

Special Section on:
Grid-Forming Converter Dominated Power Systems

In recent years, the landscape of power systems has witnessed a significant shift towards the massive integration of renewable energy sources, energy storage systems, and advanced power electronic devices. Among these advancements, the emergence of grid-forming converters has gained substantial attention for their pivotal role in shaping the future of power systems. Grid-forming converters offer a promising solution by providing stable voltage and frequency control, improving grid stability, and enabling high-quality power transfer.

In contrast to conventional power systems where the voltage is governed by synchronous generators, grid-forming converters necessitate advanced control strategies to ensure reliability and stability of the entire power system. These strategies must tackle intricate challenges like seamless grid synchronization, precise frequency and voltage regulation, robust fault ride-through capabilities, and dynamic stability enhancement. Integrating renewable energy sources with grid-forming converters presents additional complexities, demanding optimal power management, effective grid support, and smooth transitioning amidst varying conditions. Exploring synergies between grid-forming and grid-following converters, coupled with refining communication protocols, coordination strategies, and decentralized control techniques, holds the key to efficient operation. In this context, we propose this special issue to bring together researchers and practitioners from industry, laboratories, academia, and government to present the challenges and opportunities related to grid-forming converter-dominated power system.

We encourage all researchers working in this area to submit papers to this Special Issue. Topics of interest include, but are not limited to:

- Grid-forming converter topologies and architectures
- Control strategies for grid-forming converters
- Modelling and simulation techniques for power converters
- Stability analysis and control of grid-forming converters in power systems
- Power quality and grid code compliance of grid-forming converters
- Integration of grid-forming converters with renewable energy sources
- Grid-forming converters in microgrids and off-grid applications
- Black start capabilities and resiliency of grid-forming converters
- Communication and coordination of grid-forming converter dominated power systems
- Case studies, field trials, and practical implementations of grid-forming converters
- Standards, regulations, and future perspectives for grid-forming converters

Manuscript Preparation and Submission

Check carefully the style of the journal described in the guidelines “Information for Authors” in the IEEE- IES website:

<http://www.ieee-ies.org/pubs/jestie>. Please submit your manuscript in electronic form through:

<https://mc.manuscriptcentral.com/jestie-ieee/>. On the submitting page, in pop-up menu of manuscript type, select:

“**SS on Grid-Forming Converter Dominated Power Systems**”, then upload all your manuscript files following the instructions given on the screen.

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Timetable		
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