



BY LAURIE GORTON

What might you do to bake more products at lower costs? You probably wouldn't dig a huge pit in your plant floor. Or install first-of-its-kind, state-of-the-art technology. But that's exactly what The Bun Basket did at its busy Wyoming, Mich., bakery.

Addition of a new, automated, vertical baking line followed a carefully researched, conservatively managed plan. It came on-stream mid-summer, just in time to boost the bakery's swiftly expanding position in food service products.

"Our new line already accounts for half of our volume," said Robert (Rob) Spica, who founded the bakery in 1981 with his brother Fred.

The plant's new Peerless/Gouet line handles up to 24,000 pieces, or 7,000 lb, per hour. Speeds, times, temperatures, humidity — all are fully automated and PLC-controlled. In the three-shift bakery, the new line runs two eight-hour shifts a day, five-and-one-half days a week. It makes moister products in less time with fewer inputs than tunnel systems, according to The Bun Basket's managers.

THE NUMBERS. Productivity means a lot to The Bun Basket. Today, most of its products reach the market through food service distributors. To stay competitive, the bakery must mind its costs carefully as well as maintain its processing flexibility.

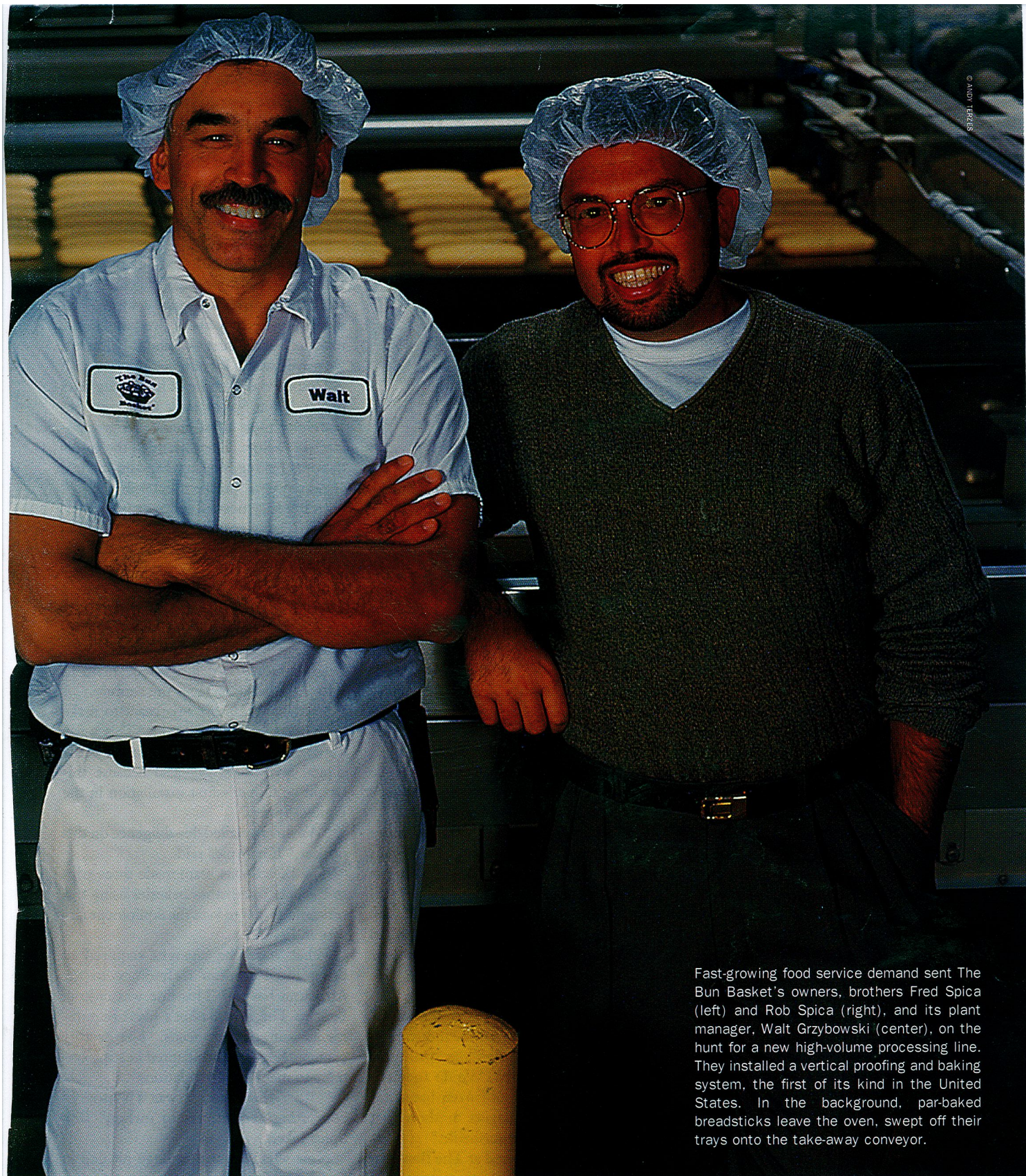
Rob Spica compared operating ratios for the new automated line with typical results for its existing 18 manually fed rack ovens. He estimated annual labor savings at more than \$350,000 based on an overall labor reduction of 15%.

