

Call for Papers for the Special Session on

**MODULAR AND RECONFIGURABLE POWER CONVERTER TOPOLOGIES FOR
TRANSPORTATION ELECTRIFICATION**

Organized and co-chaired by

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Technical Outline of the Session and Topics

There has been a substantial focus on modular and reconfigurable power converters due to the need for flexibility, reconfigurability, scalability and fault tolerance. Furthermore, automotive manufacturers are demanding reconfigurable architectures and power converter topologies to accommodate battery pack voltages for different variants of electrified vehicles and achieve safe, reliable operation. Consequently, it demands reconfigurable drive converters and battery chargers, including wired and wireless configurations, for such applications. Nevertheless, some challenges exist in implementing such systems and associated controls to ensure safety in vital operations. Additionally, sophisticated fault prediction and fault diagnostic methods, including cybersecurity, are highly needed to improve the safety and reliability of such systems in transportation electrification. Therefore, there is scope for designing and developing new power electronic converters, modulation schemes, control strategies, and implementation procedures under such stringent requirements. This special session focused on the reconfigurable and modular power converter topologies, design challenges, control strategies, and their applications in electric transportation systems.

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

- New converter topologies (AC/DC, DC/DC, DC/AC, and AC/AC)
- Modular and reconfigurable battery charging systems for wired/wireless 400 V and 800 V battery packs, and for heavy-duty electric vehicles and shore-to-ship charging applications
- Advances in modelling approaches, parameter estimation, and sensorless control techniques
- Advanced modulation and predictive control methods for normal and limp mode operation
- Fault detection, isolation, diagnosis and reconfiguration techniques
- Reliability and stability assessment of modular and reconfigurable power converters
- Cybersecurity of electrified vehicles and charging infrastructure
- Real-time simulation, hardware-in-the-loop, and experimental verification of modular and reconfigurable power converters

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.

