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# Baking & Snack®

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PUBLICATION

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## KWIK TRIP

QUALITY THROUGH VERTICAL INTEGRATION

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# *Land of* **OPPORTUNITY...**



## Kwik Trip's vertically integrated bakery operation means business in the c-store game.

by Joanie Spencer

In the upper Midwest, work ethic can often be defined by the climate. They don't let a few inches — or even a few feet — of snow slow them down. “Last winter, we got down to about negative 44,” said Eric Fonstad, director of operations for the bread and bun bakery at La Crosse, WI-based Kwik Trip. He joked, “We like it when it gets that cold because 40 below will kill off all the germs.”

Here, challenges simply carve the pathway toward success. That's the Wisconsin mindset, and it's ever apparent at Kwik Trip, the region's largest convenience store operator and one of the most vertically integrated in the industry. This family-owned retailer not only operates more than 700 stores in Wisconsin, Minnesota and Iowa, but it also completely controls its own bakery, dairy, kitchens and distribution, including a 500-truck fleet. “Every store gets a delivery every day,” Mr. Fonstad said.

Just nine years after an overhaul on its former bakery plant, Kwik Trip started up production on three new lines — one for bread and two for buns — in a brand new 200,000-sq-ft facility that features state-of-the-art technology including a new continuous mixer, record-setting bread makeup and a fully automated gantry system in its warehouse, just to name a few. It's a testament not only to overall c-store growth but also to the foresight and in-

novation from a half-century-old company and the can-do attitude of its workforce.

### C-store's vertical trajectory

Much of Kwik Trip's success can be attributed to two factors: vertical integration and the rise of the c-store.

It's no secret that consumer eating habits are changing thanks to the mobile lifestyles of young consumers raised on life hacks and instant gratification. Trends like the “snackification” of American eating habits helped evolve these outlets from gas stations to grab-and-go options to the one-stop shops they are today.

In fact, a recent article from *CNN Business* cited data from the National Association of Convenience Stores that indicated c-stores have increased sales by 30% in the past decade with a 28% increase of store openings since the turn of the century. The article included Kwik Trip as one of the top c-store chains in the country in part for its foodservice offerings such as sandwiches and take-home dinners.

Kwik Trip's status as a c-store innovator should come as no surprise because the company has always been an early adopter: Kwik Trip began in Eau Claire, WI, in 1965 when, according to *CNN Business*, there were only 5,000 c-stores in the entire country. (Today, there are more than 150,000.)

Keeping with that innovative attitude, Kwik Trip got into vertical integration in the early 1980s, first with its dairy operation, and then

Thanks to the speed and consistency of continuous mixing, Kwik Trip has increased its bun production with fewer shifts.  
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“WE SPENT A LOT OF TIME AND EFFORT TO MAKE SURE EACH INDIVIDUAL LINE IS GETTING PRODUCT AND WE’RE NOT STARVING ONE AND FLOODING ANOTHER.”

Eric Fonstad, Kwik Trip

followed in 1985 with baked goods. It’s been a key factor in the company’s success ever since.

“When you talk about vertical integration, that means we make it, we ship it and we sell it,” Mr. Fonstad said. “Those are the three key ingredients, and then you have total control over the quality of products you’re sending out to the stores. We don’t pay a middleman to make it or ship it for us, but quality plays the biggest part.”

In the earlier days of its vertical integration, Kwik Trip was making cake and yeast-raised donuts along with a few other baked goods in a space it shared with the distribution center. Sales grew, and in 1988, the company built a dedicated baking facility. In 2009, it reconstructed the building, and, in addition to sweet goods, it produced bread and buns on two shifts until 2018 when that production moved to the new plant, leaving the original bakery dedicated to sweet goods production.

“We knew about two years before that we were heading

for capacity, and we started planning,” Mr. Fonstad recalled. At that point, the company worked with Wieser Brothers General Contractor in La Crescent, MN, for construction of the new building on the land Kwik Trip had reserved for growth on its roughly 120-acre campus. Construction began in 2017, and production was up and running in the fall of the following year.

“This plant was built to support four times the volume we had in 2016, and it’s positioned well to support that,” Mr. Fonstad said of the fully automated operation.

### Taking baby steps

While Kwik Trip is no stranger to technology, the company knew it would have to step up its game to support the growth trajectory it’s currently on.