The plant installed a separate electric meter and dedicated gas lines for the new system in order to document energy savings. Only a few weeks into full operation, Rob Spica pegged energy savings at 25% over comparable rack or tunnel oven systems. "And waste, too, dropped from 1.5% to 0.75%," Rob Spica said.

"We also saved considerable space," he continued. "If we did this the conventional way, with a tunnel oven



ELEVATING



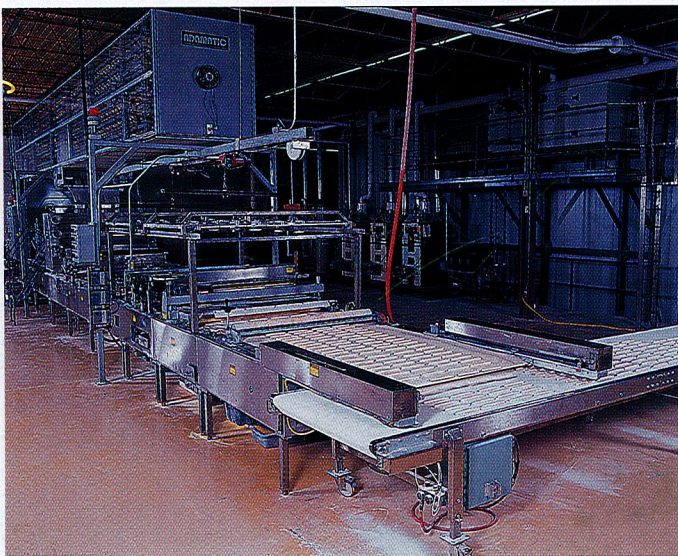
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Fast-growing food service demand sent The Bun Basket's owners, brothers Fred Spica (left) and Rob Spica (right), and its plant manager, Walt Grzybowski (center), on the hunt for a new high-volume processing line. They installed a vertical proofing and baking system, the first of its kind in the United States. In the background, par-baked breadsticks leave the oven, swept off their trays onto the take-away conveyor.

PRODUCTION

Compact, fuel-efficient vertical proofing and baking technology boosted The Bun Basket's output of food service rolls.

Breadsticks emerge from the dedicated roll makeup system at 24,000 pieces per hour to feed the bakery's new vertical line.



and return conveyors plus machinery for stacking and unstacking pans, we would have needed twice the space in our plant.”

“We’re looking at 24 to 30 months return-on-investment with our new line,” Fred Spica said. “That’s longer than our usual ROI, which we like to keep in the 12- to 18-month range. The potential of the new line to improve our business, however, is well worth the additional time.”

FOOD SERVICE FIELD. Rob and Fred Spica are fourth generation bakers, but The Bun Basket is their own creation.

“Rob and I decided a long time ago that we wanted to be in business for ourselves,” Fred Spica said.

In 1981, they joined forces around an idea original at the time: a self-serve retail bakery. The Bun Basket displayed its offerings in open bins, and customers made their own selections. From a single small retail site, the company expanded to seven locations, each doing its own baking. To improve margins, production was consolidated into a single commissary on a six-acre site in Wyoming, a suburb of Grand Rapids, Mich.

Word about the quality of the retail product spread, and local restaurant owners started buying at The Bun Basket. “Often a restaurateur would come in and buy us out for the whole day on a particular variety,” Rob Spica recalled.

“We found a big opportunity in offering hearth-baked bread and rolls to food service operators,” Fred Spica said. “There was no one else doing this in western Michigan.”

That business mushroomed, prompting the bak-

ery to launch a restaurant route business. Routes were soon transformed into more cost-efficient arrangements with area food service distributors.

Today 90% of the bakery’s output moves through food service distributors. Deli and bakery retailing at four company-owned locations accounts for about 5%.

“Don’t get me wrong, our retail sales continue to grow, but they’re overshadowed by food service,” Fred Spica said.

Dynamic market conditions add to the excitement. “It’s a market that we see growing immensely,” Rob Spica said.

