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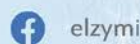


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MARCH - APRIL 2024
VOLUME 36 ISSUE 2

REGULARS

04 COMMENT
A Deep Dive Into the Plant-based Category

06 NEWS
News from Around the World

54 FAIR PREVIEW
- PLMA 2024
The Private Label World Convenes in Amsterdam



55 FAIR PREVIEW - CIBUS 2024
Cibus to Set New Records

56 PRODUCT UPDATES
Latest Innovations Within the Industry

FEATURES



10 FROZEN SNACKS AND APPETIZERS
Meeting Consumer Demand for Quality and Variety



38 NUTRITION & INGREDIENTS
A Healthy Outlook

42 FROZEN DESSERTS AND ICE CREAM MARKET
A Battle For Flavors

18 FROZEN VEGETABLES, FRUIT, MUSHROOMS, GREEN HERBS
The Cool Appeal of Frozen Fruits and Veggies



44 FROZEN SEAFOOD
Still a Lot of Room for Growth



22 TECHNOLOGY INNOVATION FOR FROZEN VEGETABLES AND FRUIT
A Race for Innovation

28 INDUSTRIAL FREEZING
From Farm to Freezer



46 FROZEN FOOD IN THE UK
“A New-found Enthusiasm for Frozen Foods”

48 FROZEN FOOD IN BENELUX
The Dynamic Food Scene of the Region

31 PLANT-BASED & VEGETARIAN PRODUCTS
Losing Steam, But Still Moving Forward

50 DIGITALIZATION & NETWORKING
Artificial Intelligence, Digitalization & Networking: A Power Trio





By **Bogdan Angheluta**,
Editor in Chief



EXPLORING THE BENEFITS OF NON-MEAT PRODUCTS

In this edition of Frozen Food Europe, we tried to focus on the 'green side': in the "Frozen vegetables and fruit market" topic, you'll read about a survey revealing that 86% of people agree that having frozen fruits and vegetables makes it easier to eat more produce. In the same survey, 83% reported that frozen fruits and vegetables help them to reduce food waste and save money due to the key attributes of frozen such as longer shelf life and the ability to prepare only what consumers need. Additionally, 76% of respondents agreed that frozen fruits and vegetables help them eat produce that they otherwise may not know how to prepare. This indicates the rapidly growing consumer inclination toward the consumption of frozen fruits and vegetables. We then move to the "Plant-based, Vegan & Vegetarian" topic, where Mintel data shows that more than 75% of Germans aged 16 to 24 routinely consume plant-based foods. Nevertheless, the current economic downturn has led to a decline in some client interest. After a significant surge, the market is today facing a temporary barrier. Consumers are starting to worry about their financial condition, which makes them less likely to purchase expensive plant-based meat replacements. Finally, in our "Nutrition & Ingredients" topic, Jonathan Thomas explains why the per capita consumption of fruit is considerably lower further east in countries such as Russia (80.3 kg) and Poland (63.2 kg). At almost 182 kg, per capita consumption of fruit is especially high in the US. It is also important to mention that you learn more about the plant-based category and alternative proteins in this year's first Frozen Food Dossier, which focuses on the above-mentioned themes. What is your take on the evolution of this market moving forward? Let me know at bogdan.angheluta@trade.media ■



After a significant surge, the market is today facing a temporary barrier, and consumers are starting to worry about their personal financial condition, which makes them less likely to purchase expensive plant-based meat replacements.



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GLOBAL

DP WORLD LAUNCHES GLOBAL FREIGHT FORWARDING NETWORK

DP World, the global leader in supply chain solutions, has inaugurated the latest in a string of more than 100 freight forwarding offices across the world, marking a significant expansion aimed at supporting FMCG and perishables customers navigating the complexities of global trade. DP World's freight forwarding expansion means businesses in the FMCG and perishables sectors can capitalize on its global logistics workforce of over 45,000 personnel, which makes up nearly half of the supply chain solutions company's worldwide staff count.

GLOBAL

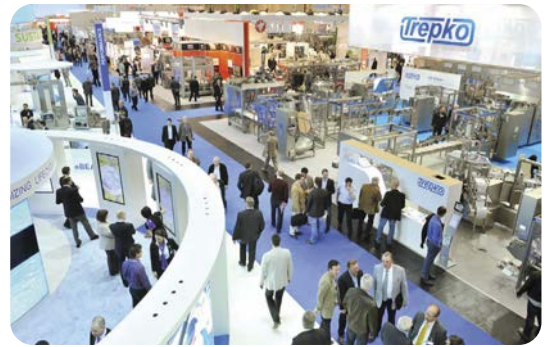
SORTING OF MULTILAYER PVDC PACKAGING WASTE

Syensqo and TOMRA, a leading provider of sensor-based sorting technology and solutions for the circular economy, have joined forces to demonstrate the technical and economic feasibility of separating and sorting multi-component plastic structures in which polyvinylidene chloride (PVDC) serves as a barrier layer. The partners developed a joint set of experiments with multilayer samples of commercial packaging waste consisting of low-density polyethylene (LDPE) and Syensqo's Ixan PVDC.

GERMANY

ANUGA FOODTEC REMAINS A CENTRAL PLATFORM FOR F&B

'Responsibility' was the top theme of the trade fair and its extensive trade program, which provided answers to questions from the fields of alternative protein sources, energy and water management, digitalization, and artificial intelligence. New technologies and concepts for sustainable management of natural resources along the entire value creation chain were presented. The participation of 1,307 companies and nearly 40,000 trade visitors from 133 countries reinforces the position of Anuga FoodTec as a pioneer for future-related solutions in food technology. "At this year's Anuga FoodTec, it became clear that true responsibility extends well beyond daily business; it is the driving force for sustainable and long-term growth. In every discussion, every presentation, and every new product, we saw how decisive it is to make brave decisions today for our common future", Oliver Frese, chief operating officer of Koelnmesse, reflected. "The



networking of science and entrepreneurial practice and interdisciplinary networking overall were achieved in an exemplary manner. This creates synergies that present the basis for overarching innovations. And it is these that we will increasingly need for a viable food system of the future, in which Anuga FoodTec is a central element as a B2B innovation and networking platform", Prof. Katharina Riehn, chairwoman of the DLG Food competence center and vice president of the DLG, emphasizes. An innovative point of focus was set with the new 'Environment & Energy' exhibition area. This area was dedicated to progressive energy solutions, which play a growing role in the food industry. Organized by Koelnmesse, the next trade fair will take place in Cologne from February 23 to 26, 2027. The professional partner and industry sponsor is the DLG, the German Agricultural Society.

GLOBAL

DEMAND FOR FAST FOOD PRODUCTS TO REACH USD1,141.8BN



The fast-food market is predicted to grow at a compound

annual growth rate (CAGR) of 5.1% from its estimated valuation of USD698.3bn in 2022 to USD1,141.8bn by 2032, according to DataHorizon Research. The fast-food industry is currently witnessing a surge in growth, with one of the primary drivers being the expanding number of working

professionals. Additionally, the continual expansion of hotels and restaurants contributes significantly to the fast-food sector's upward trajectory. As a result, the fast-food industry is adapting to meet the evolving needs of both the workforce and consumer base. This growth in the fast-food market is further fueled by factors such as the increasing family income and the rising number of households with two or more members. These trends have made fast food an increasingly appealing and convenient option for individuals seeking quick meals on the go.

UK

FROZEN SNACKING BRAND PUKPIP SECURES LISTING

Frozen snacking brand Pukpip has secured its first major UK retail listing with Ocado Retail. From April, Pukpip's freshly frozen Milk Chocolate and White Chocolate Dipped Bananas are available to buy in multipacks of three at Ocado Retail, with an RRP of GBP3 per box. Pukpip first launched in 2023 with its sights set on disrupting the ice cream category and snacking market by tapping into the rise of frozen snacking with indulgent frozen fruit. Pukpip upcycles perfectly imperfect bananas that are rejected from export due to small imperfections on their skin.

US

GLOBALDATA: TASTE AND SENSORY INNOVATIONS IN MEAT-FREE ESSENTIAL LANDSCAPE



American consumers today are more aware of the impact of their choices on the environment, influenced by celebrity activism on healthy eating, animal rights, and sustainability. This, in turn, fuels their desire to make better purchasing decisions, and food often represents the first area they can control. Plant-based alternatives are therefore in demand, given their perceived ethical and sustainable nature, says GlobalData, a leading data and analytics company. "Plant-based food and drinks are not only viewed as complying with specific dietary requirements but also as allowing consumers to be more mindful of their choices," according to Meenakshi Haran, consumer lead analyst at GlobalData. "However, when it comes to meat, Americans are often put off by the taste and texture of alternatives, as corroborated by 68% of respondents in a GlobalData consumer survey+, signaling a gap in the market. Taking note of this potential for innovation in the underserved market for meat-based alternatives, Kraft Heinz, through its joint venture with NotCo

introduced its first alternative meat innovation: "The Oscar Mayer NotHotDogs and NotSausages". Available in both Bratwurst and Italian flavors, the vegan alternatives are claimed to offer the savory and smoky experience, familiar to consumers of the Oscar Mayer brand of wieners, aligning the new product with sensory expectations." "Health is also a major influencer fueling the shift to meat-free alternatives, with 32% of US respondents considering plant-based alternatives to be healthier+ over their counterparts. As such, there is a growing tendency among Americans to prefer plant-based protein, which accounted for nearly a quarter of the total meat-substitutes market in the US," Haran adds. "With 12% of Americans claiming to have vegan, vegetarian, pescetarian, or low-meat diets+, the US market for meat-substitutes is expected to post a strong compound annual growth rate (CAGR) of approximately 14-16% over 2022-27^, suggesting the potential for companies to focus on innovations that align with consumer expectations."

UK

KWAYGA APPOINTS MARK O'SHEA AS HEAD OF ENGINEERING

Kwayga, the leading B2B private label and trending supplier sourcing engine transforming supply chain dynamics for food and beverage supermarket buyers and suppliers, has appointed Mark O'Shea as its new Head of Engineering as the company targets further progress, development, and growth in the United Kingdom and beyond. Mark is set to triple the size of Kwayga's engineering team, demonstrating its commitment to scaling its capabilities and enhancing the product.

EUROPE

FABCON FOOD SYSTEMS, TJF ENTER PARTNERSHIP

British food processing equipment manufacturer Fabcon Food Systems has entered a partnership with Spanish specialist TJF which will see both firms collaborating on the sale and supply of batch frying, pre-processing, seasoning, distribution, and packaging systems. The new Anglo-Spanish link-up will see Norwich-based Fabcon working closely with the Zaragoza specialist to offer a wide range of batch fryers to their respective customers. Each firm's fryers will also have the capability to be integrated into either company's systems.

GLOBAL

COLD CHAIN MARKET SIZE TO SEE A 18% CAGR

The global cold chain market size is estimated to grow at a CAGR of 18.04% from 2024 to 2028, according to Technavio. The North American region dominates the global cold chain market, driven by the surge in protein-rich food imports and online grocery sales. IT spending on advanced technologies like cloud computing, IoT, RFID, and data analytics is crucial for effective inventory management and temperature control of temperature-sensitive products.

GLOBAL

MULTIVAC SEES TURNOVER OF EUR1.5B IN 2023, CONTINUES INVESTMENTS

Group President and CEO Christian Traumann and Dr Tobias Richter gave an overview of the business development of the MULTIVAC Group. The company's focus at this year's Anuga FoodTec is on its wide product range for slicing and portioning, as well as integrated lines, which contribute significantly to making production processes efficient and resource-saving thanks to their high level of automation and digitalization. Despite the difficult economic situation, the MULTIVAC Group was able to achieve a stable turnover of around EUR1.5bn in the

previous year. The number of employees increased by around two percent to approx. 7,200 worldwide. The Group is also embarking on new areas of business. MULTIVAC is investing some EUR10m as an associate partner in AgriFoodTech Venture GmbH, which was founded by BayWa Venture GmbH, Bindewald and Gutting Mühlengruppe as well as MULTIVAC. The focus of the alliance is on the financing of start-ups, which use new technology to make food production and packaging more efficient and at the same time more sustainable.





US

NEW FROZEN PRIVATE LABEL FROM SPARTANNASH

The food solutions provider SpartanNash has announced the debut of *Finest Reserve by Our Family*, a new private label brand. With more products to come, the collection now features a carefully chosen selection of gourmet frozen pizzas, fine pastas, sauces, dressings, and marinades, premium spices, salts, and seasoning blends, chocolate, and wine. The new range is a testament to *Finest Reserve's* philosophy that everyone should have access to the best food possible.

GLOBAL

FROZEN FOOD MARKET TO GROW BY USD132.77BN

The frozen food market is set to grow by USD132.77bn from 2022 to 2027 progressing at a CAGR of 7.73% during the forecast period, according to a new report from Technavio. The frozen ready meals segment will be significant during the forecast period. This segment comprises frozen pizza, frozen pasta, frozen croissants, frozen Asian meals, frozen rice bowls, and frozen noodle bowls, among other products. The convenience and the shorter time needed for the preparation of meals make them a convenient choice for consumers.

GLOBAL

GEA LAUNCHES REAL-TIME MONITORING SOLUTION FOR PROCESSING TECHNOLOGY

GEA, a global leader in engineering solutions for the food, beverage, and pharmaceutical industries, has launched a new cloud-based web application for food processing and packaging lines. GEA InsightPartner for the food processing industry is the latest addition to its digital product family and uses machine data to provide flexible responses to production challenges. GEA InsightPartner is designed to support all food processing and packaging plants in achieving key production goals: maximize machine availability, minimize downtime, prevent unplanned shutdowns, and manage resources efficiently. This service enhances efficiency and productivity, reduces costs, and lowers the Total Cost of Ownership for plant equipment. By providing immediate access to historic and real-time equipment data, InsightPartner enables better production management through advanced analytics and insights from continuous monitoring. It helps identify performance improvements and extend asset longevity. Digital innovations are transforming the food industry, enabling it to increase production while reducing energy consumption and waste. GEA supports customers with its high-



performance systems, advanced sensor technologies, cloud connectivity and sophisticated analytics to help them produce more efficiently and achieve their ambitious sustainability goals. Key Features of GEA InsightPartner briefly: **Data-Driven Decision-Making:** Facilitates optimal machine utilization through immediate, 24/7 access to live information; **Maintenance and Troubleshooting Support:** Aids in maintenance planning and execution, minimizing downtime and allowing for quick fault identification and resolution; **Tracking relevant KPIs:** Maintains an optimal production level through collected data; **User-Friendly Data Access and Real-Time Monitoring.** The web application offers a user-friendly interface, allowing technical and operations managers to access historic and real time machine data.



The first step toward manufacturing proteins in ordinary plant crops is the SuperAA platform, which was announced by PoLoPo, a pioneer in molecular farming. Using patented metabolic engineering methods, the platform is currently being used in greenhouse-grown potatoes to produce the native protein patatin as well as the egg protein ovalbumin. The potato plant is transformed into a micro-biofactory by the state-of-the-art SuperAA platform, which produces the target amino acids in

ISRAEL

POLOPO TAKES FIRST STEPS TO PRODUCE PROTEINS IN COMMON PLANT CROPS

the plant and stores them in the tuber. When tubers grow to a suitable size, they are collected, and their proteins are separated and powdered. The final powders will combine easily with the existing food processing lines and recipes. Potatoes were the first crop chosen for PoLoPo because of their adaptability to a wide range of temperatures, low cost of growth, quick maturation, relatively big tuber storage capacity, high output per acre, and compatibility with current harvesting and processing technologies.

SCANDINAVIA

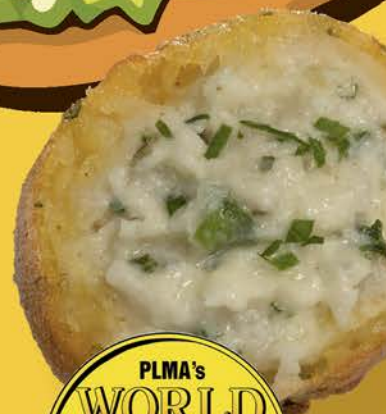
DACHSER COMPLETES ACQUISITION OF FRIGOSCANDIA

Frigoscandia AB is now a wholly owned subsidiary of Dachser and thus part of the logistics provider's Food Logistics network. This also marks the start of the Scandinavian company's full integration into the Dachser network. From now on, customers in the Nordic countries will benefit from uniform quality standards. Dachser is currently represented in the Nordics by European Logistics, its business line for the transport and warehousing of industrial and consumer goods, as well as by an air and sea freight organization.



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MEETING CONSUMER DEMAND FOR QUALITY AND VARIETY

The frozen snacks and appetizers sector has witnessed a remarkable transformation, moving from offering basic, convenient options to a sophisticated and diverse product range. This evolution is a direct response to consumer demand for high-quality, restaurant-style experiences at home, prompting manufacturers to innovate with gourmet, artisanal, and ethnically diverse offerings. The shift towards premium, ready-to-serve products enables businesses to cater to the elevated expectations of consumers seeking convenience.

The expansion into global flavors and ethnic-inspired selections reflects a broader consumer interest in culinary exploration and authenticity.

