

# **ETG-Congress 2023**

Die Energiewende beschleunigen

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## **A1: Digitalisierung der Energiewende - Neue Verfahren und Konzepte in der Netzplanung**

Raum: Raum 1

### **13:00 *Resilience-Driven Strategic Grid Planning with an Overload Protection Scheme Reducing Cascading Outages***

Gourab Banerjee (Fraunhofer IEE & University of Kassel, Germany); Christian Hachmann (University of Kassel & Fraunhofer IEE, Germany); Denis Mende (Fraunhofer IEE, Germany); Jan Lipphardt (University of Kassel, Germany); Martin Braun (Fraunhofer Institut für Energiewirtschaft und Energiesystemtechnik IEE & Universität Kassel, Germany); Julian Dollichon (Fraunhofer Institute for Energy Economics and Energy System Technology, Germany)

pp. 1-8

### **13:20 *Rooftop Photovoltaic Systems in German Agriculture - An Analysis of the Status quo and Potential for the future***

Felix Klabunde (Technische Universität Braunschweig, Germany); Bernd Engel (TU Braunschweig, Germany)

pp. 9-14

### **13:40 *Impact of Grid Parameters for Modeling Surrounding Grid Areas***

Steffen Weghorn (Friedrich-Alexander-University Erlangen-Nürnberg, Germany); Johannes Porst (FAU Erlangen-Nürnberg, Germany); Matthias Luther (University of Erlangen-Nürnberg, Germany)

pp. 15-21

### **14:00 *A Parallel and Decoupled Procedure for Time-Series-Based Planning of Distribution Grids Considering Active Power Curtailment***

Friederike Wenderoth (University of Kassel, Germany); Roman Bolgaryn (Fraunhofer IEE, Germany); Martin Braun (Fraunhofer Institut für Energiewirtschaft und Energiesystemtechnik IEE & Universität Kassel, Germany)

pp. 22-29

### **14:20 *Opportunities and risks of implementing autonomous systems in power industry***

Milos Subasic (Hitachi Energy, Germany); Peter Noglik (Hitachi Energy Germany AG, Germany)

pp. 30-37

## **B1: Digitalisierung der Energiewende - Neue Verfahren und Konzepte im Netzbetrieb**

Raum: Raum 2

### **13:00 *Influence of temporal restrictions on the potential of curative congestion management***

Katharina M. Kollenda, Marbod H. M. Kollnig and Tobias Sous (RWTH Aachen University, Germany); Albert Moser (IAEW, RWTH Aachen, Germany)

pp. 38-47

### **13:20 *Konzepte zur Berücksichtigung des Netzboosters in der Betriebsplanung elektrischer Übertragungsnetze***

Julia Ziegeldorf-Wächter (FGH e. V., Germany); Lukas Kalisch (Forschungsgemeinschaft für Elektrische Anlagen und Stromwirtschaft e. V., Germany); Simon Krahl (FGH e. V., Germany); Lisa Klesse, Mihaela Kovacheska and Dominik Geibel (TransnetBW GmbH, Germany)

- pp. 48-54
- 13:40 *Droop concept for voltage angle-based operation for converter-dominated grids*  
Hassan Alhomsy (Ilmenau University of Technology, Germany); Franz Linke (Research Fellow, Germany); Dirk Westermann (Ilmenau University of Technology, Germany)  
pp. 55-60
- 14:00 *Concept and Operation of a distributed multi-domain Power System Laboratory with HiL-capabilities*  
Gert Mehlmann (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Christian Scheibe (Friedrich-Alexander-Universität Erlangen Nürnberg (FAU) & Siemens AG, Germany); Simon Resch (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Georg Kordowich (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Julian Richter (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Timo Wagner (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Ananya Kuri (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany & Siemens AG, Germany); Michael Richter (Friedrich-Alexander-University Erlangen-Nuremberg & Chair of Electrical Power Systems, Germany); Johann Jäger (University of Erlangen-Nuremberg, Germany); Matthias Luther (University of Erlangen-Nürnberg, Germany)  
pp. 61-68
- 14:20 *Verfahren zur Erstellung kostenoptimierter Fahrpläne für Flexibilitäten mit einem Modell-Prädiktiven-Algorithmus*  
Steven Eich, Andreas Winter and Michael Igel (Hochschule für Technik und Wirtschaft des Saarlandes, Germany)  
pp. 69-76

## **C1: Komponenten und Technologien für die Energiewende**

Raum: Raum 3

- 13:00 *Reducing network expansion using AC and DC meshing concepts*  
Robert Martin Schmidt, Christian Ziesemann and Maik Schönefeld (RWTH Aachen University, Germany); Albert Moser (IAEW, RWTH Aachen, Germany)  
pp. 77-82
- 13:20 *Automating day-ahead forecasting of photovoltaic power generation: Model design, monitoring, and adaption*  
Stefan Meisenbacher, Tim Martin and Benedikt Heidrich (Karlsruhe Institute of Technology, Germany); Ralf Mikut (Karlsruhe Institute of Technology (KIT), Germany); Veit Hagenmeyer (Karlsruhe Institute of Technology, Germany)  
pp. 83-90
- 13:40 *pandaprosumer - Tool for Consideration of Flexibilities in Energy Distribution Grids*  
Simon Ruben Drauz-Mauel and Lars-Peter Lauven (Fraunhofer IEE, Germany)  
pp. 91-98
- 14:00 *The application of Wide Area Monitoring System (WAMS) for Grid Forming Converter Control*  
Nizam Halawi, Hassan Alhomsy, Steffen Schlegel and Dirk Westermann (Ilmenau University of Technology, Germany)  
pp. 99-104

14:20 *Investigation of the Short-Circuit-Power Significance in Converter-based Power Systems*  
Deepak Deepak (University of Stuttgart, Germany); Krzysztof Rudion (Universität Stuttgart, Germany); Christoph John and Hans Abele (TransnetBW GmbH, Germany)  
pp. 105-112

## **D1: Sektorenkopplung und Elektromobilität - Netzdienlichkeit von Ladeinfrastruktur**

Raum: Raum 4

13:00 *Object-Oriented Charging Model for the Simulation of Grid-Serving Intelligent Charging Infrastructure*

Timo Alexander Hertlein (Coburg University of Applied Sciences and Arts & Siemens AG, Germany); Christian Weindl and Tobias Blenk (Coburg University of Applied Sciences and Arts, Germany); Jörg Ochs (Siemens AG, Germany)  
pp. 113-120

13:20 *Phase-Precise Control of Electric Vehicles to Reduce Voltage Unbalance in Low-Voltage Grids*

Gian-Luca Di Modica, Lukas Ebbert, Hendrik Kösjan and Nils Alexander Müller (Technische Universität Braunschweig, Germany); Bernd Engel (TU Braunschweig, Germany)  
pp. 121-128

13:40 *Bridging the Gap between Electric Mobility and the Power Grid: A Novel Mechanism to Tap the Grid Serving Potential of Flexible Assets*

Vincenz Christian Regener, Elisabeth Springmann and Kirstin Ganz (FfE München, Germany)  
pp. 129-136

14:00 *Integrating Control Strategies for Electric Vehicle Charging into simultaneity-factor-based Grid Planning Approach*

Hendrik Maschke (Fraunhofer Institute for Energy Economics and Energy System Technology, Germany); Andrea Schoen (Fraunhofer Institute for Energy Economics and Energy System Technology & University of Kassel, Germany); Jan Ulfers (Fraunhofer Institut für Energiewirtschaft und Energiesystemtechnik IEE, Germany); Martin Braun (Fraunhofer Institut für Energiewirtschaft und Energiesystemtechnik IEE & Universität Kassel, Germany); Jan Ringelstein (Fraunhofer IEE, Germany)  
pp. 137-144

