

**13th International Modelica Conference**  
March 4-6, 2019, OTH Regensburg, Germany

**Monday afternoon**

13:00	16:30	Industrial User Presentations FMI+SSP+DCP	Industrial User Presentations LANG+LIB	Tutorials
16:30	17:00	Coffee Break		
17:00	19:15	Vendor Sessions		
19:15	19:30	Short Break		
19:30		Welcome Reception		

**Tuesday**

09:00	09:15	Welcome		
09:15	09:45	Modelica News		
09:45	10:30	Keynote 1: Dr. Christian Kral, Vienna, Austria		
10:30	11:00	Coffee Break		
11:00	12:15	<b>Session 1A: Buildings 1</b> Session Chair:	<b>Session 1B: Power&amp;Energy 1</b> Session Chair:	<b>Session 1C: FMI 1</b> Session Chair:
				<b>Session 1D: Automotive 1</b> Session Chair:
12:15	13:45	Lunch		
13:45	15:00	<b>Session 2A: Buildings 2</b> Session Chair:	<b>Session 2B: Power&amp;Energy 2</b> Session Chair:	<b>Session 2C: FMI 2</b> Session Chair:
				<b>Session 2D: Electrical Power 1</b> Session Chair:
15:00	15:30	Coffee Break		
15:30	17:00	Poster Session (Forum Building K)		
17:00	18:40	<b>Session 3A: HVAC</b> Session Chair:	<b>Session 3B: Language</b> Session Chair:	<b>Session 3C: Mechanics&amp;Transport</b> Session Chair:
				<b>Session 3D: New Applications</b> Session Chair:
18:40	20:00	Transfer to Dinner Location		
20:00		Conference Dinner at the Castle of Emmeram		

**Wednesday**

08:30	09:15	Keynote 2: Dr. Gerd Rösler, Regensburg, Germany		
09:15	09:30	Short Break		
09:30	10:45	<b>Session 4A: Power&amp;Energy 3</b> Session Chair:	<b>Session 4B: Automotive 2</b> Session Chair:	<b>Session 4C: Aerospace</b> Session Chair:
				<b>Session 4D: Numerical Methods</b> Session Chair:
10:45	11:15	Coffee Break		
11:15	12:30	<b>Session 5A: Buildings 3</b> Session Chair:	<b>Session 5B: Power&amp;Energy 4</b> Session Chair:	<b>Session 5C: Thermodynamic 1</b> Session Chair:
				<b>Session 5D: Electrical Power 2</b> Session Chair:
12:30	14:00	Lunch		
14:00	15:15	<b>Session 6A: Buildings 4</b> Session Chair:	<b>Session 6B: Thermodynamic 2</b> Session Chair:	<b>Session 6C: Tools</b> Session Chair:
				<b>Session 6D: Automotive 3</b> Session Chair:
15:15	15:30	Short Break		
15:30	15:45	Closing Session		

