

## SolarTech Power Solutions

# Reform of flow batteries for communication base stations



## Overview

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] 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.

The innovative approach of “5G base stations + distributed renewable energy sources + repurposed electric vehicle batteries” utilizes the distributed renewable energy. This not only facilitates the cascading utilization of retired electric vehicle batteries but also promotes the low-carbon.

The transition to lithium-ion (Li-ion) batteries in communication base stations is propelled by operational efficiency demands and environmental regulatory pressures. Operators prioritize energy storage systems that reduce reliance on diesel generators, which account for 30-40% of operational costs.

This work studies the optimization of battery resource configurations to cope with the duration uncertainty of base station interruption. We mainly consider the demand transfer and sleep mechanism of the base station and establish a two-stage stochastic programming model to minimize battery.

The Communication Base Station Battery market is experiencing robust growth, driven by the expanding deployment of 5G and 4G networks globally. The increasing demand for higher data speeds and improved network coverage is fueling the need for reliable and efficient power backup solutions for base.

Why do cellular base stations have backup batteries?

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