SolarInvert Energy Solutions

Base station electricity charges electricity consumption communication and new energy sites

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 are base station models?

The base station models vary in their approaches and potential use cases. Hereafter, the models are grouped according to these aspects. Main component models only model the power consumption of the main base station components (power amplifier, analog frontend, baseband unit, active cooling, power supply) separately.

Can a base station Power model be combined?

As the main components are common to most of the models, they can be easily combined to form a new model. Most of the base station power models are based on measurements of LTE (4G) hardware or theoretical assumptions. For the more recent models, based on measurements of 5G hardware, the parameter values are not publicly available.

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%) .

What are the main components of a base station Power model?

The main components are the baseband processing unit, analog frontend, power amplifier, and power supply as well as active cooling. As the main

components are common to most of the models, they can be easily combined to form a new model. Most of the base station power models are based on measurements of LTE (4G) hardware or theoretical assumptions.

Do base stations dominate the energy consumption of the radio access network?

Furthermore, the base stations dominate the energy consumption of the radio access network. Therefore, it is reasonable to focus on the power consumption of the base stations first, while other aspects such as virtualization of compute in the 5G core or the energy consumption of user equipment should be considered at a later stage.

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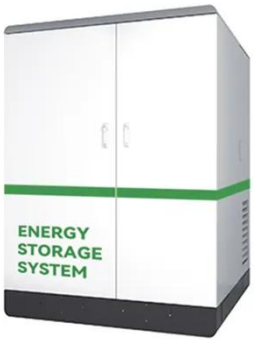

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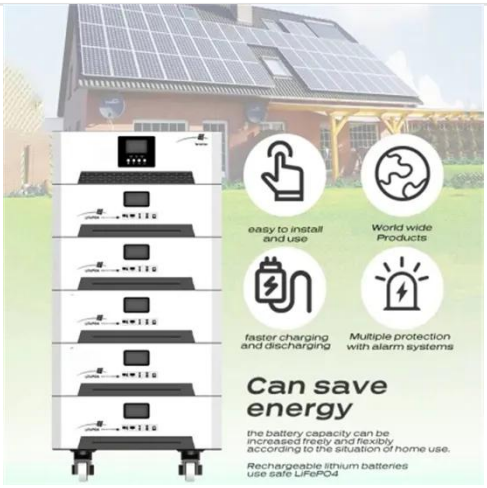

Breakdown of power consumption in radio base ...

Even 65 % of the total energy consumption of a base station is used for

radio-wave generation, mostly in power amplifiers [1]. The need for energy can be ...

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