AVL Advanced Simulation Technologies International User Conference 2015

Tuesday, June 23, 2015

Opening Session / Keynote Speeches

8:30 **Welcome Address**
H. List, Chairman and CEO, AVL List GmbH

8:45 **Powertrain Simulation - From Design Optimization to Model Based Development**
G. Rainer, Vice President, Advanced Simulation Technologies, AVL List GmbH

9:15 **Porsche Intelligent Virtual Development Process**
C. Gümbel, Porsche AG

9:45 **COFFEE BREAK**

10:15 **Application without Simulation is Improvisation**
E. Martini, Continental Automotive GmbH

10:45 **Simulation in Large Engine Development, Challenges and Trends**
H. Tienhaara, Wärtsilä

11:15 **Connecting Elements are Leading to Development Efficiency - AVL IODP**
W. Puntigam, AVL List GmbH

11:45 **Exhibitor presentations (Atos, CPU 24/7, NOESIS Solutions, Mechanical Simulation Corporation, RESCALE, SIMULIA) in Session Rooms**

12:15 **LUNCHBREAK**

	Structure Dynamics	Engine Fluid Dynamics	System Simulation
	Session Keynote	**Session Keynote**	**Session Keynote**
13:15	**Using AVL EXCITE for Engine Design** M. Ejakov, Ford Motor Company	**Efficient Gasoline Engine Combustion – Today's Role of CFD** A. Ennemoser, AVL List GmbH	**Implementing AVL CRUISE in the DAF trucks development chain** M.J.A. Taken, B.A.M. Lipsch, H.J.M. Voets, DAF Trucks NV
	Bearing Analysis	**Diesel Engine Development**	**Commercial Vehicles**
13:45	**Influence of Shell Contour, Journal Shape, Bearing Clearance and Oil Viscosity on Conrod Big End Bearing Results** G. Pichler, SinusPro GmbH	**Pollutant Emission Optimization for Diesel Engines** M. Chauvy, O. Davodet, PSA Peugeot Citroën	**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, E. Morello, Iveco/CNH
14:05	**Creep Deformation in Journal Bearings under Constant Load: Influences and Effects** C. Sous, G. Burghardt, RWTH Aachen University	**Thermodynamic Analysis with Various Compression Ratios in Direct Injection Diesel Engines** L. Passily, O. Kastner, Continental Automotive GmbH	**Complete Vehicle Modeling and Simulation of a Long Haul Truck with Electrified Auxiliaries in the CONVENIENT Project** J. Holm, O. Lindgärde, Volvo GTT, H. Ofner,AVL List GmbH, L. Feng, KTH
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	**3D CFD Simulation of Oil and Gas Flow Across a 2-piece Piston Oil Control Ring** M. Carlsson, D. Konstanzer, H. Hernst, Scania CV AB	**Tractor and Implements Optimization Considering Soft Soil, Vehicle and Powertrain** M. Oswald, AVL List GmbH
14:45	**COFFEE BREAK**	**COFFEE BREAK**	**COFFEE BREAK**
	Cranktrain Strength and Durability	**Diesel Engine Development**	**Fuel Efficiency**
15:10	**Cranktrain Bearing Parametric Study** L. Chai, FCA Fiat Chrysler Automobiles	**Engine Configurator Based on AVL BOOST and CAMEO** H.-M. Kögeler, J. Wolkerstorfer, AVL List GmbH	tbc.
15:30	**Cranktrain System Assessment of Ecotorq 12.7 Litre Diesel Engine** O. Deliktas, M. S. Tabak, Ford Otosan	**Modeling of the Air Fuel Mixing and Flame Lift-off of a Diesel Spray** E. Celik, Continental Automotive GmbH	**Development of Simulation Models with Modern Electrical Systems** S. Tsiamakis, G. Fontaras, K. Anagnostopoulos, B. Ciuffo, Z. Samaras, Aristotle University of Thessaloniki
15:50	**Introduction of AVL EXCITE into Cummins Standard Analysis Process** I. Piraner, D. Liu, Cummins Inc.	**Modeling of Diesel Spray from Multi-hole Nozzle under Off-Axis Needle Displacement** F. Palmieri, G. Chiatti, O. Chiavola, Roma Tre University	**Combined Driveability and Fuel Efficiency Simulation in the Concept Phase** M. Oswald, A. Shabashevich, AVL List GmbH
16:10	**Using OptiStruct with AVL EXCITE** H. Thomas, Altair Engineering, Inc.	**1D / 3D Coupling Simulations for EGR Distribution in the Cylinder** J. Houstin, Alten, O.Davodet, PSA Peugeot Citroen	**Predicting İstanbul 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
16:30	**COFFEE BREAK**	**COFFEE BREAK**	**COFFEE BREAK**
	Valve Train and Timing Drive	**Electrification**	**New Applications**
16:50	**Valve Train Dynamics Study for Two Wheeler Engine** T. Balasubramanian, V. Rajagopalan, K. Arun, V. Lakshminarasimhan, TVS Motor Company Limited	**A Hybrid Simulation Approach Combining Electrothermal and Mechanical Solvers to Predict Lithium-ion Cell Reactions Due to Mechanical Loads as Occur in Vehicle Accidents** S.F. Heindl, C. Breitfuss, C. Ellersdorfer, F. Feist, W. Sinz, Technical University Graz, A. Geier, Audi AG, R. Tatschl, C. Fink, Z. Pavlovic, P. Gollob, A. Braun, AVL List GmbH	**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	**Flexible Multi-body Dynamic Modeling of an Entire PSA I4 Cylinder Diesel Engine** H. Krichene, Alter Solutions for PSA Peugeot Citroën	**Numerical and Experimental Investigation of the Flow Distributions in Fuel Cell Stack Manifolds** L. Feierabend, S. Burgmann, M. E. Kinaci, Zentrum für BrennstoffzellenTechnik GmbH, F. Schmieder, L. Büttner, J. Czarske, Technische Universität Dresden	**Friction Clutch Thermal and Performance Analysis on 1D Vehicle Simulation Platform** E. Penazzi, FCA SDE, S. Carletta, FCA, D. Di Rocco, E. Vitaliani, AVL List GmbH
17:30	**Methodology for Camshaft Bearing Failure Investigation of an Automotive Valve Train System** S. Bukovnik, AVL List GmbH, H. Jansson, VOLVO Car Cooperation	**tbc.**	**A Computationally Efficient Hybrid 3D Analytic-numerical Approach for System Level Modelling of PEM Fuel Cells** G. Tavcar, T.Katrasnik, University of Lubljana