This trend presents a significant opportunity for businesses to differentiate their offerings and capture market share by catering to the adventurous palate of today's consumers. The introduction of international cuisine into the frozen snack and appetizer segment allows manufacturers and retailers to offer a taste of global cultures, meeting the

growing consumer appetite for variety and authentic culinary experiences. As such, the frozen snacks and appetizers market is evolving to meet consumer demands for premium, diverse, and convenient eating experiences. This presents a lucrative opportunity for businesses within the food industry to innovate and expand their product portfolios with gourmet, ethnic, and

artisanal options. Embracing these trends can enhance product appeal, drive consumer loyalty, and position companies as leaders in the competitive frozen food market.

EXPECTING A STRONG GROWTH

The market for frozen snacks is projected to be worth USD 107.86bn in 2024 and rise at a compound annual growth rate (CAGR) of 4.23% to reach USD 132.68bn by 2029. Sales of frozen snacks surged during the COVID-19 pandemic because of





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products being made available in e-commerce sites and several supermarkets and hypermarkets that offered home delivery to consumers. The quick spread of the virus raised consumer awareness and hygiene standards, which presented a huge potential for e-commerce businesses to supply thoroughly sanitized packed food goods in multiple regions via contactless delivery. Nonetheless, the industry's ongoing innovation in providing suitable packaging contributes to the market's overall expansion. To meet local consumer preferences, major firms are launching new kinds of ingredients and goods. Due to their ease of use and time-saving advantages over scratch cooking, customers' increased preference for convenience items is driving the growth in demand for frozen goods. Because of the growing number of people who work and their busy lifestyles, the frozen snack market is growing quickly, and this trend is predicted to continue. The popularity of Italian food is spreading throughout the world, and the deep-frozen pizza trend is dominating the marketplaces in North America, Europe, and Asia.

Manufacturers are devising inventive methods to satisfy consumer needs and accelerate market expansion. Consuming animal protein raises blood sugar levels, cholesterol, and calorie intake, all of which increase the risk of heart disease, obesity, and high blood sugar. Customers are therefore demonstrating a preference for vegan protein sources, which has helped the companies that provide plant-based or vegan frozen goods by creating a favorable platform. The market is mostly driven by expanding consumer spending on food and drink, the introduction of products with extended shelf life, an increase in impulsive purchases, and a growing need for convenience foods like frozen pizza and fries that are fresh and can be reheated fast. For example, the American Frozen Food Institute (AFFI) stated in February 2021 that sales of all sorts of frozen and chilled meals were double digits, with sales of frozen meals - such as seafood and poultry - being 21.0%

higher than in 2019. The primary benefit of these items resides in their cozy familiarity among consumers as snack foods, particularly for families where worried parents look to frozen pizza as a kid-friendly option that will satisfy even the pickiest eaters. Adults' need for quick snacks and their fast-paced lifestyles have led to an increase in the demand for instantaneous, healthful, and handy cuisine. These goods are regarded as advantageous since they can be consumed after being prepared for a brief amount of time. The market has been growing because of these causes. Additionally, producers have given customers access to a wider variety of foods, the majority of which require preparation outside the home. Restaurants deliver food items based on customer convenience and need to keep up with the ever-changing demands of their patrons. Furthermore, it is anticipated that additional lifestyle shifts among North American consumers will fuel the market expansion for frozen snacks.

The US Department of Agriculture reports that 72% of Americans bought frozen food last year because of their hectic schedules. Furthermore, the





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traditional dining experience is being reinvented, and the way restaurants and cafes run is being forced to change due to increased consumer expectations, worries about environmental sustainability, increased competition from grocery stores, growing preferences for healthier food options, and rapidly advancing technology. Though there is greater rivalry in terms of product offerings and dining experiences, which are anticipated to produce good sales in line with the amount of time spent at the restaurants, restaurant operators in North America remain enthusiastic about their companies. Furthermore, the area is experiencing a spike in demand for frozen burgers, sausages, cutlets, chicken fingers, dippers, pretzels, croissants, fish fingers, fish

sticks, fries, nuggets, rolls, baguettes, fish cakes, squid rings, and many other foods. Takeout and delivery are convenient choices offered by many eateries. As a result, restaurants maintain bigger inventories of frozen snack goods to satisfy the rising demand and promote sales growth.

COMPANIES BRINGING NEW PRODUCTS TO MARKET

The Frostkrone Food Group has again showcased its extensive range of finger food and snacks designed for the food service industry at this year's Internorga. This prestigious trade fair highlighting gastronomy, the hotel business and group catering offered the company a perfect platform for presenting their innovative product

ideas to a wide specialist audience, while simultaneously enabling them to ramp up their profile in the said industries. Not only is it their diverse and extensive range of goods but also their huge experience and international presence which all go to make the Frostkrone Food Group a strong partner for the food service business. And this is also true because the company is known for responding flexibly to customers' wishes and for acting with an acute sense of foresight. "We love finger food," and it is this love that drives the Frostkrone Food Group to constantly work on innovative product ideas, "food which guests love to eat and food which opens up more possibilities for food service businesses to style their gastronomic



selections,” explains Emiel Lommen, global commercial director of the Frostkrone Food Group. Among the line up were the new snack ideas: Burger Balls boast the full-bodied taste of the original but in the cool finger food style – even for times when you are feeling just a little peckish but they are also so suitable for a variety of occasions when food is called for. They are available in five popular burger flavors. Ideal for the easy kind of pleasure and for those chilled-out times.

INTERNATIONAL VARIETY IN THE STREET FOOD STYLE

Street food is international. The diverse culinary delights from all over the world are mirrored in the incredibly vast selection of snacks on offer from the Frostkrone Food Group. This means that guests are spoilt for choice and can enjoy an ever-changing kaleidoscope of fascinating snacks there and then on the spot or as takeaways. Mac & Cheese Cube Bacons are, of course, inspired by American cuisine. After the first bite into the crispy, crunchy

coating, equally crispy bacon and tasty macaroni in a hearty cheese sauce are just waiting to be savored without any delay, the company says. Chilli Cheese Nuggets are a real eye-catcher in their colorful mix of black, red, and gold – and could even match the colors of some football teams at the next game. Cauliflower Bites are made of tender cauliflower wrapped

107.86
bn USD is the estimated value of the market for frozen snacks in 2024.

in tempura batter – popular as a little snack in between meals or as an unusual side dish. Pizza Pockets is also a product that is a simply delicious snack solution. The plain and simple answer to so many things: a rumbling tummy, a quick break, or some relaxation at the local bistro. Here are some examples of these baked pastry pockets: “Salami” and “Special” with cooked ham and mushrooms. In

organic quality as “Tomato and Mozzarella” sumptuously filled with melt-in-the-mouth mozzarella, tomatoes, and aromatic pesto sauce. Pizza Pockets are ideally suited to be sold at bake-off stations, petrol stations and kiosks. Preparation is easy, quick, and safe – no previous experience or knowledge required. All the finger food and snack products can be successfully prepared in a few minutes in all the usual types of kitchen appliances such as fan ovens, ovens, hot air fryers and deep fryers, and speed ovens (e.g. Impinger, Turbochef). They have been designed in such a way that they fit into the catering routine perfectly.

PLANT-BASED SNACKS ARE GAINING TRACTION

According to a Euromonitor lifestyles poll, thirty percent of consumers want to consume fewer animal products. Therefore, it should come as no surprise that many the new food product releases have been fueled by plant-based innovation. Although plant-based innovation was first primarily focused on dairy (in the form of milk substitutes) and meats

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Serving suggestion

(in the form of meat substitutes), it has expanded to include all food categories, especially in Western Europe. Several well-known brands of snacks have expanded their product lines to include plant-based options after noticing this trend. For instance, Ben & Jerry's has introduced a variety of almond-based ice cream choices. Since 2020, a wider variety of oat-based chocolate confections, such as Cadbury's plant-based chocolate, have been available on store shelves. Plant-based options for meat snacks have also increased; one notable example is the collaboration between Beyond Meat and PepsiCo to produce plant-based jerky in 2021. The percentage of snacks with plant-based and vegan claims has grown dramatically in the last three years on a global scale. Euromonitor data shows. Prominent producers of snacks, including Unilever for ice cream and Mondelez for chocolate confectionary, have innovated to expand the

offering. For instance, Ben & Jerry's had more than 16 vegan SKUs by 2022, up from just one in 2016. According to the research company, plant-based snacks adapt to four key trends. The initial functions of snacks are founded on two fundamental principles: convenience and impulse. Globally, snacking instances have increased because of urbanization, a decrease in mealtimes, and consumer demand for more value from their main foods. Furthermore, hedonism, premiumization, health, and sustainability continue to be

prominent factors influencing the global snacking market. It is crucial that plant-based snacks include these components in their positioning strategy as a result. These four trends are health, sustainability, premium offerings, and indulgence. Even though plant-based snacks are still somewhat specialized in comparison to their dairy and meat counterparts, there are a lot of opportunities ahead of them as consumer demand rises and more people choose to minimize their intake of animal products by following a vegan, vegetarian, or flexitarian diet. Furthermore, customers appear to be willing to pay a premium for plant-based snacks due to their added benefits, such as improved environmental impact or a health-oriented stance. The market for plant-based snacks is anticipated to expand overall as customers look for more sustainable and healthful snack options. This presents significant prospects for snack manufacturers, Euromonitor experts conclude. ■

132.68
bn USD is the projected value of the market for frozen snacks by 2029.



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THE COOL APPEAL OF FRUITS AND VEGGIES



The consumption of fruits, vegetables, mushrooms, and green herbs is crucial for a balanced diet. While fresh produce is commonly preferred, frozen alternatives offer numerous advantages. A long and fascinating history is associated with frozen fruits and vegetables. The roots of this multi-billion-dollar industry can be traced back to the early 20th century when Clarence Birdseye, an American inventor, entrepreneur, and naturalist, invented the quick-freezing method. This method facilitated the preservation of foods' taste and texture, increasing its consumer appeal, which became the upcoming industry's USP leading to the establishment of the frozen fruits & vegetables industry as we know it today.

According to an article published by the American Frozen Food Institute (AFFI) in November 2022, a survey found that 86% of the more than 1500 people surveyed agreed that having frozen fruits and vegetables makes it easier to eat more produce. In the same survey, 83% reported that frozen fruits and vegetables help them to reduce food waste and save money due to the key attributes of frozen such as longer shelf life and the ability to prepare only what consumers need. Additionally, 76% of respondents agreed that frozen fruits and

vegetables help them eat produce that they otherwise may not know how to prepare. This indicates the rapidly growing consumer inclination toward the consumption of frozen fruits and vegetables. Moreover, technological advancements in the cold chain industry have also contributed to the expansion of the frozen fruits, vegetables, mushrooms, and green herbs industry in recent years. Innovations in freezing technology, such as quick freezing and cryogenic freezing, have significantly improved the quality and texture of frozen products by minimizing ice crystal formation. Furthermore, state-

of-the-art packaging materials and vacuum-sealing techniques have extended shelf life while preserving flavors and nutrients.

The following snapshot shows the market for frozen fruits & vegetables. It indicates that the demand for frozen fruits, vegetables, mushrooms, and green herbs is poised to rise significantly. It is being driven by the sustained and growing popularity of convenience and R-T-E (Ready-To-Eat) meals, which in turn reflects their high demand.

Technological advancements have revolutionized the frozen foods market, impacting every stage of the value

FROZEN



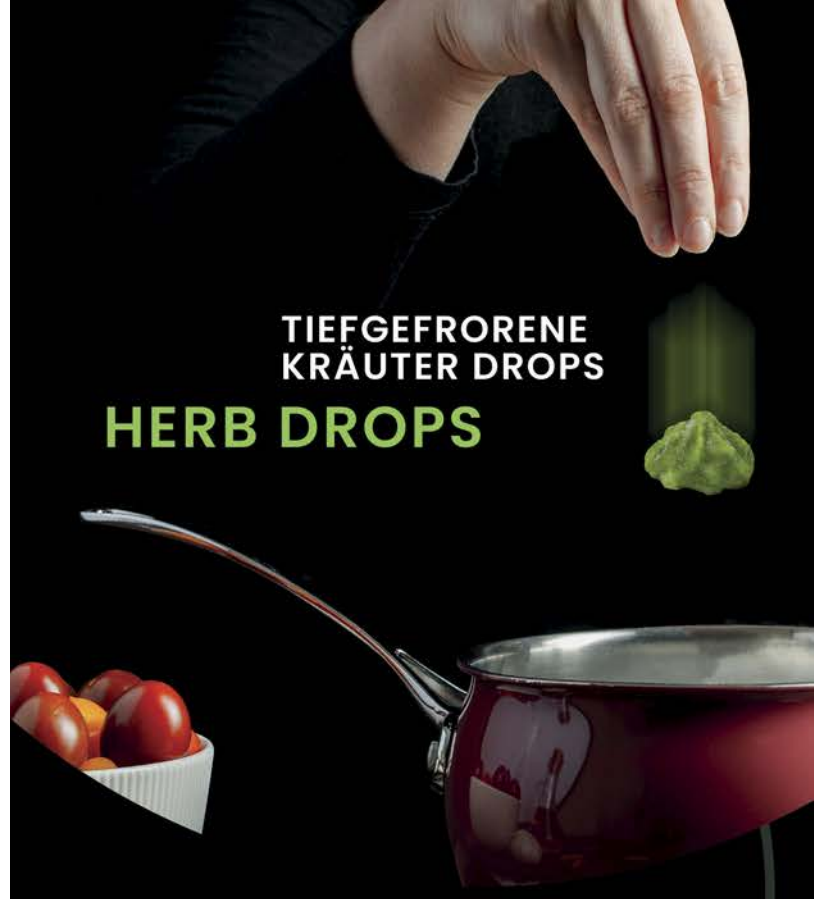
chain. Digitalization and automation have streamlined production processes, ensuring consistency and efficiency. In logistics, temperature-monitoring systems and GPS tracking in refrigerated vehicles enhance the cold chain, reducing wastage and ensuring product integrity. These technological advancements are not only enhancing product quality and safety but also addressing sustainability concerns by reducing food waste, improving energy efficiency, and exploring innovative packaging materials. Overall, technology is a driving force behind the evolution and growth of the frozen fruits, vegetables, mushrooms, and green herbs industry.

HIGH-PRESSURE FREEZING ECONOMY

High-pressure freezing (HPF) is an advanced method utilized for preserving the quality and nutritional content of fruits and vegetables. By subjecting the produce to pressures ranging from 200 to 400 MPa, HPF enhances the characteristics of ice crystals, leading to improved texture and flavor retention. This technique addresses limitations seen in traditional freezing approaches, such as inefficient heat exchange. Moreover, HPF holds potential benefits for small-scale operations due to its simplicity and effectiveness in preservation. Continued research into HPF's application in fruits and vegetables is crucial for optimizing its effectiveness and ensuring the production of top-notch frozen goods. In summary, high-pressure freezing technology presents a promising avenue for maintaining the freshness and nutritional value of fruits and vegetables throughout the freezing process. IQF stands for Individual Quick Freezing which is a technique wherein each fruit or vegetable piece is frozen independently to prevent them from adhering to one another.

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This process utilizes a blast freezer to rapidly freeze the individual chunks of fruits and vegetables at extremely low temperatures, often below -30 degrees Celsius, within seconds. This prevents vegetables, for instance, peas, from lumping and sticking to each other. Thus, this process produces high-quality frozen fruits, vegetables, mushrooms, and green herbs as it protects the cellular structure of the vegetable. It also prevents moisture loss, thereby preserving its quality. The IQF method is quickly becoming popular as compared to its counterparts. This is because it doesn't compromise the product's quality and taste in contrast to conventional freezing technology which can damage the food's cellular structure by forming large ice crystals.

THE MARKET DYNAMICS

The frozen fruit and vegetables market is projected to grow at a significant rate. The market has been growing due to the rising production and consumption of convenience food products and the advancement of

technologies in the cold-chain and preservation industry. Moreover, the industry is driven by several macro-economic factors such as an increase in world population, a rise in global per capita income, and the open world market. The supply side of the frozen fruits, vegetables, mushrooms, and green herbs market encompasses a complex network of entities and activities involved in the production, processing, and distribution of frozen food products. At its core are the manufacturers and processors who transform raw materials, such as fruits and vegetables, into frozen food items. These companies invest heavily in research and development to innovate freezing techniques, improve product quality, and introduce new offerings that align with evolving consumer preferences, such as organic or plant-based options. Suppliers of packaging materials and equipment play a crucial role in the supply side, providing the necessary tools and materials for preserving frozen food quality and safety during storage and transportation. The demand side of the frozen fruits, vegetables, mushrooms, and green

herbs market encompasses a broad spectrum of stakeholders, each contributing to the overall consumption and growth of frozen food products. At its core, the demand side primarily consists of consumers who make purchasing decisions based on their preferences, needs, and convenience. Furthermore, the demand side includes retailers and distributors who act as intermediaries between producers and consumers. These entities play a crucial role in stocking, marketing, and selling frozen food products to consumers through various channels, such as supermarkets, grocery stores, convenience stores, and online platforms.

