

Special Session on

“AI-Driven Forecasting, Control, and Optimization of Hybrid AC/DC Microgrids and EV-Integrated Energy Systems”

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Call for Papers

The increasing penetration of renewable energy sources (RES), electric vehicles (EVs), hydrogen energy systems, and distributed energy resources (DERs) has transformed modern power systems into highly dynamic, data-rich cyber-physical systems. Hybrid AC - DC microgrids, peer-to-peer (P2P) energy trading, and EV-grid interaction (V2G, G2V, V2H) require accurate forecasting, fast decision-making, and adaptive control under uncertainty.

Artificial Intelligence (AI) and Machine Learning (ML) techniques - such as deep learning, reinforcement learning, and multi-agent systems are emerging as powerful tools to enable accurate forecasting, real-time energy management, optimal power dispatch, and resilient operation of next-generation microgrids.

This Special Session invites original research papers and review articles focusing on AI/ML-based forecasting, optimization, control, and market participation of hybrid microgrids and EV-integrated energy systems. Both simulation-based and experimental/HIL-validated works are strongly encouraged.

Submissions Procedure:

All the instructions for paper submission are given at the conference website:

<https://taltech.ee/en/PEMC2026/paper-submission>

Topics of interest include but are not limited to

1	AI-based energy management strategies for hybrid AC–DC microgrids
2	Deep learning-based load and renewable generation forecasting
3	Reinforcement learning for real-time power dispatch
4	Blockchain-enabled P2P energy trading with AI optimization
5	AI-driven V2G, G2V, and V2H coordination strategies
6	Multi-agent systems for distributed microgrid control
7	Digital twins and predictive maintenance using ML
8	AI for hydrogen production scheduling and fuel cell integration