Explosion Protection Application Bulletin

Protecting Dust Collectors with Explosion Suppression

Need for Protection

The nature and operation of dust collection equipment present possible fire and explosion hazards, due to the greater concentration of small particle material. Dust collectors experience more explosions than any other process vessel types.

Benefits

Protection dust collection equipment from explosions will:

- Minimize costly replacement and/or repair of the dust collector.
- Prevent possible death or injury to personnel.
- Protect profits by reducing lengthy plant shutdown and loss of product.

Why Suppression?

Preventative protection techniques (inerting, fuel concentration control) can reduce the possibility of an explosion. But human error, equipment failure, and lack of maintenance practices can all render these techniques ineffective.

Explosion suppression is a responsive technique that:

- Contains the explosion, preventing the release of pressure, fire, and toxic materials.
- Greatly reduces the deflagration pressure to safe levels.
- Extinguishes the combustion before fire is produced.
- Utilizes FM approved systems and sanitary designed components.
- Interfaces with process equipment (rotary valves, blowers, etc.) to enhance protection.

How does Suppression Work?

Basically, explosion suppression is accomplished in the following steps.

Detection

Control

Agent Injection

Suppression

For a fuller explanation, see Fike Total Concept Explosion Protection brochure (B9086).

Why choose Fike?

Fike systems are the fastest. Due to our patented suppressant container and nozzle design, suppression agent is rapidly injected allowing for the lowest Total Suppressed Pressure (P_{red}).

Fike systems are the most reliable. Our systems have been extensively tested by third party organizations, such as Ciba in Switzerland. Fike systems have never experienced a system failure in the field.

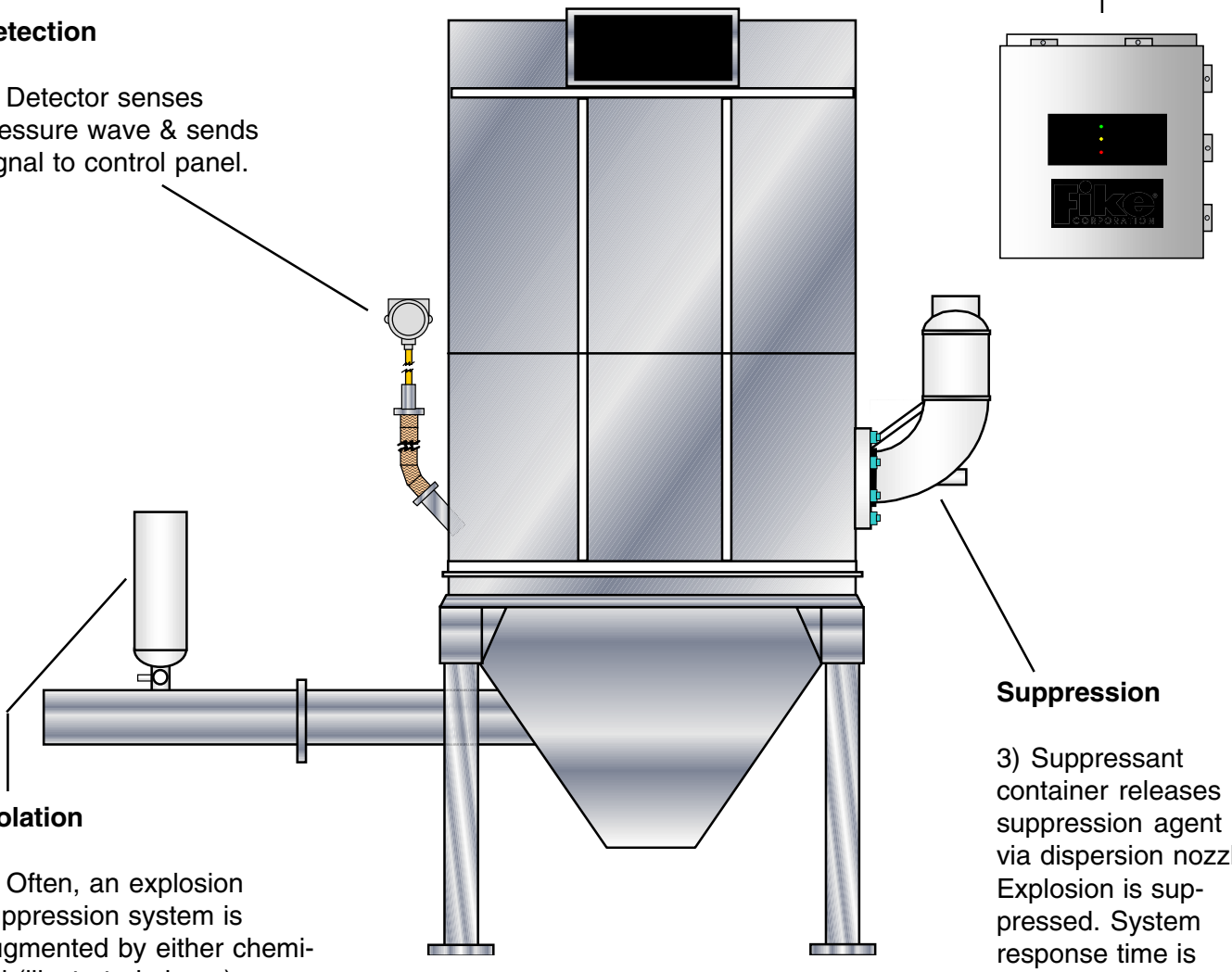
Four steps to successful explosion protection

Control

2) Control panel receives signal and issues command to suppressant container.

Detection

1) Detector senses pressure wave & sends signal to control panel.



Isolation

4) Often, an explosion suppression system is augmented by either chemical (illustrated above) or mechanical isolation to prevent flame or pressure from traveling through connected ducts or piping into other process equipment.

Suppression

3) Suppressant container releases suppression agent via dispersion nozzle. Explosion is suppressed. System response time is measured in milliseconds.

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