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Chemical powders de-lumped with bulk conditioner

DSM Coating Resins Spain is the world's largest producer of polyester resins and one of the largest producers of specialty emulsions. The company is now using bulk conditioner to de-lump chemical powders, which previously required manual delumping/tools.

DSM Coating Resins receives large volumes of dicarboxylic acid and diol ingredients in bulk bags in order to produce saturated polyester resin powders used in protective coatings for bridges, ships and automobiles.

Both materials agglomerate during shipment and storage, preventing them from flowing out of the bulk bag, which until recently required workers to empty the bag onto a grate in a caged area and crush the lumps using hand tools.

To eliminate the cost, mess, delays, and safety concerns of the manual methods, the company has now installed a Block-Buster™ Bulk Bag Conditioner that de-lumps the materials automatically.

"These manual methods created significant time loss and disturbances in the loading process while posing risk of injury and discomfort to workers, and DSM still encountered blockages in the downstream process, further slowing production," says Elio Sanchez, project manager at DSM Coating Resins Spain.

Bulk Bag Conditioner breaks up caked chemicals efficiently, safely

The new Bulk Bag Conditioner, manufactured by Flexicon, is installed in a safe atmospheric area near the front end of the process, which feeds the factory's blending reactors.

Housed in a free-standing support frame, the unit stands at 2210 mm high, 3378 mm wide and 1981 mm deep. It is equipped with two hydraulic rams fitted with specially contoured end plates, and a powered scissor lift with variable-height turntable.

"Once a forklift loads a bulk bag onto the conditioner's platform, the operator closes the safety interlocked doors.

"From the unit's control panel, the operator programs the ram pressure, number of ram cycles, single or multiple turntable heights and degree of rotation according to the dimensions of the bag and the conditioning required to loosen the material throughout the bag," explains Sanchez.

"After pressing 'start', the conditioning cycle is automatic: the bulk bag is raised hydraulically to the pre-selected height, the



Above and below: Hydraulic rams fitted with specially contoured end plates press opposite sides of the bag to loosen solidified powders. The turntable and bag rotate 90° to condition all sides, while the scissor lift allows conditioning at all heights.



Before installing the Bulk Bag Conditioner, manual methods to de-lump chemical powders slowed the reactor loading process.

end plates press opposite sides of the bag to break down the agglomerates, and the bag and turntable rotate 90° to condition the adjacent sides. The unit can also be programmed to automatically repeat conditioning cycles at multiple bag heights."

Thereafter, the material flows freely from bulk bag spouts into reactors, where 1 to 3 tonne batches are converted into saturated polyester resins.

Sanchez notes, the Bulk Bag Conditioner has cut the time to de-lump materials by 75% and improved the quality of raw materials entering the factory's reactors while improving safety.

Since dicarboxylic acid is a main ingredient in most batches produced, the conditioner is in use daily. □



Bulk bag is loaded into the conditioner. Once the safety doors are secured, the operator initiates the conditioning cycle.