



Monday, 16 October

8am	Registration Day 1
8:30am	Coffee Tutorials
9am	TT1 - Immittances of Converters in Power Systems: Theory, Modeling and Applications
9am	TT2 - Grid-Forming Converters: Principles and Practices
9am	TT3 - Power Hardware-in-the-Loop (PHIL) - Real-time simulation and closed loop stability
9am	TT4 - Introduction to Virtual synchronous machines - inverters for a stable and well-damped grid
9am	TT5 - Power System Dynamic Modelling, Performance Assessment, Needs and Services Identification, and Grid Connection Process with a High Share of Inverter-based Resources
12pm	Lunch <i>Foyer Tulla Hörsaal</i>

1:30pm **Live Demo - Energy Lab 2.0**
Energy Lab 2.0

6pm **Welcome Reception eGrid2023**
KIT Casino Campus North

Tuesday, 17 October

7:30am	Registration Day 2
8:30am	Opening Speech
9am	Keynote 1 - Michael Jesberger, TransnetBW GmbH Security of supply and energy transition - A contradiction? » Michael Jesberger
9:45am	Keynote 2 - Zhenyu (Henry) Huang, Pacific Northwest National Laboratory Power Electronics for a Better Future Grid » Zhenyu (Henry) Huang
10:30am	Coffee Break
11am	Panel 1 - Low inertia grids: how to host safely a high integration of renewables?



Continued from **Tuesday, 17 October**

12:30pm **Lunch Break**

12:30pm **Poster Session 1**

P-Q Theory-based Dynamic Load Modelling in Short-Circuit Analysis

» [Mr. Karthik Rajashekaraiah](#), Mr. Cosimo Iurlaro, Mr. Mauro Semeraro, Dr. Sergio Bruno, Prof. Giovanni De Carne

Digital Twin Paradigm for Fault Ride Through in Grid-Integrated Distributed Generation

» [Dr. Mohammed Ali Khan](#), Dr. Varaha Satya Bharath Kurukuru, Dr. Navid Bayati, Prof. Thomas Ebel

Field report on power plants modeling for electrical power system stability studies

» [Mr. Nils Wiese](#), Mr. Thorsten Reimann, Dr. Diana Strauß-Mincu, Dr. René Suchantke, Mr. Reinhard Stornowski

Towards a Real-World Dispatchable Feeder

» [Mr. Sebastian Beichter](#), Mr. Maximilian Beichter, Ms. Dorina Werling, Mr. Johannes Galenzowski, Mr. Victor Weise, Mr. Christoph Hildenbrand, Mr. Friedrich Wiegel, Mr. Ralf Mikut, Dr. Simon Waczowicz, Prof. Veit Hagenmeyer

Modulation Methods for Modular Multilevel Converters with Full-Bridge Submodules

» [Mr. Arttu Ruusila](#), Prof. Petros Karamanakos, Prof. Antonios Antonopoulos, Dr. Jyri Kivimäki

Fast and Accurate Real-Time Frequency Estimation Using Windowed Maximum Likelihood For Power Systems Applications

» [Mrs. Imane Biyya](#), Dr. Ahmed Abbou, Dr. Zakarya Oubrahim

Green Hydrogen Power Supply: Challenges and Opportunities

» [Mr. Samuel Queiroz](#), Dr. Levy Costa

Technical and Economic Design of the Hydrogen-Based Energy Storage Systems for Power System Stability with 80% Renewable Energy-Research Project: HZwo StabiGrid

» [Dr. Farhad Safargholi](#), Mr. Marco Voigtmann, Mrs. Fatemeh Abedini, Ms. Yang Guo, Ms. Hanen Nouri, Mr. Patrick Schaarschmidt, Ms. Maria-Sophie Günther, Mr. Martin Ulber

Experimental validation of demand side response rates for frequency control

» [Mr. Leo Casasola Aignesberger](#), Mr. Friedrich Wiegel, Dr. Simon Waczowicz, Prof. Veit Hagenmeyer, Dr. Sergio Martinez

Impacts of Multi-physical Domain of Wind Turbine on Power Grid Performances

» Ms. Lulan Yin, [Prof. Rongwu Zhu](#)

PQ and DQ control methods against voltage disturbances for Shunt Active Power Filter – A Comparative Study

» [Mrs. Imane Biyya](#), Dr. Zakarya Oubrahim, Dr. Ahmed Abbou

Efficacy Analysis of Power Swing Blocking and Out-of-step Tripping Protection for Grid-Following-VSC Systems

