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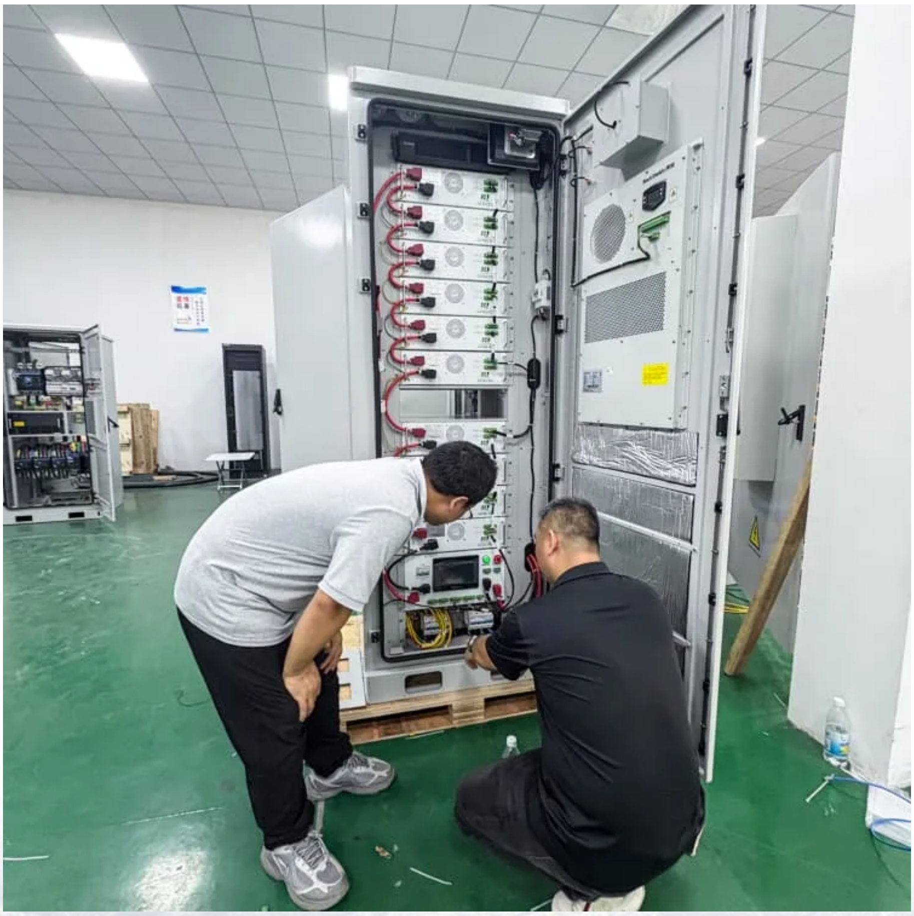
Reasons for base station replacement with wind power source



Overview

It is shown that powering base station sites with such renewable energy sources can significantly reduce energy costs and improve the energy efficiency of the base station sites in rural areas.How to make base station (BS) green and energy efficient?

This paper aims to consolidate the work carried out in making base station (BS) green and energy efficient by integrating renewable energy sources (RES). Clean and green technologies are mandatory for reduction of carbon footprint in future cellular networks.

What are the components of a base station?

A typical base station consists of different sub-systems which can consume energy as shown in Fig. 4. These sub-systems include baseband (BB) processors, transceiver (TRX) (comprising power amplifier (PA), RF transmitter and receiver), feeder cable and antennas, and air conditioner (Ambrosy et al., 2011).

Can a BS install a solar array or a wind turbine?

However, the foremost challenge in equipping a BS with a solar array or a wind turbine is the sizing and configuration of the systems. Sizing of PV arrays and turbines is directly effected by the fact whether or not a BS is off-grid or on-grid.

Can a wind turbine power a BS?

The main challenge is the sizing of the PV panels and the wind turbine to power a particular BS for which feasibility studies have been done using actual site data as well as simulated data, using software like HOMER, that provide the size and configuration of wind turbines and PV panels (Deshmukh and Deshmukh, 2008).

How can radio resources be manipulated to conserve energy?

The radio resources can be manipulated to conserve energy by adapting the capacity and/or converge of the green BS. This is demonstrated in (Valerdi et al., 2010), where both aspects are optimized according to the available renewable energy and battery back-up available.

What is the difference between power lines and nodes?

In such schemes, the nodes may provide the data transmission service, whereas the power lines are used to transfer the harvested energy between nodes. The BSs act as energy storage devices, which cooperate with each other for their energy needs.

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