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Call for Papers for the Special Session on

DESIGN, CONTROL AND FAULT DETECTION OF POWER CONVERTERS FOR ENERGY STORAGE AND EV CHARGING SYSTEMS

Organized and co-chaired by

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Technical Outline of the Session and Topics

Electric storage devices, like batteries, supercapacitors, and electric vehicles, are usually connected to a grid/microgrid for cogeneration or energy conservation for future use. This connection is made through power electronics interfaces that should guarantee high stability, voltage regulation, power flow control, and low electromagnetic emission, along with high power density, low cost, and high reliability. To increase the power density, passive devices that are considered the bulkiest components in these systems should be reduced or avoided. This can be achieved by considering multilevel topologies that would comply with power quality requirements without the need for bulky devices. This session is dedicated to the various solutions adopted for energy management at the storage or EV charging levels in DC/AC microgrids. More specifically, it will present advanced power electronics topologies used for power exchange in such applications. Model-based or intelligent control algorithms ensuring a compliance with the microgrid requirements and EV-related standards are also considered as major topics in this session. In addition, fault detection techniques dedicated to the diagnosis of power converters for electric vehicles and energy storage devices are also covered.

Topics of the session include, but are not limited to:

- Multilevel converters in grid-connected storage devices
- Fuel cells for EV drives
- PV-assisted charging systems
- Model-based vs AI-based control design
- Battery charging systems
- Energy management in V2G systems
- AI-based fault detection techniques for EV and battery charging systems

Timeline for Authors

All the instructions for paper submission are available on the conference website. Please visit www.iecon2026.org or scan the QR code for the timeline.