AVL Virtual ISC 2021 Technical Presentations - Available On Demand from Day 1, June 21, 14:00 PM CEST

ADAS and AD - Scenario Based Validation

TSC2openX: Constraint-Based Concretization of Abstract Scenarios for Automated Driving
J. S. Becker, C. Neurohr, L. Westhofen, *OFFIS e.V.*

Collaborative Development of Automotive Cyber-Physical Systems with Distributed Co-Simulation
I. Raghupatruni, S. Terres, M. Knepper, P. Allard, H. Lockstädt, M.B. Bescos del Castillo, S. Roeder, J. Schmidt, *Robert Bosch GmbH, Mobility Solutions Technical Strategy & Enabling*

Test Case Management for Efficient Validation of ADAS
E. Karabiyik, U. Ersoz, E. Ozkaya, O. Cetin, *AVL Research & Engineering (Turkey)*

Model-Based Development Environments for Validation and Approval of Autonomous Driving Functions on the Example of the AVL HighWayPilot
K. Fuchs, T. Knorr, *AVL Deutschland GmbH*

Defining the Regulatory Roadmap for Virtual Testing
B. Simkin, *NVIDIA*

Simulation Environment Independent LIDAR Modeling Approach With Modern Graphics Pipelines
M. Kirchengast, *AVL List GmbH*

Virtual Validation of Objective and Subjective Safety Adas Features in a Cloud Environment
P. Nitsche, J. Schlager, *AVL List GmbH*

Personal Driving Simulator: Multi-Domain Simulation With Photorealistic Visualization
S. Gimpel, M. Strobel, *aSR advanced Simulated Reality GmbH*

Scenario-Based ADAS/AD Testing: OpenScenario 1.0 - Check, What Now?
S. Terres, D. Stracabosko, M. Bulaja, *AVL List GmbH, AVL-AST d.o.o. Croatia*

Battery - Key for Electrification

Simulation and Design of Thermal Insulation Materials in EV Battery Systems
J. Wolf, B. Guillaume, A. Nositschka, E. Neu, U. Stude, L. Garnier, *Saint-Gobain Sekurit Deutschland GmbH & Co. KG*

Reliability Analysis Using 1D Electro-Thermal Co-Simulation
T. Langbauer, C. Mentin, *Silicon Austria Labs GmbH*

Cell Failure Analysis and Thermal Runaway & Venting Simulation of a Battery Module
V. K. Singh, M. Tilinski, *MAN Truck & Bus SE, EPVT*

Electro-Thermal Real-Time Models of Battery Systems
M. Slepchenkov, *TAE Technologies*

Geometrical Optimization of Battery Cooling Plates via Multi-Material CFD
S. Föller, B. Reis, D. Gaudrie, S. Houille, V. Yanik, *Stellantis N.V., Propulsion and Chassis CAE & Advanced Engineering*

Multi-Scale Modelling of Li-ion Batteries: Simulating Outbreak of the Thermal Runaway
T. Katrasnik, I. Mele, K. Zelic, *University of Ljubljana - Faculty of Mechanical Engineering*

Electrical Drive Units - Leverage your Propulsion System

Application of CRUISE™ M to Thermal Lifetime Analysis for PTCE/HTOE
A. Haspl, M. Leighton, H. Bansal, *AVL List GmbH*

Understanding of Rotor Axial Motion in an E-Machine: Root Cause and Potential Countermeasure
J. Carpentier, M. Hay, *Renault*

EDU NVH Correlations and Strength Calculations with AVL EXCITE™ Toolchain Special Focus on Planetary Gearsets
G. Fischer, H. Bansal, A. Puntigam, *AVL List GmbH*

New EXCITE - Next Level of Transmission and E-axle Simulation
S. Bukovnik, *AVL List GmbH*

Assessment of the NVH Behaviour of a Hyper-Highspeed Electric Drivetrain for Passenger Vehicles
B. Schmelzle, *AVL Deutschland GmbH*

Simulating the Oil Flow in Complex Gearbox Designs
A. Oliva, *AVL Deutschland GmbH*

