INDUSTRIAL “HOW TO INSTALL” SERIES

DUSTY ENVIRONMENTS

Introduction

Dusty environments present various challenges to effective and reliable smoke detection. Detection performance is questionable and generally compromised by the environment, longevity is limited and frequent problems and maintenance becomes costly. Xtralis recognised the need for a better detector and subsequently developed a unique ASD solution that is suited to a variety of harsh industrial environments - the **VESDA VLI**.

Special features such as an industry first fully monitored ‘Intelligent’ filtration system, IP66 rated enclosure, particle separation, conformal coated electronics, all serve to ensure the VLI performs and survives the dusty conditions of the protected environment.

Figure 1: VESDA VLI

Each application will have some unique aspects, and varying levels of dust. However, a detector designed for industrial applications and harsh environments, that can perform as intended and offers reliable fire detection must be given consideration and certainly acceptance over other technologies designed for standard or what we may term “normal” environments.

The degree of dust in an application will determine the system design approach, i.e. the length of the pipe network, placement, the number of holes and sizes, whether countersinking is needed or if an additional in-line filter is required.

Certainly in most instances a manual or automated backflush arrangement is included as part of the overall solution so that purging of the pipe system can be undertaken in line with the site's environmental conditions.

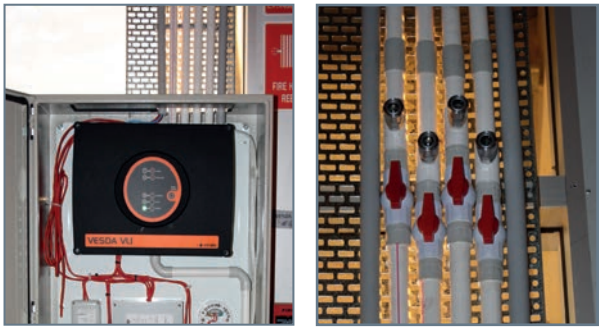

Figure 2: Manual Backflush Purge Valves

Figure 3: Automated Backflush System

As indicated the VESDA VLI is a purpose built detector with specific features that can perform in a variety of industrial dusty, dirty and harsh conditions. It is generally located within the dusty environment.

In some applications, such as a slightly dusty factory or warehouse, whilst a standard VESDA detector may be suitable, it is generally recommended that an in-line filter be incorporated in the design. The need for an in-line filter can be determined in consultation with an Xtralis design engineer based on the environment.

Figure 4: Dusty Storage Warehouse

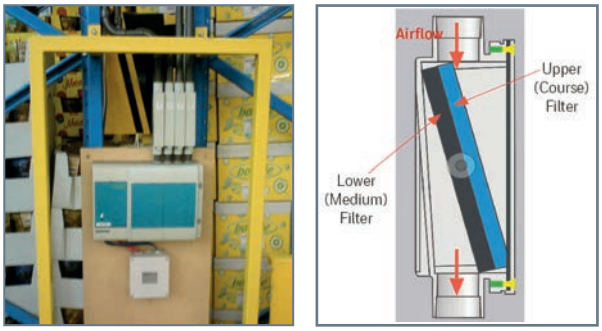

Figure 5: VLP in warehouse with VSP-850 Pre Filter

Where environments have a higher degree of dust present perhaps due to some specific factory processes there may be a need to incorporate a larger in-line filter.

Once again this is easily accommodated when using ASD since the in-line filter is simply mounted in line with the pipe network, typically at the same location as the detector.

However, if installing standard VESDA detectors, which have a lower IP rating than the VLI, in-line filters can be located within the protected environment where dust is present and the detector positioned outside the sampling area.

The application of ASD systems in environments with high levels of airborne particulates (dust) may increase the chance of sampling hole blockage. Pipe network maintenance activities (i.e. back flush and the manual cleaning of sampling holes) are likely to be more frequent in such environments to ensure optimum performance.

Counter-sinking the sampling holes on the pipe network is a simple cost-effective measure to address the potential issue of sampling hole blockage. The counter-sinking sampling hole configuration as shown in Figure 6 will aid in reducing the build-up of contaminants at and around the sampling hole and reduce the incidence of hole blockage.

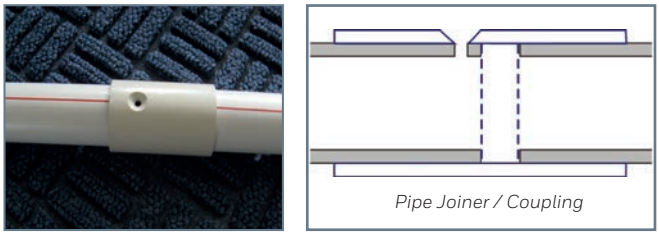

Figure 6: Countersink hole in Pipe joiner

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.