

AUSTRALIA

# BULK

## HANDLING

### REVIEW

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- BHP's 11km conveyor for Bowen Basin
- \$10bn Inland Rail a boon for bulkies
- Conveyor monitoring with fibre optics

**Chute! It's been 110 years of belt conveyor innovation**

Read more on p32

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# Chemical powders de-lumped with bulk bag conditioner

DSM Coating Resins Spain S.L. is the world's largest producer of polyester resins and one of the largest producers of specialty emulsions.

*Forklift loads a bulk bag into the conditioner.*



*Once the safety doors are secured, the operator initiates the conditioning cycle.*



To produce saturated polyester resin powders used in protective coatings for bridges, ships and automobiles, DSM receives large volumes of dicarboxylic acid and diol ingredients in bulk bags. Both materials agglomerate during shipment and storage, preventing them from flowing out of the bulk bag, which required operators to break lumps using hand tools.

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

Workers originally emptied the bag onto a grate in a caged area and proceeded to crush the lumps using hand tools. "These manual methods created significant time loss and disturbances in the loading process while posing risk of injury and discomfort to workers," says Elio Sanchez, project manager at DSM Coating Resins Spain. And DSM still encountered blockages in the downstream process, further slowing production.

Manufactured by Flexicon (Europe), the Bulk Bag Conditioner is installed in a safe atmospheric area near the front end of the process, which feeds the factory's blending reactors.

*Scissor lift raises the bulk bag to a preselected height while hydraulic rams with contoured end plates press opposite sides of the bag to loosen solidified powders.*



Housed in a free-standing support frame, the unit measures 2210 mm high by 3378 mm wide by 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.

After pressing "start," the conditioning cycle is automatic: the bulk bag is raised hydraulically to the preselected height, the



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.

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.

The material now flows freely from bulk bag spouts into reactors, where one to three tonne batches are converted into saturated polyester resins.

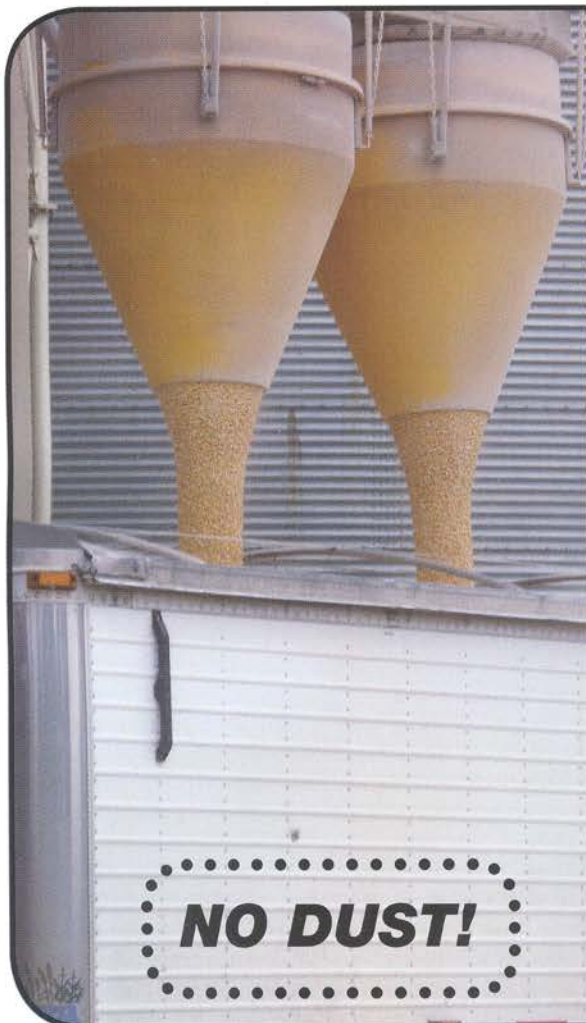
Mr Sanchez says the Bulk Bag Conditioner has cut the time to de-lump materials by 75 percent and improved the quality of raw materials entering the factory's reactors while improving safety.

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

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



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