

INDUSTRIAL “HOW TO INSTALL” SERIES

CORROSIVE ENVIRONMENTS



Introduction

Often when we provide VESDA smoke detection for Industrial applications, we come across processes that involve the use of chemicals, e.g. battery manufacture (Figure 1).



Figure 1 - Chemical Environment

These applications present challenges for effective and reliable smoke detection since the contaminated air within the environment will naturally be drawn into the pipe-network and finally to the detector. Many airborne chemicals can have a severe corrosive impact on the equipment (Figure 2) creating the need for effective preventive measures to ensure continued reliable operation with reduced total cost of ownership.

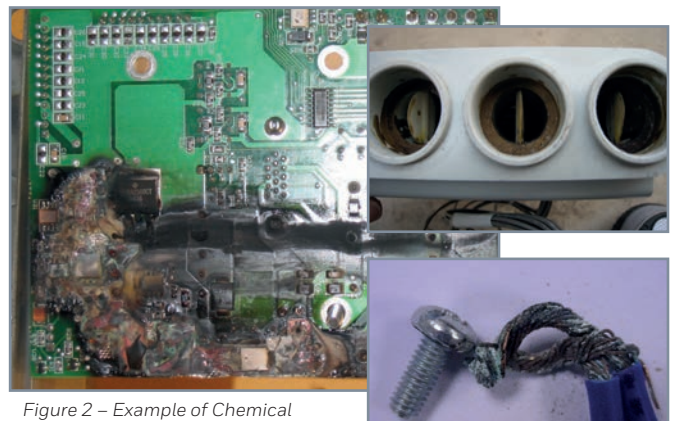


Figure 2 - Example of Chemical Contamination Impact

There is, however, a very simple solution to remove corrosive gases or vapours from the air and safeguard the detector. Xtralis has developed, tested and implemented over many years the "Chemical In-Line Filter". This form of filtration has been installed with numerous VESDA systems.

Preventive Solutions

The chemical "In-line" filter comprises a filter housing with special chemical filter media. The assembly then becomes part of the pipe network. Each sampling pipe requires a dedicated chemical filter assembly (Figure 3).

Chemical In-line filters will have an impact on smoke transmission and total pipe length and must be checked following the guidelines specified in doc (14888: Chemical Filter For Corrosive Environments) to ensure performance criteria are met.

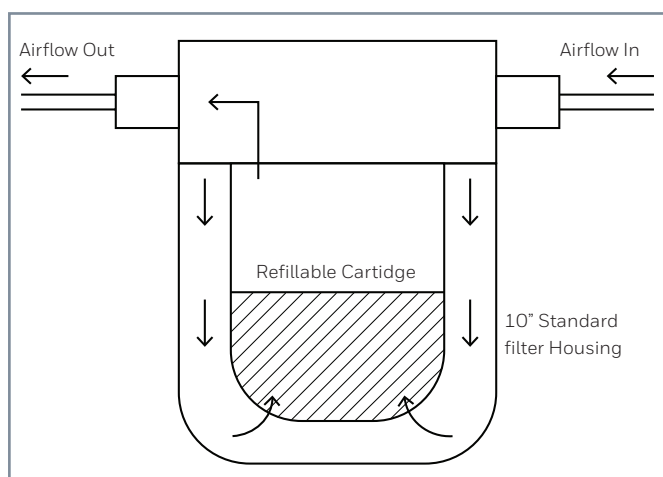


Figure 3 – Chemical Filter

Xtralis has taken this gas-phase air filtration method and adapted it to remove gaseous contaminants and other chemicals from the sampled airstream prior to it entering the detector.

To effectively remove corrosive gases from the sampled flow, the appropriate chemical media for the targeted gas (or gases) should be used. There are many manufacturers that have chemical media and advice can be obtained from Xtralis for the proper selection and deployment.

The VESDA chemical filtration process uses small dry granules, pellets, or beads to purify the air through physical or chemical adsorption or absorption of the targeted gases.



Figure 4 – Various Chemical Media

The In-line filter container can also include moisture adsorbent media (i.e. silicone gel) to reduce the humidity of the sampled airstream.



Figure 5 – In Situ Chemical Filters

The life of the filter media is dependent upon the type of environment and airborne chemical or gas concentrations that exist or are produced within that environment where sampling is undertaken.

Different types of media will have different life spans. Some types of specific filter media will even change colour providing an indication that it has become saturated and needs replacement.

For effective protection against more than one corrosive gas in the environment the system should comprise multiple chemical filters in series, each with chemical media to target the gaseous contaminant of concern.

Chemical test coupons are also available from the manufacturer for environment evaluation and can be used to determine the specific media(s) that should be used.

To ensure the media is providing the required protection a regular maintenance program to inspect the media also needs to be implemented.

Specifier's and installers considering or applying ASD systems in these harsh chemical environments should consult with Xtralis, who have the experienced staff available and can provide the expertise to assist with any designs.

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.