8th IEEE Workshop on the Electronic Grid (eGrid 2023) 16 - 18 Oct 2023 *All times in CEST*

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** *Foyer Tulla Hörsaal*
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 -** **Olaf Sener, TransnetBW GmbH**
	Security of supply and energy transition - A contradiction? » Michael Jesberger (TransnetBW GmbH)
9:45am	**Keynote 2 -** **Zhenyu (Henry) Huang, Pacific Northwest National Laboratory**
	Power Electronics for a Better Future Grid » Zhenyu (Henry) Huang (Pacific Northwest National Laboratory - Department of Energy (DOE))
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[1], Mr. Cosimo Iurlaro[2], Mr. Mauro Semeraro[2], Dr. Sergio Bruno[2], Prof. Giovanni De Carne[1] (1. Karlsruhe Institute of Technology, 2. Politecnico di Bari)

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

» Dr. Mohammed Ali Khan[1], Dr. Varaha Satya Bharath Kurukuru[2], Dr. Navid Bayati[1], Prof. Thomas Ebel[1] (1. university of southern denmark, 2. Silicon Austria Labs)

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

» Mr. Nils Wiese[1], Mr. Thorsten Reimann[1], Dr. Diana Strauß-Mincu[1], Dr. René Suchantke[2], Mr. Reinhard Stornowski[2] (1. Fraunhofer IEE, 2. 50Hertz Transmission GmbH)

Towards a Real-World Dispatchable Feeder

» Mr. Sebastian Beichter[1], Mr. Maximilian Beichter[1], Ms. Dorina Werling[1], Mr. Johannes Galenzowski[1], Mr. Victor Weise[1], Mr. Christoph Hildenbrand[1], Mr. Friedrich Wiegel[1], Mr. Ralf Mikut[1], Dr. Simon Waczowicz[1], Prof. Veit Hagenmeyer[1] (1. Karlsruhe Institute of Technology)

Modulation Methods for Modular Multilevel Converters with Full-Bridge Submodules

» Mr. Arttu Ruusila[1], Prof. Petros Karamanakos[1], Prof. Antonios Antonopoulos[2], Dr. Jyri Kivimäki[3] (1. Tampere University, 2. National Technical University of Athens, 3. GE Grid Solutions)

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

» Mrs. Imane Biyya[1], Dr. Ahmed Abbou[1], Dr. Zakarya Oubrahim[1] (1. Mohammed V University Rabat, Morocco)

Green Hydrogen Power Supply: Challenges and Opportunities

» Mr. Samuel Queiroz[1], Dr. Levy Costa[1] (1. Eindhoven University of Technology)

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[1], Mr. Marco Voigtmann[1], Mrs. Fatemeh Abedini[1], Ms. Yang Guo[1], Ms. Hanen Nouri[1], Mr. Patrick Schaarschmidt[1], Ms. Maria-Sophie Günther[1], Mr. Martin Ulber[1] (1. TU Chemnitz, University, Chemnitz, Germany)

Experimental validation of demand side response rates for frequency control

» Mr. Leo Casasola Aignesberger[1], Mr. Friedrich Wiegel[2], Dr. Simon Waczowicz[2], Prof. Veit Hagenmeyer[2], Dr. Sergio Martinez[1] (1. Escuela Técnica Superior de Ingenieros Industriales, Universidad Politécnica de Madrid, 2. Karlsruhe Institute of Technology)

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

» Ms. Lulan Yin[1], Prof. Rongwu Zhu[1], Mr. Yake Gu[1], Ms. Xiaoxiao Qi[2] (1. Harbin Institute of Technology (Shenzhen）, 2. State Grid Xinjiang Electric Power Company)

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

» Mrs. Imane Biyya[1], Dr. Zakarya Oubrahim[1], Dr. Ahmed Abbou[1] (1. Mohammed V University Rabat, Morocco)

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

» Dr. Yongxin Xiong[1], Prof. Heng Wu[1], Prof. Xiongfei Wang[2] (1. Department of Energy, Aalborg University, 2. Aalborg University)

Continued from **Tuesday, 17 October**

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

» Mr. Li Cheng[1], Dr. Yang Wu[2], Prof. Xiongfei Wang[1], Prof. Minjie Chen[3], Mr. Zichao Zhou[1], Prof. Lars Nordström[1] (1. KTH Royal Institute of Technology, 2. Aalborg University, 3. Princeton University)

