

## ContainerPower Energy Solutions

# PV plant energy storage combined frequency regulation project



## Overview

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By combining energy storage with PV systems to form PV-ESS integrated systems and adopting VSG control strategies, effective grid frequency support can be achieved during load disturbances (Nguyen et al., 2019; Shenghu et al., 2024; Chen et al., 2024).

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Second, the power control point positioning under deloading operation of PV systems and the virtual inertia control of energy storage systems are analyzed. Subsequently, a GA-BP neural network is introduced and applied to the adaptive parameter design of the PV-ESS system, enabling real-time.

Abstract—There is a growing demand for renewable energy generation in power grids driven by targets for electricity production from renewable energy resources and environmental concerns. This large-scale integration of variable renewable generation has many challenges for grid operators. This paper.

To address these challenges, this paper proposes a coordinated control and optimization strategy for PV-hybrid energy storage systems. An inertia coefficient  $k$ , derived from the energy equivalence between the rotational kinetic energy of a synchronous generator and the stored energy of batteries.

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