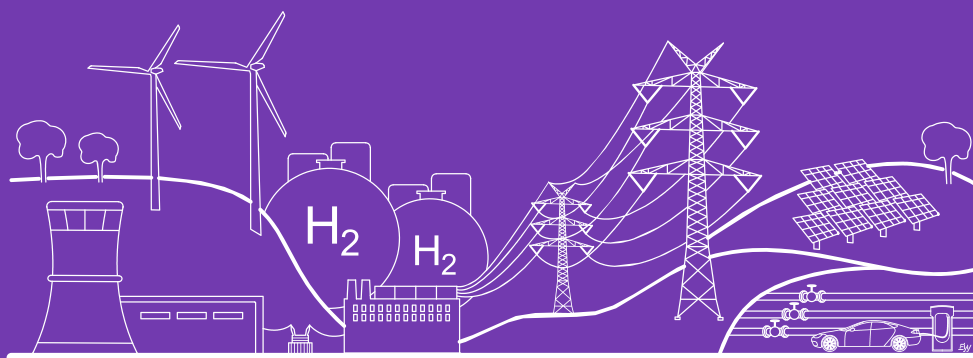


PROGRAMME 2025

NEIS CONFERENCE

on Sustainable Energy Supply
and Energy Storage Systems

since 2013



Officers Home Society of the
University of the Bundeswehr Hamburg e.V.
Rodigallee 98 · 22043 Hamburg

Monday, September 15th 2025

Conference Opening and Start of the First Group of Sessions
(Sessions 1, 2, and 3)

9.00 – 9.10	Conference Opening Professor Detlef Schulz; Department of Electrical Power Systems, Helmut Schmidt University Hamburg
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9.10 – 9.20	International Welcome NEIS 2025 Conference Committee: Dr. Khaled Alosmani, Dr. Munira Halimjanova, and Arash Nosrat; Department of Electrical Power Systems, Helmut Schmidt University Hamburg
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Session 1 Energy Storage Systems and Battery Technologies

9.20 – 10.30	Digital Twin of Hydrogen Fuel Cell Hybrid Electric Vehicle using Laboratory and Drive Cycle Data (ID #41) <u>Dominik Kuckuk</u>[*], Tobias Scholz, Janin Reinarz, Friedbert Pautzke Electric Vehicle Institute, Bochum University of Applied Sciences, Bochum, Germany An overview of Lithium-Ion battery models and their parametrisation techniques (ID #49) <u>Omar Elattar</u>[*], Ivana Mladenovic Technische Hochschule Nürnberg Georg Simon Ohm, Nuremberg, Germany SOH Estimation of BESS Using Operational Data Based on Adaptive UKF and AWTLS (#ID 85) <u>Muhammad Zubair Abbas</u>^{1,2,*}, Firas Alhaider^{1,3} ¹Vattenfall GmbH, Hamburg, Germany ²Carl von Ossietzky Universität, Oldenburg, Germany ³Helmut-Schmidt-Universität, Hamburg, Germany Life Cycle Assessment of a Flow Battery as Stationary Storage for a Renewable-based Energy District (ID #87) Jonathan Voigt[*], <u>Lisa Trautmann</u>[*], Semih Severengiz Bochum University of Applied Sciences, Bochum, Germany Sustainable Technologies Laboratory
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Coffee Break
10.30 – 10.50

