

Call for Papers for the Special Session on

**WBG (SiC/GaN) DEVICES BASED INVERTERS AND MULTIPHASE DRIVES IN
TRANSPORTATION ELECTRIFICATION: DESIGN, PARALLELING OF THE
DEVICES, PARASITIC EFFECTS, ADVANCED CONTROL STRATEGIES, FAULT-
TOLERANT OPERATION**

Organized and co-chaired by

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Technical Outline of the Session and Topics

Wide bandgap (WBG) device-based inverters using SiC and GaN technologies are emerging as key enablers for high-performance electric vehicle powertrains. This session focuses on the design of voltage source inverters based on WBG devices to enhance power density, efficiency, and fault tolerance. Challenges associated with device paralleling, including current imbalance and parasitic effects through optimized layout and modulation techniques. Advanced control strategies need to emphasise mitigating switching stresses and improve dynamic performance. Furthermore, fault-tolerant operation under device and phase failures to ensure reliable and continuous traction drive operation in electric mobility applications. To facilitate the discussion on these topics, a special session is proposed.

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

- Multi-phase inverters: New material (SiC/GaN), new developments in design.
- Multi-phase inverters: Advances in design to overcome the parasitic effects.
- Multi-phase inverters: Advanced control techniques including AI based techniques.
- Multi-phase inverters: Advances in PWM techniques and fault-tolerant operation, reliability.
- Device paralleling for inverters: Advances in paralleling design and layout, current sharing issues and solutions, system ruggedness and reliability.
- Multi-phase motors- Open End Winding configuration.
- Multi-phase motors-Fault tolerant operation, reliability.
- Multi-phase motors-Specialized applications.

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.

