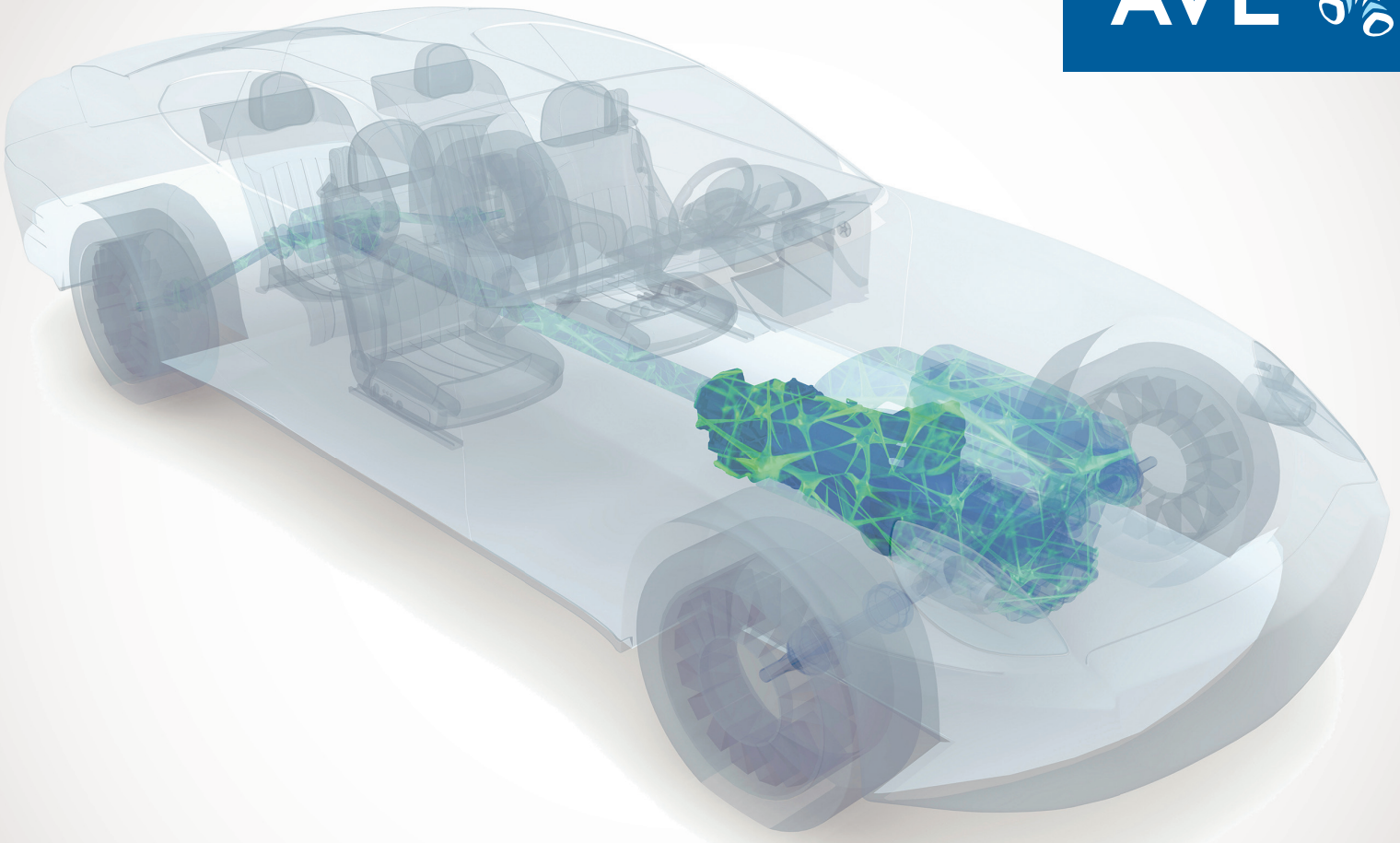

CONNECT. EXPERIENCE. SOLVE.

AVL Advanced Simulation Technologies International User Conference 2015

June 23-25, 2015, Messe Congress Graz, Austria

FOREWORD

We are living in a time where the role of simulation evolves from supporting the design process to addressing all stages of the development process by Model Based Development solutions.