WHAT'S NEXT?

The frozen fruits, vegetables, mushrooms, and green herbs market is poised for a dynamic future marked by a combination of technological innovation, sustainability initiatives, and evolving consumer preferences. As we move forward, embracing advanced processing technologies, such as flash freezing, cryogenic freezing, AI-driven quality control, and sustainable packaging solutions, will enhance efficiency and ensure product quality. To ensure the growth and sustainability of this sector, prioritizing investment in research and development for advancing freezing technologies, packaging innovations, and distribution strategies is crucial. Effective collaboration among various stakeholders, such as farmers, processors, and retailers, is essential for driving innovation, ensuring food safety, and adapting to changing consumer needs. Additionally, educating consumers about the nutritional advantages and culinary flexibility of frozen products can significantly boost acceptance and demand, ultimately fueling the expansion of the frozen fruits, vegetables, mushrooms, and green herbs market. By fostering innovation, adopting sustainable practices, and staying attuned to consumer trends, this industry can navigate the path ahead with resilience and responsiveness to create a future that is both prosperous and sustainable. ■



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A RACE FOR INNOVATION

The frozen food industry never stands still, so the need for machines that can keep up with the pace of it is more obvious than it has ever been. Innovation, then, is paramount for manufacturers aiming to improve key indicators such as performance, uptime, and output.

For **Urschel**, recent innovations in the fruit/vegetable sector include the TranSlicer 2520 Cutter (T2520), E TranSlicer with discharge conveyor (ETRS-C), new DiversaCut models (2110A and Sprint 2) with built-in discharge conveyors, the Affinity CD-L Dicer, and the Comitrol Processor Models 1700HMI and 9310. According to Alan Major, chief sales officer, Urschel the T2520 is the latest evolution of the

original TranSlicer that revolutionized the fresh salad industry. It excels in commercial food processing of fresh-cut salads, leafy vegetables, celery, leek, carrots, and cucumbers. The design concept encompasses the next generation of sanitation to greatly reduce cleaning times. To accommodate different types of products, the machine offers a choice between three feed belt configurations: primary and secondary belts, full-length

primary belts, or the more compact machine version featuring shorter primary belts. HMI option is also available. The ETRS-C, DiversaCut 2110A® (2110A) and Sprint 2® Dicers feature built-in discharge conveyors to facilitate dispensing cut product into totes. The built-in conveyors assist in effectively capturing slivered, small cuts of products such as leeks, onions, or peppers to promote complete discharge from each machine. Also new

for the 2110A, the DiversaCut 2110A equipped with a large product input. Urschel delivers a targeted solution to processing whole heads of leafy vegetables - the DiversaCut 2110A® Dicer specially equipped with a large feed hopper and a new type of impeller. Withing with leading fresh-cut processors, this new development alleviates precutting and minimizes product handling. The Affinity CD-L Dicer, the most recent addition to the Affinity series, combines new technology with the utility of previous Urschel Model CD-A and L-A machines. Processors replacing Model L-A's with the CD-L achieved more than twice the capacity. Feed spindle, feed drum, and 5 HP (3.7 kW) motor work effectively with the cutting components in the successful processing of dried fruits and other products. Optional integrated oil spray system lubricates circular knives to assist in the processing of sticky products. The Comitrol Processor Models 1700 and 9310 now offer new technology. Among these features is the available HMI. An HMI integrated system monitors amperage, temperature of the motor bearings and inside air of the support housing, identifies misaligned safety sensors, and flags machine runtime, motor loads, and overfeeding issues. The Comitrol series is popular for purees and pastes in such products as baby food, nut milks, nut butters, and beverage bases.

COMPLETE SUPPORT FOR CLIENTS

"Urschel offers complete support over-the-phone, in-person plant visits, service agreements, and test cutting in our Product Test Cutting Facilities at offices all over the world," says Alan Major. Urschel's significant ongoing investment in the global infrastructure of the

company gives clients peace of mind knowing their local office is there for complete support in terms of maintenance and training for the long life of their cutting equipment. Urschel speaks the language of food processing and the local language, so important details in customer expectations are met. Implementing innovative technology is also crucial in food production to deliver benefits and fulfill the demands of the food processing industry. As food processors expand into processing-controlled environments, the potential for built-in smart technology in Urschel cutting machines has increased." He adds that the

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Alan Major, chief sales officer, Urschel

investigation of PLC's (programmable logic controller) and HMI's (human machine interface) on Urschel machinery began several years ago. Urschel engineers determined a strategy to enable this technology on Urschel cutting machinery to benefit customer lines. "As the Global Leader in Food Cutting Technology, Urschel global personnel possess the highest degree of knowledgeable food cutting expertise. Urschel is the number one best-selling provider of industrial food cutting machinery because the company partners with customers to increase their productivity and profitability. Manufacturing is vertically integrated

under one roof which is unique to our company compared to other manufacturers. Urschel designs new patented cutting methods and discovers new shape cuts to assist processors. Urschel continues to develop new knives, parts, components, and machinery to expand and grow with the ever-changing demands of the food industry," Alan Major points out.

A POSITIVE YEAR FOR URSCHTEL

Related to the past year's general market volatility, supply chain issues, and workforce shortages, Alan Major explains that Urschel's global business in 2023 far exceeded expectations, considering the economic climate globally and the effects of supply chain disruptions, military conflicts, and impact from inflation and currency devaluation, Urschel still had a record year, and the workforce remained strong. "Urschel is a capital-intensive company, so we typically lag in the effects of economic downturns as we primarily sell to the food industry. Previous economic declines have had little impact which leads the company to be cautiously optimistic in 2024. While inflation has impacted food processing sectors, including potato producers, on margins the frozen potato market continues to evolve. Some of those same conditions will drive consumers to increase consumption and processors to increase capacity to keep up with demand. Consumers will evaluate cost comparison of grocery store products and still realize the value in purchasing such products as frozen French fries. In comparison, the cost per pound/per serving will remain economical, which will lead to positive market growth in the potato sector," Alan Major concludes.



Photo: Urschel

NEW CUTTING MACHINES FROM FAM STUMABO

The SureTec 240 is the latest addition to **FAM STUMABO**'s wide range of fruit and vegetable cutters. This high-capacity machine guarantees peak production in heavy-duty production circumstances, ideally suited for frozen vegetables and large fresh vegetable processors. Reliability and durability are essential elements. The cutting machine features the unique concept of the SureCut Unit (SCU). The SCU allows the cutting components to be pre-assembled in one piece and perfectly adjusted, away from the machine. It allows even non-technically trained operators to change and install the cutting tools on the machine in a very fast, uncomplicated, and error-free manner. In this way, the new SCU concept assures cutting accuracy from the very first moment of every new production run, maximizing production uptime. SureTec 240 allows processors to dice a wide variety of softer fruit products such as mango, apples, pears and strawberries. Also, harder root vegetables like carrots, turnip and celeriac fall within the possibilities of the cutting machine. Other successful products are beetroot, broccoli, onions, and potatoes. The machine is equipped with a large drum accepting a maximum infeed product of 240 mm (9.44") in any dimension. This ensures a reduction of the need for pre-cutting of the products. The SureTec 240 is designed to permit thorough cleaning. It has slip holes in the drum for the removing of product residue and a rounded tube frame. The open cutting zone is easily accessible for fast cleaning and visual inspection. The durable components that are used in the machine assure a long service life. The slipper clutch and slip detection system will avoid expensive downtimes and prevent the parts from severe damage or wear. The drive zone is quickly accessible thanks to the hinged electrical cabinet. Another novelty by FAM STUMABO is the Yuran™ Capcitech. This heavy-duty, belt-fed dicer and strip-

Our in-house engineering, design, and manufacturing of precision blades, cutting tools, and machinery, combined with a highly qualified team of application experts has allowed us to launch a multitude of innovations that have set several new standards in industrial food cutting.

FAM STUMABO



cutter is designed for cutting a wide variety of products at high capacities. The Yuran Capcitech has a large product opening for cutting vegetable products and can be equipped with a feed roll or driven top belt for peppers and leafy-type green vegetables. The product with a predetermined thickness or in its natural thickness is delivered to a 300 mm wide, high speed feed belt. It carries the product to the dicing or strip-cutting unit, providing a uniform distribution and ensuring continuous production. The machine offers food processors precision cutting along with substantial savings in production time and product waste. The Yuran Capcitech is typically used to cut bell peppers, capsicum, jalapeño and chili peppers as well as raw or blanched greens such as spinach, radish, kale, cabbage, and mustard leaves. Other popular products are raw or brined citrus peel and a variety of herbs such as parsley. The Yuran Capcitech has an increased feeding capacity by at least

30% versus the Yuran Hytec 240, thanks to a wider 300 mm feed belt, a powerful 7.5 kW (10 HP) motor, and an improved feeding method. Additionally, the 2-meter-long, high-grip profiled feeding belt stabilises the product before cutting, preventing product buildup. The driven top belt has been specifically designed to guarantee a positive transfer of the product towards the cutting tools, and this greatly improves the quality of the cuts and results in a significant reduction in fracturing of the product. Yuran

Capcitech also features a large product opening for firm products up to 25 mm (1") and 125 mm (5") for compressible products. It has excellent hygiene and cleaning access, separated product and drive zone, limited use of wear parts, easy-to-replace feed belts, and increased output combined reduce the total cost of ownership (TCO) ensuring a fast return on investment.

"Seeing the importance of cutting equipment in a processing line, we at FAM STUMABO, are committed to driving innovation in the field of food cutting. We work closely with our customers to feel their pulse on new trends, needs, and requirements. Our in-house engineering, design, and manufacturing of precision blades, cutting tools, and machinery, combined with a highly qualified team of application experts has allowed us to launch a multitude of innovations that have set several new standards in industrial food cutting," company representatives say. It often starts with 'test before you invest'. Before a customer invests in FAM STUMABO's food cutting machines, the company offers the advantage of our demonstration equipment and its expert advice to identify the ideal cutting equipment for the results he is looking for. "Our customer care support team guarantees rapid, premium support for your business whenever necessary. To maximize your running time, we offer service support ranging from troubleshooting to engineering and application assistance. In addition, we

stock a large inventory of commonly sold parts and provide sharpening equipment and services for your blades. FAM STUMABO has developed a Total Care Program which provides customers with a complete service range. It contributes to the best possible and most economic operation of our machines over their lifetime. It covers all services which customers may want to use before, during, and after the purchase of each food cutting machine. Our expert advice assures our customers that the equipment delivers optimal performance. To optimize setups, our team can suggest additional functions, for example, to boost machine capacity, meet certain requirements for certification, or facilitate setup changes. Free online live chats, integration assistance, and training courses are provided by our teams. In addition, we can propose feasibility tests and real-life demonstrations, in order to optimize customer projects. Finally, by providing additional functions, our experts can help optimize the configuration of a customer's application. Our investment in virtual tools has allowed us to stay close and connect with our customers for demonstrations,

commissioning, training, and remote service interventions. FAM STUMABO is a strong knowledge-driven organization with a unique set of online platforms to share our knowledge broadly with partners and customers," FAM STUMABO representatives added. "Sustainability is another important driver in the food industry, all the way from farm to fork. On the processing side, this results in a firm commitment from processors to reduce food waste as well as limit water and energy consumption. By choosing FAM STUMABO, you don't buy just another cutter, but a solution that also helps reach your sustainability goals with almost no off-cut product sent to waste, extended product life, energy-efficient motors, and machine designs that limit the use of water both during production as well as for cleaning of the equipment," representatives add. All FAM machines are designed for flexible and effortless operation with a special focus on ensuring the safety of operators and maintenance personnel at every risk level. The design of our machines and cutting tools assures long service life under all conditions with a minimum of maintenance costs and

downtime through simplified, yet rugged construction. Standardization of cutting tools and knives helps to avoid human errors. The simplicity of changing the cutting tools helps solve the problem of hiring qualified operators. "We do not just design a classic model. We adapt our machines to allow the processing of specific products and develop special tools adapted to the characteristics of the product," FAM STUMABO representatives add. On the sanitation side, all FAM STUMABO equipment is designed to allow fast, yet thorough cleaning. High-volume production also requires solid maintenance programs. FAM STUMABO offers several packages for preventative maintenance. Our in-depth training programs are perfect for improving operator knowledge and the overall effectiveness of your installation. "We design machines, blades, and cutting heads that respond to customers' unique processing needs. This allows them to easily integrate the machinery into any full line with quick and effortless switching of the cutting equipment. We also offer clever infeed systems on our machines for conveyor feeding."

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your product
to perfection

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INDUSTRIAL FOOD CUTTING SOLUTIONS



Until now, more advanced sorting capabilities meant a system that was also more complex to operate and costly to maintain. COMPASS is the first sorter that breaks that paradigm – it offers consistently high sort accuracy, a compelling ROI and significantly simpler and more intuitive operation than any other food sorting system.

Jack Lee, Duravant group president - Food Sorting and Handling Solutions

INNOVATIONS IN SORTING

Key Technology, a member of the Duravant family of operating companies, has presented the COMPASS family of food optical sorters. Powered by next-generation inspection technology as well as a new sort engine and ergonomic user interface, COMPASS is the easiest to use optical sorter on the market, achieving consistently accurate foreign material (FM) and product defect removal and simplifying system operation, sanitation and maintenance. COMPASS helps processors automate and improve quality management of their food products, while maximizing yield and increasing profitability. “Optical sorting technology has developed significantly over the last decade. Until now, more advanced sorting capabilities meant a system that was also more complex to operate and costly to maintain. COMPASS is the first sorter that breaks that paradigm – it offers consistently high sort accuracy, a compelling ROI and significantly simpler and more intuitive operation than any other food sorting system,” said Jack Lee, Duravant group president - Food Sorting and Handling Solutions. “Available alongside our industry leading VERYX® and ADR food inspection systems, COMPASS expands our product portfolio and ability to help each customer find the solution that is truly best for their needs.” COMPASS is ideal for sorting processed, frozen and pre-processed vegetables and fruits, nuts, leafy greens, potato chips, confections, and other food products. Thanks to its advanced sensors and lighting technology, as well as Key’s powerful new NEXT sort engine, COMPASS accurately identifies and separates plastic, glass, paper, and other organic and inorganic FM from the line, in addition to sorting the specific product defects each processor wants

to manage to deliver its customers the product quality grade they expect. Key designed COMPASS for extreme ease of use. Its highly intuitive user interface mimics the navigation of smart device apps and enables an operator without any technical background to quickly become proficient in using the sorter. Operators can quickly create and edit COMPASS sort recipes to ensure consistent performance on every product run. COMPASS features Key Discovery, powerful data analytics and reporting software that turns the sorter into an IIoT-connected device, delivering a wealth of product quality and sort process information that gives food processors valuable insights into the operation of their line. COMPASS is offered in a configurable range of system types and sizes to meet individual customer application and capacity requirements. Key is first introducing chute-fed COMPASS models, to be followed by belt-fed variants of the sorter. COMPASS can be installed in line at the start of the process to sort incoming products, after critical transformational processes on the line or at the end of the food processing line to ensure final product quality and safety prior to packaging.

SUITED FOR FROZEN VEGETABLES

The TOMRA 5C premium sorting machine, with **TOMRA**’s biometric signature identification technology, is ideally suited for frozen vegetables. By locating the TOMRA 5C on the processing line between the IQF tunnel and the packing station, final checks for food safety and product quality can be made with unrivaled accuracy, according



Photo: Key Technology

to a press release. As the frozen product reaches the end of the line for bagging, the sorter recognizes and removes any remaining foreign material, extraneous vegetable matter (EVM), and hard-to-detect product defects, such as stems and stalks with green beans and nightshade with peas. These detection capabilities greatly reduce the risks of consumer complaints or product recalls – already a vital requirement, and one that is harder to meet with organically-grown fruit and vegetables, which typically get delivered to processing lines containing more unwanted materials such as insects, rodents, and EVM. As well as protecting brand reputations, the TOMRA 5C’s state-of-the-art technologies deliver other operational advantages, according to company representatives. Compared to its highly effective predecessor, the Nimbus BSI, this new machine further enhances sorting efficiency and yields; is easier to keep running in optimum condition; has a more hygienic design which reduces cleaning time by about 35% compared to the Nimbus and has a capacity that’s greater by 5-10%. The TOMRA 5C was first introduced in 2020 to sort Dried Fruit and Nuts but was designed from the outset for many different applications, including IQF Vegetables and Fruit. Validation was conducted over an intensive six-week period, with the machines working for two or more shifts per day and sorting four to five tons of product every hour. Sorting performance was assessed with more than 20 different types of Vegetables, mono and mixed. The trials showed consistently excellent results –

even with Vegetables that are traditionally difficult to sort, such as white cauliflower, and even when looking for foreign materials that are difficult to detect, such as nightshade mixed in with peas. The TOMRA 5C's sorting accuracy is made possible by combining high-resolution lasers with TOMRA's innovative Biometric Signature Identification (BSI) technology, which means that every object passing down the line is assessed not only for its color and shape but also for biological characteristics. This next-generation spectral imaging can look inside materials on the line by identifying their unique biometric characteristics or 'fingerprint'. BSI clearly contrasts good and bad materials and can detect even smaller defects than those recognized by conventional spectral technology. Efficiency is also improved by connectivity to the cloud-based data platform TOMRA Insight. By accessing live data from the sorter, operators can make almost instant improvements to line efficiencies. When frozen vegetable products are mixed, this facility can ensure that each bag is packed with the right mix. Moreover, accessing data

TOMRA 5C's sorting accuracy is made possible by combining high-resolution lasers with TOMRA's innovative Biometric Signature Identification (BSI) technology, which means that every object passing down the line is assessed not only for its color and shape but also for biological characteristics.

