

# AUSTRALIA **BULK** **HANDLING** **REVIEW**

www.bulkhandlingreview.com  
Volume 22 No 1 | January/February 2017

- Profile of Peter Bulloch of BHP Billiton
- Profile of Tom Hicks of Bechtel
- Improved logistics see Cairn Hill re-start



Kockums supplies cutting-edge sack emptying solution to CSD



# PVC modifiers re-packaged using bulk bag dischargers, filler, conveyor

US company Kaneka North America LLC needed an efficient, dust-free method of re-packaging PVC modifiers to replace manual methods in place since 2003.



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 23 kg sacks, efficiently and dust-free.



Operator in foreground initiates a bulk bag filling cycle while operator in background loads a bulk bag into the discharger frame using its electric hoist and trolley.

The plant packages grades of modifier products into bulk bags (907kg, 771kg, 454kg) and 23kg 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 23kg sacks.

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, 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 23 kg 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 a 226 l 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 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.

At the bulk bag filler, an inflatable collar seals the bag spout to prevent the escape of dust, after which the PLC inflates the bag to remove creases prior to filling.



'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 23 kg sacks.

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 3.6 m 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 23 kg 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 23 kg sacks.

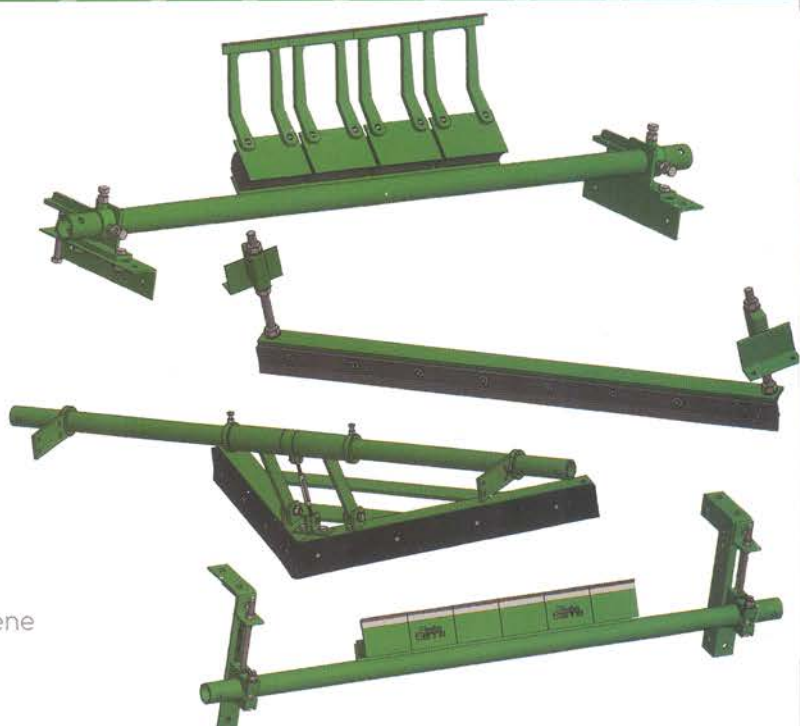
The BFC Series discharger differs from the BFF Series discharger in that bags are lifted from the plant floor by means of a cantilevered I-beam with hoist and trolley, eliminating the need

# Belle & Banne

## conveyor products

Belle Banne Conveyor Products stock a comprehensive range of engineering services and quality conveyor products including but not limited to:

- Conveyor belt products – frames and structures, conveyor belt cleaners, ploughs, and trackers
- Lagging – ceramic and rubber strip lagging.
- Moulded rubber products – impact and abrasion-resistant rubber and ceramic linings
- Composite rollers – nylon, high density polyethylene (HDPE) and fire-resistant anti-static (FRAS)
- Conveyor pulleys.



Belle Banne Conveyor Products Pty. Ltd. | Mail: PO Box 403 Ingleburn NSW 1890

Address: 7 Phiney Place Ingleburn NSW 2565 | Ph: +61 2 9618 9400

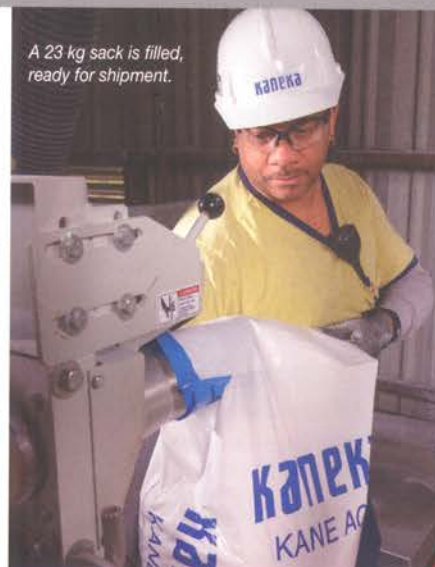
Email: [info@bbcp.com.au](mailto:info@bbcp.com.au) | [www.bbcp.com.au](http://www.bbcp.com.au) | ABN 12137362497



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.



A 23 kg sack is filled, ready for shipment.



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

According to Flexicon, from start to finish, both operations are completely enclosed, greatly reducing dust emissions. Dust 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.

"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 engineering resins to meet customers' physical and chemical property requirements. ■

## NEWS

# GHD leads engineering sector in diversity and equality

Engineering firm GHD has been recognised for its efforts in advancing women and flexibility in its workforce.

**G**HD has been named by the Workplace Gender Equality Agency (WGEA) as a '2016 Employer of Choice,' recognising the company's proactive efforts to change work culture to promote diversity and inclusion.

GHD is one of only a handful of companies in the engineering, architecture and environmental consulting sector to achieve WGEA's sought-after recognition.

According to WGEA, trends in this year's recipients include a focus on flexibility and greater support for women to progress into leadership positions.

Over the past 12 months the percentage of women in senior leadership roles at GHD increased by 16 percent in Australia. Women now make up 38 percent of GHD's Australian leadership team, and 33 percent of the GHD board. More than 40 percent of Australian new starters this financial year have been women (compared with 36 percent in 2015/16).

GHD general manager - Australia, Phil Duthie, a WGEA Pay Equity Ambassador

and a member of Consult Australia's Male Champions of Change group, says concerted efforts to evolve culture have been pivotal.

"It is relatively easy to introduce a diversity strategy, and it is relatively easy to introduce flexible working policies. What's much harder is shifting the culture - for both men and women - so real change actually happens," Phil says.

"Ours is a male-dominated industry, and if we want to drive better diversity and inclusion then we need to be shaking off old norms and entrenching better, more flexible ways of working.

"We can only make flexibility the norm if it is seen as normal for both men and women. More broadly, our approach recognises that our people have a life outside of work, and may need support to balance their responsibilities at home or other interests.

"My senior leadership team and I have been conscious that if we work flexibly on a regular basis, we will give others the confidence to ask for non-traditional arrangements that suit

them. I try to work flexibly on a regular basis, at times necessitated by personal matters and pursuits. We are looking to create a cultural acceptance of flexible working as a legitimate and valuable way of delivering for our clients and our business.

"It is really pleasing to see how this culture of flexibility has given more women at GHD the confidence to express interest in leadership roles. There's now greater acceptance that client and business outcomes can be delivered without following the traditional full-time, office-bound model.

"We set up our diversity and inclusion strategy in 2014 because we were looking for better business outcomes, but it was also driven by my personal experience of how diverse teams enrich the strategic conversations and team dynamics. So this Employer of Choice recognition from WGEA is something we really cherish."

GHD is progressively training 120 of line managers in Australia in the principles of managing a flexible workforce. ■