

ProFlap back pressure flap avoids the spreading of explosion pressure and flame into the workroom.

Explosion hazard? – Keller Lufttechnik advises on protective measures

Our new homepage www.exschutz.net was specially designed to provide you with extensive insights into an often neglected topic: explosion protection during the separation of dust. LUF TREIN lists possible explosion hazards and reports how companies address this issue to ensure adequate protection in the event of an emergency.

Many operators do not take into consideration any explosion hazards in their production facility. But numerous organic, metallic, paint or spray dusts created during production processes are explosive in certain concentrations. The finer the dust, the greater its surface – and thus the increased risk of an explosion. Also materials which are considered non-combustible as solids can develop into a risk in the form of dust. If an ignition source is created, an explosion can occur. In the event of damage or during inspections by factory inspectors or the Employers Liability Insurance representatives, the operator must submit explosion protection documentation. This is to prove that explosion prone areas have been identified and suitable measures were undertaken to prevent an explosion or to control it.

An explanation: Are dusts prone to explosion?

„Explosions do not occur frequently, but if they do occur, the company is held fully liable according to ATEX 137. Therefore Management should adapt

precautionary measures for this eventuality,” recommends Jens Kuhn. “We would be pleased to support you in these efforts. If you are uncertain if explosive environments could exist in your facility, please ship us a small amount of your dust and we will investigate if it is explosive. If the dust is considered explosive, we will recommend clarification of the following issues with our Keller experts for undertaking the necessary protective measures.”

Can an explosive environment be prevented?

An explosive situation exists only where dust is dispersed, or mixed with air at a certain dust concentration. For example, this could occur during filter cleaning in a dry separator. When using a wet separator, such conditions would not be present. However, since dry separators present a considerable advantage in most cases and work more efficiently, some operators do not take into consideration the use of a wet separator. Even the use of non-combustible filter auxiliaries may not be adequate to prevent an explosion, as a 10% content of explosive fine dust is sufficient to generate such an environment. Gas inertisation with oxygen or CO₂ in larger volumes is not economical since a closed circuit in most systems may not be feasible. If a potentially explosive situation cannot be precluded, then the following concerns must be addressed:

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Can ignition sources be eliminated?

„Our air pollution control systems for ex-applications are designed as ignition source-free according to ATEX guidelines“, informs Jens Kuhn. Ignition sources such as hot metal chips occurring during processing might be extracted, as well. If no such ignition sources are present, no additional measures need to be undertaken. However, if the possibility cannot be entirely excluded, the next question should be as follows:

„What types of constructive protection measures are available?

The system should be designed so as not to endanger any personnel in case of emergency:

- Explosion pressure-surge resistant or explosion pressure resistant design: Systems designed to survive an explosion, and with an explosion pressure surge resistant design impervious to any resulting distortion.

- Pressure relief through burst panels: For systems installed outdoors or attached to the exterior wall of the plant, the explosion excess pressure is relieved through burst panels. Flames and dust can escape so be sure to establish an adequate safety zone.
- Flameless pressure relief: A pressure relief device discharges the pressure and a metallic flame filter absorbs flames and heat.
- Explosion suppression: A detector recognizes the increasing pressure inside the filter housing and adds an extinguishing agent.
- Decoupling of clean air and dirty air ductwork as well as dust collection containers: This measure prevents the flame and explosion from spreading into other parts of the system, to the processing machines, or into the plant.

“Which measures are adopted in individual cases would depend on the location of the system and the potential risk of an explosion, among other considerations“, says Jens Kuhn. “We willingly inform our customers of suitable methods“.