» [Dr. Yongxin Xiong](#), Prof. Heng Wu, Prof. Xiongfei Wang

Neural-Network-Based Impedance Estimation for Transmission Cables Considering Aging Effect

» [Mr. Li Cheng](#), Dr. Yang Wu, Prof. Xiongfei Wang, Prof. Minjie Chen, Mr. Zichao Zhou, Prof. Lars Nordström

Real-Time Monitoring and Control of Inverter-Based Resources with an Integrated T&D System

» [Mr. Abdul Shafae Mohammed](#), Dr. Johan Enslin, Mr. Qi Xiao, Dr. Ning Lu



Continued from **Tuesday, 17 October**

Improving Power System Resilience Based on Grid-Forming Converter Control and Real-Time Monitoring

» [Mr. Jakob Ungerland](#), Ms. Rebekka Denninger, Dr. Corinna Köpke, Dr. Benjamin Lickert, Dr. Kris Schroven, Mr. Daniel Werner, Prof. Alexander Stolz

Neural Network Modeling of an Electrochemical Ammonia Synthesizer for Smart Grid Applications

» Mr. Miswar miswaras@gmail.com, Prof. Mehrdad Kazerani

A Distributed Two-Layer Frequency Compensation for Islanded Microgrids Based on Q-learning and PI Controllers

» [Mr. Sijia Li](#), Ms. Xian Gao, Prof. Frede Blaabjerg, Prof. Amjad Anvari-Moghaddam

Grid Frequency Control Capability of Energy Storage Systems: Modeling, New Control Approach, and Real-time Validation

» [Dr. Arman Oshnoei](#), Mr. soroush oshnoei, Mr. Kamran Jalilpoor, Dr. Sadeqh Soudjani, Prof. Frede Blaabjerg

Integration of a Grid-Forming MVDC-System into a Transmission Grid Section for Real-Time Applications

» [Mr. Julian Richter](#), Mr. Ilya Burlakin, Mr. Timo Wagner, Mr. Michael Richter, Dr. Gert Mehlmann, Prof. Matthias Luther

Parameterization of a Decentralized Bottom-up Black Start Sequence in Inverter-Dominated Grids

» [Ms. Mina Mirzadeh](#), Mr. Robin Strunk, Prof. Axel Mertens

Composing Power Flow Patterns through Coordinated Dispatch of Energy Packets

» [Mr. Dominik Schulz](#), Mr. Klemens Schneider, Mr. Marcel Weißbecher, Prof. Veit Hagenmeyer, Prof. Martina Zitterbart, Prof. Marc Hiller

Simulation Models for Superconducting Components of the Electric Aircraft

» [Mr. Ali Khonya](#), Prof. Mathias Noe, Dr. Wesley Tiago Batista de Sousa, Dr. Frederick Berg, Dr. Michael Cooper

1:45pm

Panel 2 - HVDC and Inverter-Based Resources System Stability

3:30pm

Coffee Break

Foyer Tulla Hörsaal

3:30pm

Poster Session 2

Design of dairy systems as active Net-Zero Energy Factories. Technical and economic analysis of the German decarbonization process

» [Mr. Hannes Peter Wasser](#), Dr. Pio Alessandro Lombardi, Dr. Marc Richter, Mr. Sandeep Yadav Mattepu, Prof. Przemyslaw Komarnicki, Prof. Antonio Marco Pantaleo

Reinforcement learning algorithms for exploiting flexibility within a Net-Zero Energy Factory

» [Mr. Sandeep Yadav Mattepu](#), Dr. Pio Alessandro Lombardi, Mr. Hannes Peter Wasser, Dr. Marc Richter, Prof. Przemyslaw Komarnicki

Application of Model-Free Control to Reduce the Total Harmonic Distortion of Inverters

» [Mr. Jan Wachter](#), Prof. Lutz Gröll, Prof. Veit Hagenmeyer

Mobile Charging Units for Electric Vehicles and their Infrastructure Strategy

» Dr. Alfred Safin, Dr. Timur Petrov, Prof. Elena Gracheva, Dr. Nicola Campagna, Prof. Rosario Miceli, [Prof. Stanimir Valtchev](#)

An Energy Efficient Residential Loads Powered by Standalone Solar Microgrid system

» [Ms. nisha gnanam](#), Mr. Mahesh M

Defining and Constraining the Electrical Cardinality of Multiport Converter Mission Profiles

» [Dr. Matthew Deakin](#)



