

The AVL logo consists of the letters 'AVL' in a bold, white, sans-serif font, positioned to the left of a stylized white icon. The icon is a circular arrangement of six teardrop-like shapes, each containing a smaller version of the same shape, creating a complex, multi-layered geometric pattern.

HIGH POWER SYSTEMS CONFERENCE 2024

Decarbonization and Sustainability:
A Paradigm Shift

PROGRAM

APRIL 17–18, 2024

Helmut List Halle
Graz, Austria

**HIGH EFFICIENCY SYSTEMS
AND POWERTRAINS**

**ENERGY LIFE
CYCLE MANAGEMENT**

**POWER-TO-X
TECHNOLOGIES**

**ALTERNATIVE FUELS
FOR NET-ZERO CO₂**

Foreword

At this event, we're not just discussing the future – we're shaping it!



PROF. HELMUT LIST
Chairman and CEO
AVL

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



PROF. DR. KANGKI LEE
Senior Vice President High Power Systems
AVL

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

Our expert-led discussions will explore high efficiency systems and powertrains, energy lifecycle management, harnessing Power-to-X technologies, and embracing, alternative fuels towards net-zero CO₂ and zero carbon fuels.

Participate in a gathering of the brightest minds in the industry, including high power system developers, OEMs, suppliers, shipowners, regulators, and more. It's a dynamic forum where these industry experts converge to exchange ideas and chart the course for a decarbonized and sustainable future.

But that's not all! Our 2024 conference kicks off with keynote speakers from renowned institutions and OEMs, who will not only share their insights but also set the stage for a lively debate on the future of high power energy systems.

Our panel discussion promises to be a highlight, featuring R&D leaders from design, build, and user sectors. Plus, we're excited to welcome prominent industry leaders, adding a global perspective to our discussions.

Use the social evenings to network with all participants.

Facts

Conference Date:

April 17–18, 2024

Conference Venue:

Helmut List Halle, Waagner-Biro-Straße 98a, Graz, Austria
Shuttle bus service to conference hotels.

Event Contact:

AVL List GmbH, Hans-List-Platz 1, 8020 Graz.
Phone: +43 316 787-927, E-Mail: event@avl.com

Ticket Prices:

- General ticket: € 1,390.- (plus 20 % VAT)
- University members: € 650.- (plus 20 % VAT)
- Students: € 150.- (plus 20 % VAT)
- Free of charge for members of the press.

Ticket price includes lunch, snacks and beverages, evening events.

Registration:

In the Helmut List Halle on Wednesday, April 17, 2024, from 08:00.

Conference Language:

English

Additional Discounts:

Group Registration and CO₂ Compensation:

Please contact us before registering to the conference.

Evening Program:

Tuesday, April 16, 2024: Welcome Reception at „The Needle“ in the Kunsthaus,
Wednesday, April 17, 2024: Social Evening at Schlossberg Restaurant Graz

Arrival:

By plane: Graz-Thalerhof
By train: Graz Main Station
By car: Free Parking

Hotel Recommendation:

AVL has blocked rooms at selected hotels and has made every effort to secure the best possible room rate for you at this event. For more information, please visit the conference website.

Core Topics of the Conference

High Efficiency Systems and Powertrains

The push for decarbonization has intensified, elevating the urgency to enhance propulsion and energy systems efficiency. Despite higher costs of alternative fuels compared to traditional options, economies of scale and production advancements may bring reductions, yet prices are likely to stay elevated. This underscores the demand for more efficient powertrains and systems. The industry is swiftly addressing these challenges with innovative materials, optimized components, hybrid solutions, and data-driven optimizations. Various approaches and initiatives aim to boost efficiency in existing assets through conversions and novel solutions for future generations.

Energy Life Cycle Management

Within the context of well-to-wake optimization, green corridor energy life cycle management focuses on leveraging the use of alternative fuels — specifically hydrogen, ammonia, and methanol (currently prominent as transitional fuels). The systems technology integrates internal combustion engines that use power-to-liquid solutions, alongside fuel cells. This approach ensures a comprehensive and sustainable energy life cycle, promoting efficient power generation and distribution across diverse sectors like shipping, power generation, rail, and mining. The goal is to enhance environmental performance while meeting the high power demands of these industries.

Power-to-X Technologies

Power-to-X (PtX) technologies revolutionize the energy landscape by converting renewable electricity into diverse energy forms, supporting multi-sector decarbonization. PtX enhances the integration of electricity, heat, and transportation for a more interconnected energy system. Challenges persist, focusing on efficiency, cost, and scalability. Progress, particularly in high-temperature electrolyzers (SOEC) and PtX plants, marks breakthroughs addressing these challenges and expanding the potential of PtX technologies. Continued advancements in electrolyzer technology and infrastructure are crucial for optimizing PtX processes and ensuring economic viability at a larger scale.

