Integration of Power Generation and Wind Energy

Message from the Guest Editors

The increasing deployment of wind energy systems plays a pivotal role in transitioning to a sustainable and renewable energy future. As one of the most mature renewable energy technologies, wind power has achieved significant growth globally. However, integrating large-scale wind energy into existing power systems presents unique challenges. These include the variability and intermittency of wind resources, their impact on grid stability, and the need for efficient planning, control, and operation strategies. Emerging technologies like artificial intelligence, big data analytics, and high-fidelity modeling are increasingly applied to optimize wind farm design, improve grid stability, and enhance overall system performance. Topics of interest include, but are not limited to, the following:

- High-fidelity modeling and simulation of wind energy systems;
- Optimization algorithms for wind farm planning and design;
- Grid stability and control in wind-integrated power systems;
- Intelligent forecasting and data-driven operations in wind energy;
- Hybrid energy systems combining wind and other renewables;
- Resilience and reliability in wind energy

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Deadline for manuscript submissions

15 December 2025

Energies

an Open Access Journal by MDPI

Impact Factor 3.2 CiteScore 7.3

mdpi.com/journal/
energies

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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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