TOMRA

Heartbeat feature, which gives one-click information about the machine's health status and automatically triggers alarms if there are faults. Cleaning is made easier, and uptime is increased by a hygienic machine design with minimal and curved surfaces and easy access. Operation is made easy with the well-proven TOMRA ACT user interface. And this machine has proven that it can withstand the tough conditions found in IQF environments, with an ability to perform well in temperatures as hot as 50°C or as cold as -30°C. ■

retrospectively makes it possible to quantify the standards of raw materials from suppliers and to make better-informed business decisions. Keeping the TOMRA 5C running for optimum performance is aided by a



Photo: TOMRA



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PEF treatment provides many opportunities to get greater value from your snacks, but it takes more than just a system to get the best from PEF. At Elea our specialist PEF Engineers and Food & Bio Technologists are focused on getting the best value from your product, before and after the installation of your PEF system.

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FROM FARM TO FREEZER



The role of industrial freezing in the food industry is never underestimated, so the need to innovate is a constant for major players involved in the manufacturing of equipment. While freezing methods don't emerge overnight, fine tuning the existing ones is a constant, stable process.

One freezing technology gaining traction in the food industry is high-pressure processing (HPP). Unlike traditional thermal processing methods that use heat to eliminate bacteria and enzymes, HPP relies on extreme pressures to achieve microbial inactivation while maintaining the food's fresh characteristics. By subjecting packaged food products to pressures ranging from 100 to 600 megapascals (MPa), harmful pathogens are destroyed without compromising the food's taste, texture, or nutritional value. HPP has become particularly popular for preserving juices, meats, seafood, and ready-to-eat meals, offering extended shelf life and improved food safety. Another notable innovation is the development of cryogenic freezing techniques, which involve the use of extremely low temperatures to rapidly freeze food products. Liquid nitrogen or carbon dioxide are commonly employed in cryogenic

freezing processes, where food items are exposed to temperatures well below -100°C (-148°F). This rapid freezing helps to minimize the formation of ice crystals within the food, preserving its texture, flavor, and nutritional content more effectively than conventional freezing methods.

Furthermore, advancements in individual quick freezing (IQF) technologies have revolutionized the freezing of fruits, vegetables, and seafood in the food industry. IQF involves rapidly freezing individual pieces of food separately, preventing them from sticking together and preserving their natural texture and taste. This method allows for better retention of nutrients and flavor compared to traditional bulk freezing, where items are frozen in large batches. IQF technology has become increasingly automated, with advanced systems capable of precisely controlling freezing parameters such as temperature, airflow, and processing time, thereby ensuring

optimal quality and consistency in frozen food products. As consumer demand for convenient and nutritious frozen foods continues to rise, the adoption of IQF technology is expected to further expand in the food industry.

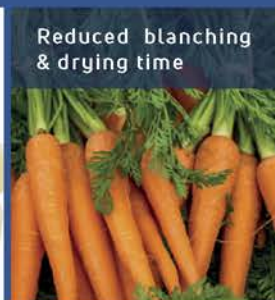
Pulsed Electric Field (PEF) technology has emerged as a promising method for freezing in the food industry, offering a non-thermal approach to preserve food quality while extending shelf life. PEF involves the application of short pulses of high-voltage electrical energy to food products placed between two electrodes. These pulses create temporary pores in the cell membranes of the food, allowing for the controlled release of water and nutrients during freezing. This process helps to reduce ice crystallization, minimizing damage to the food's cellular structure and preserving its texture, flavor, and nutritional content. PEF technology is particularly suitable for delicate foods such as fruits, vegetables, and seafood, offering faster freezing rates and



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Photo: FPS Food Process Solutions

improved product quality compared to traditional methods. Additionally, PEF has the advantage of being environmentally friendly, as it requires less energy and reduces the need for chemical preservatives, making it an increasingly attractive option for food manufacturers seeking sustainable freezing solutions.

ENHANCING THE EFFICIENCY AND RELIABILITY OF FREEZING UNITS

"In an era driven by data and technology, managing and maintaining freezer units around the world has evolved into a seamless, data-driven process," **FPS Food Process Solutions** representatives say. "Customers in the food processing industry are constantly searching for higher standards of equipment service and assurance in machine maintenance. Here at FPS, we are exploring how recent advancements in Internet of Things (IoT) technology enable us to



Central to the FPS RMS is its ability to deliver critical data right to its users' fingertips. By installing a remote gateway device within the freezer control panel, essential production related information such as motor current, freezer temperature, and alarm status are transmitted to relevant personnel.

FPS Food Process Solutions

provide real-time insights, automated alarming, and remote monitoring capabilities to our customers. At the forefront of this innovation is the FPS Remote Monitoring System (RMS), a solution designed to enhance the efficiency and reliability of our freezing units around the globe." They go on to explain that the FPS RMS is a web-based, universal platform that helps customers track, analyze, and report on their freezer's performance.

Powered by Ignition by Inductive Automation and hosted on Amazon Web Services, the system utilizes widely known standardized modules and protocols to ensure the customer's data is safe and secure. "Central to the FPS RMS is its ability to deliver critical data right to its users' fingertips. By installing a remote gateway device within the freezer control panel, essential production related information such as motor current, freezer temperature, and alarm status are transmitted to relevant personnel. Plant managers, maintenance teams, and remote service technicians can access real time data from anywhere around the world. This visibility enables proactive decision-making and swift response times to potential issues, ultimately minimizing downtime and optimizing production procedures." Additionally, the RMS facilitates comprehensive data analysis, going beyond mere data visualization to provide actionable insights. Through anomaly detection

algorithms, the system automatically identifies anomalous events and deviations from production baselines, according to FPS representatives. For instance, by detecting freezer drive fluctuations, relevant personnel can be immediately notified via email to mitigate risks and mitigate costly downtime events. "In addition to its analytical capabilities, the RMS offers unparalleled support through the Remote Monitoring Control Centre (RMCC). Staffed by support technicians trained in freezer operation and controls, the RMCC operates 24/7 to respond swiftly to customer inquiries and automated notifications. With access to historical trends, alarm history, and real-time video feeds, FPS technologists can offer tailored recommendations to address downtime events effectively, regardless of geographical location. Here at FPS Food Process Solutions, we are leveraging advanced technologies to redefine the standards of efficiency, reliability, and customer satisfaction in the food processing industry. Through the RMS, we strive to empower our clients with actionable insights and unparalleled support, setting new benchmarks for excellence in machinery management and maintenance."

INNOVATIVE FEATURES AND EFFICIENT OPERATION TO PROMOTE SUSTAINABILITY

Freezer equipment design by FPS Food Process Solutions contributes significantly to reducing food waste and promoting sustainability through innovative features and efficient operation, company representatives point out. Advanced freezing technologies such as Individual Quick Freezing (IQF) and Spiral Freezing ensures rapid and uniform freezing of food products to minimize the formation of ice crystals, preserving the texture, flavor, and nutritional content of the food, thereby reducing waste due to quality degradation. "FPS prioritizes hygienic design principles in its equipment, incorporating features such as fully welded construction to minimize bolts and lap joints, smooth surfaces, Clean-in-Place systems, and externally mounted motors. This ensures

compliance with food safety standards and minimizes the risk of contamination from bacteria such as E. Coli and listeria, preventing potential food waste due to safety concerns." FPS's freezer equipment incorporates energy-efficient components and design features to minimize energy consumption during the freezing process. Features such as insulated panels, efficient fan systems, and optimized airflow patterns contribute to lower energy usage and operational costs. "FPS's freezer equipment is built to withstand the rigors of industrial food processing environments, offering long-term reliability and durability. Robust construction, high-quality materials, and precision engineering contribute to equipment longevity, reducing the need for frequent replacements and associated waste. FPS is committed to sustainability and environmental responsibility, ensuring that its equipment meets or exceeds industry sustainability standards. By investing in FPS freezer equipment, food processors can align with sustainability initiatives and reduce their environmental footprint."

INNOVATION AT THE FOREFRONT

FPS Food Process Solutions continuously reinvents itself by looking for innovative solutions to help elevate the food processing industry. One such solution to stand out from the competition is in PEF technology. "Pulsed electric field (PEF) technology is a non-thermal food processing method that uses high-voltage, low-energy electric pulses to perforate the cell walls of the treated commodity, also known as electroporation. This enables the movement of water and other compounds in/out of the cells," representatives add. PEF technology has demonstrated distinct benefits such as rapid microbial inactivation, extended shelf life and food safety. It facilitates gentle extraction of intracellular compounds, preserving nutritional quality and flavor. PEF also reduces processing time, energy consumption, and dependence on chemical additives. "Always striving to add value for customers, FPS Food Process Solutions and PEF-specialists

OptiCept Technologies, designed OPTICEPT (Controlled Environment Pulsed Electric Field Treatment), a state-of-the-art PEF-system designed specifically for the solid food processing industry."

The patented PEF OPTICEPT treatment can be applied in a wide range of food products. For example:

- **PEF helps** to preserve the texture, color, and overall quality of frozen products.
- **PEF treatment** softens the potato tissue, minimizing breakage and feathering during cutting.
- **PEF has proven** effect in meat tenderization, protein extraction, algae products and more.

"The technology allows for precise control over parameters such as pulse frequency, intensity, and duration, enabling customization to suit specific product requirements. This flexibility ensures optimal treatment for different types of foods and raw materials. OPTICEPT operates at lower energy levels compared to thermal treatments, making it an energy-efficient alternative for various processing applications. This reduction in energy consumption contributes to cost savings and environmental sustainability. The OPTICEPT system consists of a PEF generator and a dual conveyor belt system with a built-in PEF chamber. The PEF generator is food grade compliant with the enclosure designed in stainless steel. All control and safety devices are included, as well as sensors for pressure, temperature, flow, and conductivity. The dual conveyor belt system is hygienically designed, focused on robust construction, cleanability, and high efficiency," according to representatives. "Starting with the potato sector, PEF has shown distinct advantages over conventional preheaters. It softens the potato tissue without the use of heat, using less water and energy to operate. Less cutting force is required, resulting in minimal feathering and breakage, therefore less product loss. PEF technology is adaptable. It can be easily integrated into existing processing lines and scaled up to meet production demands, offering versatility and scalability to manufacturers." ■



LOSING STEAM, BUT STILL MOVING FORWARD

A clear trend toward plant-based diets has been noticeable for quite some time now, with an increasing number of people embracing vegetarian and vegan lifestyles. Plant-based diets have the potential to be healthier, but they can also be a more ethical and sustainable option. Also, these diets are probably going to draw an increasing number of followers as they gain popularity. Recent inflation, though, seems to have put a brake on this trend.

The potential for better health outcomes is one of the key benefits of a plant-based diet, as they have been linked to decreased rates of chronic diseases. Research has indicated that individuals who follow a vegetarian or vegan diet typically have lower blood pressure, cholesterol, and BMIs than people who eat meat. This is so because diets based mostly on plants tend to be higher in fiber and lower in saturated fats, which can aid in promoting a healthy digestive system and lowering inflammation. Furthermore, diets based mostly on plants tend to be higher in nutrients than diets high in animal products. Excellent sources of vitamins, minerals, and phytochemicals that promote general health and wellbeing include fruits, vegetables, whole grains, and legumes. Antioxidants, which can help guard against oxidative stress and inflammation, are also abundant in many. Plant-based diets are advanced by vegetarianism and veganism, which completely forego animal products. While vegans abstain from all animal products, including dairy and eggs, vegetarians usually eschew meat, poultry, and fish. These diets have extra advantages



even if they can be harder to stick to. It's increasingly simple to obtain plant-based substitutes for meat, dairy, and other animal products because many stores have departments dedicated to selling only plant-based foods - but prices are sensibly higher. A wide range of alternatives, such as plant-based cheeses, meats, milks, and yogurts, are frequently found in these areas. Certain retailers even provide plant-based substitutes for items like hot dogs, sausages, and hamburgers that are typically made with meat. Many grocery stores now include plant-based departments in addition to labeling their products as "plant-based" or "vegan." This eliminates the need to thoroughly study the ingredient list and makes it simple to immediately determine which goods are appropriate for a plant-based diet.

THE IMPACT OF HIGH INFLATION

Last year, Mintel published a report showcasing the interest in the plant-based food and drink sector and arguing that things seem good in the long run. According to Mintel data, more than 75% of Germans aged 16 to 24 routinely consume plant-based foods. Still, some customer interest has decreased because of the recent economic slump. Following a sharp increase, the market is currently confronted with a short-term obstacle. Customers are becoming less inclined to buy pricey plant-based meat substitutes as they start to worry about their own financial situation. As an example, Mintel looks at Beyond Meat's recent sales decline. According to the research company, the strain on household finances is the reason why the market for meat substitutes is lower now than it was a year ago. The plant-based movement will probably pick up steam again once people start to feel better about their financial situation. Long-term demand should also be supported by knowledge of the plant-based industry's environmental credentials and beneficial effects on global warming. Brands might emphasize the promotion of desirable attributes like high protein and fruit/vegetable content. Protein is a huge opportunity since, according to Mintel's research on plant-based food trends, most

consumers who eat a plant-based diet would like to see more high-protein plant-based dairy substitutes. Food and beverage firms have a chance to support customers who are looking for pro-plant diets, not necessarily vegan ones, by appealing to the significant portion of consumers who wish to investigate vegan options and include fruits, vegetables, and grains in their meals. Sustained market development requires more variety in plant-based proteins. Innovation in plant-based protein types, formats, and sources will also keep evolving to satisfy consumer demand for viable substitutes for dairy and meat. Burger alternatives are among the most widely used plant-based foods, and their popularity can be largely attributed to their accessibility and the advancements in taste and texture that manufacturers have made. Like Impossible Foods and Beyond animal did with burgers, brands can discover ways to remain ahead of the market by elevating new

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alternative formats to various sorts of animal products, Mintel goes on to explain. And here's a funny story underlying the fact that plant-based isn't going anywhere: Emirates, a premier airline, has observed a forty percent increase in customer demand for plant-based meals. Emirates will add even more dishes to its "vegan vault" of more than 300 carefully chosen plant-based recipes later this year to fulfill this demand in 2024. This will include a variety of new vegan dishes that will be available onboard and in lounges. Emirates increased the number of plant-based meals it offered onboard from 280,000 in 2022 to over 450,000 in 2023. Consumption of vegan meals has increased 40% annually in line with the number of passengers; however, in some regions, such as Africa, where consumption has increased by 4%, Southeast Asia,

where it has increased by 5%, and the Middle East, where it has increased by 34%, consumption has outpaced the growth in passenger volume. The Economy Class had the largest growth in the consumption of vegan meals. Particularly on Emirates' flights to China, Japan, and the Philippines, significant increases were observed. Since Emirates started providing vegan meals for its cabin crew in 2018, many them are also adopting a plant-based diet. Customers of Emirates can savor appetizing delicacies in Economy class, such as a robust chickpea kale stew with parsley pilaf rice and baby spinach, a textured pumpkin frittata, a tofu tikka masala, or a chickpea crepe loaded with carrot, peppers, mushroom, and tomato concasse. Delicious vegan desserts at Economy include chocolate pudding with cocoa soil, delicious banana cake with chocolate crumble, and coconut mousse with mango compote. Customers who like vegan food will be treated to wholesome, delectable delicacies in Premium Economy class, such as creamy squash chestnut stew paired with light chocolate tofu cheesecake, or smooth and velvety raspberry parfait with a hint of orange compote. Emirates will introduce additional vegan main meals later in the year, along with a variety of delicious vegan appetizers like vegan pizza and fruit muffins, as well as a chocolate pecan cake, pistachio raspberry, and raspberry tonka cake.

