

■ **Design considerations - Explosion protection basics**

**“Give us 5 minutes of your time ...
... and we will give them safely back!”**



■ **THE PROBLEM: Safe handling of explosive dust**

Organic and/or metallic dust

- ⇒ in the pharmaceutical, chemical and metalworking industry
 - ⇒ from agglomeration, drying and coating operations
 - ⇒ from grinding, cutting, welding, polishing, blasting, etc.
 - ⇒ present during everyday bulk goods handling
- can be potentially explosive.

■ **THE SOLUTION: Explosion protection on the Herding® filter units**

Explosion protection on the Herding® filter units is necessary if

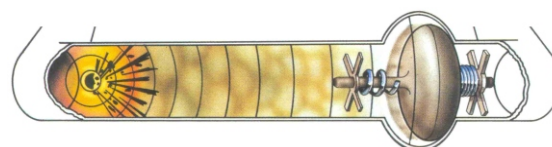
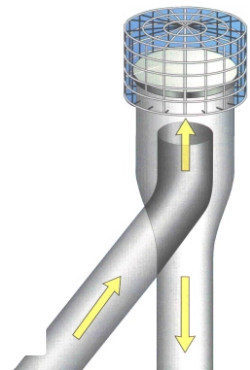
- ⇒ the dust has a minimum ignition energy $> 3\text{mJ}$ and there is an ignition source in the device or in the dust, or there is an external ignition source
- ⇒ the dust has a minimum ignition energy $< 3\text{mJ}$

Designing in explosion protection on the Herding® filter units

Explosion-resistant design which provides explosion decoupling for the Herding® filter unit from upstream and downstream equipment (in the raw and clean gas lines and the dust/product discharge devices)

A distinction is made between

- ⇒ passive and active decoupling systems
- ⇒ flame and/or pressure decoupling systems



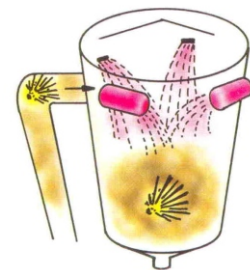
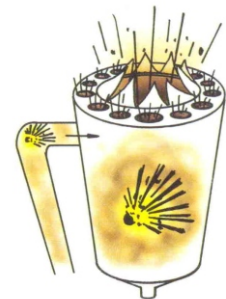
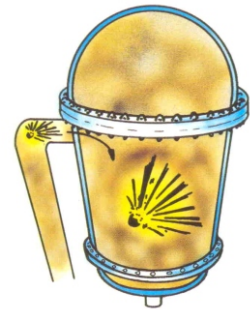
Design considerations - explosion protection basics

Designing in explosion protection on the Herding® filter units

- ⇒ Explosion-proof design to withstand maximum explosion pressure (p_{max}) or reduced maximum explosion pressure ($p_{red, max}$)
- ⇒ Explosion-proof design to withstand reduced maximum explosion pressure ($p_{red, max}$) designed to withstand explosion pressure: permanent deformation is not allowed
- ⇒ Explosion-proof design to withstand reduced maximum explosion pressure ($p_{red, max}$) designed to withstand explosion surge pressure: permanent deforming is allowed

The filter units have the following protection features:

- ▷ Explosion surge pressure relief system (per VDI 3673)
 - with flame and pressure release or flameless pressure relief
 - only approved for non-toxic dust
 - suitable for outdoor installation; also suitable for indoor installation when a discharge duct for release to the outside is installed
- ▷ Explosion suppression (in accordance with VDI 2263 Sheet 4)
 - with detectors, control unit and extinguishing agent supply
 - approved for toxic substances
 - suitable for installation on the plant floor



User obligations

Users have an obligation to continually conduct risk assessments and review the process parameters to ensure compliance with occupational safety, hazardous substance and work equipment safety regulations. Users must take appropriate action if they identify changes in intended use or other changes that have taken place since the design phase.

As a service, HERDING will create an explosion protection document in accordance with occupational safety regulations.

**“Talk to us ...
... and we will keep you out of harm's way”**

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