This extension of the "simulation workspace" requires additional capabilities of the simulation models as well as of the simulation environments and raises the need for new consistent integration platforms containing simulation models for design optimization and system simulation models for function development and calibration work. To realize "frontloading" the system simulation models must operate in the office as well as on real time platforms for experimental testing. As the whole vehicle - together with driver, environment and traffic conditions - is strongly influencing CO2 emissions, a large variety of different physical phenomena has to be considered. As a consequence, we have to apply a multitude of different simulation solutions, each selected to be the best suited for the targeted application at a particular development task and development progress.

For mastering these challenges AVL has developed the "AVL Integrated and Open Development Platform" (IODP). The IODP brings together virtual and real development solutions enabling both the connected simulation employing multi-disciplinary simulation software solutions as well as connecting software and hardware components for function and calibration development. With Model.CONNECTTM AVL announces the first product of the IODP platform which covers different development environments (office, HiL and testbeds). Model.CONNECTTM is the basis for enabling Model-Based Development in a consistent way along the development process.

With this extended scope the AVL AST International User Conference now covers both the design optimization as well as the function development and calibration tasks. The event brings together simulation experts with powertrain specialists sharing their expertise and best practices and discussing challenges of the future simulation solutions.
Two days of the conference are dedicated to user presentations outlining the role of simulation in the virtual and physical experiments along the powertrain development process. The third day is dedicated to seminars where new applications and workflows are presented and discussed.
The enclosed Expo shows solutions offered by partners of AVL and AVL´s solutions based on the latest simulation software developments.

We welcome you in Graz and wish you a lot of good information, discussion and fun.

Dr. Gotthard Ph. Rainer
Vice President
Advanced Simulation Technologies

GENERAL INFORMATION

Conference Office

AVL List GmbH
Hans-List-Platz, 8020 Graz
Phone: +43 (316) 787-1222
e-mail: ast-uc2015@avl.com

Conference Office @ MCG:
Tuesday & Wednesday:
08:00 -18:00
Thursday: 08:00-15:30

Conference Venue

Messe Congress Graz (MCG)
Messeplatz 1, 8010 Graz
Phone: +43 (316) 8088-0
E-mail: office@mcg.at

Registration

starting from Tuesday, June 23, 07:30

Conference Fee

Regular:
590 EUR,- (excl. tax)

Faculty members of universities:
200 EUR,- (excl. tax)

Authors:
free of charge

Co-authors:
290 EUR,- (excl. tax)

Wi-Fi

Free Wi-Fi tickets are available at the conference office at Messe Congress.

Proceedings

The abstracts will be distributed on a USB-Stick upon registration on June 23.
After the conference a link to the online proceedings will be shared with all conference attendees.

Conference Language

English
no simultaneous translation

Evening Program

Welcome Reception:
Monday, June 22, 19:30
at „Freiblick" by Eckstein,
Rooftop at Kastner & Öhler
via Badgasse, 8010 Graz

Barbecue Evening:
Tuesday, June 23, 19:00
at the „Soap Factory"
Angergasse 41, 8010 Graz

Public Transport / Parking

We kindly ask you to use public transportation.
Tram stops on lines 4 and 5:
Jakominigürtel/ Messe or Stadthalle.

In the conference office, you will receive a 3-day-ticket for public transportation in Graz for free.

Parking:
An underground car park is available for a fee (access via Fröhlichgasse)

CONFERENCE AGENDA

Tuesday, June 23, 2015

Room 12

Keynote Session

08:30	**Welcome Address** H. List, Chairman and CEO, AVL List GmbH
08:45	**Powertrain Simulation - From Design Optimization to Model Based Development** G. Rainer, Vice President, Advanced Simulation Technologies, AVL List GmbH
09:15	**Porsche Intelligent Virtual Development Process** C. Gümbel, Director Virtual Vehicle, Porsche AG
09:45	**Coffee Break**
10:15	**Application without Simulation is Improvization** E. Martini, Executive Director Application, Continental Automotive GmbH
10:45	**Simulation in Large Engine Development, Challenges and Trends** H. Tienhaara, General Manager, Analysis, Ship Power 4-stroke, Wärtsilä Finland Oy
11:15	**Connecting Elements are Leading to Development Efficiency - AVL IODP** W. Puntigam, Head of Integrated and Open Development Platform, AVL List GmbH