INNOVATIONS ACROSS THE BOARD

Ardo has presented its sweet potato fries, which are a real favorite and a great alternative to potato chips. Prepare these natural sweet potato fries in the oven or deep fryer. The new extra thin cut makes them extra crispy, so they're ideal as a snack, with a burger or as a side dish. The product is gluten-free and vegan. The company also showcased its versatile avocado slices, using avocado that is perfectly ripened and therefore well suited to preparing guacamole. It also shows how valuable it can be in many dishes (wraps, sandwiches, salads, etc.) and shapes (in pieces, puréed, etc.). Ideally for barbecuing and grilling, adding to a salad or serving



with a fresh dip is the corn on the cob cut into quarters. The super sweet corn ribs curl up during preparation, which gives a dish a nice extra touch. Moving forward, Ardo's vegetable fingers are a must-have in any kitchen. The golden sweetcorn fingers, the orange vegetable fingers with carrot, butternut and sweet potato, and the broccoli fingers in a surprising red crust can be served separately or together. The combination of yellow, orange, and red hues adds color to tapas plates, side dishes or main courses. They can be served as an alternative to fries, as a topping on a salad or in a wrap. Ardo's vegan vegetable fingers are a favorite with young and old thanks to their delicious vegetable filling and super crunchy crust. The crispy vegetable fingers are available in a mixed carton with two bags of each. Finally, Ardo developed a perfect farming technology to grow Edamame soybeans in Europe too (Marchfeld, Austria). The fresh green

color and sweet flavor make this Edamame in the pod an original appetizer. These beans in the pod are great with a pinch of coarse sea salt, with soy sauce or as a side dish with sushi. **BENEO** has also announced the next significant turning point in its plant-based journey. The ingredient producer plans to add plant-based Meatless Beef Bites and Minced Meat to its line of semi-finished products this year. With its authentic juicy and meat-like textured beef imitation products, BENEO provides manufacturers with a scalable and effective approach to capitalize on the plant-based trend, all thanks to its highly creative technology. The demand for beef imitation products is significant, with 76% of customers in Europe finding beef to be an appealing sort of meat substitute. In addition to helping manufacturers satisfy consumer demand for excellent alternative beef products, this innovative BENEO solution offers straightforward, short ingredient lists, semi-finished goods that are easy to handle. The plant-based alternatives to beef, made possible by BENEO's low-energy processing technology, are

not only tasty but also sustainable. Meatless Beef Bites and Minced Meat products are made from myco- and pea protein and are available frozen. They are colored to give them a genuine beef look. They keep their juiciness and succulence through baking or frying thanks to their exceptional heat stability and water-holding capacity. Additionally, because of their juicy and rich texture, finished goods might have less fat, which is in line with customers' growing desires for healthier options. Meatless Minced Meat is great for marinades, sauces, and lasagna; Meatless Beef Bites are great for stir fries and stews.

Loryma is adding a functional mix devoid of chemical coloring, flavoring, and preservatives, as well as animal products, to its wheat-based portfolio. Wheat-based, vegan Lory Stab accurately mimics the technological characteristics of egg or milk in baked goods, producing a visually appealing and genuine texture. Muffins, sponge cakes, cake bases, and lava cakes are examples of products that contain this basic ingredient. These products have the characteristic airy texture, light crumb, and uniform pore

structure. All kinds of vegan dough can be made with the concentrate by mixing it with flour, sugar, oil, water, and flavorings. The product is a fluid mass that is easily filled with components like fruit or chocolate bits. Because of the wheat-based mix's neutral flavor and aroma, it can be used in a variety of recipes and applications, such as cupcakes, lava cakes, sponge cakes, American muffins, and cake bases, all of which precisely satisfy the expanding demand for plant-based bakery goods. The stabilizing and raising components create a loose and elastic crumb structure, which results in the characteristic mushroom-shaped bulge in muffins, for example. "The light, airy texture and authentic mouthfeel of the finished baked goods perfectly imitate the sensory properties of nonvegan products. Thanks to the balanced cost-benefit ratio, Lory Stab is an economical and efficient solution for manufacturers who want to broaden their market appeal," according to Norbert Klein, head of Research and Development at Loryma. Wheat proteins, native and modified wheat starches, and wheat-based functional blends are among Loryma's areas of expertise. It is also the trademark of the Crespel & Deiters Group, which develops and

produces wheat-based culinary ingredients to enhance industrially manufactured dishes.

AN AREA THAT (STILL) ATTRACTS INVESTMENTS

The third quarter of the year 2023 has seen an increase in the volume of deals (46 transactions) compared to the same period in the prior year (up 91.7%), according to corporate finance house Oghma Partners. Deal value has also increased by about 5.0% to GBP1,230.0m compared to the same period the prior year. 75.0% of deals in 2023 had an estimated value of GBP10.0m or less, up from approximately 69.0% of deals in 2022. Both 2022 and 2023 experienced a high volume of low value deals compared to the five-year average between 2017-2021 (c. 57.0%). Only about 8.0% of transactions were estimated to be above the GBP50.0m mark in 2023, falling well below the five-year historic average of 15.0%. Overseas buyers were responsible for 23.3% of deal volume in 2023, which is slightly down from 27.4% of deal volume in 2022, and the historic 5-year average of 29.0%. Financial buyers accounted for 19.0% of the deal volume in 2023, up from 13.7% in 2022 and higher than the five-year average of circa 17.0%. "The key issues that impacted M&A in 2022 dragged over into the start of 2023 with inflationary cost pressures, the cost-of-living crisis and the increased

cost of debt suppressing the higher value deals in the first half of the year (with the exception of the Glanbia Cheese acquisition)," explained Mark Lynch, partner at Oghma Partners. "However, deal volume increased compared to 2022, 116 deals for 2023 (an increase of 57.0%). We believe that this increase in activity in part is reflected in pent up seller activity and, in addition, the sad bonus of many businesses acquired out of administration (c. 10.0%). UK plant-based companies have particularly struggled in 2023, with three notable businesses being acquired out of administration. In June, Vegan Food Group (formerly known as VFC) acquired Meatless Farm, in July Vbites acquired Plant and Bean, and in December it was announced Vbites had gone into administration. It hasn't just been the smaller players struggling, in August Beyond Meat sales had fallen by almost a third over the previous three months, Heck announced in May it was slashing its range of meat-free products from ten to 2, Pret a Manger has closed half of its vegetarian and vegan only outlets, Nestle axed its Garden Gourmet plant-based vegan brand in the UK and LoveSeitan collapsed in August. The meat free industry has faced a triple whammy – a cost of living crisis turning consumers away from higher cost meat-free products, cost inflation and much reduced investor appetite to provide follow-on funding." ■

Photo: Ardo





Redefining the Future with Innovation and Progress



CGM

Please discuss CGM's evolution in the last 12 months in terms of actual results vs expectations. As a company focused mainly on foodservice, could you expand on the results of that segment and also the catering one.

Reflecting on the results achieved in 2023, it was indeed a highly successful year for us. Our aim of continual improvement was evident, with a notable economic growth in sales by approximately 10 percent and improved resource management in production, thanks to our new production site. These results were driven by a general increase in consumption by end users, who resumed going out and consuming even more than before the pandemic.

Please comment on the recent production structure which has recently opened. Can you offer some data regarding capacity, sustainability features, etc?

Our new plant, operational since last summer, spans 4000 square meters and includes a pre-fried product fryer, automated packaging plant, and a -20 degree refrigerated warehouse. This facility internalizes previously outsourced activities, enhancing production effectiveness and efficiency. From a logistical perspective, the location along a provincial road, near a freeway exit, and large outdoor area with four loading docks contribute to its convenience. In terms of sustainability, the cold production facilities, storage cells, and freezing tunnel use ammonia and carbon dioxide plants instead of freon-type gases, minimizing environmental impact. A 500 KW solar panel system supplies electricity.

What are CGM's plans regarding retail?

Presently, we collaborate with several retail companies, albeit to a limited extent compared to our desired level of involvement. We are highly determined to expand our presence further. Over the past few years, we have developed a line of 8 references packaged in convenient (100% recyclable) 200/250 g cartons intended for retail sale, offering flexible products ideal for home consumption.



"Our industry thrives on uncertainty, by its ability to effectively respond to



Giuseppe Marinangeli, CEO of CGM SRL

Interview



We have achieved the pinnacle of innovation

Please describe the innovation process that takes place at CGM. Also, how does CGM select the products that are suitable to enter the market?

Within the new plant, we have achieved the pinnacle of innovation. The packaging department uses automation technology, with robots handling tasks like placing bags in cartons and composing footboards for storage in the cold room. The manufacturing department has a flexible production line for both pre-fried and non-pre-fried products, with new and 4.0 certified, cutting-edge machinery capable of collecting data for monitoring and providing insights. The company's R&D department continuously explores new raw materials, launching an average of 4 new products each year after thorough testing and analysis.

In terms of markets served, how do you see CGM's expansion in the near to mid-term?

Currently, the company operates in over 15 foreign markets, with a majority in the EU. The number is rapidly growing due to daily requests from foreign countries. The expansion is a source of pride, recognizing the company's value beyond its nearly 40-year presence in Italy and we express our gratitude to our export team for their outstanding work.

How would you assess the state of the industry overall in 2024?

The industry appears to be healthy in the first few months of 2024, with January and February exceeding expectations. We hope this positive trend will continue in the upcoming months. It's important to note that our industry thrives on uncertainty, and a company's quality is often measured by its ability to effectively respond to unforeseen market events.



and a company's quality is often measured
unforeseen market events."





A HEALTHY OUTLOOK

Widespread adoption of healthier diets should keep demand for fruit, vegetables, and herbs (frozen and otherwise) relatively high.

Global demand for fruit, vegetables and herbs remains at high levels, with consumption increasing throughout the world. These foods continue to benefit from the growing demand for natural products containing as few additives as possible, as well as foods naturally rich in the various vitamins and minerals. Although data suggests that large sections of the European population do not eat the recommended amounts of fresh produce outlined in official guidelines, usage of fruit, vegetables and herbs in food and beverage manufacturing remains high. Other growth drivers over the coming years include the increasing popularity of plant-based diets, greater uptake of fruit-based products as snacks and heightened consumer interest in ethnic cuisine and new flavour profiles. In the past, the availability of various fruit, vegetables and herbs was constrained by seasonal harvests, as well as potentially disruptive environmental conditions (e.g. droughts and floods). The freezing process overcomes this issue, enabling consumers to buy products even when they are out of season. Consumer appreciation of the health qualities of frozen fruit and vegetables has grown steadily in recent

years since essential nutrients are 'locked in' during the freezing process and optimum freshness is preserved. Other benefits of frozen fruit and vegetables include less food waste and elimination of the need for additives such as preservatives. The individual quick freezing (IQF) process is widely used since it does not compromise in terms of product quality. The IQF process involves a cold blast which freezes the foods individually, after which they are packaged. This ensures that ice crystals do not have time to form, with the result that cells within the foods remain undamaged. Demand for frozen vegetables and fruit continues to increase across much of the western world. A 2022 survey by the American Frozen Food Institute (AFFI) found that shoppers were purchasing more frozen fruit and vegetables compared with three years previously. Of the 1,500 people surveyed, 86% agreed that buying frozen products made it easier to incorporate fruit and vegetables into their daily diets, while 83% associated frozen fruit and vegetables with reduced food wastage and cost savings. Furthermore, 76% claimed that frozen fruit and vegetables enabled them to eat foods they would be uncomfortable preparing otherwise. Other key findings from the research included the following:

- 63% of buyers used frozen fruit and vegetables as sides to a main dish;
- 50% of buyers used frozen fruit and vegetables as ingredients in smoothies/beverages;
- 44% of buyers used frozen fruit and vegetables as additions to past and rice dishes.

VEGETABLES

Vegetables offer a myriad of health benefits and are eaten on a wide range of occasions, examples of which include as a main meal accompaniment, within prepared foods (e.g. ready meals and soups) or even as a snack. In Europe, per capita consumption of vegetables is highest in countries such as Turkey, Belgium, and Germany, at more than 200 kg.

PER CAPITA CONSUMPTION OF VEGETABLES IN SELECTED COUNTRIES (KG), 2021

Country	Kg
China	399.0
Turkey	248.5
Belgium	237.9
Germany	201.0
Ireland	185.4
Sweden	175.2
UK	170.1
Netherlands	169.8
Norway	166.8
Austria	165.8
Australia	163.2
Greece	156.6
Poland	140.5
Italy	136.3
US	126.5
Canada	126.2
France	120.2
Portugal	117.0
Russia	112.5
Spain	107.8
India	90.8
Mexico	54.3

Source: ourworldindata.org



Outside Europe, per capita consumption of vegetables is especially high in China, at almost 400 kg. This compares with around 125 kg for both the US and Canada and falls to just under 91 kg in India. Per capita consumption of vegetables lies below 100 kg across much of Latin America but is over 200 kg in North African countries such as Algeria and Libya. Future demand for vegetables should derive some benefit from the growing percentage of the world's population now following vegetarian and/or vegan diets. These diets are most popular in Germany and Austria – in 2022, there were almost 1.5 million vegans in Germany (equivalent to almost 2% of the total population), while more than 8 million were classed as vegetarians and/or actively eschewing meat. Elsewhere, the percentage of the total population taken by vegans is estimated at 5% in both Austria and the UK, with the latter having witnessed a rise in numbers of around 1.1 million during 2023. According to Future Market Insights (FMI), the global market for frozen vegetables is poised to increase from USD53.8bn to almost USD96.5bn between 2024 and 2034, with annual growth averaging 6%. Much of this is expected to result from health concerns, as well as the convenience of frozen vegetables when availability of their fresh equivalents is compromised. The market continues to witness innovation despite its mature state – Nomad Foods' Iglo range in Germany, for example, encompasses Pumpkin & Sweet Potato in Lime Butter and Broccoli & Cauliflower in Yogurt Sauce. Some of the more popular frozen vegetables include peas, spinach, sweetcorn, and broccoli. Market growth may also be aided by the rising popularity of air fryers, which can be used to add a crispy texture to certain types of frozen vegetables, although they are not ideal for cooking leafy vegetables. Around 30% of UK households now possess an air fryer,

80%
of US consumers agreed that buying frozen products made it easier to incorporate fruit and vegetables into their daily diets.

rising to 37% of those containing children. Of those households with an air fryer, 20% use it every day.

FRUIT

Nutritional values are also high for many types of fruit, the eating of which is widely encouraged to maintain a healthy diet. There are thought to be over 2,000 types of fruit worldwide, many of which are used to improve the health perception of many products. Berry fruits, for example, are low in calories and high in vitamin C, antioxidants, and fibre, with the result that varieties such as blueberries, raspberries, strawberries, cranberries and blackberries are often considered 'superfoods.' Elsewhere, citrus fruits such as oranges, lemons and limes are high in vitamin C and antioxidants. Health benefits typically associated with increased fruit intake

include a lower risk of developing diabetes, cardiovascular disease, high blood pressure and cognitive decline, while they have also been linked with improved ocular health.

Worldwide, per capita consumption of fruit tends to be highest in Caribbean countries such as the Dominican Republic and Guyana, and lowest in certain parts of Asia and Africa – for example, it is less than 100 kg in African countries such as Zambia, Togo, and the Gambia. Within the European region, per capita consumption of fruit is generally highest in the Netherlands, Norway, and Europe's more southerly regions, specifically countries such as Portugal, Turkey, Greece, and Italy. Compared with Western Europe, per capita consumption of fruit is considerably lower further east in countries such as Russia (80.3 kg) and Poland (63.2 kg). At almost 182 kg, per capita consumption of fruit is especially high in the US, although this figure decreases significantly in both Canada and Mexico. Fruit has a wide range of applications within the food and drink industry. Notable examples include processed foods (e.g. breakfast cereals, cakes, and snack bars), dairy foods (e.g. yoghurt and ice cream), frozen desserts and various beverages, notably juices





PER CAPITA CONSUMPTION OF FRUIT IN SELECTED COUNTRIES (KG), 2021

Country	Kg
US	181.8
Netherlands	168.4
Portugal	161.5
Norway	140.5
Turkey	139.4
Greece	128.5
Italy	128.4
Austria	127.4
France	126.3
Belgium	124.7
Mexico	123.0
Spain	116.8
Ireland	112.9
China	109.2
UK	107.8
Sweden	105.5
Germany	102.3
Canada	101.3
Australia	87.5
Russia	80.3
India	63.5
Poland	63.2

Source: ourworldindata.org

and smoothies. Fruit also represents a popular and healthy type of snack, as well as producing a range of flavours in food and beverage applications. Citrus-based flavours consistently represent one of the most popular varieties worldwide, especially within the beverages industry, with research from ADM suggesting that the global market for citrus flavours will grow in value by an annual average of almost 5% between 2023 and 2033. Although the market is still dominated by traditional favourites such as orange, lemon and lime, other emerging citrus fruits within this sector include blood orange, yuzu (a citrus plant native to East Asia) and calamansi, a Filipino lime which tastes like a mixture of orange and lime. Beverages such as smoothies continue to represent a major application area for many types of fruit. According to Precedence Research, the global market for smoothies was worth over USD12.5bn in 2023, with annual growth expected to average over 9% in the years leading up to 2033. Smoothies are widely viewed as a valuable source of various vitamins and other nutrients, as well as a convenient and healthy

breakfast option. However, concerns have arisen over the sugar content of many fruit-based drinks such as smoothies, leading to the emergence of more low-sugar or sugar-free varieties. The market also remains vulnerable to supply chain problems, as fruit harvests can often be disrupted by weather or climatic factors. According to data from SkyQuest Technology, the global market for frozen fruit was worth around USD4.3bn in 2023, a figure set to increase by an annual average of more than 7% to USD7.3bn by 2031. It remains a dynamic and expanding sector, with growth having been driven by the convenient and healthy nature of many products, as well as strong demand for end-user applications such as frozen desserts and fruit-based beverages. The tropical fruits sector remains the market's largest, encompassing products such as bananas, pineapples, and mangoes, which are popular for reasons such as their exotic flavours. Much of the recent growth in the market, however, has come from the berry fruits sector, which offer benefits such as a sweet-tart flavour profile. One of the world's leading suppliers of frozen fruit is Del Monte, whose range includes varieties such as Mango Chunks, Summer Fruits, Blueberries, Pineapple Chunks and Strawberries, as well as various smoothie mixes (e.g. Strawberry & Banana). The UK market has recently witnessed the launch of Trü Frü by Mars, a business the latter acquired towards the end of 2022, and which aims to capitalise on the trend towards fruit-based snacks. The Trü Frü brand, which is worth approximately USD215m at the retail level in the US, consists of whole fruit pieces immersed in chocolate and is available in frozen and ambient formats. Varieties in the range include Pina Colada Pineapple in White Chocolate & Coconut,

Strawberries dipped in Milk & White Chocolate and Raspberries dipped in White & Dark Chocolate.

