

Shield your
manufacturing
process and people
from dust explosions
with CV Technology.

Let CV Technology
offer peace of mind
to your company
and employees.

www.cvtechnology.com



CV TECHNOLOGY
FIRE AND EXPLOSION PROTECTION

Global Leader In Explosion Protection

**With CV Technology
products and care,
you'll be better
protected from dust
explosions.**

- Suppression
- Isolation
- Venting
- Flameless Venting
- Dust Testing
- OSHA And NFPA Compliance

Talk to your CV Technology representative
today about how to **shield** your people and
process from combustible dust or go to
www.cvtechnology.com



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THE COMPANY

For more than 20 years in the dust explosion and fire protection industry, CV Technology has become a world leader through the superior design and support of their products. Specializing in complete explosion and fire protection solutions, CV Technology provides peace of mind by preventing and mitigating dust explosions and fire hazards that result from the manufacturing and handling of dry bulk materials.

A single dust explosion can render a facility useless for extended periods of time. Current statistics estimate that 2-3 dust explosions occur every day in various facilities in the United States. Understanding and preventing these dangerous events is one of the most challenging tasks facing companies today.

CV Technology implements the *Shield Review Process* to protect your manufacturing process and people from dust explosions. The proper strategy for dust explosion protection is as unique as the manufactured products themselves. Through our proven Shield Review Process our experts provide a custom solution that is both effective and economical. Every implementation we complete is custom tailored to the specific requirements and conditions within the client's manufacturing operation. CV Technology provides piece of mind to your company's employees and business process.



SHIELD REVIEW PROCESS

Analysis / Dust Testing

Our experts will help you determine what tests are necessary and appropriate for your process.



Mitigation / Solutions

Our Interceptor® line of products will be custom tailored to fit the basis of safety required for your manufacturing process.

Implementation / Execution

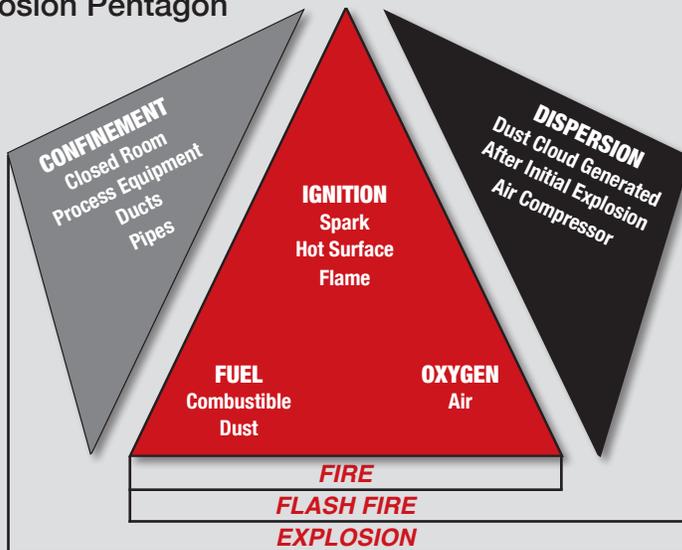
Our team of engineers, consultants and service technicians work together with you to ensure a successful installation.

DUST EXPLOSION BY DESIGN

Dust Explosions are unique and complex phenomena that are as unpredictable as they are dangerous. Dust explosions can only occur when all five elements of the dust explosion pentagon are present.

1. **Explosive Dust:** Combustible material present. Some examples are sugar, plastics, coal, grains, flour, starch, chemicals and metals.
2. **Suspended Cloud:** The explosive dust being processed must be entrained in a cloud of sufficient concentration.
3. **Confined Area:** Suspended dust cloud within an enclosure must exist in order to achieve the pressure rise characteristic of a dust explosion. In the absence of a confined area, flash fires are still a hazard but explosions typically are not.
4. **Oxygen:** O_2 in optimum concentration must be the medium for handling the explosive dust.
5. **Ignition Source:** When all other elements are present, an ignition source is the only thing needed to activate and initiate a dust explosion. Types of ignition sources can be generated from smoldering or burning dust, open flames, hot surfaces, heat from mechanical impact or electrical discharges.

