

Special Issue

Enabling Future Energy Transition in Digital Power Systems Through AI Technologies

Message from the Guest Editors

The global push towards net-zero emissions is transforming the way power systems are planned, operated, and regulated. Traditional centralized infrastructures are giving way to decentralized, digitalized, and decarbonized energy systems. This Special Issue focuses on the role of AI-driven approaches in accelerating the energy transition and enabling the design of next-generation, resilient, and sustainable power systems.

Topics of interest include, but are not limited to, the following:

- AI for renewable energy forecasting, integration, and flexibility management
- Optimization and control of distributed energy resources (DERs), storage, and microgrids
- Digital twins, edge/cloud intelligence, and cyber-physical energy system architectures
- Decentralized and federated learning for resilient and privacy-preserving power systems
- AI-enabled energy markets, demand response, and transactive energy systems
- Predictive maintenance, asset health monitoring, and reliability enhancement
- Hybrid physics-ML models for stability, security, and cross-sector decarbonization
- Case studies, benchmarks, and reproducible applications of AI in real-world power systems

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Deadline for manuscript submissions

15 October 2026



Energies

an Open Access Journal
by MDPI

Impact Factor 3.2
CiteScore 7.3



mdpi.com/si/258681

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About the Journal

Message from the Editor-in-Chief

Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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