Alternative Fuels Towards Net-Zero CO₂ and Zero Carbon Fuels

In the pursuit of sustainability, alternative fuels — hydrogen, ammonia, methanol, and synthetic methane — emerge as key players in the high-power system industry's journey towards a net-zero carbon footprint. Hydrogen, a lightweight true zero-emission carrier, is pivotal for short-term applications with minimal environmental impact. Ammonia, boasting good energy density, is a promising zero-carbon fuel. Methanol's ease of handling makes it an effective energy carrier in the quest for net-zero carbon emissions. Synthetic methane, an innovative product, holds potential as an ideal fuel during the transition to a decarbonized energy landscape. These alternatives drive the industry closer to a zero-carbon future, blending innovation and responsibility for a sustainable tomorrow.

Speakers



KEYNOTE SPEAKER
CLAUS GRAUGAARD

Chief Technology Officer –
Onboard Vessel Solutions
Mærsk Mc-Kinney Møller Center
for Zero Carbon Shipping



DR.
DIRK BERGMANN

CTO
Chairman of CIMAC's
GHG Strategy Group, Accelleron



DR.
SUNG CHAN AN

Head of Engine Research Institute
HD Hyundai Heavy Industries



STAVROS CHATZIGRIGORIS

Director
Advanced Engineering Services



MARCO COPPO

CTO
OMT Officine Meccaniche
Torino SpA



DR.
MILINKO GODJEVAC

Engineering Manager
Future Proof Shipping



THOMAS S. HANSEN

Director, Head of Sales & Promotion
MAN Energy Solutions



DR.-ING.
ANDREAS KUNZ

CTO
INNIO Jenbacher GmbH & Co OG



TOMOO KUZU

Senior Executive Vice President
Mitsubishi Heavy Industries Marine
Machinery & Equipment co. Ltd.



DR.
ANDREAS LIPPERT

Vice President & GM – Electrolyzers
Accelera by Cummins



DIPAK MISTRY

Strategic Business Development
Director
Ceres Power



JÜRGEN RECHBERGER

Vice President Hydrogen & Fuel Cell
AVL List GmbH

Speakers



MARIA SEGURA

Product Manager
AVL List GmbH



JENS-OLAF STEIN

Head of Engineering
Robert Bosch AG



ERICH VOGT

CEO
DUAP AG



**DR.
MICHAEL WILLMANN**

Director Engineering
Woodward L'Orange Stuttgart



ANDREAS WIMMER

CEO and CSO LEC GmbH
Graz University of Technology



**VIP PANELIST
TORSTEN PHILIPP**

Managing Director
Geislinger GmbH

Conference Program*

*Subject to change

TUESDAY, APRIL 16, 2024

| | |
|-------|--|
| 19:00 | Welcome Reception at "The Needle" of the Kunsthaus |
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Day I WEDNESDAY, APRIL 17, 2024

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|---------------|---|
| 08:00 | Coffee and Registration |
| 08:30 – 08:45 | Chairman's Welcome and Opening of the Conference Prof. Kangki Lee, Senior Vice President High Power Systems, AVL List GmbH |
| 08:45 – 09:00 | Welcome Address, Representative of the Styrian Government |
| 09:00 – 09:20 | KEYNOTE: Title to be confirmed Claus Graugaard, Chief Technology Officer-Onboard Vessel Solutions of Maersk Mc-Kinney Møller Center for Zero Carbon Shipping |

Session 1: Decarbonization and Sustainability

| | |
|----------------------|--|
| 09:20 – 09:40 | Speaker and title to be confirmed |
| 09:40 – 10:00 | Speaker and title to be confirmed |
| 10:00 – 10:20 | Pursuing the Most Promising Pathways: The Exciting Challenge of Scaling Zero-Emissions Technologies Dr. Andreas Lippert, Vice President & GM – Electrolyzers, Accelera by Cummins |
| 10:20 – 10:40 | Live Q & A – Session 1 |
| 10:40 – 11:10 | Break |

Session 2: Technology Trends

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|----------------------|---|
| 11:10 – 11:30 | Decarbonizing Propulsion of Large Merchant Ships Thomas Storgaard Hansen, Director, Head of Sales & Promotion, Two-Stroke Marine, MAN Energy Solutions |
| 11:30 – 11:50 | World's Leading Carbon-Neutral HiMSEN Engine Development Dr. Sung Chan An, Head of Engine Research Institute, HD Hyundai Heavy Industries |
| 11:50 – 12:10 | Power Generation in a Decarbonized World – Challenges and Opportunities Dr. Ing. Andreas Kunz, CTO, INNIO Jenbacher GmbH & Co OG |
| 12:10 – 12:30 | Live Q & A – Session 2 |
| 12:30 – 14:00 | Lunch Break |