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<b>Monday afternoon</b>		S054 (694)	S051 (300)	S053 (144)	S052 (129) + further rooms
13:00	16:30	Industrial User Presentations FMI+SSP+DCP	Industrial User Presentations LANG+LIB	Tutorial 1	Tutorial 2 + 3..7
16:30	17:00	Coffee Break			
17:00	17:45	Vendor Session	Vendor Session	Vendor Session	Vendor Session
17:45	18:30	Vendor Session	Vendor Session	Vendor Session	Vendor Session
18:30	19:15	Vendor Session	Vendor Session	Vendor Session	Vendor Session
19:15	19:30	Short Break			
19:30		Welcome Reception			
<b>Tuesday morning</b>		S054 (694)	S051 (300)	S053 (144)	S052 (129)
09:00	09:15	Welcome			
09:15	09:45	Modelica News			
09:45	10:30	Keynote 1: Dr. Christian Kral, Vienna, Austria			
10:30	11:00	Coffee Break			
11:00	12:15	<b>Session 1A: Buildings 1</b> Session Chair:	<b>Session 1B: Power&amp;Energy 1</b> Session Chair:	<b>Session 1C: FMI 1</b> Session Chair:	<b>Session 1D: Automotive 1</b> Session Chair:
11:00	11:25	Raymond Sterling, Jesús Febres, Andrea Costa, Adeleh Mohammadi, Rafael Carrillo, Baptiste Schubnel, Yves Stauffer, Pietro De Cinque, Krzysztof Klobut, Marcus Keane: A virtual test-bed for building Model Predictive Control developments	Jovan Brkic, Muaz Ceran, Mohamed Elmoghazy, Anton Haumer, Christian Kral: Open Source PhotoVoltaics Library for Systemic Investigations	Lennart Ochel, Robert Braun, Bernhard Thiele, Adeel Asghar, Lena Buffoni, Magnus Eek, Peter Fritzon, Dag Fritzon, Sune Horkeby, Robert Hällquist, Åke Kinnander, Arunkumar Palanisamy, Adrian Pop, Martin Sjölund: OMSimulator – Integrated FMI and TLM-based Co-simulation with Composite Model Editing and SSP	Jakub Tobolar, Martin Leitner, Andreas Heckmann: Anti-Roll Bar Model for NVH and Vehicle Dynamics Analyses
11:25	11:50	Moritz Lauster, Dirk Müller: Characterization of Linear Reduced Order Building Models Using Bode Plots	Mareike Leimeister: Python-Modelica Framework for Automated Simulation and Optimization	Lars Ivar Hatledal, Houxiang Zhang, Arne Styve, Geir Hovland: FMU-proxy: A Framework for Distributed Access to Functional Mock-up Units	James Jeffs, Andrew McGordon, Widanage Dhammik Widanage, Simon Robinson, Alessandro Picarelli: System level heat pump model for investigations into thermal management of electric vehicles at low temperatures.
11:50	12:15	Christoph Nytsch-Geusen, Jörg Rädler, Matthis Thorade, Carles Ribas Tugores: BIM2Modelica – An open source toolchain for generating and simulating thermal multi-zone building models by using structured data from BIM models	Jörn Benthin, Annika Heyer, Philipp Huismann, Anne Hagemeyer, Klaus Görner: Demand oriented Modelling of coupled Energy Grids	Martin Krammer, Klaus Schuch, Christian Kater, Khaled Alekeish, Torsten Blochwitz, Stefan Materne, Andreas Soppa, Martin Benedikt: Standardized Integration of Real-Time and Non-Real-Time Systems: The Distributed Co-Simulation Protocol	John Batteh, Ashok Kumar Ravi, Dale Pickelman: Diesel Cooling System Modeling for Electrification Potential
12:15	13:45	Lunch			

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<b>Tuesday afternoon</b>		S054 (694)	S051 (300)	S053 (144)	S052 (129)
13:45	15:00	<b>Session 2A: Buildings 2</b> Session Chair:	<b>Session 2B: Power&amp;Energy 2</b> Session Chair:	<b>Session 2C: FMI 2</b> Session Chair:	<b>Session 2D: Electrical Power 1</b> Session Chair:
13:45	14:10	Nadine Aoun, Roland Bavière, Mathieu Vallée, Adrien Brun, Guillaume Sandou: Dynamic Simulation of Residential Buildings Supporting the Development of Flexible Control in District Heating Systems	Torsten Schwan, Ole Ziessler, Tom Eckhardt, Rene Unger: An Evaluation of District Heating Grids with Modelica	Claire-Eleuthèriane Gerrer, Sylvain Girard: Non Linear Dimension Reduction of Dynamic Model Output	Alexander Grimm, Anton Haumer: Parametrization Of A Simplified Physical Battery Model
14:10	14:35	Filip Jorissen, Lieve Helsen: Integrated Modelica Model and Model Predictive Control of a Terraced House Using IDEAS	Abdulrahman Dahash, Annette Steingrube, Mehmet Elci, Fabian Ochs: Optimization of District Heating Systems: European Energy Exchange Price-Driven Control Strategy for Optimal Operation of Heating Plants	Slaven Glumac, Zdenko Kovačić: Relative Consistency and Robust Stability Measures for Sequential Co-simulation	Mads Nannestad, Benoit Bidoggia, Zhe Zhang, Tiberiu-Gabriel Zsurzsan, Kasper Skrivers: Modeling of transformer-rectifier sets for the energization of electrostatic precipitators using Modelica
14:35	15:00	Scott Bortoff, Christopher Laughman: An Extended Luenberger Observer for HVAC Application using FMI	Michael Mans, Tobias Blacha, Peter Remmen, Dirk Müller: Automated model generation and simplification for district heating and cooling networks	Kenji Sawada, Mamoru Sakura, Osamu Kaneko, Siichi Shin, Isao Matsuda, Toru Murakami: Energy balance based Verification for Model Based Development	Alberto Romero, Alejandro Goldar, Luis D. Couto, Emanuele Garone: A Model Predictive Control Application for a Constrained Fast Charge of Lithium-ion Batteries
15:00	15:30	Coffee Break			
15:30	17:00	Poster Session (Forum Building K)			

