

# Perfluorohexanone energy storage fire protection

What is perfluorohexanone fire extinguishing agent?

The perfluorohexanone fire extinguishing agent has attracted the attention of the industry because of its environmental friendliness and good performance in suppressing lithium-ion battery fires. Perfluorohexanone is used widely to protect spaces housing electrical systems [18,19].

Does a plunger type perfluorohexanone (C<sub>6</sub>F<sub>12</sub>O) fire extinguishing device work?

In this study, a plunger type perfluorohexanone (C<sub>6</sub>F<sub>12</sub>O) fire extinguishing device was developed, and key components such as gas generating device and puncture valve were improved. The 271 Ah lithium iron phosphate battery was used to verify the fire extinguishing efficiency and environmental adaptability of this device in extreme environments.

What are the physical properties of perfluorohexanone?

Physical Parameters Perfluorohexanone is a fluorinated ketone compound. It is a colorless, odorless, and easily vaporized liquid fire extinguishing agent at room temperature. No residue is left after evaporation. The main fire extinguishing mechanism is chemical suppression and flame cooling.

How long does perfluorohexanone spray last?

The duration of perfluorohexanone spray was 45 s. The shorter time to extinguish the fire is mainly because of the rapid increase of internal pressure of fire extinguishing device under high temperature. After the extinguishing, the intervening ignition was carried out with an open flame, and there was no re-ignition phenomenon.

Can perfluorohexanone suppress lithium-ion battery fires?

Perfluorohexanone is used widely to protect spaces housing electrical systems [18, 19]. The agent has been demonstrated to have an outstanding fire extinguishment performance and a minimal environmental impact [20, 21]. Therefore, the perfluorohexanone was selected as the potential inhibitory medium for suppressing lithium-ion battery fires.

How does perfluorohexanone work?

The device is in a storage pressure (perfluorohexanone) when it is not working, and it can be activated with a small current immediately when a fire signal is received. A pressure cavity is formed at the front end of the sealed cavity as a power source, and the perfluorohexanone is atomized by an atomizing nozzle.

Fire protection system of electrochemical energy storage power station = detection and alarm system (very early advance detection) + fire extinguishing system of electrochemical energy ...

The invention discloses a perfluorohexanone fire extinguishing method suitable for a lithium iron phosphate energy storage battery prefabricated cabin, which takes a battery cluster as a local application protection unit,

takes the whole ...

Li-ion battery (LIB) energy storage technology has a wide range of application prospects in multiple areas due to its advantages of long life, high reliability, and strong environmental ...

Perfluorohexanone fire extinguishing agent originated from 3M Group in the United States, a few years later, it was introduced to China and improved, Our company's strategic ...

RP-3 jet fuel is the main fuel for aircraft in China, and it is also a source of fire. C6F12O (Novec 1230) has an outstanding fire extinguishing performance and minimal ...

“Explore the benefits of Perfluorohexanone (FK-5-1-12) in safeguarding new energy storage systems. Learn how this clean, efficient fire suppressant provides superior ...

To verify the suppression performance of pack level and full submergednce level perfluorohexanone extinguishing systems on liquid-cooled lithium iron phosphate energy ...

We recommend using the HFC-227ea or NOVEC 1230 extinguishing system, In particular, perfluorohexanone fire extinguishing system has better performance. ... We should conduct scientific management, guide ...

LIBs are electrochemical energy storage devices that can convert chemical energy into electrical energy and vice versa [1], [2]. ... Perfluorohexanone fire extinguishing agent ...

Fire protection system for energy storage battery compartments in energy storage power stations that provides early warning and effective extinguishing of battery fires. The ...

Hfc-227ea has a strong cooling effect. The fire extinguishing efficiency of HFc-227ea and PERfluorohexanone on lithium battery is higher, and the fire extinguishing effect is related to the fire extinguishing dose. Overall ...

This document describes the LUNA2000-97KWH-1H1, LUNA2000-129KWH-2H1, LUNA2000-161KWH-2H1, and LUNA2000-200KWH-2H1 Smart String ESS in terms of their installation, ...

Perfluorohexanone (chemical formula: C 6 F 12 O) is a new type of clean fire extinguishing agent, with good insulation [9], which can quickly put out lithium battery fire ...

Similarly, as the battery energy storage industry develops, energy storage fire accidents are also increasing [16, 19]. Fig. 2 shows the installed capacity and accident data of global energy ...

What is an ESS/BESS?Definitions: Energy Storage Systems (ESS) are defined by the ability of a system to

store energy using thermal, electro-mechanical or electro-chemical solutions. Battery Energy Storage Systems (BESS), simply ...

Fire Protection for Battery Energy Storage Systems Fire Protection System of Electrochemical Energy Storage Power Station ... The Non-Pressure Storage Perfluorohexanone Cooling and Extinguishing Device, offered by explosion ...

Explore advanced fire safety solutions for energy storage systems, including fire suppression techniques and innovative technologies to protect personnel and equipment. ... Superfine dry powder and perfluorohexanone ...

Lithium-ion batteries (LIBs) have emerged as the most promising energy source for electric vehicles (EVs) and energy storage systems (ESS) in recent years due to their high ...

As the industry continues to innovate, integrating Perfluorohexanone with other fire suppression technologies could maximize fire protection and contribute to the safe, ...

The energy crisis and environmental pollution have prompted the pursuit of clean and sustainable energy (Choi et al., 2012; Du et al., 2023; Zhong et al., 2023), and energy ...

NOVEC 1230 fire extinguisher is a non-pressurized storage perfluorohexane cooling and extinguishing device designed for fire protection in small and specific spaces. The device adopts an integrated, miniaturized ...

Lithium-ion batteries (LiBs) are a proven technology for energy storage systems, mobile electronics, power tools, aerospace, automotive and maritime applications.

The surface temperature of the battery was effectively reduced by releasing continuously perfluorohexanone. The maximum cooling rate on the surface of the thermal runaway battery ...

Dedicated BMS system for energy storage with intelligent temperature control for optimal efficiency ... Lithium iron phosphate batteries with over 6,000 cycle life; Intelligent fire protection with real-time monitoring and early warning ; Product ...

Key words: Li-ion battery, thermal runaway, energy storage, intelligent fire protection, test method : X 932 , , , . [J]. , ...

Comprehensive research on fire and safety protection technology for lithium battery energy storage power stations[J]. Energy Storage Science and Technology, 2024, 13(2): 536-545.

I. Principles of fire extinguishing It is mainly to extinguish the fire by removing most of the heat from the fire

scene, i.e.: after the release of perfluorohexanone fire extinguishing ...

Lithium battery fires pose a significant threat to life and property. Prompt fire suppression intervention is crucial to suppress the development of such fires. To investigate ...

Lithium-ion batteries (LIBs) have been extensively used in electronic devices, electric vehicles, and energy storage systems due to their high energy density, environmental ...

The LiFePO<sub>4</sub> lithium-ion battery with large capacity (202 Ah) was selected as the object. The burning characteristics of lithium-ion battery caused by the extern.

Fire suppression system for energy storage containers that uses multiple fire extinguishing agents to effectively extinguish battery fires. It combines water irrigation for ...

Based on the Novec 1230 protection fluid made by 3M, our fire extinguishing aerosol system, Kidde ECS 500 Novec SEVO 1230 FORCE 500, allows for smaller pipe diameters and the use of low-pressure welded cylinders. ...

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