

INNOVATIONS. MEET. SYNERGIES.

Conference Program

# 7<sup>th</sup> AVL Large Engines TechDays

19<sup>th</sup> - 20<sup>th</sup> April, 2016, Helmut-List-Halle, Graz, Austria

## FOREWORD



The AVL Large Engine TechDays were first held in 2004. Since then this conference has established itself as a major event on the agendas of the worldwide industry engaged with large engines, their applications and systems. We will welcome again leading industry representatives, technical experts and opinion makers from engine manufacturers, users, regulatory organizations, suppliers and universities to this event in Graz. For all of them the AVL Large Engine TechDays became a valuable biannual meeting place, enabling a good overview of current industry topics by exchanging information on technical solutions and the respective impact on the environment and the economics. In addition, the networking opportunities during the conference are appreciated by the participants.

As always, the conference will address a high priority topic of the large engine industry. This year it will be 'System Integration

– Way to CO<sub>2</sub> Reduction and Performance Optimization'.

During the last years, many efforts were made to improve engine economics, efficiency and emissions using new technologies, sophisticated engine control and monitoring systems, applying gaseous fuels instead of the standard liquid ones. Further optimization potential exists in the environment the engines are installed in. A detailed holistic analysis of the complete system allows a perfect layout, interaction and matching of all system components. This requires a close cooperation between the engine manufacturers, component suppliers, system integrators and regulatory organizations. The users as final customers have to define their system requirements in a detailed manner as layout boundaries. These will differ according to the large variety and complexity of the large engines applications, therefore such a flexible system layout is the goal.

Therefore we selected 'System Integration – Way to CO<sub>2</sub> Reduction and Performance Optimization' to be the guiding topic for this year's TechDays.

As in previous years, the organizers of this year's Large Engine TechDays set up an interesting conference program. The key notes of well-established industry leaders illustrate their view on trends and challenges of system integration in the large engine world and will be followed by a broad spectrum of presentations from industry experts highlighting various aspects of the main conference topics as optimization potentials on emissions and efficiency, safety and reliability. The two conference days will be closed with the traditional panel discussion, engaging the audience in a lively dialogue with the panelists.

Beside the comprehensive information given by the presenters and the networking opportunities during the breaks you can enjoy the beautiful atmosphere and treats in the historic city of Graz and the province of Styria, the 'Green Heart' of Austria.

We are very much looking forward to welcoming and hosting you in Graz.

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

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

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

Andrei Ludu  
Deputy Vice President Large Engines

## GENERAL INFORMATION



**Conference Office:** AVL List GmbH, Hans-List-Platz 1,  
8020 Graz, Phone: +43 316 787-927, Fax: +43 316 231123-4490,  
E-Mail: event@avl.com

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

**Registration:** In the Helmut-List-Halle on Tuesday, April 19<sup>th</sup>,  
2016 from 07:30 a.m.

**Conference Fee:** € 1,150.- excl. VAT  
Fee includes lunches, snacks, evening program, proceedings.

**Conference Language:** English

**Presentations:** Presentations will be available on a USB stick

**Hotel Reservation:** Please use the enclosed registration form

**Evening Program:** Welcome Reception on April 18<sup>th</sup>, 2016  
at the Orangerie, Hofgasse 15, 8010 Graz.  
Social Evening on April 19<sup>th</sup>, 2016 at the "Seifenfabrik",  
Angergasse 41, 8010 Graz

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

## CONFERENCE PROGRAM - MONDAY, APRIL 18<sup>TH</sup>, 2016

07:00 p.m. Welcome Cocktail at the Orangerie

## CONFERENCE PROGRAM - TUESDAY, APRIL 19<sup>TH</sup>, 2016

Chairman: Ulrich Walter

08:30-08:45 a.m. **Opening of the conference**  
Andrei Ludu, Deputy Vice President Large Engines, AVL List GmbH

08:45-09:00 a.m. **Welcome Address**, Siegfried Nagl, Mayor of the City of Graz

09:00-09:30 a.m. **KEYNOTE: System Integration - Opportunities and Challenges**  
Ulrich Dohle, Chairman & CEO, Rolls-Royce Power Systems AG

09:30-10:00 a.m. **KEYNOTE: Data Analysis through ClassNK Data Center**  
Yasushi Nakamura, Executive Vice President and Representative Director, ClassNK

10:00-10:30 a.m. **KEYNOTE: Marine Propulsion System Integration**  
Christian Poensgen, SVP Engineering 4-Stroke, MAN Diesel & Turbo

