

Call for Papers for the Special Session on
Power Electronics Advances for Hydrogen Production and Systems
Organized and co-chaired by

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Technical Outline of the Session and Topics

Global hydrogen demand is rapidly increasing, driven by the need for zero-carbon energy solutions across transportation, industry, and power generation. Hydrogen produced from renewable sources offers a sustainable alternative to fossil fuels, enabling energy security, fast refuelling, and long-range operation in heavy-duty applications. Power electronics is a critical enabler of this transition, providing high-efficiency, high-reliability interfaces for electrolyzers, fuel cells, storage systems, and grid integration. This special session will focus on advanced converter topologies, control strategies, wide-bandgap devices, and system-level optimization techniques that improve the efficiency, scalability, and cost-effectiveness of hydrogen energy infrastructure.

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

- Next-generation power converters for hydrogen production and fuel cell applications
- Advanced controllers for converters and energy management in hydrogen systems
- Reliability and Safety Considerations in Power Electronics for H₂-Based Energy Systems
- Advanced theoretical, AI/ML-based, or data-driven electrical modeling of electrolyzers
- Condition monitoring and fault-tolerant control in green hydrogen production systems
- Digital twin of hydrogen-based energy systems
- Thermal management for high-power converters for green hydrogen production
- Hybrid energy storage systems including hydrogen (HESS)
- Power quality issues in hydrogen systems
- Grid integration strategies for large-scale deployment of hydrogen systems
- Power electronics applications in FC hybrid electric vehicles and e-mobility
- Advanced energy hub architectures to integrate H₂ production and utilization via fuel cell

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.