To meet that goal, Kwik Trip strategically planned its move. For starters, the operation would go from two shifts on a shared line — buns during the day and bread at

Continuous mixing, a new technology for Kwik Trip, has ensured speed, accuracy and high quality in the company’s bun production.



## KWIK TRIP



integration. After all, coworkers are not just in the Kwik Trip bakery. They're also the folks working in each of those 700 stores, and the bakery has a responsibility to provide them with the product they need. "We had to plan inventory, so we never stopped producing," said Dan Walters, bakery R&D manager. "We never shorted one package of buns to stores."

Mr. Fonstad credits the relationship with vendors and the commitment from coworkers for that success. "Without our OEMs, this process would have been a lot harder," he said. "But the equipment vendors did a great job helping us get this plant started. A lot of credit goes to them, but also a lot of credit goes to the coworkers on the floor. They paid attention and learned from the OEMs how to run the new equipment."

### **Bigger, better, faster**

Once the new plant was fully operational, automation was only the beginning. New and upgraded technology enabled

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Kwik Trip is setting new records for its 1-lb bread loaf production.



# Still making huge



the bakery to crank out more product at higher quality than it had experienced before, and that's the key to sustaining growth.

"Uptime was critical for us," Mr. Fonstad said. "We asked all our OEMs, 'What's your uptime?' And we checked references. If someone was using AMF or Reading or Zeppelin, we wanted to hear from them."

For example, raw ingredients are now managed through a Zeppelin Systems USA PRISMA ingredient handling system that automates everything from a sprinkle or dash of minor ingredients in the bakery's J-Bin ingredient storage room to bulk items such as flour housed in one of two 224,000-lb silos or sugar from the 80,000-lb silo, all from Zeppelin.

According to Eric Reimer, bread line supervisor, the automated ingredient handling not only streamlines the operation but also mitigates the potential for human error. Through the PRISMA system, Mr. Reimer can view the status of all raw ingredients on one of two laptops.

"We want to make sure our products are moving through the pipe," Mr. Reimer said. "You can't see a lot, so

## PAPERLESS TECHNOLOGY: tracking made easy

In KwikTrip's latest bakery plant, 200,000 sq ft is a lot of ground to cover, especially when going through a tanker-load of flour a day.

But thanks to technology upgrades that include more than 2,000 interconnected pieces to control the bakery's MES, maintenance, SCADA systems, ingredient handling system, order pulling, and energy management system, coworkers have a bevy of paperless and wireless resources to know where every product is at any given stage of the operation.

For example, flat-screen monitors are placed throughout the bakery floor noting the status of production. "If there's an issue in one part of the bakery or an alarm sounds, coworkers can see on monitors what's going on from another area," said Eric Fonstad, director of operations for the bread and bun bakery. This makes different points of the process easy to monitor without coworkers planting their feet just waiting for something to go wrong. "It's very helpful," he observed.

And the use of tablets made quality control completely paperless, which has not only improved accuracy over handwritten records, but it also makes FSMA compliance much easier. "When the state of Wisconsin comes in, and they see we do this, it's a lot easier," Mr. Fonstad said. "If they say, 'Show us an example of a run from two weeks ago where you have all your information,' we can readily hand it to them."

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Three 2,000-lb mixers create about 18,000 lb of bread per hour.

you need to be able to trust the system.” With four main common hoppers and 16 individual 800-lb hoppers, along with a weight-loss system that has two load cells that talk to each other, this automation ensures that all ingredients stay on spec.

“If we’re requesting 120 lb of something, we want exactly 120 lb. We don’t want anything over or under a parameter because it will hinder the quality of the product,” Mr. Reimer said. “That was the biggest thing we needed here. We needed to eliminate any chance of human error, and we did that with this level of automation. We set pa-

rameters, and we can’t move on to execute the product until those parameters are met.”

From there, ingredients are sent to either the “bun side” or “bread side” of the bakery.

On the bread side, three 2,000-lb AMF vertical mixers feed one AMF makeup line that produces a variety of bread loaves at an astonishing rate for 1-lb loaves: 225 per minute. “We broke the record for AMF,” Mr. Reimer proclaimed. “Their old record was around 209, and I said, ‘We can go faster than that.’”

