

Application Bulletin: **Vending Machines** • Technology: **FirePro Condensed Aerosol**

Application
Vending Machines

The Risk
Electrical components, power supplies, compressors, heating elements and combustible contents in a compact unit, where fire can develop unnoticed and spread beyond the machine.

This Bulletin Covers
- Design considerations
- Environmental requirements
- End user responsibilities
- Post-discharge procedure
- Myths & comparative analysis

Mandatory Message to End Users
"Following discharge, the vending machine must be isolated, inspected, cleaned, and assessed before being returned to service."

Condensed Aerosol Fire Suppression in Vending Machines

Design Considerations, Environmental Requirements, End User Responsibilities, Myths & Comparative Analysis

1. Introduction

Vending machines are widely installed in public, commercial, and industrial environments and present a compact but significant fire risk.

These risks arise from electrical components, power supplies, compressors (in refrigerated units), heating elements, and combustible contents such as packaging and stored goods. Fires within vending machines can develop rapidly in confined spaces and may go unnoticed until they spread beyond the unit, posing a risk to surrounding areas.

FirePro condensed aerosol (CA) technology provides an effective, LPCB-certified suppression solution for **localised, enclosed equipment protection**, particularly where traditional fire suppression systems are not viable.

This bulletin outlines the design considerations, environmental requirements, end user responsibilities, and common misconceptions relevant to FirePro systems in vending machine applications.

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2. Purpose of FirePro in Vending Machines

FirePro is designed to:

- Suppress fire at its earliest stage within the machine enclosure
- Prevent fire spread beyond the vending unit
- Protect surrounding property and reduce business disruption

However, FirePro is **not designed to**:

- Prevent electrical faults or mechanical failure
- Replace routine maintenance or safety checks

> **Therefore:**
> *Vending machines must be regularly maintained and inspected to reduce ignition risk.*

This requirement must be clearly communicated during installation and handover.

3. Important Note on Residue and Internal Components

FirePro is not a clean gas agent and does not provide zero-residue discharge.

A light, dry aerosol particulate may settle inside the machine after activation, including on:

- Circuit boards
- Motors and compressors
- Stored products and packaging

> **Mandatory message to end users:**
> *"Following discharge, the vending machine must be isolated, inspected, cleaned, and assessed before being returned to service."*

This is a mandatory operational requirement.

4. Why Sprinklers and Water-Based Systems Are Unsuitable for Vending Machines

Traditional water-based systems are not appropriate for localised protection of vending machines.

4.1 Electrical Hazard

- Water introduces risk of short circuits and electric shock
- Can exacerbate failure in powered equipment

4.2 Ineffective Local Protection

- Sprinklers are designed for room-level protection, not internal equipment
- Fire inside the machine may not trigger system activation in time

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4.3 Damage to Equipment and Contents

- Water can destroy electrical systems and internal mechanisms
- Stored goods may be ruined or contaminated

4.4 Unnecessary Collateral Damage

- Activation affects surrounding area, not just the machine

5. Why FirePro Is Well Suited for Vending Machine Protection

FirePro is particularly effective for enclosed, self-contained equipment.

5.1 Compact, Self-Contained Units

- Ideal for installation within vending machine enclosures
- No external infrastructure required

5.2 Rapid Internal Fire Suppression

- Suppresses fire at the point of origin
- Prevents escalation and spread

5.3 No Water or Moisture

Eliminates risks of:

- Electrical damage
- Corrosion
- Product contamination caused by liquid

5.4 Effective Across Fire Types

- Electrical components (Class C)
- Packaging and products (Class A)
- Refrigeration oils (where applicable – Class B)

5.5 Minimal Pressure Impact

- Safe for small, enclosed volumes
- No pressure relief systems required

5.6 Long 15-Year Life

- Minimal maintenance once installed

6. Vending Machine Protection Requirements (Mandatory)

6.1 Routine Maintenance

- Electrical systems must be regularly inspected
- Cooling systems and compressors must be maintained
- Dust and debris must be removed

6.2 Internal Housekeeping

- Avoid accumulation of combustible materials
- Ensure ventilation paths are not obstructed

6.3 Electrical Safety

- Machines must be properly earthed
- Faulty wiring must be repaired promptly

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6.4 Isolation After Activation

- Machine must be disconnected from power following discharge
- Prevents re-ignition and ensures safe inspection

7. Environmental Conditions

FirePro performance in vending machines is generally stable, but consider:

TEMPERATURE	HUMIDITY
May vary depending on machine type (especially refrigerated units)	Typically not critical
AIRFLOW	**POST-DISCHARGE VENTILATION**
Internal fans should stop upon activation where possible	Vent machine or surrounding area after activation

8. Design Considerations for Vending Machines

8.1 Enclosure Volume

- Accurate calculation of internal machine volume required
- Ensure correct sizing of aerosol unit

8.2 Generator Placement

- Install to optimise distribution across electrical and mechanical components
- Avoid obstruction by product storage areas

8.3 Detection Integration

- Localised detection recommended where feasible:
  - Thermal detection
  - Small enclosure detection devices

8.4 Activation Method

- Can be:
  - Automatic (linked to detection)
  - Self-activating (thermally triggered units)

8.5 Power Isolation Integration

- Automatic shutdown of power supply highly recommended

9. Post-Discharge Procedure

1. Disconnect power to the vending machine
2. Ventilate the unit and surrounding area

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3. Open and inspect internal components
4. Clean:
   - Electrical parts
   - Mechanical systems
   - Internal surfaces
5. Remove and dispose of contaminated products where necessary
6. Test system functionality
7. Replace or recommission FirePro system

10. Common Myths & Factual Counterpoints

Myth 1: "Small machines don't need fire protection."

Fact: Vending machines contain electrical and mechanical components that can fail and ignite, particularly in unattended or public locations.

Myth 2: "Building fire systems will protect vending machines."

Fact: Room-level systems often react too late to prevent fire spread from within enclosed equipment.

Myth 3: "Water suppression is sufficient."

Fact: Water systems are not designed for internal equipment fires and can cause more damage than the fire itself.

11. Transparency Statement

FirePro UK maintains full transparency:

- FirePro is designed to suppress fire, not prevent equipment failure
- FirePro is not a zero-residue agent; a dry particulate will be present
- Post-discharge inspection and cleaning are mandatory
- Stored products may need to be discarded after discharge
- FirePro does not provide cooling of components
- FirePro introduces no water, avoiding electrical hazards and moisture damage
- FirePro is often the most practical solution for enclosed equipment protection

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12. Summary

FirePro condensed aerosol provides an effective and practical fire suppression solution for vending machines, addressing the challenges of compact, enclosed electrical equipment where traditional systems are unsuitable.

Its ability to suppress fire at source, without introducing water or requiring external infrastructure, makes it ideally suited for protecting standalone machines in public and commercial environments.

However, successful protection depends on:

- Proper installation and sizing
- Routine maintenance of equipment
- Safe post-discharge procedures

> **Key operational requirement:**
> *All vending machines must be isolated, inspected, and properly cleaned before being returned to service following any FirePro system activation.*

If you would like to learn more about FirePro, or discuss a vending machine application, please visit us at **www.fireprouk.com** – see contact details below.

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