

Explosive Environment Solutions

⚠ Caution The equipment contained within this Explosive Environment section requires greater attention to specification and installation guidelines. Improper specification, installation or service of these products can result in loss of equipment or serious injury.

Explosion Proof, Purged, and Intrinsically Safe Systems

EXPLOSION PROOF

What is an explosion-proof indicator? It's simply a digital weight indicator enclosed in a special case. The purpose of an explosion-proof indicator is not, as the name suggests, to protect the indicator. Instead, the case prevents any explosion WITHIN the case from causing subsequent fire or explosion in the surrounding atmosphere.

For example, in a grain elevator application, combustible dusts (Class II hazardous atmosphere) may be present. A spark in a non-explosion-proof indicator could ignite an elevator-wide explosion. However, with an explosion-proof indicator, the spark (or even an explosion) is contained within the case. The hazardous atmosphere cannot be ignited, and the elevator is protected.

EXPLOSION PROOF ADVANTAGES

- Explosion containment
- Requires low maintenance
- No electronics
- No moving parts

EXPLOSION PROOF DISADVANTAGES

- Cannot indicate failure of containment capability
- Cost of protection per cubic foot increases with enclosure size
- Promotes condensation
- Cumbersome, limited access
- Causes harmful heat build-up
- Limited sizes
- Bulky designs
- Excessive weight

PURGE

Purged systems are ideal for hazardous environments and use positive pressure to prevent particles, gases and fibers from entering the controller enclosure. As an added safeguard, a differential pressure switch automatically cuts off power when the pressure falls below the acceptable level. Type X, Y and Z purging hardware is available that meets National Fire Protection Association (NFPA) article 496 guidelines.

The three configurations are as follows:

Type X Pressurizing: Reduces the classification within the protected enclosure from Division 1 to Safe.

Type Y Pressurizing: Reduces the classification within the protected enclosure from Division 1 to Division 2.

Type Z Pressurizing: Reduces the classification within the protected enclosure from Division 2 to Safe.

PURGE ADVANTAGES

- Reduces heat build-up
- Inhibits metal corrosion
- Requires low maintenance
- Increases equipment longevity
- Allows fast access to equipment
- Reduces moisture and dust build-up
- Reduces classification within enclosure
- Continuous system status indication
- Protects enclosures up to 450 cubic feet
- Allows use of any enclosure shape
- Cost of protection per cubic foot decreases with enclosure size

PURGE DISADVANTAGES

- Contains moving parts
- Requires instrument air supply
- Some systems contain electronics
- Some systems require electrical power

INTRINSICALLY SAFE

Intrinsically safe load cells and safety barriers take the explosion proof principle a step further. Intrinsic safety ensures that the indicator's electrical wiring and components are, by design, incapable of releasing enough energy to ignite flammable or combustible atmospheric mixtures in their most easily ignitable concentrations. In short, an intrinsically safe device eliminates the conditions for an explosion, no matter what the circumstances.

INTRINSICALLY SAFE ADVANTAGES

- Limits energy to device
- Requires low maintenance
- No moving parts
- Ideal for sensors

INTRINSICALLY SAFE DISADVANTAGES

- One barrier is required for each conductor
- Project cost increases with number of conductors
- Offers no protection against heat, moisture and dust
- Requires protection or installation in nonclassified area
- 24 VDC, 50 mA maximum power and signal strength limit