The three-pocket divider cuts 75 per minute per pocket, and dough balls are weighed by a BSI system that rejects any that are out of spec and reintroduces the dough back into the process. In all, the operation produces around 18,000 lb of bread per hour. “It’s pretty impressive when all of a sudden you see how many loaves of bread we made,” Mr. Reimer said.

Meanwhile, on the bun side, Zeppelin dosing systems feed an Exact Mixing from Reading Bakery Systems continuous mixer, a technology first for Kwik Trip. Flour and minor ingredients come together in a Brabender pre-mixer at a constant rate before feeding into the mixer.

“One big advantage of the continuous mixer is the shorter mix time. It’s meant for long runs, and we probably only changeover three or four times based on demand,” Mr. Fonstad said. “The other advantage is the consistency. We get the same, consistent dough coming out all the time. You maintain efficiency and quality with a continuous mix.”

The new technology was not without its learning curve, but thanks to a good relationship with Reading, it was a short one. “We were accustomed to barrel mixing, so when

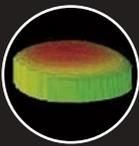
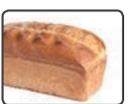


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				● ● ● and many others

### MIDWEST WORK ETHIC AND PRIDE IN A JOB WELL DONE

If Kwik Trip's new 200,000-sq-ft baking facility were a vehicle, it might still have that "new car smell," even a year after starting up the lines.

That's because every coworker in the plant takes a great amount of pride in the new operation. Kwik Trip invested in several technology upgrades that were new to the bakery.

Each upgrade was met with open arms by coworkers at every level. "The coworkers are the reason this plant looks and runs the way it does," said Eric Fonstad, Kwik Trip director of operations for the bread and bun bakery. "They're the ones doing the work every day. The technology in this plant is highly automated, and the coworkers have done a tremendous job in adapting to all the changes."

And they work hard to care for what they've been given. Call it a company culture being driven from the top, or call it that good old-fashioned Midwest work ethic. "Our owner, Don Zietlow, expects an honest, hard day's work out of you. But he's going to reward you for that, too. And that's how it should be," Mr. Fonstad said.

That pride in a job well done can be seen in any given moment on the plant floor. Here, there's no such thing as downtime. If product is not moving on the line, coworkers are meticulously running a cloth down the machines, keeping everything looking clean and pristine at all times.

"I've said it before, and I'll say it again: The coworkers deserve the credit for making this plant work," Mr. Fonstad proclaimed. "We as leaders can give them guidance, but at the end of the day, the coworkers need to execute the plan, and they do it very well ... every day."



we were first introduced to continuous, we needed some education," Mr. Fonstad said. "We spent a lot of time learning how to run it. They had a lot of in-house supervision for us and trained us on how to use the mixer as far as moisture content and mix time. We developed all our recipes with Reading, and they did a great job with us."

The mixer feeds two AMF Accupan bun systems that produce 1,600 buns a minute. Each divider makes and deposits them into a Bundy Baking Solutions pan. The pans are fed into the makeup area by a Workhorse Automation system.

"We run all our bun products at full rate," Mr. Fonstad said. "None of them are at half or even three-quarter rate. We're running them at the full rate the system was designed to run."

With the three new lines and the efficiency of the continuous mixer, Kwik Trip makes more bread and buns in one shift per day — instead of two at the old plant — and creates a better work-life balance for coworkers. "Now, they work four 10-hour shifts," Mr. Fonstad said. "We eliminated overtime, which is a big benefit."

Going bigger, better and faster is all about doing more with less.

#### Dialing it in

Front to back, it takes roughly 2.5 hours to create a loaf of Kwik Trip bread or pack of buns. And it took a lot of dialing in to perfect every minute of that process for the

Kwik Trip supplies bread loaves for retail and foodservice at its more than 700 c-stores.

19 total SKUs produced in the new plant.

The control centers on AMF's Allen-Bradley touchscreen HMI for each side allow operators to see the progress of each operation and easily tweak as needed, whether in the AMF proof box, BakeTech oven or AMF cooling tower.

A Burford Corp. seeder/splitter on each side executes splits for Kwik Trip's submarine buns and French rolls on the bun side and tops the 8-grain bread before baking on the bread side.

After bread and buns are removed via Capway depanners and the bun pans head through a Henry Group cleaning system, an EyePro System ensures that products are in spec and kicks rejected product off the line. This also allows operators to make any adjustments to the bake.

