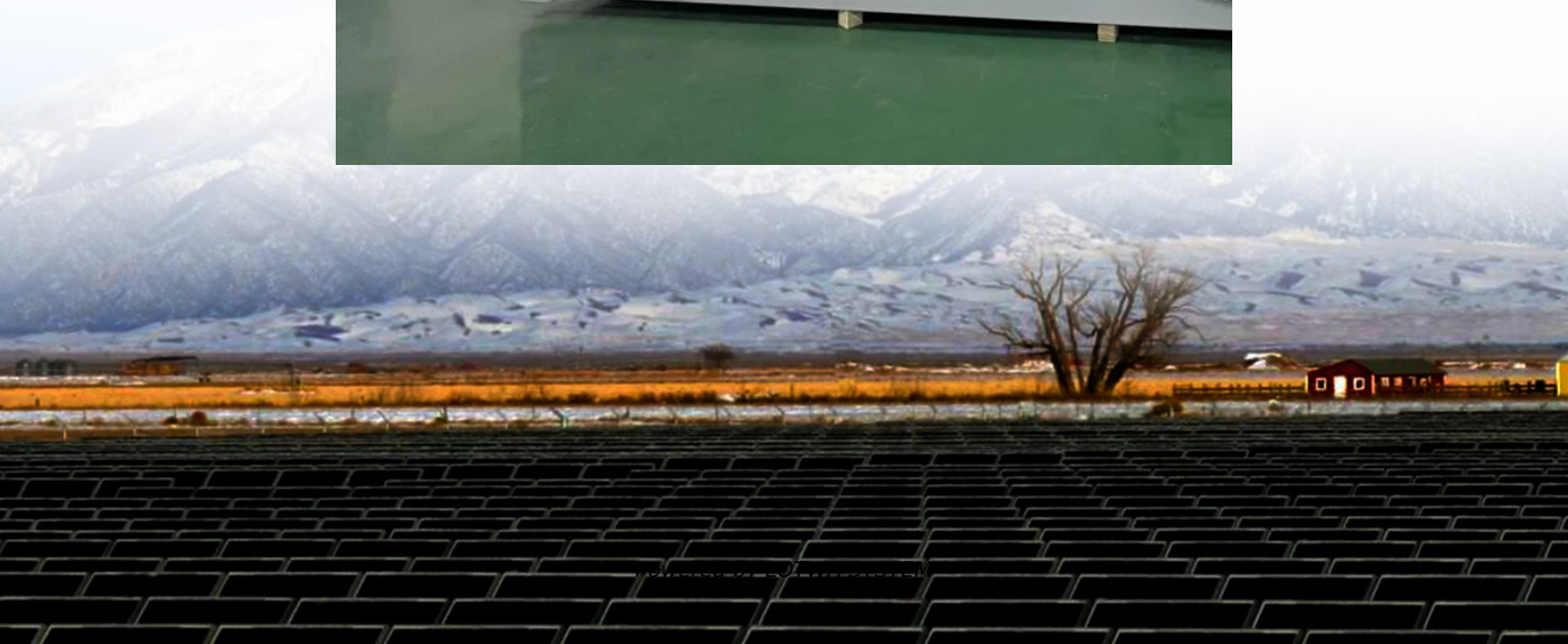


Dubai Energy Storage Frequency Modulation Power Station





Overview

Developed by DEWA (Dubai Electricity & Water Authority), this pumped storage power station (PSPS) is part of the Dubai Clean Energy Strategy 2050, which aims to supply 100% of the city's electricity from renewable sources by 2050. What is dynamic frequency modulation model?

The dynamic frequency modulation model of the whole regional power grid is composed of thermal power units, energy storage systems, nonlinear frequency difference signal decomposition, fire-storage cooperative fuzzy control power distribution, energy storage system output control and other components. Fig. 1.

What is the frequency modulation of hybrid energy storage?

Under the four control strategies of A, B, C and D, the hybrid energy storage participating in the primary frequency modulation of the unit $|\Delta f_m|$ is 0.00194 p.u.Hz, excluding the energy storage system when the frequency modulation $|\Delta f_m|$ is 0.00316 p.u.Hz, compared to a decrease of 37.61 %.

Can battery energy storage improve frequency modulation of thermal power units?

Li Cuiping et al. used a battery energy storage system to assist in the frequency modulation of thermal power units, significantly improving the frequency modulation effect, smoothing the unit output power and reducing unit wear.

How to evaluate frequency modulation performance under a control strategy?

Similarly, under external perturbations, the frequency modulation power change evaluation method is similar to frequency, the corresponding average value of power fluctuation is adopted P_m , power peak difference ΔP , the overall degree of power fluctuation P_{sd} evaluates the frequency modulation performance under the corresponding control strategy.



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