IECON 2026

Doha, Qatar | 18-21 October

The 52nd Annual Conference of the IEEE Industrial Electronics Society

Call for Papers for the Special Session on

Emerging Technologies Enabling Sustainable and Resilient DC Electrification and Integration of Buildings, Facilities, and Energy Resources

Organized and co-chaired by

Niwton G. F. dos Santos, Tallinn University of Technology, Estonia (niwton.feliciani@taltech.ee)
Dmitri Vinnikov, Tallinn University of Technology, Estonia (dmitri.vinnikov@taltech.ee)
Enrique Romero-Cadaval, University of Extremadura, Spain (eromero@unex.es)
João Martins, NOVA University of Lisbon, Portugal (jf.martins@fct.unl.pt)

Technical Outline of the Session and Topics

Intensive research on energy efficiency, energy-saving technologies, energy storage techniques, and both sustainable and resilient utilization of renewable energy is essential to enable emerging power-electronics-based systems, such as zero-energy buildings (ZEBs), data centers, and electric vehicles. In this context, DC microgrids offer higher power-delivery capabilities and effectively address last-mile electrification challenges while supporting energy-transition objectives. This special session focuses on sustainable and resilient DC electrification of buildings and facilities, integrating but not limited to renewable generation, energy storage, IT loads, and electric vehicles. Researchers are invited to present recent advances, discuss technical challenges, exchange ideas, and explore emerging technologies enabling efficient energy generation and use.

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

- Renewable energy generation and energy storage technologies
- DC and hybrid AC/DC microgrid architectures for buildings, facilities, and communities
- Power electronic converters for residential and community DC microgrids
- Emerging power-electronic-based technologies for data centers and IT loads
- Electric vehicle charging and traction systems, including V2X technologies
- Advanced power converter topologies for sustainable and resilient DC electrification (e.g., partial power converters, differential power processing converters, etc.)
- Smart integration of DC systems for optimized performance, monitoring, protection, fault diagnosis, and reliability of buildings, facilities, public utilities, and communities
- Power management strategies, data acquisition, communication, and intelligent control for residential and community microgrids

Timeline for Authors

All the instructions for paper submission are available at the conference website. Please visit www.iecon2026.org or scan the QR code for the timeline.