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Industrial Park Unified Energy Storage Project



Overview

Project: PV Carport Integrated with Micro-grid Energy Storage System

Location: Dingli Zhuhai Headquarters Industrial Park Rated capacity:

100kW/215kWh High Energy Costs: Due to peak-hour grid reliance.What is an integrated energy system Park (IESP)?

The advanced form of IES is the Integrated Energy System Parks (IESPs), which are applied in local hubs to manage multiple energy systems in terms of generation, conversion, storage, and consumption (Li et al., 2024). However, the IESPs management is a complex task, and achieving an optimal operational state encompasses significant challenges.

Is IESP a multi-vector integrated energy system Park?

This study develops a comprehensive optimization framework for a multi-vector Integrated Energy System Park (IESP) that simultaneously manages electricity, heating, and gas infrastructures.

Are integrated energy system parks adaptive?

Conclusion This study developed a comprehensive and adaptive optimization framework for Integrated Energy System Parks (IESPs), enabling the coordinated management of electricity, heat, and gas subsystems.

Does a diversified energy portfolio ensure high reliability and Renewable Integration?

Together, this diversified energy portfolio ensures high system reliability and renewable integration. In summary, the results confirm that the integrated energy system effectively leverages renewable sources to meet a substantial share of demand ($\approx 38\%$), with the gas turbine providing essential dispatchable capacity.

Why is energy storage important?

Its peak output at hour 19 (345.8 kW) supplies approximately 67 % of the

system's maximum demand, confirming its role as the primary dispatchable resource for compensating renewable variability and meeting late-day demand peaks. Energy storage further supports system flexibility by alternating between charging and discharging states.

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