶ Electric Batteries / Electric Components & Manufacturing
- ▶ New ICE – SI Engine / Hybridization
- ▶ Electric Batteries / Electric Architecture & Cooling
- ▶ LCA / TCO of the Powertrain for Passenger Cars and Commercial Vehicles

Panel Discussion

- ▶ Panel Discussion: Automotive Industry on Its Way to Autonomous Mobility

Virtual Hall

- ▶ Additional lecture videos

AVL



Reimagining Motion

**For a greener, safer,
better world of mobility.**

We are driven by a passion to examine the science, mechanics and philosophy of movement. By using all our imagination, creativity and pioneering spirit, we create a world that is climate neutral and one that makes safe, comfortable, green mobility a reality for everyone.

Some will call it a distant dream.
We call it **Reimagining Motion**.



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Dear Ladies and Gentlemen,

We are pleased to send you the programme for the 45th International Vienna Motor Symposium.

Due to the positive feedback from the previous year, in 2024 the numerous topics from science, the automotive and supplier industries will be presented again in three lecture halls in the Vienna Hofburg.

The focal points of this year's symposium continue to be climate-neutral drive solutions with a technological mix, fuel cells, hybrid and hydrogen engines and the consequences of the required turnaround for the automotive industry. The topics of sustainability, current trends in drive systems, energy sources for mobility and the automotive industry's path to autonomous mobility form further key topics.

All registered participants will receive access to the Vienna Motor Symposium Web Platform again, where the recording of the complete lecture programme will be made available after the event.

In addition, in-depth lecture videos will be available in "virtual sessions" on the Web Platform during and after the event.

The Web Platform also offers an additional function that allows you to get in touch with other participants.

The extensive lecture programme is complemented by an exhibition at which leading automotive and supplier companies present the latest technologies and developments.

We invite participants and their accompanying persons to a reception with the opening of the exhibition in the exhibition areas of the Hofburg Conference Centre Vienna on the first evening of the 3-day event.

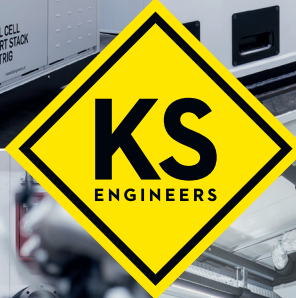
The invitation of the mayor of Vienna to the city hall provides the opportunity to end the second day of the congress comfortably.

Two exclusive half-day tours for accompanying persons will be offered to visit interesting sights in Vienna.

We look forward to your registration for the symposium and hope to welcome you personally in Vienna.

Best Regards

Univ.-Prof. Dr. Bernhard Geringer
President of the Austrian Society for Automotive Engineers (ÖVK)



TESTING THE FUTURE OF MOBILITY

Comprehensive testing equipment and system solutions for HEV, PHEV, BEV, FCEV, H2, e-FUELS, system validation and ADAS testing, all from a single source.

Vienna Motor Symposium 2024

45th International Vienna Motor Symposium 24 – 26 April 2024

GENERAL INFORMATION

Dates:

Wednesday,	24 April 2024, 18.00 – 21.00 hrs. Reception and Opening of the Exhibition
Thursday,	25 April 2024, 8.30 – 18.30 hrs. Symposium and Exhibition 25 April 2024, 20.30 hrs. "Mayor's Reception" hosted by the Mayor of Vienna
Friday,	26 April 2024, 8.00 – 17.15 hrs. Symposium and Exhibition

Congress Venue:

Conference Centre Hofburg Vienna
Heldenplatz, 1010 Vienna, Austria

Chairman:

Univ.-Prof. Dr. B. **Geringer**
President of the Austrian Society of Automotive Engineers (ÖVK)

Organizer:

Austrian Society of Automotive Engineers (ÖVK)
Elisabethstrasse 26, 1010 Vienna, Austria
Phone +43/1/585 27 41-0
<https://wiener-motorensymposium.at/en/>
info@oevk.at



To the Website

Organization of the Symposium:

The International Vienna Motor Symposium is organized by the Austrian Society of Automotive Engineers (ÖVK) and the Institute for Powertrains and Automotive Technology (IFA), Vienna University of Technology.

ORGANIZATIONAL INFORMATION

Registration:

The registration is possible online at <https://wiener-motorensymposium.at/en/>.

The General Terms and Conditions as well as the Data Protection Statement can also be found at <https://wiener-motorensymposium.at/en/>.

