2023 IEEE International Conference on Energy Technologies for Future Grids (IEEE ETFG 2023)

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SPECIAL SESSION

Advances in Energy Storage and their Integration with Power Electronics

The integration of energy storage involves combining energy storage devices, such as batteries or supercapacitors, with power electronic systems to enable efficient energy management, conversion, and control. This integration offers several benefits, including improved system efficiency, enhanced grid stability, and optimized energy utilization. Power electronics can serve multiple functions in energy storage systems, such as controlling energy flow, managing storage charge and discharge, and interfacing with the grid. Researchers are developing new power electronic circuits and control algorithms that can handle these multiple functions more efficiently and reliably. Integrated power electronic converters with bidirectional power flow can enable seamless integration of energy storage with the grid. Research is focused on developing advanced inverter topologies and control strategies that can optimize the performance of storage-inverter systems. New inverter designs can improve power quality, reduce harmonic distortion, and enhance system stability. By developing new power electronic designs and control algorithms that can optimize the performance of energy storage systems (Li-ion, Lithium Sulfur, Sodium Sulfur etc.), researchers are contributing to the development of new energy solutions for a wide range of applications. To advance research and development in this promising and dynamic area, this Special Session calls for papers that focus on advancement in energy storage technologies and novel power converter topologies and relevant control systems for their integration. We welcome contributions that demonstrate the potential of power converter topologies and their control in various energy storage integration applications. The papers should cover topics such as, but not limited to:

- Battery Energy Storage and their applications
- Next-generation Energy Storage Technologies
- Battery-Inverter Integration
- Multi-functional Power Electronics
- Power Electronics for Fast Charging
- Battery storage for DC Microgrids
- Power electronics for Solid-State Batteries
- Control algorithms for storage integration
- Battery storage for Grid forming inverters
- Battery Management System and
- Efficient Energy Management

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Conference Website: https://attend.ieee.org/etfg-2023/

Track SS3: Energy Storage Integration

Paper Submission Site: https://cmt3.research.microsoft.com/IEEEETFG2023/