Session 2 Thermal Aspects in Electrical Engineering

10.50 – 11.50	Optimization of Greenhouse Cooling Strategies: Performance Analysis of Ventilation and Evaporative Cooling Across Different Climatic Regions in Lebanon (ID #12) <u>Loubna Khaled</u>^{1*}, Rabih Dib¹, Bakri Abdulhay^{2,3}, Nazih Moubayed¹ ¹ Laboratoire de recherche LaRGES, Faculty of Engineering, Lebanese University, Tripoli, Lebanon ² Laboratoire de recherche CERADE, Equipe GRINEEC, ESAIP La Salle - Angers - France ³ Nantes Université, CNRS, Laboratoire de Thermique et Energie, LTEN, UMR6607, F-44000 Nantes - France Optimal dynamic thermal plant control: A study and benchmark (ID #10) Thomas Grandits¹, Stefano Coss², and <u>Gundolf Haase</u>^{1*} ¹University of Graz, Graz, Austria ²Arteria Technologies, Graz, Austria
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	Investigation of Frequency Stability in Hybrid Grids During HVDC-Based Curative Congestion Management (ID #30) <u>Carsten Thomas Gatermann</u>^{1*}, Siyuan Li^{2*}, Steffen Schlegel¹, Jutta Hanson², Dirk Westermann¹ ¹ Power Systems Group, Technische Universität Ilmenau, Ilmenau, Germany ² Institute of Electrical Power Supply with Integration of Renewable Energy, Technische Universität Darmstadt, Darmstadt, Germany Thermal Modeling of Power Transformers: Comparative Analysis of IEC 60076-7 and IEEE C57.91 for Hotspot Temperature Estimation (ID #35) <u>Silas Aaron Selzer</u>^{1*}, Jonas Kurtz¹, Niklas Bäcker¹, Markus Zdrallek¹, Korbinian Maurer² and Karlheinz Lindl² ¹University of Wuppertal, Wuppertal, Germany ²Maschinenfabrik Reinhausen GmbH, Regensburg, Germany
	11.50 – 13.10 Lunch break and group Photo
	Post-lunch session opening, 1st keynote address, Session 3, and Poster session
13.15 – 13.45	1st Keynote Address Prof. Mohamad Ramadan; Senior research scientist, Université d'Angers, Polytech Angers, France. Presenting: "Green to Green energy systems: a step forward toward an optimal energy policy"
	Coffee Break 13.45 – 14.00
	Session 3 Power Systems Planning, Optimization, and Management
14.00 – 15.20	Constructing heating networks from GIS data: A framework for editing and converting line topologies into calculable grids (ID #5) <u>Constantin Völzel</u>^{1*}, Niklas Schug², Michel Textor¹, Stefan Lechner¹ ¹THM - University of Applied Sciences Hessen, Wiesenstrasse 14, 35390 Giessen, Germany ²TransMIT GmbH, Kerkrader Strasse 3, 35394 Giessen, Germany Mathematical Model of the impact of climate change on the energy security of the Republic of Tajikistan (ID #31) Alfiya Akhrorova, Nigina Kamilova, <u>Shahlo Saidova</u>* Tajik Technical University named after Academician M.S. Osimi, Dushanbe, Tajikistan Analysis of Complementary Load Profiles for Optimal Use of Power Flow Controllers in Low-Voltage Grid Areas (ID #44) <u>Jonathan Mader</u>*, Michael Suriyah, Thomas Leibfried Karlsruhe Institute of Technology (KIT), Institute of Electric Energy Systems and High-Voltage Technology (IEH), Karlsruhe, Germany Estimation of Aggregated Distribution Grid Flexibilities Using Linear and Nonlinear Machine Learning Algorithms (ID #69) <u>Tamim Jaouni</u>*, Neelotpal Majumdar, Lutz Hofmann Electric Power Engineering Section, Institute of Electric Power Systems, Leibniz University Hannover, Hannover, Germany Optimizing soil-based microbial fuel cells: From parameter tuning to practical power generation (ID #75)