Registration Fee: € 2.790,-- incl. 20% VAT

Registration Fee ÖVK Membership: € 2.688,-- incl. 20% VAT

The registration fee includes the admission to the lectures, the exhibition, the web platform, the symposium documents, reception and exhibition opening, the "Mayor's Reception", lunch on Thursday and Friday, coffee during the breaks as well as bus transfer to the airport at the end of the symposium.

We will confirm receipt of the online registration immediately, but this is not the authorization to participate in the symposium.

A confirmation of registration (incl. invoice) or another information will follow in a few days.

The Motor Symposium is planned as a 3-day face-to-face event.

Payment:

The invoice must be paid within 3 weeks.

Booking and Cancellation Conditions Symposium Participation:

Changes and cancellations must be made in writing to registration@oevk.at

For cancellation after **10 March 2024**, we are obliged to request full payment of complete registration fees, as all orders will have been placed.

Lecture Duration:

20 minutes each, followed by 10 minutes' discussion

Language of Lectures:

German and English (simultaneous translation)

Conference Papers:

Lecture texts in electronic form in English language

Proceedings (in printed form) for an additional charge.

ORGANIZATIONAL INFORMATION

Web Platform:

The web platform of the symposium provides information about the lectures, the speakers and the exhibition. From the symposium onwards, the digital congress documents as well as the recordings of the face-to-face sessions and the video presentations of the virtual sessions will be available there for a limited period. Participants will receive their login data for the web platform a few days prior to the symposium.

Student Registration:

We offer Austrian and foreign students a limited number of free student places. Certain conditions must be met if you wish to participate in the symposium.

For more detailed information, please visit our website where you will find the application form:

<https://wiener-motorensymposium.at/en>

The period for submitting applications will end on **28 February 2024**.

Bus Service:

Friday, 26 April 2024, 17.30 hrs. (at the end of the symposium),
from entrance Conference Centre Hofburg to Vienna Airport (Schwechat).

Arrival at Vienna Airport approx. 18.15 hrs.

Buses will be marked "Wiener Motorensymposium".

Hotel Booking:

We have pre-reserved hotel allotments for you in hotels of various categories within walking distance of the event location. The booking of hotel rooms is based on the "first come – first serve" principle directly at the hotels. We recommend booking as early as possible. You can find detailed information about the hotels and booking on our website:

<https://wiener-motorensymposium.at/en/information/general>

Exhibition:

This top-level lecture programme is accompanied by an exhibition at which leading automotive and component companies present latest technologies and developments.

If you are interested in an exhibition space, please contact our partner company Media-Plan, Email: mp@media.co.at.

WEDNESDAY, 24 April 2024

18:00 **Reception and Opening of the Exhibition**
Registration until 21:00

THURSDAY, 25 April 2024

FESTSAAL

07:30

Registration

PLENARY OPENING SESSION

Chairman: B. **Geringer**, ÖVK

08:30

OFFICIAL OPENING

08:45

Karl **Rose**, former Chief Strategist, ADNOC, Abu Dhabi:
The Energy Transition and Its Impact on the Future of Mobility and Fuel Systems

09:05

Rebecca **Yates**, VP Advanced Lubricants Products, bp, UK:
Pathways to Net Zero for bp and Castrol

09:25

Ruiping **Wang**, CEO, Aurobay Holding, China:
Hybrid Futures

09:45

Arnd **Franz**, Chief Executive Officer, MAHLE GmbH, Stuttgart:
Opportunities and Challenges on the Way to a Hydrogen Mobility

10:05

Discussion of the lectures in this session

10:35

Coffee Break

TRANSITION / STRATEGIC DEVELOPMENT

Chairman: S. **Pischinger**, RWTH Aachen University

11:15

Quo Vadis Europe?
G. **Fraidl**, P. **Kapus**, C. **Martin**, AVL List GmbH, Graz

11:45

Different Paths and Respective Processes of Vehicle Intelligence in China and Europe
T. **Thorstensen**, EFS Unternehmensberatung GesmbH, Vienna;
K. **Ni**, HoloMatic Technology Co., Ltd., Beijing

12:15

Energy Infrastructure – a Constraint for Automotive Technology Change often Overlooked
D. **Bothe**, A. **Pfannenschmidt**, F. **Schrogl**, Frontier Economics Ltd., Cologne