Exhibitor Presentations

	Room12	Room 11	Room 10
11:50	**Dassault Systemes**	**Rescale Inc.**	**Mechanical Simulation Corporation**
12:00	**Altair Engineering**	**CPU 24/7**	**Atos IT Solutions and Services**
12:10		**NOESIS Solutions**	
12:20	**Lunch**		

Tuesday, June 23, 2015

Structure Dynamics - Room 12

13:15 **Session Key Note**
Using AVL EXCITE for Engine Design
M. Ejakov, Ford Motor Company

Bearing Analysis

13:45 **Influence of Shell Contour, Journal Shape, Bearing Clearance and Oil Viscosity on Conrod Big End Bearing Results**
G. Pichler, SinusPro GmbH

14:05 **Effect of Elastic Deformation of Materials with Low Stiffness on Pressure Build-Up with Surface Contact Layer**
S. Wolking, G. Burghardt, RWTH Aachen University

14:25 **Simulation of an Axial Thrust Bearing in a Heavy Duty Diesel Engine Valvetrain Using the AXHD Joint in AVL EXCITE Power Unit**
A. Spencer, H. Herbst, Scania CV AB

14:45 **Coffee Break**

Cranktrain Strength and Durability

15:10 **Method of Cranktrain Optimization in AVL Simulation Process**
C. Priestner, T. Ovari, M. Brunner, F. Zieher, AVL List GmbH

15:30 **Cranktrain System Assessment of Ecotorq 12.7 Litre Diesel Engine**
O. Deliktas, M. S. Tabak, Ford Otosan

15:50 **Introduction of AVL EXCITE into Cummins Standard Analysis Process**
I. Piraner, D. Liu, Cummins Inc.

16:10 **Using OptiStruct with AVL EXCITE**
H. Thomas, Altair Engineering, Inc.

16:30 **Coffee Break**

Valve Train and Timing Drive

16:50 **Vibration Analysis Workflow for Different Large Engine Applications**
N. Naranca, AVL-AST d.o.o.

17:10 **Flexible Multi-body Dynamic Modeling of an Entire PSA I4 Cylinder Diesel Engine**
H. Krichene, Alter Solutions for PSA Peugeot Citroën

17:30 **Methodology for Camshaft Bearing Failure Investigation of an Automotive Valve Train System**
S. Bukovnik, G. Kreuzwirth, AVL List GmbH, H. Jansson, Volvo Car Corporation

Tuesday, June 23, 2015

Engine Fluid Dynamics - Room 11

13:15 **Session Key Note**
The Role of CFD in Virtual Engine Development
W. Bauer, H. Albert, M. Tilinski, D. Zülow, E. Trapel, MAN Truck&Bus AG

Diesel Engine Development

13:45 **Pollutant Emission Optimization for Diesel Engines**
M. Chauvy, O. Davodet, PSA Peugeot Citroën

14:05 **Thermodynamic Analysis with Various Compression Ratios in Direct Injection Diesel Engines**
L. Passilly, O.Kastner, Continental Automotive GmbH

14:25 **3D CFD Simulation of Oil and Gas Flow Across a 2-piece Piston Oil Control Ring**
M. Carlsson, D. Konstanzer, H. Herbst, Scania CV AB

14:45 **Coffee Break**

Diesel Engine Development

15:10 **Engine Configurator Based on AVL BOOST and CAMEO**
H. M. Koegeler, J. Wolkerstorfer, AVL List GmbH

15:30 **Modeling of the Air Fuel Mixing and Flame Lift-off of a Diesel Spray**
E. Celik, Continental Automotive GmbH

15:50 **Modeling of Diesel Spray from Multi-hole Nozzle under Off-Axis Needle Displacement**
F. Palmieri, G. Chiatti, O. Chiavola, Roma Tre University

16:10 **1D / 3D Coupling Simulations for EGR Distribution in the Cylinder**
J. Houstin, Alten, O.Davodet, PSA Peugeot Citroën

16:30 **Coffee Break**

Electrification / Simulation Platform

16:50 **Method for Predicting Li-Ion Cell Reactions due to Mechanical Crash Loads**
S.F. Heindl, C. Breitfuss, C. Ellersdorfer, F. Feist, W. Sinz, Technical University Graz