HERBS

As is the case with fruit and vegetables, many herbs are sold in IQF format. This freezing technique is considered especially useful within the category since herbs tend to lose their nutritional value after 48 hours and are frequently vulnerable to damage during the transportation process. Traditionally, air drying has been a popular method of preserving herbs, although this can cause shrinkage and potentially loss of flavour and/or nutritional value. The freezing process assists in preventing oxidation and can also result in less packaging being used, as well as ensuring availability throughout the year, rather than when herbs are in season. Many of the most popular herbs used for cooking purposes appear in frozen format – examples include dill, oregano, tarragon, parsley, basil, chives, coriander, lemongrass, sage, and thyme. According to Future Market Insights (FMI), the global market for herbs and spices is poised to increase from around USD171.5bn in 2024 to more than USD244bn by 2034, with annual growth averaging almost 4%. Growth is likely to be aided by high levels of interest in ethnic cuisine and hence a wider choice of flavour profiles, as well as greater consumer awareness of the health benefits offered by various herbs. Herbs frozen using the IQF process are used in applications such as pizza, soups, ready meals, sauces, and salads. More herbs are also being incorporated into beverages such as tea, coffee, and soft and alcoholic drinks. Herbal cocktails are increasing in popularity, accompanying spirits such as vodka, gin, tequila, and whiskey. Some of the more popular matches within the sector include basil with gin, dill with vodka, coriander with tequila and mint with many beverages – it is especially useful for taking the edge off sharp citrus-based flavours. ■



#

12.5

bn USD was the estimated value of the global smoothies market in 2023.

[frozen^{europa}food35]

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A BATTLE FOR FLAVORS

Europe's ice cream culture is a fascinating blend of tradition and innovation, spanning from Italian gelaterias to Scandinavian dessert bars. Behind the scenes, a diverse array of production methods and flavor trends shape the continent's frozen dessert landscape. From artisanal crafters to large-scale manufacturers, each contributes to the rich tapestry of flavors that define European ice cream. But which countries are faring best in the competitive frozen landscape?

The EU produced 3.2 billion liters of ice cream in 2022, up 5% from the year before, according to Eurostat.

Germany produced 620 million liters of ice cream in 2022, more than any other EU nation. France came in second with 591 million liters and Italy third with 571 million liters. Germany produced the cheapest ice cream on average in 2022, costing EUR1.5 per liter, in addition to being the world's largest producer. There was a difference in the average price of EUR1.9 and EUR2.3 per liter of ice cream recorded by France and Italy, respectively. At an average cost of EUR7.0 per liter, Austria produced the priciest ice cream, with Denmark

and Finland coming in second and third, respectively, at EUR4.4 and EUR2.8 per liter. 250 million kilos (kg) of ice cream were shipped by EU nations to non-EU nations in 2022, for a total value of EUR930 million. However, ice cream imports of 61 million kg and EUR203 million came from non-EU nations. Compared to 2021, the amount of ice cream imported from outside the EU fell by 14% in 2022, although exports fell by just 2%. In 2022, 53 million kg of ice cream were shipped from France, making up 21% of all ice cream exported outside of the EU. As a result, it became the biggest exporter of ice cream among all EU nations, surpassing the exports of the Netherlands (42 million kg; 17% of

total exports outside of the EU), Italy (31 million kg; 13%), Germany (28 million kg; 11%), and Belgium (23 million kg; 9%).

RIISING TO THE FRONT

And France isn't just the biggest exporter: the country boasts nearly 400 industrial ice cream manufacturers, making it the second largest producer of ice cream in Europe (behind Germany). Small and medium-sized businesses in the industry are thriving, even in the face of industry titans like Nestlé (Extrême, La Laitière), Unilever (Miko, Magnum), and Häagen-Dazs. As such, this is a market that is constantly changing and more dynamic than before. According to Taste France,

following a year of unprecedented post-lockdown revenue, 2022 broke previous records with a 14% value gain in revenue of EUR1.397bn. The French Ice Cream Making Businesses' Association Annual Report states that with a 27% market share, ice cream bars are the most popular choice among customers, followed by tubs (13.1%) and cones (17.8%), which are growing at an impressive rate of +28.4%. According to an OpinionWay poll conducted for the French Ice Cream Making Businesses' Association, 60% of French people consider the nostalgic frozen delicacy to be a small luxury that they can afford to indulge in during an inflationary period. Indeed, according to 82% of respondents, "ice cream is a pleasure purchase that is both comforting and affordable." With new goods accounting for 5.2% of revenue, the market is innovation focused. Customers are drawn to things that are customized and unique. As a result, producers have created vividly colored products with an extensive assortment of toppings (such as fresh fruit, cookies, chocolate chips, and more), sauces (such as

3.2
billion liters of ice cream were produced in 2022 in the EU.

caramel, chocolate, and berries), and customizable flavors. To appeal to a target audience that is lured to aesthetically pleasing things, presentation and packaging are careful and imaginative. Innovative items such as creamy sorbet or ice cream with a frothy texture are being made with the help of new technologies. Manufacturers are always riding fads such as back-to-nature, sugar-free, lactose-free, and vegan or plant-based ice cream to surprise customers with unique goods. Because consumers want products manufactured with basic, all-natural components and free of additives or preservatives, naturalness is a major trend in the business. For this reason, premium ingredients are being used more and more, such as organic milk, fresh fruit,

1.5
euro per liter was the average price of the ice cream produced in Germany in 2022, which was also the cheapest in Europe.

and locally produced goods. French ice cream producers are dedicated to fulfilling the demands of the modern environment, especially about lessening the impact of their packaging. ADEME is now conducting a study to have a better understanding of what consumers expect from CSR. It is noteworthy that according to the OpinionWay Survey conducted on behalf of the French Ice Cream Making Businesses' Association, 66% of French consumers would be willing to pay extra for ice cream that is produced locally or in France.

CONSUMPTION IS GROWING AROUND THE WORLD

As a recent US survey by National Frozen & Refrigerated Foods Association (NFRA) showed, many Gen Z and millennial consumers claimed that consuming fruit-based ice cream makes them feel less guilty than eating chocolate frozen snacks. There seems to be a sizable level of interest in and consumption of ice cream among the group of responders who have kids. Only 21% of Gen X parents admit to hiding ice cream from their children, compared to 43% of Gen Z parents. Compared to childless folks, parents have ice cream nine times a month on average and spend more time perusing the ice cream aisle. 75% of parents agree that a side of ice cream is necessary to complement a birthday cake when it comes to celebrations. When it comes to ice cream-related healthier dessert options, consumers have a lot of options to choose from.

Consumers of diverse tastes and tolerance levels may now find a variety of frozen dessert options that are high in protein, low in carbohydrates, plant-based, and have extra fiber. For a variety of reasons, American adults commonly purchase items from the ice cream and novelty aisle. Most frequently, millennials want to try "better-for-you" dessert selections. On the other hand, over 50% of respondents claim that they always review the labels on ice cream and frozen novelty foods to determine which ones are healthiest for them. ■





STILL A LOT OF ROOM FOR GROWTH

"The EU Fish Market" study published by EUMOFA (European Market Observatory for Fisheries and Aquaculture Products) shows that fisheries and aquaculture products make up less than 1% of all goods and services purchased by EU households, a far smaller percentage than the share of meat, which is 3.9%. However, between 2020 and 2021, both the amount spent on meat and fisheries and aquaculture products climbed by 10%. This indicates that while both helped to raise the overall portion of food expenditures, other food items emerged as the primary catalyst, with their proportion of total expenditure rising by 14% between 2020 and 2021.

Ireland and Cyprus had the biggest improvements when viewed at the national level. Due to a rise in the share of consumption of fisheries and aquaculture products across all preservation categories in total goods and services, the share of these products climbed by 38% in Ireland and by 58% in Cyprus. Hungary's proportion of spending on fisheries and aquaculture products increased by 26% overall because of a 71% growth in the frozen fish category. Portugal, which spends the most per person in the EU on fisheries and aquaculture goods, witnessed a 9% increase in its share, mostly because of a 27% increase in fresh and chilled seafood purchases. In terms of processed goods, a more thorough analysis conducted at the EU level reveals that overall foodservice sales fell precipitously between 2019 and 2020, with a reported 35% loss of about 200,000 tons, or from little over 563,000 tons to approximately 367,000 tons. The largest countries also had the longest restaurant closure times, which corresponded to the highest declines⁵⁹. It primarily impacted shelf-stable products⁶⁰, which make up most processed fish and seafood items, according to the EUMOFA report.

GERMANY IS THE BIGGEST CONSUMER OF FISH AND SEAFOOD PRODUCTS

Within the European Union, almost 80% of processed fish and seafood consumed through foodservice is consumed in five countries: Germany,

Spain, France, Italy, and Sweden. Nearly half of the total is accounted for by Germany alone. The countries with the worst declines between 2019 and 2020 - equal to or greater than 40% - were France (-51%), Belgium and Spain (-48% each), the Netherlands (-42%), Portugal, and Luxembourg (-40% each). Sales significantly increased in each of these instances in 2021. Only three of the 27 countries - Estonia, Slovenia, and Cyprus - showed no change in sales in 2021 compared to 2020, when they had decreased by 13%, 25%, and 29%, respectively. Sales were significantly lower in two of the EU's 27 members, Ireland, and Croatia: from 2019 to 2020, they saw declines of 19% and 14%, respectively, and from 2020 to 2021, they saw dips of 17% apiece. In every other EU member state, 2021 was a year of recovery, the EUMOFA study reveals. In the foodservice industry, shelf-stable products are most frequently used, followed by frozen and refrigerated goods. However, the proportion of processed fisheries and aquaculture products that are shelf-stable varies greatly between nations. In Bulgaria, where frozen goods are preferred; it was 5% in 2021, whereas in Spain, it was 81%. Germany is the country with the biggest consumption of shelf-stable items through the foodservice industry; in 2021, 114,000 tons, or half of the EU total, were consumed there. Spain came in second with around 74,000 tons. When it comes to frozen product consumption, these two nations lead the pack:

Germany consumes about 64,000 tons, while Spain consumes slightly more than 12,000 tons. The scenario is more varied when it comes to chilled products: Germany (about 7,600 tons in 2021), France (nearly 7,000 tons), and Spain (almost 6,000 tons) account for 15%, 14%, and 11% of the total, respectively. Sweden comes in second with about 3,600 tons (or 7% of the total) reported in 2021. Frozen goods contributed EUR9.08bn to the EU deficit in 2021 or 47% of the overall deficit. The category of prepared-preserved items had a deficit of EUR2.12bn, or 11% of the total deficit, followed by fresh products, with a deficit of EUR7.26bn, or 38% of the total. The fresh and frozen food categories saw the largest increase in the trade deficit when compared to 2020.

WHO'S SELLING AND WHO'S BUYING?

China's total import-export flows in 2021 were 9.4 million tons, a 12% decrease from 2020, but they also showed a 7% gain in value, coming to EUR33bn. China's total export value increased by 5%, from EUR17.2bn to EUR18.1bn, despite a 25% decline in export volume, from 4.9 million tons to 3.7 million tons. The decrease in volume was probably still caused by COVID-19-related constraints. China's top export destinations in 2021 were the US (11%), the EU (10%), the Republic of Korea (11%) and Japan (15%). Frozen, processed, and filleted marine fish is China's principal export to Japan, making



114k

tons of fish and seafood shelf-stable products were consumed in Germany through foodservice in 2021.

up 36% of all exports to this nation in 2021. Along with making up 38% of all exports to the US and 22% to the Republic of Korea, this product category is also responsible for 22% of all imports into the EU, with frozen Alaska pollock fillets making up 30% of the entire amount. The recession also had little impact on Chinese imports, which decreased by 2% from 2020 to a total of 5,7 million tons. Nonetheless, their worth increased by 9%, approaching EUR15m. Among China's suppliers of fisheries and aquaculture products, the EU comes in at number eighteen. Vietnam, the Russian Federation, and Peru are the top three import sources for China. China imports fishmeal, a vital component of its expanding fish farming industry, primarily from Vietnam and Peru. In 2021, fishmeal made up 36%

Vietnam's imports and 82% of Peru's total. China imported more than 80,000 tons of fish worth EUR282m from the EU in 2021. Of this, fishmeal from Denmark made up 15% of the overall amount, and frozen whole blue whiting, mostly from the Netherlands and Germany, made up 22% of the total. Meanwhile, the number of fisheries and aquaculture total flows (import + export) in the US decreased by 25% between 2020 and 2021, from 6,2 million tons to 4,6 million tons. Nonetheless, the value of the flows increased by 14% from 2020 to a total of EUR28.8bn. The combination of rising imports and declining exports caused the US trade imbalance to rise to EUR19bn in 2021, 38% more than in 2020. US fisheries and aquaculture goods exported in 2021 totaled 1,34

million tons, a 52% decrease from the year before. Exports reached a total value of over EUR5m, making the 14% value reduction less notable. The top three travel destinations in terms of value in 2021 were China (15%), the EU (17%), and Canada (29%). Major US exports to Canada were lobster and salmon, which together made up about 38% of all exports to Canada. Fishmeal and salmon make up most US exports to China, making over 38% of the total volume. EU 26 imports the majority of its frozen Alaskan pollock fillets (28% of total volumes in 2021) from the US, with hake and salmon coming in second. US imports of fisheries and aquaculture products saw a 23% value gain and a 3% volume decrease between 2020 and 2021. They came to 3,26 million tons in total, which is equivalent to EUR24m. After China, Ecuador, the Russian Federation, Thailand, Norway, Canada, India, Chile, Indonesia, Vietnam, and China, the EU is ranked 11th among US suppliers in terms of value. The three most valuable imports into the US from the EU are tiny pelagics (6%), octopus (16%), and salmon (45%). Finally, it should be noted that by to their 2022 revenue, the 5 largest seafood suppliers in the world are Maruha Nichiro Corporation (Japan), Charoen Pokphand Foods (Thailand), Marubeni Corporation (Japan), Sysco Corporation (US), and Mitsubishi Corporation (Japan). While this last name might come as surprising, as Mitsubishi isn't necessarily known for its seafood trade, it's the companies that it owns that make up seafood a huge part of its business. Such companies include British tuna processor Princes Group, handling 30-40% of Japan's imported Atlantic bluefin tuna, the Norwegian aquaculture company Cermaq, and the Japanese seafood wholesaler Toyo Reizo, according to a report by Insider Monkey. ■



“A NEW-FOUND ENTHUSIASM FOR FROZEN FOODS”

The frozen food industry in the United Kingdom brings together products ranging from traditional frozen vegetables and ready meals to gourmet options and health-focused alternatives. This expansion has been fueled by innovations in food processing techniques, packaging, and flavor development. A shift towards higher-end frozen foods reflects changing consumer lifestyles and the desire for elevated dining experiences, even in the comfort of one's own kitchen.

In an address at the Federation's celebratory 75th Annual Luncheon at London's Hilton Park Lane late last year, British Frozen Food Federation (BFFF) President Ian Stone says consumers have a new-found enthusiasm for frozen foods. His remarks were upheld by data showing that sales of frozen food topped 2 billion tons a year. "The combined effects of the pandemic and the current cost-of-living crisis have led to a new-found enthusiasm for frozen foods," Stone added. He cited research conducted by the Federation which reveals that two in five consumers – nearly 40% – say that they are now buying more frozen food than they did just a year ago. "Increased numbers of consumers and foodservice operators have found what we have always known: that frozen food provides consumers with the best value nutritional food with the longest shelf life, allowing the consumer to only cook what they want, when they want it," he added. "And for the caterer, frozen provides exceptional quality, and nutritious ingredients that increase yields and provide utmost flexibility."