12:45

Lunch at Hofburg Conference Centre

ELECTRIC POWERTRAINSChairman: L. **Eckstein**, RWTH Aachen University

14:30

PPE – The New E-Drives from AudiG. **Fröhlich**, J. **Baumann**, S. **Pint**, AUDI AG, Ingolstadt

15:00

Electric Drive Units with High Power Density and Sustainability through High Speed and Maximum EfficiencyA. **Angermaier**, M. **Deiml**, AVL Software and Functions GmbH, Regensburg;
W. **Vallant**, G. **Fuckar**, AVL List GmbH, Graz

15:30

High Flux and Compact, 800V SiC Integrated Electric Drive Module from BorgWarnerH. **Nanjundaswamy**, M. **Ishihara**, A. **Diko**, J. **Deussen**, A. **Mayer**, BorgWarner, USA

16:00

Development of a Scalable Electric Powertrain Platform for the “New Daily Electric”A. **Bernardini**, R. **Mantia**, M. **Aimo-Boot**, G. **Mantovani**, J. **Corsi**, Iveco Group, Torino;
F. **Richert**, G. **Geraci**, FEV Europe, Aachen; M. **Cianco**, FEV Italy, Torino; P. **Glusk**, FEV Consulting, Bilbao

16:30

Coffee Break**NEW ELECTRIC VEHICLES / CHARGING INNOVATIONS**Chairman: B. **Geringer**, ÖVK

17:00

The New Porsche TaycanO. **Bitsche**, C. **Hauck**, Dr. Ing. h.c. F. Porsche AG, Weissach

17:30

Tailormade Drive Systems from AUDI AG to Meet the Requirements of Mobility – Premium Platform Electric (PPE) and Premium Platform Combustion (PPC)S. **Pint**, C. **Schneider**, AUDI AG, Ingolstadt

18:00

Automated Charging of Urban eTaxi-FleetsG. **Eckhard**, Easelink GmbH, Graz

18:30

End of Programme

20:30

**“Mayor’s Reception” at the City Hall hosted by the Mayor of Vienna.
Please bring your invitation.**

BATTERY SYSTEMS – RECYCLINGChairman: L. **Eckstein**, RWTH Aachen University

08:00

From Unified Cell to Unified Battery: from Raw Material to RecyclingM. **Hollweg**, A. **Perner**, T. **Tiedje**, M. **Freese**, G. **Mendl**, Volkswagen AG, Braunschweig / Salzgitter / Wolfsburg; P. **Juris**, AUDI AG, Ingolstadt

08:30

Industrial Recycling of Electric Vehicle BatteriesA. **Ferrarese**, E. A. **Kumoto**, L. A. **Gobo**, R. **Marquard**, Tupy S.A., Joinville / Neunkirchen-Seelscheid

09:00

Nothing but Fast Charging? – Battery Swapping as a Complementary Option of Energy Supply for Electric TruckingJ. **Jöhrens**, M. **Allekotte**, F. **Heining**, ifeu - Institut für Energie- und Umweltforschung Heidelberg gGmbH, Heidelberg

09:30

Coffee Break**E-FUELS / DIRECT AIR CAPTURE**Chairman: W. **Böhme**, ÖVK

10:00

We Are Fueling our World with Renewable EnergiesT. **Herdan**, HIF EMEA GmbH, Berlin

10:30

CO₂ Negative aFuel as a Global Energy Carrier and the Solution for the Future Electrified MobilityF. **Obrist**, M. **Graz**, P. **Zanolin**, T. **Schwendinger**, Obrist Powertrain, Lustenau

11:00

Direct Air Capture – Key to Permanent CO₂ ReductionK. **Dums**, N. **Hinterberger**, C. **Scholz**, A. **Siemens**, F. **Ehrat**, Dr. Ing. h.c. F. Porsche AG, Stuttgart

11:30

Ammonia – the Key to Sustainable Energy and Transportation Systems?A. **Wimmer**, Graz University of Technology; N. **Wermuth**, LEC GmbH, Graz

12:00

Lunch at Hofburg Conference Centre

NEW PHEV & BEV POWERTRAINSChairman: C. **Beidl**, Technical University of Darmstadt

