Green Hydrogen Energy Systems — From Production to Grid-Scale Integration

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Special Session Chair:

Prof. Mohan Lal Kolhe,
Professor in Sustainable Electrical Energy Systems with Renewables and Hydrogen,
Faculty of Engineering and Science, University of Agder, Norway

Summary:

This special session brings together advances across the hydrogen value chain—renewable H_2 production, storage, conversion, and power-system integration. We invite research that bridges electrochemistry, power electronics, controls, and techno-economics to enable safe, efficient, and bankable hydrogen solutions. Emphasis is on real-world deployments: green H_2 for industry and mobility, hybrid RES–H_2 microgrids, and grid services via fuel cells. Case studies, pilots, standards, and digital twins are especially welcome.

Key Topics (include but not limited to):

Green hydrogen production
Power conversion & control
H_2–renewables hybrid systems
Grid integration
Hydrogen Mobility & infrastructure:
Techno-economics & policy of green hydrogen energy systems
Demonstrations & case studies

Call for Papers:

Authors are invited to submit original research, case studies, and demonstration results to the Special Session on Hydrogen Energy Systems at AEES 2026. Submissions should clearly state objectives, methods, results, and implications for scalable deployment. Both academic and industry contributions are encouraged. Please select this special session during submission and indicate "Hydrogen Energy Systems—From Production to Grid-Scale Integration" in your cover note. We look forward to your contributions and to advancing hydrogen's role in a resilient, low-carbon energy future.

About the Special Session Chair:

Prof. Mohan Lal Kolhe is a globally recognized expert in smart grids, hydrogen energy, and

integrated renewable systems with over three decades of international academic and industry collaboration. Over the past 25 years in green hydrogen, he has led and advised projects on electrolyzer–renewables coupling, H_2 storage and fuel-cell CHP/microgrids, and real-time control of H_2-enabled power systems. He has secured > NOK 50 million in competitive funding, served on South Australia's first Renewable Energy Board (2009–2011), designed MSc/PhD programs, supervised 15+ PhDs and 100+ Masters, and is listed among the Top 2% scientists worldwide (Stanford/Elsevier, 2020–2023). His publications and keynote talks have shaped policy and deployment strategies for hydrogen-ready energy systems.