

EUROPEAN BAKER & BISCUIT

● Supporting the international baking & biscuit industry

Issue 5 (202) | Vol. 33 | 2025

Process

The Future Is
Formed: Extrusion
Powers Bakery
Diversification

Markets

Italy: All Bets on
Frozen Chocolate
Croissants

Trade Shows

A Fall Full of
Opportunities



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 **WEEKLY NEWSLETTER**

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Controlling Fermentation: How Modern Proofer and Retarders Shape Bakery Quality





An Autumn of Trade Shows: Innovation on Every Front



EATS is only one stop on a busy calendar for bakery and snack professionals. With Fi Europe and Gulfood Manufacturing also approaching, this season marks important exchanges across continents.

Tudor Vintiloiu

As autumn trade shows set the rhythm of the season, the Equipment, Automation and Technology Show for Food and Beverage (EATS) — formerly known as Process Expo — opens its doors in Chicago with renewed energy and a broadened scope. The rebrand reflects an industry that is changing fast, embracing automation, digital control, and sustainability as part of its core identity.

But EATS is only one stop on a busy calendar for bakery and snack professionals. With Fi Europe and Gulfood Manufacturing also approaching, this season marks important exchanges across continents — from ingredients and formulation to equipment, packaging, and finished product innovation. Each of these events highlights a different piece of the value chain, yet together they capture the shared momentum driving efficiency, quality, and creativity throughout the baking world.

For the baking and snack sectors, EATS offers a unique vantage point. It brings together the technologies that shape every stage of production — from ingredient handling and dough preparation to proofing, baking, cooling, and packaging. What sets this event apart is its focus on integration: how these individual operations connect into complete, data-driven lines capable of delivering consistent quality at scale. European Baker & Biscuit will be present at the press stands across these key events, ensuring our readers have access to the latest insights and developments from the global baking scene.

This issue captures the same spirit of innovation. We explore how modern proofing systems combine precision and flexibility, and how extrusion technologies continue to expand possibilities in the snack segment. A dedicated feature on product quality management examines the systems and standards behind reliability and consistency, while our ingredients section turns to sweeteners — exploring their technical roles and evolving perception in reformulation.

Also included is an overview of the Italian bakery market and a product spotlight on sourdough bread. Complementing these is our Overview Middle East supplement — a focused add-on dedicated to the technologies, trends, and ambitions shaping one of the world's most dynamic bakery regions. •



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Ferrero Completes Acquisition of WK Kellogg Co



The Ferrero Group announced the successful completion of its acquisition of WK Kellogg Co. WK Kellogg Co is now a wholly owned subsidiary of Ferrero. The transaction was previously announced on July 10, 2025, and approved by WK Kellogg Co shareowners on September 19, 2025. With the completion of the transaction, WK Kellogg

Co shareowners are entitled to receive \$23.00 in cash for each share of WK Kellogg Co common stock they owned immediately prior to the closing. WK Kellogg Co has ceased trading and will no longer be listed on the New York Stock Exchange. The acquisition of WK Kellogg Co supports Ferrero's plan for strategic growth in North America and expands the Company's reach across more consumption occasions with brands beloved by consumers. Ferrero plans to invest in and grow WK Kellogg Co's iconic portfolio of brands across the United States, Canada and the Caribbean.

Leadership Change at Nestlé



The Board of Directors of Nestlé S.A. has announced that Pablo Isla will become Chairman effective October 1, following Paul Bulcke's decision to step down from the Board earlier than planned. Paul Bulcke, Chairman of Nestlé, stated: "I have full trust in Nestlé's new leadership and firmly believe this great company is well positioned for the future. This is the right moment for me to step aside and accelerate the planned transition, allowing Pablo and Philipp to advance Nestlé's strategy and guide the company with a fresh perspective. I wish the entire Nestlé family every success in the future." The move comes after Philipp Navratil was named chief executive officer of Nestle earlier this month after previous CEO Laurent Freixe was fired following an investigation into an undisclosed relationship with a direct subordinate, according to the company. Freixe had been the CEO of Nestle since Sept. 1, 2024.

Mars Shares Plans to Invest EUR1bn Across the EU



Mars announced plans to invest EUR1bn in its European Union operations by the end of 2026, strengthening the region's manufacturing capabilities, sustainability and innovation pipeline, and increasing its economic resilience. This new investment builds on more than EUR1.5bn Mars has invested in EU manufacturing over the past five years, modernising facilities, increasing production capacity and accelerating efforts to decarbonise its value chain. These investments support the company's 24 factories across 10 EU countries and the 25,000 people it employs in its direct operations. 85% of Mars products sold in the EU are produced locally within the EU, which is also an export hub to over 100 markets around the world. To continue the decoupling of growth from emissions, Mars is embedding environmental initiatives across key stages of its value chain. In 2022, its ice cream factory in Steinbourg, France – home to Snickers, Twix and Bounty ice cream bars – became powered entirely by renewable electricity, the first Mars site globally to become fossil-fuel free.

Revyve Secures EUR24m Funding to Boost Egg-Replacing Yeast Proteins

Dutch food-tech scale-up Revyve has raised nearly EUR24m in Series B financing, bringing its total capital raised to more than EUR40m. The investment will accelerate the company's commercial rollout of functional yeast proteins designed to replace eggs and additives in mainstream food categories. The Series B round was co-led by ABN AMRO Sustainable Impact Fund and Invest-NL with regional support from Brabantse Ontwikkelings Maatschappij (BOM) and strategic investments by Lallemand Bio-Ingredients' Swiss affiliate Danstar Ferment and Grey Silo Ventures (CVC of Cereal Docks Group). Existing investors Oost NL and Royal Cosun doubled down on their commitment. Revyve produces highly functional yeast proteins that mimic



the performance of eggs in food categories such as bakery, sauces, alternative meat and plant-based dairy. Unlike many substitutes, Revyve's ingredients are natural, more sustainable, and price competitive, helping manufacturers respond to pressing industry challenges.

Florian Gmeinwieser Takes Over as iba Director

GHM Gesellschaft für Handwerksmessen mbH announces a change at the helm of its trade fair iba. Florian Gmeinwieser (53) is taking over as director of the renowned world's leading trade fair for the baking and confectionery industry. In his position as Director iba, he will be responsible for the future and development of



the trade fair. Gmeinwieser succeeds Susann Seidemann, who is moving to a new management position within GHM.

With Florian Gmeinwieser, GHM secures a proven B2B expert. A graduate in business administration, Florian offers more than 20 years of work experience in strategy development and consulting in the B2B environment of German and international companies. His extensive expertise in business development, digital marketing and digital strategies, as well as his understanding of the challenges facing the baking industry, make him the ideal candidate to head up iba.

Lantmännen Unibake Acquires Boboli Benelux

Lantmännen Unibake, one of Europe's largest bakery groups and part of the Swedish agricultural cooperative Lantmännen, has acquired Boboli Benelux B.V., a Dutch specialist in savoury bakery products.

Boboli Benelux is known for Mediterranean flatbreads such as focaccias, pizzas, and pizza crusts, holding strong market positions in the Benelux, UK, and Germany. The company employs around 200 people and operates



a modern bakery in Bunschoten, which will become Unibake's first facility in the Netherlands. The move strengthens Unibake's presence in the fast-growing European bake-off market while

adding significant capacity and expertise in savoury bakery. Boboli's recent investments and growth track record make it a cornerstone for Unibake's strategic expansion in this category.

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AMF Promotes Diana Boxey To Vice President Global Marketing



AMF Bakery Systems, a global leader in bakery automation solutions, is proud to announce the promotion of Diana Boxey to Vice President, Global Marketing. This milestone recognizes Boxey's 13 years of outstanding leadership and vision in guiding the company's brand evolution through an era of transformative growth.

Since joining the organization in 2012, Boxey has played a pivotal role in building the marketing foundation that has helped grow AMF from a single-brand entity into a family of nine globally recognized brands, all committed to delivering best-in-class unit equipment and complete system solutions for industrial bakers worldwide. As Vice President, Global Marketing, Boxey will lead the company's continued marketing transformation, driving brand strategy, digital innovation, demand generation, and commercial alignment across all product lines and regions.

Red Dot Award For Minebea Intec

The advanced Blue HMI user interface of Minebea Intec, a leading global manufacturer of industrial weighing and inspection technologies, has received the prestigious Red Dot Award in the Interface & User Experience Design Category. The internationally recognised award honours outstanding product design that combines functionality, innovation and aesthetics in a special way.



Whether dynamic checkweighing, Static Weighing or recipe management – Blue HMI is the central user interface for all weighing and inspection applications using Minebea Intec technologies. Developed for demanding industries such as Food, Beverage, Pharmaceutical and Chemical, it combines intuitive operation, ergonomic design and smart features into a user interface that efficiently supports processes today and in the future. "With Blue HMI, we have created a user interface that is technologically state of the art and at the same time reflects our vision of efficiency, clarity and user-friendliness," said Dr Thorsten Vollborn, Head of Product Management & Academy, Minebea Intec.

Puratos Opens Third Canadian Innovation Centre In Montreal

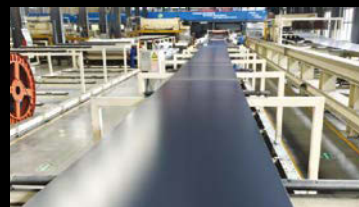


Puratos has expanded its presence in Canada with the opening of a new Innovation Centre in Montreal, its third facility in the country. The new hub complements existing centres in Mississauga, Ontario, and Chilliwack, British Columbia, and is designed to strengthen support for Quebec's bakery, patisserie, and chocolate businesses. The Montreal site provides product development, category management, and product profiling services, helping companies refine recipes, set profitability targets, and identify opportunities for improvement. Two full-time Technical Advisors and three Key Account Managers will manage the centre, offering bilingual service and a strong focus on locally relevant recipe creation. Exclusive capabilities include enhanced chocolate preparation equipment, such as a refrigerated marble table, a full-size laminator, and dual proofers for simultaneous retarding and proofing. A 140qt Hobart mixer will be added shortly to expand testing and formulation for large batches.

Continuous Process Solutions Unveils Two Cutting-Edge Steel Belts

Continuous Process Solutions, a leading provider of advanced steel belt technologies, has expanded its product range with two exciting innovations for the food manufacturing sector from their production partner Mingke.

These additions are now available exclusively from Continuous Process Solutions and are set to boost production efficiency and hygiene across a wide range of food processing applications. New to market are Teflon-coated steel belts, which have been designed by Mingke to solve sticky situations. Manufactured from



high-carbon steel with a durable Teflon coating, the new non-stick belts offer excellent corrosion resistance, low surface friction and superior product release.

Ideal for sticky or delicate ingredients such as confectionery, doughs and coated products, the belts are suitable for use in food production, heat press machines and chemical environments up to 260°C. Their low-friction surface supports smoother transfer, easier cleaning and reduced product waste.

SVZ Expands Premium Fruit And Vegetable Ingredient Portfolio

Premium fruit and vegetable ingredients supplier SVZ integrates tropical fruit ingredient brand Netra Agro into the core SVZ portfolio. For almost 30 years, SVZ has operated Netra Agro as a specialised subsidiary for reliably and sustainably



sourced tropical fruit ingredients, including IQF (Individually Quick Frozen) fruit pieces, purees and concentrates. Now, in a strategic move to strengthen its position as a trusted supplier in the market, SVZ will fully absorb Netra Agro's products and operations, while ensuring complete continuity of service for its global customer

base. The integration process is already underway and is expected to be fully concluded in early 2026.

"The move to integrate Netra Agro and its decade-spanning expertise in tropical fruit sourcing reflects SVZ's mission to become the leading sustainable ingredient partner for food and beverage producers around the globe," said Johan Cerstiaens, Managing Director at SVZ.

GoodMills Innovation Launches New Fiber

With its new High-MAC brans, GoodMills Innovation allows bakeries and industrial manufacturers to enrich their baked goods with fiber – without compromising on texture, volume or flavour. The finely milled and physically stabilised brans made from wheat, rye and spelt can be incorporated into a wide range of applications, from classic breads and rolls to toast, sandwich loaves, pizza bases, crispbreads and cookies. The new ingredient solution has been developed in response to growing demand for high-fiber, nutritionally sound baked goods that are light, of consistent quality and free from coarse and other undesirable sensory components.

Thanks to a special micronisation process, more than 90% of the High-MAC particles are smaller than 200 µm. This allows them to be combined with higher-extraction flours to increase mineral and fiber content without affecting standard processing behaviour. The result is baked goods with significantly improved nutrient density that still promise appealing taste and appearance.

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At Food Ingredients Europe, Tomorrow's Taste Today

The ultimate food ingredients trade show, Fi Europe, returns this December 2-4 to Paris, at Expo Porte de Versailles, to bring together the most important producers and startups that shape the baking industry.