Splash Lubrication Simulation of a High-Speed Ev Reducer Using a SPH Tool
A. Levillain, *Valeo*

Virtualizing the Effect of Oil Splash Shields on Gearbox Lubrication Behavior
M. Braunstingl, G. Szalai, M. Leighton, H. Bansal, G. Fuckar, *AVL List GmbH*

Fuel Cell - Power Source for Future Mobility

Virtual Calibration of Fuel Cells Systems
B. Bunel, U. Henigman, M. Abart, F. Berg, *AVL List GmbH*

Hybrid PEM Fuel Cell Systems
S. Gößling, F. Smyrek, M. Bahr, N. Nickig, *Zentrum für BrennstoffzellenTechnik GmbH*

CFD-Simulation of a Commercial Fuel Cell with Homogenized Channel Method
M. Haslinger, T. Lauer, *TU Wien, IFA-Institute of Powertrains and Automotive Technology*

Challenges for CFD in Fuel Cell Systems
R. Pöschl, M. Lerch, M. Hofer, L. Sandor, W. Kaufmann, *AVL List GmbH*

Model-Based Virtual Sensor Development for the On-line Diagnostics of Automotive Fuel Cell Systems
D. Ritzberger, A. Schenk, T. Schubert, C. Pötsch, *AVL List GmbH*

Calibration of Adaptive Energy Management Strategies for Fuel Cell Trucks Using Real-World Driving Scenarios
A. Ferrara, S. Zendegan, C. Hametner, H.-M. Koegeler, S. Gopi, M. Huber, J. Pell, *TU Wien, AVL List GmbH*

A Fuel Cell Vehicle Power System Matching Analysis based on AVL CRUISE™ M
L. Ran, L. YeFa, W. TanHua, *Shanghai Electric Group Co., Ltd, Central Academy*

Early-Phase Simulation Model for PEM Fuel Cell System Development
T. Schubert, A. Schenk, D. Ritzberger, F. Mair, *AVL List GmbH*

Physicochemically Consistent Reduced Dimensionality System Level Fuel Cell Model for Simulating Performance and Degradation Phenomena
T. Katrasnik, A. Kravos, A. Kregar, C. Pötsch, *University of Ljubljana - Faculty of Mechanical Engineering, AVL List GmbH*

Solid Oxide Cell (SOC) System Simulation
M. Goll, E. E. Jorquera, R. Neubauer, B. Reiter, *AVL List GmbH*

ICE - The Path to Zero Impact Emission

Simulation of a CNG Engine Using Turbulent Jet Ignition (Tji) with Controlled Air Charge
S. Ziyaei, P. Lappas, S. K. Mazlan, *RMIT University Melbourne*

Large Engine Prechamber Design Using Condensed CFD Simulations and Machine Learning Approaches
S. Posch, H. Winter, G. Pirker, A. Wimmer, *LEC GmbH*

Investigation of Energy Management Strategy of Hybrid Electric Vehicles Considering Engine Emissions with Aftertreatment System
Y. Wang, A. Biswas, B. Bilgin, *McMaster Automotive Resource Center (MARC), McMaster University*

Holistic Approach for Air intake System Development: Leveraging the Power of Simulation to Enhance Breathing of Naturally Aspirated Gasoline Engine
A. C. Borde, B. Nandapurkar, A. Panwar, Rajeev Boodanur, *TATA Motors*

Simulation of Working Process of Turbocharged Wankel Engine and Experimental Verification of Combustion Model
R. Z. Kavtaradze, A. A. Zelentsov, A. A. Kasko, *Bauman Moscow State Technical University*

Explore and Exploit Design Spaces based on AI-Driven Virtual Development
M. Botticelli, R. Hellmann, P. Jochmann, K.G. Stapf, *Robert Bosch GmbH*

Development of a Three-Dimensional Numerical Model of an Active Scavenged Pre-Chamber Ignition System
L. Euchner, M. Wensing, T. Russwurm, P. Janas, *BMW Group, Friedrich-Alexander-Universität Erlangen-Nürnberg*