14:20 *Impact of Harmonics above the 50th Order on the Industrial Grid due to Charging of Electric Vehicles in an Employee Parking Lot*

Julia Gartner (Volkswagen AG, Germany); Nils Alexander Müller (Technische Universität Braunschweig, Germany); Bernd Engel (TU Braunschweig, Germany)  
pp. 145-152

## **E1: Komponenten und Technologien für die Energiewende**

Raum: Raum 5

13:00 *Performance von passiven Spannungsteilern für HVAC und HVDC in Abhängigkeit der Sekundärbeschaltung*

David Graber (Pfiffner Instrument Transformers Ltd, Switzerland)

pp. 153-159

13:20 *Isolierung von HS-Messwandlern mit nicht-fluorierten Gasen für AIS-Anwendungen - Herausforderungen beim Ersatz von SF6*

Jürgen Bernauer (PFIFFNER Group, Switzerland); Klaus Siebert (PFIFFNER Deutschland GmbH, Germany)

pp. 160-166

13:40 *SF6-freie Schaltanlagen - Neue Technologien für Verteilnetze*

Bastian Woelke and Marius Sieberichs (Westnetz GmbH, Germany); Christoph Schmalfeldt and Stefan Eimert (Westnetz, Germany); Daniel Hoeffmann (Siemens AG, Germany); Peter Gronbach (Siemens Energy, Germany)

pp. 167-172

14:00 *Haben Wandler mit alternativen Isolierölen eine Zukunft?*

Martin Boss (Pfiffner Instrument Transformers, Switzerland)

pp. 173-175

## **Donnerstag, 25. Mai 14:40 - 15:10**

### **Kaffeepause / Ausstellung**

Raum: Ausstellung

## **Donnerstag, 25. Mai 15:10 - 16:50**

### **A2: Digitalisierung der Energiewende - Digitalisierung der Energienetze**

Raum: Raum 1

15:10 *Enhancing Transparency in Low-Voltage Grids through ANN-Based Evaluation of Measurement Locations*

Marcel Dipp (Fraunhofer IEE, Universität Kassel, Germany); Leon Thurner (Retoflow, Germany); Sebastian Wende-von Berg (Fraunhofer IEE & Universität Kassel, Germany); Martin Braun (Fraunhofer Institut für Energiewirtschaft und Energiesystemtechnik IEE & Universität Kassel, Germany)

pp. 176-180

15:30 *Application of artificial neural networks for power system state estimation - Validation with a weighted least squares algorithm*

Andreas Winter, Philipp Raß and Michael Igel (Hochschule für Technik und Wirtschaft des Saarlandes, Germany); Peter Schegner (TU Dresden, Germany)

pp. 181-186

15:50 *Smartifizierung in der Mittel- und Niederspannung bei E.ON und ihren Regionalgesellschaften*

Jens-Michael Salzmann (EDIS Netz GmbH, Germany); Michael Wilch (EON SE, Germany)

pp. 187-192

16:10 *Plug&play digitization system for grid analysis in low voltage distribution networks*

Ingo Liere-Netheler and Tom Fuchs (Westnetz GmbH, Germany)

pp. 193-198

16:30 *Analyse der Zuverlässigkeit von Algorithmus und Kommunikation einer dezentralen Steuerungslösung für die Niederspannung mittels Reallabor*

Sonja Baumgartner (LEW Verteilnetz GmbH (LVN), Germany); Veronika Barta, Stephanie Uhrig and Amon Hofmann (HM Hochschule München); Rolf Witzmann (Technische Universität München, Germany)  
pp. 199-205

**B2: Digitalisierung der Energiewende - Sensoren & Algorithmen im Asset Management**

Raum: Raum 2

15:10 *Approach for a Continuous Condition Assessment of Power Cables Using Broadband Power Line Communication*

Max Bondorf (University of Wuppertal, Germany); Thorsten Reske (Bergische Universität Wuppertal, Germany); Markus A. Koch (University of Wuppertal, Germany); Markus Zdrallek (Bergische Universität Wuppertal, Germany); Fabian Karl (Power Plus Communications AG, Germany)  
pp. 206-211

15:30 *FORM: Einsatz faseroptischer Sensoren im Dynamic Line Rating*

Christian Großer (PI-COM, Germany); David J Skrovanek (University of Wisconsin-Madison, USA); Georg Letsch (PI-COM, Germany); Uwe Ziebold (50 Hertz Transmission GmbH, Germany)  
pp. 212-218

15:50 *Entwicklung und Implementierung einer künstlichen Intelligenz für visuelle Inspektionszwecke mit mobilen Robotern in Umspannwerken*

Carl-Hermann Soetbeer, Matthias Lorenz (Schleswig-Holstein Netz AG, Germany); Tobias Genders, Frederik Puhe (Westnetz GmbH, Germany)  
pp. 219-225

16:10 *Modellierung eines KI-gestützten Optimierungssystems für Instandhaltungs- und Erneuerungsstrategien von Ortsnetzstationen*

Dirk Gromoll (University of Wuppertal, Germany); Petros Dalamaras and Markus Zdrallek (Bergische Universität Wuppertal, Germany); Daniel Merk and Arkadius Mateja (Energieforen Leipzig GmbH, Germany); Lukas Lenz (Stromnetz Hamburg GmbH, Germany); Patrick Horn (Stadtwerke Troisdorf GmbH, Germany); Mike Beck (Meliorate GmbH, Germany)  
pp. 226-233

16:30 *Detection of Abnormal System- and Operating Behaviour in the Electrical Grid Operation Based on Industrially Proven AI Technology*

Jasper Lammering, Stefan Dalhues, Michael Ludwigs, Matthias Reckleben, Jan Kemper, Andreas Kubis and Wolfgang Fischer (PSI Software AG, Germany); Lilia Michailov, Niclas Hildebrandt, Alexander Görtz and Rudolph Felix (PSI Fuzzy Logik und Neuro Systeme GmbH, Germany); Johannes Stuber (Bayernwerk AG, Germany); Jana Breuer (Schleswig-Holstein Netz AG, Germany); Lorenz Soleymani (Avacon Netz GmbH, Germany); Paul Grape (EDIS Netz GmbH, Germany)  
pp. 234-239

**C2: Komponenten und Technologien für die Energiewende**

Raum: Raum 3

15:10 *Optimale Planung von Verteilnetzen bei Anwendung von dynamischen Strombelastbarkeiten von Kabeln und Transformatoren*

Markus Miller (University of Stuttgart, Germany); Krzysztof Rudion (Universität Stuttgart, Germany); Haiko Nägele (Netze BW GmbH, Germany); Andre Großhans (Netze BW, Germany)  
pp. 240-247

15:30 *Potential Contributions of Loads and Storages to Inertia: A Qualitative and Quantitative Feasibility Study*

Walter Schitteck (Universität Kassel, Germany); Janek Massmann and Tobias Hennig (Amprion GmbH, Germany); David Sebastian Stock (Fraunhofer IEE, Germany); Martin Braun (Fraunhofer Institut für Energiewirtschaft und Energiesystemtechnik IEE & Universität Kassel, Germany)  
pp. 248-254

15:50 *Long-term system needs concerning voltage and frequency stability within the interconnected power system of CE*

Christoph John, Joachim Lehner, Johannes Sauter, Saleh Momenzadeh and Hans Abele (TransnetBW GmbH, Germany)  
pp. 255-259