Continued from **Tuesday, 17 October**

On the practical limitations of Groebner bases techniques in power flow studies - A case study on Smart Transformer-based distribution systems

» Dr. Robin Lautenbacher, [Dr. Hrishikesan Vadakkedath Madhavan](#), Dr. Marius Langwasser, Prof. Ralf Koehl

Active Damping Control Strategy for PLL-Synchronized Converters in Weak Grids

» [Ms. Xingqi Liu](#), Dr. Zhixiang Zou, Mr. Yiyang Yao, Mr. Jian Tang, Prof. Wu Chen, Prof. Zheng Wang, Prof. Ming Cheng

A Single-Phase Reactive Power Compensator with Reduced-Size Film Capacitors and Active Power Decoupling Control

» [Mr. IOAN SERBAN](#), Mr. Ronald Musona

Mission Profile Emulation for SM in MMC Connected with Photovoltaic Power Station

» [Dr. Enyi Li](#), Mr. Moxi Wang, Prof. Ke Ma, Prof. Frede Blaabjerg

Fault-Tolerant Scheme for Modular Multilevel Converter Based on Exchanging SMs Between Arms

» Mr. Amin Hashemi Zadeh, Dr. Kourosh Khalaj Monfared, Mr. Armin Miremad, Dr. Yousef Neyshabouri, [Prof. Hossein Imaneini](#)

Control Strategies for a Highly Compact Universal Power-Flow and Quality Controller used as Soft Open Point in Distribution Network Under Fault Conditions

» [Mr. Alexander Köhler](#), Mr. Davood Keshavarzi, Dr. Nima Tashakor, Prof. Stefan Götz

Dual-Ascent Optimization for the Provision of Ancillary Services in Three-Phase Low-Voltage Microgrids

» [Mr. Andrea Lauri](#), Dr. Tommaso Caldognetto, Prof. Ruggero Carli, Dr. Davide Biadene, Prof. Paolo Mattavelli

A Structured Approach for Design of an SST Control Architecture Based on CAFCR Framework

» [Ms. Lindsey Vlaar](#), Dr. Dongsheng Yang

Low-Capacitance Cascaded H-Bridge STATCOM with Enhanced Control Scheme under Unbalanced Grid

» [Mr. Amin Darvishzadeh](#), Dr. Yousef Neyshabouri, Prof. Hossein Imaneini

Assessment of Communication Architecture and Delay on Multi-Agent DC Microgrid Performances

» Mr. Haoyu Wang, [Prof. Rongwu Zhu](#)

Impacts of Inverter Current Reference Generation on Phase Selection Element

» [Mr. Yifei Li](#), Prof. Heng Wu, Prof. Xiongfei Wang

Demand Response Management in Time-Delayed Low Inertia Microgrids Against False Data Injection Cyberattack

» [Dr. Seyed Hossein Rouhani Mahmoudabadi](#), Prof. Chun-Lien Su, Mr. Jin-Ting Yu, Dr. Ebrahim Abbaszadeh, Prof. Saleh Mobayen

Cooperative Control for the Second Order Voltage Harmonic Component Mitigation in Hybrid Microgrids

» Dr. Fotis Valsamas, Dr. Dionisis Voglitsis, [Prof. Nick Papanikolaou](#), Prof. Yongheng Yang

Design of a Voltage-Controlled Active Power Filter with non-invasive Grid-Impedance Observer for the Compensation of Distortion Reactive Power

» [Mr. Niklas Wastensteiner](#), Dr. Swen Bosch, Prof. Heinrich Steinhart

Impact of Electric Vehicle Integration on an Industrial Distribution Network: Case Study Based on Recent Standards

» [Ms. Ana Simarro García](#), Ms. Raquel Villena Ruiz, Mr. Andrés Honrubia-Escribano, Mr. Emilio Gómez Lázaro

Achieving Robust Frequency Control in Microgrids through Automated LQR Control

» [Dr. Ahmed Tijani Salawudeen](#), Dr. Ilka Jahn, Prof. Antonello Monti

4:45pm

**Keynote 3 -
Adrian Timbus, Hitachi Energy**



Continued from **Tuesday, 17 October**

» Adrian Timbus

5:30pm Selected Paper Session 1

5:30pm Operating Experiences and Insight in Future Applications of Grid Forming Capability of VSC HVDC
 » [Ms. Ying Jiang Hafner](#), Mr. Adil Abdalrahman, Mr. Mauro Monge, Mr. Peter Lundberg

