

IMPORTANT INFORMATION FOR OPERATORS

DEFLAGRATION ISOLATION

Combustible wood dust is generated in wood pellet plants, which presents the risks of dust deflagration, dust explosion, and flash fire.

A dust deflagration produces flames and pressure, which can spread to interconnected equipment.¹

Deflagration isolation is a technique that can interrupt or reduce the effects of a deflagration between enclosures that are interconnected by pipes or ducts.² It should be used in conjunction with deflagration

venting to prevent propagation of the flame in the primary equipment to upstream and downstream connected equipment.³

Your safety and the safety of your co-workers depends on all safety equipment working 100% of the time. If you see something say something.

TEN ACTIONS YOU CAN TAKE

- 1. Report any dust you see** accumulating or leaking from equipment.
- 2. Complete routine maintenance and inspections** according to equipment manufacturer and company specifications to help improve system reliability.
- 3. Follow electrical safe work procedures** to ensure system is not disabled after maintenance; ensure workorders specify to re-arm any sensors or re-open any valves following maintenance.
- 4. Post signage in the areas** where isolation system sensors are located (if applicable) to make personnel performing maintenance aware.
- 5. Ensure you receive specialized training** on equipment from the supplier if you are designated as personnel to perform maintenance and inspections.
- 6. Perform regular routine cleaning of systems** (e.g., sensors, valves) as necessary; determine frequency based on operation and characteristics.
- 7. Follow supplier manuals for installation** and contact suppliers if unsure. Ensure contractors have knowledge and skills to correctly install equipment.
- 8. Perform preventative maintenance** to keep flap valves in good working order. Regularly clean valves to remove any dust deposits or accumulations that could impede the valve's ability to close. Never modify a flap valve without approval from a qualified engineer or the supplier.
- 9. Ask your supervisor if you are unsure** about the location of isolation systems, how the systems operate, and how you should respond if a given system activates.
- 10. If you observe any unusual system activities** like false activation or warning lights and sounds, or an unapproved system modification, report it to your supervisor.

Explosions can propagate to other locations in the plant. However, these risks can be mitigated with explosion isolation technologies, which contain the explosion.

This explosion isolation prevents it from spreading throughout the entire process plant. (See Figure 1.)

Figure 1

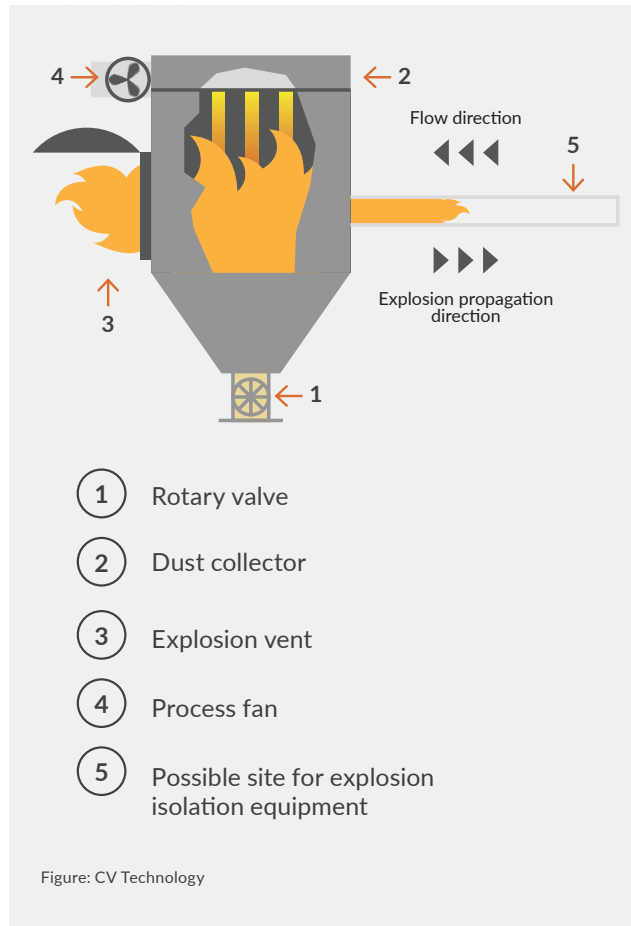


Figure: CV Technology

DID YOU KNOW?

Equipment in wood pellet plants that commonly needs isolation due to the presence of ignition sources and dusty conditions includes:

- hammer mills
- dust collectors
- bucket elevators
- drag chain conveyors
- cyclones

The types of isolation techniques that can be used include:

- inherently safer design (ISD)
- flap valves (passive engineered)
- rotary valves (passive engineered)
- chemical isolation (active engineered)
- fast-acting mechanical valves (active engineered)

1 NFPA 652. 2019. *Standard on the Fundamentals of Combustible Dust*. NFPA (National Fire Protection Association), Quincy, MA.

2 NFPA 69. 2019. *Standard on Explosion Prevention Systems*. NFPA (National Fire Protection Association), Quincy, MA.

3 CCPS (Center for Chemical Process Safety). 2005. *Guidelines for Safe Handling of Powders and Bulk Solids*. American Institute of Chemical Engineers (AIChE), New York, New York.