Dust Explosion Pentagon



REGULATIONS AND STANDARDS

A catastrophic explosion at a sugar refinery in 2008 in Port Wentworth, Georgia emphasized safety protocols by United States Occupational Safety and Health Administration (OSHA) under the National Emphasis Program (NEP) concerning hazards associated with combustible dusts.

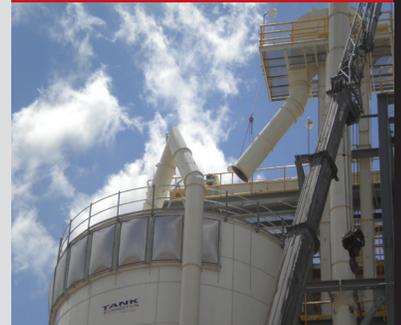
Additionally, the National Fire Protection Agency (NFPA) created the NFPA 652 Standard on Combustible Dusts and established consistent standards across industries. The responsibility of compliance with these standards falls upon the owners and operators for their facilities.

CV Technology serves on the committees of NFPA for combustible dust standards. We engineer up-to-date NFPA and OSHA codes and standards into every *CV Technology Protection Solution*. Through the *Shield Review Process* we offer these “best practices” on codes and standards with an assessment of your facility.

CV Technology engineered safeguards offers you peace-of-mind; utilizing passive, active, or a combination of both, to *shield* your manufacturing process and people from dust explosions.



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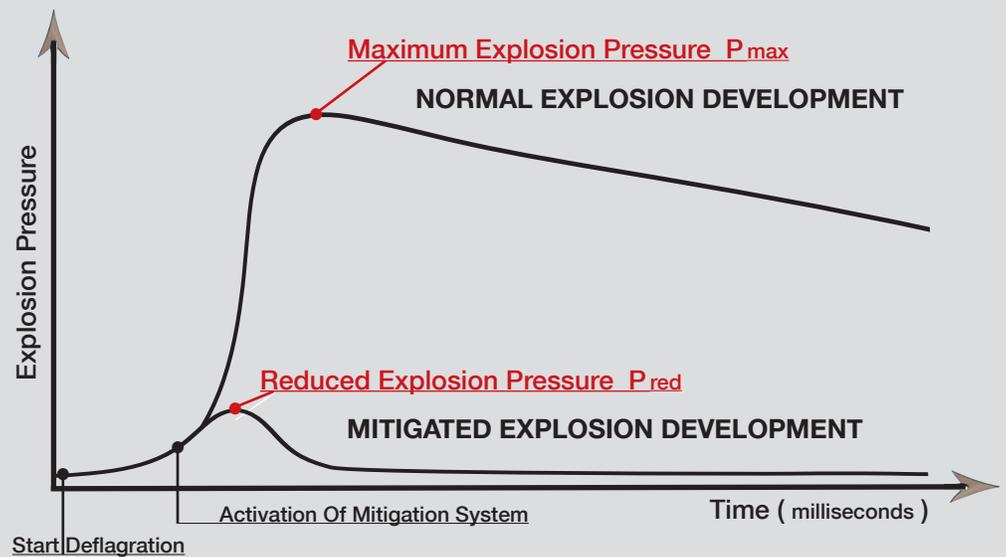




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INTERCEPTOR® LINE OF PRODUCTS

Explosion mitigation systems can be categorized into two types of technologies, passive and active safeguards. CV Technology has engineered our Interceptor® line of products to meet a full array of explosion management solutions. These technology safeguards offer you peace-of-mind by utilizing passive, active, or a combination of both solutions to shield your manufacturing process and people from dust explosions.