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

AVL Advanced Simulation Technologies International User Conference 2015

Wednesday, June 24, 2015

Opening Session / Keynote Speeches

8:30 **Energy Management Development based on the Entire Vehicle Simulation Model**
H. Tokuda, DENSO

9:00 **Engine Simulation at BMW: Past, Present and Future**
D. Linse, BMW Group

9:30 **Calibration 4.0? – Paradigm Change due to New Model-based Development Methods**
B. Schick, AVL List GmbH

10:00 COFFEE BREAK

	Structure Dynamics	Engine Fluid Dynamics I	Engine Fluid Dynamics II	System Simulation
	Transmission / Driveline	**Diesel Engine Development**	**Gasoline Engine Development**	**Hybrid, Electric, Control**
10:30	**Transmission Radiation Noise Reduction by means of Combination of EXCITE and Optimization Calculation** C. Togashi, N. Hariu, Y. Akiyama, I. Terada, Isuzu LTD.	**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	**A Novel CFD Approach for an Improved Prediction of Particulate Emissions in GDI Engines by Considering the Varying Piston Surface Temperature** F. Koepple, P. Jochmann, A. Hettinger, A. Kufferath, Robert Bosch GmbH	**Variable-structure Decentralized Powertrain Control of Simulated Conventional and Hybrid Driving Strategies** F.Walz, P. Hermannstädter, Porsche AG
10:50	**tbc.**	**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	**Reducing the Knock Probability in a Gasoline Engine by Means of CFD** M. Poli, Piaggio	**Online Parameters Identification and SOC Estimation for Healthy and Aged Electric Vehicle Batteries Based on Equivalent Circuit Models** R. Ahmed, S. Habibi, McMaster University
11:10	**Computational Establishment of the Transmission Noise and Vibration** M. Zubík, A. Prokop, K. Řehák, M. Janoušek, P. Novotný, Brno University of Technology	**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.	**Thermal Analysis of a 4-Cylinder GDI Engine** C. Pecollo, FIAT Chrysler Automobiles	**Powertrain Connectivity for Energy Efficient Driving** A. Engstle, AVL Software and Functions GmbH
11:30	**I4 Gasoline Power Unit Vibration Comparison, Using Manual versus Automatic Transmission** H. Johannesson, Volvo Car Corporation	**Efficient Use of Detailed Chemistry in AVL FIRE® with FGM** F. Tap, D. Goryntsev, A. Starikov, Dacolt International BV	**Fast Optimization of Spray Pattern and Injection Strategies in GDI Engine by using CFD simulation** C. Forte, G.M. Bianchi, University of Bologna, A. Siliato, NAIS srl	**Model-based Control-system Development and Pre-calibration of Injection-system Parameters by means of a Physics-based Injection System and Engine Model of a Locomotive Engine** R. Strasser, S. Laszlo, C. Pötsch, AVL List GmbH, I. Koops, AVL Software and Functions GmbH
11:50	**Grid-loss?... Take it Easy** M. Janic, SET Sustainable Energy Technologies GmbH	**Engine Emission and Performance Optimization with Optimus** S. Poles, NOESIS Solutions	**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	**An Advanced Real-time Capable Mixture Controlled Combustion Model** T. Katrasnik, University of Lubljana
