Battery Types in Communication Equipment Rooms

Overview

Types of Batteries Used in Telecom: A Practical Guide for Powering. For critical communication nodes, power reliability directly impacts customer experie.

Key Takeaways

Batteries in communication equipment rooms are classified based on chemistry, rechargeability, ventilation needs, and safety standards, with primary and secondary cells, VRLA, and flooded lead-acid types being the most common.Types of Batteries

Primary Cells: Non-rechargeable batteries that are discarded after use. Examples include carbon-zinc, alkaline-manganese, mercury-zinc, silver-zinc, and lithium-based cells such as lithium-manganese dioxide, lithium-sulfur dioxide, and lithium-thionyl chloride . Secondary Cells: Rechargeable batteries used for backup power in telecom and network rooms. Common types include lead-acid (flooded or VRLA), nickel-cadmium, nickel-metal hydride, nickel-iron, silver-zinc, silver-cadmium, and lithium-ion . Lead-Acid Batteries: These are widely used in telecom environments. Flooded lead-acid batteries contain liquid electrolyte and continuously vent hydrogen gas, requiring special ventilation and spill containment . VRLA (Valve Regulated Lead Acid) batteries, including Absorbed Glass Mat (AGM) types, immobilize the electrolyte, emit minimal hydrogen, and generally do not require special ventilation . Lithium-Ion Batteries: Increasingly used in modern telecom systems for their high energy density, long life, and compact footprint. They often include built-in Battery Management Systems (BMS) for monitoring and safety .

Safety and Standards

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Battery rooms must comply with NFPA 70E for electrical safety, including protection against shock, arc flash, and chemical hazards . The IEC 50272-2 standard specifies safety requirements for stationary battery systems up to 1,500V DC, addressing risks from electricity, gas emissions, and electrolyte handling . OSHA regulations (29 CFR 1926.441) apply to unsealed flooded batteries, requiring ventilation, worker protection, and acid neutralization procedures . VRLA batteries are considered sealed and are generally exempt from these specific OSHA requirements. Environmental and Fire Codes: Local fire codes and building codes dictate installation requirements, including room separation, ventilation, and spill containment, depending on battery type and electrolyte volume . Hazardous Area Classification: Areas where batteries emit flammable gases may be classified according to EN 60079-10-1, which defines zones based on the presence of explosive atmospheres . This classification guides ventilation, monitoring, and safety measures.

Design Considerations for Indoor Equipment Rooms
• Space and Weight: Battery racks must fit within limited floor space and comply with building floor load limits .

• Modularity: Modular battery systems allow scalable capacity for future network expansion .

• Thermal Management: Batteries must operate safely under controlled temperature and humidity, with protection against overheating and fault escalation .

• Monitoring: BMS systems provide real-time status, fault detection, and lifecycle management .
Summary

In communication equipment rooms, batteries are classified primarily by chemistry (lead-acid, lithium-ion, nickel-based), rechargeability (primary vs secondary), and safety requirements (ventilation, fire codes, hazardous area classification). Proper selection, installation, and monitoring ensure reliable backup power while minimizing risks to personnel and equipment. Compliance with NFPA, IEC, OSHA, and local codes is essential for safe operation.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Article Content

Battery Technology for Data Centers and Network Rooms: Safety

Initially, fire codes for stationary lead acid batteries were written for large systems utilizing vented (also called “flooded” or “wet cell”)

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

Contact Us

Continue your research online:

Website: https://alfa-pro.co.za
Technical inquiry: https://alfa-pro.co.za/contact.html

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved