

# POWDER & BULK SOLIDS

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## Full Line Conveying and Packaging Considerations

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### Tubular Form Fill Seal Technology on the Rise

Tubular FFS systems are not only growing in popularity but even succeeding in converting paper bag users to the benefits of PE film.

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### The Development of Inherently Safe Static Protective FIBCs

Companies that supply products in Type D FIBCs have the assurance of knowing they can ship their products to any company, for any application, anywhere in the world with proven electrostatic safety.

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### PVC Modifiers Re-Packaged Using Bulk Bag Dischargers, Filler, Conveyor

Kaneka North America LLC turned to Flexicon Corp. when it needed an efficient, dust-free method of re-packaging PVC modifiers to replace manual methods in place since 2003.

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### Pendulum Bucket Conveyors

Nerak Systems' pendulum bucket conveyors transport bulk materials from one or more feed points to any number of discharge points. They transport materials up to 100 ft vertically and horizontally in C, Z, and other configurations. Minimum material loss with no degradation to your product is most important. The bucket belt was built with permanent overlap, ideal for a range of applications, from handling food to the transport of abrasive industrial materials. Dust-tight, explosion-proof and clean-in-place options are available. All conveyors feature a proprietary steel cable reinforced rubber block chain for maximum resilience and durability. This corrosion-free chain requires no lubrication, while design and material selection ensure continuous quiet running (<65 dBA).

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www.nerak-systems.com

### On-Line Moisture Measurement Gauge

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NDC Technologies, Dayton, OH 937-233-9935

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# PVC Modifiers Re-Packaged Using Bulk Bag Dischargers, Filler, Conveyor

Kaneka North America LLC needed an efficient, dust-free method of re-packaging PVC modifiers to replace manual methods in place since 2003. The plant packages grades of modifier products into bulk bags (2000, 1700, 1000 lb) and 50-lb sacks based on projected customer orders for product grades in specific bag sizes. When the actual orders don't match the projections, the plant needs to transfer products from one bulk bag size to another.

Previously, forklifts suspended a bulk bag above the hopper of a portable screw conveyor which transferred the material into the desired size bulk bag. Similarly, material was discharged from a bulk bag into the hopper of a valve bag filling machine for 50-lb sacks.



Two bulk bag dischargers, a flexible screw conveyor, a bulk bag filler and programmable controls allow re-bagging of PVC modifiers into bulk bags of three sizes and 50-lb sacks, efficiently and dust-free.

Both operations presented safety risks from the suspended bulk bags and generated high levels of dust. Product loss also occurred, and operations frequently had to stop for cleaning and removing dust that would pose a safety hazard. "Re-bagging was inefficient, and the fine powders generated dust," said Brian Wilson, staff reliability engineer at Kaneka North America.

In the new system supplied by Flexicon Corp., a flexible screw conveyor transfers powder from the first of two Bulk-Out bulk bag dischargers to a Twin-Centerpost bulk bag filler. The second bulk bag discharger empties into the hopper of the valve bag filler for 50-lb sacks located under the discharger.

### Discharging Material into Various Size Bulk Bags

In Kaneka's "bulk-to-bulk" transfer system, the loops of bulk bags are connected to a bag lifting frame which is forklifted onto a cradle at the top of a Bulk-Out bulk bag discharger model BFF-C-X.

A Spout-Lock clamp ring that is raised pneumatically by a Tele-Tube telescoping tube makes a secure, sealed connection to the bag spout, preventing contamination of the plant environment with dust during material discharge. The telescoping tube maintains constant downward tension on the bag as it empties and elongates, promoting material flow into an 8-cu-ft hopper.

As the bag lightens, Pop-Top extension arms at the top of the four discharger posts increasingly stretch the bag upward into a cone shape, as Flow-Flexer bag activators raise opposite bottom sides of the bag into a "V" shape on timed cycles, promoting total discharge from the bag.

The receiving hopper of the discharger is equipped with a hinged lid and bag tray support, allowing material to be dumped manually from sacks, boxes, and other containers.

