frozen food europe

the magazine for the frozen food industry

May/June 2020 - volume 32 issue 3

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By **Dan Orehov,**
Managing Editor

REACHING CONSUMERS DIRECTLY

The direct to consumer (DTC) frozen foods business is in the early stages of rapid growth. As many food types are becoming increasingly available on a direct to consumer basis, the share of total purchases allocated to frozen foods is higher in e-commerce than in brick and mortar sales. Frozen food is now one of the Top 10 items to purchase when buying groceries online. According to various opinions, consumers currently favor frozen foods as they provide convenience and save time, while also being perceived as safer. They come packaged, branded, and sealed, meaning the consumer does not need to trust a delivery person or personal shopper to choose a quality item.

Consumers have rapidly adopted to the time saving and variety expanding options enabled by technology. Next day delivery, once considered fast, has become a norm in many areas while expectations for same day delivery are growing. Companies like FreshDirect and others have created expectations about timely deliveries.

> *Studies have shown that frozen foods are likely to see a significant fraction of food ordered online for home delivery, it in the context of the COVID-19 pandemic.*

Moreover, studies have shown that frozen foods are likely to see a significant fraction of food ordered online for home delivery. Taking all this into account and placing it in the context of the COVID-19 pandemic, it is obvious that this particular crisis has already created opportunities for direct to consumer business growth. Many companies are prioritizing their e-commerce sales, since a significant number of people are shopping online at this point in time. The result is clear: those who are already present in the e-commerce space are seeing a spike in sales, while companies who fail to adapt to the "new normality" may not survive. Either way, one thing is certain: consumer behavior and shopping patterns have changed.

Is your business prepared for the post-COVID-19 era? Feel free to send your thoughts at dan.orehov@trade.media.

Stay safe! ■

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ISSN 1473-3382


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US

NEW PRESIDENT AND CEO FOR GCCA

The Global Cold Chain Alliance (GCCA) announced that Matthew Ott, CAE, has been named the organization's new president & CEO. Ott succeeds outgoing President & CEO, Corey Rosenbusch who left the Association earlier this year to take the helm as President & CEO of The Fertilizer Institute. "GCCA is a vibrant global association at the forefront of one of the most critical industries in the world – the perishable food supply chain," Matthew Ott said. "I look forward to working with the staff and members on advancing the organization and industry forward during this time of unprecedented change.

US

MCCAIN FOODS HALTS US PLANT EXPANSION

As foodservice dropped is the US, frozen potato producer McCain Foods has put its expansion plans on pause. Last year, the Canadian company had announced its intention to spend USD300m to expand its Othello, Washington plant, which employs over 450 workers and produces cca. 400m pounds of frozen products, started the expansion in May 2019 and was expected to be completed in early 2021. The company said it would review restarting construction once safety measures are lifted and business is back to normal. This move was expected to follow a similar expansion to its plant in Burley, Idaho.

Global

BÜHLER GROUP AND PREMIER TECH CREATE GLOBAL PARTNERSHIP

The strategic cooperation between swiss Bühler Group and Premier Tech from Canada, which started as a close collaboration in August 2019, evolved into a Joint Venture in China and ultimately grew to a global partnership for bulk packaging. This new partnership will allow Bühler to access Premier Tech's leading technologies in bagging and palletizing either through the newly created PT-Bühler joint venture in China, serving the world with cost-effective packaging, or directly through Premier Tech's facilities for the high-end food feed and grain markets worldwide.

"The global partnership will serve customers worldwide by building on Premier Tech's recognized know-how in the field of automated packaging technologies while making full use of Bühler's strong international sales and service network," André Noreau, CEO of Premier Tech's Systems and Automation business said. Premier Tech and Bühler are bringing their cooperation to new heights by offering adapted state-of-the-art packaging solutions around the globe. Bühler will continue to service its existing installed base and will also focus on sales and service through its global customer service focus and total plant-solution expertise.

Bühler and Premier Tech have worked closely together in the interest of forming a 50/50 joint venture in China, PT-Bühler, that will officially start on July 1, 2020. The aim of the joint venture is to develop and market new cost-effective packaging solutions based on Premier Tech's bagging expertise. Operating in Wuxi, China, PT-Bühler will focus on serving the food and feed markets in China, and other markets moving towards cost-effective automation.

"Customers will benefit from significantly more efficient, and even more accurate and food safe packaging solutions thanks to automation technologies developed by PT-Bühler," Johannes Wick, CEO of Bühler's Grains & Food business said.

