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

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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

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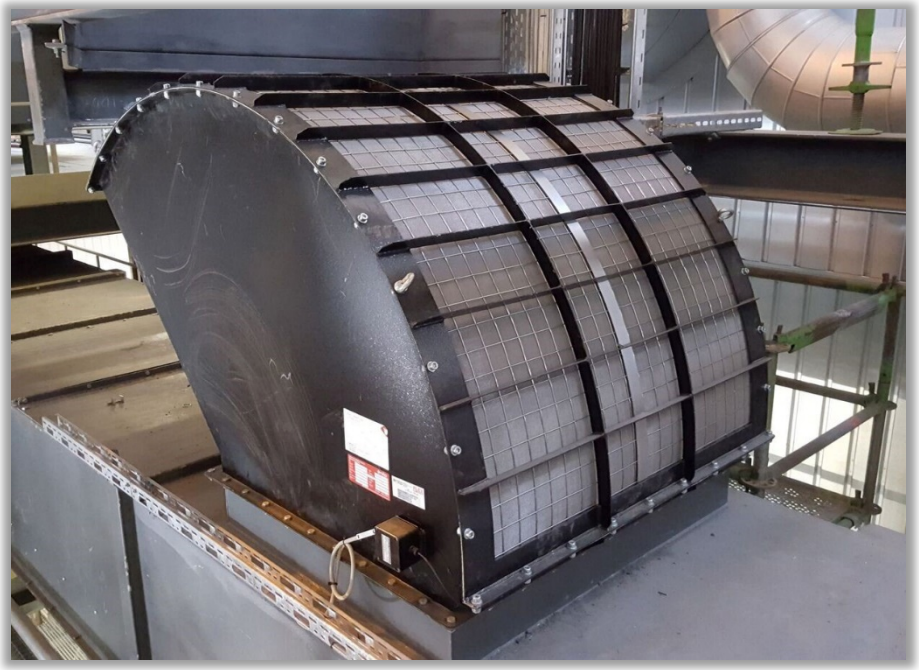
Flameless Vents

- 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



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How It Works

Flame Arrestor

Explosion Vent

Mating Flange

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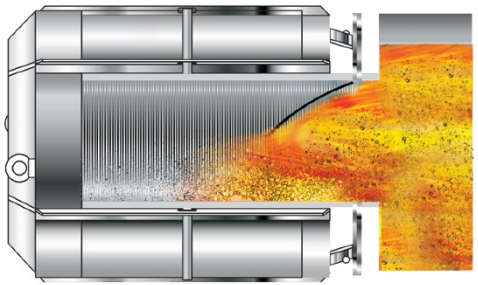
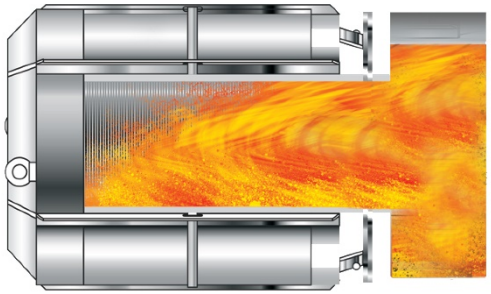
How It Works



