



IEEE 7th Global Power, Energy and Communication Conference

Bochum/GERMANY

June 11-13, 2025

Call for Digests: Special Session on

High-Gain Power Converters: Advanced Techniques and Control for Renewable Energy Integration

Organized and co-chaired by

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Technical Outline of the Special Session:

This advanced technical session focuses on emerging trends in high-gain DC-DC converter technologies, including the innovation in switched inductors, switched capacitors, and voltage multiplier designs. The design must include reduced voltage and current stress techniques with optimal component configurations. The session also covers the high-gain converters topologies with and without coupled inductors types with novel approaches. Emphasis will be placed on minimizing losses, reducing thermal effects, and enhancing the converter's reliability and efficiency. Key applications of high-gain DC-DC converters are the integration of renewable energy sources, energy storage devices, DC microgrids, hybrid electric vehicles, etc.

The session also covers the advanced control techniques such as Model Predictive Control (MPC) Artificial Intelligence (AI), and machine learning for control of the high-gain power converters. Also focuses on power converters with MPPT, voltage stabilization, and energy management control strategies between the battery, solar PV and loads. Additionally, this session will address the relevance of Sustainable Development Goals (SDGs), particularly SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action). This session contributes to the increased adoption of green energy solutions, thus driving the transmission to a sustainable energy future.

Topics of the Special Session, but are not limited to:

- Novel topologies for high-gain DC-DC converters.
- Coupled inductor-based high-gain DC-DC converters.
- Innovations in switched-inductor, switched capacitors, and voltage multipliers designs.
- Lower stresses high gain converters for Renewable Energy Sources.
- Maximum Power Point Tracking (MPPT) in Renewable Energy Sources.
- Bidirectional high-gain DC-DC converters for energy storage devices.
- Energy Storage Integration in Hybrid Renewable Energy Sources for DC Microgrids.
- Advanced Control Techniques for high-gain converters.
- AI and Machine Learning techniques for high-gain converters control.
- Improving Reliability in high-gain converters.

Important Dates

- Deadline for submission of special session papers– March 30th, 2025.
- Notification of Acceptance – April 27th, 2025.
- Deadline for Final Paper Submission – May 11th, 2025.

All instructions for paper submissions are included on the conference website: <https://gpecom.org/2025/>