VESDA®

INDUSTRIAL "HOW TO INSTALL" SERIES

HIGH TEMPERATURE AREAS

Introduction

VESDA detectors can accommodate a wide range of sampled air temperatures (-20°C (-4°F) to 60°C (140°F) making it an ideal smoke detection solution for many industrial environments.

However, some applications require sampling from environments with extreme temperatures, outside the detector's recommended temperature range (e.g. industrial ovens, smelters, powder coating plants, etc).

In those unique cases Xtralis recommends a simple, cost effective and proven technique to precondition the sampled air prior to entering the detector.

Figure 1 - Roaster Oven Exhaust Sampling

Cooling Sampled Air

Sampled air of extreme high temperature from, e.g a hot oven exhaust (Figure 1) can be cooled down to an acceptable degree by allowing the pipe to "run" in a cooler environment (external to where sampling occurs). The length of this pipe "run" can be assessed based on the sampled air temperature, pipe material, pipe flow rate and external ambient temperature.

Simply extending the length of the pipe before it enters the detector, may be all that is required to sufficiently cool the air.

Alternatively, Figure 2 provides some conservative estimates of the pipe "runs" required to lower the temperature of the sampled air for Copper pipes across a range of flow rates. All calculations assume an external ambient temperature of 20°C (68°F) and a sampled air temperature entering the detector of 60°C (140°F).

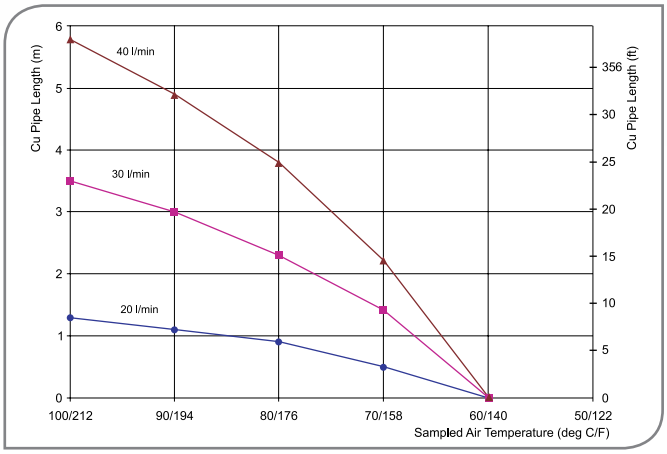

Figure 2 - Est. Copper pipe "run" for sampled air cooling

In some industrial applications there will be a need to incorporate Water Traps (Figure 3) to manage water condensate.

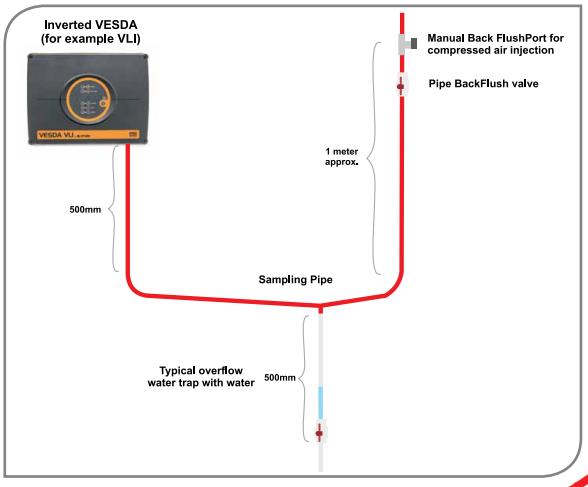

Figure 3 - Typical Water Trap Arrangement

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Air Cooling and Water Trap Design Guides can be found on the Xtralis web site or obtained from your Xtralis representative.

In very uncommon cases it may be difficult to cool the sampled air to a level consistent with the detector's operating temperature. In these situations it may be necessary to deploy refrigerated cooling in the form of a 'Dehumidifier or drier' (Figure 4) which not only cools the air but removes condensation.

Figure 4 - ASD with refrigerator drier

Although in most instances the aspect of hot air cooling within the sampling pipe network is easily addressed, there are some environments and locations where there is no choice but to install the detector within the protected area where sampling is performed. The challenge then becomes two fold, cooling the hot air and also ensuring the detector is protected such that it operates within its specified temperature range within the environment.

Some examples of these can include areas with boilers and furnace areas, ovens and similar environments. ASD system designs must be carefully thought through for these applications so that the installation provides the desired outcome.

A system design, whereby the detector is mounted in a protective enclosure and uses 'Thermoelectric Cooling' (refer to Thermoelectric Cooling flyer, Doc 33064) combined with the information explained herein can be applied in order to achieve an effective solution for these high temperature environments (Figure 5).

Figure 5 - ASD protected from extreme heat

As with all industrial applications of this type a rigid and regular maintenance program should be implemented.

Further advice relevant to the use of Xtralis VESDA ASD in "High Temperature" areas can be sought from our experience applications engineers.

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.

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