Battery Storage

Ensuring secure charging and storage for Lithium-ion batteries

GUNNEBO®
Safe Storage

Understanding the risks – why lithium-ion battery storage is challenging

Lithium-ion batteries are widely used across various industries due to their efficiency and high energy density, powering everything from portable electronics to large-scale industrial equipment. However, the storing of these lithium-ion batteries presents challenges and risks for businesses all over the globe.

What are the dangers associated with lithium-ion batteries?

INERIS (Institut National de L'Environnement Industriel et des Risques) identified 50 potential accidental scenarios throughout the battery life cycle, of which 12 were deemed critical. The most concerning risk is battery fire, which poses a significant hazard. This is a significant risk because the fire caused by lithium-ion batteries cannot be extinguished using conventional methods. Normal CO2 or water extinguishers are completely ineffective against these types of fires, as the battery itself generates the oxygen molecules and intense heat needed for combustion. To stop or even slow down such a fire, an aerosol extinguisher is absolutely necessary. These specialized extinguishers use specific chemical agents capable of tackling the unique challenges presented by lithium-ion battery fires, unlike standard extinguishers.

How do these battery fires originate?

Storing lithium-ion batteries presents unique challenges due to their inherent risks, the most significant being the thermal runaway. This can be triggered by an increase in environmental temperature, physical shock, or assembly issues, potentially leading to the battery igniting and causing a fire.

Thermal Runaway

Thermal runaway is a chain reaction within a battery cell that can be very difficult to stop once it begins. It occurs when the temperature inside a battery reaches a critical point, triggering a chemical reaction that generates even more heat. Given the structure of the battery, the reaction itself becomes stronger and causes critical overheating. The materials of the battery also release bound oxygen, which further fuels the fire. This escalation can happen within milliseconds, causing the battery's temperature to spike dramatically. Thermal runaway can also be initiated by mechanical or electrical impact, short-circuiting within the battery cell, or exposure to heat.

Release of Hazardous Gases

During thermal runaway or other failure, lithium-ion batteries can emit toxic gases. These gases can be self-igniting or explosive, further exacerbating the risk of fire.

Re-ignition of a Burnt Battery

A burnt battery that has not been sufficiently cooled poses a risk of re-ignition. This can restart a fire that was previously extinguished, creating ongoing safety hazards.

These risks underscore the importance of proper storage and handling of lithium-ion batteries to prevent accidents and ensure safety.

Ensuring safety with secure battery storage

To address the challenges of storing lithium-ion batteries and ensure the safety of people and assets, specialized storage systems are essential.

SecureBattery represents an exceptional and highly secure solution for precise battery storage and charging. The cabinets offer a streamlined and trouble-free solution, effectively mitigating potential risks associated with overheating and fires during battery storage and charging processes. Our paramount objective is to transcend prevailing industry safety benchmarks, for a safer world.

Leveraging our expertise and experience with EN14470-1 European standard fire-proof cabinets, our solutions ensures optimal safety and compliance. Our SecureBattery cabinets are endowed with cutting-edge fire safety features, including integrated smoke detectors, temperature sensors, and automatic fire extinguishers. Meticulously engineered to preclude fires, effectuate rapid suppression in emergencies, and ensuring prompt notification to users in the unlikely event of a fire.

The Gunnebo SecureBattery offering includes two ranges - SecureBattery Professional and SecureBattery Lite. For more detailed information, please refer to the product sheets.

Areas of use

The Gunnebo SecureBattery range provides secure storage solutions for batteries used across various industries, ensuring safety and compliance while minimizing risks. Discover how our cabinets can enhance safety in different sectors.

Universities & Schools

Ensure a safe environment for students and researchers by securely storing and charging batteries used in various devices. Our safety cabinets protect against potential hazards, helping maintain a secure and compliant educational setting.

