

A U S T R A L I A N

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Norwegian candy supplier steps up standards with new machinery

Bulk handling machinery specialist Flexicon has supplied a variety of modern components for leading Norwegian candy supplier Nidar's plant upgrade.



Ingredients such as milk powder, sugar, starch, and sour coating powder arrive in 1.1 tonne bulk bags, and are gravity fed into the processing lines where feasible.

Nidar manufactures 150 products under 35 brands on 10 production lines. The company's plant was built in 1950 and has been updated regularly with modern bulk handling equipment to improve productivity and the working environment.

In fact, the five-level plant (four storeys plus basement) has been extended six times to accommodate growth in production, explains Tor Ove Kvingedal, one of three maintenance engineers. "But as with most old buildings," he says, "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 reduces manual labour, contains dust, and fits in very tight spaces, as recently demonstrated with the addition of a twin half-frame bulk bag discharger, Flexicon told ABHR.

Bulk bag dischargers designed to save labour, reduce dust

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

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.



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, which maintains constant downward tension to promote complete discharge.

Norwegian tastes in candy

"Any nation with self-respect has its own chocolate factory and traditional chocolate products," notes Nidar's website. Having flown the Norwegian flag since its foundation in 1912, Nidar is practically a national institution.

The firm develops and manufactures its products in the city of Trondheim (formerly known as Nidaros) on a 40,000 square metre site that includes production machinery, offices and warehousing. The factory employs 350 people, of whom 250 are operators. Annual production exceeds 15,400 tonnes.

The company produces chocolate bars, boxed chocolates, marzipan, gummi candies, caramels, liquorice products, and pastilles under a range of historic brand names.

"We are always innovating with different kinds of packaging," Kvingedal said. "But launching new brands is harder. Norwegian people like their good old familiar chocolate bars, and many of our most successful brands date back to before the Second World War."

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

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

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 two or more days. "The system also reduces manual effort, contains dust and improves the working environment," Kvingedal added.

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

The ceiling height of only 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, 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 10 cm 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."



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(Left and middle): Nidar AS added twin bulk bag dischargers from Flexicon to handle two types of starch in a tight space on the plant's fourth floor. (Right): 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.

Labour saved and dust levels reduced

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

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



Norway's leading supplier of candy/confectionary makes 140 products under 35 brands including its new salty-sweet candy Smash.

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," Kvingedal said. "I don't have any issues at all with the twin discharger."



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