

**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 H<sub>2</sub>-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 H<sub>2</sub> 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](http://www.iecon2026.org) or scan the QR code for the timeline.