Global

FROZEN FRUITS MARKET EXPECTED TO INCREASE

The global frozen fruits market size is expected to expand at a CAGR of 6,7% and reach USD5.59bn by 2027, according to a new report by Grand View Research. As most international trade has been affected by the pandemic, consumers are expected to increasingly spend on the purchase of packaged food items, such as frozen fruits. The growing popularity of products with a longer shelf life, including packaged fruits and vegetables, as a result of increased occurrences of COVID-19 at the global level, is expected to expand the market scope. In terms of product, tropical fruits accounted for over 40% share of the global revenue in 2019. The growing popularity of tropical varieties, including papaya, banana, and pineapple, as a key vitamin source among consumers, is fueling the growth of the segment. Berries are expected to register a CAGR of 7.5% from 2020 to 2027, owing to the growing adoption of these products in the formulation of various beverages in developing countries, including China and India. Online sales will also play a pivotal role, with an expected CAGR of 7.7% over the forecast period.

US & CANADA

NORTH AMERICAN FROZEN BAKERY MARKET TO GROW

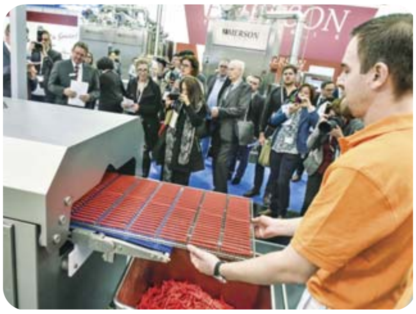
The trend for frozen bakery products among North Americans is becoming clearer each year. This product segment is driving the regional food industry at a substantial rate. Currently, Americans and Canadians prefer baked ready-to-eat products such as cakes, cookies, donuts, and snacks. Based on the data analyzed by Facts and Factors research company, the North America frozen bakery products market in 2019 is over USD9.07bn and is anticipated to reach over USD12.96bn by 2026. The projected CAGR for the North America frozen bakery products market is around 5.2% from 2020 to 2026.

Germany

AUTOMATION: THE BASIS OF ANUGA FOODTEC 2021

The next Anuga FoodTec, one of the most important international supplier trade fairs of the food and beverage industry, will take place March 23 – 26, 2021 in Cologne, Germany. With its two new segments 'Digitalization' and 'Automation', Anuga FoodTec 2021 is aiming to create a compact platform for two of the industry's top themes and will demonstrate how the digital transformation can be implemented today and in the future. In accordance with the high relevance of the topics within the industry, the event program of Anuga FoodTec 2021 also addresses themes that go hand in hand with digitalization and automation. Among others, lectures on "Digital Factory", "SmartTec 4Food" and "Integrating existing machines" are planned (subject to changes), organizers Koelnmesse say.

The complexity is increasing within the food and beverage industry, and the demands placed on the companies are correspondingly high. It is, therefore, more important than ever to find innovative packing and sustainability solutions for a cost-saving, highly-frequented production while at the same time meeting the consumer's increased expectations in terms of variety. Automation and digitalization are here just two interlinked



technologies that make a significant contribution across the entire value chain. Automation is present in many places but is by no means a fixed part of the food and beverage industry in every business. Innovative automation systems are useful hereby and in some cases applications that are necessary for increasing revenue, improving productivity, minimizing safety risks, optimizing resource management, or minimizing error rates or improving the capacity of machines and systems. At Anuga FoodTec 2021 many 'Automation' ideas and solutions will be covered in breadth and depth that is hitherto unknown. Thanks to the digitalization, automated processes can be linked with each other. Accordingly, a multitude of companies, which supply the OEMs with digitalization and automation solutions, will be exhibiting in the 'Digitalization' product segment.

US

BEYOND MEAT LAUNCHES BEYOND BREAKFAST SAUSAGE

Plant-based meat company Beyond Meat showcased its latest product, Beyond Breakfast Sausage, a new plant-based breakfast sausage featuring 11 grams of protein per serving with 50% less total fat, 35% less saturated fat and sodium and 33% fewer calories than a leading brand of pork sausage patties. The product is made without GMOs, soy, gluten, or artificially produced ingredients. "Our Beyond Breakfast Sausage platform delivers on our promise of enabling consumers to Eat What You Love™ while advancing health, environmental, and animal welfare benefits," Ethan Brown, Beyond Meat founder and CEO said.

US & CANADA

GROWTH FOR THE SALMON MARKET

Having reached a volume of 445,480 tons in 2019, the salmon market is expected to continue its moderate growth during the next five years, according to a new report by IMARC Group. High per capita income, improved standards of living and awareness about the health benefits of salmon are increasing its consumption in North America. Moreover, owing to biological constraints and seawater temperature requirements, farm-raised Atlantic salmon is widely consumed in the region. In addition to this, a long coastline and continual technological advancements in the fishing industry are further creating a positive outlook for the market in the region.

US

NESTLÉ LAUNCHES LIFE CUISINE

Nestlé USA is introducing Life Cuisine, a new brand that features gluten-free to high-protein meal solutions. It offers 15 recipes. Consumers can choose from a variety of options offering a full cup of vegetables, two or more essential nutrients, high protein, high fiber and more. The company is also introducing new and improved meals from Lean Cuisine. More than half of the brand's portfolio will be relaunched including new Lean Cuisine Bowls. At the same time, more than 50 offerings will feature renovated, calorie-conscious recipes and will be released in updated packaging that highlight enhancements.