By Jo Ilie

Fi Europe marks its 30th edition with a return to Paris, bringing the event back to the centrally located Paris Expo Porte de Versailles. The venue ensures easy access for the expected 24,500 attendees from more than 135 countries. Steady exhibitor growth reflects the industry's continued trust in Fi Europe as a key meeting place for the global food ingredients sector - a platform where decades

of expertise support innovation and business collaboration. Fi Europe's comprehensive content program for 2025, designed to bring attendees strategic insights, creative inspiration and meaningful connections across the global food and beverage landscape, features industry leaders, academics and analysts from leading organisations including Innova Market Insights, Mintel, Kline & Company, Good Food Institute Europe and the Everest Group.

PROGRAM HIGHLIGHTS

The program addresses the evolving needs of food, beverage and pet food professionals through six distinct formats, spanning free-to-attend conferences and innovation sessions to premium networking events tailored for C-suite executives and specialised sectors including the rapidly expanding pet food market.

“The global food and beverage industry faces unprecedented transformation, from regulatory pressures and sustainability demands to breakthrough technologies that are redefining what’s possible in food innovation,” said Yannick Verry, Brand Director Fi Events Portfolio at Informa Markets. “Our 2025 content program provides the strategic intelligence and expert analysis that industry leaders require to navigate these changes successfully, while also creating the networking opportunities essential for building the partnerships that drive profitable progress and growth.”

The Fi Europe Conference delivers a focused, science-backed program for R&D, product development, innovation and strategy professionals across two and a half days. Located at the Conference Theatre (Booth 72M54), the program explores five core themes addressing the industry’s most pressing challenges: reformulation, plant-based and alternatives, health and wellness, tech-led innovations & solutions and functional food and beverages.

Among these themes, reformulation is a historic and ongoing challenge, where reducing sugar without sacrificing consumer acceptance requires innovative solutions, like precision fermentation technologies. Dr Elizabeth Thundow, Vice President of Food & Nutrition at Kline & Company, will address the practical realities manufacturers face when cutting sugar, revealing barriers that extend far beyond simple ingredient substitution to encompass functional roles in recipes and consumer psychology. Her insights connect directly with the work of Carlotte Lucas, Head of Industry at the Good Food Institute Europe, who will examine which fermentation-derived ingredients offer genuine commercial viability, providing the economic framework that determines whether laboratory innovations can successfully bridge to market-ready solutions. This intersection of challenge and opportunity extends through the Innovation Hub program, which brings together diverse voices from marketing, procurement, sustainability and regulatory affairs to explore the forces reshaping the global food and beverage landscape. Richie Gray, VP and Global Head of SnackFutures Ventures at Mondelez International, is set to reveal how global CPG producers identify and nurture the disruptive technologies that will reshape food manufacturing, while Lu Ann Williams, Global Senior Vice President of Research and Co-Founder at Innova Market Insights, will unveil the top 10 F&B trends for 2026, revealing the consumer behaviours and market shifts that will drive innovation over the coming year.

The program extends beyond presentations through daily Innovation Tours, offering hands-on introductions to products and suppliers responding to the latest market trends. Reflecting the rapid expansion of specialised markets, the pet food sector receives dedicated attention through Day 3’s

Pet Food Spotlight, where Kate Vlietstra, Senior Research Director at Mintel Food & Drink, examines how health-focused ingredients are transforming pet nutrition to meet the demands of wellness-conscious pet owners.

Professional development opportunities go beyond technical insights with a panel discussion addressing different stages of career advancement and sector specialisation. Senior executives requiring strategic foresight can access the inaugural Future of Nutrition Lunch & Learn (3 December, 13:00-15:30), where “Future-proofing food: surviving, adapting & thriving in uncertainty” combines keynote presentations, expert discussions and interactive workshops to explore resilient food system strategies over the next three to five years.

Leadership development takes centre stage through the Women’s Networking Breakfast 2025: Empower, Lead, Connect (3 December, 8:30-11:00). Open to all, these dynamic panel discussions with industry trailblazers complement interactive sessions designed to strengthen leadership skills and boost confidence.

FOUR SPECIALISED ZONES ADDRESS EVOLVING INDUSTRY NEEDS

This year’s expanded show floor addresses current industry priorities through four distinct areas.



Food ingredients and health ingredients remain the beating heart of global sourcing. These areas feature a huge assortment of functional and value-adding ingredients, science-backed and emerging nutrition innovations and 25 country pavilions showcasing region-specific solutions plus a new Ready-to-Market zone displaying finished products, demonstrating how ingredients translate into consumer-ready innovations.

The Petfood Suppliers Hub returns following its successful 2024 debut, showcasing ingredients, technologies, packaging and processing solutions alongside curated content on consumer trends, regulations and safety. Established pet food manufacturers as well as F&B businesses exploring this dynamic market will find comprehensive resources in this dedicated space.

Finally, the enhanced Food Technology & Solutions zone provides access to technologies that optimise efficiency, streamline operations and secure supply chains. Spanning categories, the Startup Pavilion will showcase emerging disruptors, with Startup Challenge finalists pitching groundbreaking ideas during the event.

FI EUROPE 2025 INNOVATION AWARDS

The ingredients industry's prestigious annual awards have eight categories recognising excellence in the field.

The Innovation Awards recognise teams, individuals and companies breaking new ground in the food ingredients industry. Free to enter for exhibitors, with the Diversity, Equity & Inclusion Award also open to non-exhibiting companies, associations or organisations, participants gain international recognition and multi-channel promotion, with opportunities to meet industry visionaries, obtain objective validation and expand their professional networks.

THE AWARDS FOCUS ON INNOVATIONS INTRODUCED WITHIN THE LAST TWO YEARS ACROSS EIGHT CATEGORIES:

Dairy Alternative Innovation Award
Diversity, Equity & Inclusion Award
Food Manufacturing Innovation Award
Future Foodtech Innovation Award
Health Innovation Award
Pet Food Innovation Award
Plant-based Innovation Award
Sustainability Innovation Award

The judging panel comprises esteemed industry professionals from around the world, presided over by Chair Prof. Colin Dennis of the International Food Information Service. These experts have been specially chosen for their knowledge, credentials and objectivity, including representatives from leading organisations such as Campden BRI, EAS Strategies and Giract.

Finalists will be unveiled at the end of October. In a second round of judging, they will be invited to present their innovations to the judging panel on 1 December. The winners will be announced the next day, at the Fi Europe Celebration & Awards Party during the exhibition. As well as revealing this year's award winners, the ceremony will feature entertainment, live music and enhanced networking opportunities for both exhibitors and visitors in celebration of Fi Europe's 30 editions of excellence.

ENHANCED NETWORKING AND LEARNING OPPORTUNITIES

Learning takes centre stage with the Fi Europe Conference and Innovation Hub delivering cutting-edge insights, while daily hands-on Innovation Tours introduce attendees to products and suppliers that are responding to the latest market trends. Visitors can view more product innovations from key industry players in the New Product Zone. The revamped Future of Nutrition Summit transforms into an intimate 'lunch & learn' experience, enabling business leaders to engage directly with industry pioneers and build valuable connections over shared insights.

Networking opportunities extend beyond formal sessions through targeted programs including the Women's Networking Breakfast and a dedicated petfood networking program, creating natural touchpoints for meaningful relationship building across sectors. The milestone celebration reaches its crescendo with the Fi Europe Celebration and Awards Party, where the prestigious recognition program honours breakthrough achievements spanning innovation, sustainability and food technology.

With more than one million attendees throughout its history and billions of euros in business generated, Fi Europe has established itself as a leading platform for the global food ingredients sector — a place where innovation is fostered, connections are made, and the foundations for a more sustainable food industry are built. •





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Controlling Fermentation: How Modern Proofer and Retarder Shape Bakery Quality

In baking, few processes are as deceptively simple yet critically important as proofing. It is the moment when dough becomes alive—when yeast activity, temperature, and humidity work together to create structure, volume, and flavor. For the professional baker, controlling these conditions is not only a matter of craft but also of consistency and efficiency.

By Tudor Vintiloiu

Modern proofers and retarder-proofers are crucial tools for managing that balance, combining precise control of time, temperature, and humidity with designs that fit operations of every scale—from artisan bakeries to mid-size industrial lines.

THE SCIENCE BEHIND THE RISE

Proofing, or final fermentation, is the stage after shaping and before baking, where yeast metabolizes sugars into carbon dioxide and alcohol. The gas expands within the gluten network, producing the open crumb and texture characteristic of well-made bread or pastry. If the temperature is too low, fermentation slows and volume suffers; too high, and yeast activity races ahead, risking collapse. Humidity plays an equally delicate role: too little dries the dough surface, restricting expansion, while too

much weakens structure and promotes stickiness. Typical proofing conditions fall between 35 °C and 43 °C, with relative humidity around 80–85 %. Achieving uniformity throughout a cabinet is far from trivial: airflow patterns, door sealing, and control precision all influence product outcome. Equipment design therefore focuses increasingly on independent control of temperature and humidity, allowing bakers to fine-tune both parameters without one affecting the other.

RETARDING: SLOWING THE CLOCK FOR QUALITY AND WORKFLOW

Retarding is controlled refrigeration that delays fermentation. By cooling dough to 0–5 °C, bakers can extend schedules overnight or synchronize production across product lines. Beyond scheduling flexibility, retarding

improves flavor development as slow enzymatic activity releases more sugars and organic acids. Modern retarder-proofers integrate both functions in one insulated cabinet, holding dough cold for hours before automatically warming it to proofing conditions. For busy bakeries, this allows “set-and-forget” overnight fermentation with ready-to-bake dough by morning.

PRECISION, EFFICIENCY, AND HYGIENE

Where earlier proofers relied on manual thermostats and water pans, today’s units feature microprocessor control, dynamic airflow, and energy-optimized insulation. Separate heating elements and humidity generators enable rapid, stable recovery after door openings, while variable-speed fans distribute air evenly across trays. Smooth stainless interiors with removable ducting simplify cleaning and meet modern hygiene standards.

Energy efficiency is another priority. Heating and humidifying continuously can be resource-intensive, especially when cabinets also act as holding units.

Manufacturers now employ insulated floors, programmable fans, and door sensors that pause operation when open to minimize heat loss. The goal is no longer only perfect fermentation, but predictable, repeatable performance at lower operating cost.

Three manufacturers illustrate how differently the global bakery-equipment industry approaches proofing technology—ranging from advanced European systems to dual-purpose North American cabinets.

SVEBA DAHLEN: INTEGRATED PRECISION FOR FULL CONTROL

Swedish manufacturer Sveba Dahlen has long specialized in bakery ovens, mixers, and proofers, and its F-Series F500 cabinet ranks among the most advanced standalone retarder-proofers available. The unit combines proofing, retarding, and freezing in a single insulated structure, addressing bakeries that need flexible production schedules without compromising product quality.

The F500 features touch-screen controls with pre-programmed proofing profiles, delayed-start functions, and a “Dough-on-Demand” mode that transitions automatically from retarding to proofing. Dynamically controlled fans vary airspeed during each phase to maintain uniform humidity and temperature while conserving energy. An insulated heated floor prevents condensation or ice buildup in mixed-temperature environments.

Doors are self-closing yet can remain open past 90 degrees for loading; sensors pause fan operation when open; and joint-free stainless surfaces with removable ducts ease cleaning. In practice, the F500 helps artisan or semi-industrial bakers standardize fermentation results across shifts while lowering energy use—a growing concern in Europe’s cost-sensitive market.

FWE: COMBINING PROOFING AND HOLDING IN ONE FOOTPRINT

U.S. manufacturer Food Warming Equipment (FWE) takes

a more compact approach with its ETC-2333-PH cabinet, designed for operations that value versatility. The model accommodates 23 × 33-inch donut screens, making it suitable for QSR and pastry producers working with fried or baked doughs.

Its distinction lies in combining proofing and heated holding within one unit. Independent controls for air temperature and moisture allow precise fermentation settings, then maintain products at serving temperature without transfer. Transparent Lexan doors permit visual inspection without opening, while a removable humidity pan and sloped ceiling manage condensation and simplify sanitation.

Although less digital than European retarder-proofers, FWE’s design answers a practical need for space and cost efficiency. For many retail bakeries, one cabinet performing both proofing and holding functions replaces two separate appliances, cutting energy and maintenance costs.

LBC BAKERY EQUIPMENT: SPECIALIST DESIGN AND MODULAR SCALABILITY

Another U.S. producer, LBC Bakery Equipment, focuses exclusively on proofing systems. Its LRP2S-50 Roll-In Proofer typifies the company’s emphasis on reliability and modular design.

Constructed with insulated cam-lock panels and stainless interiors, the cabinet provides digitally controlled temperature, humidity, and time settings on an easy-reach door panel. Its working range of 21–49 °C and humidity up to 99 % covers most bakery needs, while uniform airflow ensures even results across racks. The roll-in layout lets bakers wheel full trolleys directly into the chamber, minimizing handling and preserving dough integrity.

