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Call for Papers



This special session will focus on leveraging Artificial Intelligence (AI), Machine Learning (ML), and Internet of Things (IoT) techniques for predictive maintenance, health monitoring, and fault diagnosis in renewable energy systems (like solar PV, wind energy) and power electronic converters. As renewable energy penetration increases, real-time system reliability, fault tolerance, and proactive maintenance become crucial to avoid downtime and performance loss.

The session will highlight cutting-edge AI methods such as deep learning, anomaly detection, explainable AI, federated learning for decentralized systems, and Digital Twin-based diagnostics to predict failures before they occur, optimize maintenance schedules, and enhance the operational lifespan of assets. It supports the broader goal of making smart grids, EV charging infrastructure, and renewable systems more resilient, cost-effective, and intelligent.

• Topic of the Session includes, but are not limited to:

- AI/ML algorithms for predictive maintenance in solar PV, wind, and hybrid systems
- Deep learning models for early fault detection in power converters and inverters
- Digital Twin technology for real-time diagnostics and failure prediction
- IoT-enabled condition monitoring of renewable energy components
- Explainable AI techniques for transparent fault diagnosis
- Time-series analysis and anomaly detection in power systems
- Federated learning for decentralized fault monitoring
- Cloud-edge integration for real-time predictive analytics
- Case studies on intelligent health monitoring of power electronic systems
- Optimization of maintenance schedules using reinforcement learning

Important Dates:

- Special Session Paper Submission Due : June 15, 2025
- Notification of Paper Acceptance : July 31, 2025
- Camera Ready Paper Submission Due : August 31, 2025
- Regular Registration Due : October 30, 2025

Author guidelines as per regular paper submission.





Submission Portal