DUST TESTING

CV Technology helps develop a comprehensive understanding of the materials being handled that may be at risk through dust testing as part of our Shield Review Process. CV Technology provides a full array of dust tests that include:

- **Dust Combustibility Testing** – To determine if a material is a combustible dust.
- **Dust Explosibility Testing** – An ASTM E-1226 protocol test to determine the K_{st} and P_{max} of a dust (combustibility factor).
- **Minimum Ignition Energy (MIE) Testing** – Minimum ignition energy to ignite dust.
- **Minimum Exposable Concentration (MEC) Testing** – Least concentration of dust suspended in air that will support an explosion.
- **Minimum Auto Ignition Temperature (MAIT) Testing** – Dust in a pile or suspended in a cloud to determine what temperature will ignite the materials.

EXPLOSION VENTING AND FLAMELESS VENTING

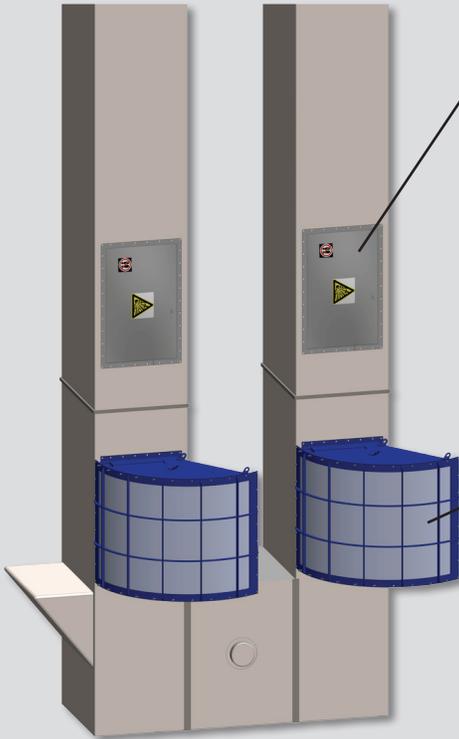
Explosion vents offer a passive and economical means of explosion mitigation. Each explosion vent is precisely designed to burst at a given pressure to maintain the structural integrity of the protected equipment. Flameless vents offer all of the advantages of explosion vents, but with the added benefit that they are designed to allow no flame to be exhausted.



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FIRE AND EXPLOSION PROTECTION

EXPLOSION VENTS

- A variety of different sizes and designs
- Easy installation
- Long service life
- Minimal maintenance
- Optional burst sensors, gaskets, insulation, and frames
- NFPA compliant



INTERCEPTOR IT

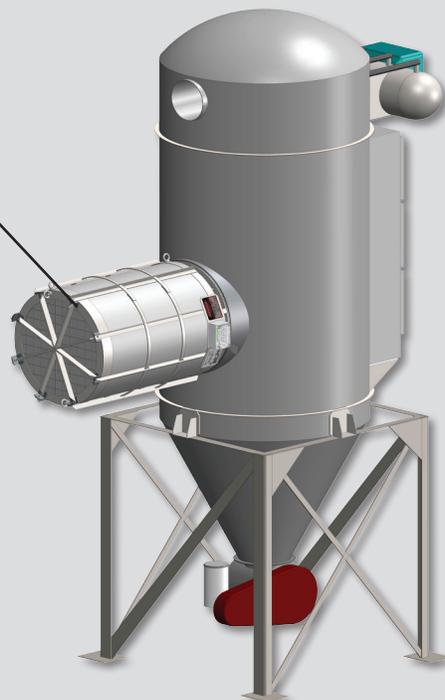
Safe Passive Flameless
Explosion Venting

- Passive indoor explosion venting designed to retain dust and flame
- Easy installation
- Long service life
- Minimal maintenance
- NFPA compliant and ATEX certified

INTERCEPTOR R

Safe Passive Flameless
Indoor Explosion Venting

- Passive indoor explosion venting designed to retain the dust and flame
- Easy installation
- Long service life
- Minimal maintenance
- Process friendly
- Sizes from 8" to 32"
- Designed to handle large volumes and high reduced pressures
- NFPA compliant and ATEX certified
- FM Approved