LBC offers multiple widths and depths, including pass-through layouts for integrated lines. Using one control platform across all configurations, the company gives bakeries a scalable solution—from a small artisan shop to a commissary plant—without retraining staff or altering process parameters.

THE PATH FORWARD

Across these examples, the direction of proofing technology is clear. Precision and reproducibility remain paramount but are now joined by demands for energy efficiency, hygiene, and digital oversight. Programmable cycles, variable fans, and temperature ramping let bakers tailor fermentation to exact product profiles while minimizing waste. Retarder-proofers like Sveba Dahlen’s F500 integrate cold storage and proofing; combination units such as FWE’s ETC-2333-PH maximize flexibility; and modular roll-in designs like LBC’s LRP2S-50 keep specialist engineering relevant for daily production.

In an era of tight margins and scarce labor, the ability to “let the dough decide” under automated, repeatable conditions has become as important as mixing or baking itself. The modern proofer is no longer just a warm box—it is an intelligent environment that lets bakers deliver consistency batch after batch without surrendering the artistry that defines their craft. •

How Do We Create the Bread of the Future?

Bread; we've been eating it for centuries, and its popularity continues to spread across the globe. In emerging markets, it's often considered a luxury product, yet global demand - driven by population growth - keeps rising sharply. Fresh bread represents by far the largest share of this market growth. According to Innova Market Insights, no less than 78% of the world's population bought bread or bakery products last year. At the same time, the demand for healthy ingredients and health benefits in bakery products is increasing rapidly. Although the industry is responding to these trends, progress still lags behind the pace of demand. Meanwhile, there is growing pressure to find solutions that balance two challenges: the looming scarcity of raw materials on one side, and large amounts of food waste on the other. How do we deal with this? What does the "music of the future" sound like when it's no longer a dream, but a real possibility? Music to our ears, right?

The Dutch company Verhoeven Bakery Equipment Family has developed several answers and solutions through its project "The Bakery of the Future." This involves technology that embraces, supports, and elevates craftsmanship to a higher level. It allows bakers to save on ingredients, energy, space, and time, while improving the quality and appearance of the final product. And then there's another innovation that helps reduce waste through the upcycling of bread that would otherwise be discarded. A pipe dream? Too good to be true? Not at all! It's real, and available to bakers around the world. For everyday bakery products, but also for the growing category of special products that consumers increasingly demand.





LOW-CARB AND GLUTEN-FREE

In recent years, gluten-free products have taken a serious place in the market, driven by a growing number of consumers adopting wheat-reduced or gluten-free diets. This shift reflects the rising demand for low- or no-carbohydrate foods. According to Fortune Business Insights, this market is expected to grow by more than 8% annually over the next 5–10 years, a trend that started at the end of the 20th century. Producing these specialty breads comes with unique challenges. More than with conventional bread, controlling moisture is crucial when making gluten-free products. This is precisely where Vacuum Cooling & Baking technology plays a key role: it allows the baker to manage the product's moisture balance. By lowering the air pressure in a vacuum chamber, the boiling point of water is reduced, meaning baking can occur at temperatures impossible in a normal oven. This process enables significant improvements in volume, texture, crumb softness, bread stability (no collapsing or shrinking), and crust crispness. Moreover, during vacuum baking, the product cools down to a core temperature of around 25°C within just a few minutes, after spending only about 60% of the usual baking time in the oven. This translates into substantial savings in baking time, ingredient use (thanks to the increased volume), and energy consumption, truly a win-win-win-win situation.

SHORTAGES AND WASTE

Before a bakery even starts processing flour, roughly two-thirds of the CO₂ emissions associated with bread production have already occurred - from soil cultivation and crop protection to irrigation and wheat harvesting. Every kilo, every loaf, every slice of bread that is eaten or reintroduced into production instead of thrown away contributes significantly to lowering emissions and saving increasingly scarce raw materials. Globally, bread waste averages about 15% of total production. This waste occurs at multiple stages of the bread lifecycle: during production, transportation, at retail level, and after purchase when consumers fail to consume what they buy. That 15% represents enormous quantities; in Europe alone, it amounts to over 12 billion kilos of bread every year.

UPCYCLING

Many initiatives have been developed to help combat this waste; for instance, by processing leftover bread into animal feed, slurries, breadcrumbs, or other secondary products. The “Repeatloaf” concept takes this a step further through an automated fermentation process that truly enriches or upcycles leftover bread. The result is a dry, enriched powder containing no live organisms, which can be added directly to new dough. Because the substance is dry, it doesn't need to be reused immediately; the Repeatloaf powder can be stored for months - just like flour - as long as it's kept dry. This marks a significant step forward in reducing bread waste and moving toward a more sustainable bakery industry. •



The Future Is Formed: Extrusion Powers Bakery Diversification

Once seen mainly as a snack-forming technique, extrusion has quietly become one of the most versatile tools in modern baking. From pretzel sticks and filled nuggets to crispbreads, breadcrumbs, and better-for-you baked snacks, today's systems handle an expanding portfolio of doughs and formulations that demand both creativity and consistency.

By Tudor Vintiloiu

For manufacturers under pressure to shorten product cycles and diversify output without expanding floor space, extrusion's appeal lies in its combination of control, flexibility, and throughput.

EVOLVING EXPECTATIONS

In a market defined by variety, bakers want lines that can adapt as quickly as consumers do. "Over the last several years, customers have been asking most for flexibility and ability to innovate in extrusion systems," says Joe Pocevicus, Sales Director – EMEA & APAC for Reading Bakery Systems (RBS). "Snack makers want to run traditional pretzels, co-extruded filled nuggets, braids, and more on a single line without sacrificing quality. At the same time, there's been growing demand for products with added protein and better-for-you formulations."

This push for flexibility has reshaped how extruders are engineered. Quick die changeovers, hygienic designs that minimize downtime, and digital controls that store and recall multiple recipes are now standard expectations rather than optional features. Pocevicus notes that these demands have "influenced our priorities: quick die changeovers, improved

sanitary design for faster cleanability, and control systems that make it easier to manage different dough types and recipes."

THE MODERN EXTRUDER

Although extrusion has been a bakery mainstay for decades, the mechanics of dough handling have changed dramatically. RBS, known for its low-pressure and high-pressure extruders used in pretzel and snack lines, has re-engineered several core components. "The most significant improvements have been in sanitary design, band cutter design and control systems," Pocevicus explains. "Our latest Low Pressure Extruders use seamless, single-piece hoppers that eliminate harborage areas, are lightweight, and tool-free to remove for cleaning. Cutting systems have also advanced, with bandcutters capable of up to



275 cuts per minute and multiple blade types for sticks, filled products, or difficult doughs.”

That level of precision and speed addresses a long-standing tension between flexibility and consistency. According to RBS, “Consistency comes from precise dough flow and controlled cutting systems. Twin auger designs maintain uniform dough pressure while reducing crystallization. For challenging doughs like gluten-free or high-protein, optional pre-feed rollers keep flow consistent and prevent bridging.” The company’s Science & Innovation Center serves as the proving ground where processors test new formulations and shapes before scaling to industrial runs. “We work with our customers to run trials to evaluate the product flavor, shape and texture using different formulations, process parameters and dies,” says Pocevicus. “This hands-on approach reduces risk and speeds time-to-market.”

BROADER MARKET TRENDS

Beyond RBS’s core pretzel and snack lines, other equipment suppliers are also expanding extrusion’s role in bakery production. Baker Perkins, for example, positions its SBX Master™ twin-screw extruder as the central processing unit in integrated systems for cereals, snacks, and baked ingredients. Official specifications list continuous outputs from 250 to 2,500 kg/h, depending on formulation, with modular downstream options for preconditioning, forming, and drying.



Baker Perkins succinctly defines extrusion’s economic argument: “If it is possible to make a product with an extruder, it is almost certainly the cheapest, most efficient and most compact method for making it.” The company also clarifies the design choice most buyers face. “Single screw extruders offer simplicity and lower capital cost, but twin-screw extruders provide versatility and higher quality products.” Together, those statements highlight a key consideration for bakery producers: single-screw units often suffice for stable, uniform doughs, while twin-screw systems open the door to higher protein, gluten-free, or multi-texture products where mixing energy and precise thermal control are essential.

Meanwhile, Cletral continues to champion twin-screw extrusion as a platform for both snack innovation and bakery applications. The company states on its official site that “Directly expanded snacks (DX snacks) are our core business,” but its portfolio also extends to crispy flatbreads, breakfast cereals, bread snacks, and croutons. Cletral even offers a croutons kit that “enables the conversion of snack lines, which are directly expanded, to produce continuously-extruded croutons.” These examples demonstrate how

extrusion bridges the line between traditional baking and modern snack processing—using the same core technology to produce either finished consumer goods or functional inclusions for bakery formulations.



HEALTH, SUSTAINABILITY, AND DIGITAL CONTROL

Formulation trends are also changing what bakers expect from extrusion. Pocevicus points to the rise of health-focused ingredients: “Better-for-you snacks are a major driver, with demand for gluten-free, high-protein, and high-fiber products growing fast. These doughs can be difficult, but with pre-feed rollers, continuous mixing, and the right cutting technology, we can manage them effectively.” He adds that sustainability and automation are converging priorities. “On sustainability, our focus is on efficiency and easy operation. Features like recipe-driven controls, and quick and easy sanitation and maintenance reduce downtime and keep throughput high.” Looking ahead, Pocevicus sees “big opportunities in co-extruded and multi-textured snacks, protein-enriched formulations, and automation. Co-extrusion is enabling more complex filled products, while continuous mixing is opening the door for fully automated systems and easier processing of gluten-free and alternative flour snacks.”

The same automation curve is visible across the OEM landscape. Baker Perkins and Cletral are both integrating advanced monitoring into their lines, using sensors and analytics to fine-tune dough rheology, predict maintenance intervals, and document energy use. As digital twins and AI-driven controls spread through food manufacturing, extrusion systems—already compact, closed, and measurable—are likely to become early adopters of adaptive process management.

A PROCESS BUILT FOR DIVERSIFICATION

Extrusion is no longer confined to niche snacks; it is becoming a standard forming, shaping, and pre-cooking step within broader bakery operations. Its ability to combine mixing, forming, and partial cooking in one footprint lets producers pivot quickly between SKUs without adding ovens or sheeters. Whether running classic pretzels on RBS low-pressure extruders, protein-fortified cereal snacks on Baker Perkins twin-screw systems, or crispbread and crouton bases on Cletral lines, the principle is the same: controlled versatility.

As Pocevicus concludes, “Flexibility, healthier products, and smart technology will drive the next wave of growth in extrusion.” For bakers seeking to expand portfolios while keeping operations lean, that wave is already here. •

A Factory Is As Good As Its **Quality Management System**

Consistent product quality is more than a matter of reputation — it is a legal, operational, and financial necessity. Customers expect reliability, retailers demand compliance, and regulators enforce increasingly stringent food safety and sustainability standards. For factory managers, implementing a Quality Management System (QMS) that meets internationally recognised certifications such as ISO 9001, FSSC 22000, or BRCGS Food Safety is the most effective way to build structure, ensure accountability, and drive continuous improvement across all bakery operations.

By Jo Ilie

A Quality Management System is a structured framework that defines how your factory controls, monitors, and improves every step that affects product quality — from sourcing flour to delivering packaged goods. In a bakery, that means systematising control over ingredients, equipment, processes, hygiene, documentation, and training.

International QMS standards like ISO 9001 focus on customer satisfaction and operational consistency, while FSSC 22000 and BRCGS integrate food safety requirements. Certification under these schemes demonstrates to regulators, retailers, and consumers that your factory meets global best practices in food manufacturing.

For bakeries, a good QMS delivers clear benefits: fewer batch rejects and production errors, stronger compliance with food safety and labelling laws, reduced customer complaints, improved staff awareness and accountability, easier entry into export markets or large retail supply chains.

