

# ICSMARTGRID 2025

13<sup>TH</sup> INTERNATIONAL CONFERENCE ON SMART GRID

May 27-29, 2025, Glasgow/United Kingdom

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### 13<sup>th</sup> International Conference on Smart Grid

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#### SPECIAL SESSION

#### **Title: Smart monitoring and diagnosis for Renewable Energy, Green Mobility and Zero Energy Building**

Monitoring and diagnosis tools can effectively address future developments in technology improvements, and applications of rechargeable battery technologies. These tools play an essential role in optimizing the performance, safety, and lifetime of batteries while supporting advancements in battery systems. For example, monitoring tools analyze the physical, chemical, and electrochemical properties of battery materials. Diagnosis tools identify degradation mechanisms like capacity fade or internal resistance increases. In addition, monitoring data serves as input for battery models, while diagnosis tools validate and refine these models to predict performance and failures. To conclude, monitoring and diagnosis tools enable optimization of design and manufacturing processes. These tools enhance the efficiency, reliability, and safety of battery applications in electric vehicles (EVs), renewable energy storage, and portable electronics. The

Integration of AI/ML algorithms for anomaly detection and performance prediction or the use of IoT and digital twins for remote monitoring of battery systems can be utilized to achieve the desired performances.

#### **Topics of interest for this special session include, but are not limited to:**

- AI-Driven Fault Detection in Renewable Energy Systems
- Leveraging AI and machine learning for predictive maintenance in wind turbines and solar panels.
- Real-Time Monitoring of Renewable Energy Grids
- Advanced IoT systems for the seamless integration and monitoring of renewable energy sources.
- Intelligent systems for monitoring the health and efficiency of battery storage in renewable energy setups.
- Digital Twins for Renewable Energy Assets
- Using virtual models for real-time diagnostics and performance optimization
- Smart Monitoring for Electric Vehicle (EV) Battery Management
- Innovations in battery health monitoring and optimization for extended lifecycle
- AI-Based Diagnostics for Autonomous and Electric Vehicles

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- Predictive analytics for reducing downtime and improving the safety of green mobility solutions.
- IoT Solutions for Monitoring Urban Green Mobility Systems
- Intelligent sensors and networks for public transport and bike-sharing systems
- Vehicle-to-Everything (V2X) Communication in Smart Cities
- Diagnostics and monitoring solutions for integrating green vehicles into smart urban environments
- Smart Energy Monitoring for Zero Energy Buildings
- Advanced building management systems for energy consumption and production analysis.
- Diagnostics for HVAC and Renewable Integration in Buildings
- Smart monitoring solutions for ensuring efficient heating, ventilation, and air conditioning.
- IoT-Enabled Predictive Maintenance in Smart Buildings
- Using IoT devices for diagnosing equipment failures before they happen
- Energy Harvesting and Monitoring in Smart Building Design
- Solutions for capturing and utilizing energy efficiently in zero-energy infrastructures
- Integration of Renewable Energy, Mobility, and Building Management Systems
- Unified platforms for monitoring and diagnosing across energy, transport, and buildings
- Cybersecurity in Smart Energy Monitoring Systems
- Big Data and AI for Sustainable Energy Systems

### Deadlines

Call For Papers Website URL	<a href="http://www.icsmartgrid.org">www.icsmartgrid.org</a>
3 to 5 Pages Long Digest Submission Deadline	April 20, 2025
Notification of acceptance	May 10, 2025
Final submissions due	May 20, 2025
Conference	May 27-29, 2025

### Chairs of the Special Session

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