US

AHOLD DELHAIZE USA SIGNS PARTNERSHIP

Ahold Delhaize USA announced Americold as its partner to build the two previously announced fully-automated frozen warehouses. The new facilities are part of the company's previously announced supply chain transformation plan as it transitions to a fully-integrated, self-distribution model. The plan will expand cold-storage space by 24 million cubic feet, or 500,000 sqf, by building the two frozen facilities in partnership with Americold. The facilities will be located in Plainville, Connecticut, which will serve Ahold Delhaize USA's Northeast brands, and in Mountville, Pennsylvania, which will serve Ahold Delhaize USA's Mid-Atlantic brands.

"We're extremely proud of this new partnership with Americold and the opportunity to fully expand our cold-storage capacity as part of our current storage needs and future growth plans," Chris Lewis, executive vice president, Supply Chain for Retail Business Services, the services company for Ahold Delhaize USA said.

By **Dan Orehov**

PLANT-BASED PRODUCTS ON THE RISE

According to research, some 95% of people who purchased a plant-based burger this year also ate meat, new data from market researcher NPD Group shows. This means that the largest chunk of the target population for the "meatless" burgers and similar products is made up of flexitarians, namely those who do eat meat, albeit less frequently.

Some 228 million servings of plant-based burgers were purchased at quick-service restaurants this year, up 10% from a year ago. And while beef burgers are still the most popular burgers on menus, with 6.4 billion ordered, growth is flat compared with a year ago, according to the report. The substantial year-over-year growth in plant-based burgers is due primarily to greater availability at major fast-food chains including Burger King QSR, +0.55% and White Castle. The plant-based meat market is estimated to account for a value of USD12.1bn in 2019 and is projected to grow at a CAGR of 15.0% from 2019, to reach a value of USD 27.9bn by 2025. An increasing number of consumers are demanding plant-based meat, either for medical reasons or as a healthy lifestyle. As a result, the demand for plant-based meat continues to expand. Additionally, continuous efforts in research & development by plant-based meat manufacturers, in terms of better aroma, texture, longer shelf life, and better nutritious profiles is projected to escalate the growth of global plant-based meat market in the coming years. Companies, both start-ups and established players are entering this high growth market owing to the growing preference for plant-based diets among consumers at a global level. Established food companies such as Cargill (US) and Tyson Foods (US) have invested in start-ups that are producing plant-based meat products; this is further expected to boost sales in the coming years.

CATEGORIZING BY SOURCE AND TYPE

According to MarketsandMarkets researchers, by source, the plant-based meat market is segmented into soy, wheat, pea, and others (quinoa, oats, beans, and seeds). Soy is widely used as a base ingredient for plant-based pork, beef, and chicken products, owing to its high protein content and meat-like texture. The growing health concerns associated with the consumption of animal protein-sourced foods and adoption of flexitarian and vegetarian diets are expected to drive consumption of soy as a source in the global market. Impossible Foods offers soy-based burgers and is backed by a strong distribution network in the US.

Pricing and availability of meat substitutes are two key factors that currently hold back its penetration worldwide.

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In January 2019, the company launched an upgraded version of its burger, which would have 30% less sodium and 40% less saturated fat. The same research company says that by type, various sausages, nuggets, strips, and burgers have chicken as their major meat ingredient. Chicken flesh and eggs are loaded with animal protein, fats, and cholesterol. On the other hand, the protein content in plant-based meat chicken products is about the same while the other nutrients may vary. Beyond Meat's (US) plant-based burger includes ingredients such as pea protein and canola oil. Impossible Food's (US) patties contain soy protein and coconut oil to replicate the taste of chicken.