10:30-11:15 a.m. **Coffee Break**

11:15-11:45 a.m. **Thermal Power Plant Requirements in the Energy System of the Future**  
Emmanouil Kakaras, President, European Power Plant Suppliers Association

11:45-12:15 p.m. **Conception of the Main and Auxiliary Components of a Large Container Vessel Supplied with LNG as Fuel**  
Christoph Gessner, Managing Director, Hamburg Süd - Columbus Shipmanagement GmbH  
Hannah Steinbach, Technical Superintendent, Columbus Shipmanagement GmbH

12:15-01:45 p.m. **Lunch**

## CONFERENCE PROGRAM - TUESDAY, APRIL 19<sup>TH</sup>, 2016

Chairman: Ulrich Walter

01:45-02:15 p.m.	<b>The Hybrid Tugboat System which can reduce 20% of Fuel Consumption</b> Takuro Hatamoto, System Design, Marine Engineering Group, Engineering & Technology Center, Niigata Power Systems Co., Ltd.
02:15-02:45 p.m.	<b>Integration of a High Pressure (pre-turbo) SCR to a Large Marine 2-Stroke Engine</b> Thomas F. Werner, Tier III Programme Manager, Winterthur Gas & Diesel Ltd., Switzerland
02:45-03:30 p.m.	<b>Coffee Break</b>
03:30-04:00 p.m.	<b>Delivering Best Value through Full System Integration of Engine and Aftertreatment</b> Michael Fischer, Lead Engineer, Research & Applied Science, Legislation Affairs; Ginette Anderson, Manager LE/Sales & Marketing, Clean Air USA; Jay Kedia, Director LE/Sales & Marketing, Clean Air USA; Mark Sommerfeld, Director Engineering, Clean Air USA, TENNECO GmbH
04:00-04:30 p.m.	<b>Implementation of the LNG-Hybrid Barge in Hamburg and Experiences during the First Operating Year</b> Christian Becker, Key Account Manager LNG-Hybrid, Becker Marine Systems GmbH & Co. KG
04:30-05:00 p.m.	<b>N.N.</b>
07:30 p.m.	<b>Social Evening at the "Seifenfabrik"</b>

## CONFERENCE PROGRAM - WEDNESDAY, APRIL 20<sup>TH</sup>, 2016

Chairman: Ulrich Walter

08:30-09:00 a.m.	<b>Integrated Engine Plant Simulation for Ships with CRUISE M</b> Soren Hansen, Assistant Director Vessel Performance, American Bureau of Shipping
09:00-09:30 a.m.	<b>Engine Technologies to enable Digitalization and System Integration in Marine and Energy Solutions</b> Illari Kallio, Vice President, R&D Engines, Wärtsilä
09:30-10:15 a.m.	<b>Coffee Break</b>
10:15-10:45 a.m.	<b>System Integration - Opportunities and Challenges for Large High Speed and Medium Speed Engines</b> Frank Starke, Global Product Manager Medium Speed Engines, Caterpillar Motoren GmbH & Co. KG
10:45-11:15 a.m.	<b>Big Machines and Big Data: Optimizing the Customer Value of GE's Reciprocating Engines</b> Andreas M. Lippert, General Manager Engineering, GE Power & Water, Jenbach
11:15-11:45 a.m.	<b>Virtual System Integration</b> Robert Strasser, Lead Engineer Real Time & System Simulation Development Large Engines, AVL List GmbH
11:45-01:15 p.m.	<b>Lunch</b>
01:15-01:45 p.m.	<b>Tier4 Locomotive Engine/System Optimization</b> Paul L. Flynn, Chief Consulting Engineer, GE Transportation
01:45-02:15 p.m.	<b>Increasing the Value of Analysis and Testing</b> Caner Demirdogen, Director, Global HHP Design, Analysis, Product Assessment Leader, Cummins Inc.
02:15-02:45 p.m.	<b>The LE tailored MD1 ECU from Bosch for Diesel, Gas and Dual Fuel Engines</b> Anton Brandstätter, Platform Project Leader; Martin Bernhaupt, Manager System Development; Oliver Fautz, Manager ECU Development; Gerald Rehbichler, Manager ECU Development, Robert Bosch AG
02:45-03:45 p.m.	<b>Panel Discussion</b> Moderator Ulrich Walter
03:45-04:00 p.m.	<b>Closing Remarks</b> Andrei Ludu, Deputy Vice President Large Engines, AVL List GmbH

