Flexible Hose Safety and Combustible Dusts

Dust explosions are a major hazard in industrial manufacturing. Microscopic fine particles can quickly transform the ambient air into an ignitable atmosphere which may then cause a small spark and be enough to trigger an explosion with serious consequences.

By Ross Blanford, Director of Sales for North America, Masterduct Inc.

Dust explosion. Source: stock.adobe.com/Hussain.

Safety Focus – Equally Important for Components

Dust can be a fire hazard, particularly when powdery and dusty products are processed or generated during the production process. There is always the potential for danger in production, filling, and packaging plants, as well as in conveying equipment and in silos, bunkers, and other storage facilities. Most dust in a manufacturing environment is combustible to a degree, resulting in an ever-present chance for danger.

Use Suitable Equipment

"Machine and plant operators must take preventative measures," said Ross Blanford, Director of Sales at Masterduct Inc. in Houston, TX. This includes complying with laws, regulations, and standards such as ATEX, TRGS 727, NEC, COD, or NFPA. Blanford continued, "however also using safety components such as antistatic or electrically conductive or dissipative hoses prevent electrostatic charges as a source of ignition." Often in a manufacturing environment, the quality and safety of the hoses or ducting are not considered as important as other pieces of equipment. Adopting this mentality is highly discouraged as it can result in injury to both the facility operators and the environment.

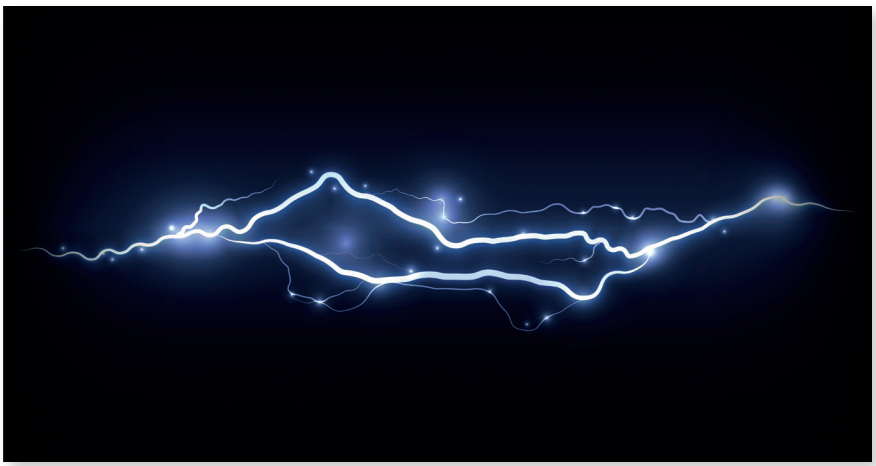
The Operator is Responsible

It is the operator's responsibility to assess the explosion risk of the plant and divide the plant into danger zones, as well as document and ensure all safety measures to protect employees. Operators are also obliged to use suitable operating equipment. Standards such as ISO 8031 as well as NFPA 654, 652, 77, and the upcoming 660 all contain critical guidance regarding safely mitigating static charge and managing combustible ducts. An important part of this process is having a dust hazard analysis on file in the facility. This requirement has been in place since September 7, 2020.

Rely on Safe Hoses

With appropriately designed components, such as anti-static, electrically conductive, or static dissipative hoses and their appropriate fittings, hose specialists can help operations and safety departments ensure that machines and systems are safe and that important regulations are considered. Extensive tests are carried out on all hoses to confirm and verify their suitability in demanding applications. By doing this, manufacturers are doing their part to mitigate the risk of accidents taking place in their facilities. Design elements that must be verified include:

- **Does the hose have any additive in the plastic to make it permanently antistatic?** Only having a metallic wire helix with the potential to be grounded does not guarantee safety performance.
- **Does the hose or ducting have a wire in the helix at all?** If not and there is no additive in the plastic, the hose is not safe for combustible dust.
- **Does the manufacturer list an OHM rating for the hose or duct on their specification documents?**
- **Does the manufacturer offer grounding instructions to assure that this secondary safety measure is performed properly?**



Corona discharge. Source: stock.adobe.com/Pavel.

Many distributors and end users do not recognize the differences in quality and safety when it comes to thermoplastic or fabric hoses used by industrial manufacturers since they can look and act similarly. It is important to understand the design and material differences that can result in hoses that look similar to perform very differently and to offer vastly different safety features in order to assure a safe and long lasting hose for every application.

Master-PE L-F EL. Source: Masterflex SE.

ABOUT THE AUTHOR

Ross Blanford has been the Director of Sales for North America for Masterduct, Inc since 2019. He has more than twenty years of experience in sales and sales management specializing in technical sales of industrial products. He spent several years in the explosion-protected electrical industry where he developed a passion for preventing explosions caused by combustible media and operational safety.