Session 3: Power-to-X and Fuel Cell

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|----------------------|---|
| 14:00 – 14:20 | Hydrogen – Dream or Reality? Jürgen Rechberger, Vice President Hydrogen & Fuel Cell, AVL List GmbH |
| 14:20 – 14:40 | The Role of Low-Temperature SOEC in the Power-To-X Market, and the Associated Business Case Dipak Mistry, Strategic Business Development Director, Ceres Power |
| 14:40 – 15:00 | Speaker and title to be confirmed |
| 15:00 – 15:20 | Live Q & A – Session 3 |
| 15:20 – 16:00 | Break |

Session 4: Operational Experience with New Technologies

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|---------------|--|
| 16:00 – 16:20 | IMO GHG Reduction Trajectory and Maritime Industry Readiness for Alternative Fuels Tomoo Kuzu, Senior Executive Vice President, Mitsubishi Heavy Industries Marine Machinery & Equipment co. Ltd. |
| 16:20 – 16:40 | Speaker and title to be confirmed |

Day I **WEDNESDAY, APRIL 17, 2024**

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|---------------|---|
| 16:40 – 17:00 | Onboard Carbon Capture – A Prerequisite for the Transition to Climate-Neutral Shipping Andreas Wimmer, CEO and CSO LEC GmbH, Graz University of Technology |
| 17:00 – 17:20 | Live Q & A – Session 4 |
| 17:20 – 17:30 | Conference Information |
| 17:30 | End of Conference Day 1 – Shuttle to Hotels |
| 19:00 | Social Evening at Schlossberg Restaurant |

Day II **THURSDAY, APRIL 18, 2024**

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| 08:30 – 08:40 | Welcome to Day 2 Prof. KangKi Lee – Senior Vice President High Power Systems, AVL List GmbH |
| Session 5: Fuel Injection Systems for Alternative Fuels | |
| 08:40 – 09:00 | PTX Injection Systems for Large Engine Applications Dr. Michael Willmann, Director Engineering, Woodward L'Orange Stuttgart |
| 09:00 - 09:20 | DI Gas- & Hydrogen Injector – Modular Design for High-speed Car, Truck and Large Bore Engines Erich Vogt, CEO, DUAP AG |
| 09:20 - 09:40 | Solutions and Challenges for the Decarbonization of Large Engines Jens-Olav Stein, Head Engineering, Robert Bosch AG |
| 09:40 - 10:00 | Experiences of Direct Injection and Combustion of Ammonia Marco Coppo, CTO, OMT Officine Meccaniche Torino SpA |
| 10:00 – 10:20 | Live Q & A – Session 5 |
| 10:20 – 11:00 | Break |

Session 6: Lifecycle Assessment - Sustainability

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|---------------|---|
| 11:00 – 11:20 | Future Solutions of ICE With Alternative Fuels Maria Segura Carrasco, Product Manager, AVL List GmbH |
| 11:20 – 11:40 | Design and Operation of MW Zero Emission Ship Installations Dr. Milinko Godjevac, Engineering Manager, Future Proof Shipping |
| 11:40 – 12:00 | Live Q & A – Session 6 |

12:00 – 13:30 **Lunch Break**

Session 7: Green Corridor and Live Panel Discussion

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|---------------|---|
| 13:30 – 13:50 | De-fossilization of Ocean-Going Vessels Dr. Dirk Bergmann, CTO, Chairman of CIMAC's GHG Strategy Group, Accelleron |
| 13:50 – 14:10 | Energy-Efficient Ship Design Stavros Chatzigrigoris, Managing Director, Advanced Engineering Services |
| 14:10 – 14:30 | Catalysing the Transition to Net-Zero Carbon Shipping Dr. Eng Kiong Koh, Director, Research & Projects, Global Center for Maritime Decarbonization |
| 14:30 – 15:30 | VIP Panel Discussion & Impulse Speech (panelists to be confirmed) Moderator: Ulrich Walter |
| 15:30 – 15:45 | Closing Remarks Prof. Kangki Lee, Senior Vice President High Power Systems, AVL List GmbH |

AVL High Power Systems

Over the last 75 years, AVL has engineered and redesigned around 150 large engines for major applications, such as ships, power plants, oil field services, locomotives, and off-road machinery.

AVL has the most experienced independent engineering team with a wide range of development expertise. This enables AVL to completely design new large engines, hybridized propulsion system and fuel cell applications, from a first draft to the finished product. Advanced simulation tools, efficient engineering methods and innovative technologies pave the way to higher system efficiency and product quality.

AVL's engineering expertise in the field of powertrain integration results in efficient and comprehensive solutions for optimizing the entire performance, taking into consideration all potential challenges. Based on extensive R&D, AVL is at the forefront of combustion engine technology and power systems design.



AVL's strive towards decarbonization technologies includes engineering solutions for maximum fuel flexibility as well as fuel cell development for different applications. Nevertheless, the marine industry consistently moves towards digitalization.

This is why AVL provides tools and engineering solutions to enable fast-forward transition towards digitalization.

Media Partners:



FURTHER INFORMATION AND REGISTRATION:

www.avl.com/high-power-systems-conference

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