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Innovative Smart Grid Technologies for Electric Power System Development

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Message from the Guest Editors

Welcome to our Special Issue, "Innovative Smart Grid Technologies for Electric Power System Development." This issue explores the forefront of electrical power system innovation, focusing on smart grid evolution, microgrids, and their alignment with global sustainability goals. We discuss the rise of local energy communities, peer-to-peer energy sharing, and the integration of cutting-edge sensors, connectors, and control systems into existing power grids to enhance real-time data collection and customer engagement. Additionally, we examine the impact of electric vehicle adoption on the grid and strategies to bolster EV charging infrastructure. We also cover methods for optimizing distribution line capacity, self-healing grids, cybersecurity measures, and the role of energy storage, particularly batteries, in grid stabilization and renewable energy integration. Our topics include smart connectors, protections, energy storage, harvesting, EV integration, and dynamic distribution line rating, offering valuable insights into the future of electrical power systems.

Keywords: smart sensors; smart grid; energy storage technologies; energy harvesting

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Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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