- 13:30 **Development of New Generation Plug-in Hybrid System for C-Segment SUV**
K. **Hashimoto**, Toyota Motor Corporation, Aichi
- 14:00 **A Driving Experience at a New Level – the All-New Second Generation Volkswagen Plug-In Hybrid Drive**
K. **Bennewitz**, J. **Theobald**, L. **Hentschel**, M. **Schaefer**, S. **Quentmeier**, S. **Schaefer**, T. **Krone**, I. **Möller**, Volkswagen AG, Wolfsburg
- 14:30 **Status and Prospects of Hyundai Mobis' Traction Motor for Future Mobility**
Y. **Lee**, D. **Kim**, Hyundai Mobis Co., Ltd., Seoul

15:00 **Coffee Break****PLENARY CLOSING SESSION**Chairman: H. **Eichlseder**, Graz University of Technology

- 15:30 Helmut **List**, Chairman & CEO, AVL List GmbH, Graz:
Strategic Orientation of an Engineering Company in the Global Transformation Process
- 15:50 Friedrich **Eichler**, Chief Technology Officer,
CNH Industrial Österreich GmbH, St. Valentin:
Current and Future Customized Solution for Powertrain, Ecosystem, and Precision Technology at CNH
- 16:10 Oliver **Blume**, Chairman of the Board of Management of
Volkswagen AG and Dr. Ing. h.c. F. Porsche AG:
Transforming the Volkswagen Group
- 16:30 **Discussion of the lectures in this session**
- 17:00 **CLOSING ADDRESS**

17:15 **End of Programme**17:30 **Bus Transfer** from Heldenplatz (Hofburg Conference Centre)
to Vienna Airport (Schwechat)

08:30

Plenary Opening Session at FESTSAAL

Live Broadcast at GALERIE

10:35

Coffee Break

PANEL DISCUSSION

Chairman: R. **Hudi**, Future Mobility Technologies

11:15

**AUTOMOTIVE INDUSTRY ON ITS WAY TO AUTONOMOUS MOBILITY:
MASTERING THE BIGGEST CHALLENGES IN SAFETY ARCHITECTURE,
REGULATION/LEGISLATION AND AI**

R. **Hudi**, Future Mobility Technologies, Regensburg

S. **Poledna**, TTTech Auto, Vienna

B. **Wolfers**, PSWP, Berlin

R. **Herrtwich**, NVIDIA, Berlin

12:45

Lunch at Hofburg Conference Centre

H2 FUEL CELL – COMMERCIAL VEHICLESChairman: H. **Eichlseder**, Graz University of Technology

14:30

Aging of Fuel Cell Systems for Heavy Duty Trucks – Mitigation Strategies and How to Validate Efficiently During the DevelopmentM. **Thewes**, D. **van der Put**, M. **Walters**, D. **Lückmann**, A. **Schloßhauer**, Y. **Liu**, A. **Balazs**, A. **Müller**, R. **Beykirch**, D. **Thien**, S. **Tews**, FEV Europe GmbH, Aachen; J. **Kexel**, S. **Pischinger**, RWTH Aachen University

15:00

"Design for Circularity" to Optimize Resource Efficiency of Fuel Cells for Heavy-Duty TransportA. **Engelen**, M. **Schäfer**, C. **Mohrdieck**, cellcentric GmbH & Co. KG, Kirchheim/Teck-Nabern

15:30

FCTRAC Fuel Cell Tractor: Operating Strategy for Real-Duty ScenariosC. **Varlese**, P. **Hofmann**, C. **Junger**, J. **Konrad**, R. **Krizan**, Vienna University of Technology; D. **Brunner**, AVL List GmbH, Graz; C. **Mayer**, CNH Industrial Österreich GmbH, St. Valentin; K. **Masser**, Engineering Center Steyr GmbH & Co KG, St. Valentin

16:00

Hydrogen Fuel Cell Technology – Developments for Heavy-Duty VehiclesM. **Kammerer**, Ballard Power Systems Inc., Vancouver

16:30

Coffee Break**EMISSION REDUCTION**Chairman: G. **Hohenberg**, Technical University of Darmstadt

17:00

Passenger Car Powertrains with Gasoline Engines: System Solutions for Future Exhaust Gas Emission LegislationsD. **Zovak**, F. **Meier**, A. **Hettinger**, E. **Schünemann**, Robert Bosch GmbH, Stuttgart

17:30

The Long Path of the EU7/VII Emission Legislation and Its Consequences: Influence on Exhaust Gas AftertreatmentR. **Brück**, P. **Langenfeld**, Emitec Technologies GmbH, Lohmar

18:00

Measuring a Vehicle's Real World Brake Wear Particle Emissions on Public RoadsM. **Huber**, P. **Fischer**, Graz University of Technology

