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Special Session 12

Low-Carbon Optimization and Coordinated Management of Electricity-Hydrogen Integrated Energy Systems

Introduction and Topics

With the accelerating transition toward carbon neutrality, integrated energy systems are becoming a key enabler for the efficient utilization and coordinated management of multiple energy carriers. In particular, the integration of hydrogen technologies into multi-energy systems provides new opportunities for enhancing renewable energy accommodation, improving system flexibility, and reducing carbon emissions. Electricity-hydrogen integrated energy systems, characterized by the coupling of electricity, heating, cooling, gas, storage, and hydrogen, are emerging as a promising paradigm for future low-carbon energy infrastructures.

However, the increasing penetration of renewable generation, the strong coupling among heterogeneous energy networks, and the multi-timescale dynamics of energy conversion and storage devices bring significant challenges to system planning, operation, and control. Advanced methods are urgently needed for low-carbon optimization, coordinated dispatch, uncertainty management, and intelligent operation of electricity-hydrogen integrated energy systems.

This special session aims to provide a forum for researchers and practitioners to exchange the latest advances in modeling, optimization, and management of electricity-hydrogen integrated energy systems. Contributions are welcomed on both theoretical developments and practical applications related to the low-carbon, flexible, resilient, and intelligent operation of future integrated energy systems.

Topics including but not limited to:

1. Low-carbon planning and optimal operation of electricity-hydrogen integrated energy systems
2. Coordinated management of electricity, heat, cooling, gas, storage, and hydrogen subsystems
3. Renewable energy integration and flexible utilization in integrated energy systems
4. Source-grid-load-storage-hydrogen coordinated dispatch and optimization
5. Multi-energy flow modeling and energy hub analysis
6. Demand response and flexible resource scheduling in integrated energy systems
7. Carbon-aware dispatch and emission reduction strategies for multi-energy systems
8. Robust, stochastic, and data-driven optimization under uncertainty
9. AI-enabled, digital twin, and intelligent control methods for integrated energy systems
10. Resilience enhancement, techno-economic assessment, and low-carbon evaluation of integrated energy systems

Special Session Chairs

Dr. Guofeng Wang
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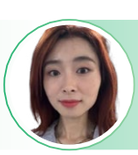

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Paper Submission

Submission Method

* View paper submission instruction on website
https://www.ieee-icps.com/sub.html

* Submit your paper through the website or QR code
https://easychair.org/conferences/?conf=ieeeicpsasia2026

Important Dates

Submission Deadline	May 25, 2026
Notification Deadline	June 10, 2026
Early-bird Registration Deadline	June 15, 2026
Author Registration Due	June 15, 2026

Publication

Submissions to IEEE I&CPS 2026 will be peer reviewed on the basis of technical quality, relevance to conference topics, originality, significance, clarity, etc. Accepted papers will be submitted for inclusion into IEEE Xplore subject to meeting IEEE Xplore's scope and quality requirements.

Excellent papers will be recommended for review by **IEEE Trans on Industry Applications** (proportion can reach up to 50%), **Global Energy Interconnection** and **DeCarbon**.

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