Before implementing a QMS, a company starts with a gap analysis — a systematic review comparing your current operations against the chosen standard's requirements. This can be done internally or with help from a certified consultant. Typical areas to assess include: ingredient sourcing and supplier verification, process documentation and standard operating procedures (SOPs), cleaning and

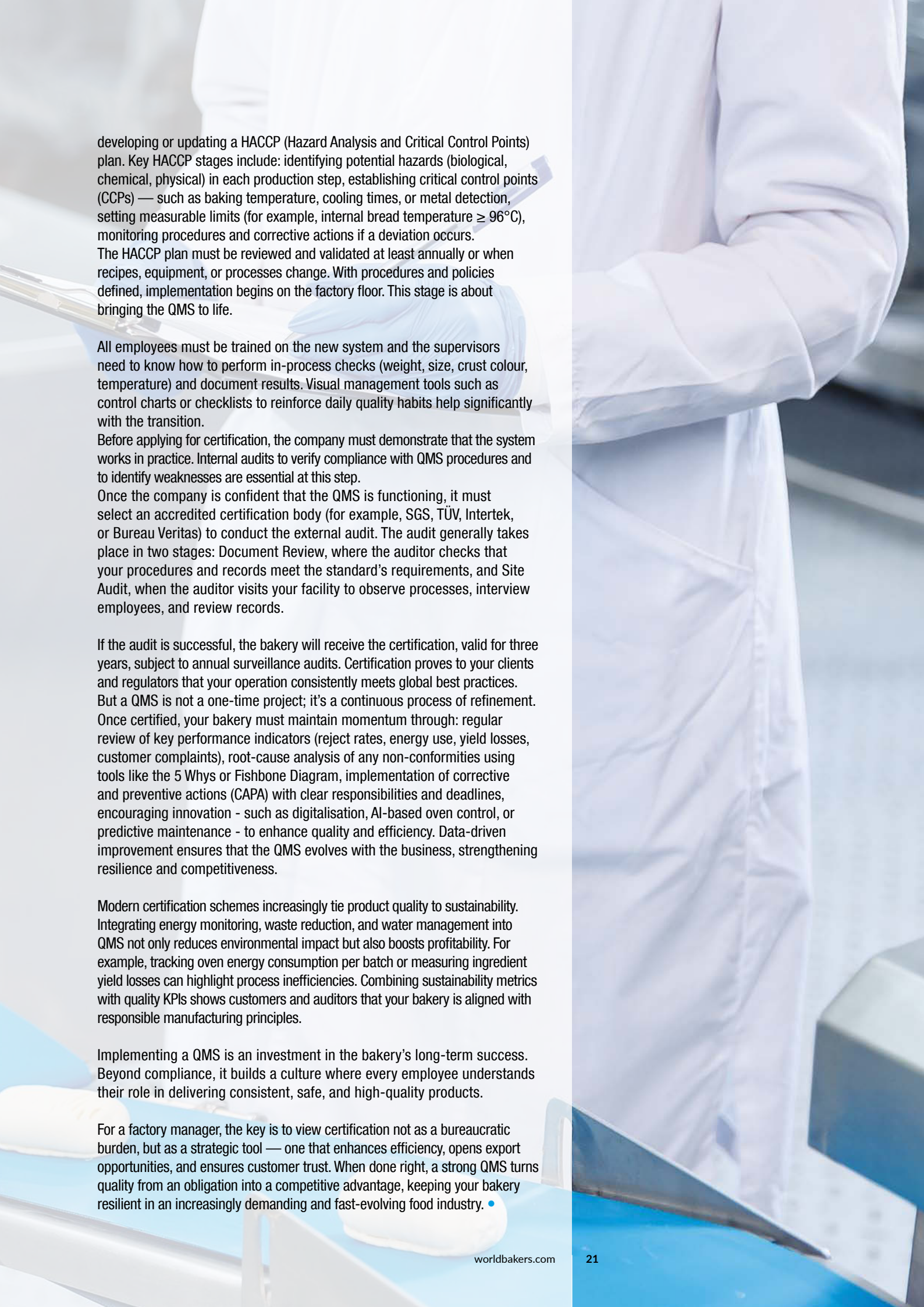
sanitation practices, maintenance and calibration schedules, traceability and product recall readiness, record keeping and documentation.

The results of this assessment form the roadmap for implementation.

The next step is to create the structural backbone of the system. The process coordinator must identify which operations, facilities, or product categories the QMS will cover (for example, frozen bread lines, pastries, or dough preparation) and each department — production, maintenance, logistics, R&D — must know its quality roles. Several documents are necessary to forward the process. A quality manual outlines overall system and company policy. Standard Operating Procedures (SOPs) contain step-by-step instructions for each process (mixing, proofing, baking, cooling, slicing, packaging). Work Instructions and Records focus on daily logs, inspection forms, temperature charts, calibration certificates. Corrective Action Reports are the documentation of non-conformities and solutions.

Document control is crucial: the company must ensure all versions are dated, signed, and accessible to the right personnel.

Modern QMS frameworks require integration with food safety management systems. In a bakery, this typically means



developing or updating a HACCP (Hazard Analysis and Critical Control Points) plan. Key HACCP stages include: identifying potential hazards (biological, chemical, physical) in each production step, establishing critical control points (CCPs) — such as baking temperature, cooling times, or metal detection, setting measurable limits (for example, internal bread temperature $\geq 96^{\circ}\text{C}$), monitoring procedures and corrective actions if a deviation occurs.

The HACCP plan must be reviewed and validated at least annually or when recipes, equipment, or processes change. With procedures and policies defined, implementation begins on the factory floor. This stage is about bringing the QMS to life.

All employees must be trained on the new system and the supervisors need to know how to perform in-process checks (weight, size, crust colour, temperature) and document results. Visual management tools such as control charts or checklists to reinforce daily quality habits help significantly with the transition.

Before applying for certification, the company must demonstrate that the system works in practice. Internal audits to verify compliance with QMS procedures and to identify weaknesses are essential at this step.

Once the company is confident that the QMS is functioning, it must select an accredited certification body (for example, SGS, TÜV, Intertek, or Bureau Veritas) to conduct the external audit. The audit generally takes place in two stages: Document Review, where the auditor checks that your procedures and records meet the standard's requirements, and Site Audit, when the auditor visits your facility to observe processes, interview employees, and review records.

If the audit is successful, the bakery will receive the certification, valid for three years, subject to annual surveillance audits. Certification proves to your clients and regulators that your operation consistently meets global best practices.

But a QMS is not a one-time project; it's a continuous process of refinement.

Once certified, your bakery must maintain momentum through: regular review of key performance indicators (reject rates, energy use, yield losses, customer complaints), root-cause analysis of any non-conformities using tools like the 5 Whys or Fishbone Diagram, implementation of corrective and preventive actions (CAPA) with clear responsibilities and deadlines, encouraging innovation - such as digitalisation, AI-based oven control, or predictive maintenance - to enhance quality and efficiency. Data-driven improvement ensures that the QMS evolves with the business, strengthening resilience and competitiveness.

Modern certification schemes increasingly tie product quality to sustainability. Integrating energy monitoring, waste reduction, and water management into QMS not only reduces environmental impact but also boosts profitability. For example, tracking oven energy consumption per batch or measuring ingredient yield losses can highlight process inefficiencies. Combining sustainability metrics with quality KPIs shows customers and auditors that your bakery is aligned with responsible manufacturing principles.

Implementing a QMS is an investment in the bakery's long-term success. Beyond compliance, it builds a culture where every employee understands their role in delivering consistent, safe, and high-quality products.

For a factory manager, the key is to view certification not as a bureaucratic burden, but as a strategic tool — one that enhances efficiency, opens export opportunities, and ensures customer trust. When done right, a strong QMS turns quality from an obligation into a competitive advantage, keeping your bakery resilient in an increasingly demanding and fast-evolving food industry. •

Unlocking Plant-Based Potential with Yeast-Based Ingredients

For plant-based foods to succeed in the marketplace, the key lies in delivering on two core consumer expectations: exceptional taste and authentic texture. Angel Yeast's yeast-based solutions address these fundamental needs through a comprehensive approach.

By Angel Yeast

Angel Yeast has a broad portfolio. Which yeast-based ingredients are most relevant for plant-based applications?

Plant proteins often carry beany or grassy off-notes that hinder consumer acceptance. Our yeast extract serves as a "flavor guide" - naturally rich in umami compounds that enhance the inherent savory notes of plant-based ingredients while subtly masking undesirable flavors. Moreover, it replicates the rich, full-bodied lingering taste characteristic of meat, transforming plant-based products from monotonous to multi-dimensional taste experiences.

Beyond flavor, texture presents another significant challenge. Angel Yeast's yeast protein offers exceptional structuring capabilities. It enables plant-based meat formulators to create a more muscle-like fibrous structure that not only replicates meat's chewiness but also effectively binds water and fat during cooking. This dual functionality maintains juiciness and prevents dry, crumbly textures. This textural enhancement is crucial for product quality. Additionally, yeast protein provides a balanced amino acid profile rich in lysine - often deficient in cereal proteins - with high digestibility, effectively compensating for nutritional gaps in common plant proteins and fundamentally elevating plant-based products' nutritional value.

One of the biggest formulation challenges in plant-based foods is replicating taste and texture. How do yeast-based ingredients help?

This represents the core of our expertise. For taste, the challenge involves both "masking and

enhancing." Relying solely on flavors often yields simplistic, artificial tastes. Our yeast extract provides a natural solution: its natural flavor compounds not only mask off-notes but also unlock ingredients' inherent savory potential, delivering broth-like richness and sustained meat-like aftertastes that simple additives cannot achieve.

For texture, the issues are "structure and moisture retention." Many plant-based meats lack real meat's fibrousness and juiciness. Our yeast protein plays a key role here, contributing to an improved fibrous network in plant-based meat during processing. This structure mimics meat's mouthfeel while effectively locking in moisture and fat to ensure products remain tender and juicy after cooking.

How do they support clean-label and nutritional demands?

This is where yeast-based ingredients demonstrate their inherent advantages. For clean-label needs, our yeast extract and yeast protein have clear and straightforward declarations on ingredient lists. They help products eliminate dependence on MSG, artificial flavors, and synthetic improvers, enabling brands to offer consumers more transparent, cleaner formulas.

Nutritionally, as mentioned earlier, incorporating yeast protein directly enhances protein quality. This means that while improving flavor and texture, we simultaneously achieve comprehensive nutritional enhancement rather than relying on isolated fortification later in the process.





What about industrial performance? Do these ingredients stand up to large-scale processing?

This is a crucial consideration. An exceptional ingredient solution must withstand industrial production demands while ensuring stable, reliable supply. Angel Yeast provides not just products but a complete system encompassing R&D, production, and supply chain assurance.

Our production and supply capabilities as a major global yeast manufacturer include large-scale production facilities and an established worldwide supply chain network. This guarantees continuous, stable supply of key products like yeast protein and yeast extract, reliably meeting global clients' high-volume, long-term requirements without disrupting mass production plans.

Furthermore, our integrated quality control and R&D system ensures product consistency and reliability. Through strict quality control and food safety management systems implemented across the entire production chain, we maintain controllability and traceability from raw materials to finished products.

Therefore, choosing Angel's yeast-based ingredients means securing more than just ingredients - it means obtaining a reliable solution supported by dependable large-scale supply, superior quality control, and comprehensive technical support.

Where are you seeing the strongest demand globally?

We observe a diverse and dynamic global landscape.

North America and Europe represent the most mature, consumer-driven markets, with strongest demand for premium plant-based meat and dairy alternatives that emphasize excellent flavor, texture, and clean labels - making them primary

destinations for innovative solutions. Asia presents a more layered market. Building on deep-rooted vegetarian traditions, current demand focuses on "quality upgrades" of traditional soy products and meat analogs, with consumers seeking more delicious, premium options beyond original textures and flavors.

In emerging markets like Latin America, price sensitivity makes cost-effective solutions that genuinely improve product quality particularly attractive. Angel's solutions offer sufficient flexibility to integrate with local ingredients and culinary traditions, helping clients develop products that better align with regional market needs.

How do yeast-based solutions compare in terms of sustainability and cost?

From a sustainability perspective, yeast production offers inherent advantages. Compared with traditional livestock farming, yeast fermentation requires substantially less land and water while generating significantly lower greenhouse gas emissions - perfectly aligning with the environmental ethos driving the plant-based industry and providing brands with compelling sustainability narratives.

Regarding cost, a "total cost-in-use" perspective is essential. While some yeast ingredients may carry higher unit prices than basic plant proteins, their superior functionality typically reduces requirements for other expensive ingredients (like flavors, gums, or nutritional fortificants). From overall formulation cost perspectives, they often prove more competitive. Most importantly, they enable creation of higher-quality products that consumers demonstrate greater willingness to purchase, delivering value that substantially exceeds ingredient costs alone. •

Data Is the New Currency of Compliance

Digitalization has become a defining theme in food manufacturing, and nowhere is this transformation more visible—or more necessary—than in the field of food safety. Bakeries operating under increasingly stringent regulatory and retail requirements are discovering that traditional paper-based monitoring systems are no longer enough.

By Tudor Vintiloiu

The rise of the Internet of Things (IoT) and the regulatory drive toward technology-enabled traceability have turned data into the new currency of compliance.

REGULATORY MOMENTUM TOWARD CONNECTED SAFETY

The U.S. Food and Drug Administration (FDA) has placed digitalization at the core of its long-term strategy. In its New Era of Smarter Food Safety Blueprint, the agency sets out a vision that “leverages technology and other tools to create a more digital, traceable, and safer food system.” It highlights Tech-Enabled Traceability as a foundational pillar and emphasizes the need to “enable the rapid identification and removal of contaminated food from the market.” The FDA makes clear that a digitalized approach is not optional: the goal is a food system “in which the sharing of data becomes the norm, not the exception.”

This regulatory direction is being reinforced by industry-led programs such as the Global Food Safety Initiative’s Race to the Top framework, which pushes certification schemes toward deeper digital transparency. In practice, that means bakeries must increasingly demonstrate continuous control of critical parameters—time, temperature, humidity, and allergen management—through verifiable electronic data rather than manual logs.

