

# Conference on Sustainable Energy Supply and Energy Storage Systems

– NEIS 2016 –



**15.-16. September 2016**

**Helmut Schmidt University**

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– **Program** –

**Conference location:**

Helmut Schmidt University  
University of the Federal Armed Forces Hamburg  
Holstenhofweg 85  
22043 Hamburg

## Thursday, 15. September 2016

08:00	<b>Registration</b>
09:00 - 10:15	<b>Welcome greeting and invited Keynote presentations</b> Prof. D. Schulz: "Opening Presentation", Electrical Power Systems, Helmut Schmidt University Prof. R. Belmans: "Overview of Technologies and Market Instruments for high level of Renewable Energy Systems", Electrical Energy & Computer Architecture, Cath. Univ. Leuven Prof. R Hanitsch: "Solar energy systems - selected applications", Electric Drives, TU Berlin
<b>Coffee break</b>	
<b>Session 1: Electrical Power Grids</b> (Session Chair: Dr.-Ing. K.-D. Dettmann)	
10:30 - 12:10	<b>Estimation of Reactive Power Compensation in the European Transmission System</b> (D. Hewes; Technical University of Munich)
	<b>Modelling of Low-Voltage Grids with the Help of Open Data</b> (G. Schlömer, Leibniz University, Hannover)
	<b>Self-testing Solid-State Power Controller for High-Voltage-DC Aircraft Applications</b> (M. Meyer, Helmut Schmidt University, Hamburg)
	<b>Power-Transmission via an MMC-based HVDC System for the Rededication of Existing AC-Lines</b> (M. Kleine Jäger, Ruhr-University, Bochum)
	<b>Diversification of Energy Sources in the Republic of Tajikistan and their Financing</b> (M. Halimjanova, Tajik National University)
<b>12:10 Lunch</b>	
<b>Session 2: Wind and Photovoltaic Power Plants</b> (Session Chair: Prof. Dr.-Ing. H. Göbel)	
13:10 - 14:30	<b>Provision of Control Reserve by Wind Power Plants – A System Study</b> (V. Scheffer, Hamburg University of Technology)
	<b>Practical Considerations regarding Implementation of Wind Power Applications into Real-Time Hardware-In-The-Loop Framework</b> (L. Petersen, Aalborg University)
	<b>Using reference load and PV profiles for realistic evaluations of residential energy systems including PV systems</b> (A. Linhart, EWE Research Centre for Energy Technology - NEXT ENERGY, Oldenburg)
	<b>Computer Based Analysis of Distributed Wind Farms for Reactive Power Management in Sub-Transmission Grids</b> (R. Cabadag, Dresden University of Technology)
<b>Coffee break</b>	
<b>Session 3: Regulatory and Market Framework Conditions</b> (Session Chair: Dr.-Ing. M. Alpen)	
15:00 - 16:00	<b>Connected Charging Services for Electric Vehicles: A Stakeholder Analysis for Identifying Smart Charging Strategies in Distributed Energy Systems</b> (J. Glück, BMW AG, Munich)
	<b>The standby power of low power equipment must be reduced under 100 milliwatt</b> (R. Jaschke, Helmut Schmidt University, Hamburg)
	<b>State of the National Implementation of the NC RfG in Germany</b> (F. Scheben, Moeller Operating Engineering GmbH, Itzehoe)
16:00	<b>Visit of modernized 110-kV-Station of Stromnetz Hamburg</b>
18:00	<b>Gala Dinner</b>
19:30	<b>Special Event: Energy-Slam</b>

## Friday 16. September 2016

### Session 4: Energy Storage Systems

(Session Chair: Prof. Dr.-Ing. S. Dickmann)

**Dynamic requirements on LFP batteries used for providing virtual inertia +**  
(L. Beushausen, Technical University Clausthal)

**Optimization of cogeneration by seasonal heat storage in an aquifer**  
(N. Strodel, Leuphana University of Lueneburg)

**09:00 - 10:40 A Predictive Control Strategy for Battery Energy Storage Systems to combine Peak Shaving with Primary Frequency Control**

(F. Halfmann, Vattenfall Europe Innovation GmbH, Hamburg)

**Underground Pumped Hydroelectric Energy Storage in South Africa using Aquifers and Existing Infrastructure** (I.E. Davidson, Durban University of Technology)

**Enhancing chiller efficiencies via use of cold energy storage**  
(P. Puls, Fraunhofer Institute for Integrated Systems and Device Technology, Erlangen)

Coffee break

### Session 5: Grid Integration

(Session Chair: Dr.-Ing. J. Brombach)

**SmartExergy – Primary energy efficient and hybrid grid solutions for municipal energy supply systems** (L. Kriechbaum, Montanuniversitaet Leoben)

**Power Theory as Basis for the Control of Grid-Connected Converter Systems**  
(C. Sourkounis, Ruhr-University, Bochum)

**11:00 - 12:40 Implementation and Compatibility Analysis of Dynamic Voltage Support and Unintentional Islanding Capability of Power-Electronic Generators**

(M. Dietmannsberger, Helmut Schmidt University, Hamburg)

**Schedule Coordination for Technically and Economically Optimized Virtual Power Plants**  
(M. van Amelsvoort, OFFIS e.V., Oldenburg)

**Decentralized control of residential hybrid heating systems for supply of control power under consideration of local voltage levels** (P. Witte, Hamburg University of Technology)

12:40 Lunch

### Session 6: Fuel Cell and Battery Systems

(Session Chair: Prof. Dr.-Ing. J. Horn)

**Pressure-Dependent Operation of Polymer Electrolyte Membrane Fuel Cells; Exemplified by Aircraft Applications** (C. Werner, German Aerospace Center, Hamburg)

**A novel PEM electrolysis system with dynamic hydraulic compression for an optimized high-pressure operation** (F. J. Wirkert, Westphalian University of Applied Sciences Gelsenkirchen Bocholt Recklinghausen)

**13:30 - 15:10 Layout and Setup for a Conversion System of Hydrogen Exhaust Gas Streams into Electricity using a PEM Fuel Cell**

(M. Steinberger, Fraunhofer Institute for Integrated Systems and Device Technology, Erlangen)

**Model-based Lifetime Analysis of 2nd-life Lithium-Ion Battery Storage Systems for Stationary Applications** (S. Gerhard, Vattenfall Europe Innovation GmbH, Hamburg)

**Charging Strategy for a Residential Battery Storage System using Fuzzy Logic Controller**  
(Y. Cheng, National Taiwan University of Science and Technology)

Farewell