

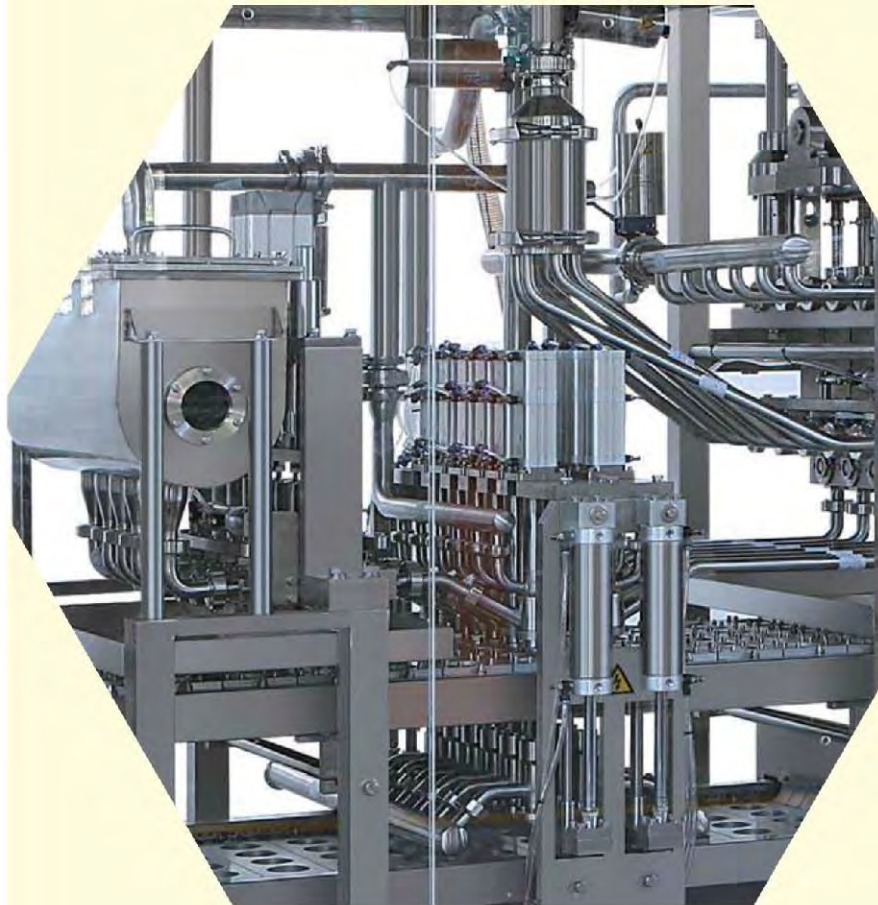
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No. 2 Xiyuan 7 RD, West Lake Science & Technology  
Development Area, Hangzhou, China PC: 310030  
Tel: 0086-571-87978016, 85120117  
Fax: 0086-571-28066599  
Email: info@youngsunpack.com

[www.youngsunpack.com](http://www.youngsunpack.com)

## YOUNGSUN®



## Norwegian confectionery maker IMPROVES safety, STOPS dust & DISCHARGES bulk bags automatically

**N**idar AS, Norway's leading supplier of candy/confectionery, manufactures 150 products under 35 brands on 10 production lines. The company's plant was built in 1950 and has been regularly updated with modern bulk-handling equipment to improve productivity and the working environment.

In fact, the five-storey plant has been extended six times to accommodate growth in production, explains Tor Ove Kvingedal, one of three Nidar maintenance engineers. "But as with most old buildings," said Kvingedal, "the original layout was not always optimal for modern production."

Where gravity feeding of materials is not possible, the plant transfers bulk materials using bulk bag dischargers, flexible screw conveyors, rigid augers, and pneumatic conveyors – equipment that reduce manual labour, contains dust, and fits in very tight spaces, as recently

demonstrated with the addition of a twin half-frame bulk bag discharger.

### Bulk bag dischargers save labour, reduce dust

Ingredients such as milk powder, sugar, starch, and sour coating powder arrive in 1.1tonne bulk bags. Nidar dedicates a number of bulk bag discharge stations to unload them, including six supplied by Flexicon (Europe) Ltd.

The newest of the bulk bag dischargers is a twin half-frame unit, which handles two types of starch in a tight space on the plant's fourth floor.

Previously, starch was purchased in 25kg sacks, which operators carried from the third to the fourth floor, where it was dumped into two large vessels, each holding 200kg to 300kg. Since the process consumes 100 kg/hour of starch, 32 sacks were manually handled per eight-hour day. "The operators were

climbing stairs numerous times a day to keep the vessels filled," said Kvingedal.

As well as hard work, unloading sacks of starch by hand was a dusty process. "The starch dust is not harmful, but is unpleasant and can be very sticky," said Kvingedal.

The new Bulk-Out BFH-C-X twin half-frame bulk bag discharger, also from Flexicon, holds two bulk bags side-by-side, providing enough starch to keep the line running for at least two days. "The system also reduces manual effort, contains dust and improves the working environment," said Kvingedal.

### Twin half-frame discharger overcomes horizontal and vertical space constraints

Starch powder originally flowed by gravity from the two large vessels on the fourth floor, through a pair of knife gate valves and 150mm diameter steel chutes



existing chutes, requiring new holes through the fourth floor and relocation of the chutes.

The low ceiling height of 4.5m also posed a problem, since insufficient headroom above the units would prevent loading and removing of bulk bags using a forklift.

To surmount both problems, Flexicon's agent in Norway, Maskiner & Pulver Teknologi AS, recommended a 1.2m high, twin half-frame bulk bag discharger, which holds two bulk bags side-by-side. The two-in-one unit discharges through two outlets spaced closely enough to obviate relocation of the knife gate valves and chutes, while the low profile design allows suspension of bulk bags from a hoist, saving an extra 10cm of headroom. "It was very tight," recounted Kvingedal.

Removing the original tanks and installing the twin half-frame discharger above the chutes was straightforward. Nidar simply needed to provide a compressed air supply to power the unit. Kvingedal said, "We installed the discharger in two days. A local company provided the hoist. It was critical to have the equipment installed quickly, because

the starch is a key ingredient on this production line."

### Saved labour, reduced dust levels

Once a bag is hoisted into position,

an operator pulls the bag spout over a Spout-Lock clamp ring, which creates a secure, dust-tight connection between the clean side of the bag spout and the clean side of a Tele-Tube telescoping tube. As the bag empties and elongates, the telescoping tube maintains constant downward tension, promoting complete discharge.

Flow-Flexer bag activators additionally promote flow through the spout by raising opposite bottom sides of the bag into a steep "V" shape.

Nidar considered installing extraction fans but decided they were unnecessary, since dust was contained by the discharger's bag spout interface.

After descending through the telescoping tube, the starch passes through the knife gate valve and then through one of the two vertical chutes to a weighing station on the second floor. A horizontally-oriented 170mm diameter auger on the third floor can run in either direction, so each discharger can supply either of the two weighing stations, which sends signals to open or close the knife gate valves to regulate flow from the bulk bags.

"The twin half-frame bulk bag discharger is easy to keep clean using compressed air or a damp rag, and maintenance needs are very low," said Kvingedal. "I don't have any issues at all with the twin discharger." **FBA**



leading to the third floor.

The large vessels could not simply be replaced with two separate bulk bag dischargers because the distance between the discharger outlets would have exceeded the distance between the