	<u>Vanessa Condric</u>^{1,2*}, Axel Wellm¹, and Ali Sanayei² ¹Schülerforschungszentrum Hamburg, Germany ²Albrecht-Thaer-Gymnasium, Hamburg, Germany
	Coffee Break 15.20 – 15.40
	Poster Session
	Poster 1: Validation of a Simplified Thermal Model for 525 kV HVDC Cables Using Finite Element Analysis (ID #4) <u>Carsten Thomas Gatermann</u>*, Pavel Viktorowitsch Ionin, Steffen Schlegel, Dirk Westermann Power Systems Group, Technische Universität Ilmenau, Ilmenau, Germany
	Poster 2: Comparing Modelling Approaches for the Thermal Behaviour of a Vanadium Flow Battery used for Thermal and Electric Storage (ID #15) <u>Felix Schofer</u>*, Lakshimi Narayanan Palaniswamy, Nina Munzke, Marc Hiller Institute of Electrical Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany
	Poster 3: Investigation of Virtual Synchronous Machine (VISMA) and Voltage Controlled Inverter (VCI) under grid fault cases (ID #19) Anja Ufkes*, <u>Boris Dorian Pouomegne Kamtoh</u>, Dirk Turschner, and Ines Hauer Institute of Electrical Power Engineering and Energy Systems, Clausthal University of Technology, Clausthal-Zellerfeld, Germany
15.40 – 17.00	Poster 4: Determination of inertia time constant of grid-forming units through load step in islanded operation (ID #20) <u>Stefanie Walujski</u>*, Stefan Klöpping, Frederik Tiedt, Bernd Engel elenia Institute for High Voltage Technology and Power Systems, Technische Universität Braunschweig, Germany
	Poster 5: Impact of Fault Clearing Times and Pre-Fault Converter Setpoints on Microgrid Stability During Islanding (ID #21) <u>Pierre Hülsemann</u>*, Jakob Ungerland Fraunhofer ISE, Freiburg im Breisgau, Germany
	Poster 6: Survey of Harmonic Voltage and Current Unbalance in the German Transmission System based on Field Measurements considering Measurement Uncertainty (ID #22) <u>Olga Zyabkina</u>^{1*}, Max Domagk¹, Ana Maria Blanco¹, Jan Meyer¹, and Marco Lindner² ¹TUD Dresden University of Technology, Dresden, German ²TransnetBW, Stuttgart, Germany
	Poster 7: Methodology for long-term reactive power forecasts of medium voltage grids (ID #23) <u>Marion Hinterreiter</u>^{*1}, Johannes Rauch¹, Oliver Brückl¹ ¹OTH Regensburg University of Applied Sciences, Regensburg, Germany
	Poster 8: Realistic distribution grid models for harmonic studies across different network levels (ID #28) <u>Erik Ole Matthes</u>*, Ana Maria Blanco, Jan Meyer TUD Dresden University of Technology, Dresden, Germany

Poster 9: The impact of electricity price forecasting on the optimal day-ahead dispatch of battery energy storage systems (ID #34)

Leon Tadayon*¹, Dominic Detering²³, Wolfgang Maass²³, and Georg Frey¹

¹Chair of Automation and Energy Systems, Saarland University, Saarbrücken, Germany

²Chair of Information and Service Systems, Saarland University, Saarbrücken, Germany

³German Research Center for Artificial Intelligence (DFKI), Saarbrücken, Germany

Poster 10: Bridging Dark Doldrums with Metal Hydride Hydrogen Storage and Vehicle-to-Home Technology (ID #39)

Astrid Pistor*^(a), Nies Reininghaus^(a), Carlos Muñoz^(a), Michael Kroener^(a), Alexander Dyck^(a), Martin Vehse^(a), Myriam Covarrubias Guarneros^(b), Julián Puszkiet^{(b), (c)}, Thomas Klassen^{(b), (c)}, Julian Jepsen^{(b), (c)}

^(a) Institute of Networked Energy Systems, German Aerospace Center (DLR), Carl-von-Ossietzky-Straße 15, Oldenburg, 26129, Lower Saxony, Germany

^(b) Institute of Hydrogen Technology, Helmholtz-Zentrum Hereon, Max-Planck-Straße 1, 21502 Geesthacht, Germany

^(c) Institute of Materials Science, Helmut Schmidt Universität, University of the Federal Armed Forces Hamburg, Institute of Materials Science, Holstenhofweg 85, 22043 Hamburg, Germany

Poster 11: Advanced Training Methods for Reinforcement-learning-based AC Optimal Power Flow (ID #57)

Eduardo Vilches¹, Nils Bornhorst^{1*}, Marcel Dipp^{1,2}, Abdullah Altayara^{1,2}, Denis Mende^{1,2}, and Martin Braun^{1,2}

¹University of Kassel, Department of Sustainable Electrical Energy Systems (e²n), Kassel, Germany

²Fraunhofer Institute for Energy Economics and Energy System Technology (IEE), Kassel, Germany

Poster 12: Frequency stability analysis of Smart Balancing scenarios in Germany (ID #58)

Klaramarie Schrade, Boyana Georgieva, Hendrik Lens
University of Stuttgart, Germany

Poster 13: Multi-Stage Formulation for Balancing and Electricity Spot Market Participation of Large-Scale Battery Energy Storage Systems (ID #76)

