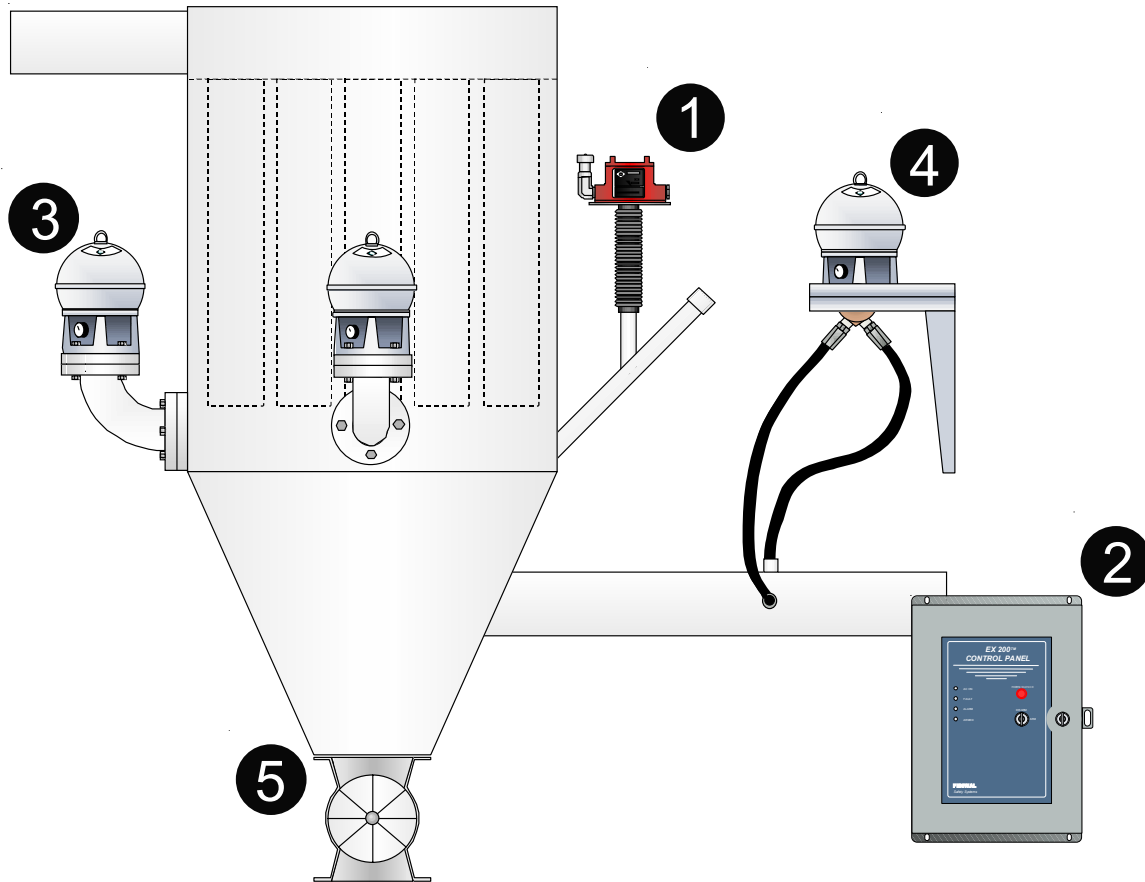


Dust Collectors

Explosion Suppression Systems



Application

Dust collectors are typically used both as receiving vessels or for the collection of dust. They separate dust from the air stream by employing an array of filter bags or filter cartridges. Dust laden air slows down as it enters the collector, shedding some of its dust load into the collection hopper which may empty via a rotary gate valve. The lighter dust is swept up into the filter components from which it is periodically removed by air blasts or by a shaker mechanism.

