



**No Structural Changes.
No Safety Compromised.**

Engineering a Class I, Division 2 Bulk Bag Conditioner for Third-Floor Installation

A globally recognized paint manufacturer required a bulk bag conditioning system capable of restoring compacted supersacks weighing 500 to 2,200 pounds to a free-flowing state, while operating within the physical and regulatory constraints of their existing facility. **The system needed to be transported in sections via freight elevator to a third-floor production space, assembled on-site without structural modifications, accommodate taller supersacks, and comply with hazardous location requirements.**

Meeting these structural, operational, and safety demands required a solution engineered specifically around the customer's environment from the outset. The goal was to deliver a hazard-rated conditioning system that fit seamlessly within the facility's limitations while safely and reliably restoring material flow.

Creating a Customized Solution

The solution began with a **Material Master® Bulk Bag Conditioner**, specifically engineered to address the facility's structural and hazardous-location requirements.

The system featured a four-piece frame construction designed to fit within a 90 x 90 x 84-inch freight elevator opening and a 5,000-pound capacity, enabling safe vertical transport and third-floor assembly without structural modifications.

In addition to its modular design, the system included a nitrogen purging mechanism with venting for hazardous environment operation, enhanced sensors and control architecture compliant with Class I, Division 2, Group C and D standards, and a human-machine interface (HMI) with automated conditioning recipes to ensure consistent and repeatable performance.



Modular & Safe: System Features

Modular 4-Piece Frame & Upgraded Controls



Engineered specifically for third-floor operation, the conditioning system was built around a modular four-piece sectional frame designed to fit within the facility's freight elevator constraints while maintaining full structural integrity once assembled. Each section was engineered to comply with dimensional and weight limitations, allowing safe vertical transport without compromising rigidity or performance. The heavy-duty carbon steel construction was optimized for stable operation in an elevated production environment where floor load distribution, vibration transfer, and dynamic hydraulic forces must be carefully controlled.

To ensure safe operation within the classified space, the system incorporated appropriately rated NEMA enclosures, upgraded sensors and control components suitable for Class I, Division 2, Group C & D environments, and a nitrogen purging system with venting to mitigate atmospheric risk. **Together, these engineered elements delivered a structurally sound, hazard-compliant solution optimized for reliable third-floor performance.**

Hydraulic Platform with 48" of Vertical Travel



The hydraulic lift platform, rated for 4,000 lbs with 48 inches of vertical travel, was critical for accommodating taller supersacks and ensuring full-column conditioning. The extended lift range allowed precise vertical positioning of the bag so the twin pivoting conditioning arms could engage at optimal pressure points throughout the material mass.

By targeting compacted zones at multiple elevations, the system effectively broke down hardened material and restored consistent, free-flowing product without manual intervention.



MATERIAL MASTER® BULK BAG CONDITIONER

Features & Benefits:

Hydraulically actuated pivoting arms apply controlled, repeatable force at critical pressure points to break down compacted material and restore consistent material flow without manual intervention

A Category 4 safety-rated Allen-Bradley HMI enables automated, recipe-driven conditioning cycles, ensuring precise and repeatable performance while reducing operator variability.

Interlocked loading doors prevent system operation when access points are open, reinforcing operator safety and supporting hazardous area compliance.

The enclosed hydraulic power unit enhances plant cleanliness, protects critical components, and limits unauthorized access or unintended system adjustments.



See MTS Bulk Bag Conditioning Solutions in Action!