



ANNUAL CONFERENCE OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY

Chicago | Illinois, November 3-6, 2024

Special Session on

Modular and Reconfigurable Power Converter Topologies for Transportation Electrification

Organized and co-chaired by:

Prof. Deepak Ronanki, Indian Institute of Technology Madras, India

Prof. Sheldon S. Williamson, University of Ontario Inst. of Tech., ON, Canada.

Prof. Apparao Dekka, Lakehead University, Canada.

dronanki@ieee.org

sheldon.williamson@ontariotechu.ca

dapparao@ieee.org

Call for Papers

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, the demand for reconfigurable architectures and power converter topologies due to variations in the battery pack voltages (400 V and 800 V) by the automotive manufacturers to achieve the safe and reliable operation. Consequently, it demands reconfigurable drive converters and battery chargers for such applications. Nevertheless, some challenges exist to implementing such systems and associated controls to accomplish safety in vital operations. Additionally, sophisticated fault prediction and fault diagnostic methods are highly needed to improve the safety and reliability of such systems in transportation electrification. Therefore, there is a scope to design and development of 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 converters and battery chargers for 400 V and 800 V battery packs
- Reconfigurable battery pack configurations and architectures for electrified vehicles
- Modular and reconfigurable battery chargers for heavy duty electric vehicles and shore to ship charging
- Advances in modelling approaches, parameter estimation, and sensorless control techniques
- Advanced modulation and predictive control methods for normal as well as limp mode operation
- Fault detection, isolation, diagnosis and reconfiguration techniques
- Reliability and stability assessment of modular and reconfigurable power converters
- Real-time simulation, hardware-in-the-loop, and experimental verification of modular and reconfigurable power converters
- Specialized applications such as heavy-duty electrified vehicles, marine and railway traction systems and their system-level simulations

Author's schedule:

Deadline for submission of special session papers	April 15, 2024
Notification of acceptance	June 10, 2024
Deadline for submission of final manuscript	July 01, 2024
Early submission is highly encouraged for early decision notifications!	



CHICAGO

All the instructions for paper submission are included in the conference website:

www.iecon-2024.org