IEEE I&CPS
— ASIA 2026 —
2026 IEEE IAS Industrial and Commercial Power System Asia

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Special Session 11

AI-Enhanced Flexibility Provision from Demand Side Resources

Introduction and Topics

Under the "Dual Carbon" targets, the power system is undergoing a profound transformation characterized by high renewable energy penetration. The integration of large-scale intermittent generation necessitates enhanced grid flexibility. Demand Side Resources (DSRs)—encompassing controllable industrial loads, distributed energy storage, electric vehicles (EVs), and user-side distributed generation—are increasingly recognized as critical alternatives to traditional supply-side regulation. However, effectively harnessing these resources is fraught with challenges due to their massive scale, heterogeneous characteristics, and stochastic behaviors. Traditional management frameworks often struggle to cope with the high dimensionality and real-time response requirements inherent in modern DSRs.

This special session explores how Artificial Intelligence (AI) serves as a transformative force in enhancing demand side flexibility and resource management. We aim to provide a comprehensive platform for discussing AI-driven solutions that span the entire value chain of DSR management. The scope covers advanced topics such as deep learning for precise load forecasting, reinforcement learning for real-time scheduling, and multi-agent systems for virtual power plant aggregation. Furthermore, we emphasize the role of AI in facilitating market participation through intelligent bidding strategies and addressing critical issues like data privacy and cybersecurity. We invite researchers and practitioners to submit cutting-edge contributions that address theoretical breakthroughs, algorithmic innovations, and practical applications. Ultimately, this session seeks to foster interdisciplinary collaboration to accelerate the development of a more flexible, resilient, and intelligent power ecosystem.

Topics including but not limited to:

1. AI for Advanced Load Forecasting and User Behavior Modeling
2. Intelligent Aggregation and Virtual Power Plant Operation Strategies
3. Deep Reinforcement Learning for Flexible Resource Scheduling
4. AI-Driven Bidding Strategies and Market Participation for DSRs
5. Smart Charging, V2G Integration, and EV Fleet Management
6. "Computing-Power" Synergy and Flexible Management of Data Centers
7. Demand Side Response and Interaction Mechanisms in Smart Grids
8. Carbon-Aware Optimization and Low-Carbon Operation of DSRs
9. Digital Twin and Big Data Analytics for Demand Side Management
10. Cybersecurity, Privacy Protection, and Trustworthy AI in Energy Systems

Special Session Chairs

Dr. Ge Chen
Great Bay University

Prof. Dr. Yi Su
Xiangtan University

Dr. Xueshen Zhao
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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	April 30, 2026
Notification Deadline	May 31, 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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