

ContainerPower Energy Solutions

China s base station room hybrid energy standards



Overview

Can solar power improve China's base station infrastructure?

Traditionally powered by coal-dominated grid electricity, these stations contribute significantly to operational costs and air pollution. This study offers a comprehensive roadmap for low-carbon upgrades to China's base station infrastructure by integrating solar power, energy storage, and intelligent operation strategies.

What is the first large-scale sodium-ion battery energy storage station in China?

In May 2024, Southern Grid commissioned a 10 MWh sodium-ion battery energy storage station in Nanning, Guangxi province, the first large-scale sodium-ion battery energy storage station in China. The energy storage station can store 100,000 kWh of electricity on a single charge, which can meet the needs of around 12,000 households for a day.

How much electricity does a communication base station consume in China?

Based on the actual number of base stations in each province of China in 2021, we calculated the national electricity consumption of communication base stations (methodology detailed in Note S4), which amounted to 83,525.81 GWh (95% confidence interval [CI]: 81,212.38–85,825.86 GWh) for the year (Figures 2 A and 2C).

Should China upgrade to low-carbon base stations?

These outcomes demonstrate that upgrading to low-carbon base stations not only ensures economic feasibility but also delivers significant environmental and public health benefits, reinforcing the strategic value of decarbonizing China's communication infrastructure.

How many kWh can a solar energy storage station store?

The energy storage station uses the latest high-capacity sodium-ion batteries

with a top response speed six times faster than other existing sodium-ion batteries. It can store 800,000 kWh of electricity per day, which can be used by 270,000 households.

What is a base station energy optimization?

The optimization covers configurations of base station energy supply equipment (e.g., investment in photovoltaics [PV] and energy storage capacity) and operational locations (e.g., urban vs. rural deployments).

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