16:10 *Leistungsbänder als Optimierungsgröße für zellulare stromfokussierte Energiesysteme auf Gebäude- und Quartiersebene*

Maik Landwehr (Energieversorgung Rüsselsheim GmbH, Germany); Peter Johannes Birkner (House of Energy & Bergische Universität Wuppertal, Germany); Björn Uhlemeyer (Bergische Universität Wuppertal, Germany); Christian Köhler (Venios GmbH, Germany); Markus Zdrallek (Bergische Universität Wuppertal, Germany)  
pp. 260-266

16:30 *Blindleistungssteuerung von dezentralen Erzeugungsanlagen zur Verlustreduktion in 110 kV-Netzen mittels linearer Optimierung*

Paul Burkhardt (University of Stuttgart, Germany); Krzysztof Rudion (Universität Stuttgart, Germany)  
pp. 267-272

## **D2: Sektorenkopplung und Elektromobilität - Potenziale der Flexibilisierung**

Raum: Raum 4

15:10 *Utilizing Flexibility Potentials in Local Energy Systems*

Tom Bender and Sebastian Flemming (Fraunhofer IOSB-AST, Germany); Arne Surmann (Fraunhofer Institute for Solar Energy Systems ISE, Germany); Sabine Pelka (Fraunhofer ISI, Germany); Arne Martin (Fraunhofer IOSB-AST, Germany); Stefan Klaiber (Advanced System Technology (AST) Branch of Fraunhofer IOSB, Germany); Matthias Kühnbach (Fraunhofer ISE, Germany)  
pp. 273-278

15:30 *Untersuchung der Auswirkungen von Verbraucherschutzvorgaben auf die Netzdienlichkeit variabler Netzentgelte*



Patrick Selzam, Elias Dörre, Katja Metzler and Lars-Peter Lauven (Fraunhofer IEE, Germany); Florian Hirschmann (Uni Kassel, Germany); Sarah Becker (Fraunhofer IEE, Germany)  
pp. 279-285

15:50 *Designing a Cellular Energy System to optimize and use Multi-Energy Flexibility*  
Sasan J Rasti and Peter Schegner (TU Dresden, Germany)  
pp. 286-293

16:10 *Optimized utilization of decentral flexibility for the operational management of cellular multi-modal distribution grids*  
Béla Wiegel (Hamburg University of Technology, Germany); Lando Helmrich von Elgott (Stadtwerke Lübeck GmbH, Germany); Davood Babazadeh and Christian Becker (Hamburg University of Technology, Germany)  
pp. 294-300

### **Kopernikus-Projekt ENSURE**

Raum: Raum 5

**Donnerstag, 25. Mai 16:50 - 17:10**

#### **Kaffeepause / Ausstellung**

Raum: Ausstellung

**Donnerstag, 25. Mai 17:10 - 18:50**

### **A3: Digitalisierung der Energiewende - KI-Methoden für Netzanwendungen**

Raum: Raum 1

17:10 *Design of Data Driven Reactive Power Forecasting for Active Cross-Voltage Level Reactive Power Management*

Merten Schuster, Marlene Pape, Julian Studt and Steffen Bollhorn (Technische Universität Braunschweig, Germany); Bernd Engel (TU Braunschweig, Germany)  
pp. 301-306

17:30 *AI-based Load Forecasts - Research and Application*

Carola Krug and Sven Sauerbaum (VIVAVIS AG, Germany)  
pp. 307-313

17:50 *Development and Application of a Machine Learning-Based Load Flow Forecast*

Bogdan Kravets, Marie-Louise Kloubert, Nico Voigt and Jan Kays (Amprion GmbH, Germany)  
pp. 314-319

18:10 *Erkennung von fehlerhaften Antrieben und Schaltheftungen mittels neuronalem Netzwerk*

Werner Schöffner (Artemes GmbH, Austria); Georg Achleitner (Austrian Power Grid AG, Austria); Jürgen Plesch (Artemes GmbH, Austria); Wolfgang Huska (Austrian Power Grid AG, Austria)

pp. 320-324

### **B3: Projekte und Anwendungen - Engpassmanagement und Redispatch**

Raum: Raum 2

17:10 *Redispatch 3.0 – Congestion Management for German Power Grids – Considering Controllable Resources in Low-Voltage Grids*

Carsten Krüger (OFFIS - Institute for Information Technology, Germany); Stefanie Holly (OFFIS, Germany); Sebastian Lehnhoff (University of Oldenburg & OFFIS - Institute for Information Technology, Germany); Marcel Otte (OFFIS - Institute for Information Technology, Germany); Arlena Wellssow and Saskia Rathjen (OFFIS - Institute for Information Technology Germany, Germany)

pp. 325-331

17:30 *Erfahrungen und Erkenntnisse aus dem Redispatch 2.0 Pilotbetrieb an der Schnittstelle zwischen VNB und ÜNB*

Christoph Brosinsky (TEN Thüringer Energienetze GmbH & Co. KG, Germany); Max Bergmann, Christian Leubner and Michael Agsten (TEN Thüringer Energienetze GmbH und Co. KG, Germany); Christiane Schiller and Nidal Meyer (50Hertz, Germany); Anne-Katrin Marten (50 Hertz Transmission GmbH, Germany)

pp. 332-340

17:50 *Congestion Management in Distribution Grids: A Two-Stage Approach*

Susanne Schmitt and Iiro Harjunoski (Hitachi Energy, Germany); Giancarlo Dalle Ave (Hitachi Energy, Canada); Milos Subasic (Hitachi Energy, Germany); Peter Noglik (Hitachi Energy Germany AG, Germany)

pp. 341-345

18:10 *Erkenntnisse zur praktischen Umsetzung eines Engpassmanagements in Nieder- und Mittelspannungsnetzen im Projekt flexQgrid*

Carmen Exner, Marc-Aurel Frankenbach and Alix von Haken (Netze BW GmbH, Germany); Nico Hübner and Daniel Mayorga González (PSI GridConnect GmbH, Germany); Jan Kemper (PSI Software AG, Germany)

pp. 346-352

### **C3: Komponenten und Technologien für die Energiewende**

Raum: Raum 3

17:10 *Physics-guided machine learning techniques for improving temperature calculations of high-voltage transmission lines*

Silas A. Selzer and Fabian Bauer (University of Technology Ilmenau, Germany); Sebastian Bohm (Technische Universität Ilmenau & FIVEmicrons GmbH, Germany); Erich Runge (Technical University Ilmenau, Germany); Peter Bretschneider (University of Technology Ilmenau, Germany)

pp. 353-360

17:30 *Data Exchange, Data Management, and Integration of External Functions in the Implementation of an Open, Modular Distribution Grid Control System*

Philipp Heeren and Johannes Rolink (University of Applied Sciences Emden/Leer, Germany); Sebastian Hanna (OFFIS, Germany); Sebastian Rohjans and Marie Clausen (Jade University of Applied Sciences, Germany)  
pp. 361-368

17:50 *Distributed Processing System for Monitoring using Digital Twins in Medium Voltage Grids*

Stephan Ruhe (Fraunhofer IOSB-AST, Germany); Steffen Nicolai (Advanced System Technology (AST) Branch of Fraunhofer IOSB, Germany); Thomas Geithner and Nadim El Sayed (Technische Universität Berlin, Germany); Peter Bretschneider (Fraunhofer IOSB & Institutsteil Angewandte Systemtechnik AST, Germany); Kevin Schäfer (Fraunhofer IOBS-AST, Germany); Mansour Alramlawi (Fraunhofer IOSB, IOSB-AST, Germany)  
pp. 369-374