GERMANY LEADS

A report by Euromonitor International shows that the meat substitutes industry in Germany saw great turnaround in 2018 and 2019, as high-profile new product launches generated renewed interests from consumers and helped them return to the aisle. This follows a temporary halt in the sales growth impetus in 2017, when the previous wave of new products had become more mature. Major brands successfully target flexitarians rather than vegetarians thanks to improving the taste and texture properties of their assortment in order to be increasingly close to meat equivalents, which resulted in widening the industry's customer base in Germany.
The Incredible Burger range under Nestlé's Garden Gourmet brand was among the most high-profile recent launches. Nestlé extended the brand's reach in the second half of 2019 by introducing vegan minced meat.
Another major recent entry was Iglo with the Veggie Love brand at the end of 2018, which contributed to developing the nascent assortment of meat substitutes in the frozen aisle of grocery retailers. Alongside large international companies, home-grown start-ups such as LikeMeat are also gaining exposure thanks to a widening offering and by being listed at major grocery retailers. LikeMeat has gained popularity through its assortment of products replacing chicken, such as vegetarian nuggets.
Retailers, especially discounter chains, also played a key role in increasing the publicity surrounding meat alternatives, notably through the launch of the Beyond Meat brand by the Lidl and Netto chains in spring 2019, which helped keep meat alternatives in media headlines. In summer 2019, Lidl also launched its private label range Next Level Meat and Aldi followed with the launch of a new veggie burger, Wonderburger. Retailers with a more established presence in meat substitutes, such as the organic supermarket food chain Alnatura and the health and beauty specialist chain dm-drogerie markt, also continue promoting and widening their private label assortment.
Despite growing competition from new challengers, Rügenwalder Mühle's position as a pioneer and as the largest meat substitute brand remains undisputed, helped by strong brand awareness derived from its meat-based products and the brand's appeal to flexitarians, backed by wide distribution across major retail chains. The company also continued to record strong growth through meat substitutes in 2019, thanks to new recipes and by widening its range.
Although growth rates for meat substitutes are expected to slow down over the 2019-2024 period as the industry reaches a higher level of maturity, it retains strong potential for growth. As it should continue to be driven by new product innovations, increased distribution, as well as by consumers' interest in reducing their meat intake for animal welfare and environmental reasons. The growing selection of meat substitutes at foodservice outlets is also expected to contribute to the use of new recipes and subsequent adoption through retail channels. However, the future growth of meat substitutes could also depend on how rapidly new types of other high-protein food replacing traditional fish and meat will become available and affordable. Notably insect-based products, but also lab-grown meat, in case technological breakthroughs supported by vast investments makes the latter a commercially viable alternative.

60%
of US adults want more protein in their diets.

GLOBAL GROWTH

Global market research company Euromonitor International unveiled new research about the impact of climate concerns on dietary habits during the webinar, "The driving forces behind plant-based diets". According to Euromonitor, 24% of the surveyed global consumers are trying to cut down their meat intake, driving sales of global meat substitutes to reach USD19.5bn in 2018.

"Meat intake is mostly reduced by consumers trying to reinforce healthier eating habits and worrying about climate change. Growing attention to welfare for animals, farmers, societies and employees at large is also noticed among them." says David Hedin, consultant at Euromonitor International.

"According to Euromonitor International's Lifestyles survey 41.9 percent of respondents think climate change will increasingly impact their life in 2019-2024," Hedin adds.

The US, Russia and the UK show the highest increases in the share of consumers worrying about climate change. In India, Brazil and China, at 77%, 72% and 66% of respondents, respectively, most consumers try to have a positive environmental impact through their everyday actions.

"Despite the global growth of meat substitutes sales and consumption, the meat industry is still expected to grow at a faster rate by 2023. Pricing and availability of meat substitutes are two key factors that currently hold back its penetration worldwide," explained Hedin.

THE US MARKET

While vegetarians and vegans are contributing to the growth in the plant-based market, they still make up a small, single-digit percentage of the US population and thus are not the main contributors to market growth, NPD food analysts note. Some 18% of the adult population is trying to incorporate more plant-based foods into their diets, according to the report, and 60% of US adults want more protein in their diets.

> *Major brands successfully target flexitarians rather than vegetarians thanks to improving the taste and texture properties of their assortment.*

> *Although growth rates for meat substitutes are expected to slow down over the 2019-2024 period as the industry reaches a higher level of maturity, it retains strong potential for growth.*

"Plant-based burgers allow consumers to substitute without sacrifice. They get the 'burger' experience while assuaging their need for more protein and social concerns," says Darren Seifer, NPD food and beverage industry analyst. "US consumers have not given up on beef burgers, but are willing to mix things up every now and then."

The hype is hotter than ever as major fast-food chains jump on the bandwagon. Burger King announced earlier this year that it would take its Impossible Whopper - made from soy protein, potato protein, coconut oil, sunflower oil and heme, a molecule that makes the burger look and "bleed" like meat - national by year-end. Last month, California-based Tex-Mex chain Del Taco sold two million of its meatless tacos made with plant-based substitute Beyond Meat two months after its launch, inspiring the chain to roll out meatless burritos. The consumer trend toward meatless meals is making its way into at-home kitchens, too. Beyond Meat enthusiasm sent shares of meal-kit company Blue Apron soaring when the latter announced it would add Beyond Meat plant-based proteins to its menus beginning in August. Still, dietitians say that ordering a plant-based burger at a fast-food restaurant isn't necessarily much healthier than eating a regular beef patty, especially if you order fries with it. When you factor in sodium, calories and fat content, plant-based burgers mimic the nutritional profile of their meaty counterparts.

