DUST COLLECTOR

FUNCTIONALITY
A dust collector (bag house) is typically a low strength enclosure that separates dust from a gas stream by passing the gas through a media filter. The dust is collected on either the inside or the outside of the filter. A pulse of air or mechanical vibration removes the layer of dust from the filter. This type of filter is typically efficient when particle sizes are in the 0.01 to 20 micron range.

EXPLOSION HISTORY
• Loss history shows that dust collectors are by far the leading piece of equipment to experience explosions.¹
• Loss history for the past ten years due to dust explosions from FM Global Data Sheet 7-76:
  • Fifty-eight in dust collectors for a loss off $15,094,000.

SOURCES OF IGNITION
• Because dust collectors are designed to handle material produced elsewhere, the ignition source does not have to come from within the dust collector. It may come from other equipment downstream of the dust collector.
• Sparks, flame, or smoldering embers, from dust production areas, are potential ignition sources that can ignite an explosion in the dust collector.

Figure 1: Sectional View of a Dust Collector

**SOLUTION**

Dust collectors are best protected by either explosion venting and/or explosion suppression systems. In both cases chemical isolation should be used on the inlet to prevent flame propagation to other equipment.

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**Figure 2: Dust Collector Protected by Explosion Suppression and Chemical Isolation**

Note: Most systems require multiple detectors and suppressant containers.

**Figure 3: Dust Collector Protected by Explosion Venting and Chemical Isolation**

Note: Most systems require multiple detectors and suppressant containers.

VENTING

Explosion Vents are designed to open at a predetermined pressure setpoint. This relieves overpressure before destructive levels are reached.