



# Cold Stores

Protecting facilities and refrigerated stock from smoke or fire damage is a priority of any cold and frozen storage business:

Freezers (-45°C to -12°C)

Chillers (-2°C - +4°C)

Anti-Rooms & Loading Bays

Plant & Maintenance Areas

**VESDA**<sup>®</sup>  
by  **xtralis**<sup>™</sup>

# Cold Stores and the challenge of protecting them from the threat of fire.

## Consider....

With an operating temperature typically ranging from 8°C to -45°C (46°F to -49°F), conventional 'passive' smoke detection systems do not reliably function or operate in cold store environments. Their design, electrical components and reaction response do not provide proactive smoke detection in the event of fire.

In some countries, national fire standards further state that, unless specified, smoke detectors should not be installed if the operating temperature is below 0°C. (NFPA 72)

Although widely utilized in warehouse facilities, sprinkler systems are generally inappropriate in freezing temperature conditions.

It may be hard to believe that a fire could occur in a cold store. However, factors such as an ultra dry atmosphere, and the highly combustible nature of polyurethane or polystyrene foam insulation, wooden pallets and plastic wrapping present a high fire risk in these environments. Electrical faults from conveyor/transport equipment, lighting, or hot spots caused by maintenance operation can also contribute to this risk.

The holding capacity of a cold store demands specialized high volume storage racking which can affect the airflow and impede the detection and response to a fire event.

The best way to avoid a serious cold store fire is to install an aspirating 'active' smoke detection system.

## The VESDA Advantage....

VESDA - the world's leading aspirating smoke detection system - provides the optimum protection against fire by reliably detecting the presence of smoke at the earliest possible stage. (Refer to Figure 1)

Despite the harsh environmental conditions, VESDA provides reliable and enhanced smoke detection along with minimal cost of ownership. It detects smoke by cumulatively drawing and analysing air from the protected area. This reliable, very early warning minimizes the likelihood of product contamination, facility and asset damage and distribution downtime.

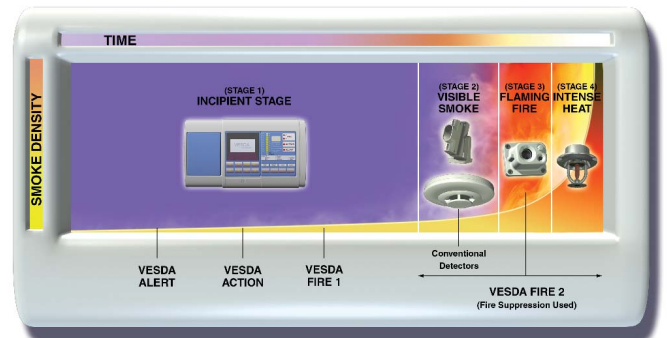


Figure 1. Fire Growth Curve

The progression of fire growth over time. VESDA smoke detectors can reliably detect a cold store fire at the earliest stage and avoid the consequence of damage and loss. VESDA detectors can be configured to generate multiple alarms during the earliest stage of a fire.

VESDA detectors provide proactive detection in extreme low temperature environments by actively sampling air from a protected area via multiple sampling holes in a pipe network. The air sample is then transported to an externally located smoke detector for accurate analysis. (Refer to Figure 2)

By locating the detector in an external, easily accessible area, the VESDA system's remote monitoring capability provides optimum smoke detection, even in areas with maintenance and access difficulties.

A VESDA pipe network can cover up to 2000 m<sup>2</sup> (20000 ft<sup>2</sup>) per detector and its system flexibility is adaptable to any cold store configuration.



Figure 3. VESDA detector located externally to the protected area

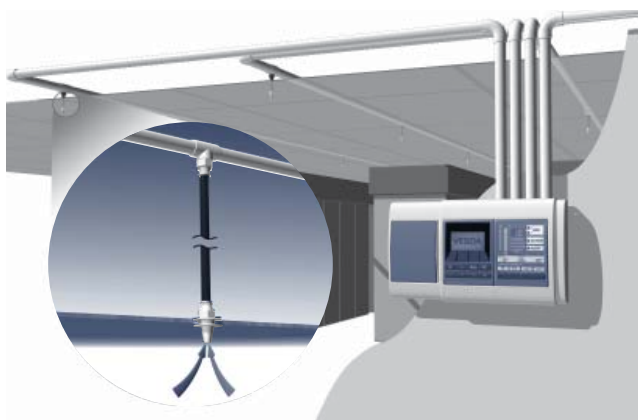


Figure 2. VESDA Pipe Network

The filtration technology and advanced learning capabilities built into VESDA detectors, provides the earliest possible detection of a fire. Nuisance alarms due to condensation clouds are eliminated, and maintenance costs are minimal, even in these harsh environmental conditions.