The demand for alternative protein is spawning food-cloning companies. Technology at Boston-based company Ginkgo Bioworks is being used in its food startup Motif Ingredients to replicate the texture and taste of foods like meatballs, chicken nuggets, cheese and yogurt with alternative proteins. The laboratory technology develops ingredients that could be used in place of dairy, eggs and meat using amino acids, enzymes, vitamins and other ingredients through fermentation with genetically engineered years and bacteria for protein substitutes. Part of the plant-based appeal is it entices consumers to cut out red-meat consumption. Studies have shown that red meat is "not essential" for diets, and has been linked to health risks, as well as environmental degradation. Nutritionists advise cutting out excessive amounts of meat and replacing the protein source with plants like legumes, vegetables and nuts. ■

By **Jonathan Thomas**

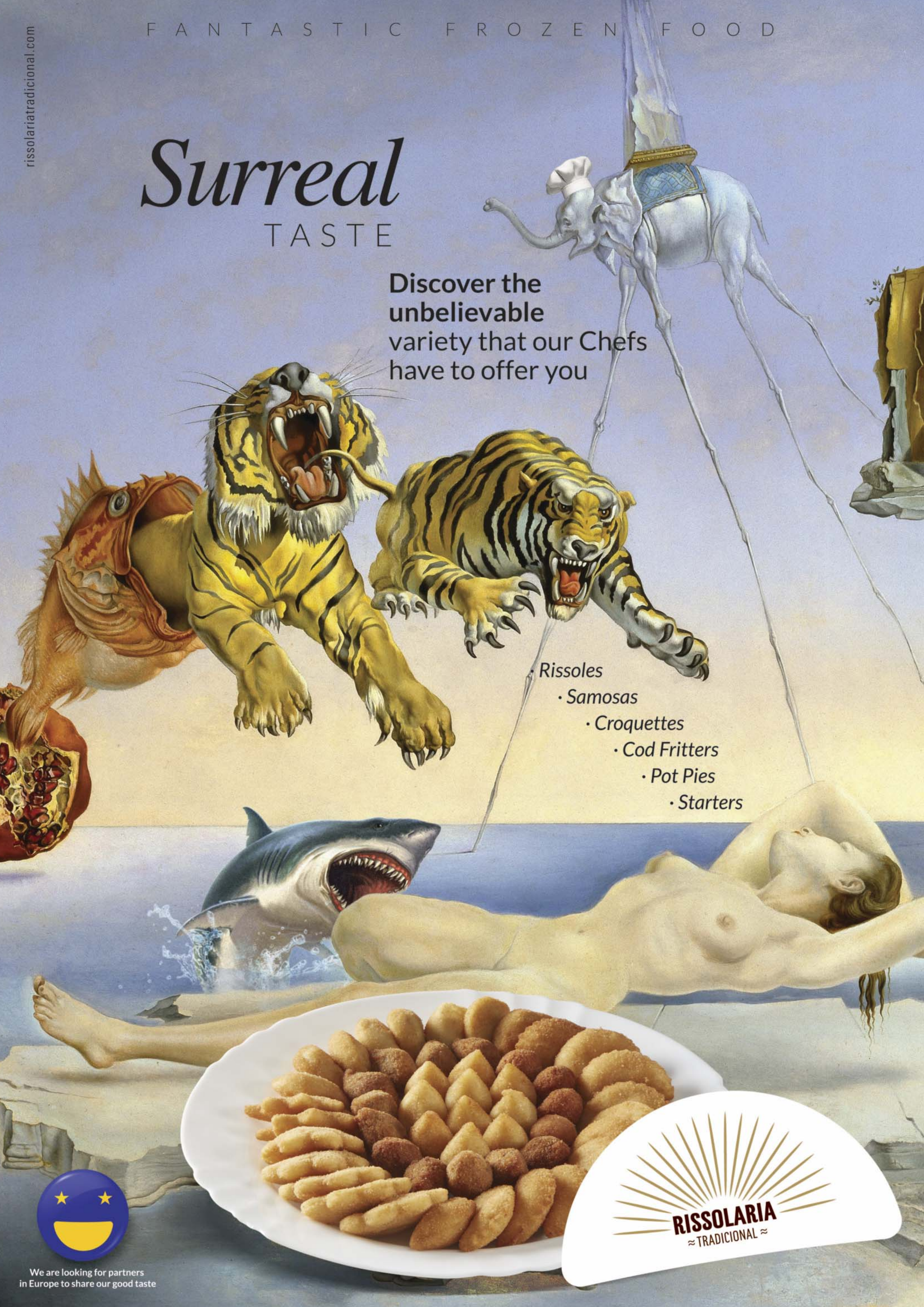
WILL HISTORY REPEAT ITSELF?

Sales of frozen finger foods may benefit from more people eating within the home.

When the global economic recession struck in the late 2000s, one of its more lasting effects was a rise in the number of people entertaining and socializing at home, as consumer spending levels dropped. This benefited various types of frozen foods such as finger foods and appetizers, which are viewed as convenient and suitable for such occasions. It now remains to be seen whether the rising number of meals eaten at home which has been largely enforced by the COVID-19 pandemic is a trend which will continue once lockdowns are eased and foodservice outlets re-open.

