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AUGUST 2013

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A SOSLAND PUBLICATION

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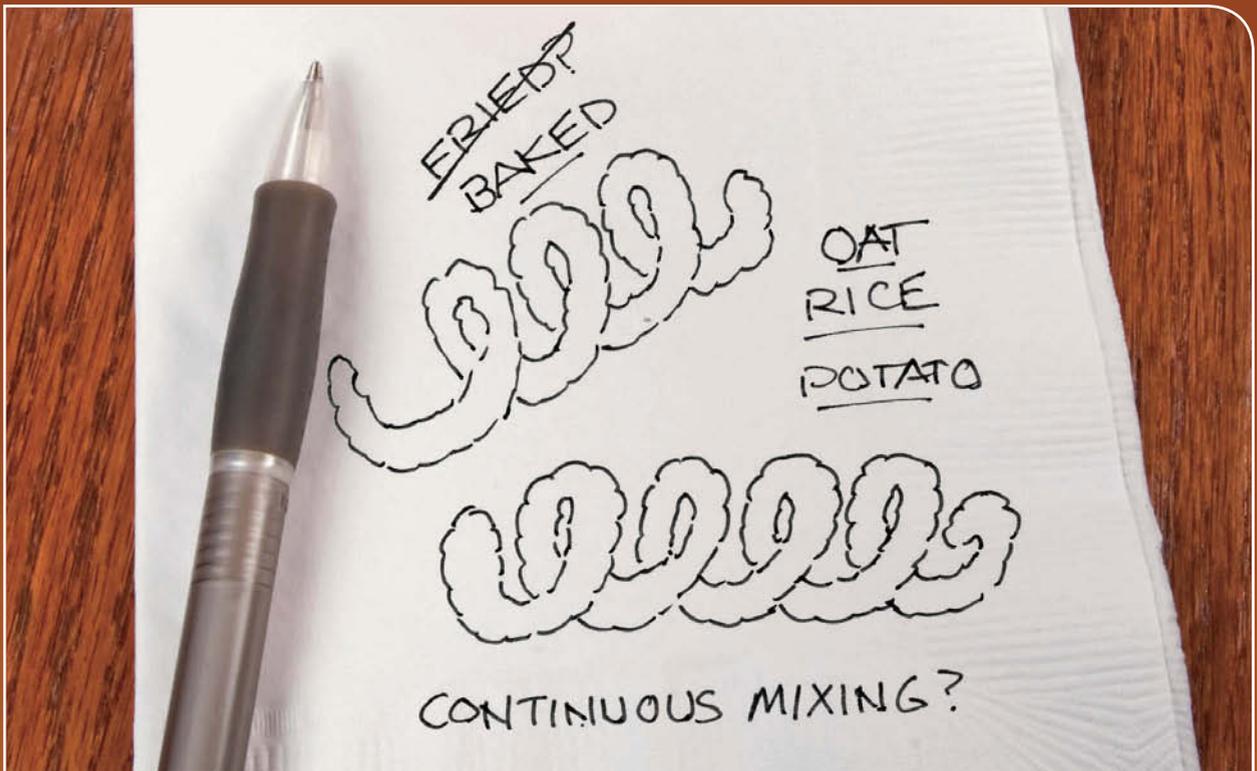
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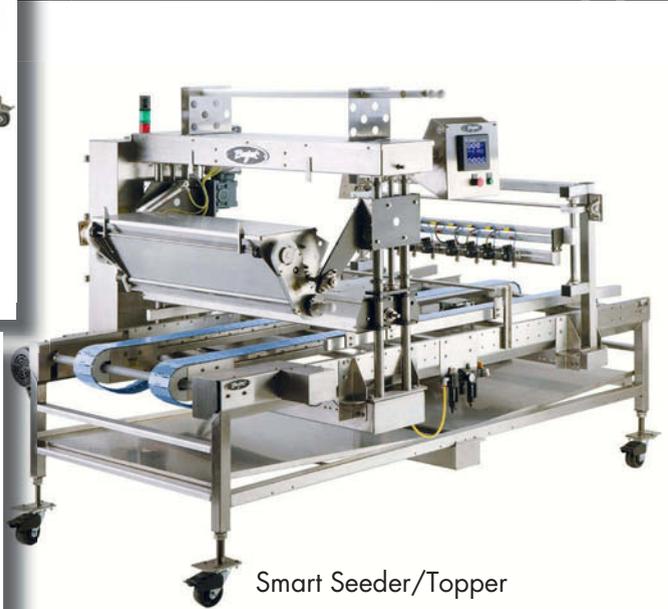
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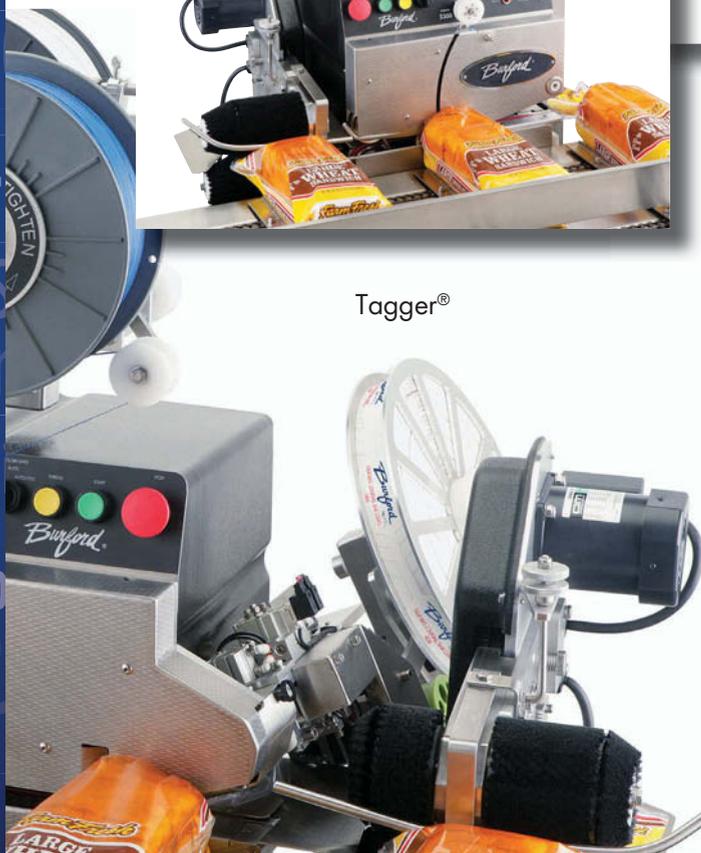


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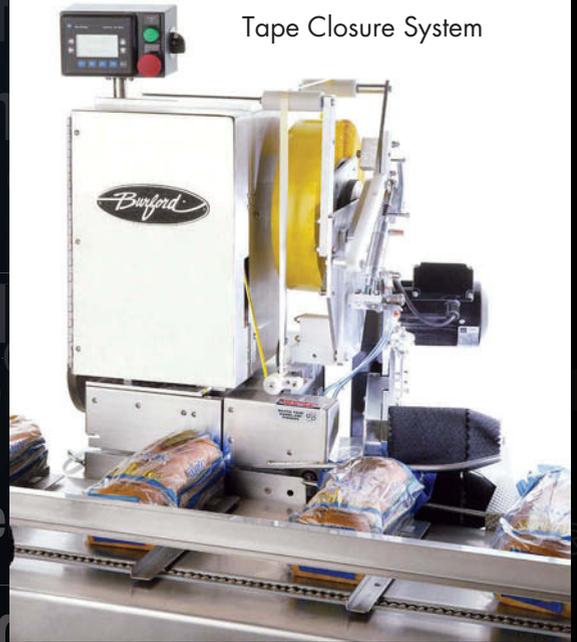
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Alpha Baking rolls out the latest liquid propane autogas step vans in its ongoing efforts to build a greener fleet.



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Cover: Motivated by his family and a team of dedicated employees, Farzad Mohebbi, president and CEO of Papa Pita, laid all his cards on the line to successfully design, build and open a new 200,000-sq-ft facility in West Jordan, UT.



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"I have some very loyal people who have been with me for years. They shared in our vision, and they felt there was nothing that we couldn't do together."

20

Farzad Mohebbi, Papa Pita



Buying into a Vision

About a year ago when Reed Jacobs was driving to Papa Pita for a job interview, he began to have second thoughts about the long commute from his home to the bakery's office on the other side of Salt Lake City. In fact, about halfway to the company's headquarters, Mr. Jacobs called his wife and told her he was turning around.

Fortunately, he said, she convinced him to keep on driving. Because after interviewing with Farzad Mohebbi, Papa Pita's president and CEO, Mr. Jacobs took the job as the bakery's comptroller. "I was so impressed with his genuineness and straightforwardness," he recalled.

Mr. Jacobs is one of many managers I met at Papa Pita who joined the business after meeting Mr. Mohebbi and buying into his entrepreneurial mission to build the best specialty bakery in the nation. Take Bryan Malkin, who had another job lined up and, in fact, planned to start his new position three days before he interviewed at Papa Pita. "I was sold the second I walked through the door," Mr. Malkin noted. "Farzad's enthusiasm and vision sold me."

Mr. Mohebbi, who owns Papa Pita with his wife, Yolanda, believes in striving for the best and taking nothing less, especially when building his spankin' new 200,000-sq-ft facility. "The vision was creating the most incredible bakery, producing the best product at the best price every day and changing the market dynamics from price escalation and fewer choices by offering a different product," he said.

He relishes being "the odd man out" who has a better product at a price that's affordable to everyone. "No smoke and mirrors," he told me during my visit to his bakery. We don't use gimmicks. We believe what we produce will sell on its own merits."

He calls himself "unorthodox" and negotiates his own deals with suppliers, relying on his engineering background and his experience as "the chief janitor, chief baker and chief distributor" since the company was founded 30 years ago. And he is admittedly a haggler at heart. And forget teams of consultants. "I was told by several of our key vendors that it was a little more than crazy that this one guy — me — thinks he can do it all," he said.

At his new bakery, he's invested in sanitary design with washdown capabilities from mixing through packaging. He made sure he purchased a flexible proofer that's easy to clean and simple to maintain. That's because any type of downtime — sanitation or maintenance — on the bakery's new flatbread line that produces 100,000 pieces an hour will cost many times the initial investment in the long run.

But all too often, investing in people and getting them to buy into a vision eventually pay the biggest dividends.

"When I was interviewed, I knew this was a good fit immediately," said Nelly Mbogo, office manager. "Papa Pita is a company that cares about its people."

— Dan Malovany, editor
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Baking & Snack

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Backtechnik, located in Unterkirnach, Germany is comprised of former Winkler GmbH professionals. For many years, Backtechnik & its sister company, 3B manufactured their state-of-the-art Bread System in the very same factory formerly owned by Winkler. After more than a decade of business, Backtechnik has continued to see steady growth in the American market.



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Hype surrounds Twinkies' grand return

Promoted as the "Sweetest Comeback in the History of Ever," 50 million Hostess Twinkies came back to the market in mid-July in a big way.

Major newspapers and national TV networks as well as local and cable stations, Internet, Facebook and other social media all reported on the Twinkies' return.

Kansas City, MO-based Hostess Brands reported that Hostess executives, family members of Twinkie inventor James Dewar and others gathered to celebrate the event at the Hostess bakery in Schiller Park, IL, just outside of Chicago, where Twinkies were first produced in 1930. Additionally, a Hostess food truck, along with Twinkie the Kid, arrived in New York City's Rockefeller

Center to kick off a coast-to-coast tour of Twinkie giveaways that was expected to end in Los Angeles in August.

The return comes four months after investment firms Metropoulos & Co. and Apollo Global Management, LLC bought selected assets out of bankruptcy.

"When Hostess products disappeared last year, there was an incredible groundswell of emotion from consumers who couldn't imagine a world without Hostess snack cakes," said Dean Metropoulos, Hostess CEO, in comments made July 15 as part of a highly coordinated media plan on the day of Twinkies' reappearance. "That's why we're here today; America wanted its snacks back — they wanted the original, and we're honored to make that happen.

"We are committed to investing in this company, reinvigorating these beloved brands, innovating to meet evolving consumer preferences with new products and continuing to bake the high-



quality, fresh and delicious snack

cakes that have given Hostess its enduring appeal," he added.

Retail customers representing more than 100,000 stores placed significant orders in advance of the comeback. According to published reports, the company has been producing snacks since early June.

"Clearly, retailers and consumers could not wait to have Hostess snack cakes back in stores," said Richard Seban, Hostess Brands president. "We are already hearing early reports of products flying out of stores almost as fast as they've appeared on shelves. As orders have continued to pour in, we are doing everything possible to fulfill them equally and timely for everyone."

The "Sweetest Comeback in the History of Ever" tagline was created for the multi-million dollar integrated marketing, advertising and public relations campaigns.



Twinkies made to last longer

Twinkies now have a shelf life of 45 days instead of only about 26 days in the past, according to Hostess Brands, Kansas City, MO.

Hannah Arnold, a spokeswoman for Hostess, said the change to extend the shelf life was made by the previous owners before they went bankrupt last October, with the longer-lasting cakes first hitting shelves on Nov. 1 of last year.

Ms. Arnold declined to say what changes were made to extend the shelf life, terming them proprietary information.

People

Grain Foods Foundation named two members to its scientific advisory board. They are **Suzanne Steinbaum**, an attending cardiologist and director of Women and Heart Disease at Lenox Hill Hospital in New York, and **Gene Bowman**, an assistant professor of neurology and a leading researcher at the Layton Aging and Alzheimer's Disease Center at Oregon Health and Science University.

Dan Hughes, Venango, NE, became chairman of the **US Wheat Associates** board of directors.

AB Mauri North America, Chesterfield, MO, hired **Michael Tamayo** as senior business development manager, tortillas.

Frank Achterberg joined C.H. Babb Co., Raynham, MA, as president of the company. Mr. Achterberg has 30 years of experience in the food industry. Additionally, **William Foran** was named CEO, and **Charles Foran** became chairman.

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Hostess to compete in mega snack market

A move to warehouse distribution and away from direct store delivery (DSD) will allow Hostess Brands to compete toe-to-toe in the market for snack treats, said Richard Seban, president of the Kansas City, MO-based company. In a July 9 interview with *Milling & Baking News*, he described Hostess as primed to win back its spot on familiar — and new — shelves this summer.

The new distribution approach was one of several significant changes Mr. Seban said will help restore luster to a brand and business diminished by struggles dating back many years.

As part of its acquisition of the Hostess snack cakes business, private equity firms Metropoulos & Co. and Apollo Global Management netted five plants, and Hostess has poured \$30 million into four of these over the past few months. The plants are located at Columbus, GA.; Schiller Park, IL; Indianapolis; and Emporia, KS. A fifth plant in Los Angeles has not been reopened.

“The [four] plants structurally were among the better plants Hostess operated before for cakes, so the plants were structurally in reasonably good shape, but they did need some upgrades, and we spent about \$30 million in opening these four bakeries,” Mr. Seban said. “We did invest in upgrading various systems and processes as well as putting in new equipment. Over the next year, we’re putting another \$70 million in, primarily in capital equipment.”

Additionally, Mr. Seban said Hostess is looking at opening a fifth facility that he said will be “more modern, state-of-the-art and located in an optimal area for both distribution and logistics.” He declined to specify where the plant will be located. According to company reports, the plant will cost \$75 million to \$80 million.

Another significant change for Hostess is a shift in its distribution system, from one

based on DSD to one geared toward delivery to warehouses.

“In a DSD system, each stop has to generate a certain amount of revenue to generate profit because we have our own driver in a DSD system stopping,” Mr. Seban said in explaining the differences between the two systems for Hostess. “So if the stops were too small, and we couldn’t service



them on a DSD route because they didn’t do enough volume, then we couldn’t service them. For example, there are 150,000 c-stores in the US. In November, we were calling on about 50,000 of them, or about a third. Now, because we’re going through a warehouse direct system, we can use independent distributors ... to go after literally everywhere that candy bars are sold. ... We feel we now have the ability to sell wherever candy sells, and that opens up an additional 100,000-plus operating units for us.”

Mr. Seban said the biggest challenge in moving to warehouse delivery was making the transition to a SAP system.

“When you’re doing DSD, your people fill out the order,” he said. “We now have to accept orders from customers. So it really required us to completely reconfigure our infrastructure. But given the time we had to get our plants started, we’ve been able to rebuild that infrastructure with the help of Acosta, our sales agent. They have been instrumental in getting us up to speed and offsetting some of the things we couldn’t do quickly enough to get our infrastructure in shape. They’ve been able to support us in that way. So the warehouse direct system looks like there is an awful lot of upside for us.”

The full exclusive interview of Mr. Seban was published in the July 23 issue of *Milling & Baking News*.

— Eric Schroeder,
Milling & Baking News

The Denver, CO, metropolitan area has been selected as the location for the headquarters of **Ardent Mills**, the proposed joint venture that will bring together the flour milling assets of **ConAgra Mills**, **Cargill** and **CHS**. The designated executives of Ardent said that while no specific office location or opening date has been set, the new company is expected to establish its presence in Denver by early 2014.

Omaha, NE-based **Gavilon Grain** acquired five grain elevators in the Rio Grande Valley area of south Texas with combined upright storage capacity of 5.4 million bu. Gavilon said it will use the facilities to store and handle yellow corn, sorghum and soybeans purchased from area farmers.

Learn about the science and engineering of bulk solids from **Kansas State University** faculty and industry experts at a Bulk Solids Handling, Storage and Flow course Nov. 11-14 at the International Grains Program Conference Center in Manhattan, KS.

US District Court of Northern California ordered the **Food & Drug Administration** to publish proposed rules for all outstanding regulations under the Food Safety Modernization Act (FSMA) by Nov. 30. Furthermore, the close of the comment period for each proposal cannot be later than March 31, 2014, with final regulations published by June 30, 2015. The **Center for Food Safety** filed the complaint against FDA because it failed to publish FSMA regulations within the original timeframe that Congress wrote into the law.



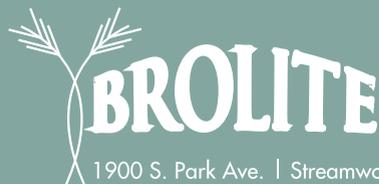
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Dessert makers layer it on thick

Life is short. Maybe that's why desserts come first in the in-store bakery channel. In fact, cakes, pies and other indulgent treats — many of which are supplied by wholesale bakers — racked up \$6.1 billion in sales in 2012, or 47.9% of dollars spent in in-store bakeries, according to Chicago-based Mintel Group's report released in March 2013.

Certainly, creativity abounds in this category, and much of that creativity is coming from other product segments. For instance, Denver-based Legendary Baking, which won 65 ribbons at this year's American Pie Championships, borrowed a few pages out of the beverage industry's game plan by combining various fruits such as mangos and key limes in a single dessert, noted Mark Van Iwaarden, the company's marketing director.

Sweet and salty has become increasingly popular. Last year, Legendary Baking's Salty Hog featured layers of moist chocolate cake, French silk filling, whipped cream, salted caramel and roasted almonds, all topped with candied bacon. When looking for new product ideas, it's always good to look outside the box.

Flowers, Hostess complete bread deal

Flowers Foods, Thomasville, GA, on July 22 said it completed the acquisition of baking plants, brands and other assets from the former Hostess Brands.

On July 8, Flowers confirmed that it received regulatory approval pursuant to the Hart-Scott-Rodino Act to acquire the Wonder, Nature's Pride, Merita, Home Pride and Butternut bread brands; 20 bakeries; and 36 depots from Old HB, Inc., formerly known as Hostess Brands.

Correction

An error in reporting "On the Ryes ... And More" in the June 2013 issue of *Baking & Snack* on Page 61 under the subhead "New look at spelt, sorghum" wrongly identified a key protein in spelt. The correct information is:

The ratio of glutenin to gliadin in spelt reverses that of wheat, Ms. Kay explained. "Spelt has more gliadin and, thus, produces a more extensible dough but without as much elasticity as wheat."

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Papa Pita's new \$50 million bakery comes with all the bells and whistles to create affordable, healthful new products for today and beyond the foreseeable future.

by Dan Malovany

When Papa Pita Bakery reached capacity three years ago, Farzad Mohebbi knew the company hit a critical crossroads that would determine the direction of the business for years to come. Option No. 1? He could play it safe and expand the 50,000-sq-ft facility located on four acres just a stone's throw from Salt Lake City's airport.

That was certainly a tempting alternative. "We had no debt and a thriving business at that time, and I was living a comfortable life," said Mr. Mohebbi, president and CEO, who owns Papa Pita with his wife, Yolanda. "I could have taken the easy road out."

Option No. 2? He could place a huge bet and put it all on the line.

"The gambler in me said, 'Let's do it the right way,'" he recalled. "We didn't need to do it. It was a matter of *wanting* to do it and believing we can do something spectacular."

Two personal factors motivated him to take the leap. First, Mr. Mohebbi wanted to build something special for his family, specifically for his daughter, Maya, and son, Kiyani. "I was rejuvenated by my two young children back then. The old saying 'children keep you young' had a whole new meaning for me having a 7- and 8-year-old who are just incredible," he said.

Second, Mr. Mohebbi felt he owed his employees who had worked with him and stood by his side during the ups and downs over the years. "I get goose bumps when I talk about my children and my team," he observed. "I have some very loyal people who have been with me for years. They shared in our vision, and they felt there was nothing that we couldn't do together. I

Freshly baked loaves of Papa Pita Great Grains bread leave the oven and travel on a spiral cooler. All of the bakery's equipment is totally washdown.



The bread line's nonstick cone rounder uses light warm air to round doughs without flour or with a slight dusting of flour or a dab of oil.

wanted this for them as much or more than for myself.”

Today, that vision has become reality. The new 200,000-sq-ft facility in West Jordan, UT, produces flatbreads, tortillas, bagels, buns and premium sandwich breads, and it has the capacity and versatility to meet anything the market can envision for years to come.

That is no exaggeration, according to Mr. Mohebbi. Relying on his engineering background and decades of experience, he personally oversaw — no teams of engineers or consultants at his side — the design of the new bakery that will eventually house five makeup systems feeding three tunnel ovens.

By using multiple makeup lines to feed two of the three ovens, the bakery can adjust its schedules, move its existing makeup lines or adapt its production lines to ensure the bakery's ovens are kept full as customer demand for one product increases or wanes.

“One thing that was big on my mind when I designed this bakery was to have the flexibility not only to make our products today but also to make the products of tomorrow,” he said. “Most companies put themselves in a box with a budget and tie their lines to specific products. My knowing the spectrum of the product line and envisioning a production line that can do any and all of those products in an efficient manner was key to designing these lines. It's not just a flatbread line.”

Additionally, he noted, when investing in the ballpark of \$50 million, a family-owned bakery needs to keep every potentially foreseeable — and unforeseeable — option open and demand attention to every detail. In dealing with suppliers, Mr. Mohebbi vetted, negotiated and even haggled to make sure that he got the biggest bang for the buck.

Although he calls himself a gambler, he did everything in his power to minimize his risks.

“Instead of telling them what I wanted built, I got a list of everything they could build or have built in a system,” he said. “I went to each manufacturer and said, ‘I want you to build me the very best and don't stop there. I also want to add this, this and this.’ I negotiated everything up front.”

In some cases, Mr. Mohebbi went against vendor recommendations. In the end, however, he felt he got the best they could offer. “Two years later, several manufacturers came out and said this is the best line they ever built,” he said. “They will incorporate many of the things they've done here into their standard design because they see how much better it performs and how it improves the product. We didn't want to be just another bakery. We want to be a great bakery.”

Placing a finger on food security

Papa Pita requires fingerprint authorization to gain access to the mixers, proofers, ovens and other systems at its new bakery in West Jordan, UT. If line operators want to change mixing times or temperatures, they need to summon their supervisors — or a person with the designated authority — to make the change.

“Codes can be shared,” noted Farzad Mohebbi, president and CEO. “I don't want people just changing the process because they think it needs to be changed.”

Both the plant manager and operations manager are alerted when a formula goes beyond its specifications.

Likewise, HMI controls are user-friendly and easy to understand. “It doesn't matter what your cultural background is,” noted Bryan Malkin, operations manager. “You can operate these systems because they're based more on symbols than language.”

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The bakery's versatile line can completely submerge and boil bagels or just apply a waterfall or even bypass the system and steam them.

Take the bakery's Rademaker 48-in.-wide flatbread line installed last year; it can crank out 100,000 round thins per hour. The capacity is so large that the line has a dedicated proofer and Babb tunnel oven and needs two spiral coolers just to handle the volume.

Moreover, Mr. Mohebbi noted, the versatile line can create almost any form of pita, lavash, pizza crust, naan, thin bagel or any other specialty thin bread that becomes the next big thing in the market. How? Of special note, it employs rotary cutters and scrap recycling systems that come both before and after the proofer.

Why's that? "Some products may change shape during the proofing process, and they need to be cut and made up after proofing to obtain the strict consistency our customers want," he said. "And we never know what products we'll need to produce five years from now."

Its bagel line, which features a BakeTek makeup system, started up this May and turns out 30,000 to 40,000 pieces per hour, depending on their size, and it doesn't matter if the customer wants them boiled, steamed or anywhere in between. "We have the ability to completely submerge and boil bagels or just apply a waterfall or even bypass the system and steam them," Mr. Mohebbi said. "Or we can do a combination of any of these."

In the near future, Papa Pita plans to add artisan roll makeup equipment to create a combination line. The move will maximize throughput of the Capway proofer and Babb stone-hearth tunnel oven and allow the bakery to expand its product portfolio for both the retail market, which makes up 75% of its business, and the food-service channel.

Feeding the third Babb oven is the Gemini Bakery Equipment variety bread line, which began production this spring and features a double-pressure board system that can make a full range of high-end specialty breads from 60 to 120 loaves a minute. During *Baking & Snack's*

exclusive visit in June, Papa Pita just began installing an AMF conventional bun line that makes 600 pieces a minute and shares oven space with the bread line.

Speed, capacity and versatility are just part of the bells and whistles built into this bakery. Mr. Mohebbi also invested in sanitary designs and in reducing maintenance, eliminating downtime, increasing food security and adding process controls that will continue to pay benefits in the long run.

Those important little things

In 2008, Mr. Mohebbi told *Baking & Snack* that success for Papa Pita comes down to monitoring, controlling, fixing or improving the little things. As they say, the devil is in the details. (For a history of the company, see *Baking & Snack* of December 2008, available in digital edition at www.bakingbusiness.com.)

Some of those little things are just common sense. Managers, for instance, are located near their areas of responsibility. Corporate offices are in the front, operations in the middle of the bakery and sales in the back near the warehouse and distribution center.

Then again, some of those little things are not that small. Take the bakery's straight-line production flow. "It's almost a dream to have a bakery with wide aisles between lines and totally straight," Mr. Mohebbi said.

Many companies talk the talk about sanitary design. Mr. Mohebbi walks the walk, and that's not a little thing in today's world. "The majority of our lines are, back to front, all stainless and all washdown, and everywhere possible, we used servo motors to avoid chains that can break down," he noted. To minimize spare parts inventory, Papa Pita worked with only a handful of vendors that Mr. Mohebbi personally vetted. He insisted all PLCs, HMIs and electronic controls come from Allen-Bradley. "If I have to change one HMI, I don't want to

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The bakery's flatbread line can crank out up to 100,000 products an hour, but it's also flexible enough to produce pitas, naan, lavash and even pizza crusts.

have 50 different types on the shelf," he explained.

His attention to detail can be seen with even something as prosaic as a proofer. Mr. Mohebbi wanted a proofer that was much bigger and much brighter so that when maintenance personnel needed to make a repair, they could replace or maintain everything as quickly as possible. In the long haul, he said, downtime costs bakeries much more than initial investments. Often, he added, downtime is never considered as a variable when calculating ROI on a major project.

"When your proof box goes down and you have to change something — or if you can't wash it daily or fix it easily — chances are that it will not be washed properly and will not be maintained properly," he said. "Your breakdowns, your downtime and the cost of repairs are many, many, many times more than that incremental cost of running it.

"One of my requests is that I want to walk into my proofers with my sunglasses on and be able to see everything because it's so bright," he said. "Everybody makes their box like it's a dark hole. You go in there, and you can hardly see because the people who designed it never have worked in that box. I wanted to get in, see what's wrong, fix it and get out because it's hot in there."

