

Dust Collection: Food Processing

Dust Collection System Solves Ingredient Processor's Dust and A/C Challenges

In southern California, Mulligan Sales, Inc. blends dry dairy and other food ingredients for makers of baked goods, snack foods and confections. These powdered ingredients typically create high dust levels that tend to absorb moisture in the air, requiring cool, dry in-plant conditions.



Focus:

Mulligan Sales, Inc.

Challenge:

Integrate dust collection system with facility's environmental controls

Solution:

DustHog® SFC Series Dust Collector with Cyclone pre-cleaner

Impact:

- Decreased residual airborne dust by 85%
- Enabled dust collector and air-conditioning systems to run simultaneously
- Dramatically reduced filter maintenance, time and labor
- Provided flexibility and capacity for future expansion

Challenge

In its powdered ingredients processing facility, Mulligan Sales required both substantial dust collection and constant air conditioning for temperature and humidity control. Running both systems simultaneously was not an option with the company's existing dust collectors—an external baghouse unit with envelope-type filters and a manual shaker for filter cleaning.

The existing system vented outside, returning no air back into the mixing and batch-weighing areas. And because the unit would have extracted conditioned air as well, the air conditioning could only be run when the unit was off and the facility was not blending.

Additionally, the facility had limited power available for their dust collection equipment, so a bigger system alone was not the answer. Mulligan needed a solution to:

- Improve collection of high levels of dust while integrating with the facility's environmental controls

- Save costs and losses associated with external venting
- Provide vastly updated filtering technology for improved performance and reduced maintenance
- Fit the solution to the limited available power

Solution

A UAS, now Parker Hannifin representative performed a detailed assessment of Mulligan's existing equipment, identified its key design inefficiencies and areas in need of dust collection, and considered the company's potential need for additional processing equipment in the future. The representative then arranged a tour of a successful DustHog installation at a leading snack food maker's facility. Impressed with its performance, Mulligan chose to work with Parker Hannifin.

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Parker Hannifin solved Mulligan's temperature control needs with an external DustHog SFC 12-3 downward flow cartridge dust collector, customized with a C-3600 Cyclone pre-cleaner for each of the existing large mixer and batch-weighing areas. This achieved measurably more effective, efficient dust collection than the previous baghouse unit. Unlike the former externally vented design, the new SFC system returned clean air into the facility. For further assurance the system featured an exterior safety filter, as well as a silencer to keep the noise level well under OSHA guidelines.

As for system size, Parker Hannifin tailored the design to meet Mulligan's equipment and airflow goals—as well as the facility's limited horsepower requirements.

Maintenance was also substantially reduced, since the SFC system required far less frequent filter change-outs than the previous baghouse unit. This resulted from the SFC's patented pulse-jet technology that "pulses" dust off filters. Parker Hannifin designed this pulse-jet system to clean the full length of the cartridge filter for better, long-lasting performance while allowing the unit to clean the filters during operation. Further, the pulsing is delivered in regulated "blasts" of air, so fewer pulses are needed, which conserves costly compressed air.

Impact

According to Mulligan Sales Plant Manager Byron Tobin, the facility went from having "tremendous dust challenges" to an "85 percent decrease in residual airborne dust."

With no external air discharge, the company also began saving thousands of dollars in state permitting fees, while reinforcing its "good-neighbor" commitment.

This solution also resolved the challenges of dust collection in conjunction with temperature and humidity control. UAS (now Parker Hannifin) worked with our vision all the way," Tobin said.



Exhaust duct from the DustHog SFC downward flow dust collector with in-line silencer and safety filter.

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- Byron Tobin,

Mulligan Sales Plant Manager

He also cited quality details that are yielding added value, including the system's washable filter cartridges with a spare set for less downtime during change-outs, explosion relief vents for protection, powder-coated finish on the collectors for corrosion resistance and three additional flexible dust collection arms that allow reconfiguration of the processing room equipment for other projects.

To accommodate Mulligan's future needs, the new system can be expanded. Tobin noted that his facility is initially optimizing 30 to 40 percent of the new system's capacity, allowing for expansion or reconfiguration to improve productivity at any time. "We knew we needed to step up," he said. "The result is impressive, and we have future capability."