

Investments in US operations support Leclerc Foods' private label bar business growth while ...

BAKING without compromise

by Charlotte Atchley

When Leclerc Foods, St. Augustin de Desmaures, QC, does anything, it does so unabashedly. Whether that's producing cookies and bars for its private label customers or installing a new production line, the family-owned company puts quality and safety at the top of its priority list and doesn't back down on ensuring those things are met.

This commitment has informed every aspect of how Leclerc does business. The company thoroughly audits its ingredient suppliers and then still inspects ingredients before they enter the warehouse. All its facilities throughout Canada and the US were awarded BRCAA+ two years ago, the first baking facilities in North America.

"I would say we put stricter standards on ourselves than what the industry requires, but I think our customers appreciate that, and it creates peace of mind for everyone,"

said Jean-Sebastien Leclerc, vice-president, co-manufacturing and manufacturing infrastructure, Leclerc.

For its facilities, Leclerc has built in redundancies in quality control and food safety as well as backup production across plants. A company that doesn't shy away from the latest and greatest in technology — its employees have fully embraced the iPad — doesn't introduce new equipment or practices at the cost of safety, quality or flexibility. "We have to be the most automated company on the market to be competitive, but those machines have to maintain our flexibility needs so we can meet our customers' needs, specifically for private label," Mr. Leclerc explained. "We're not compromising on flexibility for automation, so everything we automate needs to also improve flexibility."

This unwavering commitment to deliver on its cus-

The temperature of the roller and the gap between the roller and conveyor belt create a bar slab. The thickness of the slab determines the length of the bars at the guillotine.

Photography by Christian Lange



“We will continue to grow and maintain our flexibility and service level with our customers; we want to grow without compromising.”

Jean-Sebastien Leclerc, Leclerc Foods



tomers' needs has sustained Leclerc Foods throughout its 114-year history. The company now runs eight plants in Canada and the US. To keep meeting its customers' needs, Leclerc invests in its facilities without compromising on its values.

A family-owned powerhouse

Leclerc's origins stretch all the way back to 1905 in Quebec City, QC, when Francois Leclerc started baking cookies — his wife's recipe — in a back room of their home. Five generations later (Jean-Sebastien is the fifth generation and his father, Denis, who serves as CEO, is the fourth) the family bakery has become a cookie and granola bar powerhouse. It has endured world wars, a fire and food trends, and its longevity can largely be attributed to the Leclerc family's ability to change with the times.

In the 1980s, Leclerc branched out beyond cookies into granola bars, and that's when business began to boom. In the 2000s, the company showed its ability to adapt again when consumer attitudes about fat began to shift. Fat-free became a top priority for Leclerc's formulators. With evolving consumer attitudes regarding just what constitutes “healthy,” Leclerc is ready, thanks to the Leclerc Laboratory of Health and Wellness. As the company has commercialized, adaptability and innovation have remained its heart.

“We're able to turn new products around quickly and offer a high-quality product at a good price,” Mr. Leclerc said.

When the bakery expanded into granola bars, Leclerc moved from downtown Quebec City to the suburbs, then opened a second facility in Quebec City to handle the growth that came with that new venture. Afterward, Leclerc added a facility in Hawkesbury, ON, then moved into the US when it purchased Buckeye Pretzel in Montgomery, PA. It now has a facility in Phoenix and two in Kingsport, TN, one of which is the US headquarters. An eighth plant opened in March in Cornwall, ON.

Today, granola bars, cookies and crackers make up the core of Leclerc's business. While it has its own brand in Canada that is worth about \$140 million, that's only a quarter of its business. The majority is private label, which is what drives Leclerc's growth. Leclerc's US facilities anchor that growth.

A hefty US investment

To support the growth Leclerc has seen in its US private label business, the company has invested heavily in the Kingsport facility. In 2008, Leclerc purchased the old au-

The guillotine cuts the length of the bars to reflect the weight that will appear on the packaging.



tomotive facility and renovated it into a bakery with its signature fast-turnaround style. “Within six months, we gutted it and converted it into a food manufacturing facility and started production within the same year,” said Jeremy Carroll, plant manager.

Since that initial renovation, Leclerc has expanded production capabilities for granola, baked and bulk bars, office space, and a fully automated warehouse. All told, Mr. Leclerc estimated the Kingsport facility has seen up to \$50 million in investment in the past four years between new production lines and the nearby gluten-free facility that Leclerc purchased in 2017. “We’ve invested heavily in Tennessee,” he said.

