By Baking Management Staff

One of North America's most highly automated bakeries supports this Montreal-based bakery's expansion in the United States

Maison Cousin's strategy for low costs and high quality

I.J. White Bun Freezing System

Being a low cost producer of bakery foods no longer equates with manufacturing product with mediocre quality. The proliferation of quality-driven retail operations, such as specialty bread shops and bakery cafes, has lifted consumers' expectations and, thus, raised the bar for volume bakers.

Particularly challenged are bakers of product that consumers perceive as value added but that has become common place, such as crusty French bread and rolls. Officials of Montréal, Quebec-based Maison Cousin & Co., a manufacturer of branded European crusty bread and roll Products, pastries and sweet goods, say their challenge goes beyond balancing low cost production with product quality

"Within this environment, we also must provide our customers a broad range of products, creative product ideas and top service," says Marc Gosselin, vice president-sales and marketing. Maison Cousin confronted the issue two years ago when the company faced mounting growing pains.

Introduced par-baked breads

Founded in 1921, the company began as a wholesale deli business. By the mid 1930s, it had evolved into a wholesale fresh bread bakery and in the late 1970s introduced frozen par-baked breads to Quebec Province.

Eight years ago, Maison Cousin debuted a mini bakery Chicoutimi, Quebec, plant. To expand Maison Cousin's line, Multi-Marques tapped production capacity at two other plants. Added items included conventional and loaf cakes, fruit squares, puff pastry shells, eclairs and cream puffs.

Maison Cousin was producing par-baked products, along with frozen dough bread and rolls, from its Montréal plant, but it lacked an artisan bread line. And, the bakery already was operating at full capacity. Faced with needs to increase parbaked bread capacity and introduce artisan products, Maison Cousin officials knew that increased production would require a new bakery.

Opened fully automated plant

In fall 1998, they chose to relocate par-baked products to a new bakery and introduce artisan bread production at the Montréal plant. That plant also would continue to produce frozen dough items and would introduce eight varieties of artisan bread.

Maison Cousin wasted no time acting on the decision. It chose a 400,000-sq.-ft. vacant site in north suburban Laval, where it invested $13.5

concept, designed for small retailers, such as deli, food market and convenience store operators' who lack baking expertise but want to offer fresh product. The package includes a small convection oven and branded bread displays sized to fit a store's needs. Since then, the business has grown to supplying frozen parbaked bread and rolls to about 650 locations across Quebec.

Also in 1998, Maison Cousin was acquired by Multi-Marques, a $350 million (Canadian) manufacturer of commercial bread and sweet goods, which operates 15 plants and 32 distribution centers in Quebec and the maritime provinces. Multi-Marques purchased Maison Cousin in large part to enter the frozen par-baked product market, and Maison Cousin's brand name, well known throughout Quebec, offered instant recognition.

Further, in that year, Multi-Marques acquired Cuisine Nature, a producer of baked muffins and muffin batter, placed it under the Maison Cousin banner and relocated production to Multi-Marques' million (Canadian) to construct a 50,000-sq.-ft. plant. The building went up in quick order. Manufacturers began installing bakery production equipment in January 1999, and the bakery went on line in April.

Officials note that the new facility is the most modern, state-of-the-art bakery for par-baked production in North America. Maison Cousin engineers and production officials thoroughly researched the decisions to highly automate par-baked breads and to retain semi-automatic production of artisan breads.

The new bakery, Gosselin adds, will help Maison Cousin boost currently annual sales of nearly $19 million (Canadian) by about 35% this year. Much of the growth should come from increasing the plant's output, given dough production currently is running at about 160,000 kg (350,000 lbs.) per week, or 40% of capacity.

Continued from Maison Cousins

Needed manufacturers' support

The bakery's fully computer-controlled line requires only six production employees per shift: one in the ingredient handling and mixing control room; one in the mixing and makeup area; one in the proofing, scoring, baking and ambient cooling area; and three in packaging. Further, the bakery requires only one sanitarian daily, supported by the production employees who maintain their areas.

"When designing the bakery, our engineers examined several different manufacturers to create the most efficient par-baked bread system possible that would emulate the quality of Maison Cousin fresh bread and rolls," says Michel Doyon, executive vice president. "We needed the support of the manufacturers, while our engineers used their expertise to make the final selections and coordinate the installation."

Production of 650 g (23-oz.) French loaves reflects how Maison Cousin is achieving greater efficiency while maintaining high quality. The bread, as other products, is made with flour containing about 12% protein, is drawn pneumatically from one of three 43,000 kg (94,700-lb.) silos. The silos, which contain white and whole wheat flour, are enclosed in a room that will accommodate a fourth unit.

Flour is sifted and pumped to one of two refrigerated batching systems, which mix it with refrigerated air to

After mixing, the computer orders the bowl transferred to a hoist, which lifts and dumps the dough into a chunker. The chunker separates the dough into 20 kg (44-lb.) batches, rather than dump the entire dough into the divider hopper. "This reduces abusing the dough," Fugère explains.

For other products, the robotic system first may set bowls aside to allow fermentation for five minutes to as much as one hour.

Maison Cousin engineers and production staff were challenged to mate the mixing system with the automated makeup line, which Fugère notes, is not designed to hand fermented 'doughs. "But, we wanted to have floor time to achieve the product quality customers want," he says. "We had to view the process differently."

Enzyme supplier assisted

Extended floor time creates bucky doughs, which the makeup line's 8ft. sheeter/moulder cannot shape into elongated pieces, Fugère explains. The goal was to retain floor time and still produce extensible doughs.

