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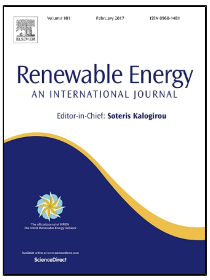

Stand-Alone Island Daily Power Management Using a Tidal Turbine Farm and an Ocean Compressed Air Energy Storage System

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Highlights

1. To compensate the MCT farm power variation due to the tidal phenomenon, an Ocean Compressed Air Energy Storage (OCAES) system is considered to achieve the island power management.
2. The novelty in this work is that conventional Diesel Generators (DGs) would only serve as a backup supply while the main island power supply will be fulfilled by the proposed hybrid MCT/OCAES system.
3. An effective model for the OCAES has been established for facilitating real-time power management simulations with other sources (MCTs and DGs).
4. Simulations under different working conditions (different load levels, different tidal speed levels, one-day cases and one-week case) are carried out to validate the feasibility of the proposed hybrid power system.

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