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

» Mr. Abdul Shafae Mohammed[1], Dr. Johan Enslin[1], Mr. Qi Xiao[2], Dr. Ning Lu[2], Ms. Cara DeCoste Chacko[3], Ms. Kathleen Sico[3], Mr. Steven G Whisenant[3] (1. Clemson University, 2. North Carolina State University, 3. Duke Energy)

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

» Mr. Jakob Ungerland[1], Ms. Rebekka Denninger[1], Dr. Corinna Köpke[2], Dr. Benjamin Lickert[2], Dr. Kris Schroven[2], Mr. Daniel Werner[1], Prof. Alexander Stolz[2] (1. Fraunhofer Institute for Solar Energy Systems ISE, 2. Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach-Institut, EMI)

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

» Mr. Sijia Li[1], Ms. Xian Gao[1], Prof. Frede Blaabjerg[1], Prof. Amjad Anvari-Moghaddam[1] (1. Aalborg University)

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

» Dr. Arman Oshnoei[1], Mr. soroush oshnoei[2], Mr. Kamran Jalilpoor[3], Dr. Sadegh Soudjani[4], Prof. Frede Blaabjerg[5] (1. Department of Energy, Aalborg University, 2. Aarhus University, 3. Ghent University, 4. Newcastle University, 5. Aalborg University)

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

» Mr. Julian Richter[1], Mr. Ilya Burlakin[1], Mr. Timo Wagner[1], Mr. Michael Richter[1], Dr. Gert Mehlmann[1], Prof. Matthias Luther[1] (1. Friedrich-Alexander-Universität Erlangen-Nürnberg)

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

» Ms. Mina Mirzadeh[1], Mr. Robin Strunk[1], Prof. Axel Mertens[1] (1. Leibniz University Hannover)

Composing Power Flow Patterns through Coordinated Dispatch of Energy Packets

» Mr. Dominik Schulz[1], Mr. Klemens Schneider[1], Mr. Marcel Weßbecher[1], Prof. Veit Hagenmeyer[1], Prof. Martina Zitterbart[1], Prof. Marc Hiller[1] (1. Karlsruhe Institute of Technology)

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

» Prof. Ehab Shoubaki[1], Mr. Sumit Kumar Srivastava[1], Prof. Robert Cox[1], Prof. Badrul Chowdhury[1] (1. Department of Electrical & Computer Engineering, University of North Carolina at Charlotte)

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

» Mr. Alexandros Boubaris[1], Dr. Dionisis Voglitsis[1], Prof. Nick Papanikolaou[1], Prof. Yongheng Yang[2] (1. Democritus University of Thrace, 2. Zhejiang University)

1:45pm **Panel 2 -**
HVDC and Inverter-Based Resources System Stability

3:30pm **Coffee Break**
Foyer Tulla Hörsaal

3:30pm **Poster Session 2**

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

» Mr. Sandeep Yadav Mattepu[1], Dr. Pio Alessandro Lombardi[1], Mr. Hannes Peter Wasser[1], Dr. Marc Richter[1], Prof. Przemyslaw Komarnicki[2] (1. Fraunhofer Institute for Factory Operation and Automation IFF, 2. Wroclaw University of Science and Technology)

Continued from **Tuesday, 17 October**

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

» Mr. Jan Wachter[1], Prof. Lutz Gröll[1], Prof. Veit Hagenmeyer[1] (1. Karlsruhe Institute of Technology)

Mobile Charging Units for Electric Vehicles and their Infrastructure Strategy

» Dr. Alfred Safin[1], Dr. Timur Petrov[1], Prof. Elena Gracheva[1], Dr. Nicola Campagna[2], Prof. Rosario Miceli[3], Prof. Stanimir Valtchev[4] (1. Department of power supply of industrial enterprises Kazan State Power Engineering University, 2. Depatment of Engineering University of Palermo, 3. Department of Engineering University of Palermo, 4. Faculty of Science and Technology (FCT) and UNINOVA -CTS University NOVA of Lisbon)

An Energy Efficient Residential Loads Powered by Standalone Solar Microgrid system

» Ms. nisha gnanam[1], Mr. Mahesh M[1] (1. L&T Technology Services)

Defining and Constraining the Electrical Cardinality of Multiport Converter Mission Profiles

» Dr. Matthew Deakin[1] (1. Newcastle University)

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

» Dr. Robin Lautenbacher[1], Dr. Hrishikesan Vadakkedath Madhavan[1], Dr. Marius Langwasser[1], Prof. Ralf Koehl[1] (1. Christian-Albrechts-Universität zu Kiel)

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

» Ms. Xinggi Liu[1], Dr. Zhixiang Zou[1], Mr. Yiyang Yao[1], Mr. Jian Tang[1], Prof. Wu Chen[1], Prof. Zheng Wang[1] (1. Southeast University)

