IEEE Power and Energy Student Summit (PESS) 2023
Conference Agenda

Wednesday, 15th November 2023

16:00 - 16:20 Registration and Opening Ceremony
Prof. Dr.-Ing. Jens Haubrock

16:20 - 16:40 Keynote Address
Prof. Dr.-Ing. habil. Martin Wolter
Vice-Chairman, IEEE Germany Power and Energy Society PES Chapter

16:40 - 17:00 Keynote Address
Oliver Müller
Stadtwerke Bielefeld GmbH

17:00 - 18:00 Special Session - Invited Papers

Assessing Power Flow Formulations for Bilevel Vulnerability Analysis for Multiple Load Cases
Eric Tönges, Philipp Härtel, Martin Braun
Department of Energy Management and Power System Operation, University of Kassel, Kassel, Germany

Virtual Synchronous Machine Control for Asynchronous Grid Connection
Felix Wald, Qiucen Tao, Giovanni De Carne
Institute of Technical Physics, Karlsruhe Institute of Technology, Karlsruhe, Germany

18:00 Networking Reception

Thursday, 16th November 2023

09:00 - 09:10 Welcome Address and Morning Coffee
Prof. Dr.-Ing. Jens Haubrock

09:10 - 09:30 Keynote Address
Dr.-Ing. Matthias Kahl
TransnetBW GmbH

09:30 - 11:30 Session 1 - Simulations, Power System Stability and Battery Storage Systems

An Extended Stability Criterion for Grids with Q(V)-Controlled Distributed Energy Resources
Jonas Schmitt[1], Stefan Ecklebe[2], Sebastian Krahmer[1], Klaus Röbenack[2], Peter Schegner[1]
(1) Chair of Electrical Supply, Technische Universitat Dresde, Dresden, Germany
(2) Institute of Control Theory, Technische Universität Dresden, Dresden, Germany

Q-Learning Based Control Algorithm with Dynamic Combination of Peak Shaving and Self-Consumption Optimization for Industrial Battery Storage Systems
Thomas Engelmann, Lars Quakernack, Jens Haubrock
Institute for Technical Energy Systems Bielefeld University of Applied Sciences and Arts, Bielefeld, Germany

Modeling High Power Chargers at Highway Rest Stops Using Data on Real Usage Behavior
Johannes beck, Nelly-Lee Fischer, Krzysztof Rudion
Institute of Power Transmission and High Voltage Technology, University of Stuttgart, Stuttgart, Germany

Transient Simulation for Steam Accumulators

Maja Maletz[1], Martin Wolter[1], Jörg Sauerhering[2]

(1) Institute of Electric Power Systems, Otto von Guericke University, Magdeburg, Germany

(2) Department 7- Applied Biosciences and Process Engineering University of Applied Sciences Anhalt, Köthen, Germany

11:30 - 12:30	Lunch Break and Networking

12:30 - 12:50 Keynote Address

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Fritz Husemann GmbH & Co. KG

12:50 - 14:50 Session 2 - Photovoltaics and Optimization of Energy Systems.

PV2Heat to Mongolia: Transitioning from Coal to Solar-Powered Resistive Heating with Thermal Storage to Improve Air Quality

Daniel Filipovic[1], Roland Unruh[1], Mohamad Alnassar[1], Joachim Böcker[1], Klaus Rauch[2], Christian Henner[3], Emre Acar[4], Oliver Wallscheid[1]

(1) Power Electronics and Electrical Drives, Paderborn University, Paderborn, Germany

(2) Klaus Rauch Consulting GmbH, Aulendorf, Germany

(3) WestfalenWIND Strom GmbH, Paderborn, Germany

(4) Fluid Process Engineering, Paderborn University, Paderborn, Germany

Design and Control of a High-Performance Single-Phase PV Inverter with MPPT and PWM Control for Urban Residential Applications

Md. Shariful Islam[1], S.M. Abul Bashar[2], Md. Faishal Rahaman[3]

(1) School of Automation, Beijing Institute of Technology, Beijing, China

(2) Department of Civil Engineering, RWTH Aachen University, Aachen, Germany

(3) School of Mechanical Engineering, Beijing Institute of Technology, Beijing, China

Transfer of Circular Economy Principles to Photovoltaics by Analyzing R Principles

Anna Katharina Schnatmann, Eva Schwenzfeier-Hellkamp

Institute for Technical Energy Systems Bielefeld University of Applied Sciences and Arts, Bielefeld, Germany

Design of a Building Energy System Using Model-Based Multi-Objective Optimization

Leon Tadayon, Josef Meiers, Danny Jonas, Georg Frey

Chair of Automation and Energy Systems Saarland Universit, Saarland, Germany

14:50 - 15:20	Refreshments

15:20 - 16:30 Poster Session

Design, Simulation, and Construction of a Three-Phase Grid Converter with Two Switchable Semiconductor Valves