At the same time, the FDA’s Final Rule on Traceability, issued under the Food Safety Modernization Act (FSMA), explicitly calls for the use of standardized digital records that can be made available to regulators “within 24 hours of request.”

For large-scale bakery operators producing for U.S. or global markets, this has elevated IoT-based monitoring systems from innovation to necessity.

THE DIGITAL FOUNDATION: METTLER-TOLEDO ON DATA AND TRACEABILITY

According to Ian Scott-Mance, Technology Manager at Mettler-Toledo Product Inspection, “digital food safety can no longer be put on the back burner.” He notes that initiatives such as the FDA’s New Era of Smarter Food Safety and the Global Food Safety Initiative’s Race to the Top make it “unmistakably clear that the topic of digital track & trace in the food industry is gaining importance.”

Scott-Mance outlines a structured approach for food manufacturers preparing to digitize safety processes. “Food manufacturers must begin focusing on data collection, which is the essential starting point for any project that seeks to improve food safety through greater traceability,” he writes. This, he adds, also supports wider efficiency gains across production lines.

Mettler-Toledo recommends a stepwise digital transformation, beginning with a detailed audit of existing data streams. “The efficient collection of data is a basic requirement so that it can then be made available across the entire supply chain, in an accessible, i.e. digital, form,” Scott-Mance explains. Many producers, he observes, still operate with a “highly fragmented picture” of data collection—some digital, some still relying on “USB sticks, or manually with pen and paper.” From there, companies should define their long-term strategy: “Are we seeking merely regulatory and market compliance



with minimal effort, should the now digitally-available data also be used to optimize the production processes, or should we be aiming for a profound and sustainable digital transformation of the company with a view to IoT and Industry 4.0?" Each scenario, he stresses, "requires a different plan, schedule, and capital cost."

Scott-Mance emphasizes that success depends not only on technology but also on people and process. "The digitization of food safety is a process that entails organizational changes in work practices and affects the interests of a wide variety of departments in the company—from purchasing to production to marketing," he writes. Change management and leadership commitment are therefore essential to maintain progress and avoid fragmentation.

For bakeries, this approach translates into rethinking inspection and monitoring as integrated data events rather than isolated checkpoints. Every temperature sensor, metal detector, checkweigher, or vision system becomes a potential node in the digital safety network.

FROM THE LINE UP: AUTOMATION AND HYGIENIC DESIGN

Where Mettler-Toledo focuses on the informational layer of digital food safety, tna solutions looks at how advanced automation supports consistency and compliance on the production line. "Safety isn't a matter of final checks or regulatory box-ticking. It is a continuous, science-led process," writes Steve Burgess, General Manager – Europe & Africa at tna solutions. "Across high-speed, high-volume lines, even minor deviations — in cooking temperature, dwell time, seasoning load or packaging sealing pressure — can have serious implications for safety and quality." Burgess points to recent U.S. recalls involving "foreign objects such as metal, rubber, and plastic in various food products," noting that these incidents "often stem from faulty manufacturing equipment or human error." To mitigate such risks, "automated systems are now capable of monitoring key parameters in real time, adjusting variables mid-process to ensure uniformity from batch to batch."

He cites examples such as "gravimetric seasoning and oil spraying solutions" that allow for exact application levels aligned with nutritional targets, and "digital tools built into frying systems [that] maintain optimal temperatures, reducing acrylamide formation in consumer-loved snacks while preserving product integrity."

According to Burgess, "Where human oversight alone once carried the weight of food safety, today's systems use technology to reduce that burden. Automated rejection mechanisms isolate contaminated or non-compliant products without disrupting production.

Modern metal detection systems operate at sub-millimetre sensitivity, working continuously and invisibly. Each intervention is informed by data, not guesswork."

Yet even the best-designed systems must be paired with disciplined maintenance and hygiene. "Food safety is not something that is considered only at the equipment selection stage. It is also built into the physical architecture of the production line," Burgess writes. "Equipment designed with cleanability and modularity in mind helps ensure hygiene standards are met and maintained consistently."

He references the design standards established by the European Hygienic Engineering & Design Group (EHEDG): "Hygienic design is not a bolt-on consideration — it's a fundamental element of food-safe engineering."

Together, these perspectives underline that digitalization in food safety is both a systems challenge and a design philosophy. The bakery line of the future will not only record what happens but actively shape it through feedback control and predictive insights.

THE BAKERY PERSPECTIVE: IOT FOR VALIDATION AND VERIFICATION

The IoT layer becomes most valuable when it connects process data to food-safety validation—an area where bakeries are under specific scrutiny. The U.S. Food Safety Modernization Act (FSMA) requires documented proof that bakery processes achieve pathogen reduction, especially for ready-to-eat products. This is where organizations like AIB International have stepped in with digital validation tools.

AIB's Kill Step Calculator allows bakers to demonstrate compliance by using time-and-temperature data from their own ovens. The organization explains that the tool "uses actual baking data collected from the baker's process to determine if the thermal process delivers the required lethality for the target pathogen." By directly linking process sensors with validation records, it bridges IoT data capture with regulatory proof of safety. AIB also advocates for broader digital readiness. In its guidance on food-safety management, the group encourages bakeries to adopt "automated temperature monitoring and verification systems that can record and archive data in real time." Such practices not only reduce the risk of human error but create an auditable record for customers and regulators alike.

This integration of process analytics and safety validation marks the convergence of production engineering and compliance management. A bakery that once relied on manual thermometer checks can now demonstrate continuous control, traceable down to the second, across every batch.

MANAGING THE HUMAN FACTOR

Even the most sophisticated digital system is only as effective as the people who operate it. Mettler-Toledo's Scott-Mance underscores this in his guidance on expertise and stakeholder engagement: "Employees have to understand and accept that the higher level of data transparency required also includes those involved outside of their own company." Leadership commitment and clear communication are vital.

Similarly, AIB International warns that technology must complement, not replace, training and hygiene discipline. Digital tools should "support proactive food safety programs by giving operators the data they need to act quickly when deviations occur." For bakeries, this means equipping production staff with interfaces that translate data into decisions, rather than overwhelming them with raw information.

Change management thus becomes part of food safety. By embedding IoT systems into standard operating procedures, bakeries can ensure that the data they collect is meaningful, accurate, and actionable.

TOWARD A CULTURE OF CONTINUOUS VERIFICATION

The combined message from regulators, auditors, and technology providers is clear: the era of static compliance is ending. The FDA's Smarter Food Safety Blueprint calls for "a culture of food safety that leverages technology and predictive analytics to prevent problems before they occur." For bakeries, this requires a shift from reactive testing to continuous verification.

In practice, this means every component of the line—from the dough mixer to the cooling conveyor—feeds into a connected data environment. Sensors monitor temperature stability and airflow uniformity, cameras validate package integrity, and inspection systems capture rejection trends that can signal upstream issues. This web of information supports both immediate corrective action and long-term improvement.

The advantage, as Scott-Mance notes, is that "the more carefully the homework is done in the management of information, the more it pays off in the medium and long term." The result is not only smoother audits and fewer recalls but also higher process efficiency and energy optimization.

CONCLUSION

Digital food safety in the baking industry is no longer a theoretical ideal; it is a regulatory expectation and an operational reality. The FDA's call for tech-enabled traceability, AIB International's digital validation tools, and the practical frameworks from Mettler-Toledo and tna solutions all point in the same direction: data-driven assurance.

As Burgess writes, "The future of safe food doesn't rest on luck or vigilance alone. It rests on systems built to perform in harmony with all the elements of the complete line and exactly as intended." For bakeries navigating this transformation, the message is equally simple and urgent—connect, monitor, and verify, because safety in the digital age is measured not in intentions, but in data. •





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The Constant Reinvention of Sweeteners

The push toward sweetener innovation in bakery formulations is being driven by health, regulatory, and consumer forces. Sugar reduction has become a central objective across markets, as both public policy and shifting consumer expectations accelerate the move away from “added sugar.” That, as well as the reigning dominance of taste - things have to be tasty, in the end - lead to new ingredients that satisfy cravings while safeguarding health objectives.

By Jo Iffe





Today's sweeteners are expected to deliver far more than sweetness alone - they must replicate the functional properties of sugar, ensuring proper texture, browning, mouthfeel, freeze-thaw stability, and flavor balance. Cost and scalability remain decisive factors, with many promising ingredients still constrained by limited supply or high production expenses. Finally, each innovation must navigate a complex regulatory landscape, where approval timelines and safety assessments vary by region, influencing how quickly new sweeteners can reach industrial bakers and consumer shelves.

THE STARS

In bakery production, sucrose (table sugar) remains the dominant sweetener by far, accounting for nearly 80 % of market revenue thanks to its unmatched functionality in browning, bulking, moisture retention, and yeast fermentation. Liquid forms such as glucose syrup, invert sugar, and high-fructose corn syrup (HFCS) - or isoglucose in the EU - are also widely used to improve texture, shelf life, and mixability.

For reduced-sugar and calorie-controlled bakery items, sugar alcohols like erythritol, xylitol, sorbitol, and isomalt are the preferred options, with erythritol in particular seeing strong market growth. High-intensity sweeteners - including stevia, sucralose, and acesulfame-K - are used where sweetness is needed without bulk, especially in icings and fillings, though taste challenges persist. Finally, natural sweeteners such as honey, maple syrup, agave, and fruit concentrates play a smaller but growing role in premium and clean-label bakery products, offering flavor depth and marketing appeal despite higher cost and formulation complexity.

But intensive research has been putting out new sweeteners that can answer all of the consumers' new expectations.

THE NEW KIDS ON THE BLOCK

A new wave of next-generation sweeteners is reshaping bakery formulations, moving beyond familiar names such as stevia, erythritol and sucralose. These innovative ingredients promise improved taste, functionality and metabolic performance, meeting the dual challenge of reducing sugar while preserving indulgence. Among them, allulose (psicose) is gaining particular traction thanks to its low calorie content (around 0.2–0.4 kcal/g) and sucrose-like behaviour in browning, bulking and freezing—making it ideal for “low-sugar” or “sugar-free” cookies and cakes. Allulose is

a rare sugar with 70% of the sweetness of sucrose but nearly zero calories. It has a similar taste profile to fructose and, when heated, creates a caramelization effect, delivering a flavor profile like sucrose.

Already popular in Asian markets such as South Korea, it is emerging globally as a true “near-sugar” alternative. Ingredient producer Samyang, for example, has received approval to sell allulose as a safe food ingredient in Australia and New Zealand, marking it as the first company worldwide to gain Novel Food approval for allulose in these countries.

The term “Novel Food,” used by regulatory bodies such as that of the EU, Canada, and Oceania, refers to innovative food ingredients that were not previously used in foods but have now been deemed safe. Allulose's Novel Food approval in Australia and New Zealand represents a significant milestone.

With this approval, allulose is now officially recognized as a food ingredient in Australia and New Zealand. Unlike high-intensity sweeteners and sugar alcohols classified as food additives, such as aspartame, sucralose, and erythritol, allulose can now be used more freely to manufacture sugar-reduced and sugar-free products.

Alongside allulose, rare sugars such as tagatose are also attracting attention for their similar performance and natural appeal. Tagatose is defined as a monosaccharide that occurs naturally in small amounts in certain fruits and dairy products, characterized as a ketose with a structural difference from fructose due to the reversed orientation of the hydroxyl group on the fourth carbon. It is synthesized for use as a food ingredient and is noted for its potential prebiotic properties, influencing gut microbiota by selectively stimulating beneficial bacteria. To address taste limitations found in early-generation natural sweeteners, ingredient developers are introducing sweet proteins and advanced stevia derivatives such as Rebaudioside M and Reb D, which deliver cleaner sweetness without bitterness. Reb M is a darling of the ingredient producers, starting with Arzeda, a U.S.-based protein design company, is expanding production of its ProSweet Reb M stevia into Europe to meet rising demand from consumer-packaged goods (CPG) companies and support global growth. The expansion will boost Arzeda's production capacity to more than 250 metric tons of ProSweet Reb M, a 95%-purity sweetener derived from stevia leaf extract. The company said this is equivalent to replacing 75,000 metric tons of sugar annually, or 18.75 billion servings, in a bid to help reduce excess sugar consumption.

But also Tate & Lyle PLC and Manus, which announces a strategic partnership, known as The Natural Sweetener Alliance, to expand access to natural sugar reduction solutions. The first ingredient to be jointly introduced is stevia Reb M, marking the first large-scale commercialisation of an all-Americas-sourced, manufactured, and bioconverted stevia Reb M ingredient. Another example comes from PureCircle by Ingredion, which now offers ingredients from bioconversion in the United Kingdom – including Reb D and Reb M – in addition to its broad portfolio of existing stevia sweeteners and natural flavor modifiers, following the UK government publishing a new specification authorizing PureCircle by Ingredion's range of steviol glycosides produced via bioconversion in the UK. As these sweeteners are already approved for use in the EU, this approval allowed food and beverage manufacturers to use the same stevia technologies in both markets.