## ABOUT AVL



AVL is the world's largest independent company specializing in the design and development of powertrain systems (engines, transmissions, electric motors, batteries, control systems) for passenger cars, commercial vehicles and industrial applications, as well as powertrain test instrumentation and test systems. The activities of the Powertrain Engineering Division comprise all functions from concept definition through to production development. Supported by comprehensive in-house research, AVL's engineering specialists design and develop powertrains of all types and sizes for a worldwide clientele and carry out application-specific system integration to achieve optimum solutions. All of AVL's software and methodology development capabilities for engine and powertrain

simulation are concentrated in its "software house", Advanced Simulation Technologies. Software tools designed by AVL represent state-of-the-art technology based on years of experience in engine and drivetrain development. These tools are used not only in-house, but also by leading engine and vehicle manufacturers worldwide.

AVL provides its customers with instrumentation technology and test systems for the entire product development process right up to mass production. AVL is a manufacturer and system integrator of complete test bed systems, delivering technologically superior tools for specific tasks, which can be individually adapted to meet the needs of different groups of users.

## AVL LARGE ENGINES



Over the last 60 years, AVL has engineered around 100 large engines for all major applications, such as ships, power plants, locomotives and compressors. Worldwide, AVL has the most experienced independent engineering team in the industry with a wide range of development expertise. This enables AVL to design completely new large engines, from the first sketch to the finished product. Advanced simulation, efficient engineering methods and innovative technologies pave the way to higher product efficiency and quality.

AVL's global engineering expertise in the field of powertrain integration results in efficient and comprehensive solutions for optimizing the entire performance – under consideration

of the boundary conditions of the customer. It is about taking into consideration the engine and the additional application-specific systems of conventional and electrified systems while anticipating the challenges of less emissions and cost.

On the single-cylinder research test bed at the Large Engines Competence Center in Graz emission and fuel consumption technologies for the year 2016 and beyond are already being studied by AVL. Furthermore, AVL continuously proves its innovator role with regard to complex environments thanks to new applications and methodologies.



## WELCOME TO 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.

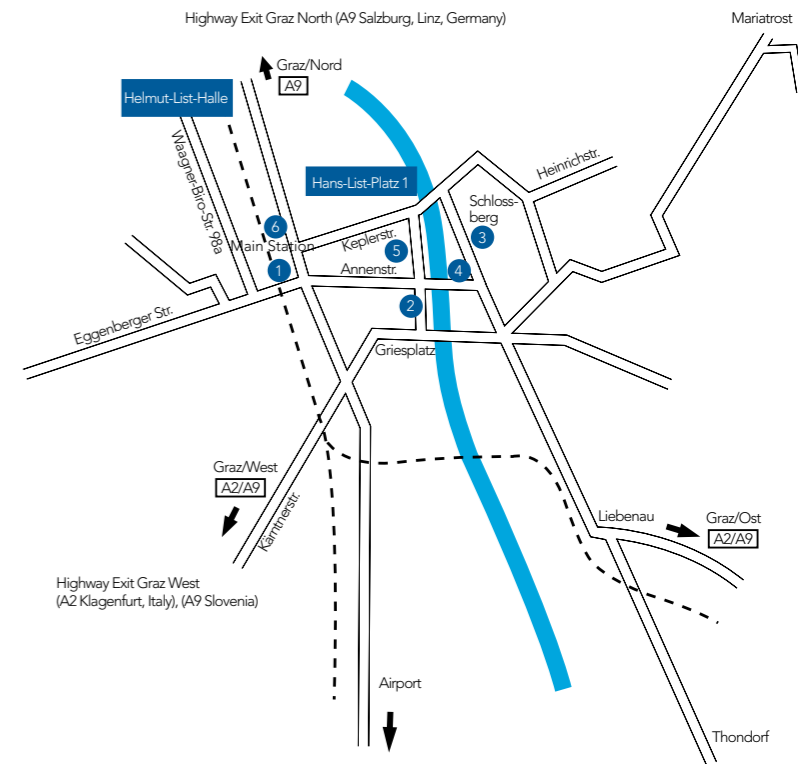
### Hotel:

- 1 Hotel Daniel
- 2 Hotel Das Weitzer
- Hotel Wiesler
- 3 Schlossberghotel
- 4 Hotel Erzherzog Johann
- 5 Hotel Mercure Graz City
- 6 Hotel Ibis Graz

### Taxi:

- Phone: +43 316 28 01  
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