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Centrifugal sifter for large-scale screening of flour

In sifting flour to remove unwanted material, Gourmet Baker’s plant in Burnaby, British Columbia (Canada) has recently replaced their old screener, which was breaking down, with a high-speed, pneumatically fed centrifugal machine – a Centri-Sifter Pneumati-Sifter – which processes 34 kg/min of flour. Gourmet Baker gave European Baker insights into the equipment upgrade.

By Catalina Mihu

One of Gourmet Baker’s three plants, the Laurel plant in Burnaby, British Columbia, produces many flavors of strudel, Danish pastries, puff pastries, croissants and cinnamon rolls, using about 36,290 kg per week of flour. A critical step is the sifting of the flour to remove unwanted material, accomplished using a recently purchased sifter for strudel production, and an older one for multiple products.

“The older screener 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 (516-micron) screen, the machine couldn’t handle it and kept breaking down.”

The company replaced the screener with a Kason Centri-Sifter Pneumati-Sifter centrifugal sifter, the same machine dedicated to its strudel line.

“The sifter itself does not need to be versatile; to feed other lines, you would use diverter valves and piping. Our other mixer room is fed also by a centri-sifter that feeds three mixers that supply dough to the rest of the facility, and it has been in operation for 16 years.” The unit meant an improvement in food safety, as “with the new unit we have had no sifter basket damage that would cause us to discard any finished goods.”

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Chris Helgason, Gourmet Baker

MOVING FLOUR FROM SILO TO MIXER
Flour is stored in two 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 cylindrical screen mounted on a central shaft that is fitted with...
helical paddles. A 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 of flour.

A pneumatically actuated diverter valve sends sifted flour to a hopper that feeds a triple-action dough mixer (for the puff-pastry line), or, in the case of the original sifter, to one of three roll-bar horizontal mixers. Each mixer’s hopper is set on load cells, allowing a PLC to stop the flow of material to the hopper once the target weight is reached. The desired amount of water is then metered into the mixer, while yeast and other ingredients are added by hand.

TRANSFORMING DOUGH INTO FROZEN GOODS

A typical batch weighs 200–400 kg, says Helgason. Once thoroughly mixed, it is dropped onto a wheeled table and moved to the appropriate production line. There, the dough is manually cut into chunks and fed by a conveyor into an extruder, which produces a continuous sheet of dough.

Measured amounts of filler (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.”