Perfluorohexanone self-induction fire extinguishing rope

OVERVIEW –

This document outlines the fire suppression principles, key features, technical specifications, application scope, competitive comparisons, and installation guidelines for the fire suppression rope system. It is intended to support design validation, factory inspection, production quality control, type testing, and consistency verification.

Product Introduction

The fire suppression rope is a next-generation, innovative fire protection solution developed by our company. It offers key advantages including flexible installation, precise fire detection and suppression, high efficiency, environmental safety, non-corrosiveness, residue-free operation, and excellent electrical insulation.

Designed for early-stage fire suppression, the system rapidly detects abnormal temperature increases and automatically releases the extinguishing agent at the ignition point.

This product utilizes **perfluorohexanone** as the extinguishing agent, which is environmentally safe, non-toxic to humans, and provides outstanding dielectric (electrical insulation) performance.

Reference Standards

- GB50370-2005 - Code for Design of Gas Fire Extinguishing Systems
- GB50263-2007 - Code for Construction and Acceptance of Gas Fire Extinguishing Systems
- CNCA/CTS0015-2010 -Certification Technical Specification for Temperature-Sensitive Automatic Fire Extinguishing Devices
- DBJ04-231-2005 - Code for Design, Construction and Acceptance of Fire Detection Tube Systems
- GA1167-2014 - Fire Detection Tube Extinguishing Systems

Fire Suppression Principle

When a fire occurs and ambient temperature rises to approximately 110 ± 10°C, the detection tube wall softens and ruptures at the hottest point.

The internal perfluorohexanone agent rapidly vaporizes and expands, creating a discharge opening at the rupture point. The agent is then released directly onto the fire source, achieving rapid cooling and effective suppression.

Action Process:

Monitor for fire → Fire occurs → Detect fire (tube wall ruptures at approximately 110±10°C) → Release extinguishing agent → Precisely extinguish the fire

Key Features and Advantages

1. **Environmentally Friendly**
   Uses clean agent perfluorohexanone, safe for both humans and the environment.
2. **Electrical Safety**
   Excellent insulation properties with no impact on sensitive electronic equipment.
3. **High Reliability**
   Fully sealed system eliminates risk of agent leakage.
4. **Maintenance-Free Operation**
   No routine servicing or refilling required.
5. **No Pressurized Cylinders**
   Eliminates the need for high-pressure storage systems.
6. **No Power Supply Required**
   Fully automatic mechanical activation without electricity.

7. **Ideal for Unattended Environments**
   Suitable for critical equipment and enclosed spaces.
8. **Compact & Space-Saving Design**
   No separate cylinder room required.
9. **Service Life**
   Up to **6 years** under normal operating conditions.

Technical Parameters

Model	Size	Storage Volume	Filling Density	Storage Pressure	Protection Range	Applicable Environment	Operating Temperature
A-M7(1M)	Φ10×1000	0.15	≤1400	0.5	≤0.01m³	-40℃~80℃	100-120℃
A-M7(2M)	Φ10×2000	0.3	≤1400	0.5	≤0.02m³	-40℃~80℃	100-120℃

Performance Advantages

1. Precise Fire Suppression

Installed directly at high-risk points, enabling immediate detection and targeted extinguishing at the source.

2. Superior Environmental Performance

Unlike aerosol systems that produce smoke and pollutants, this system uses a clean, non-toxic extinguishing agent.

3. Rapid Response & High Efficiency

- No external detection or control system required
- Unaffected by vibration, dust, oil, humidity, or electromagnetic interference
- Enables localized suppression instead of full-area flooding

4. Reduced Agent Consumption

Uses **over 80% less extinguishing agent** compared to conventional systems.

5. Flexible Installation

Can be easily installed in compact, confined, or complex environments where traditional systems are impractical.