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

» Mr. IOAN SERBAN[1], Mr. Ronald Musona[1] (1. Transilvania University of Brasov)

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

» Dr. Enyi Li[1], Mr. Moxi Wang[1], Prof. Ke Ma[1], Prof. Frede Blaabjerg[2] (1. Shanghai Jiao Tong University, 2. Aalborg University)

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

» Mr. Iman Aghabali[1], Mr. Amin Hashemi Zadeh[1], Prof. Hossein Imaneini[2], Mr. Armin Miremad[1], Dr. Kourosh Khalaj Monfared[1], Dr. Yousef Neyshabouri[3] (1. University of Tehran, 2. Christian-Albrechts-Universität zu Kiel, 3. Urmia University)

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

» Mr. Andrea Lauri[1], Dr. Tommaso Caldognetto[1], Prof. Ruggero Carli[2], Dr. Davide Biadene[3], Prof. Paolo Mattavelli[3] (1. Department of Management and Engineering University of Padova, Vicenza, Italy, 2. Department of Information Engineering, University of Padova, 3. Department of Management and Engineering, University of Padova, Vicenza, Italy)

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

» Ms. Lindsey Vlaar[1], Dr. Dongsheng Yang[1], Prof. Guus Pemen[1], Prof. Koen Kok[1] (1. Eindhoven University of Technology)

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

» Mr. Amin Darvishzadeh[1], Dr. Yousef Neyshabouri[2], Prof. Hossein Imaneini[3] (1. University of Tehran, 2. Urmia University, 3. Christian-Albrechts-Universität zu Kiel)

Continued from **Tuesday, 17 October**

Performances Assessment of Multi Agent DC Microgrid Taking Into Account Communication Architectures

» Mr. Haoyu Wang[1], Prof. Rongwu Zhu[2], Mr. Behnam Daftary Besheli[3], Prof. Marco Liserre[4] (1. Harbin Institute of Technology (Shenzhen), 2. Harbin Institute of Technology (Shenzhen）, 3. Christian-Albrechts-Universität zu Kiel, 4. Christian-Albrechts-Universität zu Kiel / Fraunhofer ISIT)

Impacts of Current Reference Generation on Phase Selection Element

» Mr. Yifei Li[1], Prof. Heng Wu[1], Prof. Xiongfei Wang[1] (1. Aalborg University)

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

» Dr. Seyed Hossein Rouhani Mahmoudabadi[1], Prof. Chun-Lien Su[1], Mr. Jin-Ting Yu[1], Dr. Ebrahim Abbaszadeh[2], Prof. Saleh Mobayen[3] (1. National Kaohsiung University of Science and Technology, 2. Shahrood University of Technology, 3. National Yunlin University of Science and Technology)

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

» Dr. Fotis Valsamas[1], Dr. Dionisis Voglitsis[1], Prof. Nick Papanikolaou[1], Prof. Yongheng Yang[2] (1. Democritus University of Thrace, 2. Zhejiang University)

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

» Mr. Niklas Wastensteiner[1], Dr. Swen Bosch[2], Prof. Heinrich Steinhart[1] (1. Aalen University of Applied Sciences, 2. Voith Group)

Achieving Robust Frequency Control in Microgrids through Automated LQR Control

» Dr. Ahmed Tijani Salawudeen[1], Dr. Ilka Jahn[1], Prof. Antonello Monti[1] (1. Institute for Automation of Complex Power System RWTH Aachen)

Geographically Distributed Real-Time Co-simulation Testbed for Community Microgrids

» Mr. Sumit Kumar Srivastava[1], Prof. Robert Cox[1], Prof. Ehab Shoubaki[1], Dr. Gokhan Ozkan[2], Prof. Christopher Edrington[2], Prof. Badrul Chowdhury[1] (1. Department of Electrical & Computer Engineering, University of North Carolina at Charlotte, 2. Clemson University)

Simulation Models for Superconducting Components of the Electric Aircraft

» Mr. Ali Khonya[1], Prof. Mathias Noe[1], Dr. Wescley Tiago Batista de Sousa[1], Dr. Frederick Berg[2], Dr. Michael Cooper[2] (1. Karlsruhe Institute of Technology, 2. Airbus)

4:45pm **Keynote 3 -**
Mario Campo, Hitachi Energy

» Mario Campo (Hitachi Energy)

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[1], Mr. Adil Abdalrahman[1], Mr. Mauro Monge[1], Mr. Peter Lundberg[1] (1. hitachi energy)

