Special Issue

Advanced Distributed Control and Optimization Technologies for Microgrids

Message from the Guest Editors

Distributed optimization and control of microgrids play important roles in advancing modern energy systems toward sustainability and robustness. By enabling decentralized decision-making among distributed energy resources (DERs), such as solar PV, wind turbines, and energy storage, these strategies eliminate the reliance on centralized controllers, enhancing operational flexibility and reducing vulnerability. Distributed control frameworks allow users to autonomously adjust generation and consumption while maintaining grid stability. They also improve scalability for expanding microgrids and support plug-and-play compatibility with new DERs. Furthermore, distributed optimization ensures efficient real-time operation by balancing supply–demand mismatches and minimizing energy costs. This Special Issue focuses on distributed optimization and control of microgrids to handle the increasing complexity of modern power systems. It seeks contributions that explore distributed planning, modelling, and analysis aimed at enhancing microgrid stability and efficiency. Emphasis is placed on scheduling optimization, robust control strategies, advanced energy management 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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