Inside a brand new bakery

With the opening of the West Jordan, UT, bakery, Papa Pita now employs 200, more than triple the 60 it had two years ago. Production at the bakery runs five days a week with extensive sanitation and preventive mainte-

nance on down days. Spending \$50 on replacing a bearing today can save thousands of dollars in labor and wasted product if the line goes down.

Flour is stored in three silos with 170,000 lb of capacity each and delivered through a Great Western Manufacturing sifter. Papa Pita worked with Horizon Systems to automatically deliver flours and 14 other essential ingredients — ranging from bulk oil and sugar to salt and other minors — that are found in most of the bakery's products, directly to the mixers.

To provide front-end control and eliminate human error, the bakery relies on a Northwind recipe system that monitors all ingredients, provides automatic lot tracking and protects proprietary formulas. There's no under- or over-scaling

here. Only yeast and a few other minor ingredients are added manually. If a supervisor or operator attempts to adjust or change a formula out of spec, an email alert is sent to Will Durrant, plant manager, and Bryan Malkin, operations manager. At the end of the day, the software turns out a report to assist in ingredient costing, purchasing and inventory.

Two Shaffer 2,000-lb open-frame dough mixers can interchangeably supply the flatbread and bagel lines, depending on production flow. Mr. Mohebbi selected the mixers because of their energy efficiency and sanitary design. "They look like Transformers on four big legs that make them easy to wash," he said.

On the Rademaker flatbread line, dough travels out of the mixer and up an inclined conveyor to an extruder and several multiroller reduction stations, a cross roller and gauging stations. After passing through the first rotary cutting station, dough pieces ride along a variable-height bridge that feeds the Rademaker cascading proofer, which automatically adjusts the dough's path of travel according to the required proof times.

For longer proofs, the bridge feeds dough pieces to the top of the proofer. For shorter proofs, the bridge lowers to the middle level or to the bottom for little or no proof. The line can even run a dough sheet through the proofer, and a second set of rotary cutters creates the dough pieces.

Each level of the cascading proofer comes with its own servo motor to adjust its speed. This added feature may seem redundant or over-engineered at first because

many proofers operate with only a few single-drive motors. However, Mr. Mohebbi said he insisted that Rademaker include this feature because it not only provides further control of proofing times but also allows better control of the product's shape during transfer from one layer to another.

The Babb 96-ft, direct-fired oven can reach 1,000°F. The expandable modular oven features a steam chamber, if items need steaming, and an inspection system to monitor color and the size of products.

All of the bakery's IJ White spiral coolers come with clean-in-place systems and belt sanitizers to minimize cross-contamination. A sloped floor beneath the coolers allows foam and water to drain, dramatically reducing cleaning time. "It used to take us 30 to 40 hours to clean them," he said. "Now it's done in 20 minutes."

Flexibility and reliability

The combination bagel and roll makeup line features a five-pocket piston divider that feeds five bagel formers with the pieces dropped via a reciprocating conveyor onto 32-by-48-in. peel boards. An ABB robot with a gantry storage system loads and unloads peel boards.

Once again, the proofer is integral to the line's flexibility. When the peel boards enter the Capway CapStep proofer, they rise upward then transfer to a downward system. According to Mr. Mohebbi, the space-saving system can handle products ranging in height from 1 to 7 in., thus accommodating everything from bagels to bread bowls for soup. Proofing times are also adjustable. "Most companies proof dough within 45 minutes to an hour. Our proofing times are much, much longer," he noted. "Some of them are 50% longer than normal."

After proofing, the bagels enter the water bath and waterfall system,



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PAPA PITA BAKERY

Papa Pita's mixers provide energy efficiency and sanitary design. The bakery has three 2,000-lb dough mixers and one 1,300-sponge mixer.

or they can bypass it to create softer steamed bagels. The Babb 100-ft oven features the same options as the one on the flatbread line, except it has stone hearth side walls and a maximum temperature of 700°F.

The variety bread line also provides extensive versatility. Sponges are created in a Shaffer 1,300-lb mixer then receive up to a 4.5-hour ferment in a conventional first-in, first-out fermentation room before entering a third Shaffer 2,000-lb dough mixer.

"One of the things that is important to us is to stay true to our process and not be tempted to cut steps for efficiency and speed," Mr. Mohebbi explained. "Although we run at the highest rates, our process still manages to keep a long natural fermentation that creates good flavor."

The Gemini Bakery Equipment makeup line features a WP Haton single-pocket divider and WP nonstick cone rounder that uses light warm air to round doughs without flour or with a slight dusting of flour or a dab of oil. Dough pieces then travel under two pressure boards that can be combined to produce a wide variety of textured products. A topper between the boards allows seeds and grains to be rolled into the dough pieces as they travel under the second pressure board and are then panned.

After traveling through the CapStep proofer, similar to the bagel line, the pans pass under a Burford seeder and into a Babb 100-ft air-impingement oven. The wash-down oven can reduce bake times by up to 30% while lowering energy usage by 35%. The bakery can control not only bake times and temperatures but also convection velocities and the heat above and below the hearth.

Of special note, Mr. Mohebbi said, is the oven's ability to raise or lower temperature by 150 F° in two minutes, which streamlines changeovers. "We can bake one pan or an oven full of pans without heat flashing," he said. "Every loaf is the same color. This is a huge advantage on a combination [bread and AMF bun line] and reduces waste tremendously."

The empty pans travel on a Capway conveyor through a 50-ft tunnel that cools them from 375°F to about 95°F. Specifically, ambient air blows through the tunnel to remove the heat from the pans. This system provides the necessary cooling as the pans recycle back to the front of the line so as not to shock the dough pieces prior to



entering the proofer. Meanwhile, the warm loaves travel along an IJ White spiral cooler and on to packaging.

At this year's International Baking Industry Exposition, to be held Oct. 6-9 in Las Vegas, Papa Pita will look for additional ways to streamline its packaging operations. Currently, the packaging department features a battery of UBE baggers and slicers and Kwik Lok closure systems. All systems can be washed down, but most of the tray loading and basket stacking remains manual. The bakery also casepacks products for food-service accounts and stores them in a 160-pallet freezer.

In addition to continuous investment, Papa Pita plans to focus on continuous improvement, noted Mr. Malkin, a start-up specialist and expert in lean manufacturing who's worked at multinational corporations throughout his career.

Ramping up the flatbread line, he acknowledged, involved a pretty large learning curve since the old bakery had a lot of rack ovens and was much more manually operated. The bagel and bread lines, however, came online much faster. The next step will involve ongoing training to lower costs further and improve the operations' efficiencies. "We're driving down the idea that every second of operation uptime counts," Mr. Malkin said.

Mr. Mohebbi said he couldn't have completed the project without his key suppliers. "I had one thing in common with all these vendors: They are owned by an individual like me, and their personal relationship commitment to excellence and promise to me was the key factor in choosing them to build my new bakery, and I sense that they are just as proud of the end result as I am," he said.

And, of course, he thanked his management team. "I could not have done this without their tremendous hard work, countless hours of stress and sleepless nights and the dedication and passion they have poured into this two-year project," he said. ●

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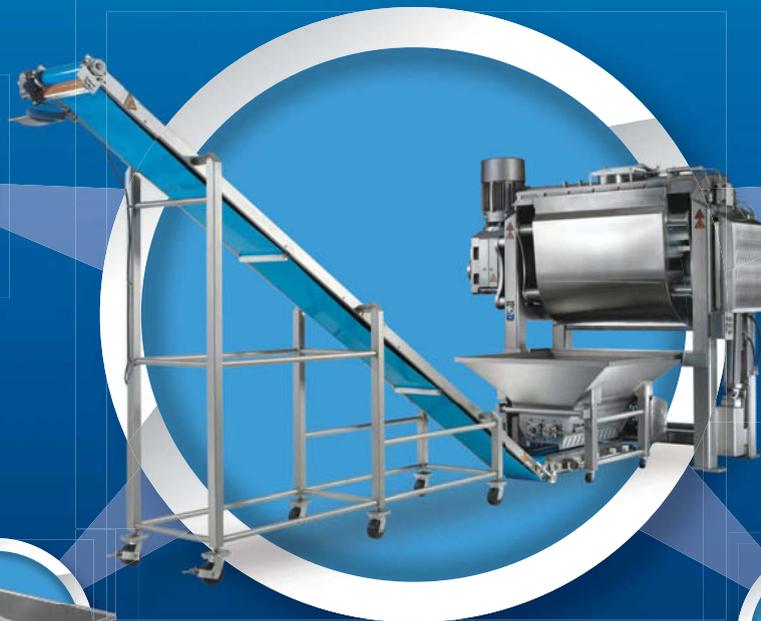
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A Perfect 10

Papa Pita prints the phrase "To live well is to eat well" on the front of every bag of its branded products.

Depending on the competition, winning five out of 10 times is not bad, seven out of 10 might be considered pretty good and nine out of 10 is often a hot streak.

That's still not enough for Farzad Mohebbi, president and CEO of Papa Pita, West Jordan, UT.

"My goal has been to make a great product at a fair price, and I believe we accomplish that to an *n*th degree at Papa Pita," he explained. "If I take my product to 10 potential customers for cuttings, I want 10 out of 10 to pick my product over my competition. That's a high bar to set. And then, I would like to produce it most efficiently as possible, tack on a fair margin and do my part in getting that in consumers' hands because it's the best product at the best price. That's what sets us apart from the competition."

Papa Pita strives for perfection along with an increasingly diversified product line and geographic expansion that fueled 30 to 50% annual growth during the past five years. About 75% of sales come from retail with the remainder from foodservice. Its products can be found from the Midwest through the Rocky Mountain states and along the West Coast as well as in Alaska and Hawaii. Most of its products are delivered fresh within an 800-mile distance from its bakery via independent distributors, although the company operates its own direct-store-delivery routes in Utah, Nevada and Idaho.

In addition to branded baked goods, the company also produces private label items. Its fundamental strat-

Papa Pita's winning formula involves creating 'healthy made delicious' products at affordable, everyday low prices.

egy involves offering premium products such as its best-selling wide-panned multigrain bread at prices slightly higher than private label but substantially lower than its competitors. All consumers, no matter what their incomes, should have access to quality, better-for-you products that feature whole grains and as clean a label as possible, according to Mr. Mohebbi. That's why Papa Pita places one of its key slogans — "healthy made delicious" — on all of its branded packages.

"I believe what we have is far better than what's out there, and it could meet consumers' demands because people are hungry for a better product at a better price," he said. "If you can create a better Starbucks with a better flavor and 30 to 40% lower prices, I guarantee that you will succeed."

Bubba's, Maya, Great Grains

Founded by Mr. Mohebbi's father 30 years ago, Papa Pita today specializes in flatbreads, tortillas, bagels, variety breads and more.

In addition to its popular pitas, the bakery's flatbread portfolio includes sandwich thins, naan, pizza crusts and lavash in all shapes and sizes under the Papa Pita

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Keeping the bread shelf full

Papa Pita operates 90 company-owned routes in Utah, Las Vegas and Boise, ID. However, the bakery's definition of a route is a little out of the ordinary because its version of direct-store-delivery includes a drop-ship system and teams of merchandisers, according to Dustin Bakker, national sales director.

Going to the merchandiser system reduced the number of trucks the bakery uses by 28, or to about 62 trucks in all. Mr. Bakker estimated the savings to be about \$500 a week on average per truck on operating costs and insurance.

"I'm trying to take the money out of what I'm wasting — I get sick seeing these trucks sitting out there for 15 or 16 hours a day and not being used — and put it to better use," he said.

Farzad Mohebbi, president and CEO, is proud of what his sales group has accomplished over the past two years. "To go from hardly any shelf space in our market to having half or more of the entire bread set in most major chains is truly amazing," he said.

brand, which sports an image of Mr. Mohebbi's grandfather as its logo.

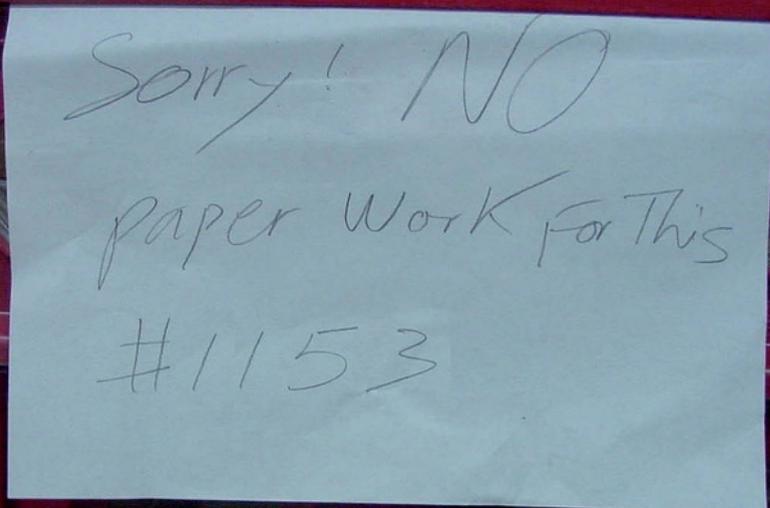
When Mr. Mohebbi joined the family business in 1998, he introduced bagels to Salt Lake City. Selling bagels under the Papa Pita name didn't make sense, so the company began branding them as Bubba's.

Soon afterward, the bakery diversified further, rolling out Maya's tortillas, named after his daughter. It then added Great Grains breads. The company also sells Thinwich flat round breads, Bubba's Skinny bagels and Wrapido Wraps.

Most recently, the company ventured into the sweet goods category by rolling out Bubba's cake donuts, made in Papa's Pita's old bakery in Salt Lake City and packaged per dozen in an overwrapped paperboard tray with a 14-day shelf life. Bubba's is now the company's breakfast brand. Not surprisingly, the line's leading seller is not a traditional chocolate, glazed or powdered sugar donut. It's toasted coconut.

Throughout the years, Papa Pita didn't spend much time on packaging. In fact, the company's products came in clear packaging with a label slapped on them, giving

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them what Dustin Bakker, national sales director, called a “small-time bakery look.”

“A lot of people laugh about the good ol’ days when we had stickers on our bread bags,” Mr. Bakker recalled.

During the past two years, Papa Pita worked with Barth Packaging to upgrade its brand to improve its shelf appeal. Scott Barth, the company’s president, met with Mr. Mohebbi to comprehend his approach to the market, then developed packaging that reflected the bakery’s vision.

“He came out here for two days and worked until 11 p.m. and around my schedule to understand what’s in my head and how to transform our product line,” Mr. Mohebbi said. “He just nailed it perfectly.”

The bakery’s packaging today is united under four pillars — fiber, whole grain, low-calorie and protein declarations — that support the company’s “healthy made delicious” campaign.

The bakery also puts “To live well is to eat well” on the front of every bag. “We believe in that concept,” he noted. “We brought all of our brands under one banner and created a type of packaging that informs consumers



of all of the products’ health and nutritional attributes.”

Each bag also declares “No HFCS. Transfats. Cholesterol.” “We threw away all of those things that should not be in bread to begin with,” he explained. “We came up with the cleanest label possible that did away with all of those terrible things that are in bread products; 95% of our product is all-natural and doesn’t contain a maximum amount of calories. We maximize fiber and whole grains in our products.”

On each bag is the Papa Pita guarantee. “If you’re not satisfied 100%, you’ll get your money back,” he added. ●

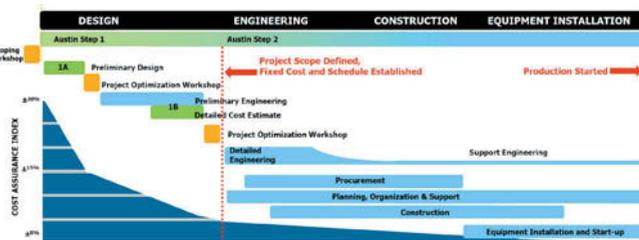
Papa Pita recently upgraded its packaging to better brand its baked goods and promote their “healthy made delicious” image.



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Hangin' on to Heritage



Despite the fact many younger US Hispanics have been born and raised in this country, they still have an affinity to their Latino roots.

by Shane Whitaker

Hispanics represent one of the fastest-growing segments of the US population. According to the 2010 Census, the Hispanic population grew 43% since the 2000 Census. In 2010, there were nearly 50.5 million Hispanics in the US, and they comprised 16.3% of the total US population up from 12.5% in 2000.

Consequently, any baking and snack food company would like to see these consumers making repeat purchases of its products. But what are the most effective ways to reach these consumers, and how can you ensure your baked foods and snacks will appeal to them?

"The key to marketing your product to any consumer group is to first understand their core behaviors," said Darren Seifer, food and beverage industry analyst, NPD Group, Port Washington, NY. "For instance, when

it comes to Hispanics and, particularly, when it comes to baking, it is important to understand that Hispanics almost never use the oven." US Hispanics use ovens only 7% of the time when preparing meals at home, which compares to 15% for non-Hispanics, he said, citing figures from NDP's "National Eating Trends (NET) Hispanic" report, which was a year-long study of US Hispanics' eating behaviors.

However, Mr. Seifer noted, US Hispanics consume bread at slightly more meals than non-Hispanics — 11% vs. 10%. Additionally, Hispanics are much more likely to eat bread at breakfast, with about 21% including bread during the morning meal compared to 15% for non-Hispanics. Additionally, the study found Hispanics are more likely to have ready-to-eat cereal at the end of the day.

El Sabroso Taco-Litos line from Snak King are tortilla chips rolled and seasoned in three flavors: Chile Limon, Salsa Picante and Guacamole, and these snacks are targeted toward Hispanic consumers.
Snak King



To best market to Hispanic consumers, Sylvia Melendez-Klinger, founder of Hinsdale, IL-based Hispanic Food Communications, said companies must assess their clientele and provide for their needs. “It’s not just translating materials anymore; it’s about also acculturating it and applying it to their needs,” she added.

Speaking their language

Although many younger Hispanic consumers whom bakery and snack manufacturers may want to target are fluent in English, Mr. Seifer said it would be a big mistake to not use their native language.

“When you look at the millennial generation, in particular, it is predominately adults in their 20s, and many of them are still bilingual even though they have been in the US from a very young age and grew up around English,” he said. “The connection to their heritage is still rooted in Spanish, and if manufacturers and marketers want to connect with this group

“Hispanics value the relationship between the consumer, the food manufacturer and the retailer.”

Mark Singleton, Rudolph Foods

the message can become jumbled and won’t make sense because it doesn’t flow. “It basically looks like Chinese to us,” she added, noting that companies should use bilingual translators who are familiar with the food as well as the messages they are translating.

“You want to make sure that those translations are global and not just regional for one country or one place,” Ms. Melendez-Klinger said.

That brings up another issue companies may have when marketing to Hispanics. This is a broad demographic made up of people from many different countries, and as such, their tastes are varied. Although 63% of US Hispanics identify themselves as Mexican, according to the 2010 Census, the other 37% have a wide variety of heritages such as Salvadoran (3.3%), Guatemalan (2.1%) and Colombian (1.8%) as well as Puerto Rican (9.2%) and Cuban (3.2%). What’s popular with Mexicans isn’t necessarily appealing to someone who is Cuban or Puerto Rican.

“Some companies put chili peppers onto a bread and think it is going to appeal to all Hispanic consumers, but it’s not going to happen,” Ms. Melendez-Klinger said. “You have to understand the different countries and the foods that they eat, and you can provide something that can appeal to all of them.”

Diversifying flavors

Dunkin’ Donuts, Canton, MA, works closely with all its franchisees to respond to its guests’ needs, and in some cases, it will tailor its menu items to resonate with particular cultures and communities, said Xavier Turpin, the company’s director of multicultural marketing. “For instance, in recent years, Dunkin’ Donuts introduced both limited-time offerings and permanent menu items featuring bold and exotic flavors inspired by the Latin cultures in select markets, such as the Cuban sandwich

Hispanics love social media

Hispanics are especially active with social media and 25% more likely to follow a brand than the average US adult online, according to the “State of the Hispanic Consumer” report from Nielsen, a New York-based leading global provider of information and insights. Last year, Hispanics were the fastest-growing ethnic group year-over-year to Facebook and *WordPress.com*, Nielsen noted.

“The time that Hispanics are spending on the Internet, it is all on social media,” said Sylvia Melendez-Klinger, founder of Hispanic Food Communications, Hinsdale, IL. One of the reasons for their high use of social media is that Hispanics are more likely to have a smartphone as compared to a home computer with Internet access, and it’s often easier to access social media sites using a smartphone vs. surfing the Web.

Darren Seifer, food and beverage industry analyst, NPD Group, Port Washington, NY, pointed out that Hispanics’ high presence on social media sites such as Facebook and Twitter makes “a pretty big avenue when trying to reach Hispanics in the US.”

In addition to launching a smartphone app that can be viewed in both English and Spanish, Dunkin’ Donuts, Canton, MA, ramped up its Spanish-language social media efforts by engaging with its Spanish-preferred Hispanic guests through special content on the Dunkin’ Donuts Facebook page, said Xavier Turpin, the company’s director of multicultural marketing.

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and Café Con Leche in south Florida, Huevos Rancheros Wake-Up Wrap in Phoenix and Latin-inspired donuts in New York,” he explained.

In 2012, Dunkin’ launched an integrated Hispanic advertising and marketing campaign with its first Spanish tagline, “America Se Mueve Con Dunkin’,” which is equivalent to its general marketing tagline, “America Runs on Dunkin’.” Earlier this year, it appointed Miami-based Zubi Advertising as its new Hispanic marketing and advertising agency.

“Understanding how America’s face is changing to a more diverse profile nationwide, Dunkin’ Donuts sees an opportunity to increase consumer engagement and enhance the brand equity within the Hispanic marketplace,” Mr. Turpin said. “At Dunkin’ Donuts, we realized that marketing to ethnic groups has evolved over the years and the approach requires marketing to a multicultural nation. We are committed to being the brand of choice for Latinos looking for high-quality food and beverages, so we believed that Zubi Advertising would help increase our consumer engagement within the Hispanic community.”

The company is focused on building brand loyalty with its Hispanic guests. “We believe that a 360-degree approach is required, spanning from product innovation, to the in-store experience, to our marketing and communications approach across creative, digital and social media, promotions and public relations,” Mr. Turpin explained.

Hispanics are among the most brand loyal consumers, according to Mark Singleton, vice-president of sales and marketing at Rudolph Foods, Lima, OH. “The Hispanic consumer tends to look for nostalgic brands,” he said. “Once they start buying a brand, especially if it’s a trusted brand that reminds them of

Chile Limon Chicharinas from Rudolph Foods have a pop of spice that appeals to Hispanic consumers.

Rudolph Foods

home, they will continue to buy it.”

Key components to a Hispanic marketing campaign include family, heritage, pride and collective togetherness, Mr. Singleton pointed out. “Hispanics value the relationship between the consumer, the food manufacturer and the retailer,” he added.

Mr. Singleton also noted that a common misconception is that Hispanic foods have to be mouth-burning spicy, but the reality is Hispanic foods are zesty and flavorful. “Products like our Chile Limon Chicharinas have a pop of spice and wonderful flavor to capture the customers’ attention,” he added.



Understanding media influence

Dunkin’ uses Spanish-language TV and radio advertising as well as bilingual in-store signage. In May, the company updated its mobile app, introducing a new language setting that enables users to view content in English or Spanish. At the same time, it also relaunched its official website to provide content in Spanish as well as English.

Having the mobile app available in Spanish might actually have the greater impact with this population, as Hispanics are much more likely to have a mobile smartphone than a personal computer in the home. Mr. Seifer noted that the use of smartphones in the Hispanic community was a reigning theme he picked up on at the Hispanic Retail 360 Summit in Los Angeles last year. Because of this, he said, scannable coupons on smartphones represent a good avenue for reaching Hispanic consumers.

According to a Media Behavior & Influence Study from Prosper Insights & Analytics, Worthington, OH, in December, broadcast TV has the greatest influence on Hispanics’ grocery purchases, with 29% Hispanics 18 years and older citing it as the greatest traditional media influencer, which was three percentage points higher than all US adults 18 and older. Broadcast TV’s sway was even greater (29.6%) for Hispanic households with income of \$50,000 or higher. Cable TV advertisements also had a much greater influence on Hispanics,





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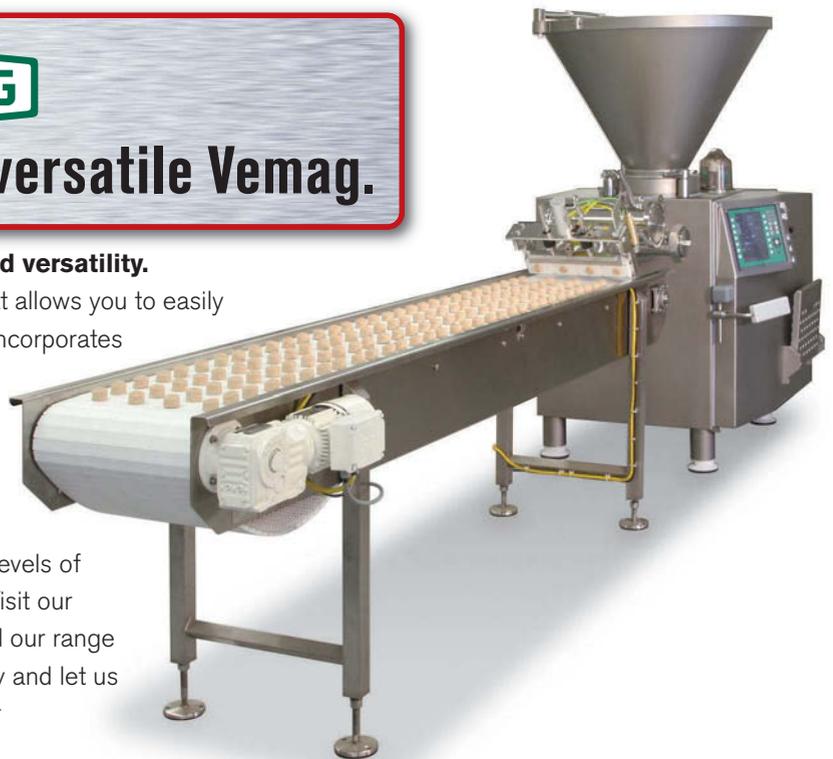


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with 18.8% noting this as most influential as opposed to 16.3% for all US adults.

While Ms. Melendez-Klinger agreed that television would have the greatest impact on Hispanics' grocery purchasing decisions, she pointed out social media is having a big influence as far as a non-traditional method to reach Hispanic consumers (See "Hispanics love social media" on Page 36).

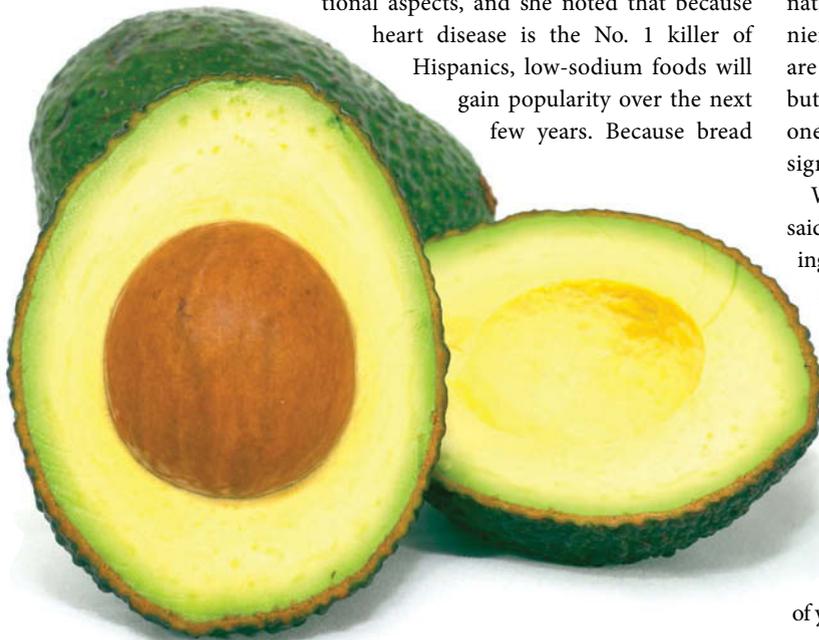
Hispanics also were more likely to be influenced by radio, especially those households making \$50,000 or more annually, who noted that this medium was the greatest guidance for groceries — 15.3% as opposed to 12% for all US consumers.