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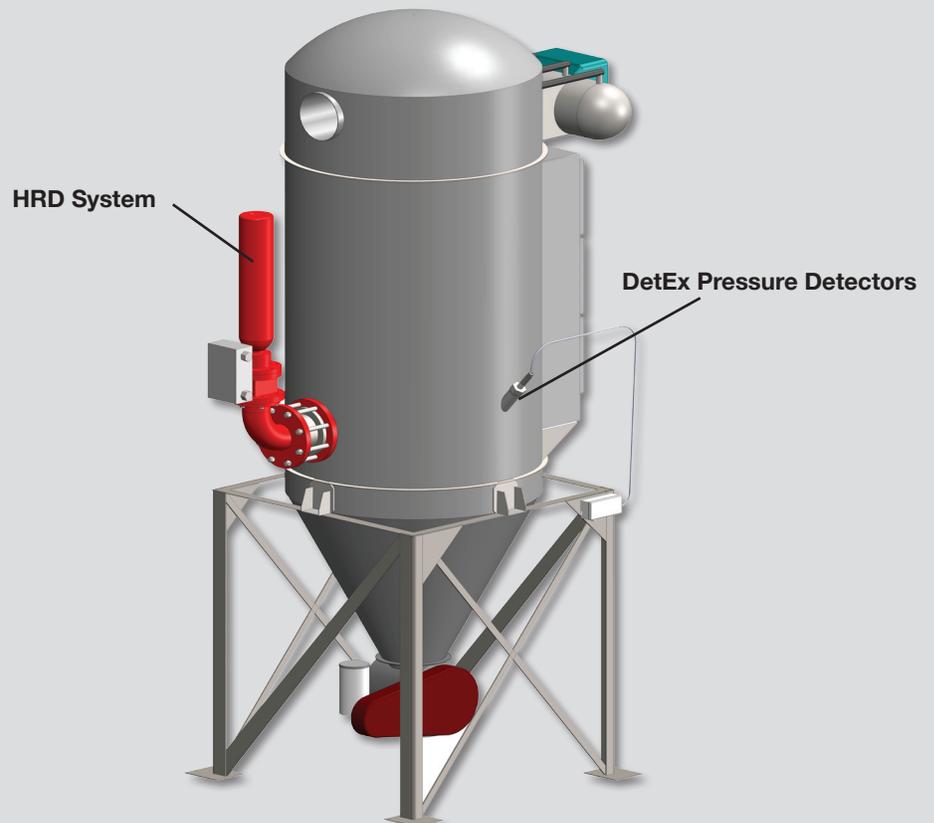
CHEMICAL SUPPRESSION

The Interceptor®-HRD™ chemical suppression system is designed to provide an active method to protect process system equipment from a dust explosion hazard. The fundamental operation of the Interceptor®-HRD™ system is detection of the pressure rise during the initial stage of an explosion, followed by fast injection and homogeneous distribution of an extinguishing agent into the protected vessel. The chemical suppression system consists of a controller, pressure or optical detectors, and the high rate discharge (HRD) bottles.

INTERCEPTOR[®]HRD[™]

High Rate Discharge
Explosion Suppression System

- High Rate Discharge (HRD) system with 6 different bottle sizes
- Advanced DetEx Pressure Detectors with rate of rise and smart floating zero logic to detect dust explosions
- CONEX Control System with 2-zone and 8-zone versions handle any application
- Integrated OSHA lockout
- Micro Gas Generator (MGG) actuator with 10 year service life
- System archiving for events, pressures, and temperatures
- 24 hour battery backup
- NFPA and FM compliant and ATEX certified