18:30

End of Programme

20:30

**"Mayor's Reception" at the City Hall hosted by the Mayor of Vienna.
Please bring your invitation.**

H2 ENGINE – DEVELOPMENT & MAXIMUM PERFORMANCEChairman: A. **Kulzer**, University of Stuttgart

08:00

Le Mans 24h Hydrogen Racing Category in 2027T. **Bouvet**, ACO-Automobile Club de l'Ouest, Le Mans;
B. **Niclot**, Win Innovation, Paris

08:30

Powertrains for High Intensity Applications – 24 Hours with H2ICEJ. L. **Beduneau**, L. **Doradoux**, G. **Meissonnier**, M. **Da Graca**, Y. **Rimlinger**,
G. **Dober**, B. **Gomot**, W. F. **Piock**, PHINIA, Blois / Belvaux

09:00

Hydrogen Energy Industry and Dongfeng Hydrogen Engine Application DevelopmentS. **Zhang**, X. **Jin**, S. **Duan**, T. **Xu**, H. **Zhou**,
Dongfeng Motor Corp. Technical Center, Hubei

09:30

Coffee Break**H2 ENGINE FOR COMMERCIAL VEHICLES**Chairman: H. **Eichlseder**, Graz University of Technology

10:00

Zero Impact Engines: A Demonstration of H2-ICE Technologies for Zero-CO₂ and Near-Zero NO_x in the North American Class 8 Heavy-Duty Truck MarketT. **Briggs**, D. R. **Williams**, Southwest Research Institute, San Antonio

10:30

Westport Fuel Systems' H2 HPDI Technology Applied to the Scania CBE1 EngineS. **Shariff**, W. **Au**, D. **Mumford**, Westport Fuel Systems Canada, Vancouver;
U. **Lundqvist**, Westport Fuel Systems Sweden, Gothenburg; E. **Olofsson**,
A. **Palmkvist**, J. **Linderyd**, M. **Pelz**, Scania Powertrain Predevelopment, Södertälje

11:00

HyMot: H2 Engine Optimized for Light Commercial Vehicle Applications with Near-Zero EmissionsO. **Coureau**, Renault Group, Guyancourt; B. **Dauverchain**, J.-B. **Leroy**,
Robert Bosch France, Saint Ouen; G. **Aufranc**, Forvia, Bavans; B. **Corbières**,
Alpine, Viry-Châtillon; B. **Griffaton**, TotalEnergies, Courbevoie; N. **Perrot**,
Ecole Centrales Nantes; X. **Gautrot**, IFP Energies Nouvelles, Rueil-Malmaison;
R. **Grizivatz**, Ose Engineering, Saint-Rémy-lès-Chevreuse

11:30

The Synergy between Operating Strategy, Hydrogen Injection System and Exhaust Aftertreatment as the Key to an Attractive Hydrogen Engine ConceptA. **Kufferath**, D. **Naber**, S. **Bareiss**, G. **Cornetti**, M. **Krüger**, H. **Rösch**,
Robert Bosch GmbH, Stuttgart

12:00

Lunch at Hofburg Conference Centre

H2 ENGINE – COMBUSTION PROCESSChairman: A. **Kulzer**, University of Stuttgart

13:30

Super Dilution High Efficiency Combustion Supported by Hydrogen as the Active Pre-Chamber FuelJ. **Li**, Y. **Liu**, L. **Han**, X. **Li**, H. **Qu**, C. **Zhao**, M. **Liu**, L. **Zeng**, CHINA FAW Group Co. Ltd., Changchun; P. **Sun**, W. **Dong**, Jilin University, Changchun

14:00

The Role of Lubricant Formulation in Controlling Pre-Ignition Phenomena in a H2-ICEM. **De Feo**, C. **Chaillou**, E. **Laigle**, Aramco Fuel Research Center (AFRC), Rueil-Malmaison; G. **Lurf**, N. J. **Kunder**, AVL List GmbH, Graz; M. **Wieser**, K. **Wilfling**, M. **Schneider**, Graz University of Technology

14:30

Towards Conceptual Understanding of Pre-Ignition Mechanisms in Hydrogen-Fueled Engines – Recent Progress at Sandia National LaboratoriesA. **Srna**, T. **Lee**, R. **Rajasegar**, G. **Nyrenstedt**, Sandia National Laboratories, Livermore