Meanwhile, biotechnological and fermentation-based production methods are opening new pathways for cost-effective, high-purity sweeteners. Together, these developments are fuelling strong market expansion, with the next-generation sweetening ingredients segment projected to grow at nearly 7.9 % CAGR through 2034.

THE IN-BETWEEN SOLUTION

Rather than completely eliminating sugar, many bakeries are adopting hybrid sweetening strategies that combine established low-calorie ingredients to achieve a balanced sensory and functional profile. Sugar alcohols such as erythritol, xylitol, isomalt, and sorbitol are popular for partial sugar replacement, particularly in products requiring moderate sweetness.

These polyols provide bulk, reduce calories, and create beneficial effects when blended with other sweeteners. Stevia also continues to play a central role, with manufacturers increasingly favouring next-generation steviol glycosides that deliver a cleaner, less bitter taste. To improve processability and scalability, liquid sweetener systems - often based on natural blends such as stevia or monk fruit extracts - are being refined for bakery use. The prevailing approach across the sector is “sugar reduction through blending,” where 30–50 % of sugar is typically replaced to maintain volume, texture, and flavour while meeting consumer demand for lower sugar content. The Up-and-coming Functional Sweetening Systems Formulators are increasingly moving away from using single sweeteners and toward multi-functional sweetening systems that address not only sweetness but also texture, stability, and nutritional value. These ingredient complexes allow bakers to achieve sugar reduction targets without compromising product quality or shelf life. A key strategy involves combining prebiotic fibres such as inulin or polydextrose with sweeteners. This approach enhances digestive benefits, improves mouthfeel, and supports moisture retention, ultimately helping extend the freshness of baked goods.

Another growing focus is on flavor management, using

bitterness blockers, flavor modulators, or small amounts of alternative sweeteners to mask the off-notes often associated with stevia or other high-intensity sweeteners. These ingredients help maintain a natural, sugar-like taste even in reduced-sugar formulations. In parallel, enzyme-assisted technologies are being used to modify carbohydrate structures — for example, converting maltose or fructose into sweeter forms or lowering the glycaemic impact of the finished product.

Beyond sweetness, functional ingredients such as sucrose esters or modified sugar derivatives are increasingly part of the reformulation toolbox. While not sweeteners in the traditional sense, they contribute to emulsification, stability, and spreadability, compensating for the structural roles sugar normally plays. Together, these systems help mitigate the typical trade-offs in sugar reduction, ensuring that bakery products retain desirable texture, flavour, and shelf stability.

THE “STEALTH” SUGAR REDUCTION METHOD

At the same time, many manufacturers are adopting a gradual sugar reduction strategy. Instead of dramatic reformulations, they are cutting sugar levels step by step - often without highlighting the change on pack. This incremental approach avoids sudden impacts on dough behaviour, browning, and overall flavour balance, helping preserve consumer loyalty while meeting evolving health and regulatory targets. By progressively reducing sugar content, brands can adapt products smoothly and sustainably to meet both market and policy pressures.

WHAT'S NEXT

Over the next two to three years, the bakery sector is poised for significant change in how it approaches sweetness and sugar reduction. One key development to watch will be the potential mainstream adoption of allulose in Europe. While this rare sugar has already gained traction in the U.S. and Asia for its near-sucrose functionality and low calorie content, its broader use in European bakery depends largely on regulatory approval and cost-efficient production.

At the same time, next-generation stevia derivatives with cleaner, more sugar-like taste profiles are expected to gain commercial momentum. These advanced forms, such as Rebaudioside M and Reb D, aim to overcome the lingering bitterness and aftertaste that have limited earlier stevia applications in baked goods. In parallel, bakers will continue experimenting with hybrid sweetener systems that blend fibres, polyols, and high-intensity sweeteners to achieve the ideal balance of sweetness, mouthfeel, and functionality. Advances in fermentation and biotechnology are also set to transform the sweetener landscape by making novel ingredients more affordable and scalable. However, regulatory decisions—particularly within the EU—will remain a decisive factor in determining how quickly these innovations reach the market. Finally, consumer acceptance will be the ultimate test. Success will likely favour “reduced sugar” products that maintain the taste, texture, and indulgence consumers expect, proving that lower sugar no longer has to mean lower satisfaction. •

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All Bets on **Frozen** **Chocolate Croissants**

Italy's bread and baked-goods sector continues to be anchored in tradition even as it integrates modern preferences. Classic products like white bread fill the consumer baskets, but the most astounding surprises come from the frozen isle.

By Jo Ilie

According to Grand View Horizon, the Italian packaged bread market generated revenue of USD14,126.6m in 2024, and is projected to reach USD15,641.2m by 2030, growing at a CAGR of 1.7% over 2025–2030. This slower but steady growth reflects a mature market where incremental gains must come from premium segments or innovation rather than broad expansion. In 2024, Italy accounted for 4.1% of the global packaged bread market by revenue. Within Europe, the packaged bread market is expected to expand at ~2.2% CAGR from 2025 to 2030, with Germany projected to overtake as the largest national market in Europe. Segment-wise, white bread remained the largest revenue-

generating product in 2024, but sourdough is flagged as the fastest-growing segment over the forecast period, offering a powerful opportunity for differentiation. Parallel to the packaged bread space, Italy's frozen bakery segment is seeing meaningful growth: from USD886.6m in 2022 toward USD 1,234.6m by 2030 (CAGR ~4.2%). This underlines rising consumer demand for convenience and semi-processed bakery formats.

DRIVERS & CONSUMPTION TRENDS

Italian consumers place a premium on taste, freshness, and natural ingredients. Market intelligence from Innovamarket Insights underscores that bread buyers in Italy expect products to feel fresh, natural, and traditionally made, free



of artificial additives. This ethos aligns well with the clean-label and slow-fermentation narrative that sourdough and artisan-style breads can deliver.

The growth edge for sourdough lies precisely in its narrative of natural fermentation, improved digestibility, and minimal ingredients, that resonate with health-conscious modern consumers. The broader global sourdough market is expected to grow at ~6.8% CAGR from 2025 to 2035 (from ~USD5.9bn to ~USD10.2bn), according to Future Market Insights, providing a favorable tailwind for Italian players in that niche. While packaged bread remains the backbone of volume consumption, there is evidence of a pendulum swing, according to Euromonitor International. Traditional unpackaged, leavened bread, a core part of Italian food

culture, saw a dip in 2023–2024 as inflation and raw-material pressures nudged consumers toward longer-shelf-life packaged forms. But many expect this to reverse: as economic pressures ease and the premiumization of fresh / artisanal bread resumes, bakery stores, local bakers, and craft operators can reclaim share. The desire for authenticity, locality and immediate consumption, which are well documented trends in the food market, supports this reversal.

According to Euromonitor International, one product to watch is frozen Nutella croissants, launched by Ferrero to leverage sourdough in a filled, semi-processed format. The croissants are made with sourdough-leavened dough (~100+ minute leavening) to balance the filling and texture. This hybrid format showcases the intersection between artisan DNA and industrial convenience.

More broadly, as consumer preferences tilt toward indulgence with wellness, innovation in packaged cakes and sweet baked goods is expected to blend clean-label, lower sugar, or functional ingredients without compromising flavour.

Lastly, frozen bakery (viennoiserie, par-baked formats, ready-to-prove doughs) offers a complementary growth path, especially for operators who want to combine convenience, consistency, and product diversity.

CHALLENGES & CONSTRAINTS

Italy's bakeries operate in a tight cost environment. Wheat, energy, labor, and logistics inflation have squeezed margins, especially for mass-market loaves. Premium segments like sourdough have more margin buffer but also higher ingredient and process costs.

Scaling sourdough or artisan-style breads in an industrial setting is not trivial. Maintaining quality, flavour consistency, crumb structure, and shelf life demands advanced fermentation, control systems, and hygiene processes. Moreover, adapting such processes at scale, especially in continuous or semi-continuous lines, requires significant capital and technological sophistication. Italian consumers are discerning and sensitive to price, especially in lower-income segments or during economic stress. Premium sourdough must justify its price with noticeable sensory, health, or branding advantages.

The growth of e-commerce, discounters, and alternative retail channels may pressure traditional baker-retailer relationships. Packaged goods must adapt packaging, shelf life, and logistics to these channels.

OUTLOOK & HORIZON

By 2030, Italy's packaged bread market may grow modestly to USD 15,641 million (CAGR 1.7%), according to Grand View Research. But within that steady envelope, sourdough and artisan-forward segments offer dynamic growth. When combined with frozen and semi-processed bakery formats, opportunities are amplified.

The future of Italian baking lies at the confluence of tradition and technological sophistication, for market players who can scale authenticity, maintain quality, and tell a compelling provenance-minimalist story. As consumers continue to reward flavor, health, and narrative, those who master sourdough at scale will be well placed to lead in Italy's evolving bread landscape. •



From Cronuts to Bonuts



By Jonathan Thomas

Although most bakery goods are consumed fresh, New hybrid bakery products combining the traditional favourites are increasingly entering the mainstream market, in response to the consumer appetite for new indulgent foods.



Consumers throughout much of the world are becoming increasingly demanding within the market for sweet pastries and bakery goods, in areas such as flavour, shape, format and texture. One of the more interesting trends resulting from this development is the emergence of what are usually referred to as hybrid products, whereby certain types of bakery goods are blended or combined with others to create new offerings. To date, this has largely been reflected by the creation of new formats and/or shapes, but more recent efforts suggest that bakeries are now developing hybrid products which unite textures. As the market has expanded, some of the earlier products have now begun to enter the mainstream.

The market for hybrid bakery products has largely been pioneered by smaller, artisanal bakeries, many of which compete in niche sectors to stand out from their rivals. As the sector has developed, however, it has attracted the attention of numerous multinational operators, including manufacturers, retailers and foodservice companies. Examples have included Nestlé, Pillsbury, Bridor, M & S, Subway, Starbucks and Dunkin' Donuts. During 2024, US bakeries specialising in cronuts experienced a 30% increase in sales, while a recent survey by the International Pastry Association found that almost two-thirds of pastry chefs claimed the emergence of hybrid sweet pastries was the leading trend captivating their consumers.

Research carried out in the UK during 2024 by Delifrance provides some indication into consumer attitudes towards hybrid bakery products and the importance of continued innovation within the sector. The research found that 42% of respondents were tempted to try a product based on its appearance, while 15% admitted to having sampled a product after having seen it on social media. Separate research from Taste Tomorrow highlights the adventurous nature of younger consumers, with 63% of millennials and consumers belonging to Generation Z attracted to bakery goods offering something unusual.

Nevertheless, another key takeaway from the Delifrance research was the considerable scope which exists for the market to grow further. This found that 38% of pastry consumers in the UK were unaware of the latest styles of hybrid products, despite significant media coverage. The older the consumer, the greater the unfamiliarity with the concept of hybrid bakery goods, which indicates that a largely untapped market exists at the upper end of the age spectrum.

According to the Delifrance research, awareness levels amongst UK sweet pastry consumers were highest for hybrid bakery products such as cronuts (23%), crookies (22%) and flat pastries (20%). At 33% of consumers, interest in trying hybrid products was highest for croissant wheels, which provides an indication of the strong influence of croissants within this market. Interest in trying new products falls to 31% for crookies, 29% for flat pastries, 28% for super-sized and/or sharing pastries and 25% for cronuts. These types of hybrid bakery products will be discussed in more detail later in the article.

Many reasons explain the growing popularity of hybrid bakery products amongst consumers, especially those in the younger age ranges. Many are appreciated for their aesthetic appeal, which means they are ideally positioned for sharing via social media posts on platforms such as TikTok and Instagram. They are also highly versatile in most instances – although many are typically associated with breakfast, they can also be eaten as an affordable or indulgent treat with hot drinks or as a snack. Furthermore, it has been suggested that while they satisfy the consumer desire for novelty, they can also provide a feeling of familiarity at the same time, given that designs are based around bakery items which people are used to.

TYPES OF HYBRID BAKERY PASTRIES

As has been stated previously, many hybrid bakery goods are based around croissants. One major reason for this is their widespread popularity throughout Europe and elsewhere – for example, research carried out recently by Bridor found that croissants remain the first choice for 95% of UK consumers when opting for a sweet pastry product. Another finding from the research was that 93% of UK consumers ate croissants at least once a week, a figure that decreases to 55% for twice a week and 23% for those eating them three to four times per week. Around two-thirds of all croissant consumers in the UK show an interest in sampling reinvented croissants, such as those mixed with other types of bakery goods.