The choice to ship through food service distributors is part of The Bun Basket’s strategy and a huge cost advantage.

“We only see the cost of direct store delivery (DSD) skyrocketing,” Fred Spica said. “The cost of labor and trucking is rising. The baker’s traditional way of getting bread to restaurants by DSD will soon be passé, and restaurants will look to frozen food service distribution for their bread needs.

“We freeze all our bread no more than an hour and 20 minutes after the oven,” he continued. “This traps the moisture in the product and delivers the quality of freshness when thawed. We do frequent cuttings with fresh and frozen bread for chefs and R&D managers to show that our quality is indistinguishable.”

Most products baked at The Bun Basket find their way to customers in the upper Midwest, but a couple independent chains are taking the bakery national.

“We started with two food service items in 1985: 8-in. and 10-in. sub buns,” Fred Spica said. “Today there are more than 150

items, and 95% of those were developed together with our customers.”

The brothers divide their labor. Fred Spica manages sales and marketing, while Rob Spica oversees operations. “We have a tremendous amount of respect for each other’s abilities,” Fred Spica said, “and we try to stay out of each other’s way!”

DILIGENT RESEARCH. “We think a long way out,” Fred Spica said. “Typically we mull an idea over for quite a while. This new line was really about five years in the making. For the first two-and-a-half years, we played with a lot of blue sky concepts.”

Despite the pressure of increasing sales demand, the Spicas took their time researching their latest change in processing technology. They attended the International Baking Industry Exposition, held at Las Vegas during September 1997, knowing they needed more capacity.

“That’s when we got serious,” Fred Spica said.

They had already decided to install a second Adamatic roll makeup system. Adamatic’s regional sales manager, Hans Lindeman, suggested they look at new European baking technology offered by Peerless/Gouet and introduced them to John Parr, who manages the venture.

“It took us almost two years to make our choice,” Rob Spica said. “This was a big decision for us, not only because of the capital investment but also because this would be Gouet’s first installation in the United States.”

“We did a detailed due diligence on this project,” Fred Spica said.

The Bun Basket team made three trips to Europe to see other bakeries using this technology and to visit the equipment factory in France.

What were the changes required to bring the European technology to the American bakery? This line was custom built to The Bun Basket’s plant requirements and output needs. The factory changed burners and adapted heating systems to meet U.S. regulations.

“Other than that, it was a matter of converting centimeters to inches,” Rob Spica joked.

Now what about that huge pit dug in the shop floor?

The vertical design of the new proofer and oven takes advantage of thermodynamic principles, but it made the system taller than The Bun Basket’s ceiling. Going up, however, was twice the cost of going down. So instead of raising the roof, the brothers decided to lower the floor, digging a 6-ft deep pit to house the line.



Transferred onto stainless steel trays stabilized by individual carriers, the breadsticks travel into the first stage of the vertical proofer (right). Breadsticks, which roll at the slightest touch, stay quietly in place throughout their trip through proofer and oven.



With the rest of the busy plant sectioned off with plastic sheeting, production continued during construction.

“We worked on the new line over weekends,” Rob Spica said. “We couldn’t afford to miss a day of production.”

TECHNOLOGY CHANGE. Before the new line, The Bun Basket made its long-run food service items the same way it did all its other products. The roll makeup system fed dough pieces onto pans, which operators transferred manually onto rolling racks. They wheeled the racks into the proof box, then into the rack ovens.

“Two people were constantly moving racks around,” Rob Spica said. “We had good flow but high labor costs.”

Now, with automation handling these tasks, The Bun Basket reduced its labor costs dramatically and cut its workers compensation rates, too. No labor, other than supervision, is needed from dough makeup through depanning. The system is operated by an Allen-Bradley PLC, with PanelView 600 display, housed in a stainless steel control panel.

The new system employs height instead of length. Its two oven chambers equal an 80-ft tunnel oven in output capacity. Design of the system eliminated any draft effect: the entry door and exit door are never open at the same time.

Products move through the system on baking pans, or trays, mounted on stainless steel carriers. Chain-driven elevators and pushers act on the stabilized frame of the carrier, not the tray, thus keeping the system “quiet.” Once loaded, dough pieces — even breadsticks — stay put.



The carriers that move products through the proofer and oven are only a few inches apart, so the size of the heated chamber is proportionally smaller than conventional ovens. The cubic volume heated is roughly 75% less than a typical hearth tunnel oven. Products can be baked at lower temperatures in less time, with more moisture retention than conventional ovens.