System Components

- 1 Pressure Detector
- 2 Single Zone Control Panel
- 3 High Rate Discharge Extinguisher
- 4 Isolation Extinguisher
- 5 Rotary Gate Valve (by others)

Hazard

If the material being handled by a process is combustible, then the dust it generates is likely to be explosive. Dust collectors collect the finest and therefore the most easily ignited dust in a process. For this reason, dust collectors are the most commonly protected process vessels. Many dust collectors handle dust loadings that are below the explosible limit. However, during the period during which the filter components are cleaned, either by shaking or by reverse jets of air, explosible concentrations can be reached. Under these conditions, an ignition source is all that is required to trigger an explosion. This can be provided by static electricity or by incoming burning particles from upstream equipment such as mills or dryers.

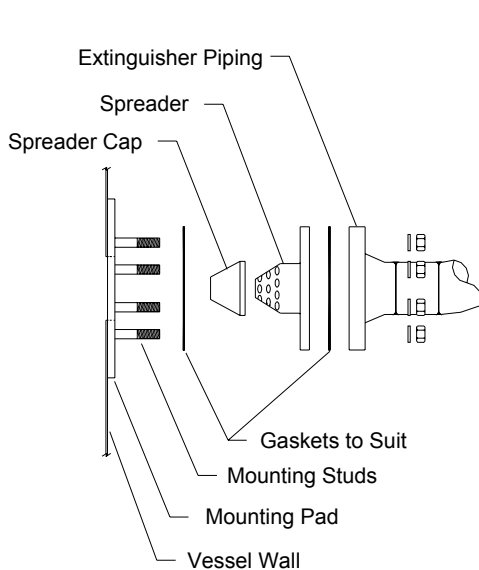
Protection System Description

A dust collector is frequently located inside the plant making protection by explosion relief venting often impractical. The solution is an explosion suppression system. In such a system, explosion pressure detectors mounted on the collector detect the pressure excursion from an incipient explosion. The detectors transmit a signal to a control panel, which triggers high rate discharge extinguishers while simultaneously shutting down the process.

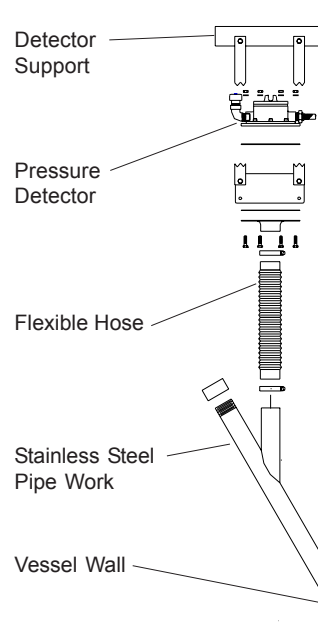
Extinguishers mounted on the collector rapidly discharge suppressant in an effort to quench the fireball before maximum pressures are reached. An isolation extinguisher mounted on the inlet duct mitigates flash-back upstream to interconnected process equipment. Additionally an explosion-proof rotary gate valve mounted on the hopper reduces the likelihood of burning materials passing downstream.

Typical Installation Details

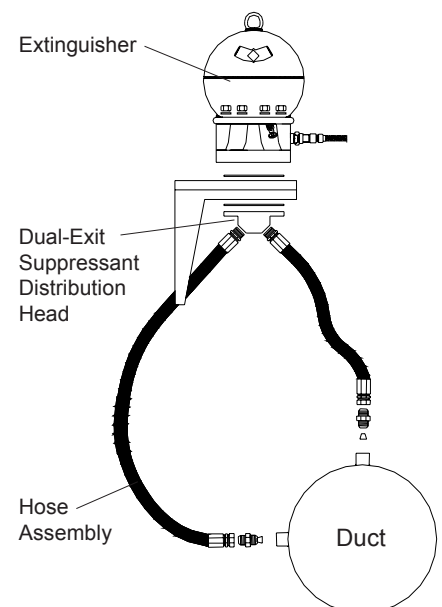
Extinguisher Spreader



Pressure Detector



Duct Isolation Components



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