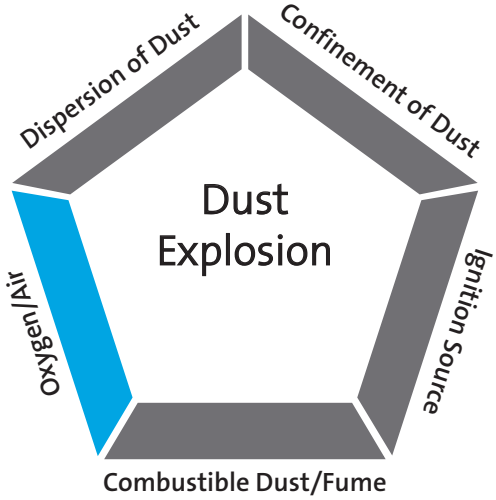
Nitrogen inerting to prevent combustible dust explosions



Nitrogen inerting is a good fit for many systems, including:

- Storage vessels
- Silos
- Hoppers
- Blenders
- Enclosed conveyor belt
- Closed loop pneumatic conveying
- Spray dryers
- Mixers
- Shakers
- Mills, shredders, classifiers
- Reactors
- Dryers

Unlike mechanical explosion control systems, using inert gas systems for combustible dust handling can prevent an explosion before it starts by removing the oxidant required for an explosion. Nitrogen inerting is a practical solution to help prevent the devastation to personnel and property that can result from combustible dust explosions.

Air Products engineers can help perform a risk assessment and design a system for efficient and reliable inerting for your operation. They can also help you design monitoring and control systems, which are critical for establishing and maintaining a safe inert atmosphere. When an inerting system is designed and installed properly, it is safer, less expensive and easier to maintain than mechanical hazard-mitigation solutions.

Evaluate the true costs!

In many cases, when compared to mechanical or chemical suppression systems, nitrogen inerting is the most economic and safest method for combustible dust handling. Nitrogen inerting is less capital and maintenance intensive and can prevent explosions unlike mechanical mitigation systems that can result in periodic system damage and loss of productivity (Table 1). Read more at airproducts.com/prevent.

Table 1. Costs required for nitrogen and mechanical-protected pneumatic conveying systems

	Mechanical	Nitrogen
Capital costs	Blowout panels Explosion detection (optional) Isolation valves (optional) Suppression devices (optional) Air compressor (dense phase) Positive displacement blower (dilute phase) Rotary airlock (dilute phase)	Nitrogen system foundation Gas recovery unit
Operating costs	Compressor/blower electricity costs	Nitrogen Gas recovery electricity costs
Maintenance costs	Quarterly inspections Annual inspections System preventive maintenance	System preventive maintenance
Explosion consequences	Assume system mititgates one explosion in five years. Assume explosion requires one week lost production and cleanup	Explosion is preveneted with inerted system

For over 70 years, our company has been providing innovative solutions that help customers become safer, more productive, energy-efficient and sustainable. Air Products engineers can offer you nitrogen inerting solutions for combustible dust operations to help make your process inherently safer and more economical. Depending on your gas supply needs and economics, we can deliver bulk quantities of nitrogen from over 90 production facilities worldwide or supply on-site generation plants. Plus, our Customer Service Centers are available 24/7 to help with your gas and equipment service needs.

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