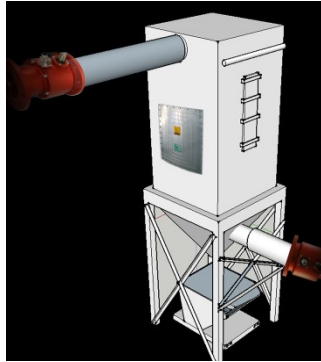


ATEX Passive Explosion Protection System

General: The protection of any vessel requires the protection of the vessel itself and the isolation of the deflagration to prevent its propagation to other process vessels or equipment. Up to now a truly passive system was not available. Our Passive System offers a wide range of explosion vent options that optionally include frangible, door and/or flameless vents for vessel protection.

Isolation is provided by the **NEW!** ATEX fully Passive Isolation Valve



ATEX Standard System Options: The ATEX Passive Explosion Protection System provides the use of all the available vent options with an isolation device responsive to the propagation of the event without the need for automatic detection of any kind.

Basic System Components: The two components of the system are a venting device and an isolation device for the inlet and outlet duct.

Venting Options:

Standard Frangible Vents: The most cost effective option when applicable is the frangible vent. Used singly or in multiples to provide the vent area required to reduce pressure growth below the limits of the protected vessel. The vents provide a time tested reliable device with a definable pressure relief rating.



Explosion Doors: The most cost effective vent when multiple activations are expected or when the replacement of vents after opening is very difficult and/or time consuming.



They have a self-closing feature which can minimize the damage from fire to the filter media. It also provides quick restoration of protection after an event. Units furnished with a field calibration

DS PV102

tool for easy setup and maintenance testing.

Flameless Explosion Vents: At times the venting to the outside of a facility is not possible because of the duct distance to an outside wall. At these times an ATEX flameless vent can provide an effective answer. The flameless vent uses standard frangible vents to release into a discharge chamber. The flameless vents expel the

deflagration air through a series of many openings around its side retaining burned particulate inside. Available in Cylindrical and Rectangular types they meet many protection options.



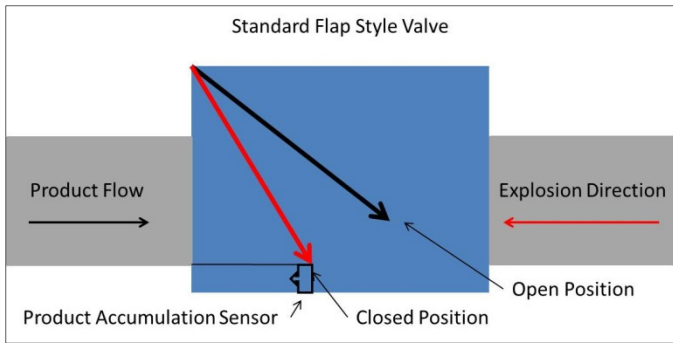
Inlet and Outlet Isolation:

The isolation of connecting duct work is a complicated process where reliability is the major consideration. Many devices such as a Quick Sliding Valves, Flap Valves, Pop-Pit Style Valves, Pinch Valves exist and all have operational issues. The New ATEX System provides the protection benefits to lower the overall operational cost and process downtime while providing an innovative venting and isolation system with the following features:



- Passive activation without the need of active detection and control systems as required by QSV's.
- Ability to perform during high product flows with the potential of product clogging at the valve closure.
- No wear and tear issues from the product itself on rubber and synthetic surfaces.
- No Powder Cleanup Downtime Concern.
- No Costly Downtime for device retrofit.
- No Costly quarterly factory Trained Maintenance Service required.
- Does Not Rely on the P_{red} of a Vent System for effective isolation.
- Field Adjustable Pressure Release.

Release Date: 7/30/12



Other Passive Product Offering:

The flap valve relies on the Vessel Vent closure limiting the allowable design pressure to a 7.5 psi maximum. A miscalculation or failure of the vent system would allow the deflagration to overcome the pressure resistance of the valve and allow the deflagration to propagate to other devices. The Flap Style Valve requires the use of an accumulation sensor to monitor process operation. The process must be stopped intermittently to use the system. The European specifications on the device do not allow its use where dust loading is possible.

The need of mechanical and automatic monitoring equipment eliminates the major benefit of the Passive System. With this valve the system needs to be monitored by a control system for a flap fault condition. Since this is an automatic system maintenance will be required at a 3 month interval as it is critical to reliable system operation.

The standard Pop-Pit valve unlike the flap valve can withstand the full potential pressure of a deflagration. Its rating is not limited based on the P_{red} of the vent system. But the standard Pop-Pit style valve has product flow limitations in ounces of product flow. The valve uses a seal larger than the pipe size to stop flame propagation. The diameter size difference allows for product build up to will prevent proper operation. But even with this limitation it is not provided with a Product Accumulation Sensor.

We have not discussed the Pinch valve because it is a full active valve without passive operational benefits.

The ATEX Passive Isolation valve provides a unique solution to this problem. Using advanced passive mechanical design techniques the ATEX passive valve provides the desirable advantages of the Pop Pit Style valve including passive explosion detection and valve activation plus resistance to abrasions, no system cleanup because of the suppressant and little or no reconditioning required. Unlike the standard pop-pit or flap valve the ATEX valves advance design is not affected by product flow fall out that would incapacitate these valves. Product accumulation does not have a point of system failure. As long as the product does not set to a solid and remains a powder the system will push through the blockage and provide the required isolation. With a 14 bar pressure rating the valve can be used on vessels rated for containment.

The ATEX system provides a passive protection system with all the associated operational and protection benefits. With the ATEX Passive Valve System you use Standard Frangible Low Mass Vents, self-reclosing Explosion Doors, Flameless Vents and/or Product Containment with a fully passive low maintenance approach to explosion protection.



Options

- The ATEX valves are available in Mild Steel and Stainless Steel Execution.
- Mechanical and Proximity Switches for remote valve indication.
- ANSI or Din Bolt Hole configurations.
- Variable field adjustable pressure release.
- Removable release head for easy pressure change in the field and valve inspection.
- Valve is mountable in any position without replacement of system springs.
- Metal Seals do not require replacement or temperature concerns.
- Available in 2 bar gas tight pressure rating.
- Available DN 100, 150, 200, 250, 300, 400, 500 and 600 sizes.



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