

2026 IEEE 12th Power India International Conference (PIICON)

10th - 12th Dec 2026



Department of Electrical Engineering
Institute of Technical Education and Research (ITER)
Siksha 'O' Anusandhan Deemed to be University, Bhubaneswar



Special Session on

SS-04: Resilient Protection and Control of PV–BESS–EV Microgrids Under Intermittent Conditions

Organized and co-chaired by:

Dr. Debayan Sarkar, NIT Silchar
Dr. Biswajit Sahoo, NIT Silchar
Dr. Susmita Kar, NIT Rourkela

[debayan@ee.nits.ac.in]
[biswajitsahoo@ee.nits.ac.in]
[karsusmita@nitrkl.ac.in]

Call for Papers

Technical Outline of the Session:

This session focuses on resilient protection and coordinated control strategies for PV–BESS–EV integrated microgrids operating under dynamic and intermittent conditions. High penetration of solar PV and EV charging introduces variability due to partial shading, weather fluctuations, and stochastic load demand. Conventional protection schemes face challenges in inverter-dominated microgrids, such as low fault currents, bidirectional power flow, and frequent transitions between grid-connected and islanded modes. The session emphasizes adaptive and intelligent protection approaches, including real-time monitoring, communication-assisted relaying, and data-driven techniques such as machine learning. It also explores coordinated control strategies for effective integration of PV, BESS, and EV systems, focusing on voltage and frequency regulation, energy management, and seamless mode transitions. Advanced frameworks such as model predictive control, decentralized and multi-agent control, and AI-based optimization will be discussed to enhance reliability, resilience, and operational efficiency.

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

- Protection challenges in renewable-dominated and inverter-based microgrids
- Adaptive and communication-assisted protection schemes
- Vehicle-to-Grid (V2G) and Grid-to-Vehicle (G2V) control strategies
- Fault detection, classification, and localization using AI/ML approaches
- Protection coordination under bidirectional power flow and low fault current conditions
- Resilient protection strategies for grid-connected and islanded operation
- Coordinated control of PV–BESS–EV integrated microgrids
- Energy management strategies considering SoC of BESS and EVs

Important Dates:

Special Session Paper Submission Due	31st May 2026
Notification of Paper Acceptance	15th Aug 2026
Camera Ready Paper Submission Due	31st Aug 2026
Early Bird Registration Date	15th September 2026
Conference Date	10-12 December 2026