Case Study

The Prextur is on for solution-led ATEX fan selections

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In the case study below Axair demonstrate how collaborative team work can help to address the technical skills gap within the industrial air movement industry to deliver solution led component selections and added value to the growing UK customer base.

As everyone will know who's a regular reader of this publication, In the laboratory and pharmaceutical industries downflow containment booths offer superior operator protection during the handling of fine powders and volatile liquids. They're used during processes including dispensing, weighing, and sampling fine powders including speciality chemicals, pharmaceutical and cosmetic products, food additives and colour pigments, as well as the handling and sampling of volatile liquids such as fragrances. With an efficient booth, companies handling powders can achieve guaranteed containment levels of <100µg/m³.

Air management and maintaining a constant air pressure using properly selected industrial fans are key aspects of providing a safe and healthy environment in the industry so most of the time, high pressure plug fans are used by downflow booth manufacturers to suit customer specifications. These high efficiency plug fans usually provide the necessary pressure and airflow rates that adhere to the strict environments of cleanroom, containment, and isolation applications. However, on this occasion our customer had a requirement for a fan solution that was certified for use in an application designed for the safe and efficient suppression of dust. This made the selection of a plug fan unsuitable, due to the nature of the potential accumulation of dust particles in the atmosphere, posing the risk of explosion if not correctly prevented by removing potential ignition sources. Attributes that plug fans, although one of the most technically advanced fan components in the marketplace, do not possess.

Helping customers to develop new ways of working

With extensive experience of combustible dust environments, the attentive and focused team at Axair called attention back to the customer problem and requirements:

- High pressure development
- High airflow capabilities
- Flexible mounting & easy integration
- Suitable for dusty ATEX environments
- High efficiency
- Technical support from their supplier

Overcoming the scarcity of customers' in-house technical

As seen widely across the industrial fan, and engineering sector, our customer had a vacant technical position that was key to the new development processes needed by the business, therefore the company had a skills gap in that their current employee set were not qualified or experienced enough. They needed support from their technical supplier to select a fan component based on the engineering principles of the application to make the solution safe, efficient, and deliverable.

Therefore, the collective genius of our inhouse industrial department, and our technical director was utilised through initial virtual meetings to get to know each other better and to build up trust. The time to value for our customers, whether new or existing is very short at Axair, our customers quickly have a 'aha moment' where they realise, we're right for them, we understand the application and we are invested in the success of our customers to deliver the best solution. A solution that is based around their needs and helps them to build better systems. The team visited the customer site to do a physical discovery analysis, more to solidify the technical principles they assumed from initial chats, actually aligned with the brief, and whether they had correctly applied advanced fan principles. Ultimately meaning we could get back to the customer with a solution that meets their objectives.

"Our time to value for new customers is very short, they realise we're different very quickly."

Many industrial processes pose the risk of dust explosions due to the handling of fine combustible dust particles accumulated in the air and on surfaces. High concentrations of dust particles have a much higher explosibility making it critical to ensure the correct equipment and safety measures are in place. According to a report by risk management specialist, Dr Julian Hought, one of the major problems in this area is lack of understanding in how dangerous dusts can be when accumulated into hazardous amounts in facilities. Preventative measures must be in place where there is a risk of dust explosion to avoid serious consequences.

The fan selection: The ATEX Prextur

The ATEX Prextur provides may benefits including an extended flange which it can be mounted on. This enabled the perfect configuration when installed into our customers containment booths.

For this particular project the Prextur 354 T2 3kW was the correct selection.

- A max airflow of 7880 m³/h
- A high efficiency rate up to 84%
- Flexible mounting ability
- ATEX certified zone 22
- Extended flange for easy mounting
- Supported by Axair

The Prextur backward curved centrifugal fan is quickly becoming a popular choice for this type of ATEX application in lab and containment industries. Other beneficial features of the Prextur backward curved fan include a reinforced impeller with high performance backward blades made of carbon laminated steel which are dynamically balanced to minimise noise and vibrations. It also boasts a self-cleaning turbine. Should maintenance or extra cleaning be required the Prextur has an easy access inspection door integrated.

What is Zone 22?

ATEX zones are designated following a hazardous area's classification on the application itself. Each zone refers to the presence of a hazardous gas or combustible dust during operation. Dust zone 22 signifies that combustible dust is present only in rare or abnormal situations and is therefore the safest explosive atmosphere as the risk of explosion of low, but still needs protecting with components that do not pose the risk of ignition.

What is ATEX

ATEX, for the uninitiated, is an acronym derived from the French expression ATmosphères EXplosibles and exists for our purposes in the form of a European 'equipment directive' 94/9/EC (ATEX 100) covering manufacturing standards, and as 'workplace directive' ATEX 99/92/EC (ATEX 137) seeking to ensure that people are protected against the risk of blast injuries or asphyxiation by dangerous substances. The updated legislation that came into force in 2016 is Directive 2014/34/EU and assists with establishing a uniformity to the approach taken when supplying and distributing equipment for explosive atmospheres.

ATEX Fans in Powder Control

ATEX fans provide safe and efficient ventilation in pharmaceutical powder containment booths, eliminating the risk of explosion which could occur due to the accumulation of hazardous dusts.

ATEX fans can be situated at the top of the containment booth in a separate compartment to the operating zone. The role of the fan is to vacuum the contaminated, dusty air particles away from the operating area and into this separate compartment of the booth. Here the air travels through a set of filters to be thoroughly cleaned before it is released back to the outer atmosphere. In some instances, containment booths also have an integrated cooling system to maintain a comfortable working temperature.

To discuss this case study or anything to do with the intricacies of fan engineering visit www.axair-fans.co.uk