STRAIGHT LINE FLOW. Under the direction of plant manager Walt Grzybowski, raw materials and supplies flow through the bakery in a straight line as they turn into finished, par-baked and frozen bread and rolls. The bakery makes its doughs in a variety of spiral and wendel mixers. Bulk flour, held in an enclosed room, combines with computer-portioned minor dry ingredients as it enters mixer bowls along with automatically metered water and liquids. Hand scaling has been eliminated as much as possible.

The operator wheels mixer bowls to the dough hoist feeding the Adamatic automatic roll makeup system. The hopper releases dough into the multi-pocket divider and drum rounder. After a short intermediate proof, dough pieces pass through the moulder for final shaping. A retracting belt transfers finished dough pieces onto a conveyor. The makeup line outputs up to 24,000 pieces, or 7,000 lb of dough, per hour.

Reaching the proofer infeed, dough pieces pass through a second retracting conveyor that loads them onto a tray-and-carrier assembly. The carrier moves off into the proofer. Carriers follow an up-and-down path through

proofer chambers. They leave the proofer at the top of the system and descend past a wide window. Any manual slits would be added here.

Entering the oven at the bottom position, carriers take products up through the first chamber. Pushers move the carriers to the second oven chamber where they descend before leaving the oven. Carriers rise into the depanning station where a sweep arm, edged with a brush, sends rolls on to cooling and packaging.

“Every 17 seconds we’re moving a carrier,” Rob Spica said.

Products made on the new line — typically long-run styles, such as the bakery’s popular breadsticks — exit to cool on two I.J. White spiral coolers. They ride a continuous conveyor belt that rises up one spiral and then transfer across to the second spiral. Fully cooled as they leave the second system, the breadsticks or other products pass through a metal detector and cascade onto loading tables.

Packaging operators manually count the breadsticks, placing them into loading flights feeding the UBE paddle baggers. Slicing, required by some products, is handled by an auxiliary UBE slicer. Kwik Lok closers seal the poly bags. Filled bags are counted into waiting delivery cases. An operator stacks sealed cases on a waiting pallet.

The bakery recently made several changes to reduce the ergonomic stress on its packaging staff. For example, the pallet loading station sits in a shallow pit. The operator engages a foot pedal to raise or lower the position of the pallet to a comfortable work position.

“We use exit interviews to figure out what people don’t like about their work here,” Rob Spica said. “That’s how we’ve eliminated much of the twisting, bending and lifting actions that are so damaging.”

A fork lift operator takes loaded and stabilized pallets away to the storage freezer. Seven docks accommodate outgoing product.

“We operate a bakery-within-a-bakery here,” Fred Spica said. “While we do 24,000 pieces per hour on the Gouet line, we have another Adamatic line for dinner rolls that is also capable of peak output of 24,000 pieces per hour. And we run a bread line and a bagel line here as well.”

The Bun Basket needs this capacity to satisfy ever-changing customer needs.

“The rack ovens give us the flexibility to produce in relatively small quantities,” Fred Spica said. “And there are a number of products, such as our big rye loaves, that we’d rather do in the rack ovens.”

Descending to leave the proofer, carriers transport loaded trays past a manual slitting station before they enter the first chamber of the oven. To allow for the height of the system, the bakery found it more economical to excavate a pit than raise the roof.



The bakery is willing to tailor products to customer requests. "Our order-size limit varies, of course, with the customer," Fred Spica said. "Naturally, if a long-standing customer wants something special, we'll be glad to do it even at relatively low volumes. But we do operate as a business and will say no when necessary."

IDEAS AND ACTION. "If it's dough, it's 'do-able' at The Bun Basket." The bakery

lives by its motto.

"There are a lot of bakeries out there," Rob Spica said. "Every baker uses similar processes, and customers can get baked foods anywhere."

"What makes us unique," continued Fred Spica, "is our service."

While The Bun Basket can rightfully brag about its high 99.8% fill rate for orders, the brothers add another dimension to service: the ability to work alongside

customers on product development.

"We're able to take an idea all the way through the development process," Fred Spica said, "through processing and packaging to the finished product."

"Some products have taken as much as two years in development, but three to six months is more typical," he continued. "The shortest one took us just 10 days."

"There's no big R&D department here," Rob Spica added. "If a customer wants a solution, we can usually turn around an idea for evaluation the next day. That's gotten us into more doors than anything else."

This work requires interaction with the customer's R&D personnel. "We'll work with the product to make it bigger, denser, crisper, sharper flavored or whatever the customer wants," Fred Spica said. "Often we go through several iterations to meet the need. Other bakers might get frustrated with this committee-style process. It requires a lot of patience, but this approach has been fruitful for us." ■

