SolarTech Power Solutions

Calculation of energy consumption of energy storage in communication base stations

Overview

How much energy does a communication base station use?

In this region, the communication base stations are equipped with energy storage systems with a rated capacity of 48 kWh and a maximum charge/discharge power of 15.84 kW. The self-discharge efficiency is set at 0.99, and the state of charge (SOC) is allowed to range between a maximum of 0.9 and a minimum of 0.1. Figure 3.

What percentage of the energy consumption comes from ran (radio access network)?

Figure 1.1(c) then shows that of the energy consumption of the network, 70%-90% comes from the RAN (Radio Access Network) of which 70% of the energy consumption comes from the Radio Base Stations, see Figure 1.1(d).

What is a base station power consumption model?

In recent years, many models for base station power con-sumption have been proposed in the literature. The work in proposed a widely used power consumption model, which explicitly shows the linear relationship between the power transmitted by the BS and its consumed power.

What is a 5G base station energy consumption prediction model?

According to the energy consumption characteristics of the base station, a 5G base station energy consumption prediction model based on the LSTM network is constructed to provide data support for the subsequent BSES aggregation and collaborative scheduling.

Can a neural network predict energy consumption from field data?

Mathematical optimization of energy consumption requires a model of the prob-lem at hand. In this thesis linear regression is compared with the gradient boosted trees method and a neural network to see how well they are able to predict energy consumption from field data of 5G radio base stations.

How much energy does a radio network use?

Importantly, more than 70% of this energy has been estimated to be consumed by the radio access network (RAN), and in more details, by the base stations (BSs) .

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