17:10 **Numerical and Experimental Investigation of the Flow Distributions in Fuel Cell Stack Manifolds**
L. Feierabend, S. Burgmann, M. E. Kinaci, ZBT, F. Schmieder, L. Büttner, J. Czarske, Technical University Dresden

17:30 **The Development of JMC Engine Simulation Platform and its Applications**
X. Zeng, Jiangling Motor Company (JMC)

System Simulation - Room 10

13:15 **Session Key Note**
Implementing AVL CRUISE in the DAF Trucks Development Chain
M. J. A. Taken, B. A. M. Lipsch, H. J. M. Voets, DAF Trucks NV

Commercial Vehicles

13:45 **Use of AVL CRUISE Simulation Tool as Virtual Test Bed for Deriving Energy Consumption Function for Different LCV Vehicle Type (Diesel, EV, PHEV)**
G. Magra, CNH Industrial, E. Morello, Iveco S.p.A.

14:05 **Predicting Istanbul Metrobus Line Fuel Consumption By Using AVL CRUISE and Ipg Truck Maker Co Simulation**
O. Özener, M. Özkan, E. Orak, Yildiz Technical University Istanbul, E. Kural, L. Allouchery, AVL List GmbH, G. Acarbulut, IETT

14:25 **Complete Vehicle Modeling and Simulation of a Long Haul Truck with Electrified Auxiliaries in the CONVENIENT Project**
E. Jonsson Holm, O. Lindgärde, Volvo GTT, H. Ofner, AVL List GmbH, L. Feng, KTH

14:45 **Coffee Break**

Fuel Efficiency

15:10 **Practical and Consistent Model-Based Development using MoBEO in AVL CRUISE M**
M. Schüssler, M. Kordon, AVL List GmbH

15:30 **Development of Simulation Models with Modern Electrical Systems**
G. Triantafyllopoulos, A. Kontses, A. Dimaratos, D. Tsokolis, Z. Toumasatos, N. Pastramas, L. Ntziachristos Z. Samaras Aristotle University of Thessaloniki

15:50 **Balancing CO_2 and Driving Pleasure in the Concept Phase**
M. Oswald, S. Kellner, AVL List GmbH

16:10 **Powertrain Connectivity for Energy Efficient Driving**
D. Hübleitner, AVL Software and Functions GmbH

16:30 **Coffee Break**

New Applications

16:50 **Creation of VTMS Model of a Passenger Vehicle and its Application**
C. Zhiqiang, Z. Gonghui, L. Yuebing, Y. Dong, Y. Yisu, W. Xiaobi, W. Wimin, Dongfeng Motor Corporation Technical Center

17:10 **Friction Clutch Thermal and Performance Analysis on 1D Vehicle Simulation Platform**
E. Penazzi, S. Carletta, FCA Fiat Chrysler Automobiles, D. Di Rocco, E. Vitaliani, AVL List GmbH

17:30 **A Computationally Efficient Hybrid 3D Analytic-Numerical Approach for System Level Modelling of PEM Fuel Cells**
G. Tavcar, T. Katrasnik, University of Lubljana

Tuesday, June 23, 2015

18:20 Transfer 1 to Social Evening
18:40 Transfer 2 to Social Evening
19:00 Social Evening

Social Evening

Barbecue at the „Soap Factory" Graz

The AVL AST International User Conference is all about making smart connections – both in the use of our products and in getting to know colleagues from the field.

We invite you to continue networking in the casual atmosphere of our BBQ event.

Seifenfabrik, Angergasse 41, 8010 Graz

Wednesday, June 24, 2015

Room 12

Keynote Session

08:30 **Energy Management Development based on the Entire Vehicle Simulation Model**
H. Tokuda, Technical Advisor, DENSO Corporation, Chairman, DENSO Europe International, President of NIPPON SOKEN Inc.

09:00 **Engine Simulation at BMW: Past, Present and Future**
D. Linse, CAE Engineer,
BMW Group

09:30 **Calibration 4.0? – Paradigm Change due to New Model Based Development Methods**
B. Schick, Global Business Unit Manager, Calibration & Virtual Testing Solutions, Instrumentation and Test Systems, AVL List GmbH

10:00 **Coffee Break**

Structure Dynamics - Room 12

Transmission / Driveline

10:30 **A Study on Transmission Radiation Noise Reduction using AVL EXCITE**
C. Togashi, N. Hariu, Y. Akiyama, I. Terada, Isuzu LTD.