With two facilities a stone’s throw away from each other, Kingsport is the largest Leclerc location in the US, making it a natural fit for the location of the business’ US headquarters. With the 2008 facility peanut-free and the 2017 facility gluten-free, this location serves as the heart of the allergen-free US business and a backup for the Canada allergen-free facilities as well. “We can better serve the US market, but we’re also a contingency plan if something goes wrong in a peanut-free or gluten-free facility in Canada; we can take over here,” said Lyne Normand, vice-president, quality, US operations, Leclerc.

With so much investment in Tennessee, the 2008 facility’s priorities have shifted from toddler snacks to crackers to cookies and fruit bars. Today, with its latest bar line, the plant shifted once again to bulk granola bar production. A second line produces breakfast cookies.

All equipment Leclerc has invested in at Kingsport must meet rigorous demands for speed and efficiency but not at the cost of product quality, food safety and flexibility. It also helps if the equipment fits within a small footprint and is easy to operate.

“We need suppliers that are willing to work with us to make it work,” Mr. Leclerc explained. “It’s not always easy, but we like to partner with companies that don’t mind innovating, and if it doesn’t go as planned, they are there to support us.”

Production that keeps moving

The 225,000-sq-ft Kingsport facility purchased in 2008 sits on 14 acres. With three production lines and one support line, the bakery produces \$70 million a year for Leclerc Foods in chewy granola bars, cookies and cereals. The latest enables Leclerc to meet its customers’ demands for bulk-packaged bars.

The bakery preps all its own rice and oats by cooking

Above: An operator removes bar dough from the mixer. The dough must be kept warm so that it can be shaped into a slab.

Below: The flowrapper automatically checks the packaging film against the product being run to ensure the film and product match.

everything before production. Three holding tanks automatically weigh the binder, rice and oats and pump them into the Peerless mixer. Save a few minors that are added manually, ingredients are automatically scaled and added by an A&B Process System. Flour and syrup are stored in silos while everything else arrives in supersacks.

To ensure the bar dough maintains its consistency, the mixing bowl is jacketed to keep the dough warm. "In the mixer, the goal is to keep the dough warm enough so it can move through the equipment and not clump up," Mr. Carroll said.

Once the dough is mixed, it travels through an extrusion system to create the bar slab, which will have a major impact on the final weight of the individual bars; the roller settings are key to getting this right. The gap between the roller and the belt, the temperature of the roller, and its speed will all determine the slab's thickness, which will impact the slicing of the individual bars.

After the initial slab creation, an inclusion wheel mixes in chocolate chips as evenly as possible before a final compression roller brings the dough to its final thickness. "We don't want one bite to be a chunk of chocolate chips," Mr. Carroll said. "We want a chocolate chip in every bite; that's roughly 32 chips in every bar."

Once the dough slab has reached its final thickness,

an operator does the first quality check by taking three samples from the slab to test the weight and chip count. The operator inputs the weight into the HMI system so the guillotine will cut the bars to the proper length. The HMI stores all these settings: speed and temperature of the roller, gap between the roller and the line, and guillotine speed. The guillotine and extrusion system constantly communicate through the system to ensure the bars are cut properly so each one is the weight declared on the packaging.

However, bars cannot be cut warm. First, the finished dough must travel through a 60-ft cooling tunnel until it reaches 45 to 50°F. Once the bar slab is sufficiently cooled, slicer blades cut it into lanes, and the guillotine determines the length of the bars to meet the desired individual weight. To reduce waste, trim from this stage is recycled back into the mixer.

It's also here that the operator does his or her second quality check when bars are weighed after the guillotine. If necessary, the HMI can adjust to meet specifications.

A bar aligner straightens the rows of finished bars in preparation for packaging before they enter the latest

A buffer system separates production from packaging. In case of a packaging event, this system allows production to continue running while the situation is resolved.



addition to this production line, a Cavanna Packaging buffer system and flowwrappers. The first-in-first-out buffer system creates space between production and packaging departments, allowing for inevitable packaging events without slowing down production. Bars enter the buffer system to be stored and are then retrieved by the flowwrappers as they are ready to receive product. With four decks, the buffer can store 8 minutes worth of product without taking too much floorspace.