In addition to quality control, food safety is of the utmost importance, which is why both sides include Fortress Technologies metal detection at three points in the process: makeup, post bake and packaging.

Perhaps the most critical aspect the bakery needed to dial in was packaging. When the technology upstream is kicking out that much product that fast, there's risk of bottlenecks at the end of the line. To avoid this, Kwik Trip placed a heavy emphasis on how it set up the packaging department, which includes five AMF bread slicers, five UBE baggers each for bread and buns, two



Left: The Kwik Trip warehouse is a metropolis that contains automation for finished product coming in from packaging and going out to the stores.

Right: Kwik Trip dialed in automation on the packaging lines to avoid starving one line and flooding another.

AMF bulk baggers and a Bosch individual bagger for hot dog buns, followed by Burford Corp. bread and bun tiers.

“We spent a lot of time and effort to make sure each individual line is getting product, and we’re not starving one and flooding another,” Mr. Fonstad explained. The bakery built in plenty of redundancy, so if one packaging line goes down, it can fire up another.

Once products are bagged and tied, an AMF robotic Versaloader loads bags into trays before they head over to the warehouse, which takes up more than 1/3 of the plant’s square footage. In this 87,000-sq-ft space lives a metropolis filled with somewhere in the neighborhood of 80,000 trays stacked in towers up to 20 high. They’re managed by a Cimcorp order pulling system, the likes of which is almost unseen in the baking industry.

The system manages the inbound and outbound items with six gantries that are zoned inside three cells. Once trays are stacked, product data leaves the AMF data control. “We transfer that data into Cimcorp,” said Bruce Burmeister, bakery production manager. “Cimcorp will take trays and upstack them to 20 high, and the system knows where to pick a spot on the outbound side to place them. When the orders come in from the store, it will pull those orders by store and route.”

The system can grab a single tray or pull all 20 at once. “It’s like a sleeve over the trays,” Mr. Fonstad said. “It clamps onto them, picks them up, and off it goes.”

Inventory is held no more than a day and a half before it’s transferred to the distribution center and loaded onto route trucks for delivery to all 700 stores. To keep up with that, the gantries move at 22 mph picking and placing product. To ensure coworker safety, the cells are blocked off by fencing, and the system comes to a stop if anyone crosses inside.

Before, this was all was done manually, but skyrocket growth made the sheer ergonomics a challenge for human hands. Kwik Trip discovered the Cimcorp system in the dairy industry and is aware of just one other bakery operation using this system. “This was an enormous job, and there weren’t a lot of options out there,”

Mr. Burmeister said. “Just imagine what it would take to manage this many trays by hand.”

### How time flies

It’s hard to believe that all this automation and data management was just two years in the making, even for those who were directly involved.

“I never dreamed we’d be standing in this bakery today. After we built the one in 2009, I never thought we’d build another one,” Mr. Fonstad said. “But as Kwik Trip has grown, we wanted to support vertical integration, so our ownership — Don Zietlow and his family — knew we needed to build another plant to support retail’s growth.”

While the new bakery may have been designed to accommodate four times the capacity of 2016 ... between the c-store boom and the perseverance of the Wisconsin work ethic, who knows how soon that day will come? Mr. Fonstad isn’t worried. “We have a lot of production hours to fill up yet,” he said.

One thing is for sure: No matter how fast it flies, Kwik Trip has supplier relationships to stand the test of time and a workforce that will prepare the bakery for the future. “The longevity of Kwik Trip coworkers is something we are very proud of,” Mr. Fonstad said, noting Mr. Walters’ and Mr. Burmeister’s combined experience of more than 60 years and growth opportunities for younger bakers such as Mr. Reimer. “Kwik Trip is the land of opportunity,” he said. “If you stay here and work hard, you can take on more responsibility and become a leader. Eric [Riemer] is a great example of that.”

At the rate Kwik Trip and the c-store market are growing — and as fast as the bakery is moving — opportunity could knock at any time. “We knew the rates were going to be extremely fast; that was the thing we were most impressed with,” Mr. Fonstad recalled. “We asked ourselves, ‘Can we build a plant that will make buns and bread that fast?’ You talk about it and hear about it, but when you see the equipment installed and running ... it’s simply remarkable how fast this plant is.”