10:50 **Gear Whine Investigation for a Manual Tractor Transmission**
S. Meleti, CNH Industrial, C. Schweiger, AVL List GmbH

11:10 **Computational Establishment of the Transmission Noise and Vibration**
M. Zubík, A. Prokop, K. Rehák, M. Janoušek, P. Novotný,
Brno University of Technology

11:30 **I4 Gasoline Power Unit Vibration Comparison, Using Manual versus Automatic Transmission**
H. Johannesson, Volvo Car Corporation

11:50 **Grid-loss?... Take it Easy**
M. Janic, SET Sustainable Energy Technologies GmbH

12:10 **Lunch**

Wednesday, June 24, 2015

Structure Dynamics - Room 12

Engine NVH

13:10 **Durability , Noise and Friction Evaluation on a Four Cylinder Engine with a Gear Driven Balancing Unit**
G. Lamonaca, FCA Italy S.p.A., G. Spanu, C. Sessarego, C.R.F. S.C.p.A, B.Klarin, AVL

13:30 **Assessment and Optimization of Heavy Duty Engine Geartrain NVH and Dynamic by Using AVL Excite Timing Drive**
O. Subasi , M. S. Tabak, Ford Otosan

13:50 **Virtual Prototyping of a Turbocharged V6 Engine Powertrain in AVL EXCITE Power Unit**
M. Cavalli, G. Lavacchielli, TP Engineering; E. Riva, G. Nicoletto, Università degli Studi di Parma

Front End Accessory Drive

14:10 **Investigation of FEAD System with OAD/OAP**
X. Ouyang, Jianling Motor Company (JMC)

14:30 **Coffee Break**

Bearing Analysis

15:00 **Creep Deformation in Journal Bearings under Constant Load: Influences and Effects**
C. Sous, G. Burghardt, RWTH Aachen University

15:20 **Evaluation of a Rod Bearing with Respect to Oil Supply Limits**
D. Schliemann, D. Wieczorek, W.Krebs, GM Powertrain Engineering

15:40 **Main Bearing Performance Investigation of Sprayed versus Non-sprayed Main Bearing Inserts**
S. Larzenius, Volvo Car Corporation

16:00 **End of Speeches**
16:20 **Best Paper Award and Farewell**

Wednesday, June 24, 2015

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Keynote Session

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10:00 **Coffee Break**

Engine Fluid Dynamics - Room 11 A

Parallel Session

Diesel Engine Development

10:30 **Optimized Charge Air Cooling for Diesel Passenger Cars with Respect to Upcoming CO_2-Limitations and RDE-Use-Cases**
C. Doppler, Virtual Vehicle Research Center, G. Hirschl, AVL List GmbH, G. Zsiga, MAHLE Behr GmbH

10:50 **Modification of Intake Port Shape for Increasing of Effective Parameters of Middle-Speed Diesel Engine**
A. A. Zelentcov, R.Z. Kavtaradze, Bauman Moscow State Technical University

11:10 **A Multi-Site Kinetic Model for NH3-SCR over Cu/SSZ-13**
K. Leistner, L. Olsson, K. Wijayanti, Chalmers University of Technology, A. Kumar, S. Y. Joshi, K. Kamasamudram, N.W. Currier, A. Yezerets, Cummins Inc.

11:30 **Efficient Use of Detailed Chemistry in AVL FIRE® with FGM**
F. Tap, D. Goryntsev, A. Starikov, Dacolt International BV

11:50 **Engine Emission and Performance Optimization with Optimus**
S. Poles, NOESIS Solutions

12:10 **Lunch**

Wednesday, June 24, 2015

Engine Fluid Dynamics - Room 11 A

Parallel Session

Natural Gas and Large Diesel Engines

13:10 **3D Numerical Simulation of CNG Direct Injection**
A. Twellmeyer, F. Köpple, B. Weigand, R. Bosch GmbH