5:45pm Power Hardware-in-the-Loop tests of a control architecture for isolated microgrids in a co-simulation framework
 » Dr. Lucio Barbato, Mr. Gianpatrizio Bianco, Dr. Luigi Mascolo, Mr. Marco Menga, Mr. Francesco Renna, Dr. Gianluca Sapienza, Ms. Chiara Micillo, Dr. Sergio Bruno, [Mr. Cosimo Iurlaro](#), Prof. Massimo La Scala

6pm The NRPS model and its extension for modeling grids with multiple (virtual) synchronous machines
 » [Mr. Florian Reissner](#), Prof. George Weiss

7pm Gala Dinner
Kesselhaus

Wednesday, 18 October

7:30am Women in Engineering Breakfast
Foyer KIT Präsidium

9am Keynote 4 - Michael Weinhold, Siemens

» Michael Weinhold

9:45am Keynote 5 - Barry Mather, National Renewable Energy Laboratory

The Grid Transformation: Integrating 100's of GW of Wind and Solar
 » Barry Mather

10:30am Coffee Break

10:45am Panel 3 - High power testing: what are the possibilities? What are the opportunities?

12:15pm Lunch

12:15pm Poster Session 3

Establishing a Switchable Experimental Power Grid in the Distribution System of a Real Building
 » [Ms. Johanna Geis-Schroer](#), Ms. Daniela Eser, Mr. Frederik Gielnik, Mr. Gregor Bock, Ms. Olga Kinas, Dr. Michael Suriyah, Prof. Thomas Leibfried

Geographically Distributed Real-Time Co-simulation Testbed for Community Microgrids
 » Mr. Sumit Kumar Srivastava, [Prof. Robert Cox](#), Prof. Ehab Shoubaki, Dr. Gokhan Ozkan, Prof. Christopher Edrington, Prof. Badrul Chowdhury

Loss and Energy Estimation of a 400 kW Grid-Connected Supercapacitor Energy Storage System
 » [Mr. Michael Hetzel](#), Mr. Lukas Stefanski, Prof. Marc Hiller

Development of a Modular Reconfigurable Battery system with Asymmetric Module Voltages
 » [Dr. Nima Tashakor](#), Mr. Pouyan Pourhadi, Mr. Md Nazmul Hasan, Prof. Stefan Götz



Continued from **Wednesday, 18 October**

Experimentally Validated Reduced-Order Models for Grid-Connected Inverters Using Balanced Residualization

» [Mr. Hans Würfel](#), Mr. Nicolai Lorenz-Meyer, Prof. Johannes Schiffer

A Scalable Transmission & Distribution Co-simulation Platform for IBR-heavy Power Systems

» [Mr. Yousu Chen](#), Dr. Yuan Liu, Dr. Xiaoyuan Fan, Dr. Wei Du, Dr. Dexin Wang, Dr. James Ogle, Dr. Johan Enslin

HIL Simulation for Overcurrent Protection Performance Evaluation Via Low-Level Test within a MATLAB/Simulink Environment

» [Ms. Mariajose Giraldo Iramillo](#), Mr. Ehsan Abbaspour, Prof. Carolina Tranchita Rativa, Mr. Ivan Dumancic

Digital Security by Design: A Review of Combined Hardware-Software-Based CyberSecurity with Compartmentalization

» [Dr. Rabia Khan](#), Dr. Kinan Ghanem, Prof. Federico Coffele

Control Architecture for Smart Digital Node providing Hybrid AC/DC Supply

» Prof. Kari Maki, [Mr. Marius Baranauskas](#), Mr. Sergio Motta, Mr. Yljon Seferi, Dr. Zhiwang Feng, Prof. Graeme Burt, Mr. Alex Stallman, Mr. Martin Franke, Mr. David Nestle, Mr. Siwanand Misara

Software Development of a Grid Analyzer for Digital Twins of Distribution Grids

» [Mr. Derk Gonschor](#), Mr. Jonas Steffen, Mr. Juan Alvaro Montoya Perez, Prof. Marco Jung

Impact of Communication Delays on Voltage Control Accuracy and Stability of a Photovoltaic Park

» [Mr. Behnam Daftary Besheli](#), Mr. Federico Cecati, Dr. Sante Pugliese, Prof. Marco Liserre, Ms. Johanna Becker, Prof. Mario Paolone

Investigating the Stability of a DC Shipboard Microgrid protected with Solid-State Circuit Breaker

» Dr. Fabio D'Agostino, Prof. Federico Silvestro, [Mr. Fabrizio Sivori](#)