Tim Biermann*, Ronny Gelleschus, Michael Böttiger, Thilo Bocklisch

Chair of Energy Storage Systems, Dresden University of Technology, 01069 Dresden, Germany

Poster 14: Comparative Analysis of Hierarchical Electric Load Forecasting Techniques in the Manufacturing Sector (ID #46)

Anna Harman^{1,2*}, Lukas Baur^{1,2}, Jan Besler^{1,2} and Alexander Sauer^{1,2}

¹Fraunhofer Institute for Manufacturing Engineering and Automation IPA, Stuttgart, Germany

²Institute for Energy Efficiency in Production, University of Stuttgart, Stuttgart, Germany

Poster 15: A Generic Simulation Framework for Large-Scale Battery Energy Storage Systems with Multi-Level Topologies (ID #90)

Florus Härtel*, Michael Böttiger, Thilo Bocklisch

Chair of Energy Storage Systems, Dresden University of Technology, 01069 Dresden, Germany

Poster 16: Qualitative Assessment of Dynamic Multi-Use Energy Management and String Management Techniques for Large-Scale Battery Energy Storage Systems (ID #92)

Ronny Gelleschus*, Tim Biermann, Michael Böttiger, Johannes Lindner, Thilo Bocklisch

Chair of Energy Storage Systems, Dresden University of Technology, 01069 Dresden, Germany

Poster 17: Conceptual Design of a Solar UAV for Continuous Operation Over Hamburg (ID #101)

	<u>Firas Alhaider</u>^{1*}, <u>Abdulbaset Alhaider</u>^{2**}, <u>Tarif Ashtar</u>^{2***} and Prof. Dr.-Ing. habil. Detlef Schulz¹ ¹Electrical Power Systems, Faculty of Electrical Engineering, Helmut-Schmidt-Universität, Hamburg, Germany ²Information and Communication department, Ebla University, Aleppo, Syria ³Department of Aeronautics, Mechanical engineering, University of Aleppo, Syria
17:15 Departure for Evening Event at the Harbour	

Tuesday, September 16 th 2025	
Conference Opening, 2 nd Keynote address, and Start of the First Group of Sessions (Sessions 4 and 5)	
9.00	Conference Opening
–	Professor Detlef Schulz; Department of Electrical Power Systems, Helmut Schmidt University Hamburg
9.10	
	2 nd Keynote Address
9.10	Prof. Martin Kaltschmitt ; Head of the Institute of Environmental Technology and Energy Economics (Institut für Umwelttechnik und Energiewirtschaft, IUE) at the Technische Universität Hamburg (TUHH). Presenting: "Increasing Shares of Fluctuating Power Generation within Electricity Supply Systems - Trends and Implications"
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9.40	
Coffee Break 9.40 – 9.50	
Session 4 Grid Stability and Advanced Control	
	Uncertainty in the Assessment of Harmonic Voltages and Currents in Sequence Domain (ID #36)
	<u>Max Domagk</u> ^{1*} , Olga Zyabkina ¹ , Jan Meyer ¹ and Marco Lindner ²
	¹ TUD Dresden University of Technology, Dresden, Germany
	² TransnetBW, Stuttgart, Germany
	Damping of voltage harmonics and transient voltage distortions with a STATCOM (ID #61)
	<u>Klaus Vennemann</u> ^{1*} , Volker Staudt ^{2*} , Tobias Hennig ¹
	¹ Amprion GmbH, Dortmund, Germany
	² Ruhr University Bochum, Bochum Germany
9.50	Advanced Control Strategies for Doubly-Fed Induction Generators in Variable-Speed Wind Turbines (ID #65)
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11.25	<u>Sina Beydaghi</u> ^{1*} , Hesam Rahbarimagham ^{2*} , Gevork B. Gharehpetian ¹ , and Sevda Beydaghi ³
	¹ Electrical Engineering Department, Amirkabir University of Technology, Tehran, Iran
	² Department of Electrical and Computer Engineering, Raf.C., Islamic Azad University, Rafsanjan, Iran
	³ Industrial Design Department, Faculty of Art, Alzahra University, Tehran, Iran
	A structured analysis of grid scenarios and power market data to establish requirements for hydrogen storage power plants (ID #66)
	<u>Mirco Fabian Woidelko</u> , M. Sc.* ¹ , Christian Becker, Prof. Dr.-Ing. ¹
	¹ Institute of Electrical Power and Energy Technology, Hamburg University of Technology, Hamburg, Germany
	DSSE-Based Training Data Generation for Probabilistic Time Series Forecasting in Distribution Grids with Changing Topologies (ID #84)