15:00

Coffee Break

15:30

Plenary Closing Session at FESTSAAL

Live Broadcast at GALERIE

17:15

End of Programme

17:30

Bus Transfer from Heldenplatz (Hofburg Conference Centre) to Vienna Airport (Schwechat)

08:30

Live Broadcast
of the Plenary Opening Session

10:35

Coffee Break**ELECTRIC BATTERIES**Chairman: G. **Brasseur**, Graz University of Technology

11:15

Gamechanger Solid-State-Battery: Impact of a Breakthrough on the Powertrain Portfolio 2040F. **Duffner**, X. **Wu**, Porsche Consulting GmbH, Bietigheim-Bissingen

11:45

PowerCo SE: Ramping-Up a Global Battery Cell ChampionF. **Blome**, PowerCo SE, Salzgitter

12:15

How to Power our EVs? Latest Cathode and Anode Material Developments to Pave Way towards Sustainable and Affordable Electric VehiclesM. **Kruft**, R. **Kiessling**, Umicore AG & Co. KG, Hanau-Wolfgang;G. **Olbrechts**, Umicore SA, Brussels;G. S. **Son**, Umicore Rechargeable Battery Materials, Cheonan-city

12:45

Lunch at Hofburg Conference Centre

NEW ICE – SI ENGINE / HYBRIDIZATION

Chairman: P. Hofmann, Vienna University of Technology

14:30

Contributing to the Environment with Internal Combustion Engines towards Carbon Neutrality – Research for a New Direction of SKYACTIV Technology Cleaning the Air while you Drive

T. Yamamoto, H. Yamashita, E. Nakai, M. Hitomi, Mazda Motor Corporation, Hiroshima

15:00

The Future of the Audi R4 TFSI Engines: the EA888 in the Next Stage of Evolution

C. Brenneisen, W. Binder, E. Baum, F. Langecker, R. Budack, A. Mayer, R. Neumann, C. Kessler, AUDI AG, Ingolstadt

15:30

The New V6-Gasoline Engine by AUDI: the Next Evolutionary Step of EA839

M. A. Schober, M. Deblaize, A. J. Kerckhoff, G. Seifried, AUDI AG, Neckarsulm

16:00

Is Now the Time for Hybrid Trucks? A View of Hybrid Powertrain Options for Global Markets

S. Sagener, W. D. Lamb, Cummins, Darlington

16:30

Coffee Break**LCA / TCO OF POWERTRAIN FOR PASSENGER CARS AND COMMERCIAL VEHICLES**

Chairman: M. Bargende, University of Stuttgart

17:00

An Analysis of the Greenhouse Gas Potential of Current Powertrain Technologies

T. Stoll, H.-J. Berner, FKFS, Stuttgart; A. Casal Kulzer, University of Stuttgart

17:30

Assessment of Potential Employment and Cost Changes as the Result of Light-Duty Vehicle Electrification

M. R. Olechiv, United States Environmental Protection Agency, Ann Arbor; G. Kolwich, FEV North America, Inc, Auburn Hills

18:00

Integration Simplification and TCO Analysis of Fuel Cell Powertrains in Heavy-Duty Vehicle Applications

B. Hibberd, Ballard Motive Solutions Ltd., London

18:30

End of Programme

20:30

**“Mayor’s Reception” at the City Hall hosted by the Mayor of Vienna.
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ELECTRIC COMPONENTS & MANUFACTURINGChairman: G. **Brasseur**, Graz University of Technology

08:00

Development of the Separately Excited E-Machine Topology I²SM – Sustainable, Compact and Efficient Powertrain for Future E-VehiclesC. **Sasse**, M. **Beringer**, ZF Friedrichshafen AG, Schweinfurt

08:30

Volkswagen Group Inverter PlatformA. **Krick**, M. **Dißemond**, Volkswagen AG, Kassel

09:00

The Laser as a Core Technology in Electric Drive ManufacturingM. **Beranek**, TRUMPF Laser- und Systemtechnik GmbH, Ditzingen

09:30

Coffee Break**ELECTRIC BATTERIES / INDUCTIVE CHARGING & COOLING**Chairman: S. **Pischinger**, RWTH Aachen University

10:00

Standardized Inductive Charging to Integrate Autonomous Driving Fleets into the Energy InfrastructureC. **Lämmle**, MAHLE International GmbH, Stuttgart;T. **Würz**, S. **Perras**, Siemens AG, Munich;P. **Grabherr**, MAHLE New Mobility Solutions GmbH, Kornwestheim