Arguably, the first hybrid bakery product to arrive onto the market was the cronut, which appeared in 2013. This was developed in New York by the renowned pastry chef Dominique Ansel and resembles a doughnut in shape and texture. However, it is made from laminated dough, deep-fried and usually filled with a flavoured cream. Since its launch, its popularity has been boosted by the advent of digital technologies, as images are shared by users of social

media. Availability of cronuts varies – some of the smaller artisanal bakeries sell them mostly via online channels, while other varieties may be sold on a seasonal or limited edition basis. One grocery retailer present in the sector is Lidl, whose in-store bakery (ISB) offering has included a Caramel Crunch Cronut in the past. The cronut was followed shortly afterwards by the cruffin, a croissant and muffin hybrid which was initially created in Melbourne and then popularised in San Francisco at Mr Holmes Bakehouse. A more recent development has been the emergence of croissants with novel shapes or formats, whose origins were in Sweden. One example has been croissant cubes, which have become popular in cities such as London, as well as in various overseas markets (e.g. Denmark, Canada and New Zealand). They were pioneered by London-based bakeries such as Le Deli Robuchon and their appeal has spread courtesy of image sharing on social media websites. The bakery's videos of its croissant cubes are now believed to have racked up more than 13 million views on TikTok.

In New York, another new form of croissant is currently gaining in popularity, following its debut in April 2022. Known variously as the Supreme or the New York Roll, this is a unique circular-shaped croissant filled with pastry crème and topped with ganache and crushed cookies, which made its debut at Lafayette Grand Café & Bakery. As is the case with croissant cubes, much of its success has been attributed to its natural suitability for images shared on social media channels.

South Korea has been the source of some of the more recent innovations within the sector. During the pandemic, the popularity of croffles (a hybrid of croissants and waffles) increased when people began to experiment within the home with waffle makers, although this trend has now spread to bakeries throughout the world. Being pressed in a waffle iron creates a denser chew, while retaining a crispy exterior and flaky interior. South Korea is also credited with the development of flat croissants, which are widely regarded as a suitable way of enjoying day-old pastries and therefore prevent food waste. The pastries are pressed down and compressed, before being coated with ingredients such as sugar or honey prior to baking. These create a taste and texture not unlike a cookie.

Another example of a hybrid bakery product inspired by croissants is the crookie, which is described as a croissant filled with American-style cookie dough and baked to achieve a soft, gooey texture. A relatively recent appearance in the Japanese market has been the crogy, which consists of a 27-layer square croissant with egg cream custard in the middle, as well as the boissant, which combines a croissant with a bagel.

Lidl's UK business has also been active within this sector, consolidating its leading position with the country's ISB market. During 2019, it launched the croll, a hybrid product combining the taste and texture of a croissant with the structural hold of a bread roll. This is considered less flaky than a traditional croissant and can feature either sweet or savoury fillings. More recently in 2025, Lidl launched a new brioche-style chocolate croissant. This combines a croissant with a brioche bun and is filled with gooey milk chocolate on its inside.





Other sweet bakery goods which have provided the inspiration for hybrid products besides croissants have included cookies, brownies, muffins, scones and sweet tarts. Noteworthy hybrid varieties have included brookies (which combine brownies and cookies), scuffins (muffins which are baked with a scone-like dough and therefore feature a dense and crumbly texture), bruffins (a brioche and muffin hybrid which offer a light and flaky texture) and townies (which combine the attributes of a brownie and sweet tart and are gaining in popularity in London at present).

Another recent development in this sector during 2025 was the launch of the bonut, which combined a bagel and a doughnut. This was developed by two Canadian bakeries, namely College Street Bagels in Toronto and Fairmount Bagel in Montreal, in partnership with Philadelphia cream cheese owner Heinz. At the time of its launch, the bonut was described as an uncut bagel shaped like a doughnut and topped with a sweet-flavoured cream cheese, namely Blueberry & Pineapple.

Other recent NPD within the sector has included the launch of sourdough doughnuts. These offer consumers a unique taste and carry obvious appeal to those who have started buying into the sourdough bread category. The slow fermentation process and use of wild (instead of commercial) yeast means that doughnuts made from sourdough are usually promoted as a healthier option than their standard counterparts. Some doughnut shops exclusively offer products made from sourdough, one example of which is The Rollin Donut in Dublin.

The market is expected to expand and develop further, with bakers and bakeries throughout the world limited only by their imagination in terms of innovation. It is possible that future NPD may feature the blending of more than two sweet pastries, such as the doffle. Created in New York, this combines a waffle, a doughnut and a bagel, comprising two mochi waffles with a sandwich of yoghurt whipped cream. It was introduced in a Blueberry & Apple Cinnamon flavour, with further launches expected. As well as shapes, formats and textures, bakers are forecast to continue to push the boundaries in terms of taste and flavours.

STUFFED COOKIES

Another recent trend worthy of mention is the emergence of what are generally termed as 'stuffed' cookies. These can best be described as large, thick, soft and chewy cookies, which usually feature a hidden, gooey centre to provide enhanced flavour and texture. This filling is placed at the centre of the cookie dough, which is then baked around it. Although stuffed cookies are generally considered an evolution or enhancement of traditional varieties and therefore not technically a hybrid product, recent evidence suggests they have been making inroads into other sectors, such as sweet desserts. Cookies have steadily gained in significance in the out-of-home (OOH) eating market in countries such as the UK, with the result that they are now regarded as more versatile options. According to Nestlé Professional, UK sales of cookies via OOH channels rose by over 9% in 2024 to GBP328m.

Recent growth within this sector can be attributed to retailers and artisanal bakers. During June 2025, M & S extended its ISB range with premium cookies named Chunked 'N' Loaded, which contain toppings and a gooey filling. The new cookies were launched in three flavours, namely Chocolate & Hazelnut, Pistachio and Raspberry Cheesecake. Other competitors within this market include the London-based Floopie Cookies, which supplies vegan-friendly cookies in flavours such as Pecan Pie and Black Fores •

A New Dawn for the European Cold Chain

Europe's temperature-controlled logistics industry is changing fast. In addition to the advent of new technologies, regulatory changes and evolving customer requirements, in 2025 and over the coming years we can also expect significant implications resulting from shifting trade and policy landscape. Assessing and discussing these changes as an industry is crucial to the continued efficiency, growth and resilience of the cold chain in Europe.

By Julie Hanson, Global Cold Chain Alliance (GCCA) Director for Europe

This spring, GCCA brought together an outstanding roster of expert speakers and cold chain leaders from across Europe to explore our industry's burning issues. Around 200 cold chain professionals gathered at our 28th European Cold Chain Conference, this year in Copenhagen, for three days of discussion and knowledge sharing about the major challenges and opportunities that temperature-controlled logistics operators throughout Europe are experiencing now and can expect in the months and years ahead. The conference sessions explored market developments in Europe's cold chain, trends in the food industry and the latest temperature-controlled logistics innovations, with topics ranging from energy and recruitment to AI and consumer behaviour.

THE IMPLICATIONS OF CHANGES IN GLOBAL TRADE POLICY

The conference's keynote speech was delivered by John Clarke, former Director for International Relations at DG Agri and the Chief Negotiator for Agriculture in the European Commission until the end of 2023. John outlined how EU trade policy is adapting from a global trade model dominated by a shared global commitment to seeking freer trade, policed by the World Trade Organisation to a more fractured model of a focus on protectionism, strategic autonomy, and characterised by governments taking unilateral action and negotiating bilateral deals. He stressed the twin pressures of reacting to a more transactional global environment and the political pressure on the EU to protect its market from unfair competition.

The audience was invited to reflect on how much the shock and awe of the early days of the new Trump administration would impact on the short, medium and long term of cold chain trade flows. There was a strong sense that something had fundamentally shifted in attitudes to global trade, but that some of the fundamentals of the European Union's approach remained unchanged. The EU's approach to food trade has long been quite protectionist in outlook. John Clarke pointed to key sectors such as beef, sheep meat, poultry, sugar and honey where the priority has been to protect the market from products made to perceived lower standards, and to the ongoing commitments in the EU Commission's Vision for Agriculture to using trade negotiations to secure commitments to mirror the EU's regulatory model for environmental protection and animal welfare. Delegates were left in no doubt that the world is entering a new and unpredictable era for global trade where economic and national security increasingly drives trade policy, with increasingly weak multilateral institutions, and shifting alliances.

COLD CHAIN AND THE FUTURE OF THE EUROPEAN ENERGY SYSTEM

Another highly instructive session on the conference programme was led by Nicola Filizola, Associate Director Energy at government affairs specialist Kellen Europe, who explored the impacts on food logistics of the transition of the European energy system. Given the European economy's vulnerability to energy supply shocks, Nicola explained that several key factors are required for energy security in Europe. These include securing access to fossil fuels for the right energy mix during the green transition; increasing access to reliable renewable sources of energy; the decarbonization of energy-intensive industries; and the integration of European energy systems. He highlighted that the trade-offs of achieving energy security in this way include the need for major investments in the grid, higher end costs for energy, and issues in the smooth adoption of regulations.

Nicola detailed the relevant European policy changes affecting the cold chain's relationship with energy, including the Clean Industrial Deal, which maintains targets for a 55% reduction in greenhouse gas emissions by 2030 and climate neutrality by 2050. He determined that the resulting outlook for the European energy system is a commitment to the competitive decarbonisation of industry and clean production as a method of economic growth resulting in expansion of the electricity grid, a focus on electrification of transportation, and more integrated EU energy markets.

Pinpointing the key concerns for temperature-controlled logistics operators, Nicola highlighted the importance of access to affordable, consistent, and

secure electricity supply; the cost associated with decarbonization of transport; increased bureaucratic burdens; and the risk to investment into the cold chain.

GCCA is taking this message to the European Parliament and Commission on behalf of Europe's cold chain operators. We are emphasising that insufficient energy storage solutions complicate the transition of cold storage facilities to renewable energy sources. Our essential message to Europe's politicians and officials is that 'cold chain energy security is food security'.

THE FUTURE OF THE COLD STORAGE MARKET

The conference session, exploring the growth of the cold storage market in Europe, led by Casper Roex of global strategy consultants OC&C, provided a valuable analysis of the evolution in demand and growth opportunities for cold storage.

In a European cold storage market where growth is underpinned by several 'attractive structural tailwinds', Casper identified the key current market growth drivers as an increase in food being produced, imported and consumed; an increase in food being frozen at some point in the value chain; more food being stored with external cold storage providers; food tending to travel longer distances; and more food being stocked longer to mitigate the risk of scarcity. On an aggregate level, OC&C's assessments indicate that demand for outsourced cold storage capacity is expected to continue growing at a rate of 5-6% per year. Casper advised that the outlook for cold storage demand is strongest in frozen potato products and bakery goods, with a positive outlook also for white meat, dairy products, fruits and vegetables. The regions where OC&C expects the fastest growth in temperature-controlled storage are Eastern Europe, Southeastern Europe, and Iberia. More measured growth is expected in the UK, the Nordics and Western Europe.

On cold chain mergers and acquisitions, OC&C analysis assessed that despite a lot of activity over the past decade, consolidation in Europe is still limited to roughly half of the market capacity and differs materially by geography.

CONCLUSIONS

The GCCA European Cold Chain Conference in Copenhagen delivered a unique forum for Europe's food logistics leaders to hear new insights from global experts on pressing industry issues, and to discuss how best to respond. As the food supply chain continues to navigate a period of significant change driven by fast-changing populations, global trade shifts and geopolitics in a warming world, collaboration such as this is invaluable in leading Europe's cold food supply chain to a successful and resilient future. •



The Everlasting Appeal of Sourdough Bread

If anyone thought the consumer's interest for sourdough everything would die down with the COVID-19 pandemic, they were definitely wrong. The past few year showed the the transition from an artisanal product to industrially--produced loaves because the demand just wouldn't budge.

By Jo Ilie

The continued popularity of sourdough reflects more than a passing consumer fad: it represents a sustained shift in how people value bread. For bakeries and manufacturers, this trend highlights growing demand for authenticity, craftsmanship, and health-linked narratives in baked goods.

Consumers associate sourdough with natural fermentation, minimal ingredients, and artisan skill, making it a symbol of quality in both retail and foodservice. The slow-fermentation story connects to broader wellness and clean-label trends: easier digestion, longer shelf life without preservatives, and enhanced flavour complexity. These benefits allow producers to position sourdough not just as a traditional loaf, but as a premium product that justifies higher margins. Industrial bakeries have responded by adapting technology to replicate artisan processes: using dried or liquid sourdough cultures, long fermentation systems, or hybrid methods combining traditional starters with controlled fermentation. Meanwhile, craft bakers continue to build loyalty through signature sourdoughs that express regional flour, fermentation profiles, and even sustainability credentials.

According to Market Research Future, the global sourdough market was valued at USD2.83bn in 2023 and is forecast to reach USD6.9bn by 2032, expanding at a CAGR of 10.27%. Growth is fuelled by rising health awareness among consumers and the increasing popularity of sourdough for its perceived nutritional and digestive benefits.

The trend toward vegan, clean-label, and organic bakery products continues to boost demand, as sourdough aligns naturally with these preferences. Consumers seeking authentic, minimally processed foods are driving interest in artisanal breads and traditional fermentation methods across both retail and foodservice sectors.

