

Principle of mobile energy storage power supply for communication base stations

What is energy storage system?

The energy storage system is used to store excess electrical energy during low communication demand periods and release it during high communication demand periods, in order to balance power supply and demand, as well as improve the stability and flexibility of power supply to the various components of the 5 G base station.

What are the components of a 5 G base station?

Firstly, in terms of energy equipment, the electrical component characteristics of the 5G base station's constituent units are modeled, including air conditioning loads, power supply systems, and energy storage systems.

Why do cellular base stations have backup batteries?

[...] Cellular base stations (BSs) are equipped with backup batteries to obtain the uninterruptible power supply (UPS) and maintain the power supply reliability. While maintaining the reliability, the backup batteries of 5G BSs have some spare capacity over time due to the traffic-sensitive characteristic of 5G BS electricity load.

What is the energy-saving operation model for 5 G base stations?

This section integrates the characteristics of power components and data flow to construct an energy-saving operation model for the 5 G base station. Through optimization, the optimal energy-saving and carbon-reduction strategies for each time period are obtained, thereby promoting energy conservation and emission reduction in 5 G base stations.

The incorporation of renewable energy sources such as solar and wind into the power supply for communication base stations is gaining traction. With ...

With the mass construction of 5G base stations, the backup batteries of base stations remain idle for most of the time. It is necessary to explore these massive 5G base station energy ...

Uninterrupted power supply to base stations is a key factor in ensuring the effective operation of mobile communication networks. Short or long-term power outages negatively affect the ...

In the communication power supply field, base station interruptions may occur due to sudden natural disasters or unstable power supplies. This work studies the optimization of battery resource ...

As the number of 5G base stations, and their power consumption increase significantly compared with that of 4G base stations, the demand for backup batteries increases simultaneously. Moreover, the ...

With the increasing proportion of fluctuating renewable energy generation, more new flexible FR resources have been noticed. In recent years, 5G has grown rapidly in scale as an ...

With the relentless global expansion of 5G networks and the increasing demand for data, communication base

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stations face unprecedented challenges in ensuring uninterrupted power supply and managing ...

In this article, the schedulable capacity of the battery at each time is determined according to the dynamic communication flow, and the scheduling strategy of the standby power considering the ...

The energy storage system is used to store excess electrical energy during low communication demand periods and release it during high communication demand periods, in order ...

This paper proposes an analysis method for energy storage dispatchable power that considers power supply reliability, and establishes a dispatching model for 5G base station energy ...

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