Without the buffer in place, the plant would need a third backup wrapping lane and cartoner to prevent production interruptions. Costly downtime that could get passed to the customer isn't a place Leclerc was willing to compromise, and the buffer system frees the company from having to make it. "Starting and stopping production is a domino effect, so our goal is to keep production moving at all times, even if it's at half speed, and the buffer enables this," Mr. Carroll explained. "It's a necessity. The quicker you can provide product, the better the profit margins are. Granola bars aren't a product with big profit margins, so the volume of it helps us pad that bottom line."

The buffer feeds two Cavanna flowwrappers that deliver product to a Cavanna cartoner. When designing the packaging department, Leclerc wanted a compact footprint that only needed one operator. The slim, high-speed wrapping system fits in half the space. Laid out in an L-shape, the entire system can be managed by one person.

The flowwrappers feature auto-tracking that ensures the film is perfectly aligned on the product. A scanner checks the bar code on the packaging against the HMI system's record of what bar is coming off the line. This check prevents product from being wrapped in the wrong film. The wrappers can run at a nominal speed of 1,000 bars per minute or a recovery speed of 1,100 bars per minute.

After being individually wrapped, bars are inspected by a Thermo X-ray machine at a speed of 600 bars per minute. Because the film is metallized, metal detectors inspect the product as it enters the wrappers. Once bars are inspected, they head into the cartoner where two robots fill and seal cartons.

Pallets of finished product are stored in the automated warehouse, ready to be picked up by customers or shipped to customers or the Leclerc distribution hub in Pennsylvania.

Installed in 2010, the automated warehouse is another area Leclerc has found new technology to be a boon. After seeing how successful automated warehousing was in other Leclerc facilities, Kingsport made the leap, too. The 70,000-sq-ft space houses finished product and ingredients. Automated cranes and forklifts hurry down the aisles to fetch and store ingredients or finished

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Lyne Normand, Leclerc Foods

### Early adopting for better operations

In general, the baking industry has not been quick to embrace new technology, but that's not the case for Leclerc Foods. For as long as Jeremy Carroll, plant manager of the Kingsport, TN, facility, and Lyne Normand, vice-president, quality for US operations, can remember, Leclerc has always been quick to try new technology.

"I think it's the Leclerc way," Ms. Normand said. "We're always trying to be ahead of everybody and find out what's new and what can we get before everybody else."

This affinity for the latest and greatest isn't just for show, however. It's driven by a need to constantly improve. This need has been the heart of many investments made at the Kingsport facility: an automated warehouse for improved control and reduced labor, a packaging system that prevents production slow-downs and streamlines the department, the POKA training tool and quality control app, iPads for every employee. These innovations and investments have improved Leclerc's product quality, production efficiency and worker safety.

Ms. Normand is constantly on the lookout for ways they can improve production, food safety, quality control and worker safety. "If it can be done, we'll look into it," she said. "What technology can we use to decrease the risk of fruit flies? We're looking into how we can use portable metal detectors, UV lights, different IoTs. We're always open to any suggestions."





An inclusion wheel mixes in chocolate chips and ensures even distribution.

products that operators scan into the system. The flurry of robotic activity happens behind a metal cage to keep operators safe. The Swisslog automated warehouse system remains the original hardware Leclerc installed nine years ago, but the facility recently switched to Viador software to run the equipment.

While it may be a significant capital investment and seem high-tech, Leclerc has found the automation to return on its investment. Not only does the automated warehouse save on labor and energy — the department doesn't have to be lit — it also minimizes product damage and eliminates an opportunity for human error in food safety, another compromise Leclerc isn't willing to make.

"When you walk into the warehouse, you can easily see if you have all your allergens in the right place because they have dedicated places," Ms. Normand said. "In the automated warehouse, the specialty milk can only go in the places for milk. It cannot be misplaced."

When automation and equipment can help Leclerc deliver quality products quickly and at the right price while supporting its commitment to food safety, Leclerc invests. Every piece of this new bulk bar line and the automated warehouse guarantees either product quality, transparency or worker and food safety. This unwavering commitment to the things that matter in production equipment also permeates the company's operational practices.

### Uncompromising operations

Everywhere you turn in Leclerc's Kingsport facility, this commitment to safety and quality is evident. Whether

it's changeovers and sanitation, quality control, training, or flexible distribution, Kingsport is growing into its role as the US base of operations and innovating to meet customers' and operations' needs.

