



INDUSTRIAL “HOW TO INSTALL” SERIES

LOW TEMPERATURES

Introduction

Cold stores, chillers, freezers and the like are all descriptions of refrigerated storage facilities constructed to preserve perishable products.

These applications are unique and can vary in size, shape, temperature levels and operation. Applying a reliable and cost-effective smoke detection solution in these applications can be challenging.

Application Design Considerations

Each individual application and environment will likely have specific conditions all of which must be taken into consideration at the design stage. The key overarching factor however, is that when ASD systems are installed they must be relied upon to perform effectively and be easily maintained – loss or disruption to business operations as a result of fire can be costly.

The building structure will influence the ASD system design and is an important factor when designing an effective detection system. Some buildings will have ceiling access above the cold areas allowing the detector and sampling pipe to be installed in this area. Penetrations are then made into the cold area. Others will have no roof/ceiling access and all sampling pipe will need to be installed within the cold area. For reliable operation and ease of maintenance detectors are typically installed outside the cold environment.

Selecting a suitable detector for the application is certainly important, as is the selection of sampling pipe, fittings and ancillary equipment. All products must be appropriate for the environment.

An ASD system design set out to local codes and standards requirements, whilst seemingly suitable may not be appropriate or even effective in some applications. The appropriated pipe design layout is essential as many systems are being incorrectly installed.

A ‘Performance Based Solution’ approach may provide buildings with a better asset protection solution that complies with the performance requirements of local codes, yet meets the needs of business continuity and risk management.

Perhaps the biggest issue is that of “icing”, a factor that is frequently encountered in freezers. However, specific installation methods and techniques can be applied to manage potential issues.



Figure 1 – Icing at entry to cold room

Xtralis have developed one method for cold area sampling - the ‘Freezer Sampling Kit’ that is ideally suited where ceiling void roof access is available.



Figure 2 – Freezer Sampling Kit

The Freezer Kit minimizes icing issues and facilitates simple service and maintenance.

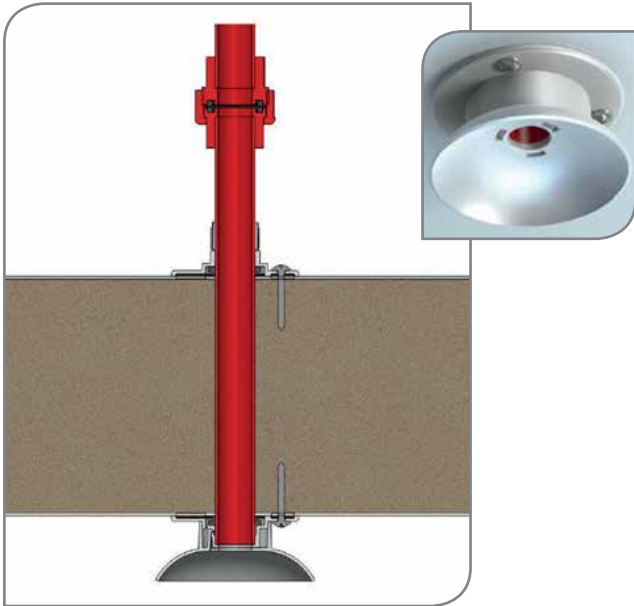


Figure 3 – Sampling Head



Figure 4 – Detector and Pipes in Roof Space

Most systems will require the detector exhaust to be directed back to the sampling area.

In applications where no ceiling/roof access is available a different design approach is required. Sampling pipe is installed within the low temp environment whilst the detector is typically installed outside the area. Sampling pipe selected must be suitable to withstand the cold temperatures.

Sampling point blockage due to icing is more likely when pipe is installed within the freezers. A periodic maintenance plan is essential together with regular system checks to ensure icing does not impair system performance.



Figure 4 – HFT Sample Pipe within Freezer

More recently designs incorporate manual or automated pipe purging systems. Compressed air is periodically used to force air into the pipe network to minimize the potential of sampling point blockage that will ensure a constant air flow is maintained by the detector.

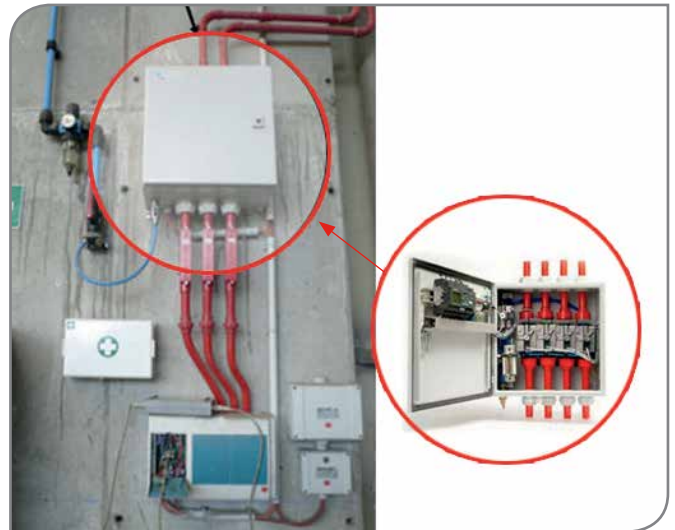


Figure 5 – Automated backflush system

Remember, all low temperature applications require a systematic and specific design approach giving consideration to the individual application. This, with a regular maintenance program ensures continued ongoing performance.

ASD systems for these unique applications should also only be installed and maintained by accredited and experienced ASD installers.

For more information on how your business can benefit from the Xtralis solution for Industrial Applications, please visit www.xtralis.com/industrial or [contact your local office or Authorised Partner](#) for expert advice and assistance with design.