

## Welcome

The IEEE Power and Energy Student Summit (PESS) is an annual conference in the field of electrical power engineering organized by universities or research institutions in Germany. It gives young researchers like Master and PhD students the chance to present their first papers to a professional audience. First experience can be gained in scientific writing, presenting, and discussing with senior experts.

This year conference consists of an engaging program with keynote lectures, paper presentations, networking and social interaction. Best paper and presentation awards were evaluated.

The (digital) PESS 2021 is jointly organized by the department of Energy Management and Power System Operation of the University of Kassel, the Fraunhofer Institute of Energy Economics and Energy System Technology (Fraunhofer IEE) and the Young Energy Net. It is supported by the IEEE PES Germany Chapter, CIGRÉ, the VDE/ETG and sponsored by 50Hertz Transmission GmbH, SIEMENS AG, and EAM GmbH & Co. KG.

The unique profile of the University of Kassel is made up of the competence fields of nature, technology, culture and society. One research area is on sustainable energy supply systems of the future. This applies to studies, research and teaching, and start-ups, which the university particularly supports.

The Fraunhofer IEE in Kassel conducts research for the transformation of energy systems. It develops technical and economic solutions to further reduce the costs of using renewable energies, to secure supply despite volatile generation, to ensure grid stability at a high level and finally to lead the energy transition to economic success. For more than 30 years, the institute, together with the University of Kassel, has been a pioneer with a wide range of innovations in energy system technology.

## Conference Topics

### Grid Planning

- Power Transmission Systems (Hybrid AC/DC networks, Onshore / Offshore)
- Power Distribution Systems
- Integrated Power / Gas/ Heat Systems / Hydrogen Infrastructures
- Integration of Renewable Energy
- New Grid Technologies
- Reliability / Power Quality

### Operation and Control

- Grid Operation / Ancillary Services
- State Estimation / Forecasting
- Power System Dynamics, Stability and Control
- Converter and Machine Controls / Grid Forming Controls
- Resilience (Prevention of Blackouts, Grid Restoration)
- Smart Grids / Distribution Automation
- Micro Grids / Cellular System Operation
- Grid Protection

### Energy Management / Energy Efficiency

- Virtual Power Plants
- Decentral Energy Management
- Smart Cities and Electromobility
- Smart Meter and Demand Side Management
- Market-Grid Coordination / Smart Markets
- Sector Coupling / Hydrogen / Power2X Energy Storage Systems

### High Voltage Engineering

- Asset Management
- Condition Monitoring
- EMC
- Testing and Measurement of High Voltage Components
- HVDC Technologies and use

### Cross-cutting Topics

- Modelling and Simulation of Components and Grids
- Machine Learning techniques

## **Conference Chair**

Prof. Dr.-Ing. Martin Braun, University of Kassel, Energy Management and Power System Operation

## **Organizing Team** (University of Kassel and Fraunhofer IEE)

Gourab Banerjee  
Dr. Ulrike Fuchs  
Kristina Gomer  
Christoph Klaaßen  
Maryam Majidi  
Moritz Neuschäfer  
Andrea Schön  
Lukas Schmelting  
Zuzanna Wala

## **Session Chairs** (University of Kassel and Fraunhofer IEE)

Gourab Banerjee  
Prof. Dr.-Ing. Martin Braun  
Dr. Lars Lauven  
Maryam Majidi  
Edwin Camilo Mora Gil  
Andrea Schön  
Dr. Sebastian Stock  
Dr. Sebastian Wende-von Berg

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