

SolarInnovate Energy Solutions

Types of wind-solar hybrid communication base stations



Overview

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 reduct.

What is a hybrid solar/wind based power system?

A hybrid solar/wind based power system comprises PV array, wind turbine, battery bank, controller, inverter, cabling, and other devices (such as fuses etc.). The layout of a BS employing conventional as well as renewable energy sources is shown in Fig. 5.

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.

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.

Do hybrid power systems reduce the cost of isolated power systems?

The hybrid systems comprising conventional and RESs have been shown to significantly decrease the overall cost of the isolated power systems over their total life cycle (Karki and Billinton, 2001).

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 off-grid BS be used for solar panels and wind turbines?

A number of off-grid and stand-alone BSs have been modeled for deployment of solar panels and wind turbine as shown in literature (Bian et al., 2013; Yu and Qian, 2009; He and Qian, 2009; Hashimoto et al., 2003; McGuire et al., 2012).

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