Munching more at lunch

Another reason food companies want to market their products to Hispanics is that they spend a greater percentage of their income on groceries. "Despite that they have the lowest income, they are the ones that spend the most for food and household items," Ms. Melendez-Klinger said. "They spend more than any other group on food. They are the ones who are going to be buying the products, so you want to have things that appeal to them."

As a registered dietician, Ms. Melendez-Klinger, who is also a member of the Grain Foods Foundation's Science Advisory Board, often focuses on foods' nutritional aspects, and she noted that because

heart disease is the No. 1 killer of Hispanics, low-sodium foods will gain popularity over the next few years. Because bread



Dunkin' Donuts hired an advertising firm earlier this year specifically to target Hispanic consumers.

and baked foods have high sodium levels, she predicted this trend could have a substantial impact on the baking industry. However, she also noted that Hispanics will look for grain bases with more fiber, flax and other nutrition boosters.

To promote health and wellness, Ms. Melendez-Klinger preaches moderation as a key factor. "We are going to have Twinkies, and we are going to have cookies," she said. "It is about controlling ourselves and

not eating the whole package of cookies."

In regard to eating habits, lunch is traditionally the largest meal of the day for US Hispanics. According to the "NET Hispanic," 73% prepare and eat lunch at home, compared to 62% for non-Hispanics. Only 18% of Hispanics consume sandwiches at lunch as compared to 38% of non-Hispanics. However, sandwiches are still the top item Latinos choose for the mid-day meal.

A common mistake food manufacturers make when marketing products to Hispanic consumers is assuming it's beneficial to have a finished product such as a complete burrito with all the fixings and fillings. "We have found that doesn't resonate very well with Hispanics," Mr. Seifer said. "You are taking away what Hispanics refer to as sazón or their signature way of making a particular dish. The convenience aspects that seem to resonate with Hispanics are things like canned beans. That is an ingredient, but it's not the finished product. They want to be the ones who assemble it and finish it with their own signature spices."

When it comes to a marketing paradigm, Mr. Seifer said companies should not think of Hispanic marketing as a separate pillar from their main marketing programs because when sales numbers start to slip, the first things to go are the ancillary programs. "What has been recommended is that you have your main marketing pillar and beneath it are your Hispanic efforts," he said. "So when marketing your product, it's always going to have a Hispanic angle to it as well."

Hispanic marketing is not something that should be pushed to the side and thought of as expendable. "It is something that should be well integrated into all of your marketing pillars," Mr. Seifer said.

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Different Flours Bake Differently

Pita bread made with lentil flour bakes well, exhibiting the puffing action that creates the product's characteristic pocket.
Pulse Canada

Here's what formulators need to know about flours milled from variety grains including beans and lentils.

by Laurie Gorton

Putting variety flours to work in the bakery takes a bit of extra care in handling and more substantial changes in formulation and processing.

These ingredients should be held in a cool, dry location, preferably at less than 75°F and under 50% relative humidity, and kept away from spices and other food ingredients with strong odors, advised Beth Arndt, PhD, director of R&D, ConAgra Mills, Omaha, NE.

Corn flour's shelf life in inventory is about the same as whole wheat flour, according to Jeff Casper, R&D manager, Horizon Milling, Wayzata, MN. "How you handle whole wheat flour should also suffice for Cargill's Maizewise whole grain corn flour," he said.

The bran and germ present in most nonwheat flours pose other storage problems. Nonstabilized flours will need protection against oxidative rancidity. Bryan Scherer, director of R&D, Penford Food Ingredient Co., Centennial, CO, recommended antioxidants such as rosemary extract or tocopherols be included in product formulations.

Formats include single or blended grains; whole, flaked, puffed and toasted forms; and a full range of flour granulations. In doughs based on wheat flours, nonwheat grain blends can be used at 10 to 20%, flour weight basis, according to Mr. Casper. "The other half of the story are grain blends used to top or enrobe pan bread doughs," he added, suggesting a topping rate of 2%.

"You can get different textural effects with the range of granulations," Mr. Casper said. "Some like the grit in a muffin. For pan bread, however, a finer grind is recommended. To achieve various visual effects, the baker can use a blend."

The question of structure

Formulators must account for functional differences, which include changes in texture, absorption and strength. "Balancing the granulation of the whole grain, the amount of water required and added time to allow for proper absorption are all ways to resolve changes in the finished product texture," explained Brook Carson, director of R&D, ADM Milling, Overland Park, KS.

"When nonwheat or whole grain is introduced into the baked products, gluten strength is diminished," she continued. "Adding wheat proteins such as wheat protein isolate can improve sheeting and dough handling as well as finished product quality."

Bran and germ in a whole-grain flour, wheat or nonwheat, provide no support to dough structure and actually disrupt the gluten network. This makes air entrapment more difficult and affects the crumb texture of the finished product. They also affect water balance.

"Bran and germ take on more water during mixing but lose water more quickly in the final product, possibly

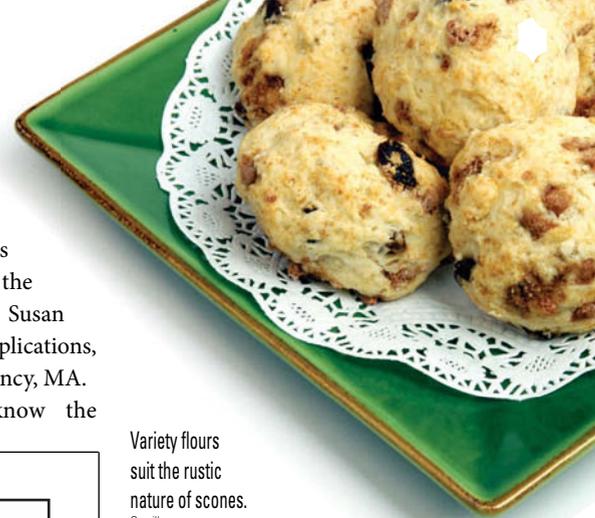
VARIETY FLOURS

resulting in shorter shelf life,” Ms. Carson explained.

A good piece of advice is to treat nonwheat flour as an entirely different ingredient, not a flour. “In general, any new ingredient will change

the dough, and consumers will notice differences in the finished product,” said Susan Kay, manager, product applications, Bay State Milling Co., Quincy, MA.

“It’s important to know the



Variety flours suit the rustic nature of scones.
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grain’s water-holding capacity,” she continued. “Some hold a lot, and some don’t hold much water at all.” She recently tested the absorption of various ancient grains and found high rates for amaranth and spelt, moderate for teff and quinoa, and poor for millet and sorghum. Grains with higher absorption will require baking at lower temperatures and for longer times, she advised.

Although rye, barley and oats contain gluten, it’s not the same as wheat’s and won’t perform the same structural role. To compensate, bakers should add vital wheat gluten when working with nonwheat flours in all but gluten-free applications. This adjustment, however, will increase water requirements. “The rate of hydration will change, and you will see differences in the rheology of the batters and doughs,” Mr. Casper advised.

Water control essential

Hydration requirements can change the process in other ways. “Some grain ingredients may require prehydration or more time to hydrate,” Dr. Arndt said. “A common problem in making whole-grain and multigrain doughs is the addition of too little water. It is also critical to not under- or over-mix dough because whole grain and multigrain doughs generally require less mixing time compared with refined wheat flour doughs.”

Flour-like ingredients for gluten-free foods — for example, Penford’s PenTech GF line — include structural components such as food starches and hydrocolloids that mimic the func-

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tionality of gluten. "Another factor to consider is that nonwheat dough often produces a looser texture than wheat dough," Mr. Scherer said. "This requires special handling when forming into loaves or other shapes."

Some baked foods require less work. Patrick O'Brien, bakery marketing manager, Ingredion Inc., Westchester, IL, reported, "As an example, Ingredion's Hi-Maize whole grain corn flour is easy to

formulate into most low-moisture foods without affecting mixing or cooking." The company maintains a library of starting formulations for many different applications to help cut down on product development or reformulation time.

And then there's the matter of flavor. Some nonwheat flours have more pronounced effects than others. "The flavor difference is typically due to the additional tannins found in the bran of the grain," Ms. Carson observed. "Whiter whole-grain varieties typically contain fewer tannins, which results in a less bitter taste." She recommended use of more sweetener or a masking agent to overcome such taste problems.

Pulse flours made from edible beans, legumes and lentils are seen as an interesting way to add health appeal to baked foods and snacks. Experiments at the Canadian International Grains Institute reveal tremendous potential, according to Heather Maskus, MSc, project manager, pulse flour milling and food applications, Canadian International Grains Institute (CIGI), Winnipeg, MB. Because they are different from regular flour, they will require some modification in processing and formulation approaches.

"Typically, the pulse flours have higher water absorption capacity compared with wheat flour," she said. "However, in optimized formulations, using less water typically helps with machinability and handling when working with pulse flour ingredients." •

Editor's note: For a deeper examination of variety flours, read "On the Ryes ... And Others" starting on Page 53 of the June edition of Baking & Snack. And watch for Q&A sessions concerning variety flours in upcoming editions of the Formulations Update e-newsletter.

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Whole Grains for Every Palate

Bakers and snack producers get creative to meet consumers' nutrition demands.

by Charlotte Atchley

Whether consumers like the taste of whole grain or not, they all want the nutrition. "If consumers have a choice between a whole grain or refined product, they are going to choose whole grain for its nutritious image," said Karen Mansur, program director for the Whole Grains Council, "especially if they can get that nutrition in a way that tastes like what they're used to."

Consumers are reading food labels more than ever and looking for recognizable ingredients. Institutions and foodservice establishments are asking bakers for more whole grain options. In return, bakers are asking for more whole grain ingredients.

Even though whole grain is becoming more and more widely accepted, it does not exist without its own challenges. Food processors must navigate a world of regulation and a sea of confused consumers. "There is still consumer confusion between products with whole grain claims, the Whole Grain Stamp, and 'Made with Whole Grain' labels," said Jeff Casper, R&D manager, Horizon Milling, Wayzata, MN.

Bakers and snack makers should know what ingredients consumers are looking for as well as the taste and texture their target shoppers prefer. And then there is the price tag. "The economy has made it difficult on these premium products because of their higher price," said Robert C. Meyer Jr., director of technical services, Dakota Specialty Milling, Inc., Fargo, ND. Finding cost-effective ways to formulate with whole grains is necessary in order to pass those savings onto the consumer and get the products into the shopping cart.

Wheat has long dominated the whole grain marketplace as the preferable grain for formulating whole grain products. When substituting whole grain for refined flour, the obvious choice is to replace it with wheat in its whole grain form. Now that consumers are used to whole wheat, the next step is to venture into other, less prevalent whole grains. "The whole grains baking market was once focused on growing the whole wheat bread category," said Colleen Zammer, director of product marketing, Bay State Milling, Quincy, MA. "Now, in many areas, whole wheat is exceeding white bread sales, and consumers are growing tired of only having two choices, white or brown."

A new spin on bread

As consumers have acclimated to the bitterness and hearty texture of whole wheat bread, they've sought out some diversity in their whole grain bread options, giving bakers the opportunity to get creative when it comes to taste and texture of the average loaf of bread.

"From a grain standpoint, this has led to bread and baked products using more ancient grains and gluten-free grains for their marketing and nutritional appeal," Ms. Zammer said. With its acquisition of T.J. Harkins in August 2013, Bay State Milling expanded its grain choices from wheat, rye and spelt to include ancient grains such as amaranth, quinoa, buckwheat and sorghum, which happen to also be gluten-free.

Grain Millers, Inc., Eden Prairie, MN, which focuses on oat products, has seen the value of and demand for

Today's innovations in whole grains offer bakers a plethora of options for the right taste, texture and functionality they are looking for in creating a variety of whole grain products.

ADM Milling

WHOLE GRAINS

ancient grains and introduced its own capabilities with these ingredients at the Institute of Food Technologists' annual meeting and Food Expo this year. The company hopes to expand to all of the ancient grains in the future but currently offers amaranth, buckwheat, chia, millet, quinoa, sorghum and teff.

Recognizing growing demand in whole grain across all bakery and snack categories, ADM Milling, Overland Park, KS, added whole grain sorghum flour. "Going forward, we plan to evaluate the opportunity to add other whole grains," said Brook Carson, director of R&D, ADM Milling. "We are also evaluating our existing systems to determine what modifications could be made to support more whole grain ingredients and then determine what other varieties of whole grain would fit best."

While whole grains in bread have definitely made strides to overtake refined flour, the taste and texture is still polarizing among consumers. "There is strong demand for products that are rich with whole grains but lighter in color, less bitter in flavor and have softer texture as well as an emerging trend around specialty items that are more dense and textured," Mr. Casper said. While ancient grains may satisfy more curious palates, some people just want soft, smooth bread with added benefits of whole grain.

To meet this continued need, ConAgra Mills, Omaha, NE, offers its Ultragrain whole wheat flour, milled from hard white wheat. This flour's particulates are fine enough to deliver a finished product with whole grain nutrition without changing the taste, color and texture of a product. For bakers wanting to make the transition to whole grain nutrition, ConAgra Mills offers



Corn enables bakers and snack producers to provide whole grain nutrition in many different applications in a cost-effective manner.

Dudion Milling

Ultragrain T-1, a blend of 30% Ultragrain flour and 70% conventional white flour, milled from hard red wheat. This blend makes transitioning simpler without risking consumer appeal, according to the company.

Taking a snack break

Although whole grain is still evolving in the bread aisle, many food companies are setting their whole grain sights on other segments. "The industry grew very quickly in the last few years, and now it's reaching a point where companies are expanding their use of

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Ancient grains can bring a new flavor and texture to bread while delivering whole grain nutrition.
ConAgra Mills

whole grain, finding new ways and new ingredients,” Ms. Mansur said. Instead of committing wholly to whole grains, companies are simply expanding their use of whole grains into snacks and other baked foods.

This building interest in new grains for new applications is obvious to Rajen Mehta, PhD, senior director, specialty ingredients, Grain Millers, Inc., Eugene, OR. Different grains and fractions of grains result in different products. When adding red wheat bran to a low-moisture product, a snack producer will create a product with some crunch. Use white wheat bran instead, and that product will be softer.

“All the textures are affected by the grain components, and often even the way you process them affects the end product,” Dr. Mehta said. “Everything from particle size to what kind of pre-heat treatment, whether you use wet heat or dry heat will affect the structure of your grain component, and it will affect the texture of the product.”

As with bread products, some consumers love the taste of refined wheat but want the nutrition of whole grains, and other consumers embrace the flavors of whole grain.

Bakers and snack producers can get their arms around both of these consumer types by using different grains and particulate sizes.

Soft white whole wheat flour from ADM Milling gives cookies, crackers and other snack foods higher amounts of whole grain. “By choosing soft white wheat, the finished product has less bitterness and the appropriate delicate texture typically expected in applications made from soft wheat,” Ms. Carson said.

In delivering exciting tastes to snacks, ancient grains can bring novel whole grain nutrition to a snack that whole wheat maybe can't. They can also provide the added value of gluten-free. ConAgra Mills attributes the success of its Ancient Grains to consumer demand for variety. Introduced in 2007, the portfolio includes amaranth, quinoa, sorghum, millet and teff. The company most recently added buckwheat, spelt and different puffed and toasted grains to give snack producers and bakers more versatility.

Formulating a switch

The goal at the end of the production line, in all cases, is to provide a nutritional and tasty product.

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WHOLE GRAINS

However, whole grain products are by nature more complicated and costly to produce than their refined counterparts. Before starting R&D work, bakers and snack producers must consider the goals of the finished product, Mr. Meyer said. Should the product meet any of the Food and Drug Administration's health claims for whole grains? Who is the final customer, and what are that customer's needs? Are you add-

ing other nutritional ingredients such as vitamins, calcium, fiber or protein to enhance the benefits of their products?

Susan Kay, manager of product applications, Bay State Milling, said the trick is knowing what modifications must be made to formulas and the production process when using whole grains. Manufacturers need to understand the basic qualities of the whole grain they are using in order to adjust production. Bakers should consider the necessary changes in the hydration rate, gluten development and mix times, dough handling and makeup as well as proofing, baking and temperatures. "With some basic understanding of whole grains and hands-on experience of working with whole grain formulations, bakers and formulators will become proficient in whole grain formulating," Ms. Kay said.

For bakers switching over to whole grain for the first time, ConAgra Mills' Ultragrain flour makes the transition easy. Bakers can blend Ultragrain whole wheat flour at the 30% level with white flour without changing a formula. This simplifies formulating while maintaining the texture and taste for consumers who may be gun shy about whole grains.

More economical approaches

When it comes to reducing the cost of formulating with whole grains, knowing which grain to use is a good start. "The optimum flour creates the optimum framework for the product," Ms. Carson said. "When you start with the right flour, you can often limit other more costly ingredients."

When experimenting with cost savings in formulation, if the grain itself is costly, Dr. Mehta said bakers can substitute it for a more economical one and make up the functionality differences with different technical approaches. "But you have to under-

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stand the functionality of the different ingredients, everything from gums to starches to the flours,” he stressed.

One whole grain in particular can alleviate much of the stress associated with cost. While some whole grains are difficult to source and therefore pricey, whole grain corn is plentiful and therefore cost effective. “It’s also gluten-free, label-friendly and easily substitutes for traditional corn,” said Jeff Dillon, vice-president of sales and marketing, Didion Milling, Johnson Creek, WI. “It’s the most economical way to go whole grain.”

Another strategy for reducing costs is reviewing the formulation and finding ways to substitute additives with less costly counterparts. Dr. Mehta suggested that bakers and snack producers work with a trusted supplier who has the knowledge and experience necessary to make suggestions. “For example, they can suggest instead of using a starch maybe you can use flour or a flour component,” he said. “You can replace some of the more expensive proteins with less expensive grain proteins.”

Reviewing formulations is a normal part of the process for Horizon Milling. According to Mr. Casper, the company analyzes formulas and products on an annual basis with their customers to ensure that Horizon Milling is providing the most cost-effective wheat protein mix. This could include comparisons of higher- and lower-costing flours to achieve savings,” he explained. “Other opportunities sometimes present themselves with reviewing the amount of additives being used to alleviate additional ingredients and improve overall cost structure per dough produced.”

Functional flours can also cut down on production costs. Often whole grain flours need to be mixed longer and slower for the grains to be optimally hydrated. This slows all of production down and costs

Triple threat in a whole grain

With consumers searching for health buzzwords like whole grain, fiber and antioxidants, a value-added whole grain could make some waves with shoppers. Suntava, Inc., Afton, MN, hopes this is the case for its exclusive purple corn containing anthocyanins. These anthocyanins are the same antioxidants that make blue corn blue, but purple corn contains more of them, resulting in a dark corn that almost appears black. “It’s the same nutrient that you’re finding in blueberries and acai, but now you’re finding it in a corn,” said Terry Howell, Suntava’s director of business development.

In different forms, this corn can be used in baking and snack applications, delivering whole grain nutrition, antioxidants and a purple color to the finished product. “We’re a triple threat in that respect because the corn comes with whole grain, antioxidants and natural color,” he said. The purple corn has been used to make corn flakes and other cereals as well as crackers, bread, muffins and pasta.

Depending on the quantity and form of the purple corn in the formulation, the color delivered in the final product can be just a hint or overwhelming. “Someone made an artisan cracker where the formulation was probably more wheat-based, and when they added our purple corn, it showed up with these beautiful purple specks throughout the cracker,” Mr. Howell said. “Whereas another cracker came to us that was entirely purple.”

Mr. Howell doesn’t think the purple color will hinder consumer excitement though. With Mehmet Oz, MD, touting the benefits of purple food on his popular television show, Mr. Howell expects purple corn will fit right into the health-conscious consumer’s diet.

Suntava and Minsa Corp., Muleshoe, TX, recently announced a partnership to develop and market purple corn masa, extending this high-antioxidant, whole grain opportunity to tortillas and corn chips.



Purple corn delivers whole grains, antioxidants and natural color to snack and bakery products such as these corn puffs, making them appealing to health-conscious consumers.

Suntava

money. Functional flours with high water absorption can speed that process along. Grain Millers recently introduced its latest in its FunctionalFlours line. Its high-water-absorbing oat flour and low-viscosity whole oat flour are both whole grain flours with some extra functionality.

ConAgra Mills’ Ultragrain HP reduces the amount of additional wheat gluten a product needs and enables higher absorption and improved mixing performance. All of this culminates in lower costs for finished goods.

As the American palate matures and adapts to this whole grain world, bakers and snack producers can be more innovative in the whole grain ingredients they choose. They can experiment with the flavors and textures of ancient grains and corn, or they can take advantage of whole grain flours that deliver the same texture and taste as refined flour. With these innovations in functional flours and different grains and grain components, bakers and snack manufacturers can successfully navigate the whole grain market. ●



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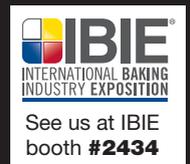
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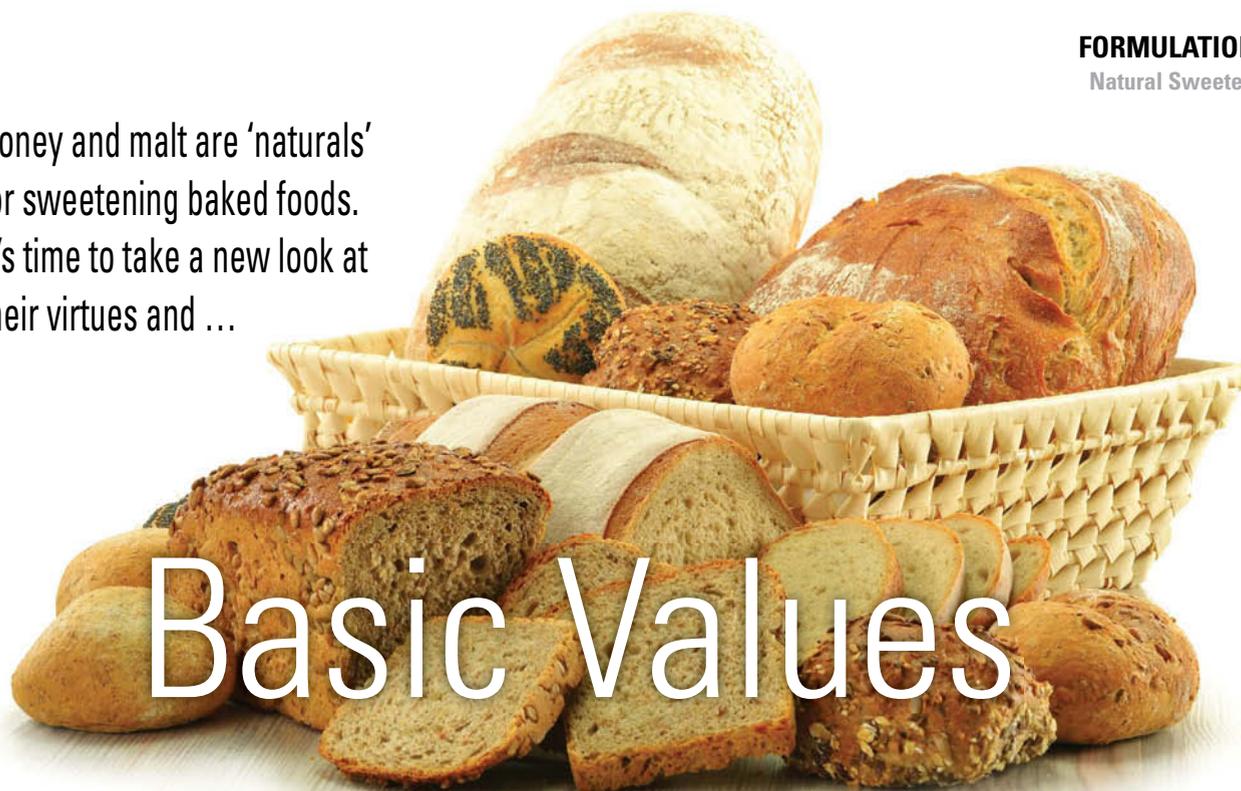
of consumers say that if given an option, they would choose a product made with honey.*

FACT

68%

of wholesale bakers report using honey in their products.*

Honey and malt are 'naturals' for sweetening baked foods. It's time to take a new look at their virtues and ...



Basic Values

by Laurie Gorton

Yes, it's fun to formulate with the new and novel, but sometimes, it's the old and traditional that does the best job. Besides, that old-fashioned approach is right "on trend" today, the trend favoring natural ingredients. Two of mankind's oldest sweeteners — honey and malt — qualify as natural, and what's more, consumers see them that way as well.

"Today's consumer is more aware than ever before about the ingredients in the foods they eat," said Catherine Barry, director of marketing, National Honey Board, Firestone, CO. "Honey plays an important role in sweetening bakery foods, giving bakers the opportunity to sweeten their products with an ingredient with exceptional familiarity and trust with consumers. This is very important to a growing segment of consumers who intensely read labels and crave more natural and clean products."

The choice of honey for foods formulated to be all-natural takes full advantage of the fact that it is familiar to consumers and does not carry negative perceptions. And it helps maintain a clean label.

Malt may be slightly less familiar to consumers, but bakers are well aware of its value in creating foods perceived as healthy. "Manufacturers targeting the health-and-wellness platform are using malt to help achieve a clean label in a number of ways," observed Judie Giebel, technical services representative and AIB Certified Baker, Briess Malt & Ingredients, Chilton, WI. "Malt is all-natural, non-GMO, healthy and nutritious. In addition to the label claims it delivers, it can help remove high-fructose corn syrup (HFCS) from a label."

Long a staple of specialty health-foods stores, honey in a variety of forms as well as malt offered as extracts and syr-

ups now get greater shelf space, even separate displays, in traditional grocery chains. Such improved visibility at retail is "a response to heightened consumer interest in this area," according to Jon Bodner, technical director, Sweetener Supply Corp., Brookfield, IL. Food product developers have increased their efforts to use such alternative nutritive sweeteners during the past few years, and he predicted this approach will likely continue into the future.

As bakery formulators re-evaluate their sweetener options, the natural choices have become very attractive, according to Jim Morano, PhD, principal scientist, Suzanne's Specialties, New Brunswick, NJ. "The general trend is to move from refined to natural," he said. "And this is driven by consumers who are attracted to natural, nutritional ingredients."

And there's another reason the market favors sweeteners with an uncomplicated reputation. "The simple cooking trend will accelerate," Ms. Giebel noted. "Foodies want old-fashioned baked goods but don't always have the time to do it. Bringing back grandma's recipes with a new flair, I believe, will be the next trend."

In its genes

Like grandma, bakers have used honey and malt — both malted barley flour and malted barley extract — for a long time. For centuries, Ms. Giebel observed. "These days, as consumers seek new food experiences, bakers are discovering malt's other contributions to both yeast-raised and chemically leavened baked goods. Malt is beneficial to both types because it comes in two forms, diastatic and nondiastatic," she said.

Diastatic malt carries the amylase and protease en-

Malt and honey effectively improve the dough — and sweetens the finished product — for whole grain baked foods.
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Diastatic, nondiastatic — what's the difference?

Nature equipped seeds with enzymes to break down their starch reserves to fuel germination by the plant's embryo, allowing it to sprout. It didn't take long for early man to discover that sprouted barley also made a wonderful beverage: beer.

Brewers learned how to take advantage of barley's naturally high enzyme content and developed the malting process. They used the result as the base for beer. Distillers also malt grains to start production of alcohol.

Barley's natural alpha- and beta-amylases liberate fermentable sugars, a fact that attracted the attention of bakers, and diastatic (enzyme-active) malted barley flour and malt extract became tools to optimize baking performance. The high enzyme content of diastatic malt allows use at very low levels, typically 1% (flour weight basis), which adds no color or flavor to the finished baked product.

Degrees Litner (°L) measure the enzymatic activity of malt by expressing the ability of cereal malt to produce sugar. The higher the number, the more the activity.

The term diastatic reflects amylase's earlier name, still used today by brewers — diastase. Malt enzymes break down under heat, and the result is called nondiastatic malt. In flour and extract form, the nondiastatic (enzyme-inactive) styles give flavor and sweetness to baked foods.