Modelling of Pre-Chamber SI ICEs by Means of 3-D CFD
O. Vitek, V. Dolecek, Z. Syrovatka, J. Vavra, J. Macek, *Czech Technical University in Prague*

Kinetic Modeling of CO Assisted Passive NO$_x$ Adsorption on Pd/SSZ-13
D. Yao, R. F. Ilmasani, J. Wurzenberger, D. Creaser, L. Olsson, *Chalmers University of Technology Göteborg, AVL List GmbH*

Improving Mixture Formation in a Heavy-Duty Hydrogen Engine
D. Cisneros Gonzalez, P. Jochmann, *Bosch*

The AVL Hydrogen Engine for CO$_2$ Neutral Goods Transport
B. Raser, *AVL List GmbH*

System Simulation ICE Diesel LCV EAS Hybrid Operating Strategy
C. Kreis, S. Krapf, H. Wancura, *AVL List GmbH*

AVL FIRE™ M Engine - Process Safe CFD Simulation Paving the Path towards Zero Impact Emissions
A. Poredos, C. Schmalhorst, *AVL List GmbH, AVL-AST d.o.o. Slovenija*

AVL CRUISE™ M Aftertreatment – A Quantum Leap for Exhaust Gas Aftertreatment System Simulation
A. Nahtigal, T. Mitterfellner, *AVL-AST d.o.o. Slovenija, AVL List GmbH*

AVL CRUISE™ M Thermodynamics - The ICE as One Key Element in Modern PT Concept Designs
I. Prah, G. Dobnik, K. Prevedel, R. A. P. B. Abrantes, *AVL-AST d.o.o. Slovenija, AVL List GmbH*

Simulation and Experimental Validation of Spark Plug Temperature Coupled with Combustion in Four-Stroke Gasoline Engine
J. Osaka, N. Kurimoto, K.Hanashi, T.Nagata, *DENSO CORPORATION*

In-Cylinder Combustion Study and Liner Thermal Load Optimization using AVL FIRE™ for an 8-Cylinder Diesel Engine
H. Wei, *Guangxi Yuchai Machinery Co., Ltd.*

Thermal Analysis of Engine and Single Phase Boiling Analysis for Different Coolant Mass Flow Using FIRE™ M
V. Lushcheko, S. Andriyanov, A. Matveev, *KAMAZ*

Advanced Methodology for the Dual-Fuel Heavy-Duty Engine Combustion Process Simulation Based on the Application of Detailed Chemistry and CFD Approach
V. Grinev, A. Kozlov, N. Zuev, *NAMI*

Near-Field Spray Velocity in a Single-Hole Diesel Injector - Modeling and Experiment
D. Konstanzer, M. Nikouei, D. Sedarsky, *Cummins Fuel Systems Sweden*

Power Unit - Reliability & Comfort

I4 Power Unit Radiated Noise Cae With Different Modelling Level of Included Planetary Gears and of Damping Properties for Load Extraction
H. Johannesson, *Volvo Cars*

Applications of EHD Simulation on Engine Bearing Development of Diesel Engines using AVL EXCITE™
I. Çiylez, *BMC Power*

Efficient Simulation of Damping for Resiliently Mounted Large-Bore Engines
M. Donderer, A. Rieß, U.Waldenmaier, J. Neher, S. Ehlers, *MAN Energy Solutions SE, Ulm University of Applied Sciences, Hamburg University of Technology*

How to Efficiently Solve HEV Power Unit Acoustics Challenges – Part 1: Specific Tools for Simulation Solution
C. Schweiger, *AVL List GmbH*

How to Efficiently Solve HEV Power Unit Acoustics Challenges – Part 2: Application Example P2.5 HEV Power Unit
C. Schweiger, *AVL List GmbH*

Impact of Bore Machining Defects in Shape on Lube Oil Consumption
M. Hay, *Renault*

