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Advantages and disadvantages of hybrid energy for customized communication base stations

Overview

Can a hybrid system reduce the operational costs of BTS?

In this paper, we presented a hybrid system, which uses renewable energy sources (solar and wind energy), diesel power and the electric grid. This system has been optimized for minimizing the operational costs of BTS, while promising high reliability.

Is hybrid energy system a cost-effective option for re-Mote and grid-connected BTS?

According to numerical results, for the use case of the Greek island of Kea, we confirmed that hybrid energy system is a promising, cost-effective option for both re-mote and grid-connected BTSs, via reducing remarkably the total annualized cost of energy system and CO2 emissions.

How to optimize a hybrid energy system?

In order to select an optimum com-bination for a hybrid system to meet the load demand, evaluations must be carried out on the basis of power reliability and system life-cycle cost. Recently, several simulations have been performed in order to optimize hybrid energy systems and to fulfill the energy demands of a BTS.

How much energy does a base transceiver station use?

There are approximately 4 million installed Base Transceivers Stations (BTSs) in the world today. A BTS of a wireless communications network consumes 100 watts of electricity to pro-duce only 1.2 Watts of transmitted radio signals. From a system efficiency perspective (output/input power), this translates into an energy efficiency of 1.2% .

What is total maintenance cost of hybrid system in the first year?

The total maintenance cost of hybrid system in the first year can be defined as where Mp, Mw, Mb is the maintenance cost of PV generators, wind turbines

and batteries in the first year respectively. The maintenance cost of system every next year is higher because of the annual inflation rate.

Can green energy be used to power cellular base stations?

Abstract: Growing concern about global warming and energy consumption, utilizing green energy to power cellular base stations (BSs) is an attractive solution to reduce operational expenditure and global carbon emissions.

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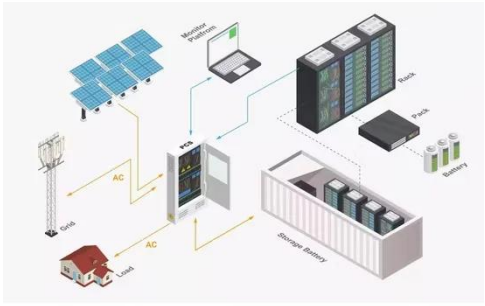

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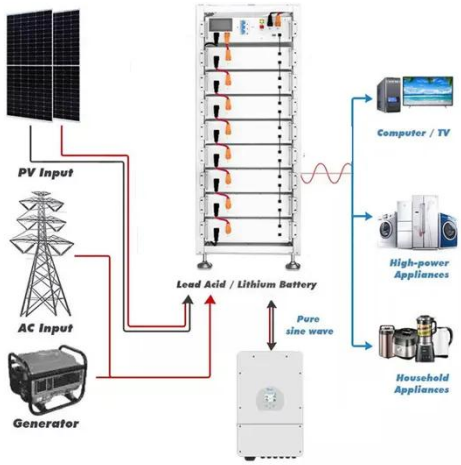

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