"Diastatic malt is made from whole grain barley malt that has been dried gently at low heat to keep all of the enzymes alive," explained Judie Giebel, technical services representative and AIB Certified Baker, Briess Malt & Ingredients, Chilton, WI. "Because it has active enzymes, diastatic malt can break down starches and create finer and softer texture in baked goods. This helps to keep the baked goods moister in return, extending the shelf life. In yeast-raised recipes, diastatic malt also replaces sugar to feed yeast and brown crusts.

"Nondiastatic malt extract is malted barley that has been naturally converted to a sweetener using its own enzymes to convert the starches to sugars," she continued. "This product has no active enzymes and will not break down the dough matrix. Malted barley extract provides nutrients for the yeast, additional flavor and the sugar needed to give yeast its starting boost."

Additional drying will give malt more pronounced malty or nutty flavors. Nondiastatic forms can be processed further to bring out stronger flavors, and deep roasting will yield malt flours with distinct cocoa notes and dark brown color, capable of replacing up to 25% of the cocoa in a formulation.

The term malt normally refers to malted barley, although other grains can be malted for specialty food uses. Wheat and rye, for example, can be made into diastatic and nondiastatic malts. Liquid malt extracts are syrupy in nature. The technology lends itself to creation of syrups from other starch sources such as tapioca and white sorghum, suitable for gluten-free baked foods. Coextracts of malt with other grains — oats or rice, for example — are also available.

Honey is the base for mead, another fermented beverage popular in the ancient world. Today, however, it's more likely to be found in beer. "Local beer crafters blend more than one floral honeys into a special recipe to create unique and distinctive ales and beers," said Alan Turanski, vice-president of sales for GloryBee Foods, Inc., Eugene, OR.

zymes native to its source barley, but these are inactivated in nondiastatic styles. In artisan breads, for example, diastatic malted barley flour enhances yeast activity and acts as a browning agent. "In multigrain breads, it will mask some of the grainy flavor notes, brown the crust, soften the dough and aid fermentation," Ms. Giebel added.

The nondiastatic version, usually offered as a liquid extract, functions primarily as a sweetener and flavoring agent. "It gives muffins a softer, moister texture," Ms. Giebel said. But it's not just chemically leavened products that benefit. Nondiastatic malt improves the flavor, color and chewy exterior of bagels and helps pizza crusts brown properly.

Honey, too, is more than just a sweetener. "Since honey is the most ancient of sweeteners and a natural preservative, it enhances the flavor of their products as well as extends its shelf life," explained Alan Turanski, vice-president of GloryBee Foods, Inc., Eugene, OR.

It carries organic acids, enzymes and other helpful compounds. Its low water activity (liquid honey averages an a_w of 0.55), limits fungal and bacterial growth. Its hygroscopic nature helps baked foods retain moisture, delay staling and improve shelf life. With total phenolics at nearly 800 mg per kg, honey contains more dietary antioxidants than all other sweeteners.

The high acidity of honey, which averages 3.91 in pH, also helps inhibit mold growth in bakery foods and extend shelf life.

A whole grain natural

To stay true to the spirit of whole grains, bakery formulators should consider using malt and honey as the source of fermentable sugars and sweetness in such varieties. "We're seeing honey's popularity grow, especially in all-natural and whole grain products," Ms. Barry said. "In



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NATURAL SWEETENERS

whole wheat breads and rolls, honey creates a sweet flavor profile while masking the bitter flavor notes whole grains can carry.”

Honey and malt have big roles to play in boosting the appeal of whole grain baked foods, according to J.W. Hickenbottom, vice-president, sales and marketing, Malt Products Corp., Saddle Brook, NJ. “These natural sweeteners mellow the bitter note of the whole grains in addition to providing fermentable carbohydrates such as fructose, glucose, sucrose and maltose,” he said. Even at relatively low levels of 1 to 3% (bakers percent), honey and malt provide enhanced flavor, color and sweetness in addition to increased shelf life and stability.

Ms. Barry explained honey’s functionality in more



Dark-roasted malted barley flour makes an effective cocoa extender.

Briess Malt & Ingredients

detail. “Products that contain honey dry out more slowly and have a lesser tendency to crack. This is due to honey’s hygroscopicity,” she said. “Additionally, it acts naturally to coat, bind and thicken products, improving body and mouthfeel.”

And even at the relatively low percentage of 6% (flour weight basis), honey improves the aroma of sweet cakes, biscuits, breads and

similar products. And it’s not just for baked foods but snacks, too. “Some of our customers use honey for their gourmet popcorn or roasted nut products,” Mr. Turanski explained.

“Why look at honey?” Dr. Morano asked. “Its cous-

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Formulators switching to honey or malt need to keep an eye on a few, but important, technical aspects.

ins on the refined side are full invert syrup and HFCS 55. These sweeteners are all roughly half-and-half, fructose to glucose. You can think of honey as a natural form of full invert processed by bees. But you will need to consider the flavor honey adds when substituting it in bakery formulations for full invert and HFCS. And if you're making all-natural baked foods, malt extract provides sweetening, flavor and color."

Work-out tips

Formulators switching to honey or malt need to keep an eye on a few, but important, technical aspects.

First, there are similarities. "Comparing honey to malt, both are marketed at about 80% solids," Mr. Hickenbottom said. "Both contribute minerals and low-molecular-weight nitrogenous compounds especially useful as yeast nutrients; both have similar calories (300 Cal per 100 g) and viscosities, and except for honey being sweeter, both are very similar in baked goods."

Take the matter of sweetness. "As a rule of thumb, liquid honey is considered to have the same sweetness as dry granulated sugar," Mr. Bodner noted. "Malt, on the other hand, usually is not as sweet as sugar."

The key is in the differences. "Honey can be used as a complete or partial replacement for almost any sweetener," Ms. Barry said. "However, differences in formulas and baking environment make substitution guidelines slightly different, depending on the formula."

Because of honey's high fructose content, it is sweeter than sugar, allowing bakers to use less of it to achieve the same sweetening power of sucrose. "Begin by substituting honey for up to half of the sugar called for in the formula," Ms. Barry advised.

Because honey contains water, formulators must reduce liquid components by 25% and add 1%

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NATURAL SWEETENERS



Both honey and malt help mask the bitter notes that sometimes accompany whole wheat and whole grain ingredients.

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baking soda, with both adjustments made for each part of honey used. Oven temperature is also critical: It must be lowered by 25 F° to prevent excessive browning.

"If you have a favorite formula you want to take into the health foods or organic market, you can convert it from refined sweeteners to honey," Dr. Morano said. Honey can replace full invert syrup, sucrose and HFCS 55 on a 1:1 solids basis.

Bakers even earn a bit of an advantage with the substitution because full invert is 76 to 77% solids and honey is 82% solids. "The higher solids content of honey means that slightly less is used by weight, and you make up the difference in water," he explained. "Say you're replacing 100 lb of full invert at 76% solids with honey at 82% solids. You do the calculation, and it comes out to 92.6 lb of honey and 7.4 lb of water."

The math of malt

The calculations for malt differ because it is not as sweet as sucrose. Malted barley extract in syrup form replaces sugar at three parts to four. Using that ratio, Ms. Giebel said 12 oz of malt extract would replace 16 oz of sugar, as long as formula liquids were also reduced by one-quarter.

This raises the aspect of water content. Both honey and malt extracts are liquids. "For example, when substituting honey for granulated sugar, it is common to reduce other added liquids to maintain the moisture balance of the finished products," Mr. Bodner explained. "In some cases, the moisture level of honey can become a limiting factor in the level of sweetener substitution." Malt extracts, on the other hand, are generally available in both dry and liquid forms.

"Malt extract is unique because barley is unique," Dr. Morano said. Barley naturally selected itself for brewing because, during germination, it liberates more enzymes

Honey 101

Most likely, honey was the baker's first sweetener, and it remains a mainstay of their ingredients.

Honey is classified by form (liquid and dry being most often used in commercial formulations), color and flavor, with the latter two resulting primarily from their mineral content and the floral source frequented by the bees.

This natural sweetener is mildly treated before it gets to the baker. Honey processors commonly use separation systems to remove particulate matter at the nanoparticle level. It is heated to 140 to 160°F before storage to prevent granulation known as "sugared honey." Such heating also destroys wild yeast cells, dissolves any glucose crystals that may have formed and redistributes moisture throughout the honey mass. When glucose crystallizes, the reaction liberates water. Honey will ferment when improperly stored, and the potential to do so increases when moisture content exceeds 20%.

"Primarily composed of fructose and glucose, honey provides more sweetness than sugar and has a natural appeal," observed Catherine Barry, director of marketing, National Honey Board, Firestone, CO. "Honey's sugar profile does change slightly between floral sources. Fructose can range from 30.91 to 44.26%, and glucose can range from 22.89 to 40.75%."

Some honey varieties are higher in one or the other. The greater the fructose-to-glucose ratio, the less likely the honey is to crystallize. One that doesn't is tupelo honey from the Southeastern US. Its fructose and glucose contents may, on occasion, reach a ratio of 2:1.

than any other type of cereal grain. "It is a tremendous enzyme source," he added.

When 100% malted barley is dried, milled and steeped in water, its enzymes convert the starches present in barley into sugar. This is a natural process much the same as for the preparation of corn syrup, except the enzymes used are native to barley, not added. Also, the whole malted barley grain is used instead of just the starch as is the case with corn syrup.

Malt extract is the functional equivalent of a high-maltose, 52 DE corn syrup, Dr. Morano explained, and it readily replaces 42 DE and 62 DE corn syrups. It also contains about 5% soluble malt protein,

which is capable of developing flavor and color through the Maillard browning reaction.

The issue of color requires careful thought. "Both honey and malt are darker materials than either granulated sugar or corn syrup, and their inclusion can result in a darker finished product," Mr. Bodner cautioned. Considerable variation exists in color and flavor, depending on type, source and process. "Lighter colors typically have a milder flavor, and darker colors tend to be stronger flavored," he explained.

And there can be a difference in color effects according to the leavening used. In yeast-raised products, for example, the reducing sugars remaining after fermentation will

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NATURAL SWEETENERS

be lower than in chemically leavened goods, Mr. Bodner pointed out. “In addition, the yeast cells secrete invertase, which splits the disaccharide sucrose into the reducing sugar monomers, glucose and fructose. For other non-yeast-raised products, the impact on browning may be more dramatic,” he noted.

Measuring value-added

While natural sweeteners enjoy high-profile recognition from consumers, they usually are not the low-cost choice. “Almost as a rule, the natural sweeteners are more expensive,” Dr. Morano said. “You can get the same sweetener functionality more cheaply with refined



Honey-pepper flatbread takes its flavor and aroma appeal from honey.
National Honey Board

What is dry honey?

The viscous nature of regular honey makes its handling in the bakery rather difficult and its scaling less than fully accurate. To overcome these problems, honey is offered to the baker in several physically modified forms in addition to the familiar liquid. Two of the modified products are plastic in consistency and made by (a) whipping reduced-moisture honey at low temperatures to form a “churned” honey and (b) plasticizing honey with invert sugar using a special mixing process. Both products have handling characteristics similar to plastic shortenings.

Early attempts to reduce honeys to free-flowing powders by vacuum drying met with only partial success, mainly because the resulting product was highly hygroscopic. Even brief exposure of the dry crystalline product to the atmosphere caused rapid moisture absorption and hardening into lumps that resisted dispersion.

The problem was solved by a process in which flour or, preferably, starch is added to the honey and the slurry then is dried on a modified double-drum dryer. In this process, the starch takes up the moisture from the honey to become partially gelatinized and then releases it to the atmosphere. The resulting sugar-starch complex consists of 75% sweetener, 23.5% starch and 1.5% moisture. The dry product remains free-flowing on exposure to the atmosphere.

The honey-starch complex possesses the functional properties of regular honey solids and of partially gelatinized starch. This combination accounts for its improving effect on crumb structure, bread yield, flavor and shelf life, which exceeds that obtained by honey alone or by honey and starch when added separately. Dehydrated honey can be used to good advantage in any bakery product in which regular honey has found application, including bread, sweet dough products and cookies.

(From “Baking Science & Technology,” 4th ed., by E.J. Pyler and L.A. Gorton, Sosland Publishing Co. For more details about this two-volume book, click on “Store” at www.bakingbusiness.com/Resources.)

sweeteners, but natural sweeteners provide bakers the option to ask premium prices for their goods.

“If a company wants consumers to look at its products as natural,” he emphasized, “it has to put in things the consumer considers natural and leave out the things consumers consider artificial.”

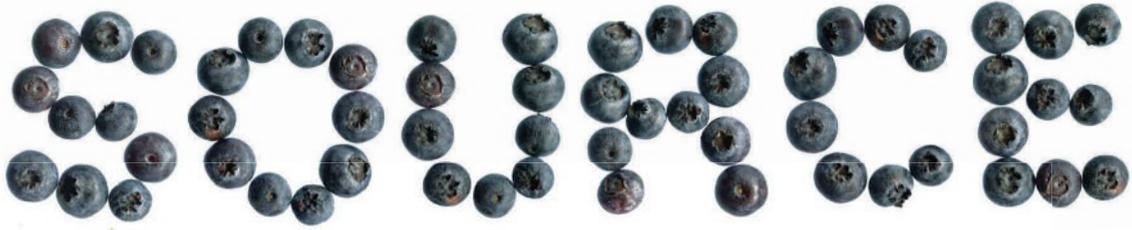
Mr. Hickenbottom made the same point. “Honey availability and price currently may deter bakers from using more of it, even though its attributes are considerable,” he said. “Consumers have good recognition and acceptance of products using honey. Malt is not as recognizable by the consumer, but many bakers of whole grain items know that malt produces products with added eye appeal and salability. Honey and malt will continue to be the ‘bakers choice’ of sweeteners in many items for years to come.

“In today’s market, sucrose and corn sweeteners are priced less than either honey or malt,” he continued. “This variance is counteracted by being able to use less honey and malt to achieve the desired flavor and color yet benefit from enhanced finished products. This difference can be as much as 15% less in both cases.”

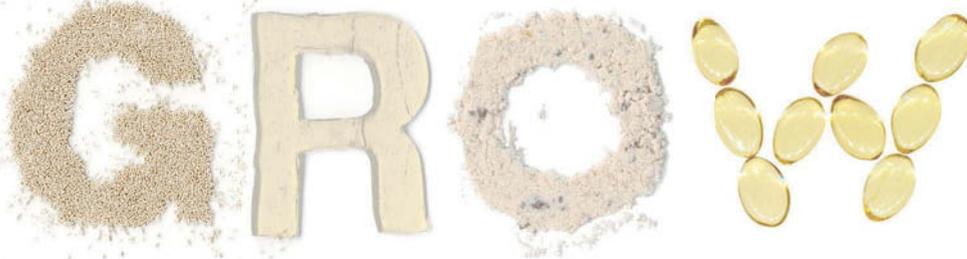
The virtues of these natural sweeteners are properly viewed as value-added advantages. “The National Honey Board expects the popularity of honey to increase as the sweetener industry continues to be scrutinized by the media and medical community,” Ms. Barry said. “Since honey is produced in Mother Nature by bees, manufacturers that sweeten their products with honey don’t have to worry about the perception consumers will have when reading an ingredient listing.”

And that’s a good thing. ●

Editor’s note: For more about honey and malt, subscribe to Baking & Snack’s weekly Formulations Update e-newsletter. Coming editions will feature exclusive Q&A sessions with people quoted in this article.



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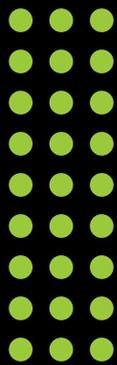
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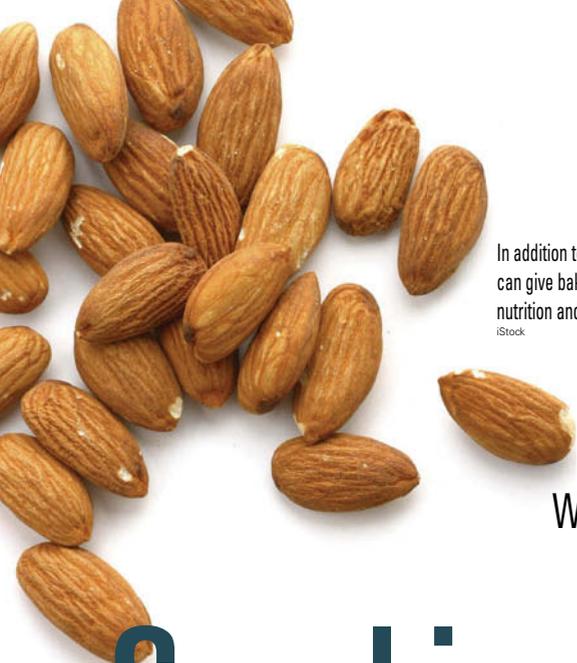
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In addition to flavor, almonds can give baked goods added nutrition and health benefits.
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With flavor, nutrition, health benefits and versatility, almonds can help baked products offer ...

Snacking Satisfaction

by Joanie Spencer

When it comes to healthy eating and weight management, snacking has found itself on the minds — and plates — of American consumers. Rather than having three large meals a day, many people are turning toward eating more meals, more frequently and in smaller portions. In fact, the Sterling-Rice Group, Boulder, CO, recently reported that North American and European consumers are snacking twice a day, and snack introductions reached an all-time high of 7,895 total new products worldwide from 2009 to 2010, according to Sterling-Rice research.

Health-conscious consumers are looking for snacks that not only fill them up but also give them energy and taste great — all important qualities in healthy snack foods. This doesn't mean that baked goods are off-limits; it simply means that smart snackers are turning toward foods that fit the bill. Incorporating almonds into products can transform the perception of a baked food into a better-for-you snacking option.

Almonds are cholesterol-free and low in saturated fat. In 2003, the Food and Drug Administration approved a qualified health claim for use on packaged foods that links daily consumption of 1.5 oz almonds with lower risks of heart disease.

This actually presents opportunity for bakers and snack manufacturers, and almonds, which contain about 6 g protein, 3 g fiber and 9 g monounsaturated fat per 28-g serving, are aiding in that opportunity. In fact, according to the Sterling-Rice Group, the number of snack products that contain almonds increased 68% between 2008 and 2010.

“Consumers are seeking bakery products that can help their families enhance their diets. They are staying away from rich, sugary and calorie-laden products,” said

Kantha Shelke, PhD, founder and principal of Corvus Blue LLC, a Chicago-based food science research firm. “Whether toasted, blanched, diced, sliced or crushed, almonds help bakers substitute for part of fat, sugar and even refined flour to create a product that will satisfy quicker and longer.”

From granola and cereal bars to clusters, almonds' sweetness, crunch and chew provide a variety of opportunities to up the appeal of baked snacks. For example, substituting almond flour for part of the wheat flour in cake, cookie and pastry formulations can add flavor and mouthfeel and improve their health-and-wellness quotient.

When replacing flour with almond flour or almond meal, it is best to reduce the amount of liquid. “Almonds do not absorb water in the manner that wheat starch and protein do,” Dr. Shelke said. “Additionally, the fat content of almonds tends to plasticize the dough and will likely shorten and tenderize the texture of the finished product. Expect a slight decrease in volume when substituting almond flour or meal for wheat or any other grain,” she noted.

Adding diced or crushed almonds into products like scones or biscuits adds a rich taste without the need for additional fat. In this application, Dr. Shelke said, “It is important to ensure that the foundational structure of the product is conditioned and strong enough to hold the pieces without collapsing under their weight. Fortunately, almonds are pretty light and will not make the finished product too dense,” she added.

The Almond Board of California provides extensive information about the nutritional aspects of almonds — and the research supporting the heart health claim — at its website, www.almondboard.com.



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Lisa Newmann founded Cookiehead Snacks, Housatonic, MA, in 2007 with the idea to revolutionize American snacking. Cookiehead's cookies, brownies and muffins are formulated on sound science without sacrificing taste by using naturally healthful ingredients such as whole grains, seeds, nuts, dark chocolate and fruit. A graduate of Bard College and the Institute of Integrative Nutrition, Ms. Newmann opened her first baking business in 1980, selling it to an international baking company in 1985. Before founding Cookiehead, she successfully ran several other bakeries and production facilities in the Northeast US. Ms. Newmann has also done work as a food business consultant.

This summer, the US Department of Agriculture (USDA) issued its final interim rule Smart Snacks in Schools — guidelines intended to help schools provide healthy snack options for students throughout the school day. USDA will accept comments on these guidelines through Oct. 28, and even companies providing nutritionally responsible snacks may have some things to say about the new dietary restrictions in US schools.

In this exclusive Q&A with *Baking & Snack*, Ms. Newmann addresses some of the difficulties bakers now face in creating baked foods and snacks that meet nutritional needs in the school cafeteria.

Jumping Hoops

New USDA guidelines about snacks in schools may prove too restrictive, leaving some nutritious foods out of the loop.

Charlotte Atchley: How are the new school lunch guidelines from the USDA affecting companies wanting to supply baked foods to school cafeterias?

Lisa Newmann: The new school lunch guidelines are a positive sign that our government recognizes how essential it is to offer healthy, strengthening food in school. This action brings to light the need for nutritionally responsible snacks made with real food. The guidelines likely present a challenge to manufacturers that do not currently take into account the impact their products have on the bodies of growing children. However, it does help them learn and reconsider their product offerings.

As a nutritious-snack company, what are the specific challenges Cookiehead has faced trying to supply schools?

Ironically, this approach fails to factor in crucial distinctions such as nutritious vs. empty calories and “good fats” compared with fats that may conform to guideline numbers but offer little or no nutritional value. The authors of the guidelines have painted snack foods with one brush. A numeric and quantitative approach is essential, but when it comes to nutrition, the numbers must measure more than calories to give a full picture of the impact certain ingredients have on consumers’ physiology.

When Cookiehead develops products, the team looks at how our food supports a person’s ability to learn, make decisions, sus-

tain energy and exercise. For example, the impact of whole grains on our health and well-being has been documented and publicized. Whole grains fill us up, reduce the chance of heart disease and cancer, and offer slow, steady energy to get us through the day alert and responsive.

Which of the new nutritional guidelines are problematic for Cookiehead and other nutritionally responsible companies?

For Cookiehead, it’s the guidelines’ black-and-white approach to calories. While we do encourage people to eat fruits and vegetables before indulging in cookies, we create snack foods with calories containing significant nutritional value in each bite. Our snacks are designed to satisfy taste buds as well as nutritional requirements. But nutritious ingredients such as nuts and berries and seeds add calories. Along with those calories, they deliver long lasting, steady — rather than spiked — energy to children of all ages. It is healthier to consume two of our small cookies than a 100-Cal pack of nutrient-free snacks. Cookiehead cookies are also made with portion control in mind. A small cookie provides enduring satiety so people can satisfy their hunger and cravings with fewer of our cookies rather than continuously reaching for more of those empty-calorie snacks.

Consumers who are making a transition from empty calories to healthier choices tend to be more successful when they embrace a

gradual shift into the awakening power that comes from a balanced diet.

What values do these guidelines have for students, schools and food companies?

These guidelines help organizations develop programs and products that offer more healthful alternatives. However, because of the emphasis on calories instead of balance, they are over-simplified, allowing consumers to think they are making healthy choices when they are still locked in unhealthy patterns.

While I understand the need for simplicity, I feel it is important to consider nutritional science before defining "simple." All calories are not created equal. The reference point should come from the current wealth of scientific evidence, which demonstrates the difference between a whole grain snack and a white flour option.

Why is USDA focusing on these nutrition points?

It is essential for USDA to start

"All calories are not created equal."

Lisa Newmann, Cookiehead Snacks

somewhere. First Lady Michelle Obama has done wonders in terms of raising awareness of the importance of fresh, healthy food and the need to reverse the epidemics of obesity and diabetes. There have been many complex pathways to this unhealthy state of our union, which will likely take at least a generation to unravel. Cookiehead addresses this problem by providing real-food snacks that deliver lots of energy.

When regulating school nutrition, what are other areas USDA could focus on?

I would like to see USDA work with other government institutions to guide education both by teaching the reasons for healthy food habits in the classroom and reinforcing those lessons with examples of real-food choices in the school cafeteria.

Healthy food choices lead to healthy students. When we integrate

talk of healthy ingredients with lesson plans, our society teaches children to be responsible for their own health, well-being and nourishment. I would also teach students about the effect of natural, whole grain ingredients on their well-being. Beyond the programs inspired by Alice Waters with her Edible Schoolyard programs, we need to build nutritional awareness into the curriculum of every school. Let's educate parents by showing the clear correlation between childhood dietary choices and healthy adult living.

In an ideal world, our schools would base their food purchasing decisions on the most beneficial, affordable, healthy meals that can be offered to students. They would back up those decisions by teaching the science of nutrition and insisting on rigorous physical education.

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Baking — the high-energy reaction phase that maximizes the chemical and physical transformations of raw dough into finished goods — represents a critical operation in cookie and cracker manufacturing. While traditional baking has relied on direct-gas-fired and convection ovens, radiant and microwave energy have recently been added to these heat transfer methods to create multi-mode ovens that permit effective control of the reactions, according to Mihaelos N. Mihalos of Mondelēz International, East Hanover, NJ.

As a senior associate principal engineer for the company's North America Region Biscuits Research, Development & Quality (RD&Q) Group Process Development & Innovation Technology, Mr. Mihaelos manages complex, leading-edge technology devel-

opment projects. He joined Nabisco in 1988 as a process engineer in biscuit engineering and has held many technical positions in his 25 years with the company. Mr. Mihalos holds US patents for his development work. In 2011, he received Kraft Foods' Technical Leadership Award for RD&Q.

He earned his BS in chemistry from Fordham University, as well as a BS and MS in chemical engineering from Columbia University, and he edited a processing section for "Baking Science & Technology," 4th ed., Vol. II, published by Sosland Publishing Co.

Mr. Mihalos spoke at this year's Biscuit & Cracker Manufacturers' Association's technical conference on multi-mode baking technology, and here, he provides details about this technology that can help bakers create optimal cookies and crackers.

Gaining Flexibility with Hybrids

Multi-mode ovens combine different heat transfer methods to benefit product structure, thickness and texture.

Shane Whitaker: What are the common mistakes cookie and cracker bakeries may still make relating to the baking process, and why would they still be making these errors?

Mihaelos N. Mihalos: The biggest mistake is trying to bake products on an oven that is not the correct oven mode. For example, certain ovens such as direct-gas-fired ovens are conducive for most cracker products. But if you have a product that is thick in nature, this will require a forced-convection mode. Unfortunately, most bakeries are fixed in their capital assets, so they will try to bake the product on the existing asset and, therefore, produce a suboptimal product.

What are the greatest challenges cookie and cracker manufacturers encounter when baking cookies?

The biggest challenge is trying to keep the critical product attributes of the final product in balance to meet the specifications. Attributes such as stack height, moisture and color are always challenges as in typical baking unit operations, and the attributes

are coupled, meaning that if you try to adjust one attribute, the other two will also be affected.

How have newer baking technologies helped bakers to address these issues?

Multi-mode baking ovens in general provide bakers with more flexibility in baking an assortment of different products by using these different oven modes as well as proving additional adjustment capabilities in the bake time and overall oven profile. Also, the introduction of data loggers and heat flux sensors have permitted the oven to be documented in much more detail in terms of its operational performance and provide an avenue to support maintenance and troubleshooting activities to a level not possible the past.

Please define multi-mode baking technology and how these systems came about.

Multi-mode baking is defined as using various oven modes to control the baking reactions — the Maillard reaction or brown-

ing — that determine final finished product attributes through decoupling of conduction, convection, radiant and dielectric heat transfer modes.

For example, microwave, direct-gas-fired and radiant heat mainly impact structure, thickness and texture. Microwave and convection have the greatest impact on moisture and weight. Finally, color can be readily adjusted by radiant and direct-gas-fired heat.

This approach to baking processes through multi-mode ovens, also called hybrid ovens, develops an understanding of the fundamental characteristics and interactions for baking reactions in terms of materials, process and product. It permits optimized process and oven designs through specific heat transfer data for scale-up from pilot plant to production.

These systems came about based on experience and significant research and development investigations and by understanding the fundamentals and characteristic heat transfer properties of the different modes. When these oven modes are used in combination with one another, this permits: 1) a more flexible oven allowing different types of products to be baked in the same oven and 2) the development of new and unique products that the consumer desires.

