New Flameless Venting for Combustible Dust

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Combustible Dust

- Combustible dust a continual hazard in the pulp and paper industry

- Dust Hazard Analysis (DHA) are a requirement in NFPA standards

- New technologies are needed to handle these hazards
Pulp and Paper Combustible Dusts

- Wood
- Paper
- Coal
- Petcoke
- Fly Ash
- Resins
- Corn Starch
Sources of Combustible Dust

- Reel cutter
- Bailing presses
- Shredders
- Extraction system
- Starch handling
- Boiler/fly ash systems
- Dust collection systems
Flameless Vents

- Use a flame arrestor on an explosion vent to vent indoors
- Allows for venting in occupied areas
- Easier retrofitting of explosion protection
- Limited to no maintenance
How It Works

Flame Arrestor

Explosion Vent

Mating Flange
How It Works

Stage 1
Pressure rise from a deflagration opens the rupture panel allowing dust and flame to enter the flameless vent

Stage 2
The flame front of the deflagration makes full contact with the mesh of the flameless vent and the quenching process begins

Stage 3
The deflagration is fully quenched and begins to contract

Stage 4
As the hot gases cool the flameless vent allows cool air to enter the vessel and prevent a vacuum from forming

The entire explosion quenching event takes place in less than 500 milliseconds
How It Works
Different Types of Flameless Vents

- **Round (quench tubes)**
  - Most efficient
  - Handle higher Kst dust
  - Handle larger volumes

- **Box (quench box)**
  - More vent area
  - More economical
  - Limited in applications

- **Duct Boxes**
  - Designed for bucket elevators
  - Slimmer profile
  - Limited volumes
Dust Collectors and Pneumatic Conveying – Flameless Venting
Fly Ash Recovery System – Flameless Venting
Questions

**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.