Website „Ex-Schutz“ provides useful information

Please visit our new website at www.exschutz.net to download information on European ATEX standards and guidelines as well as to become acquainted with available explosion and fire protection measures. <



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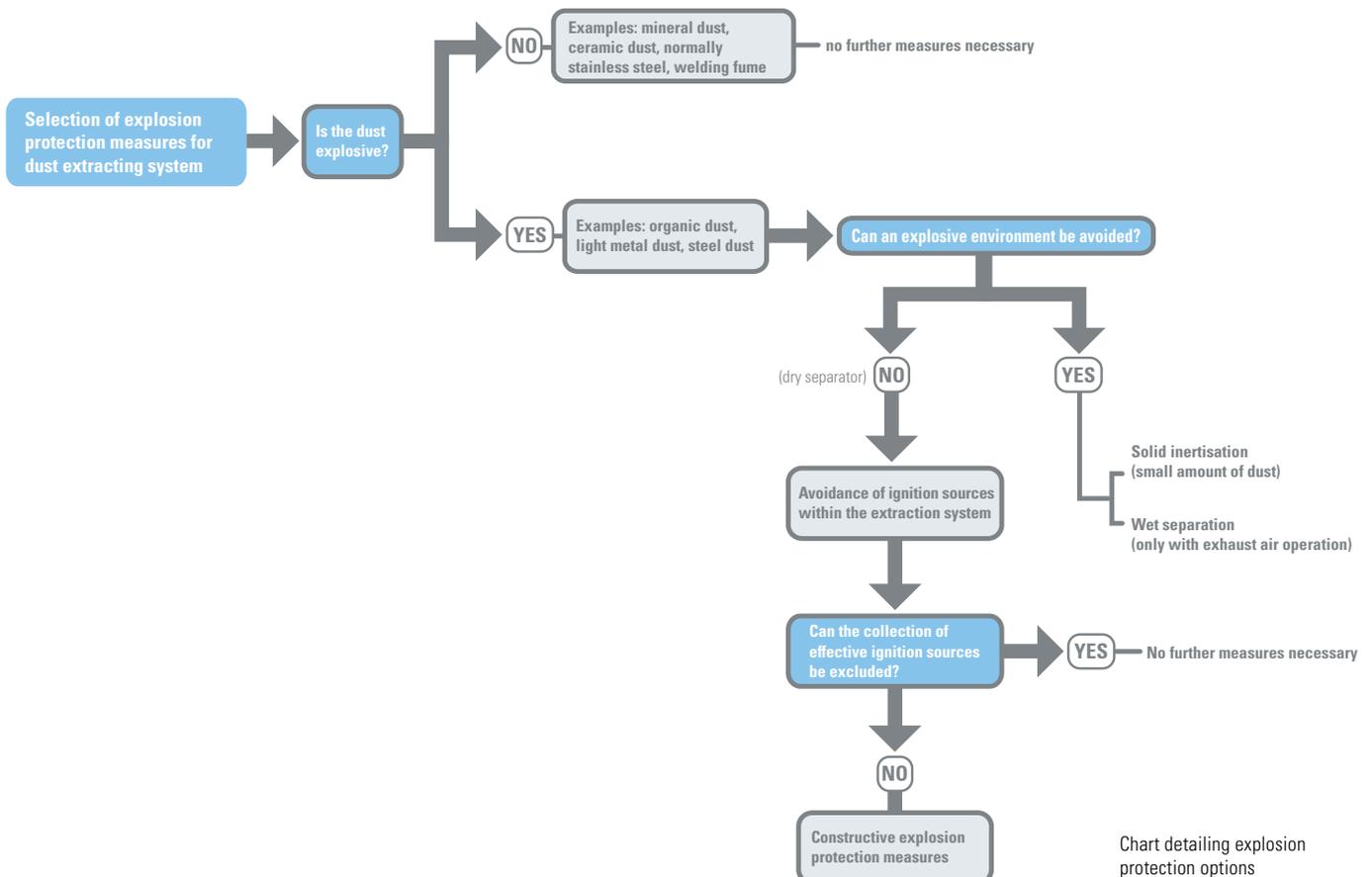


Chart detailing explosion protection options