What impact does multi-mode baking technology have on final product quality?

As we discussed above, the traditional baking process consists of convection, conduction and radiant heat transfer mechanisms. By understanding the fundamentals of the different oven modes and how they behave, one can change the heat generation systems by altering the different

These systems came about based on experience and significant research and development investigations and by understanding the fundamentals and characteristic heat transfer properties of the different modes.

Mihaelos N. Mihalos, Mondelēz International

forms of convection, direct-gas-fired and radiant heat and surrounding them with dielectric modes, which results in changing the heat transfer rates. This altering of the baking constants allows the product attributes or characteristics to be manipulated to achieve the desired products and product quality consumers seek in the marketplace.

How can newer oven technologies affect other processing steps or systems?

As newer oven technologies are implemented, it becomes much more important that the upstream unit operations such as mixing and forming be more consistent. Meaning dough mixing from batch to batch must be consistent so that every dough batch has the same rheological properties as possible, minimizing any dough variations which will become apparent in the baking stage.

It all begins with mixing because it is the key unit operation in the biscuit process. In addition, the forming unit operation will need to be as consistent as well to have constant product flow to the oven and uniform dough weights. If these attributes are maintained, then the final baked product attri-

butes will be consistent and, therefore, minimize any packaging concerns downstream of the ovens.

What's the way to best fine-tune ovens to ensure consistent quality?

The ovens need to be under constant observation and properly maintained via preventive maintenance so they are operating in the most efficient manner.

This is accomplished by using portable data loggers and the new heat flux sensors currently on the market that accurately record the oven conditions and identify any anomalies such as hot-cold spots, burners not operating properly, over exhausting, etc. By using these devices along with preventive maintenance, the ovens are able to be fine-tuned to ensure proper product quality.

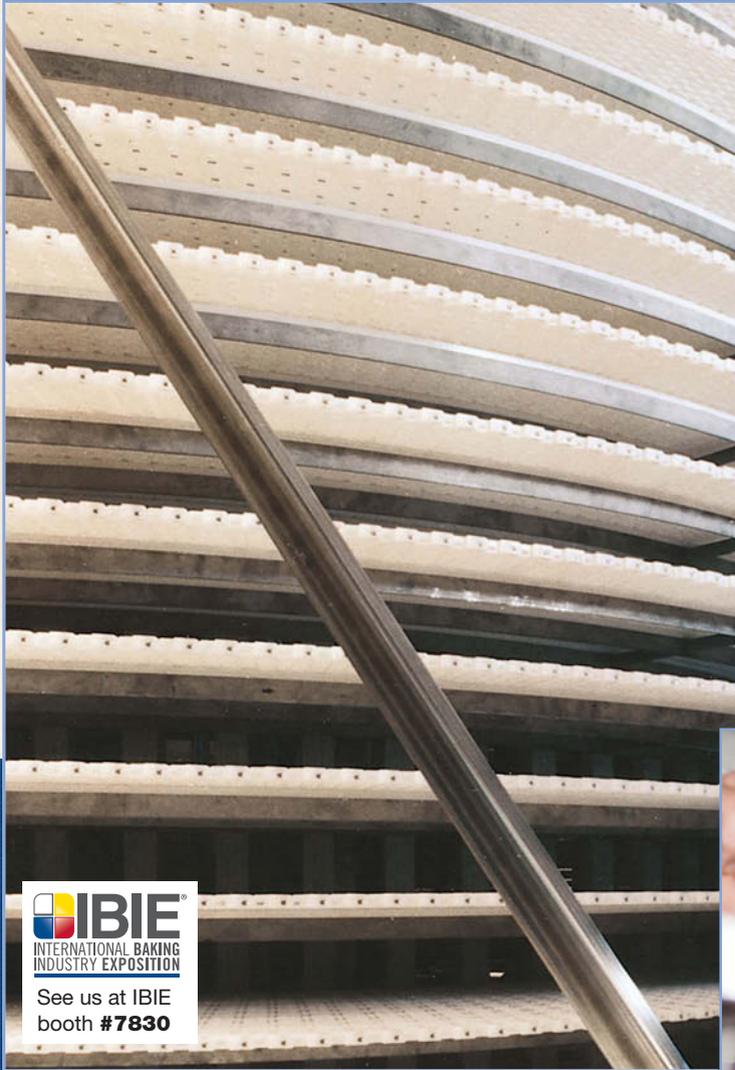
What other new developments do you see on the horizon, and what impact will these have on the industry?

In the next few years, more ovens will be implementing dielectric modes — microwave and radio frequency — as well as radiant and electric modes as the technology matures to further increase the flexibility of the baking unit operations. ●

For more on the subject, subscribe to *Baking & Snack's Operations Update* e-newsletter at www.bakingandsnack.com.

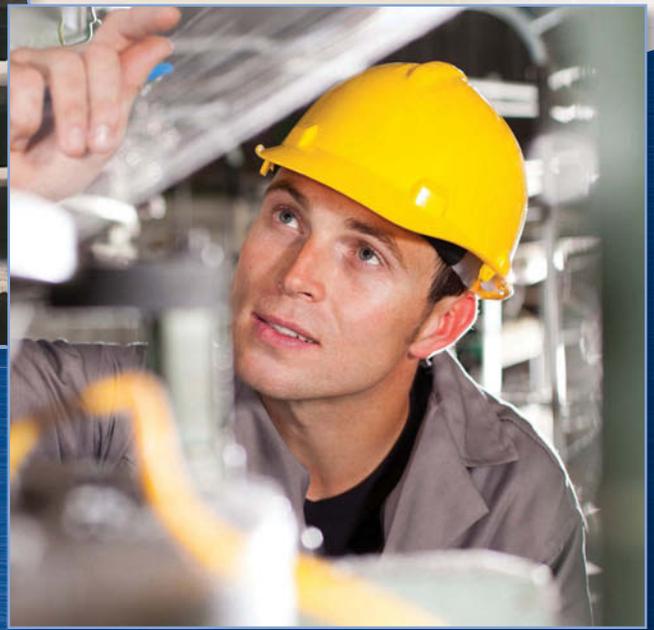
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Perfecting the Baking Process

Bakeries shopping for ovens at this fall's Baking Expo will be pleasantly surprised by advances made during the past three years.

by Shane Whitaker

Efficiency, quality, reliability and flexibility are the central characteristics regarding the latest advances in ovens. Bakers seeking the newest in oven technology at this fall's International Baking Industry Exposition (IBIE) at Las Vegas shouldn't find any shortages of developments. Many innovative features have been introduced in recent years.

When checking out ovens at Baking Expo, "the first thing bakers must ask is, what style of oven do they need to give them the bake results they desire?" said Ken Hagedorn, vice-president of sales and marketing, Naegele, Inc. Bakery Systems, Alsip, IL, which represents the Kaak Group, Terborg, The Netherlands. "There are so many different styles of ovens — indirect-fired, direct-gas-fired, impingement, cyclotherm, thermal oil — and then, there are hybrid ovens that can combine the different styles into sections. The key is to decide what kind of oven they want and what kind of profile they want for the product."

Not only are the types of heating systems used in ovens diverse, but their formats also vary greatly. They include rack, deck, tunnel and s-path to name just a few.

Know what to ask

One thing for certain is that an oven must meet the bakery's desired bake times and quality. In addition, bakers seek faster changeover times. Other key concerns include ease of maintenance and sanitation, and because of food safety and allergen issues, cleanability takes on much greater significance than in the past.

"Bakers today look for energy efficiency, quality of bake and flexibility," summarized Amanda Hicks, co-CEO of Auto-Bake Pty., Hornsby, Australia, represented in the US by Dunbar Systems, Lemont, IL.

The questions that Cindy Chananie, president of Cinch Bakery Equipment, Clifton, NJ, said she expects to hear at IBIE include: "How flexible is your technology? How even are the bake results? How efficient is your oven? How economical is your oven?" Cinch represents Gashor ovens from Zizurkil, Spain, and while this year represents the first time they will be shown at IBIE, Ms. Chananie noted that the company is not exactly a newcomer.

Bakers must ask about available features that will benefit their operations, advised Phil Domenicucci, executive product manager, thermal systems at AMF Bakery Systems, Richmond, VA. For example, they should want to know how an oven will improve product quality, resulting in a more even bake, stronger oven spring and better color consistency. And they should inquire about energy consumption and tracking.

While these qualities will lead to a quicker return on their investment, bakeries also must understand that "ovens are long-term investments that are expected to be productive for decades," Mr. Domenicucci added.

Efficiency reigns supreme

Energy efficiency tops many bakers' list of desired oven qualities. Since the last IBIE, oven manufacturers have made many strides in the area of reclaiming heat and using it in various processes.

Integrating leading control technologies with s-path ovens and continuous baking systems provide bakers with high levels of automation and flexibility.

Auto-Bake Pty.



This oven's heating system can be set in unique profiles to bake products at different bottom and top temperatures. Bakeries can bake products either on trays or directly on its hearth.

Mecattherm

To save energy, they're reheating the already heated air rather than using cold outside air in the ovens. By capturing and reusing heat, Heat and Control, Hayward, CA, can improve its spiral ovens' efficiencies. The captured heat can be used to pre-heat combustion air for greater fuel efficiency or to heat water for use in processing and sanitation, noted Don Giles, director of sales, processing systems.

AMF's Emisshield nano-emissive oven technology employs a NASA-developed, thin-film, nontoxic ceramic nanoparticle material with high emissivity and heat re-radiation capabilities. "In baking, Emisshield systems improve the uniformity and waveband width of the infrared (IR) heat produced by the gas oven," Mr. Domenicucci said.

By broadening the total bandwidth of the IR radiation from natural gas, Emisshield makes use of more radiation in the useful IR baking range. Therefore, when the walls, pans and burners of an oven are coated with Emisshield, radiant heat is absorbed and then reradiated back to the bread baking in the pans, resulting in more efficient heating of the bread. "This increase in re-radiation yields product improvements such as greater oven-spring, more even heat distribution in the dough and greater color uniformity," he added.

This technology increases the overall efficiency of the oven allowing energy savings, production increases, reduced air emissions, reduced downtime and maintenance, and improved product quality, Mr. Domenicucci said.

To enhance the energy efficiencies of its ovens, Stewart Systems Baking, Plano, TX, uses impingement recirculating systems to redirect heated air to the oven's burner-free areas, thus assisting with pan heating and product coloring, noted Dave Machette, the company's sales and marketing specialist. "This moist air is then exhausted from the oven to minimize flame quench and allow better humidity control," he explained. "The result is maximum efficiency with a modulated baking profile throughout the baking process."

Stewart introduced BiVex, an optional oven air recirculation system. This impingement recirculation system enables recipe-driven, customizable directional airflow on the upper and lower pan surfaces, in any desired ratios, Mr. Machette said. "The BiVex System increases efficiencies with the use of air impingement to reduce bake times while maximizing versatility in product bake and coloring," he added.

Mecattherm, Barembach, France, offers its first oven with Bottom Bake Booster. It bakes breads using convection with air moving under the bread to bake the bottom, while the top and sides are baked using radiant heat. This heating system is available in its FTM three-deck tunnel oven, which can bake products either on the hearth itself or in trays or pans to produce either fully or par-baked bread products.

By controlling how and where heat is applied, bakers can control crust thickness using the FTM oven. In fact, they can create sandwich breads with a very fine top

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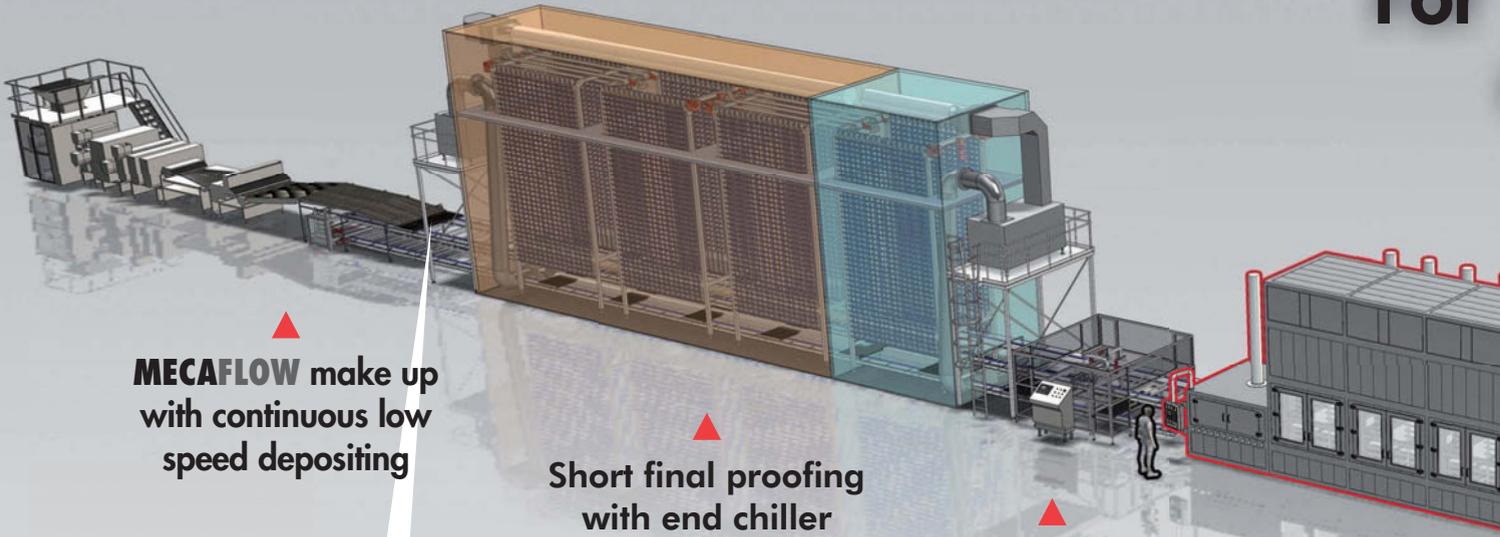


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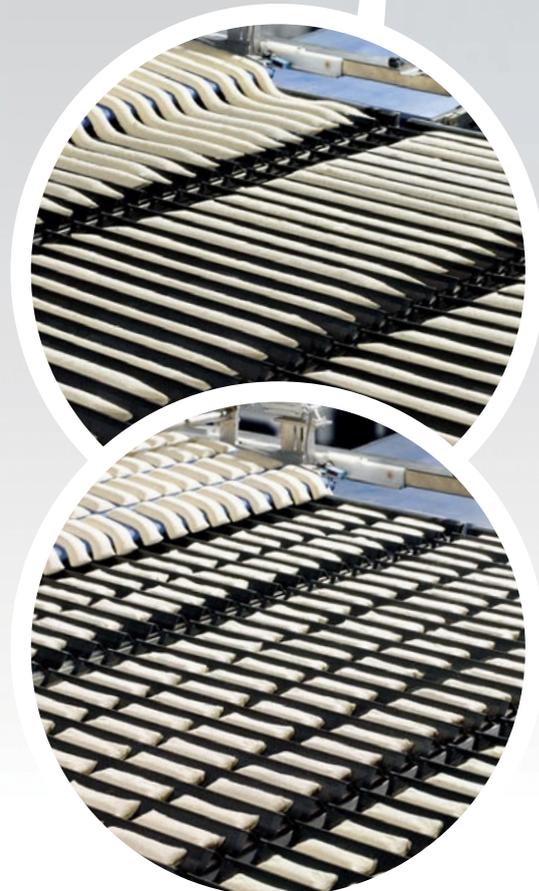


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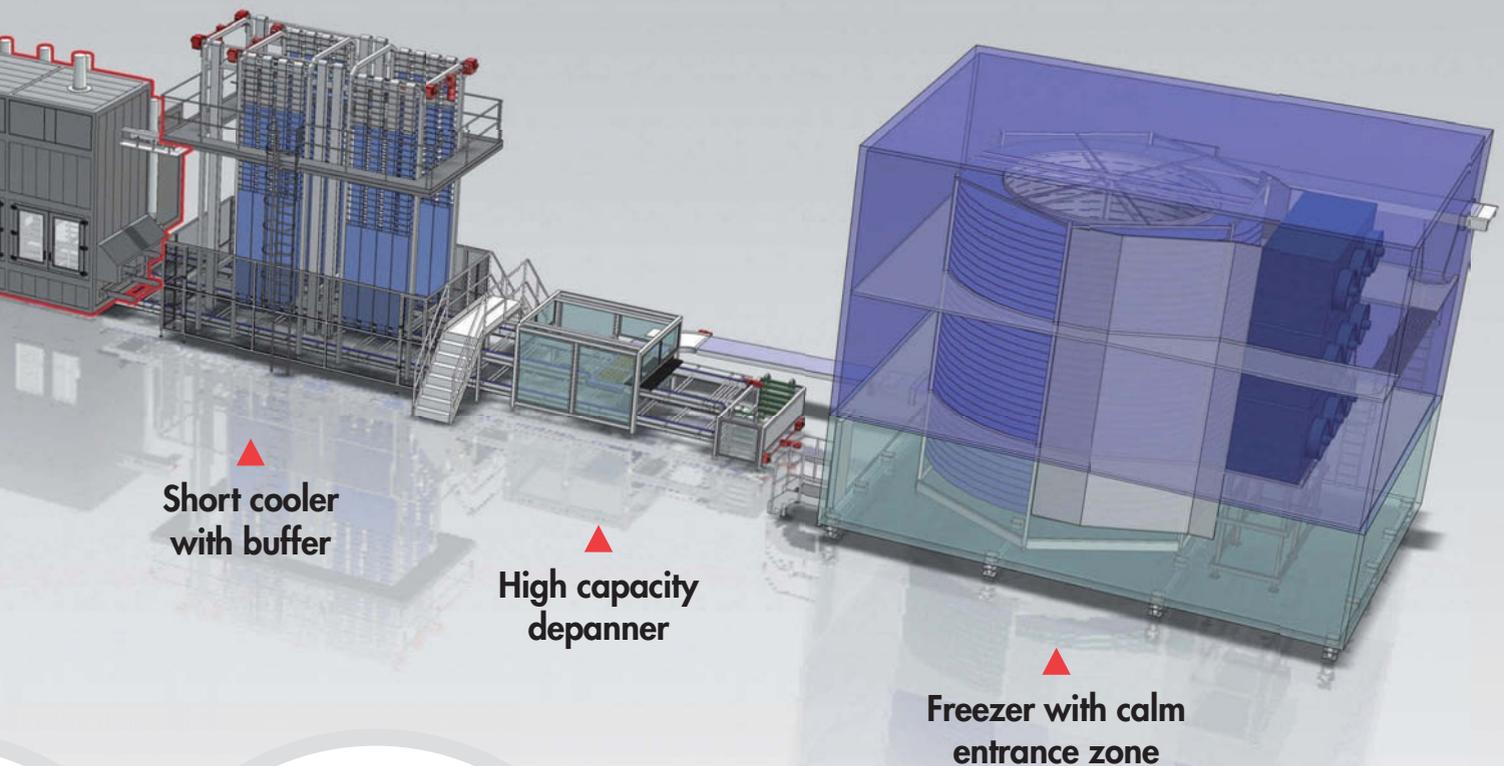
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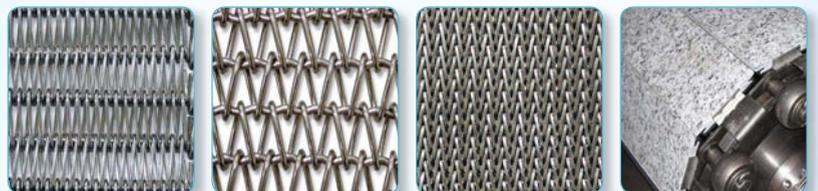
Back in 1990, Winkler GmbH licensed Gashor to build their complete craft oven line including the Winkler GmbH deck ovens, rack ovens and convection ovens. During the 10 year joint relationship, Gashor built hundreds of ovens for Winkler GmbH. Since 2000, Gashor has continued to build functionally equivalent ovens under the Gashor name.

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Belt Types for a Variety of Bakery Products

GASHOR

S o l i d T r u s t

crust but a solid crust on the bottom, according to the company.

Baker Thermal Solutions, Clayton, NC, worked with bakeries to implement active exhaust technology, which aids overall oven efficiency as well as bake quality, according to Jerry Barnes, the company's senior vice-president, engineering. This system is available as an option on new ovens or can be retrofitted in a stand-alone fashion. "Further, our engineering team is partnering with key providers of heat recovery systems," he said. "We aim to move beyond simple recovery of sensible heat to tap into more of the lost energy."

Auto-Bake Serpentine ovens offer significant energy saving advantages through its small s-path footprint and surface area as well as its onboard energy monitoring system, Ms. Hicks said. "Auto-Bake direct-fired ovens modulate energy use based on demand, thus saving energy costs," she added.

To save energy, oven downtime software from Reading Bakery Systems, Robesonia, PA, reduces the oven to low fire during prolonged production breaks. "Our customers are actively exploring ways to be more energy efficient, and we continue to design systems to help," said David Kuipers, the company's vice-president of sales and marketing. He noted about a half-dozen technologies that assist these efforts, including employing heat exchangers and convection baking when appropriate.

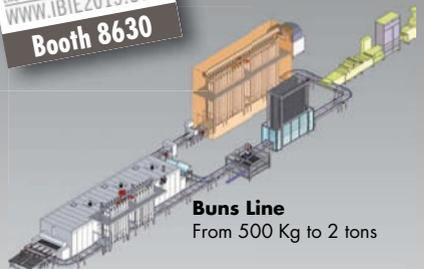
"Installing fuel flow meters to record fuel usage during a production shift helps determine actual product cost per kg and helps identify opportunities for improvement in fuel usage," Mr. Kuipers added.



Den Boer Baking Systems' Multibake ovens use a "green tool" to avoid unnecessary energy losses and monitor the energy usage for each component, said Martijn Oosterwegel, sales manager of The Netherlands-based manufacturer. Energy management and heat recovery systems for Multibake tunnel ovens, represented in the US by Tromp Group USA, Dacula, GA, provide cost savings, plus improvements in oven efficiency and effectiveness. Heat recovery systems could be imple-

With some ovens, bakers can increase or decrease bake temperatures by up to 150 F° in a matter of minutes, which allows quicker changeovers.
C.H. Babb Co.

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OVENS

By broadening bread's exposure to the near-infrared spectrum, a new technology evenly distributes heat in the dough and improves the finished product's color uniformity.

AMF Bakery Systems



needlessly. Third, heat recovery techniques can further reduce energy usages.”

mented for preheating the burner air supply or to pre-heat boiler water serving the proofer and central water heating system.

Oven manufacturers have also given greater attention to insulation to improve overall efficiency, according to Mr. Hagedorn. For example, previously ovens often would be on legs so sanitation workers could clean underneath them. “But now bakeries will often enclose that area so you can retain some of that lost heat,” Mr. Hagedorn explained.

To make ovens more energy efficient, Terry Midden, industry manager at CPM Wolverine Procter, Horsham, PA, suggested a three-pronged approach. “First, it is important to maintain the oven at its highest operating level — fans, burners, controls, and feed and discharges must all operate properly. Seal all leaks, fine-tune all components, make sure the oven is well-insulated,” he suggested. “Second, make sure the operating parameters are maximized and that the oven is not losing energy

Delivering superior results

Bake times and quality represent primary concerns addressed by equipment manufacturers. Oftentimes, bakeries look to raise their throughputs without increasing the size of the oven. Fortunately, according to Charles Foran, chairman of C.H. Babb Co., Raynham, MA, bakeries today can get 30 to 35% more throughput in the same floor space, an extremely profitable move.

Today's technology also permits bakers to adjust oven temperatures by 100 to 150 F° in only a couple of minutes, Mr. Foran said, which increases a bakery's versatility and improves changeover times. Many bakeries don't know what products they may be baking six months down the road, and these ovens give them the flexibility to do almost anything they want.

The oven manufacturing company also installs vision systems at the exit of ovens to perform quality checks on products, he added. C.H. Babb will show this technology at IBIE, and Mr. Foran noted that new industrial control



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READING THERMAL



The length of this modular tunnel oven can range from 41 to 147 ft. Bakers can bake using pans or directly on the steel-plate or stone hearth.

Cinch Bakery Equipment

systems help to tie the vision systems with upstream equipment should product be out of spec as it leaves the oven.

Baker Thermal's latest tunnel oven design offers Advanced Oven Process Control, providing more control points for a given recipe. This, in turn, gives broad flexibility to users running a variety of products in a single oven and affords faster changeovers, Mr. Barnes said.

Multiple burner towers and turbo convection, both standard features of the Gashor Rocket tunnel oven Cinch will feature at IBIE, give bakers control over the baking profile for greater versatility. "The Rocket comes with multiple burner towers, depending on length, and this makes the bake curve flexible," Ms. Chananie said. "If your tunnel oven is 100 ft long, maybe the baker prefers to have one temperature at the infeed, another in the middle of the oven and another toward the end. Now, the baker controls the baking profile."

Multiple burner towers also result in energy savings, she said, pointing out that none of the burners need to work at 100% power. Turbo convection can be engaged

Sanitation importance on the rise

Just because the baking process is often referred to as a kill step doesn't mean that bakers don't take the sanitation of their ovens seriously. In fact, new hygienic designs court favor among those looking to purchase an oven.

Bakers most often ask about the cleanability of ovens, said Charles Foran, chairman of C.H. Babb Co., Raynham, MA. Because of allergen recalls and increased inspections, bakers want ovens that can be thoroughly and easily sanitized, he added. C.H. Babb offers a clean-in-place system for its tunnel ovens, which feature fully welded, slanted floors.

Today, he estimated, up to 98% of the ovens the company builds are all-stainless-steel inside. "Ten years ago, this was unheard of," Mr. Foran said. However, stainless steel's wash-down capabilities as well as the fact it reduces flash heat make it a preferred material for oven interiors.

Auto-Bake Pty., Hornsby, Australia, designs its Serpentine ovens to require only regular sanitation and routine preventive maintenance to ensure decades of continuous production, noted Amanda Hicks, co-CEO of the company, whose ovens are represented by Dunbar Systems, Lemont, IL, in the US.

The Kaak Group makes a washdown-interior oven. The main reason for this design feature, according to Ken Hagedorn, vice-president and partner at Naegele, Inc. Bakery Systems, Alsip, IL, which represents The Netherlands-based manufacturer in the US, is not so much food safety as it is the ability to reduce carbon build-up. "That will affect the heat profile of the oven," he said. "You need to clean up the oven so you don't have hot spots from carbon that has built up and may eventually catch on fire."



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OVENS



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Stewart Systems Baking

or disengaged, depending on the product, allowing the operator control of final baking results. Ms. Chanie also pointed out that the oven is built using a modular construction system. “The length of a Rocket tunnel oven can be from 41 to 147 ft, providing anywhere from 242 to 968 sq ft of baking surface,” she said.

Ovens that feature both convective and radiant heat transfer provide the versatility many baked snack processors require, Mr. Kuipers noted. “They want to be prepared for the widest range of products as well as anticipate new product needs in the future,” he said.

With the latest AMF technology in product tracking, burner control and energy management, Mr. Domenicucci pointed out that changeover times are significantly reduced without affecting product quality.