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Tuesday evening		S054 (694)	S051 (300)	S053 (144)	S052 (129)
17:00	18:40	<b>Session 3A: HVAC</b> Session Chair:	<b>Session 3B: Language</b> Session Chair:	<b>Session 3C: Mechanics&amp;Transport</b> Session Chair:	<b>Session 3D: New Applications</b> Session Chair:
17:00	17:25	Rohit Dhumane, Jiazhen Ling, Vikrant Aute, Reinhard Radermacher: Modeling Heat Pump Recharge of a Personal Conditioning System with Latent Heat Storage	Christoff Bürger: Modelica language extensions for practical non-monotonic modelling: on the need for selective model extension	Andreas Heckmann, Marc Ehret, Gustav Grether, Alexander Keck, Daniel Lüdicke, Christoph Schwarz: Overview on the DLR RailwayDynamics Library	Michael Tiller: Modeling Supply and Demand in Modelica
17:25	17:50	Wenyi Wang, Yaoyu Li: Real-time optimization of intermediate temperature for a cascade heat pump via extreme seeking	Peter Fritzon, Adrian Pop, Martin Sjölund, Adeel Asghar: MetaModelica – A Symbolic-Numeric Modelica Language and Comparison to Julia	Scott Bortoff: Using Baumgarte's Method for Index Reduction in Modelica	John Redford, Ana Bisinella, Jean-Philippe Saut, Jacques Robert, Maria Albuquerque, Jean-Pierre Merland, Jean-Michel Ghidaglia: Modelica Modelling of an Ammonia Stripper
17:50	18:15	Zhenning Li, Hongtao Qiao, Vikrant Aute: Tube-fin Heat Exchanger Circuitry Optimization For Improved Performance Under Frosting Conditions	Bernhard Thiele, Bernt Lie, Martin Sjölund, Peter Fritzon: Controller Design for a Magnetic Levitation Kit using OpenModelica's Integration with the Julia Language	Tatsuro Ishibashi, Tadao Kawai: Modeling of Rotating Shaft with Partial Rubbing	Andrea Neumayr, Martin Otter: Algorithms for Component-Based 3D Modeling
18:15	18:40	Hongtao Qiao, Saleh Nabi, Xu Han, Christopher Laughman: Coupled Simulation of a Room Air-conditioner with CFD Models for Indoor Environment	Giovanni Agosta, Emanuele Baldino, Francesco Casella, Stefano Cherubin, Alberto Leva, Federico Terraneo: Towards a High-Performance Modelica Compiler	Martin Kuhn, Yang Ji, Bo Wang, Xiang Li, Bohui Liu, Feng Sha, Dunwen Gan, Feng Gao: Aspects of Train Systems Simulation	Jan Šilar, Filip Ježek, Arnošt Mládek, David Polák, Jiří Kofránek: Model visualization for e-learning, Kidney simulator for medical students
18:40	20:00	Transfer to Dinner Location			
20:00		Conference Dinner at the Castle of Emmeram			

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**Wednesday morning**

S054 (694)

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S052 (129)