A major change that's been evolving at Kingsport is the plant's role in the company's US distribution. While Montgomery has been the shipping hub for all of the US operations, Kingsport has lately been taking on more product distribution due to its closer proximity to the Phoenix plant and new customers' needs. "That's recently changed because we receive material from Arizona and redistribute it to the East Coast from here," Mr. Carroll said. "We used to only ship to a couple of Southern distribution centers for a major customer, and recently we started shipping to many of their distribution centers out West and North as well. We're actually sending fewer trucks to Pennsylvania than we ever have before."

Typically, unless there is a promotional push from a customer, production at Kingsport is handled on a just-in-time basis and tracked in a system that compares warehouse capacity with scheduled deliveries from Phoenix and customer orders. The warehouse doesn't keep inventory very long before it is out the door.

Production runs 24 hours, five days a week. Changeovers occur between the third and first shifts. Sanitation is quick because most of the products being run contain the same allergens. "Every morning we do a little bit to remove the excess chocolate chips," Ms. Normand said. "We are in a chocolate chip world right now."





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Charles Bruce, Leclerc Foods

When the allergens differ, Leclerc schedules production to prevent cross-contamination. Organic products start first thing on Monday morning, and more allergens are added throughout the week.

The deep clean along with maintenance is reserved for the weekend. The Kingsport team finds this schedule works best to meet sanitation standards and keep equipment working smoothly and production running during the week.

The plant’s quality control program is robust to keep up with customer demand and Leclerc’s commitment to food safety. While Leclerc has four dedicated facilities to allergens, however, the company continues to raise its own bar. Suppliers are visited and inspected. “We challenge any vendor we have in here,” said Charles Bruce, quality manager, Leclerc. “We challenge them to make them better because then we’re better.”

Leclerc also stresses a strong internal audit program. The facility conducts a monthly facility audit in addition to a corporate audit. “We’re auditing ourselves constantly,” Mr. Bruce said. “We don’t hide anything or hold anything back on those because that just pushes us to make ourselves better.”

On the day-to-day, production lines have multiple points where operators conduct quality checks as well as built-in equipment redundancy through multiple X-rays, metal detectors and vision systems. Quality control also comes by twice per shift and at the end of the production run to double-check operators’ reports.

“Each place on the line gets checked for something,” Mr. Bruce said. “You have your regular operator checks, and in addition to that, quality technicians come around and do their own to make sure the data matches what the operator is finding.”

“It’s a lot of checks,” Ms. Normand added.

In addition to redundancy and process tours, quality control takes ATP swabs and conducts environmental



Above: Lyne Normand (left), vice-president of quality for US operations, and Jeremy Carroll, plant manager of the Kingsport, TN, facility.

Bottom: The automated warehouse eliminates human error.





An operator takes samples after the guillotine to check for weight and make any necessary adjustments in the HMI.

testing and microswabs that are sent to a Leclerc lab in Canada. And for products that don't contain soy or milk, equipment is swabbed before production starts to guarantee that the equipment is free from those allergens.

To track all this data, the company uses SAP software, but internally at Kingsport, the IT department devel-

oped an application for the iPad to improve ease-of-use for quality control technicians. Through the application, technicians can scan product barcodes and enter all data. It's updated in real time and reflected in SAP. "Charles might be traveling, but he can see everything that's being done in the plant as it's done," Ms. Normand said.

Leclerc Foods on a corporate scale has implemented the use of similar technology to improve training as new employees join the company. With such a strong commitment to food safety and quality ingrained in the company culture, a rigorous training plan, complete with new technology, is critical to everyone on board.

New employees are initiated through a 1-2 week training period that addresses multiple learning styles through a combination of instructor-led, hands-on training and a knowledge management platform called POKA, developed by Alexandre Leclerc, Jean-Sebastien's brother. Each employee uses an iPad equipped with the POKA platform, which allows them to scan QR codes on each piece of equipment to access troubleshooting guides, operation manuals and standard operating procedures. This not only helps new employees onboard, but it also assists current employees when problems arise on the plant floor.

As the bar category grows, so does Leclerc's business. And as long as its customers demand safe, quality products at the right price, Leclerc will never stop innovating to meet those needs. "We always try to improve and better ourselves," Mr. Leclerc said. "We will continue to grow and maintain our flexibility and service level with our customers; we want to grow without compromising." •



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