	<u>Marcel Dipp</u>^{1,2*}, and Marco Pau¹ ¹Fraunhofer IEE, Grid Planning and Grid Operation, Kassel, Germany ²University of Kassel, Department of Sustainable Electrical Energy Systems, Kassel, Germany Reduce the Operating Costs and Carbon Emissions of Data Centers by using LNG Cold Utilization from Small-scale Liquefied Natural gas (LNG) Terminal (ID #102) Maytungkorn Sermsuk¹, Surapong Siripongdee¹, Amnuay Saengnoee¹, Woranat Sangmanee¹, and <u>Montri Wiboonrat</u>^{1,2*} ¹ College of Innovation and Industrial Management, King Mongkut's Institute of Technology Ladkrabang, Bangkok 10520, Thailand ² King Mongkut's Institute of Technology Ladkrabang Business School, King Mongkut's Institute of Technology Ladkrabang, Bangkok 10520, Thailand
	Coffee Break 11.25 – 11.35
	Session 5 Renewable Energy: Systems, Storage, and Stability
11.35 – 12.55	Operating Methods for Electrolyzers Coupled to Wind Turbines (ID #7) <u>Gerrit Green</u>[*], J.-Christian Toebermann TH Lübeck, Wissenschaftszentrum für intelligente Energienutzung, Lübeck, Germany Improved Offshore Wind Farm System Planning and Operation with Scenario-Based Methodology and Model-Based Systems Engineering (ID #26) <u>Melanie Hoffmann</u>^{1*}, Marcus Nolte², and Michael Kurrat¹ ¹Technische Universität Braunschweig, elenia Institute for High Voltage Technology and Power Systems, Braun-schweig, Germany ²Technische Universität Braunschweig, Institute of Control Engineering, Braunschweig, Germany Prospects of energy storage technologies for offshore renewables in the North Sea region (ID #32) Arto Niemi^{1*}, <u>Lukas Sepulveda Clasen</u>¹, Irina Temiz², Anti Liivat³, Minja Mihajlovic⁴, Vincent Bonnin⁴, Simon J. Stark⁴, Philippe Martens⁵ ¹DLR Institute for the Protection of Maritime Infrastructures, Bremerhaven, Germany ²Department of Electrical Engineering, Uppsala University, Uppsala, Sweden ³Department of Chemistry - Ångström Laboratory, Uppsala University, Uppsala, Sweden ⁴Stichting Dutch Marine Energy Centre, The Hague, The Netherlands ⁵Blue Cluster, Ostend, Belgium Coupled Generator- and Converter-Modelling for Partly Superconducting Medium-Speed Wind Turbine Generators (ID #43) <u>Nick Thönelt</u>^{1*}, Robin Köster², Marc Hiller¹, Yves Burkhardt², and Andreas Binder² ¹Institute of Electrical Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany ²Institute for Electrical Energy Conversion, Technical University Darmstadt, Darmstadt, Germany Impact of Wind Turbulences on the Energy Yield of a Wind Turbine with a Hydraulic-Pneumatic Flywheel System in its Rotor (ID #81) <u>Abhinay Goga</u>^{1*}, Clemens Jauch¹ and Laurence Alhrshy¹ ¹Wind Energy Technology Institute, Flensburg University of Applied Sciences, Kanzleistraße 91-93, 24943 Flensburg, Germany
	13.00 Closing ceremony and farewell

Conference on Sustainable Energy Supply and Energy Storage Systems (NEIS)

Conference Chair:

Prof. Dr.-Ing. habil. Detlef Schulz
Chair of Electrical Power Systems
Helmut Schmidt University/
University of the Federal Armed Forces Hamburg
Holstenhofweg 85, 22043 Hamburg

Organizing Committee 2025:

Khaled Alosmani alosmani.k@hsu-hh.de
Munira Halimjanova halimjam@hsu-hh.de
Arash Nosrat nosrata@hsu-hh.de

Email: info@neis-conference.com

Floor Plan