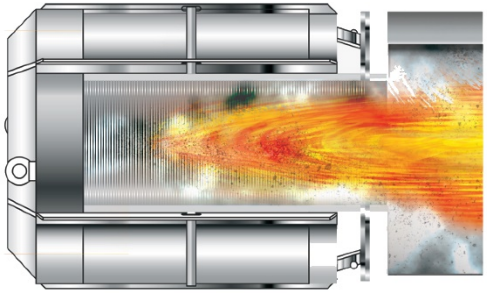
Stage 1

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



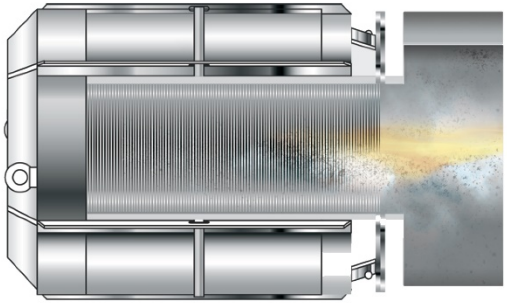
Stage 2

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

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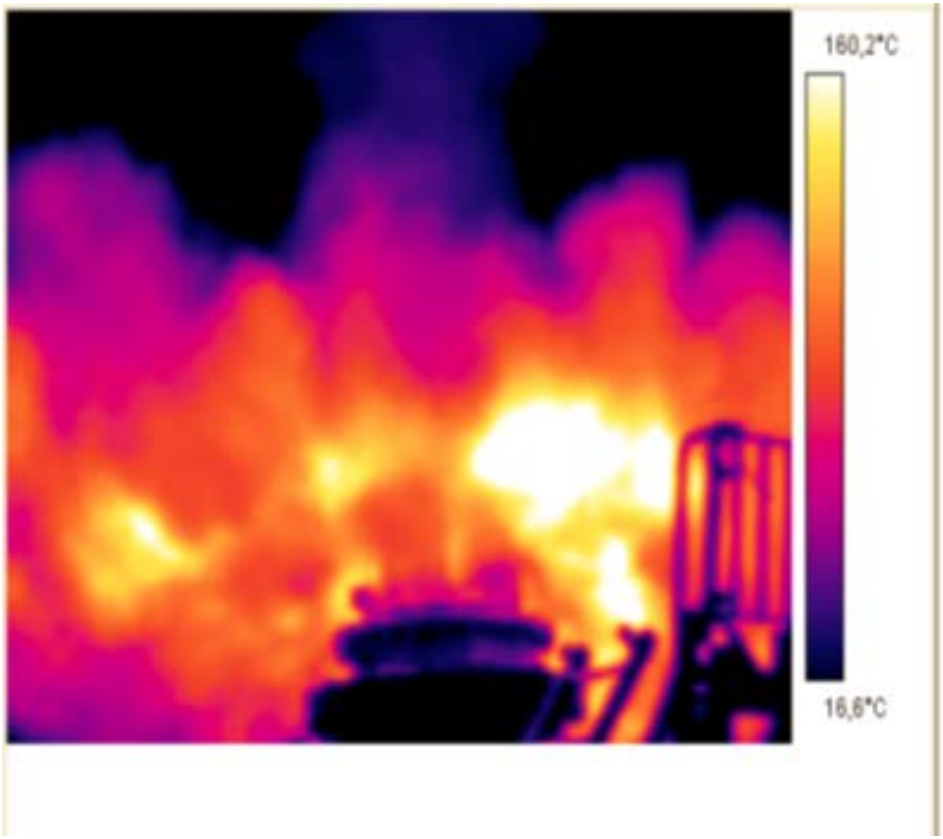
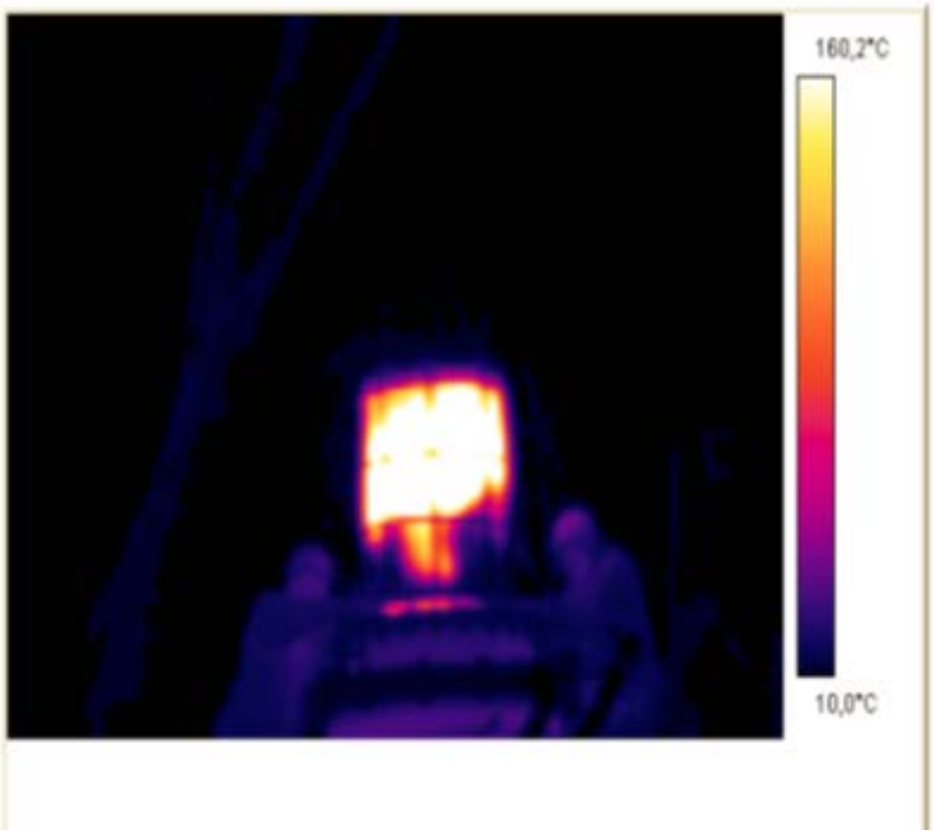
How It Works





