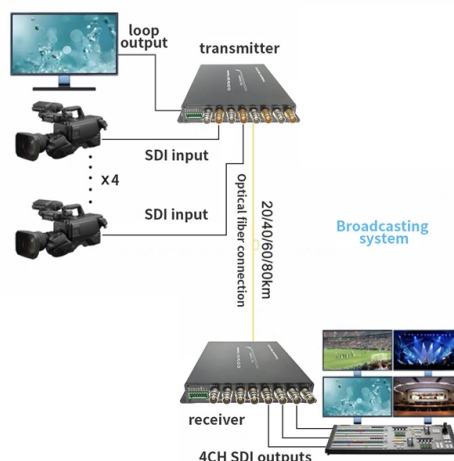


RIVO MULTITRADE OPTICAL SYSTEMS

Replacement of China Tower Communication Base Stations



Overview

Communication Base Station Retrofit Kits | HuiJue Group E-SiteThe answer lies in communication base station retrofit kits – modular upgrades transforming o.

Key Takeaways

China Tower is modernizing its communication base stations by replacing lead-acid batteries with LiFePO4 energy storage, deploying retrofit kits for 5G, and integrating AI, IoT, and green energy solutions.Battery Replacement and Energy Storage

China Tower has largely phased out lead-acid batteries in favor of LiFePO4 lithium battery packs for base station backup power. Lead-acid batteries suffered from short service life, low performance, and environmental hazards due to heavy metal content. By 2018, approximately 1.5 GWh of LiFePO4 batteries had been deployed across 120,000 base stations, replacing around 45,000 tons of lead-acid batteries. This transition supports longer cycle life, better reliability in harsh weather, and environmental sustainability, while also enabling pilot programs for lithium battery recycling .

Retrofit Kits and 5G Upgrades



To meet the demands of 5G networks, China Tower and other operators are using communication base station retrofit kits. These modular upgrades allow legacy towers to support multi-functional nodes, including millimeter-wave deployments and enhanced Mobile Broadband (eMBB) requirements. Retrofit kits address limitations in fronthaul interfaces and power subsystems, enabling faster deployment and reducing costs compared to full replacements. For example, upgrading mMIMO capabilities now takes 3 technician-hours versus 48 hours for full antenna replacement .

AI, IoT, and Multi-Use Digital Nodes

China Tower is converting 2.1 million tower sites into intelligent, multi-use digital nodes for AI, IoT, drone operations, and underground connectivity. These upgrades include smart energy management systems, solar panels, and DC power supply systems, creating emergency-ready, zero-carbon base stations. Additionally, 70% of BeiDou satellite stations now rely on China Tower's network, supporting space-air-ground communications and next-generation mobility .

Green Energy and Low-Carbon Initiatives

China Mobile and China Tower are actively implementing green base station strategies, including energy-saving technologies, extreme sleep modes for 4G/5G equipment, and multi-energy complementary solutions. In 2024, China Mobile deployed nearly 60,000 minimalist base stations and purchased over 3.5 billion kWh of renewable electricity, reducing CO₂ emissions by over 1.87 million tonnes. These initiatives align with national carbon neutrality goals and promote sustainable telecom infrastructure .

Scale and Future Outlook

China plans to build over 4.5 million 5G base stations in the near term, with ongoing trials for 10-gigabit optical networks and AI-driven network optimization. The combination of lithium battery adoption, retrofit kits, and green energy integration ensures that China Tower's infrastructure is prepared for 6G innovation, AI applications, and next-generation digital services . In summary, the replacement of China Tower communication base stations involves a comprehensive modernization strategy: transitioning to LiFePO₄ batteries, deploying modular retrofit kits, integrating AI and IoT capabilities, and implementing green energy solutions, all while scaling rapidly to meet 5G and future 6G network demands.

Article Content

Telecom battery backup systems

In general, in the construction of 5G base stations, the 5G computer room, power supply and related supporting

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With a registered capital of 10 million RMB and over two decades of industry expertise, we have grown into a leading

China Tower bolsters upgrading of nation's digital infrastructure

China Tower Corp, a Beijing-based mobile communication infrastructure company that runs most of the country's telecom

What 5G telecom towers can offer in China's digitalization

China Tower, responsible for constructing the majority of these communication base stations, positions itself as a

China's Tree-Shaped 5G Towers Ensure Seamless Connectivity

To minimize their impact on the environment and alleviate public concern, many telecom base stations are camouflaged as familiar

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