The perception of sourdough bread as healthy has risen, with 62% of consumers now viewing it as healthier, a 10% increase since 2021. Sourdough's versatility is reflected in the growing consumer interest in various baked goods, with significant increases in searches for sandwich bread (+653%), bagels (+217%), and cookies (+149%), among others, according to Puratos' Taste Tomorrow research. The increasing popularity of sourdough is further demonstrated by the US Craft Bakers Association's data indicating that around 57% of the association members sold three sourdough products in April 2022 which further increased to 64% by December 2022. Further, around 10% of the members are planning to expand their sourdough products offering in the upcoming years. Similar is the trend among various countries across the world. Thus, the increasing number of health-conscious customers and the rising popularity of sourdough is expected to drive the growth of the Sourdough Market.

MAKING SOURDOUGH AN INDUSTRIAL PRODUCT

There are many aspects that make transitioning sourdough production from an artisanal process to an industrial one a difficult challenge. For once, there is the instability of the natural sourdough starter, a truly wild ingredient that needs constant adjusting of the process. For this, a solution comes from Puratos, an ingredient company that managed to tap into the potential of sourdough and created stabilized industrial starters manufacturers can use to create consistent sourdough loaves.

According to the company, scaling bread production involves tackling several challenges, such as ensuring food safety during extended fermentation, managing the lively and sticky dough, and maintaining consistent quality.



Achieving the desired artisan texture - a crusty exterior with an open, elastic crumb - depends on precise control of time and temperature during fermentation, meticulous dough handling, and adjustments to specialized equipment. Their range of sourdoughs, together with cleaner label bakery improvers, delivers the tradition of sourdough while letting bakers create breads with their own flavour profile, appearance and story.

Adapted technology is the next aspect. Now, many tech producers offer equipment that is finely tuned to the needs of sourdough production. JAC, for example, launched at iba precise sourdough fermenters that streamline the process in bakeries of any size. A sourdough fermenter is a key piece of equipment for bakeries aiming for consistency and efficiency in production. It automates the preparation of liquid starters - essential for achieving the characteristic flavour and texture of sourdough - by maintaining precise temperature and humidity levels throughout fermentation. The process is fully automated: bakers simply add equal parts hot water and flour, start the program, and the fermenter manages the mixing and agitation cycles. The result is a uniform starter every time, ensuring reliable bread quality while reducing manual handling and cleaning requirements.

Spanish company INOXPA creates equipment for industrial sourdough plants. The system integrates multiple stages to ensure consistent fermentation and high-quality sourdough output.

The process begins in a preparation tank, where flour, water, and yeast are automatically mixed and homogenised according to a programmed recipe. The mix then moves to fermentation tanks, where optimal

temperature conditions are precisely maintained to support microbial development and create the desired flavour profile. Once fermentation is complete, an automatic dosing system transfers the sourdough directly into mixers, retaining 10% of each batch to seed the next fermentation cycle - ensuring uninterrupted production without manual input.

Each plant is designed for homogenous mixing, stable fermentation temperatures, and integrated automation—allowing bakers to maintain consistent quality while maximising efficiency and process control.

Managing sourdough fermentation is a delicate balancing act. Acidity must be carefully controlled: if the pH drops below 4.4, gluten proteins lose their functional properties, compromising gas retention and resulting in sticky, difficult-to-handle dough. A solution to address this challenge comes from Rademaker. Its Double-Chunker Sheeting System, designed for the gentle processing of pre-proofed sourdough doughs, enables industrial bakeries to replicate the craftsmanship of artisan sourdough production - preserving structure, flavour, and quality at scale. The DSS transforms dough batches into a continuous dough sheet. It is developed to avoid any stress during the sheeting process. The double chunking principle maintains the dough characteristics after the mixing and proofing process. After the DSS, the dough is rolled out into a consistent dough sheet.

In short, sourdough bridges tradition and innovation. It allows industrial producers to premiumise core ranges while giving craft bakers a platform for storytelling and differentiation - proof that “simple” bread can still lead the way in product innovation. •



A Fall Full of Opportunities

Major trade shows across all continents offer many networking, learning and business possibilities. One only has to choose where to go.

By Jo Ilie

EATS (FORMERLY PROCESS EXPO)

October 28-30

McCormick Place | Chicago, Illinois

EATS marks an exciting evolution from Process Expo, bringing together North America's most comprehensive gathering of food and beverage industry professionals. This dynamic three-day event unites eight key sectors under one roof: Proteins, Beverage, Bakery, Prepared Foods, Confectionery, Dairy, Pet, and Cannabis. EATS provides the essential platform for discovering breakthrough innovations, forging strategic partnerships, and accessing the tools and knowledge bakers need to navigate today's rapidly evolving industry landscape.

FREE FROM & FINE FOOD DUBAI, ORGANIC & NATURAL EXPO DUBAI

November 17-19

Dubai World Trade Center | Dubai, UAE

Free From & Fine Food Dubai will be co-located with the upcoming 23rd annual Organic & Natural Expo Dubai taking place in November. This strategic partnership combines Free From & Fine Food's international network in clean-label, allergen-free, plant-based, healthy, and fine food innovation with Organic & Natural's established regional reach and powerful buyer, retail, and distributor connections. The result is a bigger audience, a broader product offering, and a stronger marketplace for business connections. The 2024 edition of Free From & Fine Food Dubai welcomed over 1,200 professionals from 33 countries, including more than 200 VIP buyers. The curated B2B matchmaking program, managed by Global Management Dubai, facilitated over 365 high-value meetings. According to post-event reports, 91% of exhibitors expect to generate sales as a result of the show.

HOST MILANO 2025

October 17-21

2025 Fiera Milano | Milan, Italy

From October 17 to 21, Fiera Milano once again becomes the global hub for hospitality, foodservice and food retail. Technologies and equipment that "talk" to each other through AI and robotics, increasingly connected and automated kitchens, high-efficiency ovens that cut energy consumption, sustainable materials, and contract projects where functionality is ever more intertwined with design. This edition will feature a special focus on the art of baking with the renewed MIPPP – Milano Pane Pasta Pizza, further strengthened by the partnership with Consorzio SIPAN, which will bring its members, leading Italian players in technologies for the sector, to the exhibition.

Host Milano also means innovation beyond the exhibition path – with a dedicated area showcasing the winners of the Smart Label award – thanks to a rich programme of events. Among the highlights is the brand-new "piazza" of Bakery Square, hosting initiatives such as the conference Fermenti di Sapienza: Il Lievito Madre and the Bread and Wellbeing workshops and talks, along with thrilling competitions like the Panettone World Championship final, featuring 10 national teams from around the globe. Bakery Square will also be complemented by the European Pizza Championship with the best master pizzaioli from across the Continent. Another major innovation is sCLOCK – Chocolate in Motion, the experiential arena created by master chocolatier Davide Comaschi, which transforms chocolate into a contemporary language of culture, cross-contamination and innovation. •

2025 FEATURE PLANNING

1

JANUARY/FEBRUARY

Ad closing: Jan 31/Publishing: Feb 02

TECHNOLOGY

Sheeters & Laminators / Freezing Equipment

PROCESS

Designing & Commissioning / Production Lines / Cutting and Forming / Scoring

SPECIAL FEATURE

Business Outlooks 2025

EXPERT VIEW

Low Pressure / Extruded Snacks

FOOD SAFETY

Hygienic Equipment Design

INGREDIENTS & NUTRITION

Flours / Shelf-life Optimization / Botanicals / CBD

PACKAGING

Secondary packaging

MARKETS

UK & Ireland

SNACKING TRENDS

Expanded / Extruded Snacks

CRAFT BAKING

Freezers, Display Freezers & Coolers

SUPPLY CHAIN & LOGISTICS

Storage & Warehouse Management

PRODUCT SPOTLIGHT

Pizza / Laminated Dough-based Innovation

TRADE SHOWS

Trade Shows Outlook 2025

2

MARCH/APRIL

Ad closing: Mar 14/Publishing: Mar 28

Includes Asia Pacific Overview Print Supplement



Trade Show Preview

TECHNOLOGY

Extruders / Topping / Filling / Glazing

PROCESS

Inspection & Monitoring / Product Diversification

SPECIAL FEATURE

Energy Saving & Process Optimization

EXPERT VIEW

Sustainable Packaging Materials

FOOD SAFETY

Sanitation & Allergen Management

INGREDIENTS & NUTRITION

Oils & Fats / Flavors & Colors / Water

PACKAGING

Packaging Automation

MARKETS

Scandinavia

SNACKING TRENDS

Savory vs Sweet Biscuits

CRAFT BAKING

Kneaders & Mixers

SUPPLY CHAIN & LOGISTICS

Traceability

PRODUCT SPOTLIGHT

Traditional Bakery & Ethnic Sweets / Pies & Tarts

TRADE SHOWS

Bakery China / SIGEP China

3

MAY/JUNE

Ad closing: Apr 16/Publishing: Apr 30



Special Edition

TECHNOLOGY

Turnkey Lines / New Oven Technologies

PROCESS

Vacuum Cooling / Seasoning

SPECIAL FEATURE

Smart Production & AI

EXPERT VIEW

Efficient Product Transport: Conveying Systems

FOOD SAFETY

Trainings and Program Implementation

INGREDIENTS & NUTRITION

Plant-based Bakery / Enzymes / Free-from Alternatives

PACKAGING

Packaging Design

MARKETS

Germany

SNACKING TRENDS

Pies & Cakes

CRAFT BAKING

Dividers / Rounders

SUPPLY CHAIN & LOGISTICS

Supply Chains & NPD

PRODUCT SPOTLIGHT

Plant-based Bakery Products / Cookies

4

JULY/AUGUST

Includes North America Overview Print Supplement

Ad closing: July 10/Publishing: July 24



Special Edition

TECHNOLOGY

Turnkey Lines / Conveyor Belts

PROCESS

Depositing / Mixing & Hydrating Ingredients

SPECIAL FEATURE

Sustainability: Challenges & Outcomes

EXPERT VIEW

Oils, Fats & Dough Rheology

FOOD SAFETY

Certifications, Regulations & Compliance

INGREDIENTS & NUTRITION

Dough Improvers / Inclusions / Pulses / DRI & EU regulations

PACKAGING

Sustainable Materials

MARKETS

Spain & Portugal

SNACKING TRENDS

Sandwich Breads / Flatbreads

CRAFT BAKING

Deck and Rack Ovens

SUPPLY CHAIN & LOGISTICS

Handling & Transport

PRODUCT SPOTLIGHT

Donuts / Cakes

TRADE SHOWS

Pack Expo, Anuga

5

SEPTEMBER/OCTOBER

Includes Middle East Overview Print Supplement

Ad closing: Oct 01/Publishing: Oct 15



Special Edition

TECHNOLOGY

Software and Sensors / Proofers

PROCESS

Extrusion / Handling / Pick & Place

SPECIAL FEATURE

Sustainable Sourcing of Ingredients

EXPERT VIEW

Plant-based Formulation & Production

FOOD SAFETY

IoT in Food Safety Management

INGREDIENTS & NUTRITION

Sweeteners / Emulsifiers / Antioxidants

PACKAGING

Robots / Cobots

MARKETS

Italy

SNACKING TRENDS

Enrobed / Filled Sweets

CRAFT BAKING

Pastry Equipment

SUPPLY CHAIN & LOGISTICS

Cold Chain

PRODUCT SPOTLIGHT

Frozen Pastry / Sourdough Bread

TRADE SHOWS

Process Expo / Gulfood Manufacturing

6

NOVEMBER/DECEMBER

Ad closing: Oct 26/Publishing: Dec 10



Special Edition

TECHNOLOGY

Dough Dividers/ Rounders, Mixers & Kneaders

PROCESS

Conveying / Hygiene & Sanitation

SPECIAL FEATURE

Sustainable Sourcing of Ingredients

EXPERT VIEW

Pans, Trays, Racks & Bakeware

FOOD SAFETY

Process, Product & Staff Protection

INGREDIENTS & NUTRITION

Yeast & Sourdough / Proteins & Fibers / Starches

PACKAGING

Active Packaging

MARKETS

France

SNACKING TRENDS

Wafers

CRAFT BAKING

Small Footprint Technology

SUPPLY CHAIN & LOGISTICS

Software Solutions

PRODUCT SPOTLIGHT

Winter Holiday Treats / Meringues

Two large, golden-brown loaves of bread are positioned on the left and right sides of the image, framing the central text. The loaves have a rustic, cracked crust and are set against a solid blue background.

BAKE A BETTER FUTURE

With the unwavering trust of customers and an unstoppable drive to innovate. Angel Baking has soared to become the go-to choice for bakers across 170+ countries and regions.

At Angel, we're dedicated to fulfilling customized needs, offering a comprehensive range of baking ingredients, such as baker's yeast, **baking powder**, **bread improver**, **yeast protein**, and more! Each product is crafted under a state-of-the-art production system, quaranteeing safety and consnstency in every batch.