08:30	09:15	Keynote 2: Dr. Gerd Rösel, Regensburg, Germany			
09:15 09:30 Short Break					
09:30	10:45	<b>Session 4A: Power&amp;Energy 3</b> Session Chair:	<b>Session 4B: Automotive 2</b> Session Chair:	<b>Session 4C: Aerospace</b> Session Chair:	<b>Session 4D: Numerical Methods</b> Session Chair:
09:30	09:55	Johan Windahl, Håkan Runvik, Stephane Velut: Platform for Microgrid Design and Operation	Romain Gillot, Alessandro Picarelli, Mike Dempsey: Fault Insertion for Controller Calibration in Various Engine Models	Duansen Shangguan, Liping Chen, Jianwan Ding, Yuhui Liu: Modeling and Simulation of Dual Redundant Electro-Hydrostatic Actuation System with Special Focus on model architecting and multidisciplinary effects	Erik Henningsson, Hans Olsson, Luigi Vanfretti: DAE Solvers for Large-Scale Hybrid Models
09:55	10:20	Carsten Bode, Gerhard Schmitz: Influence of Excess Power Utilization in Power-to-Heat Units on an Integrated Energy System with 100 % Renewables	Nikolas Schröder, Oliver Lenord, Ralph Lange: Enhanced Motion Control of a Self-Driving Vehicle Using Modelica, FMI and ROS	Max Arzberger, Dirk Zimmer: A Modelica-based environment for the simulation of hybrid-electric propulsion systems	Rebeka Farkas, Gábor Bergmann, Ákos Horváth: Adaptive Step Size Control for Hybrid CT Simulation without Rollback
10:20	10:45	Anh Nguyen, John Batteh: Model-Based Controls Development and Implementation for a Hydroelectric Power System	Artem Kolesnikov, Dzmitry Tretsiak, Morgan Cameron: Systematic Simulation of Fault Behavior by Analysis of Vehicle Dynamics	Daniel Milz, Christian Weiser, Franciscus van der Linden, Matthias Hellerer, Andreas Seefried, Tobias Bellmann: Advances in Flight Dynamics Modelling and Flight Control Design by Using the DLR Flight Visualization and Flight Instruments Libraries	Christian Schulze, Andreas Varchmin, Wilhelm Tegethoff: Steady State Initialization of Vapour Compression Cycles Using the Homotopy Operator
10:45 11:15 Coffee Break					
11:15	12:30	<b>Session 5A: Buildings 3</b> Session Chair:	<b>Session 5B: Power&amp;Energy 4</b> Session Chair:	<b>Session 5C: Thermodynamic 1</b> Session Chair:	<b>Session 5D: Electrical Power 2</b> Session Chair:
11:15	11:40	Hauke Hirsch, Andreas Nicolai, Hans Petzold: Co-Simulation Through Exchange of Time-Series Data Applied to an Energy System Model and Detailed Ground Heat Exchanger Model	Luis Corona Mesa-Moles, Jean-Philippe Argaud, Audrey Jardin, Amine Benssy, Yulu Dong: Robust Calibration of Complex ThermosysPro Models using Data Assimilation Techniques: Application on the Secondary System of a Pressurized Water Reactor	Martin Otter, Hilding Elmqvist, Dirk Zimmer, Christopher Laughman: Media and Fluid Modeling with Modern Programming Language Construct	Biswarup Mukherjee, Luigi Vanfretti: Modeling of PMU-Based Automatic Re-synchronization Controls for DER Generators in Power Distribution Networks using Modelica and the OpenIPSL
11:40	12:05	Queralt Altes-Buch, Sylvain Quoilin, Vincent Lemort: Greenhouses: A Modelica Library for the Simulation of Greenhouse Climate and Energy Systems	Yangyang Fu, Sen Huang, Draguna Vrabie, Wangda Zuo: Coupling Power System Dynamics and Building Dynamics to Enabling Building-to-Grid Integration	Dirk Zimmer: Towards Hard Real-Time Simulation of Complex Fluid Networks	Marcelo de C. Fernandes, Luigi Vanfretti, Janaína G. de Oliveira, Maxime Baudette: A Fundamental Time-Domain and Linearized Eigenvalue Analysis of Coalesced Power Transmission and Unbalanced Distribution Grids using Modelica and the OpenIPSL
12:05	12:30	Ryan Rogers, Vickram Lakhian: Modeling of Low Temperature Thermal Networks Using Historical Building Data from District Energy Systems	Tobias Ramm, Mathias Ehrenwirth, Tobias Schrag: Modelling of the Central Heating Station within a District Heating System with Variable Temperatures	Maximilian Hebler, Christian Schulze, Wilhelm Tegethoff, Jürgen Köhler: Simulative Potential Analysis of Combined Waste Heat Refrigeration using Ammonia in an Intercity Bus on dynamic route	Andrea Bartolini, Francesco Casella, Adrien Guironnet: Towards Pan-European Power Grid Modelling in Modelica: Design Principles and a Prototype for a Reference Power System Library
12:30 14:00 Lunch					

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**Wednesday  
afternoon**

S054 (694)