Bakeries continually strive to improve the quality of their products, and today’s new ovens can go a long way in helping them to do that more efficiently and with greater versatility. ●

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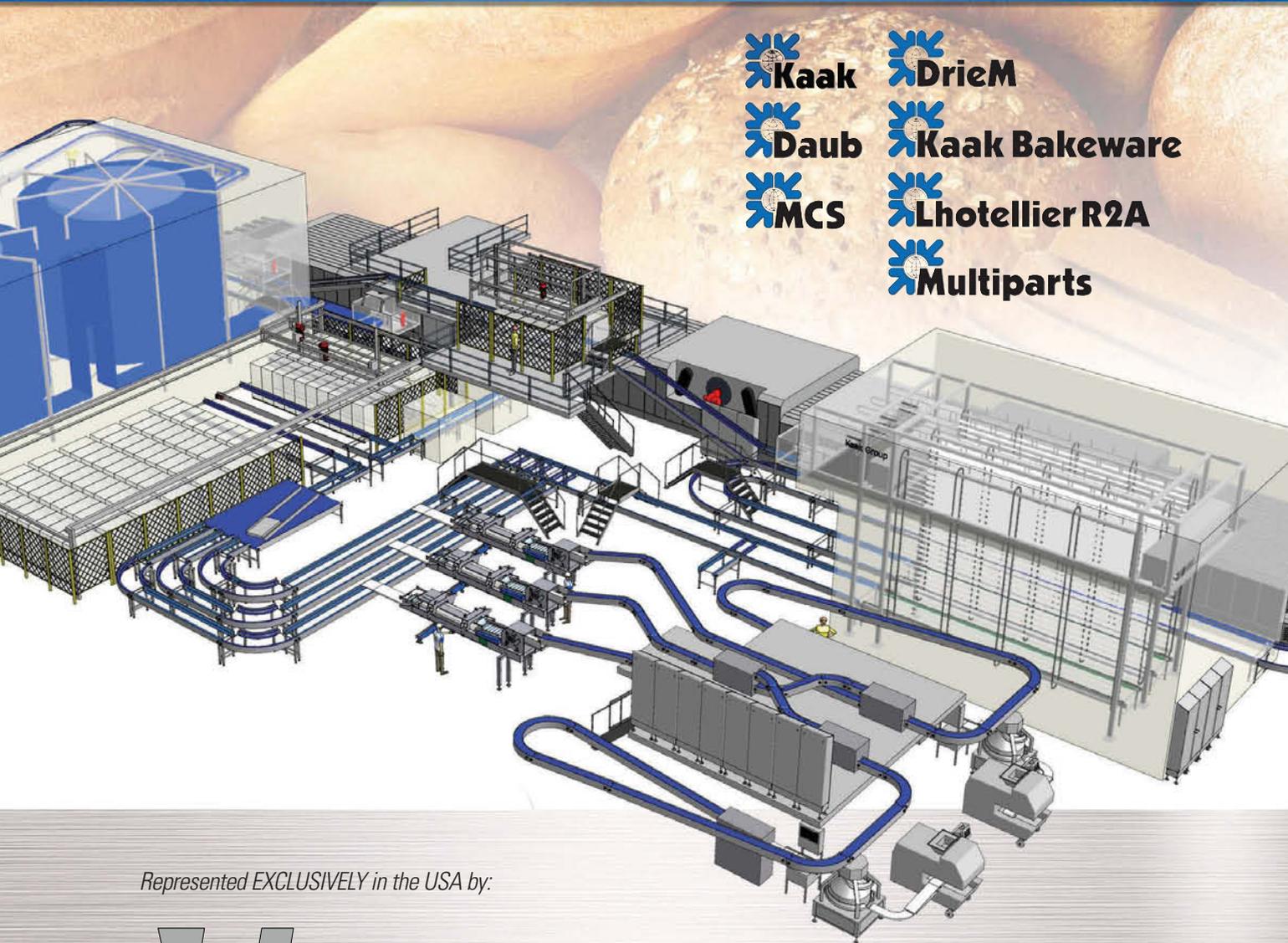
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GETTING A GOOD GRIP

Robotic stackers-unstackers keep pace with today's faster lines, while automated storage and retrieval systems supply pans as needed.

by Shane Whitaker

Upset the pan cart, and you'll create quite a commotion within a bakery. Bread and bun pans are heavy and often dangerous because they retain heat from the oven, which can burn those who have to work with them regularly.

Yet there is no reason to have employees moving or stacking and unstacking pans in today's bakeries because this can all be automated. Baking pans often require a substantial investment for a company, and as such, they want to treat this asset with care and gentle handling.

Operator safety represents an important consideration for adding this equipment. "A pan management system relieves the operator of moving heavy pan carts, keeps them safely away from moving stacked pans and encloses the stacking and unstacking in guarded areas," said Dennis Kauffman, North American sales manager, AMF Bakery Systems, Richmond, VA.

Handling larger, stronger pans

While virtually every bakery could benefit from an automated pan management system, Ken Mentch, sales engineer, Workhorse Automation, Oxford, PA, pointed out that those running with high throughput rates, multiple

pan changeovers per shift or an extraordinary number of pan types and quantities would benefit the most.

"Some bakers have the misconception that these automated systems are complicated and difficult to maintain or keep running," he said. "Workhorse's latest systems are designed to be maintenance-friendly and very reliable for these applications." Mr. Mentch noted that automated systems are extremely efficient, requiring minimal operator intervention.

With increasing line speeds and heavier and larger pans, Frank Atcherberg, president of Capway Systems, York, PA, stated that pan handling systems must be designed to handle greater speeds and weight requirements.

Today's faster line speeds are pushing the limits of conventional stacking and unstacking, added John Keane, executive product manager, packaging and automation, AMF. Thus, handling multiple pans at once has an appeal in minimizing the impact automated systems have on them.

Bun bakers commonly are using 40- or 48-count sizes that are larger and heavier than can be handled by one operator manually, and heavy six-strap bread pans are

Using a four-axis robot, this pan and lid stacker-unstacker handles multiple bun or bread pans at one time.
AMF Bakery Systems

PAN AND LID HANDLING



common only in automated systems.

Pans can be constructed in varying strengths. "Lighter pans are often designed for manual use to limit the ergonomic impacts to the operator," Mr. Keane said. "Heavier pans have features and a construction that helps maintain the pan's shape when run in an automated system. These differences become obvious when pans designed for a manual system are run in an automated system."

Bakeries can be unaware they have space for a pan handling system. "The Kaak Group is increasingly discussing the options of plac-

Multiple pan lids are picked at once, and the system's gentle handling of pans and lids provides substantial savings to bakeries through longer pan life.

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PAN AND LID HANDLING

Tracking pans using bar codes

To help a bakery customer better track its pans, the Kaak Group, Terborg, The Netherlands, incorporated an automatic pan monitoring system into a high-capacity line it installed earlier this year.

"The system works by reading metal bar code tags welded to the sides of the strap pans," said Ken Hagedorn, vice-president and partner at Naegele, Inc. Bakery Systems, Alsip, IL, which is the US representative for the Kaak Group. What helped make this possible, he added, is that Kaak manufactures its own pans.

"Every pan that passes the detector will be read, and the data will be sent to a computer system," explained Ashley Morris, the Kaak Group's US sales manager. "This data is then collected in a database system that will keep count of all the pans."

This information can be used to determine the moment a pan has to be taken from the line for recoating purposes. In that case, the computer system will send a reject signal to the line control system, which then will activate a vertical switch that automatically removes the pan from the line.

Each pan carries two metal tags on opposite sides. "The reason for this is that the orientation of the square pans will be turned 180° after each pass through the production line," Mr. Morris said. "Another advantage is that, when the operator puts the pan back into the line after recoating, he doesn't have to worry about the correct position of the barcode tag."

ing the pan handling system above existing ovens, on a mezzanine floor above existing lines or in a storage area away from the main production hall," said Ken Hagedorn, vice-president and partner, Naegele, Inc. Bakery Systems, Alsip, IL, the US representative for the Kaak Group, Terborg, The Netherlands. "All these options give the opportunity to add a pan handling system within an already full production area without affecting the overall capacity of the bakery."

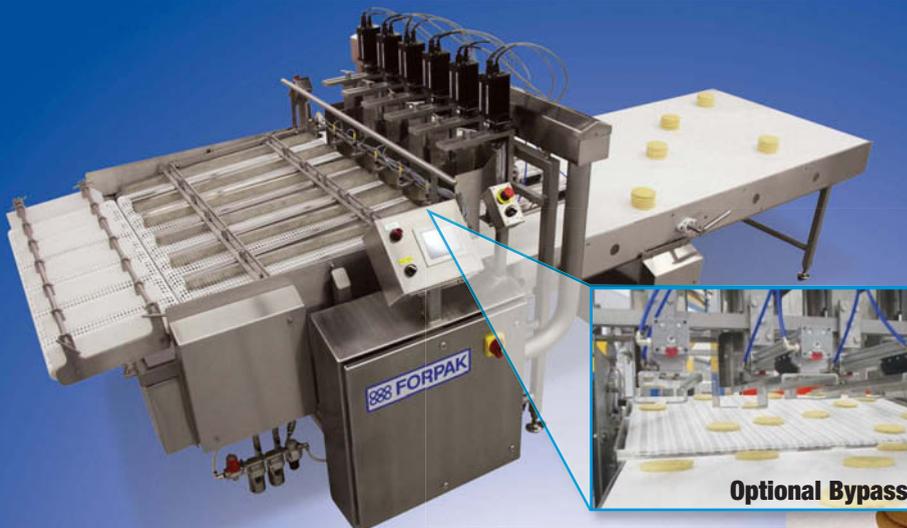
Robots reduce maintenance

Gantry stacker-unstackers from Workhorse represent the company's latest advances in pan and lid handling equipment. "The new robotic stacker/unstacker is designed to provide a gentle, accurate high-

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speed stacking system for all bakery and pan and lid types,” Mr. Mentch said. “These systems provide longer pan life, higher production rates, less pan and lid jams and quieter working environments.”

The Allen-Bradley intuitive control scheme managing the pan system is user- and maintenance-friendly. The stacker-unstacker is a part of Workhorse’s automatic pan and lid management systems that also include automated storage and retrieval systems, which can be either single or multi-level depending on the floor space available.

The storage and retrieval system continually serves the robots by retrieving the pan and lid type requested from storage simultaneously as it stores the pans and lids coming off of the production line. “These systems are integrated together, requiring no dedicated plant personnel to continually supply pans into and out of the production line,” Mr. Mentch noted.

AMF designed its new PALSUS unit (Pan and Lid Stacker-Unstacker), which uses four-axis robots, to handle increased pan rates as well as larger pan sizes. “It handles multiple pans or lids at one time, resulting in quieter, gentler pan handling,” Mr. Keane said. Its design contains 70% fewer moving parts than conventional magnetic units, thus significantly reducing maintenance.

The Capway Robocap pan system features a gantry-style robot that stacks, unstacks, stores and retrieves pans within the same unit. “The large gripper allows multiple pans to be picked up at one time, therefore, reducing the cycles the robot has to perform,” Mr. Atcherberg said. “No pan trucks are required because the pans are stored within the system. This allows higher stacks because they do not have to be moved after stacking, so less floor space is required.”

Operator safety represents an important consideration for adding an automated pan handling system.

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PAN AND LID HANDLING

Large grippers on pan systems allow multiple pans to be picked up at one time, reducing the robot's cycles.

Capway Systems

By stacking and unstacking the pans vertically, he observed, the pans are handled gently, and the coatings on the pans are not damaged by the process, therefore, extending pan and pan coating life. "The greatest benefit is that the Robocap system automatically meters the line," Mr. Atcherberg explained. "It adds and removes pans based on the line requirements. It allows easy changeovers without the need to move heavy pan trucks around and the possibility for them to fall over and someone to get hurt."

Regulating the number of pans in a line ensures bakeries have the correct number of pans for the hourly capacity and desired throughputs rates. "The pan management system can also be linked to manage the life of the pans by automatically detecting and removing those



pans from the system for recoating," Mr. Hagedorn said. "These are automatically stacked on pallets by the storage crane and are then easily removed by a forklift."

Calculating the return

During the past few years, the Kaak Group systematically put every design, concept and fabrication process through several stages to a new level of hygiene. "For example, our lidders, delidders and depanners are now



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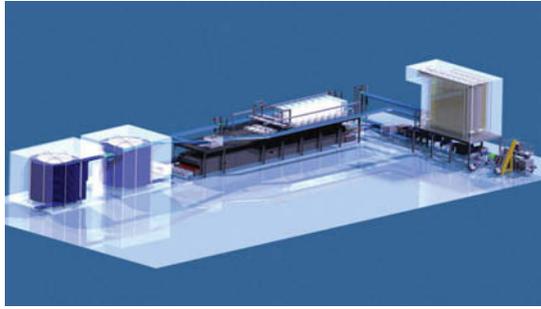
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manufactured with only closed profiles, and all angles and inclines have been modified to prevent as much as possible dust and water lying or remaining on them,” said Ashley Morris, area sales manager, USA, for the Kaak Group.

“Sensors, regardless of where they are, have been given a hygienically safe, standardized and, thus, easily exchangeable fastening,” he continued. “This hygienic

design exercise has gone into the smallest detail. An example of this fact is that pressure and dimensions of all components, even hoses and valves, have been checked and, in case of doubt, improved.”

Also, a new depanner design from the Kaak Group enables placement of almost all components alongside the line, so nothing can drop or drip onto the product. The only things positioned above the production line now are the head and the needles. There’s an added benefit. “The head is interchangeable and can even be changed to a suction depanner,” Mr. Morris explained.

When determining the return on investment (ROI) of pan handling equipment, bakers have to count factors such as operator safety, floor space, number of pan sets and daily changeovers, line speeds and operator salaries, Mr. Kauffman said, noting that AMF has spreadsheets available to help with this analysis.

Mr. Mentch noted that the ROI comes from reducing the number of dedicated operators, saving floor space through the use of multi-level storage and lengthening pan life through the gentle handling, all of which provide a substantial savings to bakeries. ●

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Searching for Better Alternatives

Alpha Baking rolls out the latest liquid propane autogas step vans in its ongoing efforts to build a greener fleet.

by Dan Malovany

Life is always a journey in the world of distribution, and for Bob McGuire, vice-president and director of logistics at Chicago-based Alpha Baking Co., the search for a greener fleet has meant taking the road less traveled.

During the past seven years, Mr. McGuire, who is also chairman of the American Bakers Association's Logistics Committee, tested the limits of technology by tinkering with hydrogen-fuel systems, biodiesel and even recycled vegetable oil as alternatives to gasoline and diesel for its fleet.

"Recycled vegetable oil worked," he said. "The problem was just getting enough of it to run our vehicles."

"Apparently," joked Mike Marcucci, Alpha Baking's CEO, "people aren't eating enough French fries. Go figure."

The bakery's latest venture, however, involves a fuel that America has in great abundance and a technology that provides a sustainable alternative to gasoline and diesel. Mr. McGuire explored it and thought the grass might be greener on this side.

In June, Alpha Baking celebrated the grand opening for its fleet of liquid propane autogas trucks. In all, the company now operates 22 step vans in the Chicagoland area. Based at North Aurora, IL, this fleet — the nation's only Ford/Roush propane-powered step van fleet — will save 60,000 gal of diesel fuel a year.

Building a better tomorrow

Why did Alpha Baking do it? Mr. McGuire explained that American-made propane creates jobs, reduces

greenhouse gasses and could eventually cut the nation's dependency on foreign oil.

"The technology to run our fleets on compressed natural gas (CNG), propane and electric is here," Mr. McGuire noted. "The infrastructures are more or less developed, so caution needs to be employed in pursuing an alternative energy method, but the opportunity exists for those in the know."

To develop the liquid propane program, Mr. McGuire spent 15 months researching the possibility after hearing legendary Texas oil and gas executive T. Boone Pickens talk about the potential for this alternative fuel.

Alpha Baking selected Penske Truck Leasing to serve as its commercial truck fleet maintenance service provider for its 2013 Roush CleanTech liquid propane autogas-powered Ford E-450 bread delivery trucks, which will emit about 2 million fewer lb of carbon dioxide over their lifetime.

"One of the biggest changes within the trucking industry over the past three years is the opportunity to employ alternative-energy vehicles in step van and Class 7 and 8 vehicle operations," Mr. McGuire said. "A tremendous amount of progress has been made. Alternative-energy vehicles have been the highlight at national truck shows the past couple of years."

Additionally, one of Alpha Baking's trucks, which feature colorful graphics and such phrases as "lower carbon emissions," "progressive" and "100% propane

Alpha Baking now operates 22 liquid propane autogas vehicles, which will reduce petroleum usage by 60,000 gal annually. One of the trucks will be featured at Baking Expo this fall.

powered,” will be on display at the International Baking Industry Exposition (IBIE), to be held Oct. 6-9 in Las Vegas.

Alpha Baking joins a growing number of bakeries and snack man-

ufacturers exploring alternative fuels and the route truck of the future since the last IBIE three years ago.

Cellone’s Bakery, Pittsburgh, has operated propane-powered trucks for more than 30 years in an effort

to find a more affordable alternative to gas and diesel, according to Brandon Cellone, treasurer. Over the years, he noted, technology has improved significantly. Today, 28 of its 44 routes are propane trucks.

Earlier this summer, executives from PepsiCo’s Frito-Lay North America (FLNA) division along with US Department of Energy and Wisconsin state officials unveiled Frito-Lay’s inaugural CNG fueling station in Beloit, WI.

By the end of this year, the Plano, TX-based company will break ground on seven public CNG fueling stations across the US and continue to grow its CNG fleet, bringing the total number of Frito-Lay’s CNG tractors to 208.

Once deployed, Frito-Lay noted, these CNG vehicles will make up 20% of the snack producer’s fleet and be located at 50% of its production locations.

According to Frito-Lay, the new CNG fueling stations will not only provide fuel for these tractors and help pave the way for more CNG vehicles to be introduced into the Frito-Lay fleet but will also make available fuel for other companies currently using or considering alternative-fuel vehicles in the future.

“This initiative to build much-needed natural gas infrastructure for large commercial vehicles is part of Frito-Lay’s deep commitment to the environment,” said Mike O’Connell, FLNA’s senior director for fleet operations, in a statement by the company. “When all 208 CNG tractors are in service, Frito-Lay will eliminate 7,863 metric tons of carbon emissions, the equivalent of more than 1,125 cars annually.”

In the US, Frito-Lay hopes to reduce its overall total fuel consumption and greenhouse gas emissions by 50% by 2020, compared with its 2007 baseline.

In addition to CNG vehicles, the company relies on all-electric trucks

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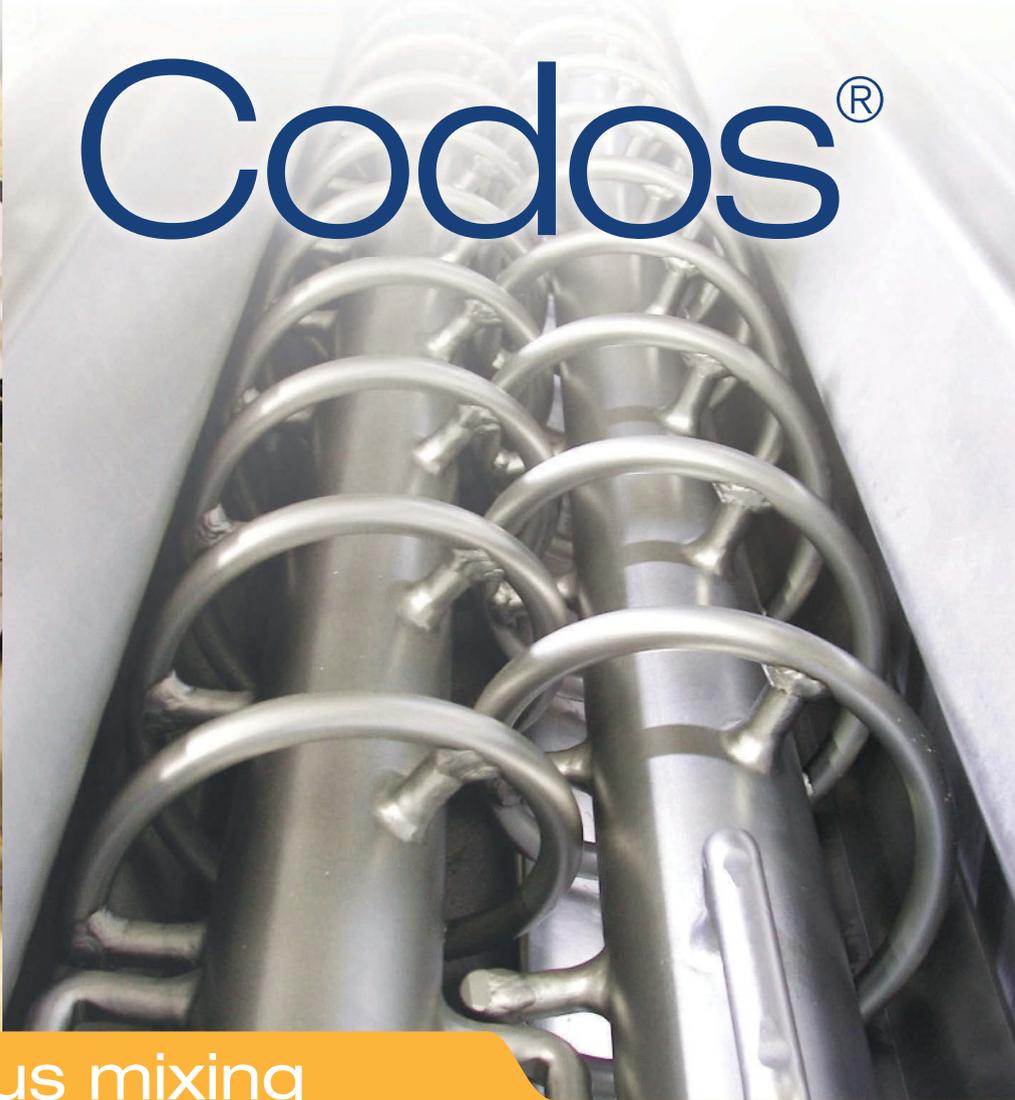


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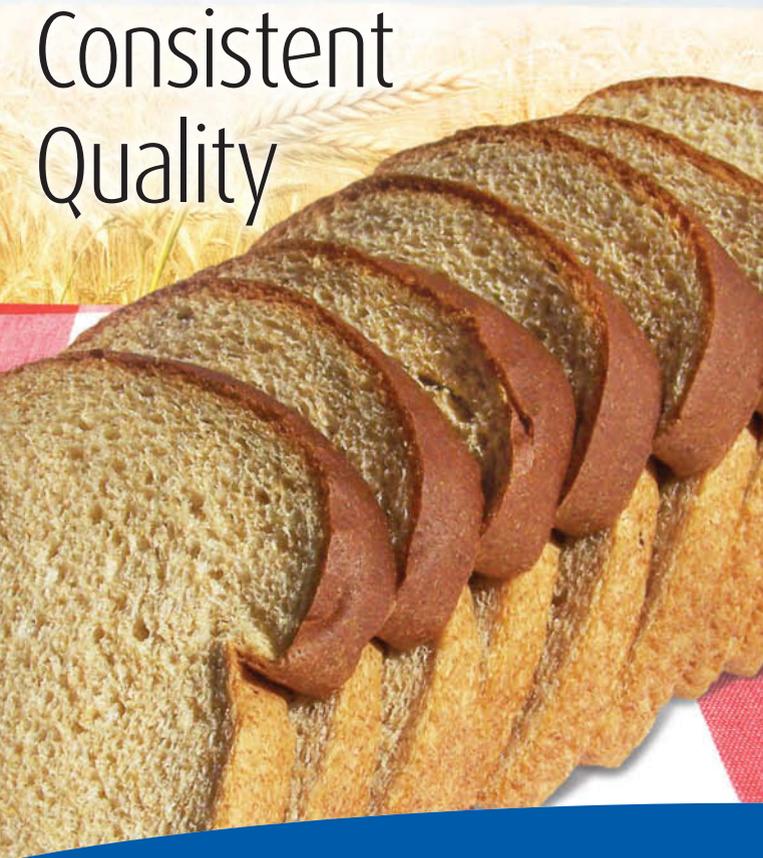
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SUSTAINABILITY



Alpha Baking, along with its supplier partners and key government officials, celebrate the grand opening of the bakery's green fleet with a ribbon-cutting ceremony at its depot in North Aurora, IL.

as part of its delivery fleet. In 2012, it began purchasing 100 all-electric commercial vehicles from Smith Electric Vehicles, bringing the total size of its electric fleet to more than 280. These electric trucks eliminate the need for some 500,000 gal of diesel fuel each year.

When venturing into alternative fuels, Mr. McGuire said it's not about return on investment.

"It's about doing the right thing," he explained. •

Conserving for the future

ACE Bakery, Toronto, broadcasts its sustainability program by posting environmental initiatives in the entryway of its newest location at Gaffney, SC. Initiatives take three directions: packaging, organics and manufacturing.

For example, the company uses paper packaging made from forests certified by the Forest Stewardship Council and both post- and pre-consumer recycled sources.

It is working with suppliers of organic ingredients to expand its current roster of eight certified-organic breads and supports the Everdale organic farming initiative, a farmer education program based at Hillsburgh, ON.

And Gaffney itself is part of the manufacturing initiative to produce breads closer to customers and, thus, reduce shipping over long distances. Bakery waste goes into animal feed programs, and energy efficiency of 95% at the bakeries surpasses industry norms. Water conservation and recycling programs are also used.



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No Small Task

Preparing for audits of any kind is daunting, but knowing your facility is both audit-ready and consumer-ready will be invaluable.

As an auditor, plant quality manager and sanitation manager over the years, my quest was to be always audit-ready and have a facility and equipment considered “food safe” at all times. Let’s define what this means. In the scope of a typical third-party or internal corporate audit scheme, it defines how well a facility conforms to applicable sets of quality and food safety standards, every minute, every hour and every day — yes 24/7 — regardless of shift. This refers to having the correct documentation and records and having flawless execution consistent with them.

Audits, whether internal, external, government or part of a Global Food Safety Initiative (GSFI), all induce a level of anxiety prior to and during the audit, at an exit meeting and finally when the report arrives. The anxiety is well-founded as these can be facility-changing events. If the plant is not acceptable, a company could lose business, receive regulatory warning letters or even become perceived as unfixable to a parent company, which could mean closure over time.

On the positive side, a good audit can be beneficial for a bakery,

increasing volume, gaining a good reputation within the company or with regulatory agencies, and establishing a path forward for capital investment and growth. From a career perspective, it can either be positive as a promotional opportunity, or if it does not go well, a negative for the plant staff and the manager. At times, a failed audit can even be what’s commonly known as a CLM, or “career-limiting move.”

Audits can be equally risky for the auditor, as well. What if something important is missed during the audit and the visit is followed by a recall due to an issue that should have been identified? What if the audit is followed by a regulatory visit, which finds unsanitary or otherwise violative conditions? We have seen a few of these in the past several years. As an auditor, I experienced this and fortunately documented items, only a week later were identified by a regulatory agent, who subsequently created a generous list of violations noted on a Form FDA 483. This could be a CLM for an auditor.

Such potential ramifications reveal why audits are so important. The challenge is how to manage audits to optimize the score and the

food safety systems while ensuring the systems and fundamental food safety practices are sustained following the audit. Unfortunately, in some situations, audit preparation can take months to ensure proper documentation and execution yielding a good audit score. However, if there is not continued diligence on the paperwork and the execution, the only benefit of the audit preparation is a good score based on a few days of observations. This postpones the CLM concern, but without continued diligence and commitment to remaining audit-ready, failure is imminent.

To be successful, an auditor must be knowledgeable about the process, regulation and standards and be inquisitive and focused on food safety programs and their execution. Oftentimes, depending on the standard, the time needed to review the programs and documentation is overwhelming, which leaves little time to spend on the plant floor examining execution. Unfortunately, this is a missed opportunity, as many floor issues tend to go unnoticed. Many auditors spend 75% of the audit reviewing documentation (to satisfy the expectations of the

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Someone will eat this food; therefore, we should focus on executing perfectly every time while maintaining perfect documentation.

standard and reporting requirements) and 25% on the floor observing program execution.

When I audited, I had the freedom to spend 75% of the time on execution and then 25% evaluating programs. This allowed me to observe operational execution, where programs are truly tested. The goal was to encourage modification of the weak execution on the floor and the programs that governed them.

Preparing correctly for an audit is vital to scoring well and making sure the work is sustainable, so you can be audit-ready in the future. The adage of “do what you say, say what you do, and prove it” is a good start. However, what you do must meet the criteria of acceptability of existing standards. As a simple example, you cannot use a cat in your facility to control mice. This would be effective to control rodent populations but would be an unacceptable control method.

The standards and codes must be articulated in your policies, procedures and work instructions to meet expectations of the standards you are working with. If your goal is GFSI certification, you must choose an audit scheme you feel comfortable with, select your product categories and meet those standards and expectations.

