

SolarTech Power Solutions

North Asia Communication Base Station Hybrid Energy



Overview

Can renewable-dominated hybrid standalone systems be implemented in BTS encapsulation telecom sector?

This study presents a thorough techno-economic optimization framework for implementing renewable-dominated hybrid standalone systems for the base transceiver station (BTS) encapsulation telecom sector in Pakistan.

What is a Base Transceiver Station (BTS) in Pakistan?

In Pakistan, existing base transceiver stations (BTSs) primarily depend on diesel generators or the conventional grid for power. However, rising international fuel costs pose challenges like load shedding, power outages, and escalating expenses.

Are hybrid systems viable in autonomous BTS sites?

To address this, this study assessed the viability and sustainability of hybrid systems, focusing on renewable energy, in 42 autonomous BTS sites across north, central, and south Pakistan. Optimization findings show that specific areas in the north are more suitable for solar, wind, biomass, and hydropower.

Which PV system is best for the northern region?

Table 10 demonstrates that most northern regions have PV-B-DG configurations since solar energy is more prevalent there and wind energy is less prevalent. Therefore, a PV system with battery storage is the ideal choice for the northern region.

Which BTS configurations are most efficient for Northern BTS locations?

Configurations like PV-BM-B, DG-PV-B, PV-W-B-HYD, DG-PV-B-HYD, and W-HYD-B are efficient for northern BTS locations. For instance, Buner BTS-14 exhibits the lowest LCOE at 0.0454 USD/kWh, with an NPC of 0.0387 million USD and an annual operating cost of USD 601, providing a 38.5% energy surplus.

Are hybrid power systems a good solution for cities?

A techno-economic study revealed that hybrid systems are the best solution for cities, and these include PV, wind power, diesel, and batteries. Additionally, these minimize CO₂ emissions and ensure pollution-free operation. The power consumed by a BTS load is directly obtained from solar, wind, and DG power.

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