18:10 *Combining Active Power Curtailment and Dynamic Line Rating in Grid Planning: An Innovative Approach*

Jan Wiemer (Fraunhofer Institute for Energy Economics and Energy System Technology (IEE), Germany); Friederike Wenderoth (University of Kassel, Germany); Jan Ulfers and Alexander Scheidler (Fraunhofer Institut für Energiewirtschaft und Energiesystemtechnik IEE, Germany); Martin Braun (Fraunhofer Institut für Energiewirtschaft und Energiesystemtechnik IEE & Universität Kassel, Germany)  
pp. 375-383

18:30 *RTU und SMGW - Eine funktionierende Kombination?*

Sven Sauerbaum, Carola Krug and Michael Conrad (VIVAVIS AG, Germany)  
pp. 384-390

### **D3: Sektorenkopplung und Elektromobilität - Sektorenkopplung im Fokus**

Raum: Raum 4

17:10 *Simulation of a decarbonized Hydrogen Network Infrastructure in a coupled Electricity and Gas Sector*

Elisabeth Feldhoff, Tom Duphorn, Steffen Schlegel and Dirk Westermann (Ilmenau University of Technology, Germany)  
pp. 391-398

17:30 *A 2-stage optimisation approach to ensure security of supply in rural cellular energy structures with solid biomass-based (hybrid) systems*

Lukas Richter (Deutsches Biomasseforschungszentrum gGmbH, Germany); Volker Lenz (DBFZ Deutsches Biomasseforschungszentrum Gemeinnützige GmbH, Germany); Martin Dotzauer (Deutsches Biomasseforschungszentrum gGmbH, Germany); Joachim Seifert (TU Dresden, Germany)  
pp. 399-405

17:50 *Unit operation of distributed cross-sectoral energy systems in market-optimised operation*

Sebastian Berg (Fraunhofer UMSICHT, Germany); Lasse Blaume (RWTH Aachen, Germany); Christoph Goetschkes (Fraunhofer UMSICHT, Germany)  
pp. 406-413

18:10 *Robust and Sensitive Aspects in a Decarbonised Energy System Regarding Energy Imports*

Georgios Savvidis (TransnetBW GmbH, Germany); Jonas Lotze (TransnetBW, Germany); Massimo Moser and Olaf Brenneisen (TransnetBW GmbH, Germany)  
pp. 414-419

18:30 *Identification of worst-case weather years regarding heat pump considerations in distribution grid planning*

Pawel Lytaev (Universität Kassel, Germany); Simon Ruben Drauz-Mauel and Lars-Peter Lauven (Fraunhofer IEE, Germany); Martin Braun (Fraunhofer Institut für Energiewirtschaft und Energiesystemtechnik IEE & Universität Kassel, Germany)  
pp. 420-426

## **Kopernikus-Projekt ENSURE**

Raum: Raum 5

**Donnerstag, 25. Mai 18:50 - 22:00**

### **Poster Session: Digitalisierung der Energiewende**

Raum: Raum 1

18:50 *Experience with the use of smart distribution substation standards for network monitoring in Cologne*

Stephan van der Broeck, Sigrid Plötz and Judith Schramm (Rheinische NETZGesellschaft mbH, Germany)  
pp. 427-430

19:09 *Digital Twins for Scaling up Hydrogen Electrolisis*

Sharaf Alsharif and Nils Huxoll (OFFIS - Institute for Information Technology, Germany); Amin Raeiszadeh (OFFIS, Germany); Tobias Brandt and Michael Brand (OFFIS - Institute for Information Technology, Germany); Sebastian Lehnhoff (University of Oldenburg & OFFIS - Institute for Information Technology, Germany)  
pp. 431-437

19:28 *Development of Strategies for the Smartification of Low-Voltage Grids*

Franziska Maria Tischbein (RWTH Aachen University, Germany); Armin Fatemi (RWTH Aachen, Germany); Frank Wirtz (Bayernwerk AG, Germany); Christin Schmoger (EDIS Netz GmbH, Germany); Stefan Dorendorf (E-dis AG, Germany); Annika Schurtz (E-Bridge Consulting, Germany); David Echternacht (University of Applied Sciences Duesseldorf, Germany); Andreas Ulbig (RWTH Aachen University, Germany)  
pp. 438-444

19:47 *Islanding algorithm for the resupply of critical infrastructure during a prolonged blackout*

Giuseppe Puleo, Maximilian Mütterig and Markus Zdrallek (Bergische Universität Wuppertal, Germany); Dirk Aschenbrenner (WSW Netz GmbH, Germany)  
pp. 445-451

20:06 *Analysis of a support-year-based and an end-year-based optimization in automated network planning*

- Tobias Riedlinger and Bernd Bastian Wierzba (University of Wuppertal, Germany); Markus Zdrallek (Bergische Universität Wuppertal, Germany); Sigrid Plötz (Rheinische NETZGesellschaft mbH, Germany)  
pp. 452-459
- 20:25 *Interoperabilität als Basis für das Smart Grid - Erkenntnisse aus SINTEG*  
Mathias Usler and Johann Schütz (OFFIS, Germany)  
pp. 460-465
- 20:44 *Full-Stack Development Process for Demand Side Flexibility Solutions from Cyber-Physical Testbeds to Field Operation*  
Immanuel Hacker (Fraunhofer FIT & RWTH Aachen IAEW, Germany); Florian Schmidtke (RWTH Aachen, Germany); Steve Bahn (Mitteldeutsche Netzgesellschaft Strom mbH, Germany); Dennis van der Velde (Fraunhofer FIT, Germany); Andreas Ulbig (RWTH Aachen University, Germany)  
pp. 466-472
- 21:03 *The Smart Grid LAB in Hesse - Active Maximization of Annual Usage Time of Electrical Grids Using Flexibilities while Ensuring Data Security and Resilience at the Same Time*  
Peter Johannes Birkner (House of Energy & Bergische Universität Wuppertal, Germany); Ingo Jeromin and Athanasios Krontiris (Hochschule Darmstadt, Germany); Anja Schaldach (House of Energy, Germany); Till Neukamp and Sophia Pfeffer (Hda - Darmstadt University of Applied Sciences, Germany)  
pp. 473-478
- 21:22 *Conversion of CIM CGMES data sets to the open source software pandapower - case study including an ENTSO-E test network*  
Frank Marten, Mario Richter and David Heck (Fraunhofer IEE, Germany); Sebastian Wende-von Berg (Fraunhofer IEE & Universität Kassel, Germany)  
pp. 479-485
- 21:41 *Infrastructure of a Laboratory Coupled Co-simulation for the Investigation of Flexibility Provision in Distribution Grids*  
Sarah Fayed (Hochschule Emden/Leer, Germany); Alejandro Rubio and Jan Petzник (DLR Institute of Networked Energy Systems, Germany); Johannes Rolink (University of Applied Sciences Emden/Leer, Germany); Frank Schuldt (DLR Institute of Networked Energy Systems, Germany)  
pp. 486-494

## **Poster Session: Projekte und Anwendungen**

Raum: Raum 2

- 18:50 *Study on the curative HVDC congestion management of the German TSOs*  
Teng Jiang, Matthias Kahl and Olaf Brenneisen (TransnetBW GmbH, Germany); Ramin Kheiri (Westhouse Ingenieure GmbH, Germany)  
pp. 495-500
- 19:28 *Robust Planning of Transmission Systems: First Results of the Project RobustPlan*  
Yannic Harms, David Sebastian Stock, Roman Bolgaryn and Jakob Kopiske (Fraunhofer IEE, Germany); Nicolai Damm and Steffen Meinecke (Universität Kassel, Germany)  
pp. 501-508