13:30 **Investigation of the Flame Propagation in a Large Gas Engine with LES**
T. Lauer, W. Holly, Technical University Vienna, P. Prieschnig, J. Schneider, R. Tatschl, AVL List GmbH

13:50 **Numerical Investigation and Realization of Optimized Valve Timing for an OHV Cogeneration Engine**
J. Bauer, D. Neher, M. Kettner, Karlsruhe University of Applied Sciences

14:10 **Combustion Prediction for Large Diesel Engines using 3D CFD Simulation**
J. Vystejn, G. Taucher, M. Engelmayer, LEC, Technical University Graz

14:30 **Coffee Break**

Gasoline and Diesel Engine Development

15:00 **Modelling of Cyclic Variability in Combustion of Spark-Ignition Engine Using the Cycle-Simulation Model**
M. Sjeric, D. Kozarac, I. Taritas, University of Zagreb

15:20 **Study of Atkinson and Miller Cycles Based on Vibe and Fractal Combustion Model**
D. S. Ju, China Engine Corporation

15:40 **Research and Optimization to Improve Distribution Uniformity of EGR**
M. Ruigang, Jiangling Motor company (JMC)

16:00 **End of Speeches**

16:20 **Best Paper Award and Farewell**

Wednesday, June 24, 2015

Room 12

Keynote Session

08:30	**Energy Management Development based on the Entire Vehicle Simulation Model** H. Tokuda, Technical Advisor, DENSO Corporation, Chairman, DENSO Europe International, President of NIPPON SOKEN Inc.
09:00	**Engine Simulation at BMW: Past, Present and Future** D. Linse, CAE Engineer, BMW Group
09:30	**Calibration 4.0? – Paradigm Change due to New Model Based Development Methods** B. Schick, Global Business Unit Manager, Calibration & Virtual Testing Solutions, Instrumentation and Test Systems, AVL List GmbH
10:00	**Coffee Break**

Engine Fluid Dynamics - Room 11 B

Parallel Session

Gasoline Engine Development

10:30	**A Novel CFD Approach for an Improved Prediction of Particulate Emissions in GDI Engines by Considering the Varying Piston Surface Temperature** F. Köpple, P. Jochmann, A. Hettinger, A. Kufferath, R. Bosch GmbH
10:50	**Reducing the Knock Probability in a Gasoline Engine by means of CFD** M. Poli, Piaggio, A. Poredos, AVL AST d.o.o.
11:10	**Thermal Analysis of a 4 Cylinder GDI Engine** C. Pecollo, FCA Fiat Chrysler Automobiles
11:30	**The AVL FIRE® Code for the Optimization of GDI Engines Performance: Cyclic Variability, Knock Occurrence, PM Formation** D. Piazzullo, M. Costa, G. Marseglia, U. Sorge, CNR - Istituto Motori
11:50	**CFD Simulation of Flow Field inside the Wankel Rotary Engine between Intake and Compression Stroke** T. Poojitganont, H.P. Berg, Brandenburg University of Technology Cottbus-Senftenberg
12:10	**Lunch**

Wednesday, June 24, 2015

Engine Fluid Dynamics - Room 11 B

Parallel Session

Vehicle and General Purpose CFD

13:10	**Reduction of Aerodynamic Drag of Vehicles using Flow Control and AVL FIRE®** S. Krajnovic, G. Minelli, M. Mirzaei, J.Östh, Chalmers University of Technology
13:30	**Detailed Heat Transfer Modelling & Optimization of a Forced-Convection Kiln using CFD Methods** H. Maier, Gridlab GmbH, W. Berger, R. Breyner, Voest Alpine Special Wire GmbH
13:50	**Motorcycle Heat Transfer Analysis** D. Suzzi, qpunkt GmbH
14:10	**Enhancements of a High-Performance CFD-DEM coupled Code towards Heat and Mass Transfer in Pharmaceutical Application** G. Scharrer, CATRA GmbH, C. Radeke, Research Center Pharmaceutical Engineering GmbH, D. Jajcevic, SES-Tec OG
14:30	**Coffee Break**