With assistance from the company's enzyme supplier, Fugère and his staff reformulated the doughs to allow extended floor time and produce doughs that the makeup line could process. "The supplier gave us very good suggestions that helped us fine-tune the final formulations, he says. "This also shows that having skilled bakers makes the difference between getting what we want and compromising with less desirable results."

Fugère and his crew also faced a problem in selecting yeast. Under ideal conditions, a bakery might use one type of yeast to get 60 minutes of floor time and 90 minutes' proofing, and another type of yeast for no floor time and minimal proofing, Fugère says. "In a high volume operation like ours, we must use the

cool flour temperature to 10%C. The unit blends the cooled flour with salt, malt and enzymes and pumps the ingredients to the mixing area.

The robotic mixing system features three spiral mixers and ten 250 kg (550-lb.) capacity bowls. "We use spiral mixers to give our crusty bread the best possible cell structure," explains Richard Fugère, Maison Cousin director of production. "This was important so that we could replicate the texture of hand-shaped product made at our Montréal6al plant."

Nine available mixing stages

Nine different mixing stages are available to handle nearly any dough, he adds. Each is determined by speed, time and direction of bowl rotation. The system's computer schedules a new dough each eight minutes and 20 seconds.

Dry ingredients, cream yeast and water are pumped to the first mixer, whose bowl rotates for about one minute to incorporate them as they fall into it. For the French bread, the system transfers the bowl to one of the other two mixers, which mixes the dough for three minutes at first speed and nine minutes at second speed.

same yeast all the time," he notes. The yeast company helped us identify the best type of cream yeast to hand all of our needs. This simplified the formulation and mixing procedures."

From the chunker, dough blocks fall into the hopper of a one-pocket ram divider, which divides the dough into 650 g (23-oz.) pieces. Other scaled products range from 30 g (1.1 ozs.) to 1 kg (2 lbs. 3 ozs.).

The pieces pass though an intermediate proofer for six minutes, then are sheeted, moulded and loaded onto baking screens, six across. They travel through a vertical proofer for 100 minutes at 28V and 75% humidity.

At the proofer exit, an automatic scoring unit makes three diagonal cuts on each screen's six loaves simultaneously. The one-piece scoring head allows for custom cutting with one to three cuts, each from 0% to 180% and at different depths.

Oven offers much control

Scored French loaves move into a vertical, six-chamber, indirect-fired oven to be baked to 80% completion. The first three chambers are set at 190%C, while the last three bake at 175%C. Fugère says the first two units are critical because they control oven spring. The third chamber, which provides the most baking time, also injects steam. The final three units control crust color and moisture evaporation.

Continued from Maison Cousin's

The screens traverse a vertical ambient cooling system for 30 minutes to allow loaf temperature to fall to 35'C. A vacuum depanner removes the loaves from the screens and deposits them on a linear conveyor destined for a spiral blast freezer. Another conveyor returns empty screens to the makeup line.

The depanner, which handles all of the bakery's hearth breads and rolls, can be adjusted according to angle, as well as height, to avoid bending long items. Fugre says using the depanner also gives screens and pans longer use because they are not subjected to the blast freezer's extreme temperature.

Product passes on the conveyor for 10 minutes and enters the blast freezer, which is held at -30%C. It reduces product temperature to about -10%C in 60 minutes.

While loaves pass through the blast freezer, an automatic box former and box liner unit assemble cartons for packers. One employee monitors the machines while two employees hand pack the frozen loaves. Fugère says Maison Cousin deliberately chose manual packing.

"We want to see the product for a final quality control check," he explains. "Also, we produce many different products in different package lots. We use the same size corrugated box for all orders, which eliminates down time to adjust equipment. This more than compensates for the additional cost of packing less-than-full boxes."

After the frozen French loaves pass through a metal detector, the employees pack them 12 to a box and include 12 paper bread bags. Packed boxes are closed and labeled automatically, positioned on pallets and placed in a holding freezer set at -18%C. Fugère says that customers can inventory product for as long as three months at -18C.

More production lines planned

Gosselin says the company plans to expand the building, add a second bread and roll line by the end of the year and expects to have four lines, possibly including one for artisan bread. "Some companies look for new business, then expand their capacity," he observes. "Customers don't want to hear that. We're building our capacity so we can go after more business."

He says that since building the bakery, Maison Cousin is positioned to become a larger player in the North American bakery market. Major plans call for focusing on branded products in Canada, working with U.S. customers to develop signature products and developing a licensing program to market branded product in the United States.

Adds Doyon, "We plan to build this company into a $100 million (Canadian) business within five years. The strategy will include acquiring companies, introducing new products, increasing sales with existing customers and serving new accounts." Maison Cousin will consider acquisitions of frozen bakery foods firms in the Northeast United States and Quebec, he says.

"We could increase our U.S. market penetration quickly by acquiring a $15 million (U.S.) to $30 million operation that has a unique niche as we do' " Doyon says. "We want to become an innovative and leading supplier of French bread, artisan bread, muffins, pastries, pies and cakes."

Gosselin adds that new product development will underscore Maison Cousin's U.S. expansion. "We especially will look for opportunities to develop signature products with supermarket in-store operators and convenience store chains for their specific needs."

Having the capacity to expand into the U.S. market harkens back to the strategy of building the new Laval bakery to gain efficiency, maintain quality and still price product competitively.

"When offering our par-baked crusty bread in the United States, we will not compete to get everyone's business," Doyon says. "Ours is a premium product, made very efficiently. We will be seeking loyal buyers who want quality at a reasonable price."

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