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Centrifugal sifter for large-scale screening of flour

Gourmet Baker is one of Canada's leading producers of baked desserts, and in 2011 received a "IRC principal certificated" for food safety by the British Retail Consortium. Less than 10% of Gourmet Baker's output is sold under its name. The balance is purchased frozen and unbaked by wholesalers, supermarkets and restaurants throughout North America.

Of Gourmet Baker's three plants, its Laurel plant in Burnaby, BC, produces many flavors of strudel. Danish pastries, puff pastries, croissants and cinnamon rolls using about 80,000 lb (36,290 kg) per week of flour. A critical step is sifting the flour to remove unwanted material, accomplished using a recently purchased sifter for strudel production, and an older one for multiple purposes.

The older sifter was originally designed to sift sugar and did not work well for flour,” says Chris Helgason, maintenance manager for Gourmet Baker, adding, “When we replaced the old screen basket with a 30 mesh screen, the machine couldn't handle it and kept breaking down.” The company replaced the sifter with a Kason Centri-Sifter® Pneumatic-Sifter centrifugal sifter, the same machine dedicated to its strudel line.

Moving flour from silo to mixer

Flour is stored in two 70,000 lb (31,752 kg) silos equipped with rotary airlocks feeding a pneumatic conveying system that delivers material to the sifter.

The flour enters a vertical inlet at the feed end of the centrifugal sifter, a horizontal, cylindrical machine that houses a 30 mesh (516 micron) stainless steel cylinder. A 1 hp (2.2 kw) motor rotates the paddles, which accelerate the speed at which on-size flour passes through apertures in the screen and drops into the pneumatic line below. Oversize debris is ejected through the back end of the cylinder into a sealed quick-release receptacle. Each sifter processes about 34 kg/min (75 lb/min) of flour.

A pneumatically actuated diaphragm valve sends sifted flour to a hopper that feeds a tri-action dough mixer (for the puff pastry line) or, in the case of the original sifter, to one of three roll-bar horizontal mixers.

Contiveder shaft includes two bearings between the screening chamber and motor drive, allowing internals to slide quickly from the shaft end for cleaning and inspection.

Transforming dough into frozen goods

A typical batch weighs 440-880 lb (200-400 kg), says Helgason. Once thoroughly mixed, it is dumped onto a wheeled table and moved to the appropriate production line. There, the dough is manually cut into chunks and fed by a conveyor to an extruder, which produces a continuous sheet of dough. Measured amounts of filling (e.g. apple or cherry for strudel) are added, and then the dough is cut and shaped to obtain the final product. Finally, the product is frozen and bulk-packed in boxes for shipping.

“We have had no contamination of the flour and no problems at all,” he says. “All we have to do is perform preventive maintenance once a month and inspect the internal screen once a week.”

Helgason adds that the sifter is easy to clean and service. “It is a Quick-Clean model with two ports on top and a hinged access port and contiveder shaft at the discharge end, from which we can remove the screen in less than 10 minutes for cleaning and inspection.”

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