5:45pm **Power Hardware-in-the-Loop tests of a control architecture for isolated microgrids in a co-simulation framework**

» Dr. Lucio Barbato[1], Mr. Gianpatrizio Bianco[1], Dr. Luigi Mascolo[1], Mr. Marco Menga[1], Mr. Francesco Renna[1], Dr. Gianluca Sapienza[1], Ms. Chiara Micillo[2], Dr. Sergio Bruno[3], Mr. Cosimo Iurlaro[3], Prof. Massimo La Scala[3] (1. Gridspertise, 2. e-distribuzione, 3. Politecnico di Bari)

6pm **The NRPS model and its extension for modeling grids with multiple (virtual) synchronous machines**

» Mr. Florian Reissner[1], Prof. George Weiss[1] (1. Tel Aviv University)

7pm **Gala Dinner**
Kesselhaus

Wednesday, 18 October

7:30am	**Women in Engineering Breakfast** *Foyer KIT Präsidium*
9am	**Keynote 4 -** **Michael Weinhold, Siemens**
	» Michael Weinhold (Technology & Innovation Smart Infrastructure at Siemens)
9:45am	**Keynote 5 -** **Barry Mather, National Renewable Energy Laboratory**
	The Grid Transformation: Integrating 100's of GW of Wind and Solar » Barry Mather (National Renewable Energy Laboratory)
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[1], Ms. Daniela Eser[1], Mr. Frederik Gielnik[1], Mr. Gregor Bock[1], Ms. Olga Kinas[1], Dr. Michael Suriyah[1], Prof. Thomas Leibfried[1] (1. Karlsruhe Institute of Technology)
	Loss and Energy Estimation of a 400 kW Grid-Connected Supercapacitor Energy Storage System » Mr. Michael Hetzel[1], Mr. Lukas Stefanski[1], Prof. Marc Hiller[1] (1. Karlsruhe Institute of Technology)
	Development of a Modular Reconfigurable Battery system with Asymmetric Module Voltages » Dr. Nima Tashakor[1], Mr. Pouyan Pourhadi[1], Mr. Md Nazmul Hasan[1], Prof. Stefan Götz[2] (1. Rheinland-Pfälzische Technische Universität Kaiserslautern Landau, 2. University of Kaiserslautern-Landau)
	Experimentally Validated Reduced-Order Models for Grid-Connected Inverters Using Balanced Residualization » Mr. Hans Würfel[1], Mr. Nicolai Lorenz-Meyer[1], Prof. Johannes Schiffer[1] (1. BTU Cottbus-Senftenberg)
	A Scalable Transmission and Distribution Co-simulation Platform for IBR-heavy Power Systems » Mr. Yousu Chen[1], Dr. Yuan Liu[1], Dr. Xiaoyuan Fan[1], Dr. Wei Du[1], Dr. Dexin Wang[1], Dr. James Ogle[1], Dr. Johan Enslin[2] (1. Pacific Northwest National Laboratory, 2. Clemson University)
	HIL Simulation for Overcurrent Protection Performance Evaluation Via Low-Level Test within a MATLAB/Simulink Environment » Ms. Mariajose Giraldo Jaramillo[1], Mr. Ehsan Abbaspour[1], Prof. Carolina Tranchita Rativa[1], Mr. Ivan Dumancic[1] (1. Frankfurt University of Applied Sciences)
	Control Architecture for Smart Digital Node providing Hybrid AC/DC Supply » Prof. Kari Maki[1], Mr. Marius Baranauskas[1], Mr. Sergio Motta[1], Mr. Yljon Seferi[2], Dr. Zhiwang Feng[2], Prof. Graeme Burt[2], Mr. Alex Stallman[3], Mr. Martin Franke[4], Mr. David Nestle[5], Mr. Siwanand Misara[5] (1. VTT Technical Research Centre of Finland, 2. University of Strathclyde, 3. AMPX Limited, 4. Fraunhofer IEE, 5. Smartrplace)

Continued from **Wednesday, 18 October**

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

» Mr. Derk Gonschor[1], Mr. Jonas Steffen[1], Mr. Juan Alvaro Montoya Perez[1], Prof. Marco Jung[2] (1. Fraunhofer IEE, 2. Bonn-Rhein-Sieg University of Applied Sciences)

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

» Mr. Behnam Daftary Besheli[1], Mr. Federico Cecati[1], Dr. Sante Pugliese[1], Prof. Marco Liserre[2], Ms. Johanna Becker[3], Prof. Mario Paolone[3] (1. Christian-Albrechts-Universität zu Kiel, 2. Christian-Albrechts-Universität zu Kiel / Fraunhofer ISIT, 3. EPFL, Lausanne)