IN-HOME EATING & ENTERTAINMENT

The amount of meals eaten within the home has increased across Europe and the world in recent months, mainly because the spread of coronavirus has closed much of the foodservice industry. In the UK, for example, Kantar estimates that the number of in-home meals eaten in households during the lockdown period has increased by over 500 million per week. Separate data from the British Frozen Food Federation indicates that frozen foods may have been one of the main beneficiaries of this trend. Total sales of frozen foods in the UK rose by over 28% in both value and volume terms in the four weeks ending March 22 2020 compared with the same period 12 months earlier. Kantar estimates the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> *In the UK, Iceland represents one of the country's leading suppliers of frozen finger and party foods.*

uplift in meal occasions featuring frozen potato products, for example, at around 16 million meal occasions while most foodservice outlets have remained shut. Frozen products such as finger foods could also potentially benefit from the rapid growth in 'streaming' which has occurred across much of the western world of late. Growth in demand for video on demand services was already being reported prior to the arrival of the COVID-19 pandemic – however, with people forced to stay indoors, consumers have been turning to the likes of Netflix and Amazon Prime in greater numbers. With more people opting for this type of in-home entertainment, demand for frozen foods which can be eaten as an accompaniment may increase as a result.

THE FOODSERVICE INDUSTRY

Many leading manufacturers of frozen finger foods and appetizers count foodservice operators amongst their customers, in sectors such as restaurants, pubs, bars and hotels. The global foodservice industry has been hit hard by the COVID-19 pandemic, with most outlets having been partially or totally closed across the world. This has led to significant drop in demand for many types of frozen foods from foodservice operators, with finger foods and appetizers believed to be no exception to the rule. However, the situation is not entirely negative.

With premises closed for in-store dining, many foodservice operators have been turning towards takeaway and food delivery services to maintain some level of profitability. As a result, the global food delivery market has significantly increased its turnover since the effects of the pandemic began to be felt. In some instances, operators have made efforts to limit contact to comply with safety directives – for example, no-contact deliveries have been adopted by companies such as Deliveroo, Just Eat and UberEats.

It has been suggested by some trade sources that, over the longer term, consumers may gravitate towards takeaway and food delivery options in greater numbers, for reasons such as lingering fears over coronavirus and reduced spending power in the event of an economic downturn. It is also anticipated that more companies such as Deliveroo may place a greater focus on eating occasions other than

One of the more interesting products supplied by Frostkrone is Lava Bites, which have a black coating resembling volcanic rock and contain red jalapenos and Cheddar cheese.

dinner/evening meals – in the UK, for example, lunchtime now accounts for over a quarter (27%) of food takeaway occasions. At the time of writing, more restaurants and foodservice operators throughout the world are beginning the process of re-opening. On a positive note, there appears to be evidence of pent-up demand amongst consumers – a survey of 4,000 people carried out by Allegra Strategies in May 2020 found that 42% of UK consumers missed visiting cafes and coffee shops during the lockdown period. This figure compares with 29% for those missing restaurant visits and 19% for those who missed going to the pub. These represent the second, fourth and fifth ranked choices respectively from a list of 17 social activities and occasions which have been largely prohibited during the lockdown period. A separate survey carried out by Piper Sandler at around the same time found that 47% of people are prepared to go to restaurants as soon as they open, although this was down from 60% in April 2020. When the situation finally does ease, manufacturers of frozen finger foods are likely to find foodservice venues such as pubs and restaurants profitable avenues for their products, assuming there is no large-scale reduction in consumer visits following the easing of lockdown. Prior to the arrival of coronavirus, consumers had been expressing a demand for a greater range of flavors and formats as far as foods are concerned. The ongoing challenge for manufacturers and foodservice operators will be to provide foods which offer novel tastes, as well as catering towards the desire for health and flexibility as far as eating patterns are concerned. It has also been suggested that local foods and ingredients will assume greater importance once the worst effects of the coronavirus have passed.

MAJOR SUPPLIERS

One of Western Europe's leading manufacturers of frozen finger foods, appetizers and other snacks is Frostkrone of Germany. The company continues to increase its geographical footprint – in 2019, it broadened its presence in the US market with the acquisition of Rite Stuff Foods, a manufacturer of frozen potato snacks (e.g. filled potato skins and potato wedges) sold via retail and foodservice channels. This was followed in February 2020 with the purchase of Innovate Foods, a Scottish firm which manufactures frozen finger foods and snacks for customers in the retail, wholesale and foodservice sectors. Recent new product activity from Innovate has included the launch of Nacho Bites, green jalapenos filled with a nacho cheese sauce and wrapped in a crispy tortilla parcel. Frostkrone specializes in the manufacture of deep-frozen finger foods and snacks, which are exported to markets in Western, Central and Eastern Europe, as well as to the US market. It operates a dedicated foodservice plant at Breda in the Netherlands, which produces around 15,000 tons of crunchy frozen finger foods per year. Its product portfolio can be broadly segmented into the following groups:

- **Meat** – e.g. chicken pops, chicken tikka masala bites and poultry teriyaki skewers;
- **Cheese** – e.g. mozzarella sticks, Cream Cheese Jalapenos, Camembert Bites, Chilli-Cheese Nuggets and Cheesy Fries;
- **Vegetables** – e.g. Sweet Potato Pops, Potato Tots, onion rings and vegetarian jalapenos;
- **Fruits** – e.g. Apple Love Balls, Banana in Batter.

