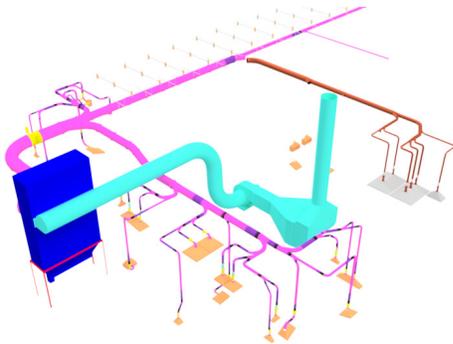


Is your facility at risk of an explosion?

Improper handling of combustible dust can not only result in costly fines for not abiding to OSHA, local and NFPA guidelines, but more importantly, put the safety of your employees, community and assets in danger of an explosion.

Combustible dust can be defined as any fine, organic or metal particulates that can create an explosion hazard when suspended in air.



Understanding the characteristics of combustible dust is the first step in helping identify how to properly handle any potential fire or explosion risks.

OSHA identifies any dust with the deflagration index (Kst Value) higher than zero, such as sugar, a potential for a deadly explosion. To combat these dangers the NFPA recognizes both chemical and passive isolation adequate methods for mitigating explosion hazards.

Chemical Suppression System Operation: NFPA 3.3.24.1

A means of preventing flame front and ignition from being conveyed past a predetermined point by injection of a chemical suppressant.

Theory of operation:

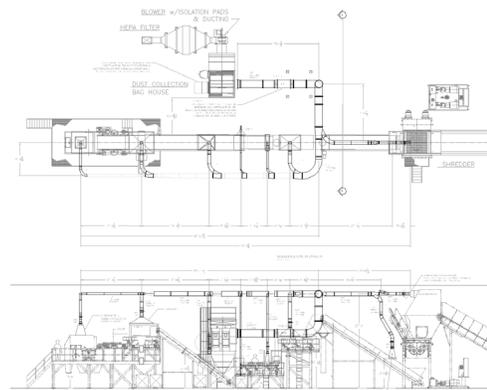
- A spike in pressure is detected by the pressure detectors located in the baghouse
- The control panel makes a decision if this is a true explosion
- If so, a chemical fire suppressant is released from a high pressure canister
- This suppressant puts out the fire and explosion before it can rupture the dust collector

Passive Dust Collector System Operation: NFPA 3.3.24.2

A method of employing equipment and procedures that interrupts the propagation of a deflagration flame front past a predetermined point.

Theory of operation:

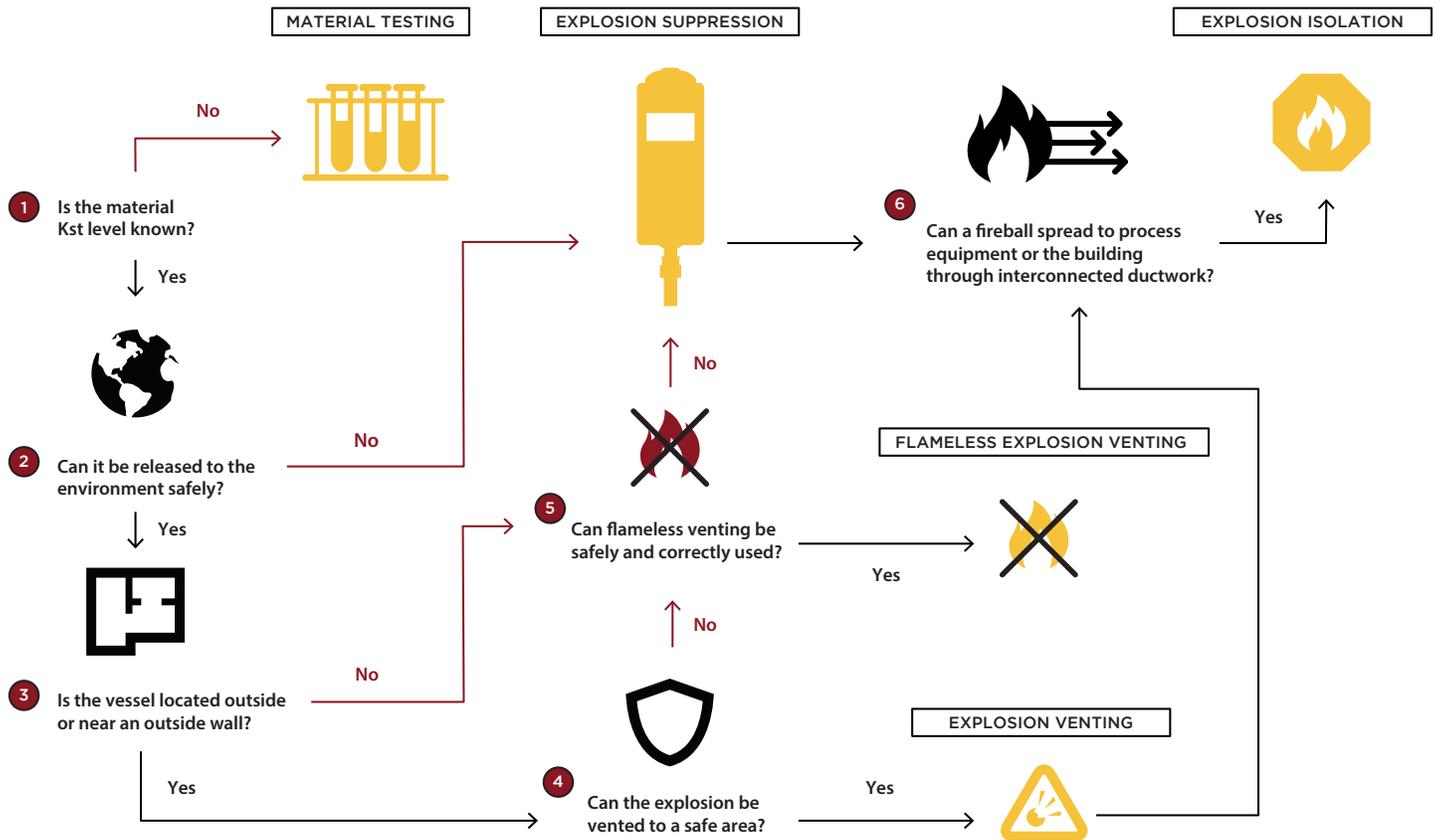
- An explosion occurs in the dust collector
- The pressure wave and fire ball are directed out of the dust collector through a break away panel (vent). This panel is designed to be the weakest point of the dust collector structure
- On the outside of the breakaway panel there is a flameless vent which allows the pressure wave to pass through but not the flame. Preventing the deflagration from reaching any aerated particles that can cause a secondary explosion
- Isolation valves that immediately close on detection of a pressure change are in place directly before the baghouse confining the flame front to the baghouse and out of the vent.



Converge Engineering can help you:

- Evaluate explosion properties of your dust
- Consultation of problem areas of your system
- Housekeeping improvement analysis
- Proper design of dust ventilation pick-up points and carrying velocities
- Static pressure and volume calculations
- Air balancing
- Chemical or Passive isolation
- OSHA and NFPA compliance advising

The diagram below demonstrates the installation of a passive isolation system where isolation valves and deflagration vents were installed to keep an explosion contained inside of a dust collector.



For more information email us at info@ConvergeEngineering.com