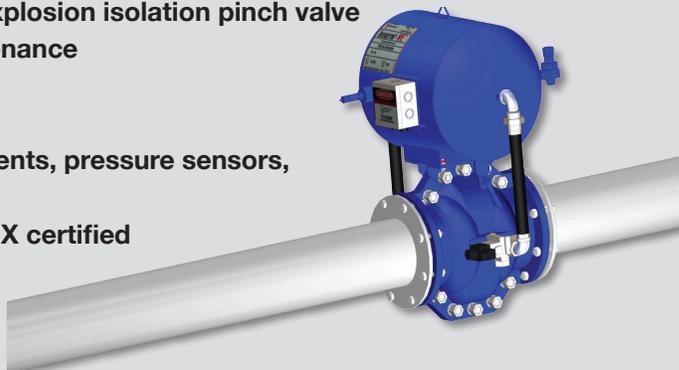


EXPLOSION ISOLATION

In many process systems, it's not enough to only protect the equipment where a dust deflagration is initiated. The interconnecting pipes and ducts that link equipment can act as pathways for a dust explosion to propagate. The solution is to use one of CV Technology's explosion isolation technologies to stop a propagating deflagration.

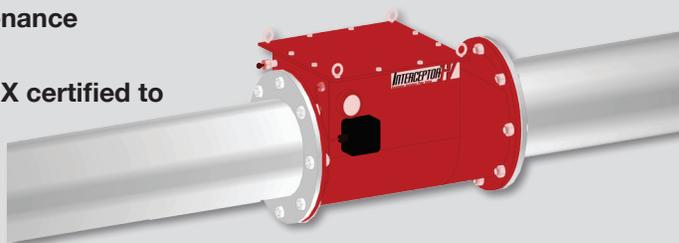
INTERCEPTOR^{VE} Explosion Isolation System

- Reusable air operated explosion isolation pinch valve
- Requires minimal maintenance
- Sizes up to 16" diameter
- Fail-safe design
- Activated by explosion vents, pressure sensors, or optical sensors
- NFPA compliant and ATEX certified



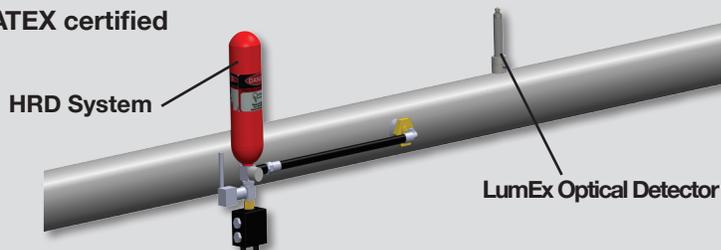
INTERCEPTOR^{FV} Explosion Isolation Flap Valve

- Low pressure drop due to unique always open design
- Position monitoring and optional dust sensor
- Flow actuated explosion isolation valve
- Requires minimal maintenance
- Sizes up to 44" diameter
- NFPA compliant and ATEX certified to EN 16447 standard



INTERCEPTOR^{HRD} High Rate Discharge Explosion Suppression System

- High Rate Discharge (HRD) chemical isolation system
- Ideal for all line sizes with a variety of bottle sizes
- Advanced controls with multiple zones and data recording
- Activated by explosion vents, pressure sensors, or optical sensors
- NFPA compliant and ATEX certified



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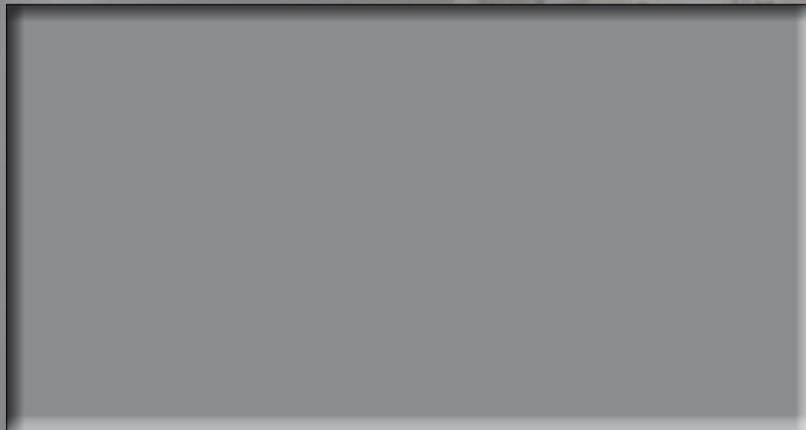




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