10:30

Battery Performance Benefits through Immersive Thermal ManagementV. **Null**, Shell, Hamburg

11:00

Miba FLEXcooler® – the Automotive Liquid Cooling Component for Cylindrical Battery Cells in the Format 46xx: How a Cooling Component Improves Range, Performance, Safety and Carbon FootprintS. **Gaigg**, Miba Battery Systems GmbH, Bad Leonfelden;F. **Wiedrich**, F. **Pöhn**, Miba eMobility GmbH, Laakirchen

11:30

From Thermal Runaway to No Thermal PropagationM. **Sens**, A. **Fandakov**, K. **Mueller**, L. **von Roemer**, J. **Werfel**, T. **Mueller**, IAV, Berlin;T. **Burton**, K. **Srivastava**, K. **Senecal**, Convergent Science, Wisconsin

12:00

Lunch at Hofburg Conference Centre

ELECTRIC POWERTRAIN AND ELECTRIC ARCHITECTURE

Chairman: P. Hofmann, Vienna University of Technology

13:30 **Dynamic Motor Drive Software Improves the Efficiency of Electric Drives by up to 3%**

M. Younkings, P. Farah, J. Rosenzweig, Tula Technology, San Jose

14:00 **Magna Software Technology: Transferring Superior Vehicle Functions for Energy & Motion Control to the Software-Defined Vehicle**

J. Meinecke, Magna Powertrain, St. Valentin

14:30 **Comprehensive Feasibility Analysis of Battery Swapping vs. Megawatt Charging for Battery-Electric Long-Haul Trucks**

B. Satvat, P3 automotive GmbH, Stuttgart

15:00 **Coffee Break**

15:30

Live Broadcast
of the Plenary Closing Session

17:15

End of Programme

17:30

Bus Transfer from Heldenplatz (Hofburg Conference Centre)
to Vienna Airport (Schwechat)

VIRTUAL HALL

Due to the large number of interesting and high-quality submissions, we are pleased to present further videos in a virtual hall. These videos are only available online on the web platform during and after the Motor Symposium in addition to lectures in the three lecture halls in the Vienna Hofburg.

INNOVATIVE LCA ANALYSIS / CIRCULAR ECONOMY

Fleet Energy Consumption Optimization in Public Transport Applications

C. **Rathberger**, C. **Backfrieder**, Magna Powertrain - Engineering Center Steyr GmbH & Co KG, St. Valentin

Cross-Product-Generation Modularization for Value-Stable Cars in the Circular Economy

S. **Peters**, B. **Schleich**, Technical University of Darmstadt

Life Cycle Analysis of European Road Transport - Presentation of a Concept for the Overall Analysis of the Environmental Impact of Road Transport in Europe with a Focus on the Methodology Developed for the Assessment of Energy Supply

G. **Lischka**, W. **Tober**, Vienna University of Technology

INNOVATIVE ELECTRIC POWERTRAIN TECHNOLOGY

Redefining Automotive Performance through Efficiency: The Drive-Brake Unit by Continental and DeepDrive

A. **Rosen**, DeepDrive, Munich; S. **Amrioui**, Continental, Frankfurt

EXTENDED DESIGN METHODOLOGY FOR ELECTRIC POWERTRAINS

Influence of the Design of an Electric Powertrain (FCEV / BEV) on the Use of Rare Earths

S. C. **Konradt**, H. S. **Rottengruber**, Otto-von-Guericke University Magdeburg

AI-based Self-Learning Synthesis for Electrified Drives

A. **Sturm**, R. **Henze**, C. **Wolgast**, P. **Eilts**, Braunschweig University of Technology;
F. **Küçükay**, Innovationsgesellschaft Technische Universität Braunschweig mbH

INTELLIGENT THERMAL MANAGEMENT

Integrated Thermal Management System for BEV

G. Eser, G. Rösel, K. Buzziol, Vitesco Technologies, Regensburg / Schwalbach;
W. Carl-Meissner, A. Burmester, K. Strieder, Sanden International (Europe), Bad Nauheim