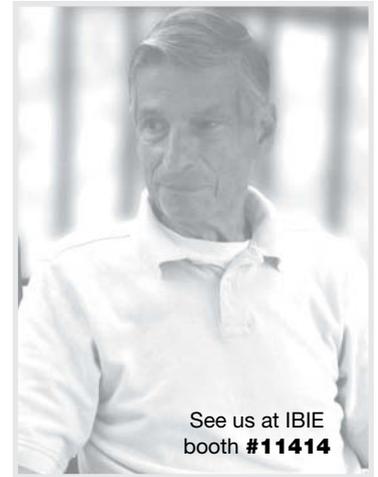
Keep in mind, the score should not be the end goal. It should be an opportunity for continuous improvement based on a thorough investigation targeted to identify potential food safety risks and their corrections. It is about continuous improvement and understanding new opportunity areas. To a large degree, GFSI audit schemes are focused more on the documentation

process and less on the execution. Nonetheless, these schemes have driven improvement in the food industry’s programs and associated execution; they should be managed and visible to company executives.

These points are important to consider, but they are strictly a reflection of the plant’s condition at the time of the audit. The term “audit ready” takes us to another place, which is to be always consumer ready. That’s right — someone will eat this food; therefore, we should focus on executing perfectly every time while maintaining perfect documentation.

With the recent FDA hearings on the Food Safety Modernization Act, consumers who lost loved ones or who were seriously sickened testified on their specific situations. These true stories were heart-wrenching to hear. They triggered in me a memory I have had for years, which has been a great reminder of how important quality, sanitation and food-safety functions are in the food industry. In 1998, following a large retail meat recall, Helen Bodnar lost her life due to listeriosis. At the time, 20/20 ran a segment on the recall and focused on Helen and her husband, John. He recalled the pain Helen experienced and her struggles with the disease as it took her life. This segment made a lasting impression on me. John and Helen reminded me of my own parents.

It was a tragic story and has been a constant reminder of the responsibilities of those working in food safety. An audit score is important; however, being audit-ready and food-safe mean everything to consumers of the products we make. •



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With baking hours from 6:00 a.m. to 2:00 p.m., Arremomy’s Quality Bakery products are available warm and fresh throughout the day. Owner Philip Arremomy describes the Jewett City, Connecticut business as an “Old World” style bakery that has maintained its popular product line since its founding in 1960.

Phil has taken Arremomy’s Quality Bakery services beyond those of a retail bakery. He offers catering services, and plans to develop a mail-order operation. Why not? He already ships baked goods to the west coast and Florida to satisfy former Jewett City residents.

In fact, some Arremomy customers travel as far as 50 miles to pick up their favorite baked goods. They place their orders in advance in order to schedule visits around Arremomy’s two week summer shut down. What generates such enthusiasm? For starters, Babka bread, sweetened with golden raisins, Whoopie pies (a cream filling between two chewy chocolate cookies), chocolate chip cookies and date or apricot filled shortbread cookies.

Phil, who grew up in the business and learned the trade from his father Philip F. Arremomy, took over in 1996. Phil’s son Ian has followed his father into the business.

In Phil’s view, a major challenge facing bakers today is the nutritional awareness of today’s customers. “Using good, pure ingredients is essential,” he said. “Because customers expect consistency in my products.” For consistent results, Phil relies on **International® Bakers Services** to flavor all of Arremomy’s baked goods. Phil is particularly fond of the Vanilla Crystals he adds to his “wonderfully delicious” donut glaze.

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.....
Tim Ross



Q&A: DIGITAL MARKETING

.....
Paul Kramer

In the rough-and-tumble of consumer marketing, companies need every advantage they can get. New digital tools point the way to enhanced reach for essential messaging. *Baking & Snack* consulted the experts at SolutionSet, San Francisco, and Catapult Marketing, Westport, CT, for advice bakers and snack food manufacturers can use now.

The two companies are the digital and consumer promotions arms of Irving, TX-based Epsilon, one of the country's leading data and technology marketing firms. Drawing on the digital expertise of SolutionSet, the deep consumer insights of Catapult and its own proprietary data and analytics, Epsilon creates cutting-edge digital campaigns for consumer packaged goods (CPG) companies such as the Kellogg Company, Battle Creek, MI. Epsilon recently brought its various consumer experts together to concentrate on what marketing looks like for CPG companies in the next several years, resulting in CPG-focused

services and the eBook "Beyond the Aisle," a Top 10 seller in the Amazon Kindle store.

Paul Kramer, CEO, Catapult Marketing, has worked with some of the world's greatest communication companies, including Grey Advertising, Bates Worldwide, Saatchi & Saatchi and D.L. Ryan Companies. His clients have included several top global companies, including Johnson & Johnson, M&M Mars, Cadbury Schweppes, Wal-Mart, Alcoa Consumer Products, Novartis and more.

Tim Ross, CEO, SolutionSet, leads the company's efforts to leverage digital technologies to engage customers, partners and employees. He helps define the strategic impact of converging Web, social and mobile initiatives. Mr. Ross has more than 12 years experience leading consulting and implementation services on enterprise digital programs that blend Internet-focused strategy, user experience and technology.

How to Make eMarketing Work

Thanks to digital evolution, you can meet consumers where they are — inside the store and out.

Joanie Spencer: What roles do Web, social media and word-of-mouth marketing play in brand building for baked foods and snacks?

Paul Kramer: You're looking for opportunities to reach shoppers as they're building their shopping lists. That's what starts the process. It might be occasion-based, either a cultural event like the Super Bowl or the 4th of July, or a personal occasion such as a birthday or anniversary.

We did a campaign for the Super Bowl last year for Keebler using football player LaDainian Tomlinson and his wife, Torsha, to disseminate Keebler snacking recipes. Video became a key part of the sharing, because we could show actual cooking demonstrations. Also, think about third-party and aggregator sites as channels for recipe distribution. For the Keebler campaign we used Rachel Ray, for instance. Mr. Tomlinson and his wife appeared in a video on Ms. Ray's website, where people go for recipes, occasion ideas and so forth.

Store websites are extremely important. Research shows that consumers don't tend to go to brand websites; they frequently visit their store websites — Wal-Mart, Publix, Target, Kroger, etc. There are a number of ways to launch occasion ideas into those sites as well, using banners, targeting direct emails through frequent shopper cards with seasonally appropriate snacking ideas and so forth. Baking and snack companies can use that channel

as a way to market to consumers during the "pre-shop" period. Companies need to get their brands on consumers' shopping lists by being where those consumers look for ideas.

Traffic to store sites vs. brand sites — even a big brand like Kraft — is more than 10-to-1. In addition to recipes and food info, the store sites feature assorted coupons and deals, so they draw a lot of people looking for those things as well.

Tim Ross: From a social standpoint, there are two things to think about. First, there's personal sharing — what consumers are buying, how they're using it and then sharing among friends. Then, there's the contest/promotion side of things, where companies get users to contribute and vote on things like recipes and ideas. We've seen success with these contests and brag books people have around the execution of recipes or creative use of baked foods or snacks.

How can wholesale bakeries better use digital and social media while maintaining brand integrity?

Mr. Ross: I think that's always a question companies have when there are activities that involve user-generated content. As long as brands enable crowd voting and commenting, along with moderating tools, they can usually mitigate risk without worrying too much. If you have moderators reviewing items or comments before they publish and/or have the crowd flagging negative com-

ments or voting up and down, people generally understand that when you provide a platform for users, they're partially responsible for maintaining its integrity.

Mr. Kramer: Maintaining brand equity gets a little into search marketing and search engine optimization as well. There are a plethora of food sites out there, and brands need to identify how people search for their foods and who the audience is. Often, people are looking for just general terms like "lunch" or "dinner" or "fast and easy" or maybe "grilling" or even by cuisine. It's important to build into your marketing those keywords that bring your products to the top of the shopper's list.

How can branding and the Web work together to create useful dialogue with consumers?

Mr. Kramer: Digital has changed how consumers think about their food purchases. Before the digital evolution, people thought about one item at a time: "I need eggs, milk, toast, etc." Today, they think in terms of solutions for all their needs, like, "I need everything for Christmas Eve from the main meal down to the cookies we'll leave for Santa Claus."

Tailoring media buys is important, too. Brands need to think about whether they want to be marketing to the 4th of July barbecue crowd or to foodies.

So, it's search, making sure your content and marketing have the right keywords, buying space on relevant websites and then also partnering with bloggers who are aligned with the brand.

And now there's a whole other area you can't miss — social sites such as Pinterest, Tumblr or Facebook, where you can build

your own food portal. That's a new approach we're using.

What is the ideal percentage of a company's marketing plan that should be dedicated to digital media?

Mr. Kramer: The latest research from Group M, a St. Louis-based media-buying company, said in 2012, 16.2% of all global ad expense was digital. I'd say if this was the average in 2012, then baking and snack companies should start there and probably aim higher. Both of the baking and snack categories pertain to meal components, so you want to make sure you're putting your products in context and that necessitates spending a higher percentage of your budget on digital.

How do you measure success of digital campaigns?

Mr. Ross: There are standard ways in terms of page views, likes and click-through — but then there are also ways to measure the impact of digital campaigns on brand loyalty and brand perception. You can either look at it simply, like how many user-generated ideas were received. Or you can be a bit cleverer about it.

One thing we've done with user-generated content is look at how many organic SEO results come from people searching for specific items or recipes, for example, and then clicking through. Look at how much it would have cost to buy that traffic through paid search engine marketing such as buying Google Ad Words.

Mr. Kramer: The programs available through some stores' frequent shopper cards are great for measurement, too. In some cases, you can do a direct email campaign to all frequent shopper cardholders, and then you can track the success of that campaign. So, if you use that

channel to push certain products, for example, you'll know which shoppers received that messaging, and then you can look at who went out and bought those products within a certain period of time.

How can digital outlets segment audiences or customize offers?

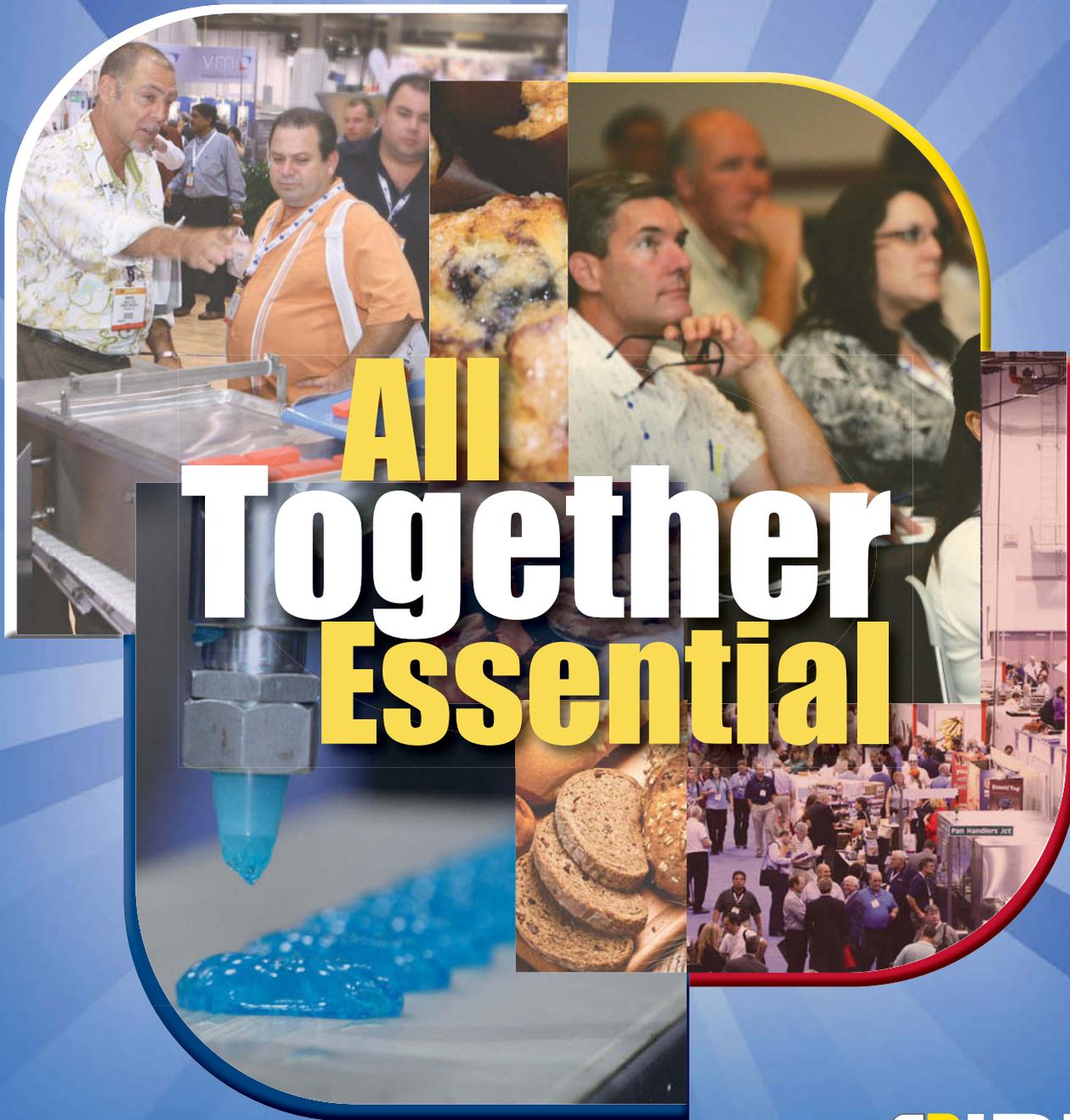
Mr. Ross: Audience segmentation is one of the things digital actually does better than other types of marketing. A website can tell you exactly where all your traffic is coming from, and you can use that information to both target certain sites and social networks and to see how your campaigns are faring.

Using online content management tools, you can also easily tailor specific messages to different audiences. If you've got a Facebook campaign running, for example, and you want to make sure the people who are coming to your site through that campaign are getting a slightly more youthful experience, you can serve up a specific version of your homepage that's tailored to that audience. You can do that across various platforms and really measure your success and fine-tune your messaging.

That's true in terms of customizing offers as well, and then you've also got all the mobile features that enable pretty amazing customization. Rather than relying on an end-cap display, for example, you can build what's called a "geofence" and basically send anyone who is within 200 yards of these stores a text about this snack item being on sale this week.

Google just acquired a bunch of mapping apps and locator services to improve geofencing within its search and mapping apps, as well. Companies can even push coupons to mobile users as they're shopping. ●

For more on the subject, subscribe to *Baking & Snack's Operations Update* e-newsletter at www.bakingandsnack.com.



All Together Essential

Serious baking pros agree: the International Baking Industry Exposition (IBIE) is the largest, most important trade event of 2013, where all the latest baking technology, products, equipment, education and opportunities come together like nowhere else. Get to IBIE this October and get what you need to build a better, more profitable business.

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For more information, see Page 133



A Dynamic Difference

Hearing exciting news from Mondelēz, B&CMA tech conference attendees learned that the biscuit and cracker industry continues to progress.

Cynthia Waggoner rocked the house. She opened the 88th annual technical conference of the Biscuit & Cracker Manufacturers' Association with a huge bang of enthusiasm and good news.

"In the seven months since the Kraft breakup," said Ms. Waggoner, vice-president of the snack and confections business for Mondelēz International's North American Operations told her audience of nearly 300 at the Intercontinental Hotel, Kansas City, MO, "we experienced the fastest growth for Nabisco in over a decade."

The company, based at East Hanover, NJ, exerts global influence. "Biscuits are 30% of what we do, and North America represents 19% of Mondelēz," she explained.

She described the company's large manufacturing base as a core competitive advantage. To strengthen that base, the company's approach is nothing less than radical. "We're taking old processes, old plants — some 100 years old — and applying one set of goals to them," Ms. Waggoner said. "It will be one set of standards across the globe: engineer once and apply worldwide. What we're really doing is something truly amazing."

B&CMA uses its tech conference to honor achievements by members. It announced winners of the Chairman's Award for Safety Excellence. For locations with less than 200 employees: Bremner Food Group, Tonawanda, NY; Chattanooga Bakery, Chattanooga,

TN; D.F. Stauffer Biscuit Co., Cuba, NY; Dare Foods, Spartanburg, SC; and Newly Weds Foods, Mt. Pleasant, TX, and Springdale, AR. For facilities with less than 500 employees: Kellogg, Charlotte, NC; for locations with less than 800 employees: Kellogg, Rome, GA; and Mondelēz, Toronto, ON; and for sites with more than 800 employees: Mondelēz, Chicago, IL.

The conference also recognizes the year's top achieving correspondence course student with the Vander Heide Award. In 2013, it went to Michael J. Downing, production supervisor at Bremner Food Group, Princeton, KY.

Guided by 2013 education committee chairman Rich McFeaters, research principal at Mondelēz International, the conference provided a comprehensive slate of topics. Speakers explored the technologies of ovens, robotics and energy conservation while others covered nutrition standards for school meal programs and prevention of biscuit checking problems. A look at new regulations emerging under the Food Safety Modernization Act was offered. And sustainable development was explored through supply chain strategies.

Tabletop exhibits over the lunch period on May 7 allowed attendees to browse a showcase of allied members' latest products and services. More than 60 exhibitors took part.



To open the tech conference, Cynthia Waggoner of Mondelēz gave a rousing state-of-the-industry presentation about progress made at the company in the seven months since its split from Kraft.



Marjorie Troxel Hellmer of Cypress Research Associates described the future of commercial bakery equipment according to her Dreamscape data.



(From left) Heidi Long, Jan Levenhagen and Dave Braun of Mennel Milling



William Grutter (left) and Jim Tumini of Ashworth Bros.



Rick Parrish (left) and Kevin Knott of Franz Haas Machinery of America



(From left) Tom Lugar, Shawn Moye, Donald Smith, Dave Kuipers and Jim Warren of Reading Bakery Systems and Richard Starke of Reading Thermal



(From left) Jeff Snow, Scott Fischer and Jason Stricker of Shick and Yolanda Thomas of Kellogg



Dwight Wagaman (left) and Dan Christie of Baker Perkins

Packed with Learning

Pack Expo Las Vegas puts all education sessions on the show floor.

by Shane Whitaker

Attendees spoke, and PMMI listened. The organization, which owns and organizes Pack Expo, made substantial changes to the education program at the coming Pack Expo Las Vegas to be held Sept. 23-25 at the Las Vegas Convention Center.

“We build Pack Expo shows around the attendees — they’re our customers, and they’re our exhibitor’s customers,” said Jim Pittas, PMMI’s vice-president, trade shows. “The whole customer-centric approach to Pack Expo is based on meeting their needs, and among those needs are learning opportunities that fit their agendas.”

An in-depth study of Pack Expo attendees, Voice of Attendees (VOA), indicated that they value education at the show, when presented in the right way. The study revealed a need for PMMI not only to rethink topics but also the location fee. In addition, PMMI, the Association for Packaging and Processing Technologies, is expanding the number of learning centers on the show floor and including industry leaders in its efforts.

A variety of educational spots will be set up on the show floor, including the Innovation Stage, the Center for Trends & Technology (CTT) and the Reusables Learning Center. The Innovation Stage will feature nonstop learning opportunities in 27 half-hour segments delivered by industry experts and covering topics and technologies for today’s industry needs.

CTT is designed to show attendees how to improve production through innovation. Suppliers such as Rockwell, Cisco, Microsoft and Motorola will be leading the education sessions, and attendees will see technology on display and learn how it works with other equipment. The Reusable Packaging Association will teach attendees at the Reusable Learning Center how to gain long-term cost saving benefits from eco-friendly packaging.

Attendees also can take advantage of in-booth education sessions, where exhibitor expertise will be front and center.

Pack Expo has booked more than 1,600 exhibitors, and it will offer special show features to help baking and snack processors find the solutions they need. For example, the Baking-Snack Break lounge will once again be hosted by the Snack Food Association and will provide a dedicated area where professionals can network with peers, meet with suppliers and engage experts for technical advice about packaging- and processing-related challenges.

Register for Pack Expo before Sept. 9 and save 50%. Registration increases to \$60 after this date. For more information or to register, visit www.packexpo.com.



All education sessions at Pack Expo Las Vegas will take place on the show floor, including 27 half-hour presentations at the Innovation Stage.

PMMI



This IBIE preview contains everything bakers need to ...

Hit the Ground Running

by Mari Rydings

Research shows that the No. 1 reason people attend an industry trade show is to see what's new. Industry insiders heading to the 2013 International Baking Industry Exposition (IBIE), slated for Oct. 6-9 at the Las Vegas Convention Center, will find plenty of new products, suppliers, features, events and educational opportunities to explore, as well as some familiar show staples.

When the show floor opens, it's time to get down to business. But before they head straight toward their "must see" booths, bakers will want to check out the IBIE Innovation Showcase, a new show feature. Located in the main area of the convention center lobby, the Innovation Showcase is a walk-through gallery of posters illustrating some of the cutting-edge technology introduced during the past three years. It's a one-stop shopping experience for the latest advances in just about every industry category.

An amplified, dual-stage demonstration program conjoins information and entertainment in the aisles. Headlining at the Amoretti Demo Theater is Cake Boss Buddy Valastro, who will lead two sessions on cake decorating. Chef Dana Herbert, winner of "Cake Boss: The Next Great Baker," and his 50-baker team will take the stage in an attempt to break the current record for the World's Largest Wedding Cake, which is 15,032 lb. Stick around after this festive feat for the opportunity to buy a slice of the cake, with all proceeds going to Susan G. Komen for the Cure's Southern Nevada Affiliate.

Pie, pizza and raisin bread also get in on the show floor action. New to IBIE 2013, The Great American Pie Festival invites attendees to feast their eyes — and their appetites — on "A Never Ending Pie Buffet." Sponsored in partnership by The American Pie Council and IBIE,

visitors can sample an impressive array of ready-made pies and take in live entertainment, merchandise, complimentary refreshments and free prizes.

To balance out the sweet, IBIE will also add some savory in the form of the PMQ Pizza Village. This town-hall-style pizza pavilion, created specifically for IBIE 2013, will connect pizza manufacturers and bakers through demonstrations, exhibits, networking opportunities and educational seminars. Village visitors can enjoy a freestyle pizza acrobatics competition and the American Pizza Championships cooking contest.

Joining The Great American Pie Festival and the PMQ Pizza Village on their inaugural IBIE run is the America's Best Raisin Bread Contest, hosted by the California Raisin Marketing Board. Over the course of the three-day show, 36 contestants will bake their raisin *pièces de résistance* in front of a panel of judges. Three

Sneak preview

Readers of Sosland Publishing's magazines will want to keep their eyes peeled for the *2013 IBIE Special Edition & Show Preview*, set to arrive in late August. The issue

features timely insider intelligence on the state of the industry, association initiatives, food safety regulations, product trends, ingredient and formulating issues, the international perspective and ideas for entertaining clients after show hours.



MEETING PREVIEW: IBIE

winners from three categories — Artisan, Commercial and Breakfast — will emerge victorious. Judges will also select one student winner in each category.

IBIE's education program is bigger

and better than ever and boasts the addition of several new seminars and speakers. Hot topic sessions include presentations on the Food Safety & Modernization Act, the Global Food Safety Initiative, managing rising

commodity prices, and formulating with ancient grains. For the complete schedule, visit ibie2013.org/education.

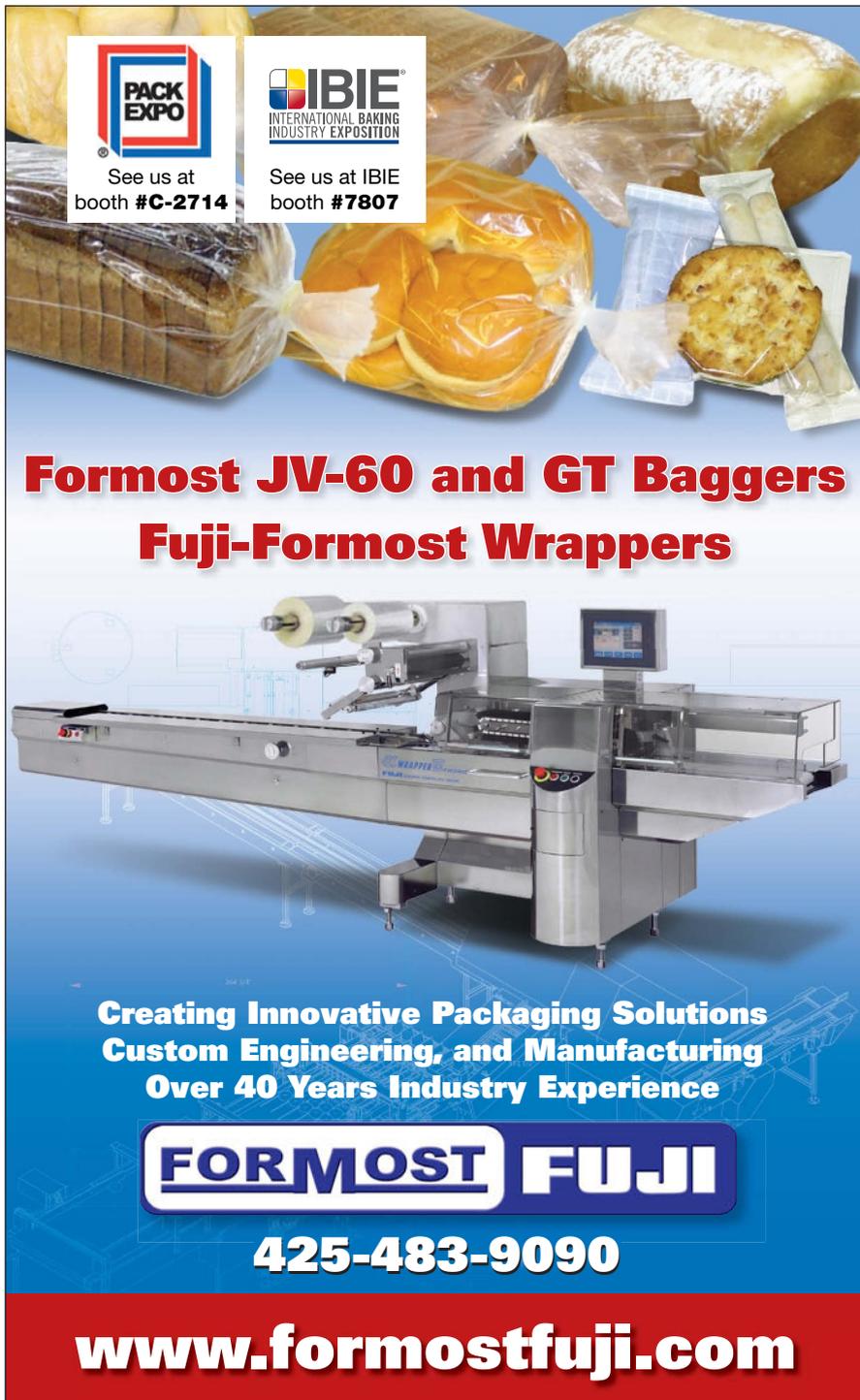
For those eager to get a jump start on the IBIE experience, three industry associations will host pre-show workshops and conferences. The American Bakers Association, in partnership with the US Food and Drug Administration (FDA), will offer "Food Defense Awareness." Scheduled for Oct. 5, the all-day seminar will provide participants with the tools they need to create a food defense plan. It will also include a hands-on demonstration of FDA's Food Defense Plan Builder (FDPB) tool. Space is limited. To register for the program, visit www.surveymonkey.com/s/22LXDWN.

The Tortilla Industry Association scheduled its annual technical conference for Oct. 5-6. Co-located with IBIE, the conference focuses on the operational angle of managing a plant for efficiency and profitability amidst a sea of safety and regulatory issues. For more information, visit ibie2013.org/tia.

Lastly, the RPIA Group will host its annual day-long The Business of Baking for Beginners (BOB) seminar on Oct. 5. This program is designed for people with five years or less in the baking industry. For more information, visit ibie2013.org/bob.

Navigating the show floor, scheduling supplier appointments and making dinner reservations will be a snap with the IBIE mobile app. Sponsored by DuPont Nutrition & Health (Booth No. 5821), the mobile app is available for iPhone, Android and Blackberry 10 devices as well as via the Web for all other mobile gadgets. Innovation Showcase entries, the education program schedule and demo times and locations are just a tap away.