20:06 *Energiespeicherung und Stromnetzregelung mit hocheffizienten Gebäuden - Windheizung 2.0*

Martina Reinwald (Bayerisches Landesamt für Umwelt, Germany)  
pp. 509-513

20:44 *Low Voltage Laboratory Grid for Smart Grid Systems with Bi-Directional Power Flows*

Markus A. Koch, Marco Tafuro, Mahjar Wazifehdust, David Cano-Tirado and Maximilian Hendrik Forchheim (University of Wuppertal, Germany); Markus Zdrallek (Bergische Universität Wuppertal, Germany)  
pp. 514-518

21:22 *From Electromobility Use Cases to an Interactive System Architecture: the Harmon-E SysArc in the unIT-e<sup>2</sup> Project*

Adrian Ostermann (FfE & TU Munich, Germany); Jeremias Hawran, Severin Sylla and Patrick Dossow (FfE, Germany)  
pp. 519-526

### **Poster Session: Komponenten und Technologien für die Energiewende**

Raum: Raum 3

18:50 *Tie open point relocation as possible replacement for the step voltage regulator*

Khalid Hachimy (Reutlingen University & Hochschule Reutlingen, Germany); Yuven Yerima (DIgSILENT GmbH, Germany); Simon Eilenberger (FairNetz GmbH, Germany); Alfred Bernhardt (FairNetz GmbH); Christoph Schmid (DIgSILENT GmbH, Germany); Frank Truckenmueller (Reutlingen University, Germany)  
pp. 527-532

19:03 *Adaption of Inverter-Based System Controls to Reduce the Negative Impact of Intermediate Infeed on Distance Protection Systems*

Marc René Lotz (Elenia Institute for High Voltage Technology and Power Systems & Technische Universität Braunschweig, Germany); Michael Kurrat (TU Braunschweig, Germany); Martin Könemund (Ostfalia, Germany)  
pp. 533-538

19:17 *Reduction of Redispatch in Germany using Dynamic Capacity of embedded HVDC systems*

Jens Reifschneider and Andreas Wasserrab (TenneT TSO GmbH, Germany); Kevin Schoenleber (Hitachi Energy Germany AG, Germany); Mark Thiele (TenneT TSO GmbH, Germany); Susanne Schmitt and Robert Juhlin (Hitachi Energy, Germany); Marc Kuberna, Norbert Lechner and Cora Petino-Wagner (TenneT TSO GmbH, Germany); Marius Langwasser (Kiel University, Germany)  
pp. 539-544

19:30 *Dezentrale Leistungsflussregelung mit Unified Power Flow Controller in Übertragungsnetzen*

Soham Choudhury and Andreas Saciak (Technical University of Darmstadt, Germany); Jutta Hanson (Technische Universität Darmstadt, Germany)  
pp. 545-552

19:44 *Control strategy for industrial reactive power sources depending on a specified reactive power setpoint value*

- Philipp Schweiberer, Oliver Brückl and Johannes Rauch (Ostbayerische Technische Hochschule Regensburg, Germany)  
pp. 553-558
- 19:58 *Bestimmung dynamischer Parameter eines vermaschten hybriden AC/DC-Übertragungsnetzes zur Untersuchung der Kleinsignal-Rotorwinkelstabilität*  
Xiong Xiao, Chengxiao Shen, Chang You and Soham Choudhury (Technical University of Darmstadt, Germany); Aaron Hebing and Jutta Hanson (Technische Universität Darmstadt, Germany)  
pp. 559-566
- 20:11 *AI-based heat demand forecasting in industrial buildings for flexible operation of combined heat and power plants*  
Lars Quakernack (Fachhochschule Bielefeld, Germany); Jens Haubrock (Bielefeld University of Applied Sciences, Germany); Julian Hövelmann and Kersten Kröger (Fachhochschule Bielefeld, Germany)  
pp. 567-572
- 20:25 *Lastabwurf im Eigenheim?*  
Heinz W Werntges (RheinMain University of Applied Sciences / Hochschule RheinMain, Germany)  
pp. 573-576
- 20:38 *Development of an Energy Management System for Battery Storages for the Implementation of Location-Specific Usage*  
Gustav Maria Hey (University of Applied Sciences Emden Leer, Germany); Brian Alexander Kraudelt (Universität Oldenburg, Germany); Philipp Heeren and Johannes Rolink (University of Applied Sciences Emden/Leer, Germany)  
pp. 577-583
- 20:52 *Die Bedeutung von Verbindungstechnik für zuverlässige Batterie-Energiespeichersysteme*  
Rüdiger Meyer (Phoenix Contact GmbH & Co. KG, Germany)  
pp. 584-588
- 21:06 *Decentralized Tertiary Control for Efficient Use of Renewable Energies*  
Martin Josef Winter, Antony Dominic, Gernot Schullerus and Thorsten Zenner (Reutlingen University, Germany)  
pp. 589-595
- 21:19 *Simulation of Switching Operations of a Shunt Reactor for reactive power compensation in transmission grids*  
Constantin Balzer (Hitachi Energy Germany AG, Germany & PowerConsulting, Germany); Ingo Schulz (Axpo Grid AG, Germany)  
pp. 596-603
- 21:33 *State-Space Based Load Flow Simulation in a Hardware-In-The-Loop System for Real-Time Demonstration of Charging Infrastructures*  
Tobias Blenk (Coburg University of Applied Sciences and Arts, Germany); Timo Alexander Hertlein (Coburg University of Applied Sciences and Arts & Siemens AG, Germany); Christian Weindl (Coburg University of Applied Sciences and Arts, Germany)  
pp. 604-609
- 21:46 *Investigations of the double-fed induction machine with a phaseshifting transformer*  
Tobias Jöns, Mike Königs and Bernd Löhlein (Hochschule Flensburg, Germany)

pp. 610-617

## **Poster Session: Sektorenkopplung und Elektromobilität**

Raum: Raum 4

18:50 *A multifaceted approach with high regional resolution to a coordinated scenario framework as a basis for integrated grid planning in Hamburg*

Daniela Vorwerk (Helmut Schmidt University, Hamburg, Germany); Detlef Schulz (Helmut Schmidt University, Germany)

pp. 618-625

19:11 *Mobile Emergency Power Supply through the use of Electric Bus Fleets (V2G) Using the Example of the Metropolis of Hamburg*

Johannes Schröder, Lars-Hendrik Michael, Amra Jahic, Patrick Möbius and Detlef Schulz (Helmut-Schmidt-University, Germany)

pp. 626-631

19:32 *Bewertungsmodell zur Potenzialanalyse von Vehicle-to-Home (V2H)*

Leo Kluge (Umlaut Energy GmbH, Germany)

pp. 632-640

19:53 *Systematische Analyse von Energieflüssen einer sektorgekoppelten Energieerzeugungseinheit (Wasserstoff-Microgrid)*

David Stephan and Uwe Werner (Hochschule Bremerhaven, Germany)

pp. 641-647

20:14 *Validation of a state-space-based load flow simulation depicting an energy system with sector-coupling technologies*