One of the more interesting products supplied by Frostkrone is Lava Bites, which have a black coating resembling volcanic rock and contain red jalapenos and a creamy Cheddar cheese. During 2019, it launched Pizza Pocket Breakfast (which contains scrambled egg, Cheddar

47% *of Brits are prepared to go to restaurants as soon as they open.*

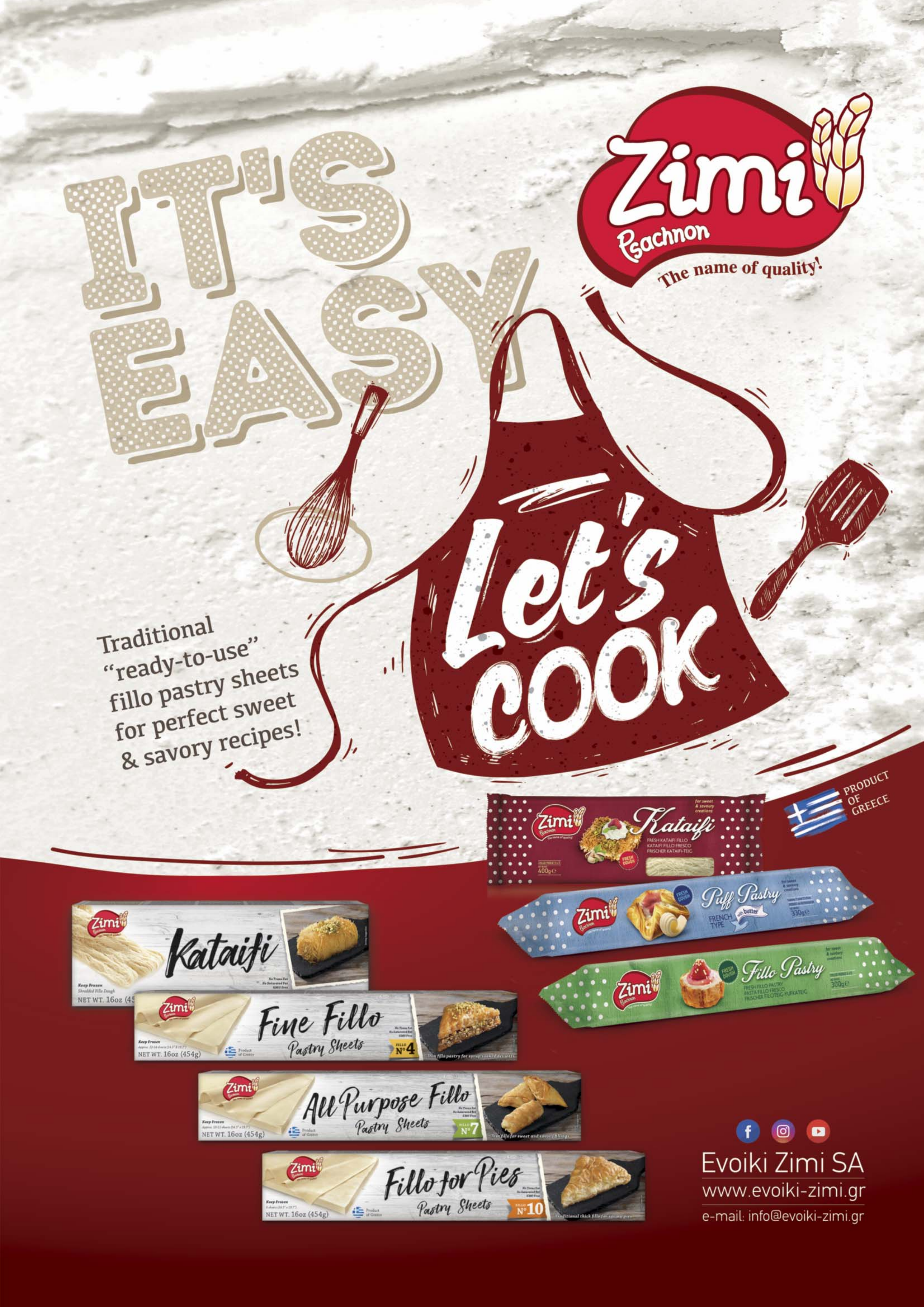
Many leading manufacturers of frozen finger foods and appetizers count foodservice operators amongst their customers.

cheese and sautéed potatoes) and Bärek, which is described as pastry sheets filled with spinach and cream and feta cheese.

