Special Issue

Large-Scale Physical Energy Storage Technologies for Carbon Neutralization

Message from the Guest Editors

With global warming and frequent climate anomalies, the demand for renewable energy sources such as wind and solar energy is increasing due to their cleanness and safety. However, due to the randomness, volatility and intermittency of the renewable energy sources, their large-scale development and utilization are seriously impeded. Energy storage (ES) technologies can reduce the impact of renewable energy instability in the power grid by delivering the energy between different times, so as to achieve the large-scale utilization of renewable energy. Among various ES technologies, physical energy storage (PES) systems have advantages of safe, large scale and low cost.

Then PES can play an important role in the large-scale access of renewable energy. However, traditional pumped hydro storage technology has inevitable geographical restrictions, and is often not applicable to regions rich in renewable energy, so it is necessary to develop new large-scale PES systems, including compressed air energy storage systems, pumped thermal electrical storage systems, compressed CO2 energy storage systems and gravitational energy storage systems, etc.

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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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