Sebastian M. Bottler (Friedrich-Streib-Str. 2 & Hochschule Coburg, Germany); Christian Weindl (Coburg University of Applied Sciences and Arts, Germany); Noah Meißner (University of Applied Sciences Coburg, Germany)

pp. 648-654

20:35 *Sector Coupling as Planning Measure in Power Distribution Networks*

Tobias Riedlinger and Bernd Bastian Wierzba (University of Wuppertal, Germany); Joshua Jakob and Markus Zdrallek (Bergische Universität Wuppertal, Germany); Nikolay Nowalski (NEW Netz GmbH, Germany)

pp. 655-662

20:56 *Synthesizing and validating electric vehicle load profiles based on field test data*

Nils Alexander Müller (Technische Universität Braunschweig, Germany); Evamaria Zauner (Thüga AG, Germany); Julia Gartner (Volkswagen AG, Germany); Gian-Luca Di Modica (Technische Universität Braunschweig, Germany); Bernd Engel (TU Braunschweig, Germany)

pp. 663-668

21:17 *An integrated analysis of automated low-voltage strategic grid planning under consideration of a cross-sectoral renewal planning*

Bernd Bastian Wierzba and Tobias Riedlinger (University of Wuppertal, Germany); Markus Zdrallek (Bergische Universität Wuppertal, Germany); Daniel Ludwig (E-regio GmbH, Germany); Christopher Johae (EWR GmbH, Germany); Rene Schmitz (Regionetz GmbH, Germany); Daniel Wolter (Stadtwerke Service Meerbusch Willich GmbH, Germany)



pp. 669-675

21:38 *Optimierungsbasierte Generierung von Vorschlägen für den Netzausbau in einem gekoppelten Energiesystem*

Raphael Houben (RWTH Aachen University & IAEW, Germany); Lukas Löhr (RWTH Aachen University, Germany); Albert Moser (IAEW, RWTH Aachen, Germany)

pp. 676-681

## **Poster Session: Ordnungsrahmen und Geschäftsmodelle für die Energiewende**

Raum: Raum 5

18:50 *Systematische Einordnung von Use Cases zum Laden von Elektrofahrzeugen*

Valerie Ziemsky (Forschungsstelle Für Energiewirtschaft, Germany); Alexander Matzner (Schweizer Legal, Germany)

pp. 682-686

20:25 *Analysis of electricity sharing as modern business models for housing associations*

Philipp Hälsig, Maximilian Röhrig, Robin Williams and Andreas Ulbig (Fraunhofer FIT, Germany)

pp. 687-693

## **Get Together**

Raum: Ausstellung

## **Freitag, 26. Mai**

### **Freitag, 26. Mai 9:00 - 10:40**

#### **A4: Digitalisierung der Energiewende - Cybersecurity und Digitale Zwillinge**

Raum: Raum 1

9:00 *A cyber-security testbed for the dynamic operation of transmission power systems*

André Kummerow (Advanced System Technology (AST) Branch of Fraunhofer IOSB, Germany); Kevin Schäfer (Fraunhofer IOBS-AST, Germany); Cristian Monsalve (Fraunhofer IOSB-AST, Germany); Mansour Alramlawi (Fraunhofer IOSB, IOSB-AST, Germany); Steffen Nicolai (Advanced System Technology (AST) Branch of Fraunhofer IOSB, Germany); Peter Bretschneider (Fraunhofer IOSB & Institutsteil Angewandte Systemtechnik AST, Germany)

pp. 694-699

9:20 *Cyber-security platform for the transparent cyber-attack detection in energy supply infrastructures*

André Kummerow (Advanced System Technology (AST) Branch of Fraunhofer IOSB, Germany); Matthias Henneke (eoda GmbH, Germany); Paul Bachmann (Hochschule Zittau-Görlitz, Germany); Simon Krackrügge (eoda GmbH, Germany); Jörg Lässig (Hochschule Zittau-Görlitz, Germany); Steffen Nicolai (Advanced System Technology (AST) Branch of Fraunhofer IOSB, Germany)

pp. 700-706

9:40 *Digitale Zwillinge in der Elektrizitäts- und Netzwirtschaft: Kernergebnisse der ETG Task Force Digitaler Zwilling*

Christoph Brosinsky (TEN Thüringer Energienetze GmbH & Co. KG, Germany); Alexander Schuetz (Amprion GmbH, Germany); Erhard Aumann (Siemens AG, Germany); Wolfgang Eyrich (Entegra gmbh, Germany); Jan Oliver Kammersheidt (EPLAN GmbH, Germany); Heinrich Hoppe-Oehl (Dortmund, Germany); Karsten Viereck (Maschinenfabrik Reinhausen GmbH, Germany); Ulf Haeger (TU Dortmund University, Germany)  
pp. 707-714

10:00 *Umsetzung eines Digitalen Zwillings für eine Umspannstation im deutschen Übertragungsnetz*

Alexander Schuetz, Michael Korwitz and Thomas Helmschrott (Amprion GmbH, Germany); Nils Weber (Entegra GmbH, Germany); Wolfgang Eyrich (Entegra gmbh, Germany); Jan Kays (Amprion GmbH, Germany)  
pp. 715-722

10:20 *Aggregation of a generic high-voltage network using the grey-box approach for dynamic frequency investigations*

Anna Pfendler (Technical University of Darmstadt & Institute of Electrical Power Supply with Integration of Renewable Energy (E5), Germany); Lukas Jung and David Nickel (Technical University of Darmstadt, Germany); Jutta Hanson (Technische Universität Darmstadt, Germany)  
pp. 723-728

#### **B4: Projekte und Anwendungen - Energiekonzepte und Digitalisierung**

Raum: Raum 2

9:00 *Automated integration process of future automation and monitoring systems in distribution grids*

Sebastian Raczka (TU Dortmund University); Frederik Puhe (Westnetz GmbH and TU Dortmund University, Germany); Carsten Krüger (OFFIS - Institute for Information Technology, Germany); Jan Arph (H & S Hard- & Software Technologie, Germany); Sebastian Lehnhoff (University of Oldenburg & OFFIS - Institute for Information Technology, Germany); Christian Rehtanz (TU Dortmund University, Germany)  
pp. 729-735

9:20 *A General Load Management System for the Low Voltage Grid – Monitoring and Control*

Jonas Claus (cte Controltechnology Engineering GmbH, Germany); Thomas Schwierz (Technische Universität Dortmund, Germany); Günter Schulz (cte Controltechnology Engineering GmbH, Germany); Dominik Hilbrich and Christian Rehtanz (TU Dortmund University, Germany); Markus Kosch (AVU Netz GmbH, Germany); Christian Wagner (Ef. Ruhr GmbH, Germany); Marco Greve (ef Ruhr GmbH, Germany)  
pp. 736-743

9:40 *IT-sichere Online-Werksprüfungen von stationsleittechnischen Anlagen in Höchstspannungsnetzen der kritischen Infrastruktur*

Stefan Kaempfer (Phoenix Contact Deutschland GmbH, Germany); Andrea Ludwig and Marco Börnert (50Hertz Transmission GmbH, Germany); André Fleischer (Phoenix Contact Energy Automation GmbH, Germany)

pp. 744-751

10:00 *Entwicklung eines offenen, nutzerorientierten IKT-Ökosystems für cross-sektorale Energiesysteme in Stadtquartieren am Beispiel Bochum-Weitmar*

Michaela Lödige (Fraunhofer IOSB-INA, Germany); Sebastian Flemming and Tom Bender (Fraunhofer IOSB-AST, Germany); Leander Grunwald (Fraunhofer UMSICHT, Germany); Jana Tischendorf (Vonovia, Germany); Therese Klarner (Ampeers Energy GmbH, Germany); Robin Williams, Franziska Friedrich and Marcus Schober (Fraunhofer FIT, Germany); Karl Bocherding (Fraunhofer IOSB-INA, Germany)

pp. 752-758

10:20 *Bewertung von Energiekonzepten unter zukünftigen Rahmenbedingungen – Use Case: KWK-Nahwärmeseineln im teilsanierten Bestandsquartier*