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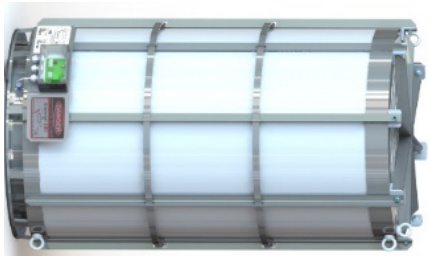
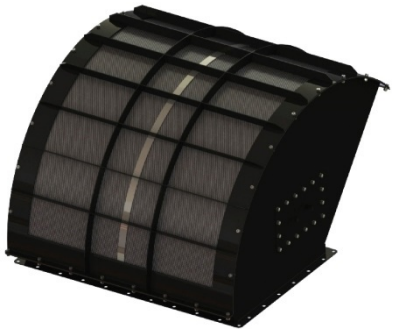
Different Types of Flameless Vents

- 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

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Dust Collectors and Pneumatic Conveying – Flameless Venting

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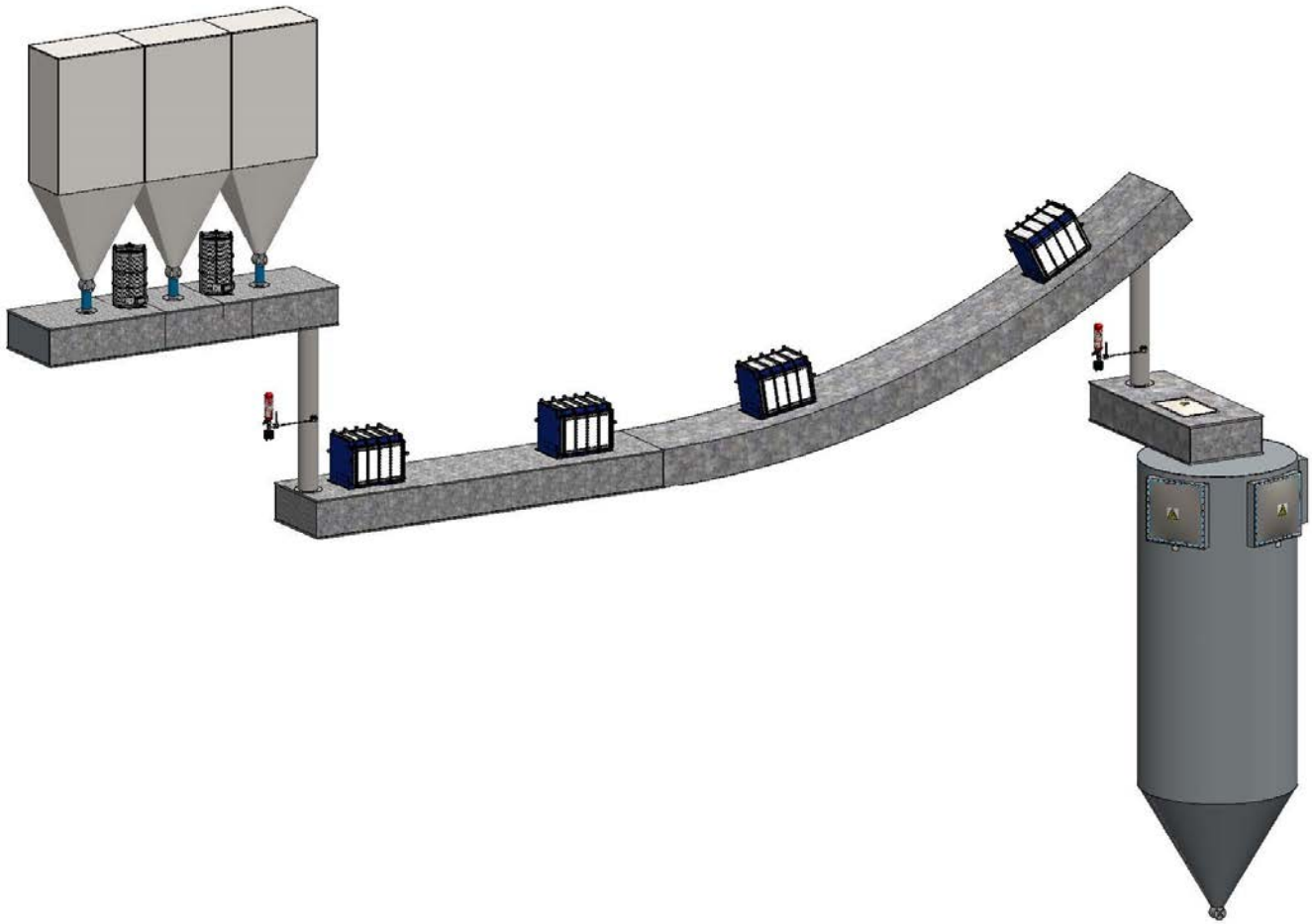
Fly Ash Recovery System – Flameless Venting



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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.

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