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

» Dr. Fabio D'Agostino[1], Prof. Federico Silvestro[1], Mr. Fabrizio Sivori[1] (1. Università di Genova)

Improved Short Circuit Behavior by Distributed Capacitors in DC Microgrids

» Mr. Kevin Pilgrim[1], Prof. Martin Pfost[1] (1. TU Dortmund University, Dortmund, Germany)

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

» Mr. Pitambar Jankee[1], Prof. Charles Trevor Gaunt[1], Prof. Michel Malengret[1], Dr. Ibrahim Abdulhadi[2], Dr. Behnam Feizifar[2], Dr. Zhiwang Feng[3], Prof. Graeme Burt[3] (1. University of Cape Town, 2. Power Networks Demonstration Centre, 3. Institute for Energy and Environment)

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[1], Dr. Davide Biadene[1], Prof. Paolo Mattavelli[1], Dr. Tarek Younis[2] (1. Department of Management and Engineering, University of Padova, Vicenza, Italy, 2. Faculty of engineering, Aswan University,Aswan, Egypt)

Flatness of some DC Microgrid Topologies

» Mr. Adam Kastner[1], Prof. Lutz Gröll[1], Prof. Veit Hagenmeyer[1] (1. Karlsruhe Institute of Technology)

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

» Ms. Francesca Marasciuolo[1], Prof. Maria Dicorato[1], Dr. Giuseppe Forte[1] (1. Politecnico di Bari)

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

» Mr. Marco Guerreiro[1], Mr. Pedro dos Santos[1], Mr. Patarachai Chevathamanon[1], Prof. Steven Liu[1] (1. Rheinland-Pfälzische Technische Universität Kaiserslautern Landau)

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

» Dr. Nima Tashakor[1], Mr. Masoud Amirrezai Haradasht[2], Mr. Mohamed Saud Furqan[2], Ms. Swati Matwankar Shah[2], Mr. Pouyan Pourhadi[2], Prof. Stefan Götz[2] (1. University of Kaiserslautern-Landau, 2. Rheinland-Pfälzische Technische Universität Kaiserslautern Landau)

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[1], Mr. Mahdi Aslanian[1], Prof. Hossein Imaneini[2] (1. University of Tehran, 2. Christian-Albrechts-Universität zu Kiel)

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

» Mr. Qilin PENG[1], Prof. Giampaolo Buticchi[1], Dr. Giovanni Migliazza[2], Dr. Nadia Tan[1], Dr. Sandro Guenter[1], Dr. Emilio Carfagna[2], Mr. Giovanni Luca Fidone[2] (1. University of Nottingham Ningbo China, 2. University of Modena and Reggio Emilia)

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

» Mr. Fargah Ashrafidehkordi[1], Dr. Dustin Kottonau[1], Prof. Giovanni De Carne[1] (1. Karlsruhe Institute of Technology)

Continued from **Wednesday, 18 October**

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

» Mr. Hannes Peter Wasser[1], Dr. Pio Alessandro Lombardi[1], Dr. Marc Richter[1], Mr. Sandeep Yadav Mattepu[1], Prof. Przemyslaw Komarnicki[2], Prof. Antonio Marco Pantaleo[3] (1. Fraunhofer Institute for Factory Operation and Automation IFF, 2. Wroclaw University of Science and Technology, 3. Aldo-Moro-Universität Bari)

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

» Mr. Miswar miswaras@gmail.com[1], Prof. Mehrdad Kazerani[1] (1. University of Waterloo)

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] (1. Department of Management and Engineering, University of Padova, Vicenza, Italy)

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

» Mr. Klemens Schneider[1], Mr. Dominik Schulz[1], Mr. Marcel Weßbecher[1], Prof. Veit Hagenmeyer[1], Prof. Marc Hiller[1], Prof. Martina Zitterbart[1] (1. Karlsruhe Institute of Technology)

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[1], Dr. Ramtin Hadidi[1], Dr. Amin Bibo[1], Dr. Meghashyam Panyam[1], Mrs. Narges Ghiasi[1] (1. Clemson University)

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

» Dr. Florian Hans[1], Mr. Frieder Haag[1], Ms. Gesa Quistorf[1] (1. Fraunhofer Institute for Wind Energy Systems IWES)

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

Flexible electronic Large Power Transformers (FeLPTs)

» Don Tan (Northrop Grumman Aerospace Systems)

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**