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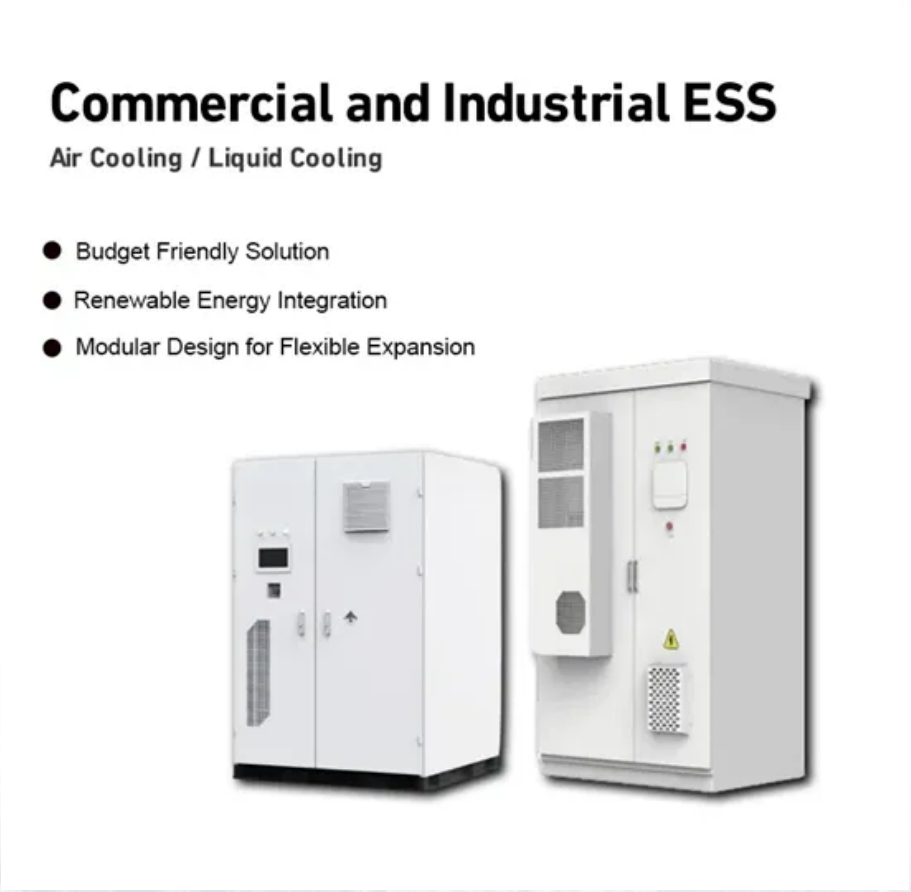
Measurement of power consumption of communication base stations



Overview

Is there a direct relationship between base station traffic load and power consumption?

The real data in terms of the power consumption and traffic load have been obtained from continuous measurements performed on a fully operated base station site. Measurements show the existence of a direct relationship between base station traffic load and power consumption.

What is the largest energy consumer in a base station?

The largest energy consumer in the BS is the power amplifier, which has a share of around 65% of the total energy consumption . Of the other base station elements, significant energy consumers are: air conditioning (17.5%), digital signal processing (10%) and AC/DC conversion elements (7.5%) .

How do base stations affect mobile cellular network power consumption?

Base stations represent the main contributor to the energy consumption of a mobile cellular network. Since traffic load in mobile networks significantly varies during a working or weekend day, it is important to quantify the influence of these variations on the base station power consumption.

Which base station elements consume the most energy?

Of the other base station elements, significant energy consumers are: air conditioning (17.5%), digital signal processing (10%) and AC/DC conversion elements (7.5%) . New research aimed at reducing energy consumption in the cellular access networks can be viewed in terms of three levels: component, link and network.

What is the power consumption model of GSM 900 sector 2 BS rack?

Power consumption model of GSM 900 sector 2 BS rack (Monday, 18/07). Generally, there is no major difference between models presenting power consumption of one day and the total power consumption for all five days of

measurements.

How much power does a radio network use?

This consumption is vast, and on the level of the operator's radio access part of the network, equals approximately 7,700.54 MW. Translated into financial costs, this corresponds to the amazing amount of approximately 5.3 million euros that the operator pays to the electricity supply company. 6.3. Reactive Site Power Consumption

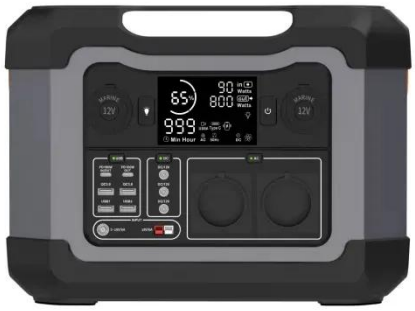
Measurement of power consumption of communication base station

Energy saving technique and measurement in green wireless communication

Sep 15, 2018 · The measured results revealed that the proposed model reduces the energy consumption of base stations by up to 18.8% as compared with the traditional static BSs, ...

Energy-Efficient Base Stations , part of Green Communications

Aug 29, 2022 · With the explosion of mobile Internet applications and the subsequent exponential increase of wireless data traffic, the energy consumption of cellular networks has rapidly ...

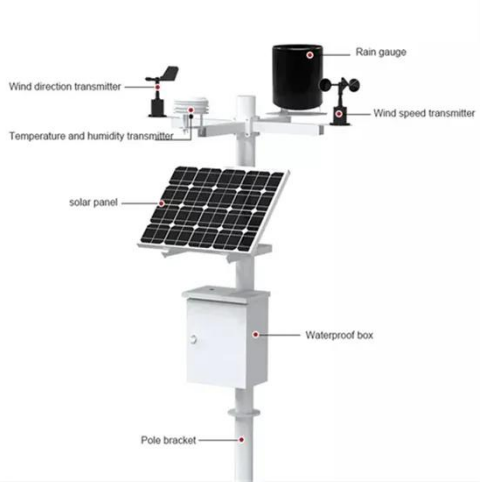


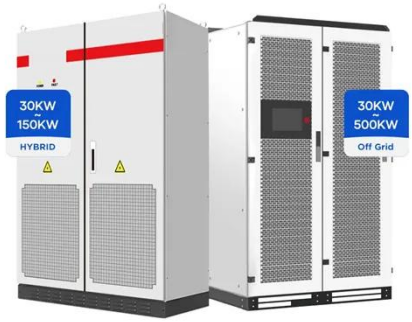
Research on Energy Consumption Modelling of 5G Wireless Communication

Feb 24, 2023 · The energy consumption measurement technology of 5G main equipment is based on the RRU energy consumption modelling. This research examines the energy consumption ...

Machine Learning and Analytical Power Consumption Models for 5G Base

Oct 25, 2022 · The energy consumption of the fifth generation (5G) of mobile networks is one of the major concerns of the telecom industry. However, there is not currently an accurate and ...





(PDF) Measurements and Modelling of Base Station Power Consumption

Base Station is the main contributor of energy consumption in cellular mobile communication. The traffic of base station varies over time and space. Therefore, it is important to quantify the ...

Power consumption model for macrocell and microcell base stations

Aug 28, 2012 · In this paper, a power consumption model for both macrocell and microcell base stations is proposed and validated by temporal power measurements on actual base stations. ...

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