CASE STUDY

Mobile Powder Pump System for Flexible V-Blender Charging

Engineered for Safe, Contained, and Reusable Powder Transfer Across Multiple Processes

Overview

A chemical manufacturing facility required a safe, mobile, and contained method to transfer powders from small containers into a V-blender, with the added goal of re-using the same system for other vessels in the future. A customized mobile Powder Pump system was engineered to deliver flexibility, containment, and ease of operation—while incorporating Clean-in-Place capability for rapid changeover between products.





About

The end user operates a multipurpose production environment handling sensitive and occasionally hazardous powders. Their facility layout includes multiple processing rooms, a V-blender, and additional vessels that periodically require solids charging. Mobility, adaptability, and operator protection were critical drivers for the project.

Challenges

Many chemical manufacturers around the world still introduce solids to their process manually. For this project, the client faced the following pain points:

- Need to charge powders from trays and drums directly into a V-blender
- Desire to later use the same system for other vessels without permanent installation
- Requirements for hazardous-area electrical compliance
- Ensuring full containment to protect operators and prevent dust emissions
- Need for an efficient cleaning process to minimize downtime between batches

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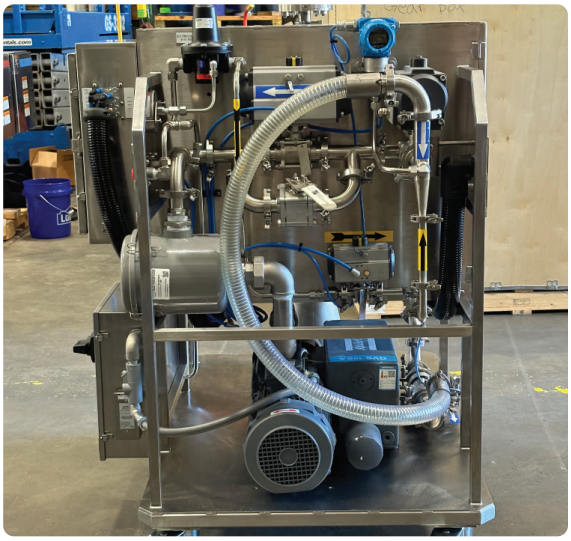
De Dietrich

Solution

De Dietrich provided a mobile 4" Powder Pump system mounted on a stainless-steel cart with integrated vacuum pump, PLC/HMI controls, and single-point utility connections. The system included:

- 304SS Cart to enable use in multiple locations
- Custom piping and flexible hose lengths to reach charging points in adjacent rooms
- Class I, Div. 2 compliant controls with a remote start/stop station
- Integrated CIP functionality using a float assembly and bypass valve, allowing wash liquid to enter the Powder Pump body for cleaning without disassembly
- Custom adapter for connection to V-blender while also allowing system to vent







Results

The customer received a fully mobile, contained solids-handling solution that safely and efficiently charges their V-blender while remaining versatile enough to serve multiple vessels. The system's enclosed transfer design improved operator safety and housekeeping, reduced contamination risk, and shortened setup time.

The built-in Clean-in-Place float and bypass valve system now allows rapid cleaning and faster changeovers—making the mobile Powder Pump not just a blender-charging tool, but a facility-wide solids-transfer asset.

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