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Special Issue Reprint

Energy Storage and Electric Power Systems

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This Reprint, titled “Energy Storage and Electric Power Systems: Theory, Methods, and Applications”, provides a comprehensive overview of the technologies driving the global transition toward carbon neutrality. As power systems increasingly integrate intermittent renewable sources like wind and solar, the stability of the grid relies heavily on versatile storage solutions.

The collected research explores a wide array of technologies and methodologies, from large-scale pumped-hydro and hydrogen systems to distributed solutions like redox flow and carbon-fiber-based batteries. Key focus areas include the optimization of hybrid and off-grid systems for isolated regions, strategies for enhancing grid stability, and innovations in transportation and fuel cell durability. By combining theoretical frameworks with practical case studies, this Reprint demonstrates that a resilient energy future requires a synergy of optimized control strategies, economic planning, and tailored storage technologies. It serves as an essential reference for researchers, engineers, and policymakers involved in the evolution of modern electric power systems.

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