IEEE I&CPS — ASIA 2026 —

2026 IEEE IAS Industrial and Commercial Power System Asia

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Special Session 16

Dynamic Modeling, Control Strategy, and Multi-timescale Optimization of Electrolyzer Systems for Wind-PV Hydrogen Production

Introduction and Topics

The rapid expansion of wind and photovoltaic (PV) power has created significant opportunities for green hydrogen production, while also introducing substantial challenges to the efficient and stable operation of electrolyzer systems. Due to the intermittency, volatility, and uncertainty of renewable energy, electrolyzers are required to operate under highly dynamic input conditions, which may affect hydrogen production efficiency, operational flexibility, and system durability. Therefore, advanced methodologies for modeling, operation, control, and energy management of wind-PV-driven electrolyzer systems are becoming increasingly important for the development of sustainable hydrogen production technologies.

This special session focuses on multi-timescale modeling, operational optimization, control strategies, and energy management of electrolyzer systems powered by wind and PV energy. By considering the dynamic characteristics of renewable power, the transient response and degradation behavior of electrolyzers, and the coordinated interaction between power supply and hydrogen production processes across different temporal scales, the session aims to advance methodologies for flexible operation, adaptive control, and efficient system-level management. Contributions addressing theoretical developments, advanced optimization techniques, data-driven methods, and practical applications are highly encouraged.

Topics of interest include, but are not limited to:

1. Multi-timescale modeling of wind-PV-powered electrolyzer systems
2. Dynamic behavior and degradation-aware modeling of electrolyzers
3. Operational optimization under fluctuating renewable energy inputs
4. Control strategies for flexible, efficient, and stable hydrogen production
5. Energy management and coordinated scheduling of renewable-powered electrolyzer systems
6. Predictive, adaptive, and data-driven control methods
7. Practical applications and demonstration studies of wind-PV hydrogen production systems.

Special Session Chairs

Dr. Jin Tan
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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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