Christoph Goetschkes and Sonja Witkowski (Fraunhofer UMSICHT, Germany)

pp. 759-766

#### **C4: Komponenten und Technologien für die Energiewende**

Raum: Raum 3

9:00 *Evaluation of a distributed nowcasting system to support ancillary services and grid restoration with wind power plants*

Lukas Holicki, Manuel Dröse, Gregor Schürmann and Marcus Letzel (WRD Wobben Research and Development GmbH, Germany)

pp. 767-773

9:20 *A field testing of ancillary services for grid restoration with wind power plants*

Achim Abels (WRD Wobben Research and Development GmbH, Germany); Tammo Fleßner (Alterric Deutschland GmbH, Germany); Lukas Holicki (WRD Wobben Research and Development GmbH, Germany)

pp. 774-781

9:40 *Areal Power Plant: Aggregation System to control a multitude of Distributed Generators during Power System Restoration - Field Test Results*

Jonathan Bergstraesser, Holger Becker and Sven Liebehentze (Fraunhofer Institute for Energy Economics and Energy System Technology IEE, Germany)

pp. 782-789

10:00 *Grid reconfiguration for congestion management of distribution grids using deep learning*

Giancarlo Dalle Ave (Hitachi Energy, Canada); Tomas Carvalho (RWTH Aachen, Germany); Jhelum Chakravorty (Hitachi Energy, Canada); Susanne Schmitt and Milos Subasic (Hitachi Energy, Germany)

pp. 790-795

10:20 *Erweiterte Anforderungen an das Verhalten von Kundenanlagen auf Verteilnetzebene im heutigen und zukünftigen Wiederaufbau*

Tilman Wippenbeck (Westnetz GmbH, Germany); Torsten Henning (Avacon Netz GmbH, Germany); Thomas Schmidt and Udo Schauerte (Westnetz GmbH, Germany); Marc Linders and Gunnar Schaarschmidt (Westenergie AG, Germany); Roland Hermes (EON SE, Germany)

pp. 796-802

#### **D4: Sektorenkopplung und Elektromobilität - Stabilität auf Verteilnetzebene**

Raum: Raum 4

9:00 *Self-Regulation of Dispatchable Loads: Stabilizing Interconnected Networks with Resilient Microgrid Technology*

Gunnar Kaestle (Clausthal University of Technology, Germany); Haoyuan Wang (Xian Jiaotong University, China)  
pp. 803-808

9:20 *Novel Load Distribution Method for Automated Strategic Low-Voltage Network Planning*

Felix Talmond, Tobias Riedlinger and Kevin Kotthaus (University of Wuppertal, Germany); Markus Zdrallek (Bergische Universität Wuppertal, Germany); Steffen Hetzel (Energieversorgung Leverkusen GmbH und Co. KG, Germany)  
pp. 809-816

9:40 *Der Beitrag von Batteriespeichern in Niederspannungsnetzen im Erneuerbaren und sektorengekoppelten Energiesystem*

Ricardo Reibsch (RLS-Graduate School Reiner-Lemoine Institute & University of Technology Berlin, Germany)  
pp. 817-824

10:00 *Auswirkungen einer Elektrifizierung von Industrie und Gewerbe auf Mittelspannungsebene*

Felicitas Mueller (Karlsruhe Institute of Technology, Germany); Daniela Eser (Karlsruher Institut für Technologie, Germany); Thomas Leibfried and Michael Suriyah (Karlsruhe Institute of Technology, Germany); Gamze Demir, Balendra Kandiah and Martin Zimmerlin (Netze BW, Germany)  
pp. 825-832

10:20 *Design Optimization of Cross-Sectoral Energy Systems including E-Mobility Charging Infrastructures for Residential Districts*

Mohamed Eldakadosi and Julian Urbansky (Fraunhofer UMSICHT, Germany)  
pp. 833-840

#### **E4: Ordnungsrahmen und Geschäftsmodelle für die Energiewende**

Raum: Raum 5

9:00 *Momentanreserve als Systemdienstleistungsprodukt in einem stromrichterdominierten Übertragungsnetz*

Christian Rinne (Otto-von-Guericke Universität Magdeburg, Germany); Christian Ziegler (Otto von Guericke University, Magdeburg, Germany); Martin Wolter (Otto-von-Guericke-Universität Magdeburg, Germany)  
pp. 841-846

9:20 *Harnessing of Reactive Power Supply from the Distribution System*

Nadja Isabelle Hiersemann and Tom Sennewald (Technische Universität Ilmenau, Germany); Steffen Schlegel and Dirk Westermann (Ilmenau University of Technology, Germany)  
pp. 847-852

9:40 *A Comprehensive Model of a Distribution System Operator*

Robin Schubert and Markus Zdrallek (University of Wuppertal, Germany)  
pp. 853-860

10:00 *Der energetische Freibetrag*

Heinz W Werntges, Johannes Kaepfel and Patrick Stoy (RheinMain University of Applied Sciences / Hochschule RheinMain, Germany)  
pp. 861-866

10:20 *Gesellschaftliche Akzeptanz von PtX-Technologien - Analyse von Akzeptanzfaktoren, Bedenken und Erwartungen aus umweltpsychologischer Perspektive*

Jan Hildebrand (IZES gGmbH, Germany)  
pp. 867-872

## **Freitag, 26. Mai 10:40 - 11:10**

### **Kaffeepause / Ausstellung**

Raum: Ausstellung

## **Freitag, 26. Mai 11:10 - 11:40**

### **Ergebnis-Präsentation der VDE ETG Task Force „Hochautomatisierung von Nieder- und Mittelspannungsnetzen“**

Raum: Raum 1

### **Ergebnis-Präsentation der VDE ETG Task Force „Klimaneutrales und nachhaltiges Energiesystem“**

Raum: Raum 2

### **Meine Daten, mein Modell, ...? NFDI4Energy: Paradigmenwechsel in der Energiesystemforschung**

Raum: Raum 3

## **Freitag, 26. Mai 11:40 - 12:40**

### **ETG Mitgliederversammlung**

Raum: Plenum

## **Freitag, 26. Mai 11:40 - 13:00**

### **Mittagsimbiss / Ausstellung**

Raum: Ausstellung

## **Freitag, 26. Mai 13:00 - 14:40**

### **A5: Digitalisierung der Energiewende - Netzdaten & Algorithmen**

Raum: Raum 1

- 13:00 *Linked Open Energy Data: Creating value from the data treasure for energy & e-mobility*  
Kolja Eger (Hamburg University of Applied Sciences, Germany); Timo Schümmer (Hochschule für Angewandte Wissenschaften Hamburg, Germany); Wolfgang Renz (Hamburg University of Applied Sciences, Germany)  
pp. 873-879
- 13:20 *A Novel Method for Estimating Short Circuit Ratio in HVDC applications*  
Marco Giuntoli (Hitachi Energy Germany AG, Germany); Giancarlo Dalle Ave (Hitachi Energy, Canada); Susanne Schmitt (Hitachi Energy, Germany); Kevin Schoenleber (Hitachi Energy Germany AG, Germany); Robert Juhlin (Hitachi Energy, Germany)  
pp. 880-885
- 13:40 *Measurement-Based Verification of Symmetrical Short Circuit Calculations in Transmission Grids*  
Markus Knittel and Daniel Scherbarth (Amprion GmbH, Germany)  
pp. 886-891
- 14:00 *The impact of spatial resolution in energy system optimization models on AC-power flow convergence*  
Oussama Alaya (University of Stuttgart, Germany); Karl-Kiên Cao and Jan Buschmann (German Aerospace Center (DLR), Germany); Hendrik Lens (Institute of Combustion and Power Plant Technology, University of Stuttgart, Germany)  
pp. 892-898

