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Solar Cell Base Station

Overview

Are solar powered cellular base stations a viable solution?

Cellular base stations powered by renewable energy sources such as solar power have emerged as one of the promising solutions to these issues. This article presents an overview of the state-of- the-art in the design and deployment of solar powered cellular base stations.

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).

What types of batteries are used in cellular BS?

Different types of batteries such as lead-acid, Lithium-ion, Redox-flow, Lithium-polymer etc are being investigated for use in cellular BS (Merei et al., 2013), (Fabbri et al., 2011a). Proper configuration and optimal battery utilization are particularly important in stand alone or off-grid Bs.

Can solar panels power a Long Term Evolution (LTE) BS?

On the other hand, in dimensioning the powering system for a typical long term evolution (LTE) BS, which solely relies on RES, with the current technologies, very large dimensions of solar panels are required for powering a BS in peak traffic hours (Marsan et al., 2013).

How does a 3 kW BS system work?

In (Hashimoto et al., 2003), a 3 kW BS at an island is powered by 7.6 kW PV panels and and 8 kW wind turbine with 177 KWh back up batteries. Their system comprises a wind generator and cylindrical photovoltaic modules that are mounted onto the wind generator pole to save installation space and cost.

Solar Cell Base Station

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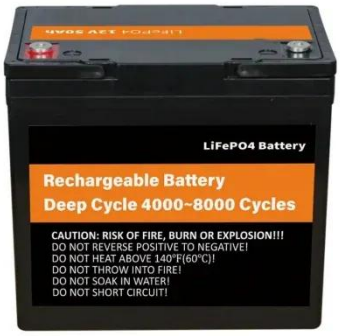

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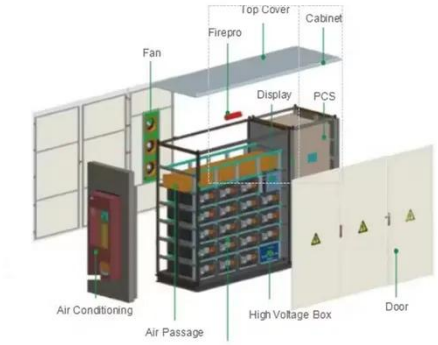

Solar-enabled green base stations: Cost versus utility , IEEE

Jun 15, 2017 · Solar-enabled cellular base stations are getting significant attention because they avoid greenhouse gas emission as well as easily available. Dimensioning of base station is a ...

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