In no time at all, the industry will truly be "All Together Now" at what promises to be the best industry show ever. ●



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NORTH AMERICA

October

- Oct. 5-6: Tortilla Industry Association Technical Seminar, Las Vegas
Phone (800) 944-6099; Web www.tortilla-info.com
- Oct. 6-9: International Baking Industry Exposition, Las Vegas
Phone (312) 673-5941; Web www.ibe2013.org
- Oct. 7-8: Private Label Manufacturers Association (PLMA) Washington Conference, Washington, DC
Phone (212) 972-3131; Web www.plma.com
- Oct. 13-15: The Snack School, Philadelphia; Snack Food Association
Phone (703) 836-4500; Web www.sfa.org
- Oct. 15-17: Food Processing Center Extrusion Workshop, Lincoln, NE; University of Nebraska-Lincoln
Phone (402) 472-2819;
Web fpc.unl.edu/web/food-processing-center/extrusion-workshop
- Oct. 19-22: 2013 Food and Nutrition Conference and Expo, Houston; Academy of Nutrition and Dietetics
Phone (312) 899-0040; Web www.eatright.org
- Oct. 21-23: Oilseed & Grain Trade Summit, Minneapolis
Phone (978) 887-8800 ext. 129; Web www.soyandgraintrade.com
- Oct. 22-24: Women in Agribusiness Summit, Minneapolis
Phone (207) 244-9544; Web www.womeninag.com
- Oct. 28-30: North American Millers' Association Annual Meeting, Washington, DC
Phone (202) 484-2200; Web www.namamillers.org
- Oct. 28-30: PMMI Annual Meeting, Minneapolis
Phone (888) 275-7664; Web www.pmmi.org
- Oct. 29-30: Kosherfest, Secaucus, NJ
Phone (207) 842-5504; Web www.kosherfest.com

November

- Nov. 3-5: 2013 Fall Wheat Conference, Portland, OR; National Association of Wheat Growers (NAWG) and US Wheat Associates
Phone (202) 547-7800; Web www.wheatworld.org
- Nov. 3-6: Process Expo, Chicago, Food Processing Suppliers Association
Phone (703) 761-2600; Web www.myprocessexpo.com
- Nov. 5-6: Vanilla 2013, Jamesburg, NJ; Bakto Flavors
Phone (732) 354-4492; Web www.baktoflavors.com
- Nov. 12-16: SupplySide West, Las Vegas
Phone (800) 454-5760 and (480) 990-1101; Web www.supplysideshow.com
- Nov. 17-19: Private Label Trade Show, Rosemont, IL; PLMA
Phone (212) 972-3131; Web www.plma.com

December

- Dec. 9-13: Whole Grain Products Short Course, Portland, OR; Wheat Marketing Center
Phone (503) 295-0823; Web www.wmcinc.org

2014 January

- Jan. 12-14: 2014 School Nutrition Industry Conference, Miami; School Nutrition Association
Phone (301) 686-3100; Web www.schoolnutrition.org
- Jan. 12-15: American Farm Bureau Federation (AFBF) Annual Meeting, San Antonio
Phone (202) 406-3677; Web www.fb.org
- Jan. 28-Feb. 2: 2014 Wheat Industry Winter Conference, Washington, DC; NAWG
Phone (202) 547-7800; Web www.wheatworld.org

February

- Feb. 16-19: 45th Cookie and Snack Makers Association Annual Convention, Wesley Chapel, FL
Web www.casba.us

INTERNATIONAL

October

- Oct. 5-9: Anuga, Cologne, Germany
Phone (+49) 221 821 2240; Web www.anuga.com
- Oct. 16-18: Flour-Bread '13, 7th international congress, and Brašno-Kruh '13, 9th Croatian congress of cereal technologists; International Association for Cereal Science and Technology
Phone (+43) 1 70772020; Web www.icc.or.at
- Oct. 30-Nov. 1: Fipan Sul 2013, International bakery, confectionery and independent food retail trade fair, Porto Alegre, Brazil
Phone (+55) 11 3159 4223; Web www.fipan.com.br

November

- Nov. 6-7: Marca Blanca, International Private Label Exhibition, Madrid
Phone (+34) 933 801 261; Web www.mbspain.com
- Nov. 19-21: Fi Europe and Ni, Frankfurt
Phone (+44) 20 7955 3991; Web www.fieurope.ingredientsnetwork.com
- Nov. 21-23: Sweet and SnackTec India, Mumbai, India
Phone (+91) 22 28715203; Web www.sweetandsnacktecindia.com

December

- Dec. 5-7: 2013 Hong Kong International Baking Expo; Wan Chai, Hong Kong
Phone (+852) 2528 0062; Web www.HKBakeryExpo.com

For more events, see the online calendar at www.bakingandsnack.com.



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WWW.SHICKUSA.COM

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Packaged cakes gain better freshness

To fulfill consumer expectations, packaged cakes should stay soft and moist until they're eaten even weeks after production. **Novozymes** recently launched two freshness ingredient systems in its OptiCake line that target such applications: Excel and Lift. Snack cakes and muffins also benefit from these new enzyme-based ingredients.

"Consumer trends of convenience and indulgence are making the packaged cake segment one of the fastest growing in the cake market," said Thomas Erik Nilsson, the company's global launch manager for food. "Staling is a major challenge for the manufacturers of packaged cakes."

Excel employs the company's patented sugar-tolerant maltogenic amylase that acts on the starch in the flour. Cakes made with it are as soft after two months as the control product was after 15 days, thus doubling freshness perception.

Lift is a phospholipase that acts on the lipids in flour and egg to generate emulsifying compounds. "It improves the volume, crumb and texture of packaged cakes," Mr. Nilsson said. Pound cakes, for example, gain around 10% extra volume.

During a blind taste test involving more than 400 consumers in France and the UK, more than 70% said a pound cake made with OptiCake technology and stored for two weeks was both moister and softer than the control, thus significantly improving the sensory properties of the cake. Overall 73% preferred the OptiCake-based pound cake, and 85% attributed their choice to its moistness.

(919) 494-3000 • www.novozymes.com



Whole grain tortilla blends

Bay State Milling offers four GrainEssentials Whole Grain Tortilla Blends: Heart Smart, Sweet Wheat, Deli Blend and Gourmet Grains. Available as a full finished mix or as a flour blend, these allow the producer to tailor tortillas to market needs. All contain whole spelt and whole wheat flours. Heart Smart adds whole oat flour. Sweet Wheat uses whole corn flour. Deli Blend contains whole rye flour. Gourmet Grains incorporates whole rye, triticale, corn and oat flours along with barley, wheat and spelt flakes plus cracked rye.

(800) 553-5687 • www.baystatemilling.com



Certified-sustainable cocoa

Cargill extends its range of certified-sustainable cocoa and chocolate products in North America. Responding to consumer demand to know where chocolate products come from and how they are produced, the company's Gerken's cocoa powders as well as its Peter's, Wilbur and Veliche chocolate brands will now be available with certification options, including UTZ Certified, Rainforest Alliance Certified and Fairtrade.

(877) 835-4243 • www.cargillfoods.com/chocolate



Bitter flavor masker

When better nutrition comes with a bitter taste, formulators can use BitterMask from **Mother Murphy's Laboratories** to improve palatability. The masking agent decreases the aftertaste of vitamins and nutraceuticals and blocks the bitterness of stevia and potassium chloride in low-calorie and low-sodium foods. It can reduce the off-flavors of whole grain flours. It also enhances extenders to better replicate the taste of the actual ingredient.

(800) 849-1277 • www.mothermurphys.com

Nutrition-rich cooked beans

Available pre-washed, cooked and ground into a variety of forms including powders and grits, **VegeFull Cooked Ground Beans** from **ADM** provide nutritional value to baked foods and snacks as well as pasta, cookies, dips and more. These ingredients re-constitute in minutes and can be added easily without changing the taste, texture or color of the food. The cooked, ground beans also permit benefit claims such as rich-in-fiber or gluten-free.

(800) 637-5843 • www.adm.com/vegefull



Clean-label dough conditioner

Derived from enzymes and ascorbic acid, TRU CL from **Cain Food Industries** gives superior dough strength and tolerance. This clean-label dough conditioner provides the dough matrix and handling characteristics of traditional emulsifiers and strengtheners yet can eliminate ADA, DATEM, SSL and CSL from formulations. (214) 630-4511 • www.cainfood.com



Clean-label guar gum replacer

Glanbia Nutritionals describes OptiSol 5300 as a flax-based functional ingredient system capable of cleaning labels and replacing guar in many applications. In frozen doughs, it maintains loaf volume performance over a period of six months, and batter made with it results in 25% less fat pick-up than those containing xanthan gum. Its high-fiber and high-protein content provides control against moisture migration and helps bind both fat and water. (800) 336-2183 • www.glanbianutritionals.com

Carmine color replacers

Vegetarian red colorants in the Tomat-O-Red line from **LycorEd** provide deep red lycopene color with blue backgrounds, similar to the shades from carmine, an insect-derived color that some consumers find objectionable. These natural colors are available in liquid form and free from any allergenic compounds. They exhibit high stability across a wide range of pH levels, light conditions and high temperatures. (877) 592-6733 • www.lycored.com

Sweet goods freshness extender

Ultra Fresh Sweet from **Caravan Ingredients** extends freshness for sweet goods to 45 days and beyond. It retains smooth, tender, resilient crumb texture in a variety of products including yeast-raised donuts, sheet cakes, cupcakes, pastries and muffins. This enables expanded retail distribution and reduces stales. The longer freshness cycle permits more dwell time in the warehouse as well as in transit and improves quality through freeze-and-thaw cycles. (800) 669-4092 • www.caravaningredients.com



Certified-organic black soybeans

SK Food International introduces non-GMO and certified-organic black soybeans in whole bean, raw flour, precooked powder and flake forms. Domestically sourced and identity-preserved, black soybeans are high in protein, antioxidants, anthocyanin and vitamin E. They can be used in ways similar to yellow soybeans in soy sauce, roasting and tofu as well as snack foods. (701) 356-4106 • www.skfood.com



Unrefined cane sugar

Taking the form of golden crystals, Zulka Morena pure cane sugar from **Zucarmex USA** is made by squeezing raw sugar cane and evaporating the juice. The vacuum evaporation process preserves the nutritional values of the cane and retains the naturally occurring colors and flavors. The result is an all-natural, unrefined, Non-GMO Project Verified, granulated sweetener, available in 25- and 50-lb bags for commercial use. (855) 294-9878 • www.zulka.com

Concentrated butter flavors

ButterBuds Food Ingredients produces concentrated natural butter flavors in dry powdered form. These go beyond top notes to provide dairy richness, masking and fatty mouthfeel at very low usage levels. In its water-soluble range, the company offers several concentrations and styles, including no-salt-added. Among its newest are a non-dairy butter flavor, non-dairy cream concentrate and a bacon flavor. It also has a line of organic butter, cream and cheese flavors. (800) 426-1119 • www.butterbuds.com



Oat fiber

Creamy in color and bland to slightly sweet in flavor, oat fiber from **Grain Millers** offers 85% total dietary fiber, nearly all of which is insoluble. The natural, non-chemically treated fiber meets least-cost needs for baked foods formulated to be high in fiber. The company also offers certified-organic oat bran. (800) 443-8972 • www.grainmillers.com



Open-frame roller-bar mixers clean easily

Available in three sizes with dough mixing capacities from 400 to 800 lb, heavy-duty three-roller-bar horizontal mixers from **Topos Mondial Corp.** feature open-frame sanitary designs for easy cleaning and maintenance. The frames can be fabricated of mild steel, coated in Steel-It stainless steel coating or constructed in all stainless steel.

The main agitator is driven by a SEW high-efficiency, hollow-shaft, direct-drive gear motor, available in variable-frequency or two-speed options. The mixer bowl features an adjustable roller bar and stretcher bar. "The unique bowl shape and roller bar positions yield faster mixing times while mixing at slower speeds," said Damian Morabito, president of Topos Mondial. "This results in less overall energy usage from the main drive motor and the bowl-jacket cooling system."

In addition to featuring an insulated mixing bowl, the mixer has main shaft seals that are simple to sanitize. The bowl-to-canopy seals are easy to remove for cleaning. A self-contained Hytos hydraulic package with manual hand pump operates the overtilt bowl.

(610) 970-2270 • www.toposmondial.com



Tortilla dough mixer

Koenig's DW240 Twin Twist mixer features two tools with specially adapted profiles that enhance the mechanical energy input and thus reduce the mixing time. The mixer fits the needs of wheat tortilla and pastry doughs because it can work ample air into the dough. Intensive but gentle mixing in the inlet zone and reduced load in the outlet zone ensure fluffy, light doughs even when processing rye and rye-mixture doughs with an 80% hydration.

(804) 798-7983 • www.koenigusa.com



Crate for self-stacking belts

Ashworth Bros.' Rack & Roll crates provide an efficient solution for storing and installing ExactaStack self-stacking spiral replacement belts. The crate system is designed for quick roll-out, roll-in belt replacements. ExactaStack self-stacking spiral belts are delivered spooled onto Rack & Roll crates, and each crate has a footprint and height of less than 4 ft, making the belt easy to stack, store and maneuver. Installation of a self-stacking belt with the crate system is simplified by rolling out the new belt directly from the crate to the infeed of the stacker. The old belt is conveniently rolled into an empty crate from the outfeed.

(800) 682-4594 • www.ashworth.com



Gentle vertical blender

Vertical blenders from Charles Ross & Son Co. enable low-shear blending of powders, pellets, granules, fibers and other solids. An auger turns on its own axis, and a mechanical arm rotates the auger around the conical vessel. Spray nozzles may be installed for liquid addition and coating purposes. To facilitate complete discharge, simplify cleaning and lower the risk of batch-to-batch contamination, none of the company's vertical blenders have a bottom support bearing.

(800) 243-7677 • www.mixers.com



Pie depositing

Hinds-Bock Corp. manufactures pie depositing machinery for fruit, custard, cream and meat pies as well as pie toppings. It custom builds semi-automatic pie depositing equipment and high-speed fully automatic pie depositors with travelling spouts. Large port openings ensure gentle handling of fruit particles. It also offers gentle piston transfer pumps.

(877) 292-5715 • www.hinds-bock.com



Precision topping

The Smart Rotary Seeder/Topper from **Burford Corp.** automatically sets up for each product, resulting in accurate topping coverage and seed savings, regardless of shift or operator. Constructed of stainless steel, the seeder/topper features a high-quality split water spray system and applies a wide variety of toppings. It offers an operator-side mandrel drive, and quick-change mandrels permit easy changeovers.

(877) 287-3673 • www.burford.com



Dough divider

The Cut and Check dough divider from **Rondo** for bread and roll manufacturers offers exacting weight tolerances. An integrated checkweigher ensures weight accuracy of dough pieces portioned by the divider. The Cut and Check processes most types of dough in a wide range of weights and can be switched from single-row to double-row production without changing the blade.

(201) 229-9700 • www.rondo-inc.com



Extruded snacks

Baker Perkins' modular Snack Master line makes direct-expanded snacks such as corn curls, chip sticks and maize rings. Snack manufacturers can also extend the line in stages to broaden the range of items they can produce, including both traditional styles and the new generation of healthy snacks. A new process makes a range of extruded products using an innovative die that produces a thin, wide sheet of dough that is cut into regular, geometric shapes by an in-line rotary cutter. The shapes may be fried as a conventional snack or oven-baked to produce low-fat snacks.

(616) 784-3111 • www.bakerperkinsgroup.com



Compact pan cooling

Stewart Systems' Edge Pan Cooler (EPC) provides efficient convective pan cooling in a minimal footprint. EPC rotates pans from horizontal to vertical, enabling natural convective airflow across pan surfaces. Moving to a vertical position also allows more cooling time in a reduced space. The unit is designed in 5-ft increments from 15 to 40 ft long to meet layout and cooling time requirements.

(972) 422-5808 • www.stewart-systems.com



Palletizing bread baskets

An integrated, automatic pallet loader and wrapper unit from **LeMatic** creates a seamless system to prepare stacks of bakery baskets for distribution.

The palletizing system holds stacks of loaded baskets in a queue until needed. Then, the stack transfer conveyor gently loads basket stacks onto a rotating distribution pallet table. After receiving each stack, the pallet table turns to receive the next stack until it is full. Once loaded, the stacks transfer to a pallet wrapper that quickly wraps the baskets tightly. A single control panel runs the entire system for unified and easy operation.

(517) 787-3301 • www.lematic.com



Tray denester

Axis Automation's denester separates and feeds a variety of trays with accuracy and repeatability. A combination of air nozzles, escapement fingers and receiving plates removes the trays without touching them. The menu-driven interface stores all tray recipes for quick changeovers. It is able to feed lines at speeds of up to 120 trays per minute, and the unit can be mounted over an existing line or cantilevered on a mobile frame.

(414) 367-4444 • www.axisautomation.com



Easy-change dust filters

Top-loading bin vent dust collectors from **The Fred D. Pfenning Co.** vent air from hoppers or silos. The top opens to allow full access to the FDA-compliant filters with quick-release PTFE membranes. The filters snap in from the top and do not require tools to remove or install. The dust collector bin is completely constructed of stainless steel and meets BISSC standards.

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Spiral blast freezers

Extended Production Systems (EPS) for **IJ White Systems'** spiral blast freezers feature advanced defrost technologies to lengthen hours of operation for up to seven days without requiring a pause for defrosting. Its automated pressurization technology improves the pressure differential at the infeed and discharge ports of freezers, controlling the warm, moist air that infiltrates freezers. EPS reduces energy costs and boosts overall production in bakeries.

(631) 293-2211 • www.ijwhite.com



Open-frame sigma mixers

Single sigma arm open-frame mixers from **Shaffer-Bundy** provide easy access for sanitation and routine maintenance. They are designed for mixing rotary-moulded cookies, crackers, biscuits, corn tortillas, muffins, sweet goods, granola bars and stiff fillings. Direct drives eliminate belts and chains and reduce maintenance as well as transmission noise and vibration. The agitator drive motor is either dual speed or variable-frequency drive.

(937) 652-2151 • www.shaffermixers.com



Delta robot case packer

When packaging fragile products such as bags of chips or other snacks into a secondary container, delta robot case packers from **BluePrint Automation** use servo-driven automatic variable pitch conveyors to eliminate the need for multiple sets of collation belts. Operators select product codes, and the collation conveyor, end-effector and cassette automatically change to the next bag and case size. The packer's small footprint accommodates tight bagger centerlines. It also checks bag seals.

(804) 520-5400 • www.bpa-flexolutions.com



Pita bread ovens

The **Henry Group** offers direct-gas-fired high-temperature ovens along with proofers and coolers for pita bread production. These ovens are designed for baking Greek or Syrian pita bread and/or pizza crust directly on the hearth. Hi-Carbon balanced-weave steel-wire-mesh belts or plates form an interlocking, self-supporting level baking surface to serve as the oven's hearth. The oven accomplishes efficient baking with greater moisture retention at temperatures ranging from 900 to 1,100°F.

(800) 356-7591 • www.thehenrygroup.com



Ultrasonic wirecutting for cookies

Cookie dough containing large inclusions is extruded through a die orifice to create a string that is then cut using an ultrasonic blade. The cutter provides a roughened top surface on the dough pieces to impart a home-baked appearance, and it cuts through the inclusions without substantial displacement that would cause pock marks on the cookies' surface.

US Patent No. 8,431,172 (April 30, 2013), S. Vangeepuram, et al., assigned to **Kraft Foods Global Brands LLC**, Northfield, IL.

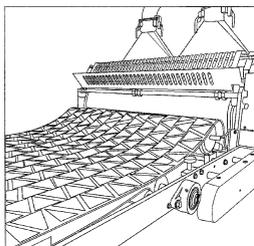
Better-for-you shortenings

Shortening compositions for use in preparing baked goods such as biscuits, pizza crusts, pot-pie crusts and cinnamon rolls are low in trans fatty acids and saturated fatty acids. For example, the composition may comprise less than about 3% weight total trans fatty acids and less than about 61% by weight saturated fatty acids and trans fatty acids.

US Patent No. 8,435,592 (May 7, 2013), B. Erickson, et al., assigned to **General Mills, Inc.**, Minneapolis.

Tortilla chip sheeter

A sheeter includes an internally grooveless front roller and a rear roller configured to rotate counter to the front roller along with a partially spiraled stripper wire coupled across the front roller, and a conveyer belt connected to a proximal conveyer roller and a distal conveyer roller. The conveyer belt's landing zone is configured to prevent damage to product. The conveyer belt includes a raised portion adjacent to the proximal end and flat portion toward the distal end.



US Patent No. 8,434,404 (May 7, 2013), M. Herrera, assigned to **Casa Herrera, Inc.**, Pomona, CA.

Infused roasted seeds

To prepare roasted seeds featuring flavors, nutrients, colors, textures, densities and/or other functionalities, the seeds are internally infused with components such as salt, flavors, nutrients, colors and/or functional ingredients.

US Patent No. 8,435,579 (May 7, 2013), D. Smyth, et al., assigned to **Kraft Foods Group Brands LLC**, Northfield, IL.

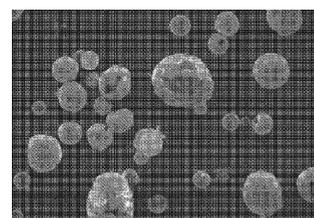
Doughs containing dehydrated potato

Fabricated chips are made from a dough containing less expensive non-ideal dehydrated potato products. These dehydrated potatoes have less than 40% broken cells and a free amylose level of less than 16%. Despite this fact, processing efficiency and finished product quality are comparable to that of products made with doughs containing dehydrated potato products having from 40% to 60% broken cells and from 16% to 27% free amylose.

US Patent No. 8,440,251 (May 14, 2013), M. Villagran, et al., assigned to **Kellogg North America Co.**, Battle Creek, MI.

Reduced-sodium salt

A mixture of a salt dissolved in a solvent with a solid, organic material is atomized and evaporated to produce a salt product. The resulting novel hollow salt particles can be used as a seasoning for food in lower amounts than conventional salt to provide the same taste. Particular advantages are obtained in the baking of reduced-sodium bread. While the patent is owned by **Eminate Ltd.**, Tate & Lyle has an exclusive license for the patent, under which it is marketing its Soda-Lo Salt Microspheres.



US Patent No. 8,435,555 (May 7, 2013), S. Minter, et al., **Eminate Ltd.**, Nottinghamshire, UK.

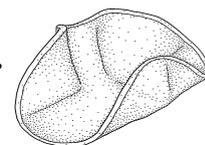
Low-calorie, low-fat snack nuts

A pressing process expels oil from the nutmeat kernels in less than a minute. This defatting process deforms the nuts, which are then reformed to their original shape using water and hardened using cold water. After drying, the nuts are post-processed with coatings and roastings. The snack nut yield by this process is generally greater than 80%.

US Patent No. 8,445,054 (May 21, 2013), V. Reddy, et al., assigned to **APPTEC, Inc.**, Cranbury, NJ.

Bowl-shaped snack food

The ornamental design for a food product, as shown and described.



US Design Patent No. D683,106 (May 28, 2013), T. Howe, et al., assigned to **Baptista's Bakery, Inc.**, Franklin, WI.

NEW ON THE SHELF

Ruffles' new flavor

Frito-Lay North America, Inc., Plano, TX, adds a Tangy Honey Mustard flavor to its Ruffles Ultimate line, a range of Ruffles chips that features flavors targeting young men and the foods they love. These chips are available nationwide in a 1.875-oz bag for \$1.09, a 2.5-oz bag for \$1.49 or a 7.5-oz bag for \$4.29.
www.frito-lay.com



Non-GMO cookies

At this year's International Dairy-Deli-Bakery Association show, **Dancing Deer Baking Co.**, Boston, launched five Thin & Crispy Non-GMO cookie varieties. They include Chocolate Chip with Sea Salt, Dark Chocolate Macadamia, Ginger Spice, Milk Chocolate Almond Toffee and Sweet Lemon Burst. The cookies retail in a 6-oz resealable package for between \$5.99 and \$6.99.
www.dancingdeer.com



Oatmeal squares

Nature Valley, a brand of **General Mills, Inc.**, Minneapolis, ventures beyond bars with the introduction of Soft-Baked Oatmeal Squares. These squares are made with 100% natural whole grain oats. Each serving contains 12 to 16 g whole grains and 160 Cal or less. Available in Peanut Butter or Cinnamon Brown Sugar, a box of six retails for \$3.89.
www.naturevalley.com



Artisan sandwich bread

Chabaso Bakery, New Haven, CT, introduced five artisan sandwich breads with distinctly rich flavors: Rustic White, Multi-grain, Oat, Rye and 100% Whole Wheat. The Rustic White bread is a "good source" of iron, and the 100% Whole Wheat bread is a "good source" of fiber with 25 g whole grains per slice. The Rye and Multi-grain loaves have 9 and 10 g whole grains, respectively.
www.chabaso.com



Sprouted grain chips

Way Better Snacks, Minneapolis, brings sprouted grains to snacking in Canada with its new line of sprouted grain tortilla chips. The chips incorporate flaxseed, chia seeds, black beans, broccoli seeds and daikon radish seeds to create a tortilla chip packing nutrition. The chips are gluten-free, non-GMO, kosher, vegan, an "excellent source" of whole grain and a "good source" of fiber.
www.gowaybetter.com



Hot cereal and bars

With its Special K Nourish line, **The Kellogg Company**, Battle Creek, MI, introduces hot cereal and bars. Special K Nourish hot cereal includes quinoa, oats, barley and wheat, providing 8 g protein and 5 g fiber. The cereal debuts in three flavors: Maple Brown Sugar Crunch, Cranberry Almond and Cinnamon Raisin. Nourish nutrition bars deliver 5 g fiber and 8 g protein in flavors such as Dark Chocolate Nut Delight, Cranberry Almond and Lemon Twist.
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Perfect Portability

Tapas get an on-the-go spin with the latest addition to Mediterranean Snacks' lentil-based line.

Crackers and hummus — it's the perfect partnership. That's what Mediterranean Snacks, Boonton, NJ, discovered about its Lentil Crackers, which led to the development of tapaz2go. The company saw an opportunity to expand its legume-based product line of Baked Lentil Chips, Lentil Crackers and Hummus Crispz to include a mini-meal snack, tapaz2go.

"We recognized that our Lentil Crackers pair perfectly with hummus and saw the opportunity to create a product that captures key consumer trends such as increased snacking occasions, eating small meals and the popularity of tapas," said Lonnie Williard, vice-president of marketing for Mediterranean Snacks. The tapaz2go products combine Mediterranean Snacks' Sea Salt Lentil Crackers with shelf-stable hummus in a convenient single-serve package that can act as a serving tray.

The development of tapaz2go took into account several consumer trends. Americans now eat more snacks and smaller meals. Protein-rich foods are growing in

popularity, and consumers look for nutritious snacks that fit in their busy lifestyles. Mediterranean Snacks also wanted to tap into interest in global culinary trends, hence the tapas theme.

The portability and shelf stability of tapaz2go along with its health profile give the snacks broad consumer appeal. Busy moms, commuters and consumers with active lifestyles can take advantage of the compact ambient food. Consumers concerned about health such as baby boomers, those interested in weight management or parents wanting a healthy snack for their kids can appreciate how the new snack's 250 Cal — or less — pack in 7 g protein, qualifying tapaz2go as a "good source" of protein.

"Since tapaz2go is shelf stable and can be stored at room temperature, it is a perfect on-the-go snack solution for people who want to fit healthy, smart snacking into busy lives," Ms. Williard said. "The unique packaging makes it a snap to enjoy while traveling, hiking, in the car or anywhere. When the box is flipped over after opening, it becomes a serving tray, making it an engaging snack experience for the consumer."

Mediterranean Snacks introduced tapaz2go at the International Dairy-Deli-Bakery Association trade show in June. The product is available at major retailers nationwide as well as on Amazon. The 3.6-oz portable package retails between \$2.99 and \$3.49. The hummus is available in three varieties: Classic, Roasted Garlic and Red Pepper. Mediterranean Snacks narrowed the flavors down to these three based on the most popular hummus flavors in the marketplace. Ms. Williard said the company has already begun testing new flavors for the future.

By combining two simple products into one snack, Mediterranean Snacks not only expanded its product line into the realm of the mini-meal but also addressed several consumer demands in one convenient package. ●

— *Charlotte Atchley*



By combining hummus with its lentil-based crackers, Mediterranean Snacks hopes to provide shoppers a portable, nutritional snack.

Mediterranean Snacks

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