H2 & RE-FUEL ENGINE ENGINEERING

Bosch Engineering High Performance H2 Engine Demonstrator

S. Tafel, Bosch Engineering GmbH, Abstatt

Benefits of Supercharger Boosting on H2 ICE for Heavy Duty Applications

N. Adrisani, Eaton srl, Torino;
N. Bagal, Eaton EIIC, Pune Maharashtra

Hydrogen-Diesel Dual Direct Injection Technology for Heavy-Duty Engines

X. Liu, Y. Zhao, Q. N. Chan, S. Kook, The University of New South Wales, Sydney

Influence of Advanced Fuels on Engine Tribology – A Comprehensive Approach

H. Hick, P. Kopsch, Graz University of Technology;
M. Frauscher, A. Agocs, AC2T research GmbH, Wr. Neustadt;
M. Plettenberg, J. Gell, AVL List GmbH, Graz;
N. Schubert, M. Mayer, OMV Downstream GmbH, Schwechat

Hydrogen DI Injector – Flexible Design for High Speed Car-, Truck- and Large Engines

B. Niethammer, ITAZ GmbH, Königsfeld

FUEL CELLS & PERIPHERALS

Fuel Cell Balance of Plants – Filtration- and Separation-Systems for Fuel Cells – Challenges and Technological Approaches

N. Busch, M. Diekjakobs, A. Hilge, S. Pietschner, K. Rathinam, Hengst SE, Münster

Passive Anode Recirculation in PEM Fuel Cell Systems: Enhancing Efficiency and Performance

G. Singer, M. Aggarwal, R. Köll, P. Pertl, A. Trattner, HyCentA Research GmbH, Graz

Operation of Fuel Cell Systems in Challenging Environmental Conditions

B. Lechner, R. Schruth, Virtual Vehicle Research GmbH, Graz

EVENING PROGRAMME

Opening of the Exhibition with Reception:

Wednesday, 24 April 2024, 18.00 – 21.00 hrs., registration counter will be open.

Reception hosted by the Mayor of Vienna:

City Hall, Thursday, 25 April 2024, 20.30 hrs.

Cultural Tickets:

Tickets for a variety of evening events (concerts, musicals, theater, etc.) can be found on the following website: <https://www.Vienna.info/en/music-stage-shows>

SOCIAL PROGRAMME

While the technical programme is being presented to the participants, we offer the accompanying persons two half-day tours of interesting sights in Vienna for a surcharge. Both tours start and end at the Conference Centre Hofburg. Details can be found online at <https://wiener-motorensymposium.at/en/>.

Half-day Tour: Wine in Vienna – Winery Cobenzl

Thursday, 25 April 2024, 14.00 – approx. 18.00 hrs.

The city of Vienna is home to the only wine-growing region in the world that lies entirely within the boundaries of a large city and, thanks to its unique wine and "Heurigen" tradition, helps shape the atmosphere of the city.

After a short bus ride, we reach the Vienna Cobenzl winery in Grinzing, one of the city's wine-growing regions. The winery is one of the most important Viennese wineries and has been owned by the city of Vienna for over 110 years.

During a tour of the wine cellar and the press house, we learn interesting facts about wine production. When the weather is nice, we have the opportunity to stroll through the vineyard, learn interesting facts about wine growing and, when the weather is clear, enjoy the view over the city.

After the tour, we will enjoy tasting some of the wines produced.

The bus then takes us back to the Hofburg.

Half-day Tour: Theatre Culture in Vienna

Friday, 26 April 2024, 9.00 – approx. 12.00 hrs.

From the Hofburg we walk to our first stop on the tour, the Burgtheater.

On a tour through the traditional house we see the grand staircases with the famous ceiling murals by Franz Matsch and brothers Gustav and Ernst Klimt, the sculpture collections of famous dramatists such as G. Hauptmann, A. Schnitzler, F. Raimund and J. Nestroy, and the portrait gallery of renowned ensemble members, through to the technical side of Europe's largest theatre. We will also be taken into the auditorium, provided that there are no rehearsals or performances underway.

After visiting the theatre, our path leads through the Volksgarten and past the Parliament to the Volkstheater, which we view from the outside. Since 1889, the Volkstheater has seen itself as a stage for stories of non-aristocratic origins. The stories told in the Volkstheater came from the middle of society and have repeatedly sparked lively debates. Afterwards we return to the Hofburg via Maria-Theresien-Platz.

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¹ ID.SERVICE free of charge for 5 years from date of purchase or 100.000 km, whichever is reached soonest. Only valid with financing via Porsche Bank. Minimum term 36 months. Minimum net credit 50%. Electricity consumption 14.1-19.2 kWh/100 km. CO₂ emissions 0g/km. Symbolic pictures. 12/2023.