

Stratos®

High Sensitivity Aspirating Smoke Detectors

APPLICATION NOTE

Cold Stores



Waltham Cross - Herts, UK

Introduction

Cold Stores are maintained at temperatures below the operating range of traditional forms of fire detection. Experience has shown that aspirating smoke detections are able to provide reliable smoke detection in such areas.

Blast freezers may typically operate at temperatures of -31°F (-35°C) with high airflows, while storage areas may operate at a more 'moderate' 39°F to -4°F ($+4^{\circ}\text{C}$ to -20°C) with reduced air movement. Temperature is maintained by ceiling mounted Chiller Fan Coil units or ventilation systems.

Low temperatures have an adverse affect on the smoke plume, which is cooled more rapidly than in normal environments. Hotter fires are therefore needed to generate sufficient heat to raise the smoke to ceiling level. In-rack sampling (3 dimensional protection) can improve system response in high bay Cold Stores since the smoke has a reduced distance to travel to a sampling point.

Humidity is not a problem under steady-state conditions. Moisture levels can increase however, due to external air entering the area via normal produce/goods ingress/egress movements and perhaps more significantly, routine thaw/defrost cycles. Any moisture will condense and quickly freeze on thermal transfer points such as walls and ceilings.

Efficient detection in the Cold Store

- The detector should be sited in an accessible location outside the cold area.
- Sampling pipe should be routed inside the cold area, 19.7" (500mm) below the ceiling and away from thermal transfer locations.
- It is not recommended that sampling pipe is run above the Cold Store with small bore capillary sampling points penetrating the ceiling. Experience has shown that condensation can easily form and freeze when it runs back down the capillary tube.
- Provision should be made for pipe expansion/contraction within the cold area to allow for routine defrost/thaw cycles.
- Sampling pipe should not be located near the chiller outlets.
- Provision should be made to heat the air sample prior to entry into the detector to prevent cold shock and/or condensation damage.
- Consideration should be given to In-rack sampling to counter the increased stratification effect of the lower temperatures.

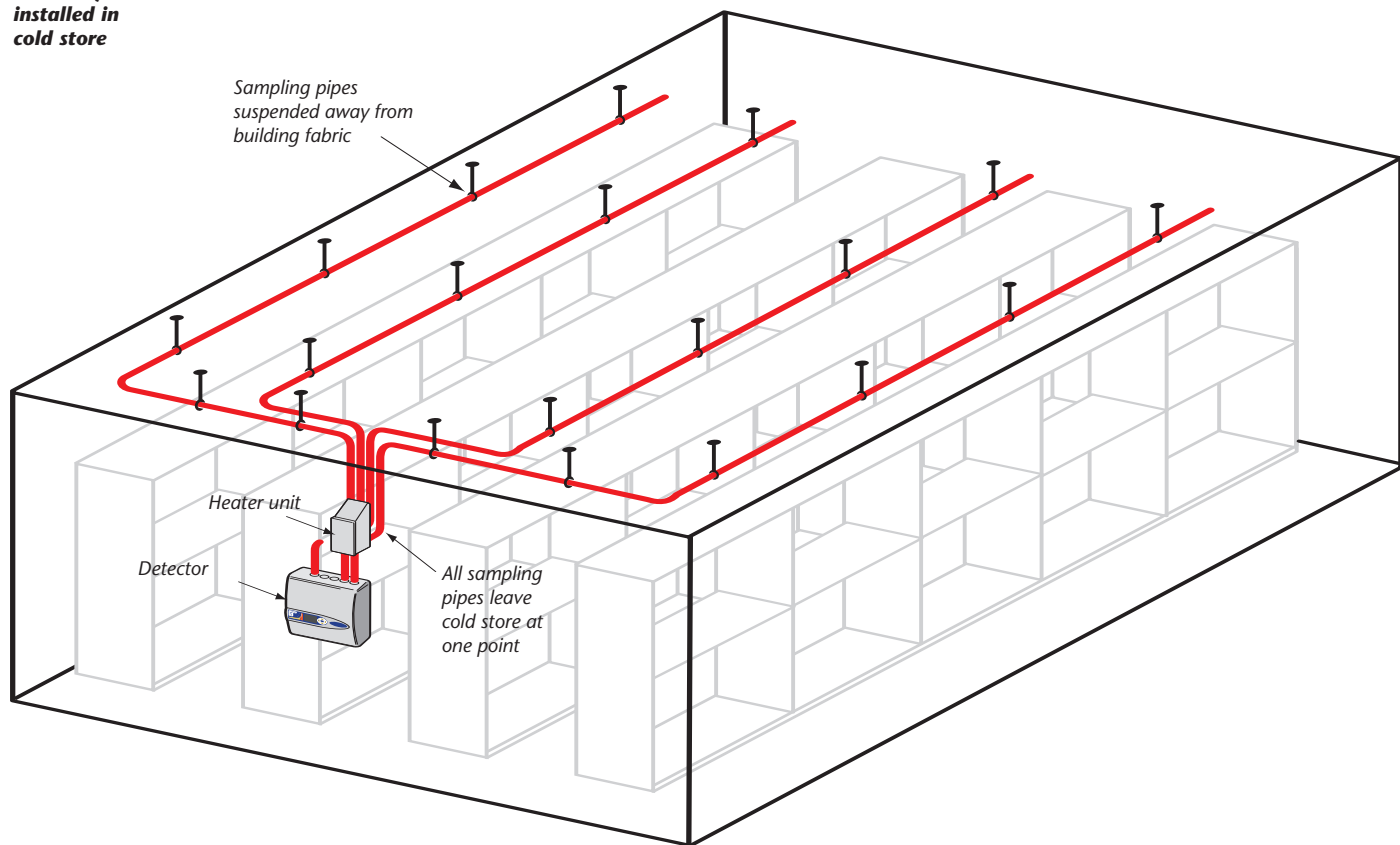
Performance testing

Cold Stores are inhospitable environments for commissioning/maintenance engineers. Routine testing can most easily be carried out by a suitable performance test as described in the BFPSA Code of Practice for Aspirating Smoke Detection Systems.

With chill stores and cold stores becoming a more familiar sight, the application of suitable smoke detection system is becoming a more frequent challenge to fire engineers. Airsense Technology Ltd produce a number of application guides which are available free of charge on request or may be downloaded from our website. The Cold Store application guide contains the information required to engineer a suitable system and avoid the pitfalls associated with this environment.



Stratos system installed in cold store



Some successful worldwide applications for cold store protection:

- **Sainsburys - Waltham Cross, UK**
- **Walmart ASDA - Wakefield, UK**
- **LIDL - Enfield, UK**
- **Rank Hovis - Leith, UK**
- **VSI - Leerdam**
- **De Groene - Ruttea**
- **VDM - Osterhout**
- **Martin OlssenHab - Uplands Väsby**
- **Logidis (Correjour) - Marseilles**
- **Umlener - Baja**
- **Pura Foods - London**
- **France Pont - Essonne**



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