



Call for Papers

IEEE Journal of Emerging and Selected Topics in Power Electronics

Special Issue on Power Electronics for Distributed Energy Resources

Distributed energy resources (DERs) include distributed generation units, electricity storage facilities including electric vehicles, and controlled loads. These resources are typically smaller in scale than the traditional large generation facilities. DERs are rapidly growing in the global electricity market. Utilities, manufacturers, technology providers, and researchers have all gravitated to the technological state-of-the arts for future opportunities. Power-electronic technologies are critical to enable the integration, protection, performance, and interoperability of DER systems in power systems. The recent advancements in power-electronic components, control methods, and integration technologies have significantly enhanced the performance, reliability, and functionality of the DER systems along with their level of penetration into the electric grids. This Special Issue is devoted to the state-of-the-art technologies of **Power Electronics for Distributed Energy Resources**, encompassing components, circuits and systems, control, protection, and verification. Prospective authors are invited to submit original contributions or survey papers for review for publication. Topics of interest include but are not limited to the following:

- **Power Conversion for DERs:** Power-electronic technologies and converter-level roadmaps, including the requirements of power electronics for DER systems, and design and implementation of future DER systems with focus on power-electronic technologies featuring high efficiency, high power density, and advanced functions.
- **Protection, Resilience and Safety for DERs:** Protection, reliability, safety, grid system restoration, resiliency-oriented controls, communication protocols, and cyber security at the device and system levels.
- **Integration and Control of DERs:** Power-system-support functions, control of individual DERs including grid-forming inverter controls, system stability, microgrids and networked microgrids, and protection with high penetration of converters for distribution & transmission.
- **MV and HV Technologies for DERs:** Medium-voltage (MV) and high-voltage (HV) power-electronic interfaces for DERs including the following main topics: energy storage systems (ESS), PV farms and hybrid PV-ESS, wind farms, solid-state transformers, DC networks, and fast chargers for electric vehicles.
- **Testing and Validation:** Grid-emulation technologies including the hardware-in-the-loop testing methods along with the challenges and prospects.
- **Utility/Regulatory Requirements and Standards:** New features and operation scenarios that may lead to modification or development of regulatory requirements and standards.
- **DER Power Semiconductor Device and SoC/SoM Technologies:** Wide-bandgap (WBG) and ultra-WBG technologies, majority and minority carrier medium/high voltage electrical and photoconductive devices, power semiconductor module for higher current and/or voltage and packaging reliability, DER smart power-management system-on-chip/-module integrating active (including storage) and/or passive devices/components.

All manuscripts must be submitted through Manuscript Central at <http://mc.manuscriptcentral.com/jestpe-ieee>. Submissions must be clearly marked "**Special Issue on Power Electronics for Distributed Energy Resources**" on the cover page. When uploading your paper, please select your manuscript type "Special Issue". Refer to <http://www.ieee-pels.org> for general information about electronic submission through Manuscript Central. Manuscripts submitted for the Special Issue will be reviewed separately and will be handled by the guest-editorial board detailed below. The Special Issue is planned for publication in April 2023.

Deadline for Submission of Manuscript: **30 November 2022**

Guest Editors

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Proposed Timeline

- **2 Aug. '22:** Call for papers to IEEE JESTPE Editorial Office
- **30 Nov. '22:** Manuscript submission deadline
- **31 Jan. '23:** Final acceptance notification
- **31 Mar. '23:** Manuscripts forwarded to IEEE for publication
- **1 Jun. '23:** Special Issue appears in IEEE JESTPE