PE-Region Platform Seminar on Hybrid Grids

Programme:

09:30-10:30

Power Electronics – Key Enabling Technology to Realizing the Energy Transition

Chaired by Prof. Frede Blaabjerg and Prof. Liuchen Chang

Prof. Rik W. De Doncker

E.ON ERC & Reserch Campus FEN, RWTH Aachen University

Abstract

Not only concerns about climate change and global political issues, but also the liberalization of the energy market has been the main driving force towards more decentralized power generation based on renewables (wind, PV) and high-exergy CHP systems.

To cope with the volatile nature of these vast amounts of renewable power sources, energy supply systems need to provide (1) storages of energy (2) automated demand response and sector coupling, and (3) flexible, controllable electrical power flow in meshed distribution grids. The presentation will focus on power electronic solutions that enable meshed (cellular) DC distribution grid structures that are economically viable and reduce the overall ecological footprint as compared to classical AC solutions. Noteworthy is the fact that the legal framework for distribution grids allows DC networks to be built as private networks for prosumers (energy communities). As a new generation of wide bandgap power semiconductors are coming to market, an outlook is given of further innovation, which benefits DC-based networks and energy supply systems.

Online link will soon be provided

TIME AND PLACE
Monday 27 June 2022
9:30 – 15:30 (online)
Online link will soon be provided

REGISTRATION
Free of charge and without registration.

Organisers:

- Dr. Sante Pugliese
  CAU Kiel
  +39 3200 122245
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- Prof. Kasper M. Paasch
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The seminar is organized in cooperation between the PE-Region Platform project partners:

PE-Region Platform projektet finansieres af midler fra Den Europæiske Fond for Regionaludvikling – Læs mere om Interreg Deutschland-Danmark på www.interreg5a.eu

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11:00-12:30 **Smart Transformer for Active Distribution Grids**

Chaired by Prof. Rik de Doncker

11:00 **Topologies of Isolated Multiport converters for DC Grid Applications: A Review**

By Mr. hanwen Zhang, Dr. Yanbo Wang, Prof. Zhe Chen

11:20 **The Potential of Frequency-Based Power control in Distribution Grids**

By Ms. Qiucen Tao, Ms. Johanna Geis-Schroer, Mr. Felix Wald, Ms. Maëva Courcelle, Dr. Marius Langwasser, Prof. Thomas Leibfried, Prof. Marco Liserre, Dr. Giovanni de Carne

11 :40 **Multi-Terminal Smart Transformer for Green Data Centres**

By Mr. Dwijasish Das, Mr. Anandh N, Dr. Chandan Kumar

12:00 **Scenario-based Smart Transformer Implementation for Reactive Power Management in MV and LV Grid**

By Mr. Marc Philipp Lüdtke, Mr. Maximilian Rose, Ms. Imke Hebbeln, Dr. Marius Langwasser, Prof. Marco Liserre

14:30-15:30 **Special Session: Wind Farm – grid interactions: exploration and development – part I**

Chaired by Dr. Saeed Peyghami

14:30 **Black Start and Islanding Operation of Wind Turbines With Auxiliary Power Converters and Energy Storage Sys.**

By Mr. Florian Redmann, Mr. Antonio Mielach, Prof. Bernd Orlik, Dr. Holger Raffel

14:50 **Converter Control Impacts on Efficacy of Protection Relays in HVDC-Connected Offshore Wind Farms**

By Mr. Guoqing Gao, Mr. Heng Wu, Prof. Xiongfei Wang

15:10 **Enhancing Synchronisation Stability of a VSC-Grid System Using IDA-PBC Controller**

Ms. Sai Sowmya Nagam, Prof. Bikash Pal

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