

CASE STUDY



Dust Collection: Replace or Buy New? Save Money, Time, and Boost Efficiency

Customer Overview

The company is a leading global ingredient solutions provider that turns grains, fruits, vegetables and other plant-based materials into value-added ingredient solutions for the food, beverage, animal nutrition, brewing and industrial markets.

SERVICES PROVIDED:

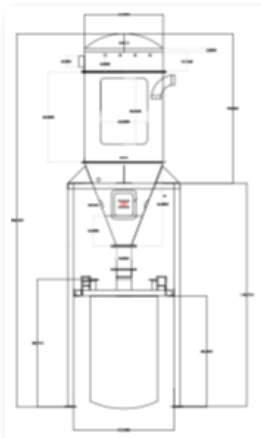
- Engineering & Design
- Manufacturing
- Training & Commissioning
- Project Management
- Installation



CV-48 Central Vacuum System with controls panel (inset).

Project Overview

A global leader in ingredient solutions—transforming grains, fruits, vegetables, and other plant materials into key ingredients for food, beverage, animal nutrition, personal care, and industrial products—faced a critical challenge in managing combustible dust. With a 15-year-old dust collection unit struggling to support bulk transfer operations, the company approached Air Dynamics Industrial Systems Corporation to evaluate whether refurbishment or full replacement was the most effective path forward.



The Challenge

The client's production facility, which processes materials such as flour, sugar, spices, cereal grains, cornstarch, and chocolate, required robust dust control to meet FDA, USDA, and OSHA safety and hygiene standards. Their existing dust vacuum unit:

- Was over 15 years old
- Could not support four operators, simultaneously, due to insufficient vacuum
- Created potential fire and explosion hazards
- Required evaluation for explosion venting compliance

The company needed to improve worker safety, boost vacuum capacity, and integrate into an existing frame structure. They wanted to determine whether refurbishing the old system or investing in a new one would yield better long-term performance and ROI.

The Solution

Air Dynamics conducted a detailed on-site assessment and presented two tailored solutions to address the facility's dust control challenges.

Solution 1: Refurbished Suppression System

The first option was a cost-conscious upgrade to the existing system. This plan included the addition of inlet isolation, upgraded access doors and cone, a new fire suppression system, explosion venting panel upgrades, and full installation support. While this solution addressed key safety and compliance concerns, it came with a notable limitation: due to airflow constraints, the refurbished system was only recommended for use by a single operator at a time during bulk transfer operations.

Solution 2: Full Replacement – Central Vacuum CV-48

Air Dynamics proposed a complete system replacement with the high-performance CV-48 central vacuum system. This solution was engineered to accommodate six users simultaneously, but resulted in seven, and provided dual-functionality for both vacuum and pneumatic conveyance. It also offered significant improvements in operator safety, maintenance access, and air quality. Designed with future scalability in mind, the CV-48 supports system expansion for redundancy and continuous 24/7 operation.

The Choice? Solution 2

A new CV-48, integrated with customer's existing space and frame. Air Dynamics was able to design the new CV-48 to fit the existing frame and floorspace that housed the old CV. This saved the customer time and construction costs as the new unit fit right in.

The CV-48 incorporates advanced design features that reduce maintenance demands, enhance operator efficiency, and improve overall plant cleanliness. These features include top-loading filters that eliminate the need for confined space entry, pour-in lid seals with extended service life, and a multiple 8-inlet configuration for versatile operation. Oil-lubricated direct-drive exhausters eliminate belt maintenance, while standardized filter types across all CV models streamline service and inventory. It was engineered with a reusable flamless explosion vent meant for indoor applications. Also included was an inline FOD separator on the piping network that removes large debris such as rags and gloves that were accidentally vacuumed into the system.

Conclusion

For this global ingredient solutions provider, the decision to replace rather than refurbish their aging dust collection system proved transformative. Air Dynamics' CV-48 central vacuum system delivered superior performance, expanded operator capacity, and significantly enhanced workplace safety and air quality. The investment not only met stringent compliance requirements but also introduced scalable functionality for long-term growth and 24/7 uptime. By prioritizing reliability, ease of maintenance, and operational efficiency, the company achieved measurable improvements in productivity, cleanliness, and overall plant performance—proving that a strategic system upgrade can pay dividends in both safety and ROI.



Air Dynamics CV-48 Installed.

The Results: Full Replacement: CV-48

Following installation of the CV-48 system, operators reported significantly improved suction and coverage. Maintenance teams also praised the system's design, citing the ease of filter access and quick changeover as major benefits. The new unit quickly became known as a "workhorse," delivering performance that far surpassed the previous equipment. Enhanced dust control contributed to a safer work environment, reducing trip hazards and improving overall air quality. The plant also noted better hygiene compliance and a noticeable reduction in equipment wear.

In terms of quantifiable improvements, the system supported seven operators, up from four that the old system could not adequately support. It also introduced dual-functionality—handling both vacuum and pneumatic conveyance tasks. Downtime was reduced thanks to the ability to sequence CV units for redundancy. Overall operations became cleaner, with less foreign object debris (FOD) and improved product quality. With minimal moving parts and a "set it and forget it" design philosophy, the CV-48 delivers consistent, reliable performance for demanding industrial environments.