Offices

Maintain a safe workplace by securely storing backup batteries for uninterruptible power supplies (UPS) and other battery-operated office equipment. Additionally, provide a designated space for employees to safely store and charge personal items like e-bike batteries during the workday. Our safety cabinets are designed to protect both equipment and personnel, significantly reducing the risk of accidents and enhancing overall workplace safety.

High-risk sites

Enhance safety in production sites by securely storing batteries for machinery and tools. Our safety cabinets help prevent accidents and equipment damage, ensuring a smooth and efficient production process.

Transportation & food delivery businesses

Securely store and charge batteries for electric scooter and other electric vehicles to ensure operational safety and efficiency.

Retail

Safety store and charge batteries for various technology and battery-powered tools, preventing accidents and equipment damage in both in-store and warehouse setting.

Choosing the right **battery storage**

Selecting the appropriate battery storage cabinet depends on two critical factors: the operational environment and the battery power requirements. Our range of cabinets ensures your battery charging and storage solutions are both safe and efficient, addressing the specific needs of your operational environment.

To begin with, you need to assess the space available and the volume of batteries you plan to store. A range of cabinet sizes is available to accommodate various space constraints, ensuring that the storage solution fits seamlessly into your operational setup. Another critical aspect to consider is fire resistance. High-quality storage solutions can provide fire protection, helping to mitigate risks such as fire outbreaks or explosions. This is particularly important in environments where the risk of fire is heightened by the presence of large or powerful batteries.
The type of batteries you are storing is equally important.

For instance, low-power lithium batteries, commonly found in mobile phones and computers, need appropriate storage to prevent damage and ensure safety. Medium-capacity lithium batteries, such as those used in electric bicycles and scooters, require more stringent storage, typically in fire-resistant enclosures that are continuously monitored. High-capacity batteries, often found in electric cars, demand even greater precautions, including tailored fire protection measures and localized fire suppression systems, to prevent potential hazards in large storage areas.

The SecureBattery range

To meet these varied needs, SecureBattery offers two key product ranges: SecureBattery Professional and SecureBattery Lite. Each is designed to provide a balance between protection and functionality, catering to different levels of safety and operational requirements.

SecureBattery Professional

SecureBattery Professional is designed for businesses needing advanced protection when storing and charging batteries. These cabinets feature a robust double-wall construction, with external steel walls and internal melamine walls separated by thermal insulation panels. The cabinets are designed to provide fire-resistant protection for up to 180 minutes from the inside out, in accordance with NF EN 13501-2 standards, and for up to 90 minutes from the outside in, meeting EN 14470-1 & EN 1363-1 standards. Additional safety features include thermo-expanding door seals that prevent heat and smoke from entering during a fire, as well as a ventilation duct that allows the cabinet to be connected to the building's ventilation system, helping to prevent heat build-up. For convenience, the cabinets have automatic closing doors, integrated electrical outlets, and built-in fire alarms and automatic extinguishers. These features make SecureBattery Professional ideal for high-risk environments requiring stringent safety measures.

SecureBattery Lite

SecureBattery Lite offers dependable protection at a lighter specification, suitable for businesses that require secure battery storage without the need for extensive fire resistance. The cabinets are constructed from heavy-duty sheet steel with intermediate fire insulation (Euroclass A1), providing fire resistance, tested in accordance with SP Method 2369 for external fire. SecureBattery Lite ensures safe charging and operation in environments where untrained users handle the equipment, and also meets standards for stability, strength and durability.

The cabinets are equipped with alarm sensors both inside and outside, integrated electrical outlets, and perforated shelves that can support up to 50 kg. Overheating is prevented by connecting the cabinets to an exhaust air system through the ventilation duct on top, ensuring safe battery charging and storage.

Both product lines offer comprehensive safety features, with SecureBattery Lite providing robust, affordable protection, while SecureBattery Professional delivers the highest level of fire resistance and security for businesses with more demanding safety needs. Together, they ensure that your battery storage solutions are both secure and adaptable to your specific operational needs.

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