NEW PRODUCTS IN THE KINGDOM

Goodfella's has added four additional frozen sides to its lineup of pizza and ready meals - cheesy pizza bites,



mozzarella cheese bites, cheese & ham croquettes, and mozzarella arancini. With the range currently on hand, shops will be able to take full advantage of the growing consumer desire for "fakeaways" and improve sales. According to research quoted by the BFFF, 3 billion more meals were eaten at home in 2023 than in 2019. Additionally, consumers want to be able to affordably recreate their favorite takeout or restaurant meals at home given the state of the economy. At a more affordable price than the

present takeout choice, the new sides offer customers a delicious side of plate option or decadent finger food that can be enjoyed on a night in with family or friends. "As purse strings tighten, consumers are looking for ways to treat themselves at a lower price point. Our new sides cater to this perfectly by offering shoppers delicious, indulgent options they can add to their meals for a complete big night in experience," said Claire Hoyle, head of marketing at Goodfella's. "The launch builds on Goodfellas' ongoing strategic

effort to provide consumers with full meal solutions, after the recent introduction of our Italian ready meals range in 2022, which is now worth over GBP3.6m. Following this success, we are continuing to diversify our portfolio to help retailers tap into the growing demand for 'fakeaway' offerings and help drive incremental sales." The range is now available in Asda stores nationwide with an MRSP of GBP2.50 and will be launching in Sainsbury's from March. The top foodservice distributor in the UK, Brakes has introduced a novel line of meals with altered textures to satisfy the increasing requests of care and hospital caterers, as well as other establishments like schools. It might be difficult to offer a variety of options to satisfy every dietary need when kitchen staff is under pressure, but the newest offerings from Brakes make it simple for caterers to prepare delicious meals that adhere to IDDSI Level Four standards. The range includes five meat-based and five vegetarian options. The meat-based products are Chicken Casserole, Shepherd's Pie, Chilli Con Carne, Fish & Potato Pie, and Beef in Bolognese Sauce, while the vegetarian options are Lentil Bolognese, Vegetable Casserole, Mixed Vegetable Curry, Creamy Cauliflower Florets, and Moroccan Chickpea Stew. Each box of ten meals – either meat or vegetarian – contains two each of the five different meals, allowing caterers to offer a varied selection for customers who require texture modified meals. "Our new range provides a ready-made solution for caterers who need to serve IDDSI level Four options," according to Cathy Amos, head of customer marketing at Brakes. "As well as providing the right products for our customers, we are committed to delivering bespoke support and the Brakes website has lots of resources providing information, free guidance and tutorials on IDDSI and other dietary needs, including a video demonstrating the IDDSI textures." With the introduction of Mini Fish Fingers, Birds Eye is expanding its main line of fish items. With this introduction, retailers can take advantage of the chance to unlock incremental sales through innovation and capitalize on the growing demand for frozen food across a wider range of

circumstances. For more than half of UK customers, fish fingers are a weekly habit. Fish fingers are a staple of frozen food meal occasions and are driving the category's overall growth with a robust value growth of +6.8% versus YA. Since before the lockdown, the usage of frozen foods has increased significantly (+17% and +26%, respectively, compared to 2019). As the most popular fish finger brand in the UK, Birds Eye is in a great position to take advantage of this trend and contribute to increased sales with this launch. "Our classic Fish Fingers have been a staple at the dinner table for generations and are particularly popular at kids' mealtimes. With the growing use of frozen foods during lunch and snacking, our new Mini Fish Fingers will tap into this demand to provide a tasty, nutritious, and fun mealtime solution for kids while also offering an innovative option for adult sharing plates and party occasions," said Mike Sowerby, head of marketing Fish & Poultry at Birds Eye UK & Ireland. "The launch of our Chunky Fish Fingers in 2018 demonstrated that there is appetite to expand our fish fingers portfolio, delivering +37% of incremental sales value to the fish fingers category. Our new Mini Fish Fingers offer retailers a similar opportunity to unlock even more sales." Aviko has brought back their renowned Hash Brown Bites due to high demand, providing operators with a satisfying and adaptable option for today's busy menus. Aviko's Hash Brown Bites are now available to foodservice operators and are free of gluten and plant-based ingredients. These adaptable golden nuggets are a delicious substitute for fries since they have a crisp, crunchy exterior and a soft, fluffy potato inside. They also bring a creative touch to brunch and



breakfast events, and their grab-and-go options help operators stay ahead of the curve in two rapidly expanding markets. Chefs and caterers can take advantage of their quick and simple preparation time, as well as their adaptability to be consumed alone with a dip, loaded with cheese, or as a side. Ready to serve from frozen in 3.5 minutes when fried. Meeting dietary requirements, Aviko's Hash Brown Bites are proudly certified gluten-free and vegan friendly and are suitable for all foodservice operators including quick-service restaurants, pubs, bars, on-the-go or delivery thanks to their long holding time. Aviko's Hash Brown Bites come frozen and are available now in 4x2500g cases, they rejoin Aviko's vast portfolio of professional potato products developed with foodservice operators in mind. "Aviko's Hash Brown Bites are back! We've kept the original recipe that we know serves up a great tasting, professional quality dish that consumers love," said Mohammed Essa, commercial director UK & Ireland. "They were innovative when we first launched, and today are the on-trend potato solution to help operators meet consumer needs across a wide range of menu options – from sharing platters to grab-and-go. Experiential dining continues to grow in popularity and our Aviko Hash Brown Bites offer a unique, versatile, and profitable way to satisfy consumer hunger for something different. Think tater tots – but better!" ■

40%
of UK consumers said in 2023 that they were buying more frozen food than they had done the previous year.



THE DYNAMIC FOOD SCENE OF THE BENELUX REGION

The frozen food industry in the Benelux region, comprising Belgium, the Netherlands, and Luxembourg, is characterized by a dynamic landscape shaped by a mix of established players and emerging companies that serve diverse consumer preferences.



The frozen food sector in the Benelux region offers a diverse array of gastronomic options, reflecting the rich culinary traditions of Belgium, the Netherlands, and Luxembourg. In Belgium, renowned for its chocolate and flavorful beers, the frozen food market features a variety of convenient options inspired by traditional Belgian dishes. From frozen moules-frites to hearty stoofvlees, consumers can enjoy the flavors of Belgian cuisine with the convenience of frozen meals. Additionally, Belgian frozen food manufacturers offer beer-infused dishes and beer-battered snacks, providing a taste of Belgian gastronomy in the freezer aisle. Similarly, the frozen food offerings in the Netherlands showcase the country's diverse culinary landscape, blending hearty Dutch favorites with international influences. Dutch

consumers can find a range of frozen stamppot varieties, herring fillets, and stroopwafels, allowing them to enjoy traditional Dutch flavors with minimal preparation. The Netherlands' thriving cheese industry is well-represented in the frozen food sector, with frozen cheese snacks and appetizers featuring iconic Dutch cheeses like Gouda and Edam. Dutch frozen food companies also draw inspiration from the country's colonial past, offering frozen Indonesian-inspired dishes such as nasi goreng and sate, providing consumers with a taste of global cuisine from the comfort of their homes. In Luxembourg, the frozen food market reflects the country's unique culinary identity, influenced by French, German, and Belgian gastronomy. Frozen products inspired by Luxembourgish cuisine, such as judd mat gaardebounen and gromperekichelcher, offer consumers

a convenient way to enjoy traditional Luxembourgish dishes. Additionally, Luxembourg's frozen food sector includes a selection of high-quality frozen wines from the Moselle region, providing the perfect complement to Luxembourgish frozen meals. Overall, the frozen food offerings in the Benelux region capture the essence of local gastronomy while providing consumers with convenient and flavorful meal options.

MAJOR PLAYERS IN THE REGION

Companies like Iglo Belgium and Iglo Netherlands, subsidiaries of Nomad Foods, have long been prominent players in the region, offering a wide range of frozen vegetables, fish, and ready meals. With a focus on quality, convenience, and innovation, these companies have maintained a strong presence in households across the

Benelux countries, capitalizing on consumer demand for convenient meal solutions without compromising on taste or nutrition. In recent years, the Benelux frozen food market has witnessed the emergence of smaller, niche players catering to specialized dietary preferences and lifestyle choices. For instance, Greenyard Frozen, headquartered in Belgium, is a leading supplier of frozen fruits and vegetables, catering to the growing demand for organic and sustainably sourced produce. Similarly, companies like SoFine Foods in the Netherlands have gained traction by offering a range of plant-based frozen products, capitalizing on the rising popularity of vegetarian and vegan diets in the region. These companies reflect a broader trend towards greater diversity and innovation in the Benelux frozen food sector, as consumers seek out alternatives that align with their health, environmental, and ethical concerns. Moreover, the Benelux frozen food industry has seen increased collaboration and consolidation, with companies seeking to strengthen their market position and expand their product portfolios through strategic partnerships and acquisitions. For example, in 2020, Agristo, a Belgian frozen potato products manufacturer, acquired Lutosa, another prominent player in the sector, to enhance its product offerings and market reach. Such mergers and acquisitions underscore the competitive nature of the Benelux frozen food market and the ongoing efforts of companies to adapt to evolving consumer preferences and market dynamics. As the industry continues to evolve, companies in the Benelux region are poised to capitalize on opportunities for growth and innovation, driven by changing consumer lifestyles and preferences.

FROZEN FOOD ENTERS THE BENELUX E-COMMERCE SCENE

The Belgian Grocery eCommerce market is predicted to reach USD442.8m by 2024 and accounts for 5.8% of the total eCommerce market in Belgium. It is expected to increase over the next years. The expected compound annual growth rate for the next four years (CAGR 2024-2028)



21.3
million USD is the estimated value of the Belgian frozen food eCommerce market in 2024.

will be 14.4%, resulting in a projected market volume of USD757.4m by 2028. Meanwhile, the Belgian frozen food eCommerce market is predicted to reach USD21.3m by 2024 and accounts for 8.5% of the Food eCommerce market in Belgium. In the Belgian frozen food retail market, the online share is 0.9% and will increase by an average of 6.1% to 1.1% by 2028. In the Netherlands, the values are significantly higher: the grocery eCommerce market is predicted to reach USD4.1bn by 2024 and accounts for 16.6% of the total eCommerce market in the Netherlands. The projected growth for the next years stands at 15.0%, resulting in a projected market volume of USD7.3bn by 2028. At the same time, the Dutch frozen food eCommerce market is predicted to reach USD199.7m by 2024 and accounts for 8.4% of the Food eCommerce market in the

Netherlands. The expected compound annual growth rate for the next four years (CAGR 2024-2028) will be 10.6%, resulting in a projected market volume of USD298.3m by 2028. Furthermore, in the Dutch frozen food retail market, the online share is 5.8% and will increase by an average of 10.3% to 8.5% by 2028. Dutch imports of frozen food are expected to reach USD330m by 2026, up 1.6% annually on average since 2021. The Netherlands currently ranks 17th in the world, with imports totaling around USD299m. The UAE leads the ranking, followed by the US, South Korea, and Japan. Meanwhile, Dutch exports of frozen food are projected to decrease 0.8% on average each year, reaching USD244m in 2026. In 2021, France surpassed the Netherlands with exports of USD255 million. China, Spain, and Mexico follow in the rankings. It should also be noted that since 1997, Dutch exports have decreased by 4.2% annually. Segment-wise, the Dutch frozen vegetables eCommerce market is predicted to reach USD25.7m by 2024 and accounts for 12.9% of the frozen food eCommerce market in the Netherlands. By 2028, projections show that the market volume should reach USD37.4m. ■

244
million USD is the projected value of Dutch exports of frozen food by 2026.



ARTIFICIAL INT DIGITALIZATION A POWER TRIO

Artificial intelligence, digitalization and networking have always been connected. Today, however, they are almost inextricably intertwined and offer interesting but not always risk-free opportunities even for the operations of professional kitchens. The potential of this trio is still long away from being tapped, but a young man is already opening a new window.

At the end of 2023, three students achieved a remarkable breakthrough. With the help of AI, they were able to make parts of the text of a 2000-year-old piece of parchment readable again that was completely charred during the eruption of the central Italian volcano Vesuvius in 79 BC. This success is linked to the hope that one day the entire scroll will be readable again and with it many other documents that are currently still considered to be destroyed. What does this information have to do with the out-of-home market? There is nothing at the first glance, but at the second glance. This is because it gives all of us a glimpse of all the possibilities of this technology in the future – even in our industry.

TIGHTLY KNIT

Artificial intelligence (AI), digitalization, and networking are closely intertwined as the three following examples show:

• **Robots**

Restaurateurs program such devices to have the dishes brought to their guests in their restaurants. If several such devices are running in an operation, they can be networked and then used flexibly. In nursing homes and hospitals, robot nurses can relieve the burden on the staff, for instance, by taking over strenuous work like lifting patients. But there are already robots for social functions like communicating, playing, or interacting too. Innovative voice control models (see below) will open previously unthinkable applications in the future, including in professional kitchens.

• **Unmanned trolleys**, which move around a site without rails, deliver food. Catering facilities at large plants thus supply employees in remote areas who cannot quickly reach a company restaurant.

• **Software Updates**

For several years now, software for commercial kitchen appliances can be updated across locations, in as much as the devices are connected accordingly. For example, recipes or preparation instructions can be uploaded at the same time – even worldwide if necessary. However, professionals think much further ahead when it comes to networking.

• **Simplified Planning of New Commercial Kitchens**

Not only future-orientated chefs use various IT features. Even architects and planners of professional kitchens

INTELLIGENCE, & NETWORKING:



are increasingly using building information modeling (BIM) for their networked planning and building processes. This software processes digital data of commercial kitchen appliances, among others, to optimize the workflow of new operations.

NETWORKING - WHAT FOR?

The so-called kitchen control systems monitor the equipment of innovative, new, but also existing kitchens, especially their energy consumption. They read out consumption data and HACCP relevant test results and process this information for statistics and management information. Kiconn and Check Cloud are two such platforms. Mandatory requirements for such platforms are data interfaces accepted by manufacturers networked with

each other whose producers store them in the software of their devices. The platform operators check and confirm to the manufacturers that the "device - platform" data transfer works. The benefits of such control systems are many and varied, as the following examples show:

- **Cost reduction by**
- Optimizing procurement, primarily from energy and in the future perhaps also from water, which is also becoming temporarily scarce time and again in Central and Southern Europe (capping load peaks)
- **Preventive maintenance**
(management of maintenance and service tasks, avoiding unscheduled repair and service work)
- **Tracking the food distribution**

equipment (containers and trolleys) along the entire supply chain

- **The automation of regularly** occurring routine tasks - for example, complete documentation for regulatory authorities and management

- **Optimization of the workflow**
The German standard for this standardization has been in place for five years. It was revised in 2021 (DIN/TS 18898). In the further developed form, it includes 16 different device classes. Since then, refrigeration equipment can also be integrated into open (non-proprietary) networking among various manufacturers and networking across devices. It is also possible to use the interface as a gateway or a cloud communication interface.



THE INTERNATIONAL PERSPECTIVE

Of course, the above-mentioned standard also has an international dimension. The people responsible have developed (built) it into the OPC United Architecture (OPC UA). It is also available as the Companion Specification of the OPC Foundation. That's why their interface can be used transnationally. The process of implementing this takes time— a lot of time. The more frequently kitchen professionals implement such control systems and therefore ask for appliances with these interfaces, the more manufacturers will be forced to incorporate them into their appliances.

A PLATFORM OF CONFIDENCE

The process to develop such platforms has been going on since the 2000's. At first, hardly any manufacturers were prepared to have their device data read out. The hurdle of placing them on an independent platform was even higher – the manufacturers feared that their data would be misused. It took a great deal of persistent international persuasion to gradually build up industry-wide acceptance for such platforms and standards, not only in our sector, but in almost all sectors and not only in Germany, but in other countries too. But in the meantime, it is accepted because the manufacturers are convinced and trust that their data is safe on them.

CAUTION IS AS IMPORTANT AS TRUST

But what about devices manufactured in countries whose institutions and state-sponsored parties reserve the right to potentially access all data from administrative and commercial enterprises? Doesn't one have to

assume with them that they deposit hidden features in your software to spy out information and forward it to government agencies or the party who analyze it? Shouldn't one even consider the scenario that they are not only tapping into the data of their own devices of their customer, but also that of other users of the platform, who are not among their customers? Previous experience forces us to assume all of this. One Far Eastern country even obliges companies to potentially cooperate with its secret service and to establish and tolerate party cells (note: there are even mandatory obligations to cooperate in the US).

But are these all arguments against cross-platforms for manufacturers, including those of kitchen control systems? No! No one can isolate themselves. One must live with these circumstances. Presumably there is only one way: the manufacturers must be as sensitive as diviner's rods. They must secure their software in the best possible way, not only against cyber-attacks, but also against state-initiated spy software. If you discover weak spots, then ultra-fast measures must be taken. Then they will be able to cover this issue, probably not completely, but to a considerable extent. The somewhat bitter realization is more is not possible today; more will not be

possible in the future either.

