

Case Study

Filter Products supplies a safe filtration solution for a dry powder conveyor system

Customer Issue

A multinational manufacturer of powder handling, conveying and processing equipment such as vacuum conveyors required a specialized filtration solution for a dry powder conveying system.

The filter design had several requirements:

- All particulate larger than 5-micron needed to be retained.
- In most applications for the new equipment, the retained solids are the desired product. Therefore, as much of the retained powder must be able to be collected for use in subsequent processing steps.
- With dry powders conveyed by a gas stream through a filter media, the potential exists for static electric charge to develop. If not properly addressed, a static discharge (or “spark”) could cause an explosion of the dry powders. Providing an electrically conductive pathway for the static charge to dissipate addresses this concern.
- Compliance with US and international regulations for contact with food products (and similar) was required, as the equipment this filter was designed for would likely have application in these types of production processes and industries.

Filter Products Company Solution

Filter Products Company reviewed the filter design concept provided by the equipment manufacturer and made a series of recommendations to optimize the filter concept into a production-ready design.

The filtration media that was chosen was a PTFE coated synthetic felt with integral electrically conductive grid. The felted synthetic provided the right filtration performance; the PTFE coating allows for a clean release of the collected powder which maximizes production yields; and the integral electrically conductive fibers of the felt (in combination with other design elements noted below) address the build-up of static electrical charge during use.

To complete the electrical grounding requirements for this filter element, Filter Products Company sourced flat braided stainless steel wire, stainless steel electrical terminals, and perhaps most crucial, highly conductive electroplated synthetic thread.

The electroplated thread is notoriously difficult to work with because the metallic electroplating creates highly erratic friction as it passes through the sewing equipment. Here, the intersection of the expertise Filter Products has in industrial sewing and specialty lubricants allowed for quick resolution to an otherwise daunting task.

All materials used in the production of this filter are made from materials that are generally regarded as safe, and no components or materials used in the assembly of the product fall outside of applicable standards or regulations.

Two rounds of pre-production filters were produced by Filter Products and delivered to the customer. Minor design changes were made after each of these short runs to refine the operator experience during filter-changes, adjust the fitment of the filter to the equipment, and improve the performance of the sewn features.

Customer Result

FPC has supplied hundreds of these specialty conductive felt filters to the equipment manufacturer, who provides them as a service item to its customers in the food products and pharma industries. The product is effective in field use.

Services Used

Consulting and Design Services; specialty material sourcing; custom filter cut & sew services.