High Performance Computing

15:00	**GPU Solvers and Beyond in Applications** G. Haase, M. Liebmann, A. Neic, G. Plank, Karl Franzens University Graz
15:20	**Technical Adaptivity for Cloud-Enabled CAE Solutions with AVL FIRE®: Requirements, Concepts and Application in Engineering** C. Unger, CPU 24/7 GmbH
15:40	**Leveraging Cloud HPC for AVL FIRE® Simulation** J. Poort, I. Graedel, RESCALE Inc.
16:00	**End of Speeches**
16:20	**Best Paper Award and Farewell**

Wednesday, June 24, 2015

Room 12

Keynote Session

08:30	**Energy Management Development based on the Entire Vehicle Simulation Model** H. Tokuda, Technical Advisor, DENSO Corporation, Chairman, DENSO Europe International, President of NIPPON SOKEN Inc.
09:00	**Engine Simulation at BMW: Past, Present and Future** D. Linse, CAE Engineer, BMW Group
09:30	**Calibration 4.0? – Paradigm Change due to New Model Based Development Methods** B. Schick, Global Business Unit Manager, Calibration & Virtual Testing Solutions, Instrumentation and Test Systems, AVL List GmbH
10:00	**Coffee Break**

System Simulation - Room 10

System Integration

10:30	**Integration of Real-time Systems into the Entire Vehicle Simulation** M. Benedikt, G. Stettinger, VIRTUAL VEHICLE Research Center, J. Zehetner, AVL List GmbH
10:50	**Tractor & Implement Optimization by Combined Vehicle and Powertrain Consideration** G. Putz, M. Oswald, AVL List GmbH
11:10	**Systems Engineering in Modern Hybrid Powertrain Development** A. Huss, AVL List GmbH
11:30	**A Short Cut from the Office to the Test Bed – An Integrated and Open Environment for Simulation** K. Rothbart, J. Balic, J. Wurzenberger, AVL List GmbH
11:50	**Development of a Python Based Tool Allowing the Interaction of Alternative I/O with the AVL CRUISE Simulation Tool** S. Tsiamakis, Joint Research Center EC, G. Fontaras, K. Anagnostopoulos, B. Cuiffo, Z. Samaras, University of Thessaloniki
12:10	**Lunch**

Wednesday, June 24, 2015

System Simulation - Room 10

Hybrid, Electric, Control

13:10	**Variable-Structure Decentralized Powertrain Control of Simulated Conventional and Hybrid Driving Strategies** F. Walz, P. Hermannstädter, Porsche AG
13:30	**Online Parameters Identification and SOC Estimation for Healthy and Aged Electric Vehicle Batteries Based on Equivalent Circuit Models** R. Ahmed, S. Habibi, McMaster University
13:50	**Model-Based Control-System Development and Pre-Calibration of Injection System for Locomotive Application** R. Strasser, S. Laszlo, C. Pötsch, AVL List GmbH, I. Koops, AVL Software and Functions GmbH
14:10	**An Advanced Real-Time Capable Mixture Controlled Combustion Model** T. Katrasnik, University of Lubljana
14:30	**Coffee Break**

Structure Dynamics - Room 10

Fatigue Analysis

15:00	**An Engineering Approach to Advanced Fatigue of Welded Joints** L. Vallance, A.Winkler, Dassault Systemes Austria GmbH
15:20	**Failure Prediction and Design Optimization of Exhaust Manifold based on CFD & FEM Analysis** Y. Shi, Jianling Motor Company (JMC)
15:40	**End of Speeches**
16:20	**Prizes and Farewell**

Structure Dynamics Room: 10

08:30	Product News - AVL EXCITE

Session 1: Turbocharger, Bearing and Acoustic Analysis

09:00	AVL EXCITE for Turbocharger Rotor Dynamic Simulation – Workflow and Modeling Guidelines
09:30	Bearing Friction and Thermal Analysis / Modeling Hints
10:00	AVL EXCITE Acoustics - Online Demo
10:30	Coffee Break

Session2: Solutions for Multi-Physics Problems - Benefits Offered through AVL EXCITE and AVL FIRE® Offline Coupling

11:00	Investigation for Piston Group Piston and Rings Analysis - Oil Flow in Ring Pack Enhanced Thermal Boundary Conditions Piston Stroke Deflection
12:00	Transmission Efficiency Investigation – Gear Sloshing
12:30	Lunch