Improved Short Circuit Behavior by Distributed Capacitors in DC Microgrids

» [Mr. Kevin Pilgrim](#), Prof. Martin Pfof

Enhancement of Withstand Capability of Grid-tied Inverters during transients, utilizing dc-side magnitudes

» Mr. Alexandros Boubaris, Dr. Dionisis Voglitsis, [Prof. Nick Papanikolaou](#), Prof. Yongheng Yang

Challenges, Solutions and Lessons Learnt from Testing Power System Performance with a General Power Theory-Controlled Converter

» [Mr. Pitambar Jankee](#), Prof. Charles Trevor Gaunt, Prof. Michel Malengret, Dr. Ibrahim Abdulhadi, Dr. Behnam Feizifar, Dr. Zhiwang Feng, Prof. Graeme Burt

Three-phase four-wire bidirectional Y-converter for an enhanced interface between the AC grid and the unipolar DC microgrid

» [Mr. Ahmed Yahia Farag Abdelfattah](#), Dr. Davide Biadene, Prof. Paolo Mattavelli, Dr. Tarek Younis

Flatness of some DC Microgrid Topologies

» [Mr. Adam Kastner](#), Prof. Lutz Gröll, Prof. Veit Hagenmeyer

A stochastic approach for power and reserve programming in EV-based DC microgrid

» [Ms. Francesca Marasciuolo](#), Prof. Maria Dicorato, Dr. Giuseppe Forte

Distributed control of islanded DC microgrids with solar as grid-forming units

» [Mr. Marco Guerreiro](#), Mr. Pedro dos Santos, Mr. Patarachai Chevathamamon, Prof. Steven Liu

Instantaneous Symmetrical Components Signal Transformation for Electrical Network Real-Time Co-Simulation Over Unreliable Low Throughput Communication Channels

» [Prof. Ehab Shoubaki](#), Mr. Sumit Kumar Srivastava, Prof. Robert Cox, Prof. Badrul Chowdhury



Continued from **Wednesday, 18 October**

Parameter Estimation of Battery Modules in a Modular Reconfigurable Battery Using Deep Neural Network

» [Dr. Nima Tashakor](#), Mr. Mohamed Saud Furqan, Mr. Masoud Amirrezai Haradasht, Prof. Stefan Götz

A Fault-Tolerant Method for Modular Multilevel Converters in DC Grids by Simultaneously Minimizing Peak Value and Fundamental Component of Common-Mode Voltage

» Mr. Ashkan Raki, Mr. Mahdi Aslanian, [Prof. Hossein Imaneini](#)

Active Thermal Control for Lifetime Equalization in CSI7-based Modular Photovoltaic Integration System

» [Mr. Qilin PENG](#), Prof. Giampaolo Buticchi, Dr. Giovanni Migliazza, Dr. Nadia Tan, Dr. Sandro Guenter, Dr. Emilio Carfagna, Mr. Giovanni Luca Fidone

Multi-rate Discrete Domain Modeling of Power Hardware-in-the-Loop Setups

» [Mr. Fargah Ashrafidehkordi](#), Dr. Dustin Kottonau, Prof. Giovanni De Carne

1:30pm Selected Paper Session 2

1:30pm Spectrum Estimation of Input Current Ripple on a Wide Class of Multilevel Grid-Tied Converters

» [Dr. Davide Biadene](#)

1:45pm Modes of Energy Packets in the Energy Packet Grid

» [Mr. Klemens Schneider](#), Mr. Dominik Schulz, Mr. Marcel Weißbecher, Prof. Veit Hagenmeyer, Prof. Marc Hiller, Prof. Martina Zitterbart

2pm Zero-Speed Start-Up of a 3 MW DFIG Wind Turbine Model: Mechanical and Electrical Hardware-In-the-Loop Co-Simulation

» Mr. Sahand Ghaseminejad Liasi, [Dr. Ramtin Hadidi](#), Dr. Amin Bibo, Dr. Meghashyam Panyam, Mrs. Narges Ghiasi

2:15pm Vector-based accuracy measures in power-hardware-in-the-loop simulations

» [Dr. Florian Hans](#), Mr. Frieder Haag, Ms. Gesa Quistorf

2:30pm Keynote 6 - Don Tan, Northrop Grumman Aerospace Systems

Flexible electronic Large Power Transformers (FeLPTs)

» Don Tan

3:15pm Coffee Break

3:30pm Panel 4 - The evolution of distribution grid: from Watt to power electronics-based grids

4:30pm Conference Closing

5pm Industry Fair