Special Issue

Intelligent Monitoring and Modeling of Electrical Systems in Renewable-Powered Microgrids: Challenges and Solutions for Strengthening Energy Security and Blackout Prevention

Message from the Guest Editor

The key objectives of this Special Issue include exploring novel strategies for real-time monitoring, digital twin applications, predictive analytics, and fault detection in microgrids. Contributions are also expected to highlight optimization techniques for load management, energy storage integration, and demand-side flexibility, all of which are essential for enhancing system resilience. Given the growing importance of cybersecurity in interconnected and digitalized power systems, papers addressing risk assessment, secure data communication, and protection against cyberattacks are particularly encouraged. Another essential aspect is the role of microgrids in energy security and blackout resilience. Intelligent systems allow seamless transitions between grid-connected and islanded modes, the effective utilization of storage, and adaptive control strategies to minimize the risk of cascading failures. This Special Issue, therefore, seeks works that not only highlight technological innovation, but also address regulatory, economic, and societal dimensions of resilient renewable-based power systems.

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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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