Session 3: Transmission and Driveline Analysis

13:30	Gear Contact and Transmission Analysis Gear Noise Analysis (Rattle/Whine) incl. Sound Radiation with AVL EXCITE Acoustics Advanced Cylindrical Gear Joint - Modeling Advices Gear Contact Including Gear Body Flexibility - Pre-Info and Demo Example
14:40	Driveline Analysis New Components Clutch, DMF, Torque Converter – Driveline Modeling Automatic Transmission - Gear Shifting Simulation using Clutch Joints

Closing Session

15:30	AVL EXCITE - Outlook
16:00	End of Workshop

Thursday, June 25, 2015 WORKSHOPS

Engine Fluid Dynamics - Room 11a

08:30	Product News - AVL BOOST / AVL FIRE®

Session1: Engine Analysis

09:00	Thermal Analysis and MultiMaterial
10:00	Automatic Post-Processing for Efficient AVL FIRE® Result Evaluation
10:30	Coffee Break

Session2: Solutions for Multi-Physics Problems - Benefits Offered through AVL EXCITE and AVL FIRE® Offline Coupling

11:00	Investigation for Piston Group Piston and Rings Analysis - Oil Flow in Ring Pack Enhanced Thermal Boundary Conditions Piston Stroke Deflection
12:00	Transmission Efficiency Investigation – Gear Sloshing
12:30	Lunch

Session 3: Engine and Powertrain Development Support

13:30	Dual Fuel and Gas Engines / CFD Simulation Tasks
14:00	Aftertreatment SCR Workflow
14:30	Optimization
15:00	Quenching Updates

Closing Session

15:30	AVL BOOST / AVL FIRE® - Outlook
16:00	End of Workshop

Thursday, June 25, 2015 — WORKSHOPS

System Simulation Room: 11b

08:30	Product News - From AVL CRUISE to AVL CRUISE M
Session 1: Powertrain and Vehicle System Analysis	
09:00	Mild-HEV with 48V PSN
09:30	EV Modeling and Validation including Battery Cooling Circuit
10:00	VTMS Applications
10:30	Coffee Break
Session 2: IODP - From Office to Testbed	
11:00	Model.CONNECT™: AVL's new Co-Simulation Platform
11:30	Powertrain on Testbed – AVL CRUISE on PUMA
12:00	Crank-Angle Resolved RT Engine Model on HiL
12:30	Lunch
Session 3: IODP - Calibration	
13:30	MoBEO in AVL CRUISE M for Efficient Engine Calibration
14:30	Virtual Vehicle Calibration incl. Demo on Virtual Testbed
Closing Session	
15:30	System Simulation - Outlook
16:00	End of Workshop

Friday, June 26, 2015

AVL Company Tour

09:00 – 11:00
AVL List GmbH, Hans-List-Platz 1, 8020 Graz
Registration necessary

We invite you to a guided tour through the AVL Headquarters with AVL Experts.

With more than 7,400 employees and 45 affiliates worldwide, AVL is the world's largest independent company for the development of powertrain systems with internal combustion engines as well as instrumentation and test systems.

Development of Powertrain Systems
AVL develops and improves all kinds of powertrain systems and is a competent partner to the engine and automotive industry. In addition AVL develops and markets the simulation methods which are necessary for the development work.

Engine Instrumentation and Test Systems
The products of this business area comprise all the instruments and systems required for engine and vehicle testing.

Advanced Simulation Technologies
The developed simulation software is focusing on design and optimization of powertrain systems and covers all phases of the development process.

Tuesday, June 23, 2015 — LIVE DEMOS

Outlook on AST Tools in the Simulation Desktop
Location: News Corner

10:00	Introduction to the AVL Simulation Desktop
12:25	AVL FIRE® New Design, New Capabilities, Shorter Turnarounds
13:00	IMPRESS New Common 2D / 3D Post-processor
14:55	AVL EXCITE Valve Train Integrated Valve Train Solution

Wednesday, June 24, 2015 — LIVE DEMOS

Outlook on AST Tools in the Simulation Desktop
Location: News Corner

10:15	Introduction to the AVL Simulation Desktop
12:30	AVL FIRE® New Design, New Capabilities, Shorter Turnarounds
12:55	IMPRESS New Common 2D / 3D Post-processor
14:45	AVL EXCITE Valve Train Integrated Valve Train Solution