

## Case Study

### Potent Compound Dust Collection

Collection of particulate or nuisance dust is a common necessity for many manufacturing processes. The particulate might be unwanted airborne dust or process material recovery, explosive or a fire potential, or even a potent compound. The material characteristics of the collected material might dictate a filter media having high efficiency or special release characteristics. The system itself may need to be constructed of specific materials or have specified finishes or gasketing and depending upon the engineering, it might be a high or low pressure system, or a positive or negative vessel design.

In the case of a Pennsylvania pharmaceutical firm with a proprietary product recovery requirement, it was a combination of the above. Product collected off the process was explosive, needed to be reclaimed, was a potent compound, required FDA food grade construction, and the collection device needed to be a high positive pressure vessel.

Systech was asked to provide the major components; a dust collector sized for 600 CFM with explosion protection, conveying tubing and NEMA 4X electrical controls with a variable frequency drive.

The dust collector was a Donaldson Torit DFT 2-4 automatic pulse clean cartridge style unit with Ultra-Web filter media. Ultra-web has high initial filtration efficiency with an easy release surface. A clean in-place hopper discharge rotary valve completed the collector package.



Because the collector needed to be designed for a Kst of 400 and the location of the collector was inside the complex, without an outside wall or ceiling, a conventional explosion vent could not be applied. Given these conditions, a Fenwal Protection Systems explosion suppression system was selected which incorporated four (4) sodium bicarbonate bottles positioned to "fire" should a pressure rise be detected. In addition, meeting NFPA 654 2006 Edition, included inlet isolation, dynamic pressure detector on collector and an infra-red sensor on the outlet duct.

The need for product recovery necessitated FDA food grade and wash down specifications of 316 SS with a 4B finish for both the collector and conveying tubing.

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