12:10	LUNCHBREAK	LUNCHBREAK	LUNCHBREAK	LUNCHBREAK
	Engine NVH	**Natural Gas and Large Diesel Engines**	**Vehicle and General Purpose CFD**	**System Integration**
13:10	**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	**3D Numerical Simulation of CNG Direct Injection** A. Twellmeyer, F. Köpple, B. Weigand, Robert Bosch GmbH	**Reduction of Aerodynamic Drag of Vehicles using Flow Control and AVL FIRE®** S. Krajnovic, G. Minelli, M. Mirzaei, J.Östh, Chalmers University of Technology	**A Short Cut from the Office to the Test Bed – An Integrated and Open Environment for Simulation** K. Rothbart, J. Krasser, AVL List GmbH
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	**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	**Detailed Heat Transfer Modelling & Optimisation of a Forced-Convection Kiln using CFD methods** H. Maier, Glidlab GmbH, W. Berger, R. Breyner Voest Alpine Special Wire GmbH	**tbc.**
13:50	**tbc.**	**Numerical Investigation and Realisation of Optimised Valve Timing for an OHV Cogeneration Engine** J. Bauer, D. Neher, M. Kettner, Karlsruhe University of Applied Sciences	**Motorcycle Heat Transfer Analysis** D. Suzzi, qpunkt GmbH	**Development of a Python Based Tool Allowing the Interaction of Alternative I/O with the AVL CRUISE Simulation Tool** S. Tsiamakis, G. Fontaras, K. Anagnostopoulos, B. Cuiffo, Z. Samaras, Aristotle University of Thessaloniki
14:10	**tbc.**	**Combustion Simulation for Large Diesel Engines using AVL FIRE®** J. Vystejn, G. Taucher, M. Engelmayer, LEC, Technical University Graz	**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	**Integration of Real-time Systems into the Entire Vehicle Simulation** M. Benedikt, G. Stettinger, VIRTUAL VEHICLE Research Center, J. Zehetner, AVL List GmbH
14:30	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK
	Bearing Analysis	**Gasoline and Diesel Engine Development**	**High Performance Computing**	
15:00	**Effect of Non-Linear Elastic Deformation of Materials with Low Stiffness on Pressure Build-Up with Surface Contact Layer** S. Wolking, G. Burghardt, RWTH Aachen University	**Modelling of Cyclic Variability in Combustion of Spark-Ignition Engine Using the Cycle-Simulation Model** M. Sjeric, D. Kozarac, I. Taritas, University of Zagreb	**GPU Solvers and Beyond** G. Haase, University Graz	**tbc.**
				Fatigue Analysis
15:20	**Evaluation of a Rod Bearing with Respect to Oil Supply Limits** D. Schliemann, D. Wieczorek, W. Krebs, GM Powertrain Engineering	**Study of Atkinson and Miller Cycles Based on Vibe and Fractal Combustion Model** D.S. Ju, China Engine Corporation	**Title tbc.** A.Heine, CPU 24/7 GmbH	**An Engineering Approach to Advanced Fatigue of Welded Joints** L. Vallance, A.Winkler, Dassault Systemes Austria GmbH
15:40	**Main Bearing Performance Investigation of Sprayed versus Non-sprayed Main Bearing Inserts** S. Larzenius, Volvo Car Corporation	**Research and Optimization to Improve Distribution Uniformity of EGR** Y. Shi, Jianling Motor Company (JMC)	**Leveraging Cloud HPC for AVL FIRE® Simulation** I. Graedel, Rescale Inc.	**tbc.**

