IEEE I&CPS
— ASIA 2026 —

2026 IEEE IAS Industrial and Commercial Power System Asia

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Special Session 13

Coordinated Flexibility Provision in Highly Renewable Power Systems: Modelling, Control and Market Integration

Introduction and Topics

The transition towards highly renewable and largely electrified energy systems requires systematic approaches to quantify, coordinate and deploy flexibility across multiple temporal and spatial scales. As variable renewable generation increases, system operation is increasingly constrained by uncertainty, network congestion and prolonged supply shortfalls. This creates a critical need to move beyond isolated flexibility resources and towards coordinated frameworks that integrate demand, storage and sector-coupled assets.

This special session focuses on modelling, optimisation and operational strategies for coordinated flexibility provision in power systems with high renewable penetration. Emphasis is placed on capturing the dynamic interactions among diverse flexibility sources, including demand response, battery and hydrogen-based storage, electric vehicles, and distributed energy resources aggregated through Virtual Power Plants and other platforms. Contributions are expected to address both system-level impacts and operational mechanisms, using high-resolution data and advanced optimisation or simulation methods.

Topics including but not limited to:

1. Quantification and valuation of multi-source flexibility in power system operation and planning
2. Modelling of coordinated demand, storage and network-constrained flexibility
3. Integration of long-duration energy storage, including hydrogen-based systems, in system operation
4. Control and optimisation of aggregators, Virtual Power Plants, and peer-to-peer coordination frameworks
5. Impacts of flexibility provision on network constraints, reliability and system costs
6. Market design, policy instruments and business models enabling flexibility deployment

Special Session Chairs

Dr. Ruiyang He
Cardiff University

Dr. Yuzhou Zhou
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Dr. Yunqi Wang
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Dr. Xiaodong Zheng
South China University of Technology

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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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