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		<b>Session 6A: Buildings 4</b>	<b>Session 6B: Thermodynamic 2</b>	<b>Session 6C: Tools</b>	<b>Session 6D: Automotive 3</b>
		Session Chair:	Session Chair:	Session Chair:	Session Chair:
14:00	15:15				
14:00	14:25	Bruno Hadengue, Andreas Scheidegger, Eberhard Morgenroth, Tove A. Larsen: The WaterHub Modules: Material and Energy Flow Analysis of Domestic Hot Water Systems	Maximilian Kormann, Imke Lisa Krüger: Application of a Real Gas Model by Van-der-Waals for a Hydrogen Tank Filling Process	Adrian Pop, Per Östlund, Francesco Casella, Martin Sjölund, Rüdiger Franke: A New OpenModelica Compiler High Performance Frontend	Weitao Chen, Shenhai Ran, Bengt Jacobson: Integration and Analysis of EPAS and Chassis System in FMI-based co-simulation
14:25	14:50	Anna Vannahme, Tobias Schrag, Matthias Ehrenwirth, Tobias Ramm: Comparison of a usual heat-transfer-station with a hydraulic modified version under the aspect of exergy saving	Sukhwinder Singh, Gerhard Schmitz, Bodo Mickan: Modeling of the Flow Comparator Prototype as New Primary Standard for High Pressure Natural Gas Flow Metering	Bernt Lie, Arunkumar Palanisamy, Alachew Mengist, Lena Buffoni, Martin Sjölund, Adeel Asghar, Adrian Pop, Peter Fritzson: OMJulia: An OpenModelica API for Julia-Modelica Interaction	Theodor Ensbury, Mike Dempsey, David Briant: Virtual Proving Ground Testing: Deploying Dymola and Modelica to recreate Full Vehicle Proving Ground Testing Procedures
14:50	15:15	Anne Senkel, Carsten Bode, Gerhard Schmitz: Evaluating the Resilience of Energy Supply Systems at the Example of a Single Family Dwelling Heating System	Tim Eller, Florian Heberle, Dieter Brüggemann: Transient modelling and simulation of a double-stage Organic Rankine Cycle	Christian Vering, Sven Hinrichs, Moritz Lauster, Dirk Müller: "hello, (Modelica) world": Automated documentation of complex simulation models exemplified by expansion valves	Franz Rudolf Holzinger, Martin Benedikt: Hierarchical Coupling Approach Utilizing Multi-Objective Optimisation for Non-Iterative Co-Simulation
15:15	15:30	Short Break			
15:30	15:45	Closing Session			

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<b>Poster Session</b>  <b>Tuesday 15:30 - 17:00 Forum Building K</b>			Hans Olsson: Flow Network based Diagnostics for Incorrect Synchronous Models
Masatomo Inui, Tomohisa Fujinuma: Study on Efficient Development of 1D CAE Models of Mechano-Electrical Products	Matic Arh, Janko Slavič, Miha Boltežar: Open-Source Software for Simulation and Validation of Electromechanical Relay's Behaviour	Jan-Peter Heckel, Christian Becker: Advanced Modeling of Electric Components in Integrated Energy Systems with the TransiEnt Library	Andreas Nicolai, Anne Paepcke, Hauke Hirsch: Robust and accurate co-simulation master algorithms applied to FMI slaves with discontinuous signals using FMI 2.0 features
Yutaka Watanabe, Toru Takahashi: Development of a General-purpose Analytical Tool for Evaluating the Dynamic Characteristics of Thermal Energy Systems	Jose Evora, Jose Juan Hernandez Cabrera, Jean-Philippe Tavella, Stéphane Vialle, Enrique Kremers, Loïc Frayssinet: Daccosim NG: co-simulation made simpler and faster	Atiyah Elsheikh: $\text{der}(x,p)$ !? Applications and Computational Methods of Dynamic Parameter Sensitivities	Willi Braun, Martin Schroschk, Vitalij Ruge, Bernhard Bachmann: Contributions to the Efficient and Parallel Jacobian Evaluation and its Application in OpenModelica
Bingrui Bao, Junfeng Guo, Baokun Zhang, Fanli Zhou: Frequency Response Estimation Method for Modelica Model and Frequency Estimation Toolbox Implementation	Yangyang Fu, Xing Lu, Wangda Zuo: Modelica Models for the Control Evaluations of Chilled Water System with Waterside Economizer	Sooncheol Park, Yonggwon Jeon, Dae-Oh Kang, Min-Su Hyun, Seung-Jin Heo: Predicting the vehicle performance at an early stage of development process via suspension bush design tool	Atiyah Elsheikh: Biochemical Reaction Networks with One Reaction Component: Highlights of the GenKinetics Library
Yuhui Liu, Liping Chen, Yan Zhao, Shanshan Liu, Fanli Zhou, Duansen Shangguan: Modelica-Based Modeling and Application Framework on the Hybrid Electric Vehicles	John Webster, Carsten Bode: Implementation of a Non-Discretized Multiphysics PEM Electrolyzer Model in Modelica	Jean-Philippe Chancelier, Sébastien Furic, Pierre Weis: Translating Simulink Models to Modelica using the $\{\backslash\text{NSP}\}$ Platform	Shashank Swaminathan: modelica_bridge : A Library for Connecting Modelica to ROS