A LOOK INTO THE FUTURE

When it comes to the question of how the development will continue, the focus returns to a young man, the 31-year-old Jerry Yue, the founder and CEO of the US American company, Brain Technologies. At the Mobile World Congress in Barcelona in February 2024, he introduced the prototype of a cell phone that totally dispenses with APPS and processes voice commands with AI. The so-called large language models (LLM) are the basis, such as those used in the chatbot ChatGPT. While the previous LLMs communicate, but above all, produce texts, Yue's will go further: his LLMs are supposed to book flights, place orders, and much more. In other words, the US Chinese-born wants to place his AI above those of the others, so to speak, meaning that his superior software should subordinate the others and let them work for them. Should the prototype of the cell phone from Brain Technologies be ready for series production, it is highly likely that this technology will also be transferred to other applications. It will also arrive in our industry soon. Then equipment won't be controlled by APPS anymore, but by Multilanguage voice commands. Recipes, preparation, or operating instructions, which are stored in many languages in the clouds, can then be called up quickly and reliably with the help of AI, even by employees with little knowledge of the language. Training or instructing foreign-language employees could become much easier in the future than presently. Perhaps staffing problems can be softened up in this way in several European countries – an encouraging prospect. ■

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THE PRIVATE LABEL WORLD CONVENES IN AMSTERDAM



The International Trade Show, which is scheduled on May 28 and 29 at the RAI Amsterdam Convention Centre under the theme “Connect. Source. Grow”, is the premier gathering for the private label industry for sourcing and business opportunities.

Organizers expect a record-breaking 2,850 exhibitors representing over 70 countries, so this year's trade show promises to be larger and more dynamic than ever. As such, an additional exhibit hall will be used to accommodate the strong demand for exhibit space. The World of Private Label welcomes more than

60 national and regional pavilions. Among the new pavilions are Dubai, Egypt, Georgia, Germany (Thuringia), Italy (Organic), Poland, South Korea, Thailand, and the Netherlands. The latest trends in food and non-food - including organic, plant-based and sustainable products and packaging - will be on display on the trade show floor. The trade show is also expected to attract more than 16,000 professionals: retail buyers from supermarkets, discounters, hypermarkets, convenience stores and specialty stores and more, from over 120 countries from all continents. One of the popular parts of the trade show is the innovation and new product development area known as the Idea Supermarket. This section features private label ranges from 64 supermarkets, hypermarkets, discounters, specialty stores and drugstores around the world. Also in this area is the New Product Expo, which will feature 500+ new products developed by exhibitors. Plus, there will be a display of winning products from retailers that earned an award in International PLMA Salute to Excellence Awards for best private label product of 2024. This year's pre-show seminar program will be enhanced by concurrent workshops that will be led by industry experts touching relevant topics in a smaller interactive setting. Participation in the seminars and

workshops is free of charge to all registered retailers, exhibitors, visitors, and industry professionals.

PRIVATE LABEL AT HIGH DEMAND

NielsenIQ surveyed 17 markets for PLMA's 2023 International Private Label Yearbook update and noticed an increase for retail brands in 16 out of the 17 countries, the only exception is Switzerland where the private label share slightly declined. European markets remain some of the biggest Private Label markets globally, 11 markets sustained their market share position above 30%, and 6 markets are now above 40% of Private Label share. The highest growth countries in private label share are Portugal (+4.4%), Germany (+2.9%), The Czech Republic (+2.8%) and Spain (+2.2%). While Switzerland is the only country showing a decline in private label share, it is still the country with the highest share across the 17 countries tracked. The share of Switzerland was in 51.8% last year, so it remains the only country with a share of over 50%. Europe's largest markets, Germany, United Kingdom, and France had a collective Private Label share of 39.6% in 2023. Finally, the private label sales grew with EUR43bn across the 17 European countries tracked. Perishable and ambient food have the highest contribution to this growth. ■



CIBUS 2024 TO SET NEW RECORDS



There's great excitement around the 22nd edition of Cibus, as the event is expected to surpass all previous editions. Scheduled in Parma from May 7 to 10, the leading trade show in the Italian agri-food sector will feature more than 3,000 brands that will showcase their products, while over 1,000 international buyers from key target markets are expected.

OThe professional visitors will come from several markets such as the United States, Germany, Spain, France, the United Kingdom, and the Middle East. 2024 will also represent a special year for the ASEAN countries, marking the return of China after the pandemics and an important delegation from Japan. The trade show is increasing its relevance for the Italian agri-food, confirming to be a must-be event for food professionals from worldwide and aiming at creating what Antonio Cellie, CEO of Fiere di Parma, defines as "a system of national and international alliances that consolidate Italian and European agri-food as a model for conscious and sustainable consumption globally. Our events ensure a path that is far more than a trade show: it's an experience designed to guide markets, even distant ones, towards our food models. The finalization of the partnership with Koelnmesse is part of this strategy". The agreement was recently signed with Koelnmesse: the German group, one of the main players in the trade show market worldwide, will handle the international development of both Cibus and Tuttofood, whose management has passed to Parma following the agreement reached in 2023 with Fiera Milano. In particular, the agreement with Cologne will

bring international visitors to Cibus and exhibitors from abroad to Tuttofood. "With the support of Koelnmesse, both events will be able to count on a more international presence, respectively, of visitors and exhibitors. Thanks to a rescheduling of the calendars aimed at harmonizing Cibus, Tuttofood, and Anuga (the food and beverage trade show by Koelnmesse), Cibus will be able to consolidate its role as a facilitator of the development of Italian agri-food exports, while Tuttofood, within two editions, will see foreign exhibitors grow from the current 10% to at least 50%," Cellie comments.

A GREAT OVERVIEW OF THE ITALIAN FOOD SECTOR

Featuring 120,000 square meters of exhibition space spread over 8 pavilions, Cibus 2024 will offer a complete overview of the Italian food sector, presenting the very finest of the main Made in Italy Agri-food sectors: fresh products, deli, cold cuts, dairy, ready meals and frozen, as well as the grocery section, featuring pasta, preserved foods, and condiments, which can be considered authentic pillars of our agri-food export. Thanks to the collaboration with the ICE Agency, buyers, category managers, and purchasing managers from the most important supermarket chains will be in Parma. A novelty of this

edition will be the "Cibus delle idee", a special section celebrating innovation. Strategically located at the entrance of Hall 7 (West gate), the area will host some successful spaces of Cibus, such as the Innovation Corner - the exhibition section dedicated to the presentation of product innovations - and the Startup Area, conceived in collaboration with Le Village by Crédit Agricole. For the very first time, the visitors will enjoy T-OWN, a section showcasing in an original way the ideas and initiatives implemented by agrifood companies to led final consumers to more responsible choices, under a social, environmental, and nutritional perspective. The call for ideas will be managed by T_OOL, a spinoff powered by the University of Parma. The trade show will also provide visitor with a rich program of conferences and events dedicated to Authentic Italian Food & Beverage. The focus will cover three main thematic areas: the new balance between Large Scale distribution and brand industry, exploring the implications for the supply chain after the recent anti-inflation agreements; the protection and enhancement of traditional gastronomic heritage through the comparison of different experiences and best practices of national and foreign consortia; and the future challenges for foodservice operators. ■



SVILA INTRODUCES NEW RECIPES

Svila Srl has recently introduced the Mamamia Sottile line into its wide range of proposals. According to the company, the proportion between the topping and the dough was designed to enhance the tasty ingredients of the topping and at the same time the crispness and flavor of the dough. The new recipes are Salami, Ham and Mushrooms for meat lovers, and 4 Cheeses and Vegetarian, for those with a vegetarian diet. All Svila's products are made with 100% Italian wheats and tomato.

<https://www.svila.it>

FROSTKRONE LAUNCHES BURGERS ON FINGER FOOD SEGMENT

Frostkrone has showcased new burger products as finger food. The company is placing five popular varieties as burger balls in the freezer section of stores. The burger balls can be savoured in five different flavours: Cheese Burger Balls, Bacon Burger Balls, BBQ Burger Balls, Fish Burger Balls, and Chicken Burger Balls. Preparation time is less than 15 minutes. The burger balls always turn out a perfect success in your own oven (180 °C, 12 minutes) or in an air fryer (180 °C, 9 minutes).

<https://frostkrone-foodgroup.com/>



CONAGRA BRANDS UNVEILS NEW PRODUCTS

Conagra Brands, Inc. has showcased a diverse line-up of new meals, vegetable sides, and snacks. For Frontera, the popularity of Mexican cuisine shows no signs of slowing. Two new enchiladas reflect his passion for authentic, quality ingredients. Chicken Enchiladas with Chile Verde Sauce and Cheese Enchiladas with Red Enchilada Sauce are made with corn tortillas and filled with delicious ingredients. Gardein has also presented its Ultimate Plant-Based collection, giving vegans, vegetarians, and flexitarians numerous ways to enjoy their favorite dishes meat-free.

<https://www.conagrabrands.com/>

MYMOCHI LAUNCHES NEW WAFFLE BITES

rice flour used in traditional mochi. The ready-to-eat snacks can simply be thawed or briefly heated in the microwave, making it possible to enjoy waffles on-the-go. MyMochi Waffle Bites come in three flavors: Original, Blueberry and Cinnamon. These lightly sweetened snacks are perfectly portioned into individual bites, gluten free and contain no artificial ingredients.

<https://www.mymochi.com/>



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STATE OF THE FROZEN FOOD INDUSTRY
is a project which contains reports on the most important frozen food categories,
as well as technical equipment innovation related to product manufacturing,
published both in print and on-line.



OREO FROZEN TREATS EXTENDS THEIR MINT LINE-UP



The OREO brand is expanding the brand's Mint Frozen Treats lineup to include snackable bars and sandwiches, and a 14oz scoopable tub. The new OREO Mint Frozen Treats releases include OREO Mint Bars feature sweet mint creme-flavored base packed with OREO cookie pieces, dipped in a delicious coating made from crushed OREO wafer pieces; and OREO Mint Sandwiches feature sweet mint creme-flavored base mixed with OREO cookie pieces, sandwiched between two big OREO cookie wafers.

<http://www.mondelezinternational.com/>

NEW PIZZA BASES INTRODUCED BY CENTRAL FOODS

Frozen food distributor Central Foods has launched five new pizza bases for the food service sector. The KaterBake pizza bases are available in a variety of sizes and are suitable for vegans and vegetarians. They include thin and crispy and soft and fluffy options, plus a rectangular pizza which is ideal for larger scale catering. The new range includes a 9" pizza base, two 12" pizza bases, a 14" pizza base and a rectangular 15" by 9" pizza base. All are soft and fluffy except the 9" and 12" thin and crispy bases.

<https://www.centralfoods.co.uk/>



SCOTT & JON'S PRESENTS 10-MINUTE MEALS



Scott & Jon's, the leader in premium seafood meals, has announced the launch of its new 10-Minute Meals. Created for swift stovetop preparation, these new meals empower consumers to enjoy the satisfaction of cooking fresh, delicious seafood dishes while saving time in the kitchen. New 10-Minute Meals help make weeknight cooking easier and come in three recipes: Shrimp Alfredo, Shrimp Fajita, and Shrimp Scampi. Each multi-serve meal includes portions of shrimp, vegetables, and home-made sauces or seasoning blends.

<https://www.scottandjons.com/>

SWEETFROG INTRODUCES NEW VERY STRAWBERRY SHORTCAKE

sweetFrog has announced the launch of its newest flavor: Very Strawberry Shortcake, made with very strawberry yogurt, nonfat vanilla yogurt, and the classic Lorna Doone Shortbread Cookies. Very Strawberry Shortcake are available at participating US sweetFrog stores for a limited time until June 11, 2024. "We are excited to introduce Very Strawberry Shortcake as our newest addition to the sweetFrog family," said Heather Marini, senior national marketing manager for Kahala Brands, parent company of sweetFrog.

<https://www.sweetfrog.com/>



1 JANUARY/FEBRUARY Ad closing 26.01
Publishing 09.02
ANUGA FOODTEC SPECIAL EDITION

Frozen Pasta for Catering and Foodservice
product innovation, manufacturers, suppliers

Bakery and Pastry
key market players, producers, suppliers

Bio and Organic Products for the Food Industry
trends and innovations

Frozen Potato Market
innovative products and European overview

Frozen Potato Technology
sorting, peeling, cutting, slicing, dicing, PEF systems

Process and Packaging Technology
state-of-the-art equipment and solutions

Freezing Technology
conveyor belts, freezers and chillers, tunnel and spiral freezing systems


Transport & Logistics
developments, distribution, and cold storage

Artificial Intelligence
update on applications for automation & robotics

Nutrition & Ingredients
for frozen bakery and potato products

Frozen Food in Germany
recent developments, review, estimates

Trade fairs: ANUGA FOODTEC Cologne, INTERGASTRA Stuttgart, BIOFACH Nürnberg, GULFOOD Dubai, FOOD EX JAPAN, INTERNORGA Hamburg, CFIA Rennes, IFE London, FOOD EXPO Greece



2 MARCH/APRIL Ad closing 29.03
Publishing 12.04
PLMA, CIBUS SPECIAL EDITION

Appetizers, Snacks and Pies
high convenience, filo pastry & pies, pizza & ready meals

Frozen Vegetables, Fruit, Mushrooms, Green Herbs
trends and market overview

Plant-based & Vegetarian Products
meat-free and protein substitutes

Technology Innovation for Frozen Vegetables & Fruit
sorting, peeling, cutting, slicing, dicing, PEF systems

BeNeLux Market Review
major players and new products

Cooked & Pre-Cooked IQF products for the Food Industry
rice, pasta, sauces, cereals, noodles, vegetables

Technology and Equipment
industrial freezing, freezers, coolers, proofers, ovens

Digitalization & Networking
smart solutions for the food industry



Frozen Desserts & Ice Cream Market in Europe
market dynamics & new product development

Frozen Fish & Seafood
sustainable practices, market overview, major processors

Nutrition & Ingredients
vegetables, fruit and herbs

Frozen Food in the UK
market overview

Trade fairs: PLMA Amsterdam, CIBUS Parma, SEAFOOD Processing GLOBAL Barcelona, FOOD & DRINK EXPO Birmingham

3 MAY/JUNE Ad closing 24.05
Publishing 07.06

Frozen Food from Italy
market overview for retail and foodservice

Frozen Pasta & Noodles
trends, new product development, producers, suppliers

Frozen Pizza Market
major producers, suppliers, country breakdown

Technology and Innovation for Frozen Pizza
processing machines, toppings, portioning and forming

Ingredients for the Foodservice Industry
herbs & mixed herbs, rice, noodles, vegetables, processed meat, and sauces

Frozen Finger Food, Fried & Baked Products
trends and successful products

Frozen Burgers
new products, producers and suppliers

Frozen Snacks and Pastry
innovative products for retail and foodservice

Optical Sorting Technology
innovation and latest equipment

Deep Freezing Technologies, Proofing, Baking, Cooling
for bakery applications

Frozen Food in the US
evolution, challenges, opportunities & major players

Trade fairs: SNACKEX Stockholm, SUMMER FANCY FOOD SHOW

4 JULY/AUGUST Ad closing 26.07
Publishing 09.08
SIAL SPECIAL EDITION 1

Coated/Breaded/Batter Foods
new products, market evolution

Ethnic Foods - Greek, Mexican, Italian, German, French & Asian Food
product trends, producers, markets overview

Potato Technology Innovation
new equipment for potato processing

Technology for the Frozen Food Industry
PEF systems

Potato Market Update
frozen fries market overview in retail & foodservice

Vegetarian and Vegan Food
product trends, innovations

Industrial Freezing Systems
latest equipment and technologies

Frozen Food in Spain and Portugal
latest market developments

Nutrition & Ingredients
trends for coated and breaded products

Trade fairs: SIAL Paris



5 SEPTEMBER/OCTOBER Ad closing 20.09
Publishing 04.10
SIAL SPECIAL EDITION 2, INTERPOM

Key Exhibitors Road Map and Event Agenda

SIAL Trends
special report

Bread, Bakery, and Pastry
sweet & salty products

Frozen Vegetables, Fruit, Mushrooms, Green Herbs
solutions for retail and foodservice

Technology Innovation for Frozen Vegetables and Fruit
sorting, peeling, cutting, slicing, dicing, PEF systems

Technology & Logistics
trends and solutions in packaging equipment

Blast Chilling and Shock Freezing
versatile applications between shock freezing and pasteurizing

Meat and Poultry Products
new technologies for product development

Frozen Food in France
key players, product innovation, suppliers

Global Retail Market
consumer behavior, new products, processors, suppliers

Nutrition & Ingredients
for pre-baked and ready to bake foods

Trade fairs: SIAL Paris, SÜDBACK Stuttgart, INTERPOM Kortrijk, PLMA Chicago, GULFOOD MANUFACTURING Dubai




6 NOVEMBER/DECEMBER Ad closing 22.11
Publishing 06.12

Ready to bake & Pre-Baked Foods
market innovation, producers, new products

Convenience Food for Retail & Foodservice
European market evolution, category breakdown

Frozen Products for Catering & Foodservice
suppliers, producers, processors

Meat and Veggie Burgers
product development & trends

Freezing Technology
refrigerating and freezing equipment

Quick Service Restaurants & Bar and Snack Channel
leading operators in Europe and market evolution

Going Green
substantial contributions of equipment manufacturers

Nutrition & Ingredients
ethnic food innovation

Frozen Food in Scandinavia
producers, suppliers, consumer trends

European Retail Market
suppliers, major retail categories, food trends

Trade fairs: SIRHA Lyon 2025, MARCA Bologna 2025, FRUIT LOGISTICA Berlin 2025, GULFOOD Dubai 2025

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