## Performance-Based design

Performance-Based design determines the best fire protection system by assessing the environmental risks at the concept design stage, i.e. the internal and external environment, smoke source, smoke movement, heat transfer and smoke detection within the structure.

A VESDA system's performance-based, advanced detection technology complements existing cold store operations of continual refrigeration, humidity control, automated processing system and storage configurations.

In addition, the design flexibility of a VESDA system provides a secure environment of a facility's individual layout of freezers, chillers, anti-rooms, loading bays and plant/maintenance areas.

## Cold Store Installation Scenarios

Typically, cold stores are constructed within a warehouse style structure. (Refer to Figure 3)

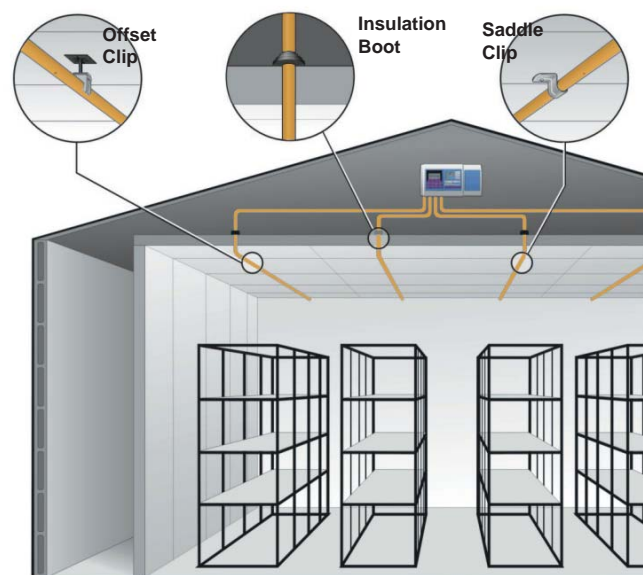


Figure 4. Cold Store Layout with Pipe Network

Many industry standards require the installation of smoke detection at both the ceiling level, and in the ceiling void area of the cold store.

By positioning a VESDA detector outside the refrigerated area, the detector remains unaffected by the internal sub-zero temperatures. The air sample is cumulatively drawn from the protected area, raised to a minimum sampling temperature and then transported to the external detector for accurate analysis. (Refer to Figure 4)





Xtralis' global network of offices and representatives means that help is soon at hand

## Why use a VESDA system?

When selecting an aspirating smoke detection system for a cold store, consider:

Look for	Why?	What VESDA offers
The best sensitivity	To achieve the earliest possible warning of a fire	VESDA can detect smoke at 0.005% obscuration per meter
A wide sensitivity range	So that detection levels can be set to suit the environment, avoiding false alarms	VESDA detectors have a sensitivity range of 0.005%–20% obscuration/m
A redundant peer-to-peer communications network	To allow flexibility in positioning and programming detectors and display modules	The VESDAnet communication network allows you complete installation flexibility
Multiple programmable alarm thresholds	So that the response can be appropriate for the stage of the fire, from 'Investigate' at the first alarm through to 'Activate sprinklers' at the fourth alarm level	VESDA has 4 programmable alarm levels
Event log and reporting	A forensic tool for investigating faults, alarms, user actions and smoke trends.	Each VESDA detector has an event log that stores the last 18000 events
A wide product range	So that there's a product to suit any size area that you want to protect...from a large refrigerated area to a small electrical supply room.	VESDA has the widest product range on the market
Absolute calibration	Ensures repeatable and reliable detection of very slow growth incipient fires	VESDA is the only air sampling smoke detector with Absolute calibration
An accredited global distribution and support network	So you get the right technical advice when you need it	All distributors of VESDA products are factory-accredited

## Some of the Cold Stores that are protected by VESDA smoke detectors

TDG Cold Storage

Clelands Cold Storage

Woodmasons Cold Storage

P&O Cold Logistics

Frigmobile Pty Ltd

NAAFI Freezers

ASDA Cold Stores

Birds Eye Frozen Food

Nestle

## Approvals



CCCF

## Need more information?

Call the Xtralis office closest to you, as listed below. Visit [www.xtralis.com](http://www.xtralis.com) to access information about the VESDA smoke detector product range and our Cold Stores Design Guide.

[www.xtralis.com](http://www.xtralis.com)

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