Vehicle Body - Design Optimization by Virtual Prototyping

CFD Simulation of a Vehicle Driving in Snow
D. Bäder, S. Eibl, C.Wolf, A. Oliva, P. Kolar, *Audi AG, AVL Deutschland GmbH*

Flow-Induced Noise in Turbulent Pipe Flow With Aeroacoustic Source Terms from Large-Eddy Simulation
J. Tieber, H. Steiner, P. Maurerlehner, S. Schoder, A. Ennemoser, *Technische Universität Graz*

Investigation on Wading Simulation of Battery Electric Vehicle based on PreonLab
H. Chen, S. Li, H. Zuo, *SAIC Motor*

Investigation on Wading Simulation of Vehicle Air Intake System
H. Yansheng, C. Zhang, *Power Accessory R&D Department of Great Wall Motor Co., Ltd.*

Analysis Improvement of Automobile Snow Based on Preonlab
X. Zhang, *Power Accessory R&D Department of Great Wall Motor Co., Ltd.*

Vehicle Model Factory - Automatic Generation of Validated Virtual Prototypes
M. Oswald, A. Fleck, G. Schrank, *AVL List GmbH*

Virtual Testing for Vehicle Water Management and Soiling
S. Saric, J. Viher, *AVL List GmbH, AVL AST d.o.o. Slovenija*

Securing Vehicle Development With Particle Based CFD Simulation - PreonLab for Vehicle Applications
Jens Cornelis, *FIFTY2*

Virtual System Engineering - Managing System Complexity

A Model in AVL CRUISE™ M to Drive the Preliminary Design of Deicing Heat Exchangers for Automotive Tanks
E. Grotti, D. Monsorno, M. Renzi, *Free University of Bozen/Bolzano, Röchling Automotive*

Seamless Testing from Office to Road - Utopia or Reality?
M. Hollander, K. McAleer, M. Abart, *AVL List GmbH*

Myth or Reality? Calibration in the Office
J. Kang, V. Bandi, J. Park, K. Nam, F. Eberhard, H. Z. Ahmed, N. Matulic, *Hyundai Motor Corporation, AVL List GmbH*

Shortened Development Cycle of Electric Vehicle Powertrain using AVL and NI Virtual Testing Solution
A. Singh, P. Fehlner, H. Z. Ahmed, K. McAleer, G. Callea, M. Wahby, *AVL List GmbH, National Instruments Germany GmbH*

Ship Engine Testing and Calibration Using Virtual Vessel Model
D. Ciglar, J. Mustac, M. Miletic, *AVL-AST d.o.o. Croatia*

Early Evaluation of Vehicle Concepts Using a High Dynamic and High Fidelity DIL Simulator
K. Cammaerts, G. Farmer, G. F. Pezzetto, J. Waters, W. Schuster, *Ansible Motion Limited, AVL List GmbH*

Virtual ECU Calibration
Y. Pei, *Weichai Power Engine Development Institude*

Real Time Crank Angle Resolved Solution for Model Based Gasoline Engine Calibration
R. Luef, C. Poetsch, *AVL List GmbH*

An Approach to Enable Automatic Validation in Product Development
E. Lappano, C. Mayr, M. Glavina, J. Zehetner, N. Schuch, J. Schlager, *AVL List GmbH*

Vehicle Concept Definition Including Virtual Benchmarking
M. Oswald, *AVL List GmbH*

How CRUISE™ M Supports Engineers in their Daily Challenges in VTMS Subsystem Layouting
M. Kolaric, *AVL-AST d.o.o. Slovenija*

How CRUISE™ M Supports Engineers in their Daily Challenges in Control Function Development
A. Cvikl, A. Balihe, *AVL-AST d.o.o. Slovenija, AVL List GmbH*

How CRUISE™ M Supports Engineers in their Daily Challenges in PT Concept Analysis
A. Perger, *AVL-AST d.o.o. Slovenija*

How CRUISE™ M Supports Engineers in their Daily Challenges in Calibration in MiL, SiL and HiL Environments
A. Cvikl, *AVL-AST d.o.o. Slovenija*