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

AVL Advanced Simulation Technologies International User Conference 2015

Technical Seminars - Thursday, June 25, 2015

	Structure Dynamics		Engine Fluid Dynamics		System Simulation
8:30	**Product News - AVL EXCITE** P. Herster	8:30	**Product News - AVL BOOST / AVL FIRE®** tbd	8:30	**Product News – AVL CRUISE / AVL CRUISE M** J. Balic, J. Krammer
	Session 1: EHD and Turbocharger		**Session1: Engine Analysis**		**Session 1: Advanced EV&HEV Applications**
9:00	**AVL EXCITE for Turbocharger Rotor Dynamic Simulation – Workflow and Modeling Guidelines** S. Bukovnik	9:00	**Thermal Analysis and MultiMaterial** A. Poredos	9:00	**AVL CRUISE – Mild-HEV with 48V PSN** N. Podbreznik
9:45	**Bearing Friction and Thermal Analysis / Modeling Hints** O. Knaus	10:00	**Automatic Post-processing for efficient AVL FIRE® Result Evaluation** M. Mayer	9:45	**AVL CRUISE M FLOW – EV with Battery Cooling Model** A. Colla
10:30	**COFFEE BREAK**	10:30	**COFFEE BREAK**	10:30	**COFFEE BREAK**
	Session 2: Solutions for Multi-physics Problems - Benefits Offered through AVL EXCITE and AVL FIRE® Offline Coupling				**Session 2: In Focus**
11:00	**Investigation for Piston Group** O. Knaus, G. Kotnik **Piston and Rings Analysis - Oil Flow in Ring Pack** **Enhanced Thermal Boundary Conditions** **Piston Stroke Deflection**			11:00	**VTMS Application with AVL CRUISE M** M. Kolaric
12:00	**Transmission Efficiency Investigation – Gear Sloshing** B. Klarin, W. Baier			11:45	**RDE in System Simulation** A. Kodrin
12:30	**LUNCHBREAK**	12:30	**LUNCHBREAK**	12:30	**LUNCHBREAK**
	Session 3: Transmission and Driveline / New Capabilities and Applications		**Session 3: Engine and Powertrain Development Support**		**Session 3: Simulation @ Calibration & Testing**
13:30	**Gear Contact and Transmission Analysis** **Gear Noise Analysis (Rattle / Whine) incl. Sound Radiation with AVL EXCITE Acoustics** C. Schweiger **Advanced Cylindrical Gear Joint - Modeling Advices** M. Sopouch **Gear Contact Including Gear Body Flexibility - Pre-info and Demo Example** J. Steiner	13:30	**Dual Fuel and Gas Engines / CFD Simulation Tasks** J. Schneider	13:30	**RT Engine Models on HiL** I. Prah
14:40	**Driveline Analysis** **New Components Clutch, DMF, Torque Converter – Driveline Modeling** C. Schweiger **Automatic transmission - Gear Shifting Simulation using Clutch Joints** V. Parma	14:10	**Aftertreatment SCR Workflow** A. Nahtigal	14:30	**Powertrain on Engine Testbed** D. Ciglar
		14:50	**Optimization** G. Kotnik		
15:30	**COFFEE BREAK**	15:30	**COFFEE BREAK**	15:30	**COFFEE BREAK**
	Session 4: AVL EXCITE Acoustics and AVL EXCITE Outlook		**Session 4: Quenching**		**Session 4: AVL CRUISE Utilities and Outlook**
16:00	**AVL EXCITE Acoustics - Online Demo** A. Hepberger	16:00	**Quenching Updates** D. Greif	16:00	**AVL CRUISE Tools and Utilities** J. Balic
16:30	**AVL EXCITE - Outlook** P. Herster	16:30	**AVL BOOST / AVL FIRE® Outlook** M. Suffa	16:30	**AVL CRUISE / AVL CRUISE M Outlook** A. Kodrin
17:00	**End**	17:00	**End**	17:00	**End**