## **B5: Projekte und Anwendungen - Systemdienstleistungen**

Raum: Raum 2

- 13:00 *Spannungshaltung an der Schnittstelle ÜNB/VNB: Technischer Pilot zur Nutzung der Blindleistungspotenziale aus HS-Kundenanlagen*  
Christopher Grahlmann and Florian Sass (50Hertz Transmission GmbH, Germany); Uwe Zickler (Thüringer Energienetze, Germany); Bernd Schottel (Avacon Netz GmbH, Germany)  
pp. 899-904
- 13:20 *Research Project SiNED Insights – Ancillary Services for Reliable Power Grids in Times of the Progressive German Energiewende and Digital Transformation*  
Cornelius Biedermann (Technische Universität Braunschweig, Germany); Vanessa Beutel (DLR, Germany); Julian Beyrodt (German Aerospace Center, Germany); Michael Brand (OFFIS - Institute for Information Technology, Germany); Sebastian Buchholz (TU Clausthal, Germany); Jana Gerlach, Neelotpal Majumdar and Thomas Leveringhaus (Leibniz Universität Hannover, Germany); Marc René Lotz (Elenia Institute for High Voltage Technology and Power Systems & Technische Universität Braunschweig, Germany); Amin Raeiszadeh (OFFIS, Germany); Alexandra Scheunert (Technische Universität Clausthal, Germany); Payam Teimourzadeh Baboli (OFFIS - Institut für Informatik, Germany); Paul Hendrik Tiemann (Universität Oldenburg, Germany); Carsten Wegkamp (TU Braunschweig, Germany); Carsten Agert (DLR, Germany); Michael H. Breitner (University of Hannover, Germany); Bernd Engel (TU Braunschweig, Germany); Stefan Geissendörfer (DLR, Germany); Lutz Hofmann (Leibniz Universität Hannover, Germany); Martin Könemund (Ostfalia, Germany);

Michael Kurrat (TU Braunschweig, Germany); Sebastian Lehnhoff (University of Oldenburg & OFFIS - Institute for Information Technology, Germany); Karsten von Maydell (DLR Institute of Networked Energy Systems, Germany); Astrid Nieße (Universität Oldenburg, Germany); Hartmut Weyer (Technische Universität Clausthal, Germany)  
pp. 905-912

13:40 *Application of curative flexibility in the design of NEOM's transmission grid*  
Hans Barrios, Martti J. van Blijswijk, Konrad Marschollek, Alexander Rainer (Siemens AG, Germany); Nagaraju Pogaku, Habibur Rahman, Nand Singh, Grain Philip Adam (NEOM Energy and Water (ENOWA), Saudi Arabia)  
pp. 913-917

14:00 *Flexible Urban Medium Voltage Networks in the Darmstadt Energy Laboratory for Technology in Application (DELTA)*  
Marcel Böhringer, Achraf Kharrat and Rafael Steppan (Technical University of Darmstadt, Germany); Carl Schweinsberg (Technical University of Darmstadt & Institute of Electrical Power Supply with Integration of Renewable Energy, Germany); Jutta Hanson (Technische Universität Darmstadt, Germany); Benjamin Niersbach (Technical University of Darmstadt, Germany)  
pp. 918-924

## **C5: Komponenten und Technologien für die Energiewende**

Raum: Raum 3

13:00 *Curative Distribution System Response on Transmission System Events Using MVDC-Links - Applications and Challenges*  
Johannes Kayser (Technical University of Ilmenau, Germany); Steffen Schlegel and Dirk Westermann (Ilmenau University of Technology, Germany)  
pp. 925-930

13:20 *Multi-Use Case Operation of DC Sections in Distribution Systems*  
Merlin Engel (Stromnetz Hamburg GmbH, Germany); Sebastian Deters (Stromnetz Hamburg, Germany); Christian Becker (Hamburg University of Technology, Germany)  
pp. 931-937

13:40 *Unbalance Control in Low Voltage Grids by single-phase BESS, Simulations and Laboratory Tests*  
Cornelius Biedermann (Technische Universität Braunschweig, Germany); André Rehbock (Tennet TSO, Germany); Bernd Engel (TU Braunschweig, Germany); Dennis Uhde (Volkswagen, Germany)  
pp. 938-945

14:00 *Robustness of a self-sufficient control algorithm in real grid situations in the low-voltage grid*  
Veronika Barta (HM University of Applied Sciences Munich, Germany); Sonja Baumgartner (LEW Verteilnetz GmbH (LVN), Germany); Stephanie Uhrig (HM University of Applied Sciences Munich, Germany); Rolf Witzmann (TUM Technical University of Munich)  
pp. 946-952

## **D5: Sektorkopplung und Elektromobilität - Lademanagement für Nutzfahrzeuge**

Raum: Raum 4

13:00 *Intelligente Lade- und Energiemanagementsysteme für elektrische Busdepots: Herausforderungen und Potenziale zur Bewältigung der Energiekrise und Umsetzung der Energiewende*

Daniel Mayorga González, Nico Hübner and Philippe Steinbusch (PSI GridConnect GmbH, Germany); Michael Merten (PSI Software AG, Germany); Kamil Korotkiewicz (PSI GridConnect GmbH, Germany); Martin Frenzel (PSI Software AG, Germany); Martin Stiegler (PSI GridConnect GmbH, Germany)  
pp. 953-960

13:20 *Bus Charging Management based on AI prediction and MILP optimization*

Edvard Avdevicius, Mina Eskander, Maik Plenz and Detlef Schulz (Helmut Schmidt University, Germany)  
pp. 961-968

13:40 *Zeitreihenbasierte Modellierung des Ladebedarfs batterie-elektrischer Lkw für die probabilistische Netzplanung*

Kathrin Walz (University of Stuttgart, Germany); Krzysztof Rudion (Universität Stuttgart, Germany)  
pp. 969-976

14:00 *Monte Carlo Simulator for Evaluating Energy Management Strategies in Electric Bus Depots*

Marco Giuntoli (Hitachi Energy Germany AG, Germany); Katarina Knezovic (Hitachi Energy Research, Switzerland); Antony Hilliard (Hitachi Energy Research, Canada)  
pp. 977-982

## **E5: Ordnungsrahmen und Geschäftsmodelle für die Energiewende**

Raum: Raum 5

13:00 *Expansion of the energy policy triangle as a result of the expansion of the German Energy Industry Act*

Benjamin Jacobsen (University of Technology Chemnitz, Germany)  
pp. 983-990

13:20 *Einfluss der Befreiung von Strompreisbestandteilen auf den Use Case vehicle to grid*

Niklas Jooß and Yannic Blume (Forschungsstelle für Energiewirtschaft e. V., Germany); Johannes Hilpert and Anna Papke (Stiftung Umweltenergierecht, Germany)  
pp. 991-997

13:40 *Dynamic feed-in from prosumer households with batteries considering spot market prices*

Tobias Riedel and Carl Hauschke (FZI Forschungszentrum Informatik, Germany); Hartmut Schmeck (Karlsruhe Institute of Technology, Germany)  
pp. 998-1005

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