

Using seawater pumping for energy storage

What is seawater pumped storage?

By Dr. DF Duvenhage Seawater-pumped storage is an innovative form of hydroelectric energy storage that harnesses the power of seawater as the lower reservoir in a two-tiered energy storage system. This approach offers a compelling solution for storing and regulating electrical energy.

How does seawater pumped-storage hydro work?

Seawater pumped-storage hydro works similarly to traditional systems. The surplus electricity from fossil fuel, nuclear, or renewable energy power plants is used during periods of low energy demand to pump water uphill to be stored in reservoirs as potential energy.

Can seawater pump storage hydropower systems be used as stabilizing buffers?

We investigated the possibility of using Seawater Pump Storage Hydropower Systems (S-PSHS) for storing energy and work as stabilizing buffers in isolated electric grids typically from small islands. We used the island of Curaçao as proof of a concept that can be upscaled and generalized to other SIDS.

Will seawater pumped hydro storage provide a buffered energy storage system?

The proposed seawater pumped hydro storage (SPHS) is one option for providing a buffered energy storage system that will surely be required in the future. Given the fact that most small island developing states (SIDS) are isolated and surrounded by large bodies of water, the medium of seawater becomes an infinite supply.

Can seawater pump storage hydropower system be developed?

Typical sketch of seawater pump hydropower system. Numerous GIS-based studies have been carried out to discover promising sites for developing pump storage hydro but very less for seawater pump storage hydro scheme. The possible location of the new reservoirs must be identified by analysing the topography and hydrology.

What is sea water pumped hydro energy storage (sphes)?

Sea water Pumped Hydro Energy Storage (SPHES) is one such option for providing the energy storage that will surely be required in the coming years. The main benefit of using a sea water system is the use of the sea as the lower reservoir, thereby reducing construction time and costs.

This approach offers a compelling solution for storing and regulating electrical energy. In this article, we explore the working principle, historical context, commercial implementations, and ...



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