A 12-ft-long flexible screw conveyor, inclined at 45°, transfers the PVC modifiers from the hopper to a Twin-Centerpost bulk bag filler with height-adjustable fill head to accommodate a wide range of bag sizes.

The operator attaches the bag loops to retractable hooks that support the bag during filling. Under PLC control, plant air inflates the bag while an inflatable collar seals the bag spout which, together with a filtered air displacement vent, prevents the escape of dust.

Load cells supporting the filler transmit weight gain information to the PLC which stops the flexible screw conveyor once the target weight is gained.

### Discharging Material from Bulk Bags to 50-lb Sacks

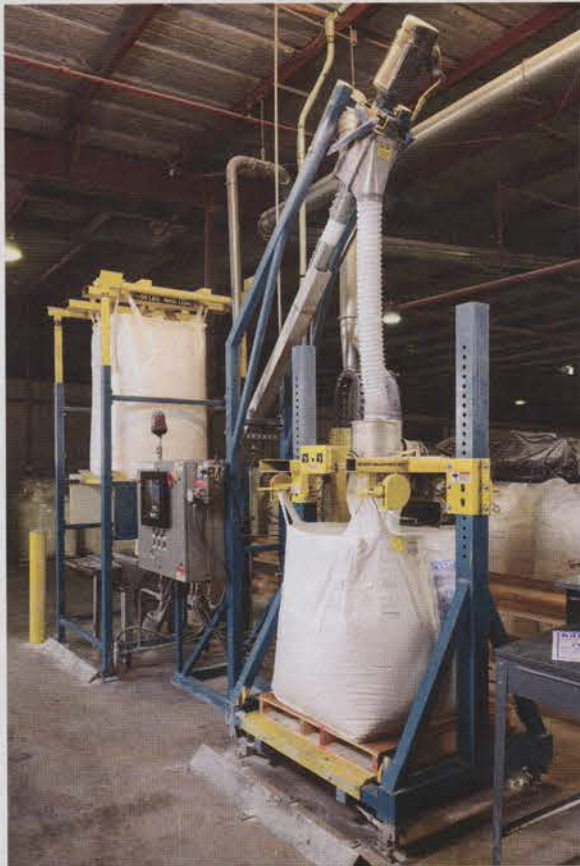
In Kaneka's "bulk-to-sack" transfer system, a Bulk-Out model BFC-C-X bulk bag discharger empties contents of the bulk bag into the hopper of the valve bag filling machine for 50-lb sacks.

The BFC Series discharger differs from the BFF Series discharger in that bags are lifted from the plant floor by means of a cantilevered I-beam with hoist and trolley, eliminating the need for a forklift. This hoist assembly was installed to fit limited headroom where the bulk bag discharger is located. As with the "bulk-to-bulk" transfer system, the discharger employs a Spout-Lock clamp ring and Tele-Tube telescoping tube.

### Dust-Tight System Boosts Productivity

From start to finish, both operations are completely enclosed, greatly reducing dust emissions. Dust





The flexible screw conveyor transfers material from the bulk bag discharger (rear) to the bulk bag filler (foreground). A height-adjustable fill head accommodates bulk bags in any of three sizes used by the company.

control for both transfer systems has been further enhanced by connecting to a recently installed dust collection system with explosion protection. Vent hoods and mass balance dust collection spouts were installed as required to make the system as clean and safe as possible.



'Bulk-to-sack' system: The bulk bag is loaded into the frame using the discharger's cantilevered I-beam, electric hoist and trolley, and then gravity discharged through the telescoping tube into a filling machine for 50-lb sacks.

"Dust generated from the re-bagging operation has been significantly reduced. The new system improves our productivity by an order of magnitude," Wilson concludes.

Kaneka North America LLC offers a range of performance modifiers for PVC and



The operator opens the outer closure of the bag to access the bag spout which he connects to a dust-tight Spout-Lock clamp ring. Once the drawstring is released, material flows through the bag spout as a Tele-Tube telescoping tube maintains constant downward tension on the clamp ring, promoting complete discharge as the bag empties and elongates.

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