Comparison with Aerosol Systems

Feature	Fire Suppression Rope (Perfluorohexanone)	Aerosol System
Suppression Method	Cooling & heat absorption	Oxygen reduction
Pressure	Non-pressurized	Non-pressurized
Human Safety	Safe for occupied areas	Risk of suffocation
Electrical Compatibility	Excellent	Potential corrosion
Residue	None	Powder residue (requires cleanup)
Heat Generation	None	High heat during reaction
ODP	0	1.9
GWP	1	6.9
Atmospheric Lifetime	0.014 years	Permanent
Environmental Impact	Eco-friendly	Not environmentally friendly
Service Life	6 years	10 years

Key Benefits

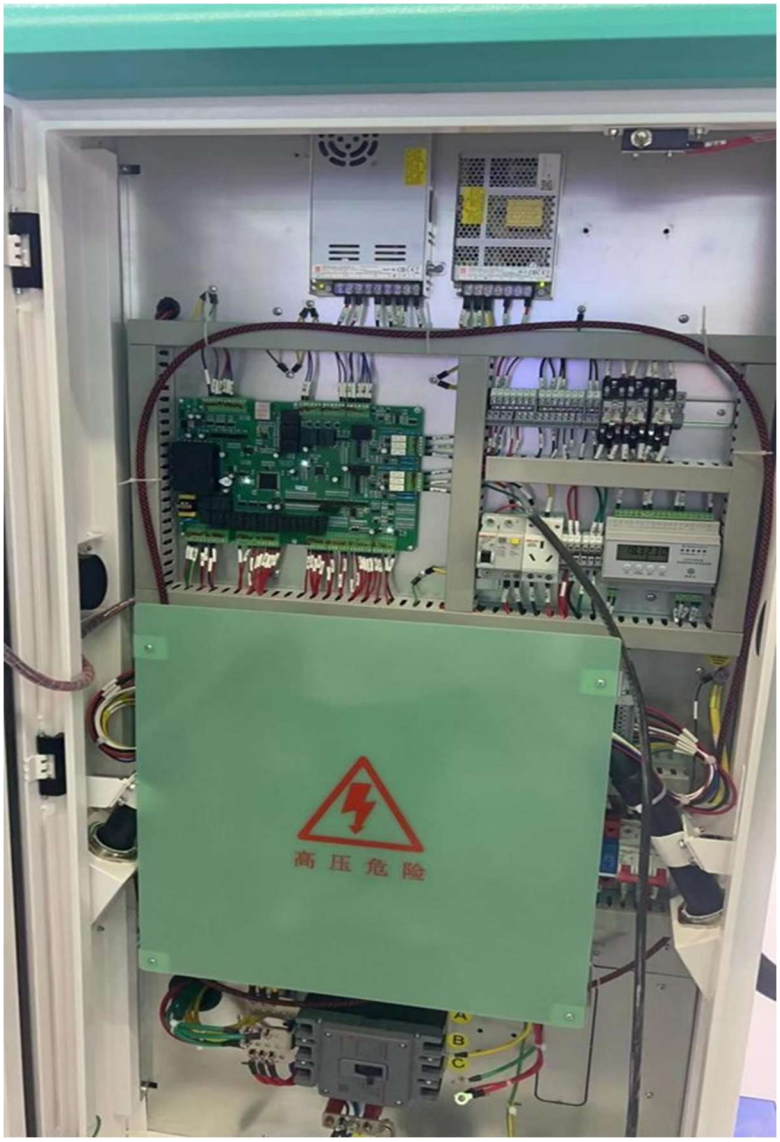
- Compact and lightweight design
- Easy installation without structural modification
- No damage to protected equipment
- Customizable for various applications
- Minimal space requirements

Installation Guidelines

- Install by wrapping the rope around or near combustible components
- Arrange in **U-shape or S-shape** within high-risk areas
- Secure using cable ties or equivalent fasteners
- Maintain a **minimum bending radius of 30 mm**
- Cable tie spacing should not exceed **500 mm**

Important Installation Notes

- Avoid mechanical damage (impact, abrasion, cutting)
- Inspect for defects before installation
- Do not install near unintended heat sources



Replacement & Safety Precautions

1. Recommended replacement cycle: **6 years**
2. Use strictly for fire suppression purposes only
3. Avoid unnecessary handling
4. Do not apply pressure, impact, or load on the tube
5. Do not hang objects on the system
6. Keep away from high-temperature environments to prevent accidental activation

Application Scenarios

Ideal for automatic fire protection in:

- Power distribution cabinets
- Rail transit systems
- Renewable energy systems
- Telecommunications equipment
- Petrochemical and metallurgical facilities
- Building electrical infrastructure

Typical Protected Equipment

- Inverter cabinets
- PLC control panels
- Electrical distribution boards
- Server racks and IT systems
- Communication cabinets
- Banking and automation control systems