

Base station backup power supply classification





Overview

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.

When does a base station need a backup battery?

When the power supply of the grid is good or the base station load is in a state of low energy consumption, the backup battery of the base station is usually idle. Reasonable evaluation of the reserve energy required by the base station is the premise of its response to the grid dispatching.

Can a battery group be used as a backup power supply?

In practice, the battery groups (either traditional lead-acid batteries or emerging lithium ones) are deployed as the backup power supply of BSs. In our scenario, one battery group could be shared by multiple BSs nearby to exploit the statistical multiplexing gain, and the multiple BSs sharing the same battery group form a virtual cell (VC).

How many base stations and backup battery features are there?

In this paper, we closely examine the base station features and backup battery features from a 1.5-year dataset of a major cellular service provider, including 4,206 base stations distributed across 8,400 square kilometers and more than 1.5 billion records on base stations and battery statuses.



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[Energy Storage Regulation Strategy for 5G Base Stations ...](#)

Dec 18, 2023 · This paper proposes an analysis method for energy storage dispatchable power that considers power supply reliability, and establishes a dispatching model for 5G base ...

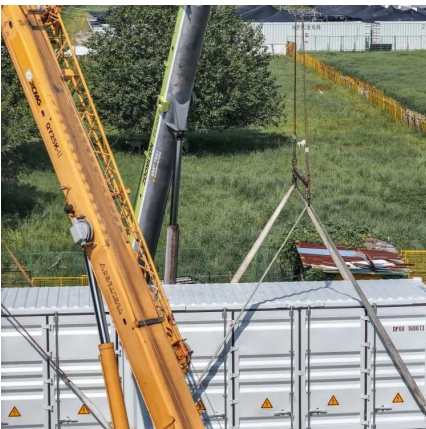
[Communication Base Station Backup Power Selection Guide](#)

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[Dispatching strategy of base station backup power ...](#)

Dec 19, 2023 · Dispatching strategy of base station backup power supply considering communication flow variation Zheyu OUYANG and Yanchi ZHANG Shanghai Dianji ...



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Apr 1, 2023 · 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 ...



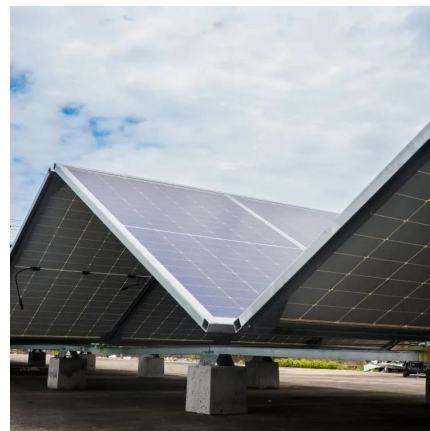
[A Guide to Selecting UPS Power Supplies for Base Stations](#)

Learn how to choose the right UPS power supplies specifically designed for base stations, ensuring uninterrupted power backup and reliable operation.



[Dispatching strategy of base station backup power supply ...](#)

Apr 1, 2023 · Abstract 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 ...



[An optimal dispatch strategy for 5G base stations equipped ...](#)

Aug 15, 2025 · Considering BSs are normally equipped with backup batteries for the continuous power supply during grid outage, and these batteries remain idle most of the time as the power ...





[Optimal Backup Power Allocation for 5G Base Stations](#)

1 Analysis of Power Outages and Network Failure
2 Condition of Network Reliability
3 Backup Power Deployment Constraints
4 Backup Power Allocation Optimization
Given the backup power sharing scenario in Sect. 4.3.3 and illustrated by Fig. 4.4, two types of power outages may happen. See more on link.springer.com/hj-net

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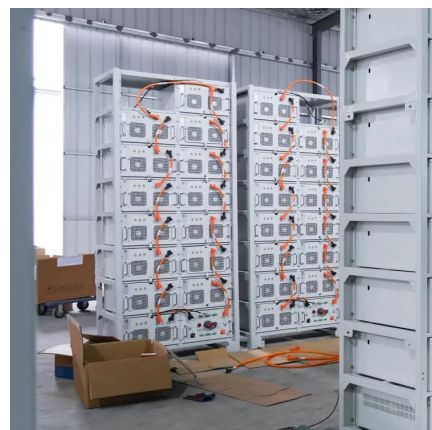


[Backup Battery Analysis and Allocation against Power ...](#)

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[Optimal Backup Power Allocation for 5G Base Stations](#)

Feb 18, 2022 · As illustrated in Fig. 4.1, one backup battery group can be shared among multiple small BSs (whose signal ranges are also covered by the nearby macro BS). Especially for the ...



[Backup Battery Analysis and Allocation against Power ...](#)

Jan 17, 2022 · Abstract--Base stations have been



widely deployed to satisfy the service coverage and explosive demand increase in today's cellular networks. Their reliability and availability ...

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