Liska Steenbock, Andreas Kirsch, Jan Boris Loesenbeck

Hochschule Bielefeld - University of Applied Sciences and Arts, Bielefeld, Germany

Inductive Energy Harvesting System with Forced Linear Operation

Christoph Andres, Martin Fritsch, Martin Wolter

Institute of Electric Power Systems, Otto von Guericke University, Magdeburg, Germany

Impact Assessment of Grid Strength and Inverter Based Renewable Energy Penetration on Voltage Stability

Ndeye Khady Diop Dieng[1], Lamine Thiaw[2], Martin Wolter[3], Anna Kerstin Usbeck[4], Ousmane Manga Adamou[5]

(1) West African Science Service Centre on Climate Change and Adapted Land Use, Niamey, Niger

(2) Ecole Superieure Polytechnique de Dakar, Cheikh Anta Diop University, Dakar, Senegal

(3) Institute of Electric Power Systems, Otto von Guericke University, Magdeburg, Germany

(4) Hamburg University of Applied Sciences, Hamburg, Germany

(5) Abdou Moumouni University, Niamey, Niger

Applicability of Methods for Short Circuit Current Calculation in Electrolysis Systems

Jan Ullmer, Michael Bruhns, Peter Schegner

Chair of Electrical Power Systems Dresden University of Technology Dresden, Germany

16:30	Close of Day 2
18:00 - 21:00	Dinner on the Sparrenexpress

Friday, 17th November 2023

09:00 - 09:10   **Welcome Address and Morning Coffee**
Prof. Dr.-Ing. Jens Haubrock

09:10 - 09:30   **Keynote Address**
Dr.-Ing. Marco Stienecker
Maschinenfabrik Reinhausen GmbH

09:30 - 12:00   **Session 3 - Transmission Lines and Faults**

Effects of Unfavorably Transposed Transmission Lines
Carlo Liebermann, Peter Schegner
Technische Universität Dresden, Dresden, Germany

An Impedance Estimation Method for High Ohmic Ground Faults in Compensated Distribution Grids
Yannick Hilen, Georg Kordowich, Johann Jäger
Institute of Electrical Energy Systems, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany

An Overview of the Selection Process for Contactless Electrical Sensors used in Overhead Transmission Lines' Monitoring
Khaled Osmani, Daniel Becker, Detlef Schulz
Helmut-Schmidt-Universität - Universität der Bundeswehr Hamburg, Hamburg, Germany

Distance Protection Test on Siemens SIPROTEC Digital Twin with MATLAB Simulink Test Grid
Hassan Alkhali, Jonathan Loebel, Johann Jäger
Institute of Electrical Energy Systems, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany

Integration of Renewable Energies in Germany and 50Hertz Grid Area.
Polina Sokolnikova
50Hertz Transmission GmbH, Germany

12:00 -13:00   **Lunch + Optional Guided Lab Tour**

13:00 -13:20   **Keynote Address**
Dr.-Ing. Nils Neusel-Lange
Bielefelder Netz GmbH

13:20 - 15:20   **Session 4 - Power Electronics**

Operational Insights into a 4 MVA Microgrid Laboratory for Decentralized Power Electronic Applications
Dominik Schmies, Karl Stephan Stille, Jarren Lange, Oliver Wallschied
Competence Center for Sustainable Energy Technologies, Paderborn University, Paderborn, Germnay

ElectricGrid.jl -- Automated Modeling of Decentralized Electrical Energy Grids
Marvin Meyer[1], Daniel Weber[1], Vikas Chidananda[2], Oliver Schweins[1], Jan Stenner[2], Septimus Boshoff[1], Sebastian Peitz[2], Oliver Wallscheid[1]
(1) Power Electronics and Electrical Drives, Paderborn University, Paderborn, Germany
(2) Data Science for Engineering, Paderborn University, Paderborn, Germany

Converter-Driven Small Signal stability and Interaction Analysis for Grid-Following Converters in Weak and Strong Grids
Jana Celine Kamma, Christina Eckel, Christian Becker
Institute of Electrical Power and Energy Technology, Hamburg University of Technology, Hamburg, Germany

Hybrid Control of Interconnected Power Converters using both Expert-Driven Droop and Data-Driven Reinforcement Learning Approaches
Jan Stenner[1], Septimus Boshoff[2], Daniel Weber[1], Marvin Meyer[1], Vikas Chidananda[2], Sebastian Peitz[2], Oliver Wallscheid[1]
(1) Power Electronics and Electrical Drives, Paderborn University, Paderborn, Germany
(2) Data Science for Engineering, Paderborn University, Paderborn, Germany

15:20 - 15:45   **Closing Ceremony**