One of Frostkrone's leading competitors in the European region and elsewhere is McCain Foods. Although it is primarily known for frozen potato products such as French fries, it has broadened its range in recent years to include foods which are marketed as suitable for informal sharing and/or social eating occasions (e.g. parties and buffets), both inside and outside the home. Its retail range includes a variety of potato wedges (e.g. Lightly Spiced and Sweet Potato), as well as Crispy Dippers which, as their name suggests, are marketed as suitable for eating with dips. In late 2019, McCain's UK division launched Brew City, a range of frozen beer snacks which had already been present in the US market for some time. Designed to be eaten with craft beer, the Brew City range includes products such as Cheesy Brew Bites, Onion Straws, Halloumi Fries and Fiery Jalapeno Bottle Caps.

For its foodservice customers, McCain supplies a broader range of items, many of which are designed to be eaten as appetizers. Typical examples include breaded cheese bites, battered vegetables, onion rings and various specialties – in the US market, for example, it manufactures battered hushpuppies (which draw on southern-style cooking) and chicken eggrolls. In many instances, these cater towards the growing consumer demand for a greater variety of snacks and light eating products in foodservice establishments. Besides McCain, many of Europe's other leading suppliers of frozen potato products manufacture appetizer-style finger foods for customers in the foodservice industry. Notable examples include Lamb Weston/Meijer and Aviko – the product ranges for these firms contain finger foods such as breaded cheese bites (e.g. chilli cheese nuggets, mozzarella sticks and Swiss style cheese wedges), as well as breaded vegetable products.

Many of Western Europe's leading grocery retailers have continued to grab a larger slice of the market for finger foods and appetizers. Much of this has been done via the launch of party food ranges, often in the form of platters. Typically, these have been introduced with specific times of the year in mind – Christmas and New Year, for example, represents a time when people are more inclined to host parties and informal eating occasions in their homes. However, many platter-style products have also been launched for the summer months when outdoor picnicking and parties are most in evidence. In the UK, Iceland represents one of the country's leading suppliers of frozen finger and party foods. Towards the end of 2019, the retailer launched a party food bundle costing GBP15, which contained around 150 items – these included foods such as chicken goujons, filo prawns, spring rolls and mini beef pasties. Iceland's range also includes a variety of platters of frozen finger foods, most of which are based around some type of cuisine or theme (e.g. Indian and crispy chicken). Iceland's rivals in the UK retail grocery market are also active in this sector, selling finger foods and appetizers in both frozen and chilled formats. Tesco, for example, offers a range of frozen party foods, examples of which include a 25-piece Boneless Chicken Selection, as well as products such as onion bhajis, spring rolls, Brie Bites, Hot & Spicy Prawns and Nacho Chicken Bites. Similar products are sold by the UK's other leading supermarkets, sometimes individually and sometimes are part of some themed platter. ■



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By Dan Orehov

PREFERENCES VARY DEPENDING ON REGION

Preferences of popular sweet bakery products vary from region to region. While Asia Pacific, Australasia and North America prefer pastries, Eastern Europe, Latin America, the Middle East and Africa favor sweet biscuits. Yet, Western Europe is the only region where cakes are the most consumed sweet baked good.

According to Euromonitor International, the reasons for these different preferences are several factors including cost, tradition, and local taste. Although sweet biscuits are preferred by most of the world, pastries led sweet baked goods with global consumption of 15 million tons in 2016. Asia Pacific is by some distance the largest market for sweet baked goods. The region is already the biggest consumer of pastries and sweet biscuits, and is forecast to be in cake consumption by 2021. On a country level, China is a major consumer of all three sweet baked goods variants and India is forecasting strong growth. Use of cocoa derivatives remains unsaturated in these markets, while in India, the goods and services tax should increase demand for premium products.

LESS SUGAR IS A TREND

The role of sugar in obesity and other diet-related diseases is being scrutinized to a huge degree, both on a scientific level and in the media as consumers pay greater attention to what sweetens their products. There are sugar-free sweet baked good products available, however these tend to be targeted towards diabetics, rather than the general population, so are unlikely to be the solution. Instead, manufacturers will take steps to reduce sugar in current mainstream products, creating healthier products rather than a traditional one. However, consumer response to reduced sugar products tends to be muted, with reduced sugar biscuits recording a global volume CAGR of -1%. This could be resistance to the use of artificial sweeteners, which are used to create such products. Increased veganism and links between eggs and high cholesterol levels have seen increased demand for egg free sweet baked goods. Manufacturers can also benefit as this trend mitigates aforementioned price volatility. Gluten free alternatives are also growing rapidly in sweet bakery, spurred on by an increasing number of consumers who perceive such products to be healthier for them, regardless of whether or not they suffer from coeliac disease. As such, cakes have seen strong growth in gluten free options in recent years. The relative inability of health to encroach on sweet bakery can be credited to consumers buying sweet baked goods as treats, not for their health properties. Manufacturers

should always look to increase the indulgence of sweet baked goods, whether through the use of new flavors, more premium ingredients or creating completely new products. Ultimately, indulgence will drive sweet bakery growth, particularly in developed markets. Overall, sweet goods will remain popular throughout all markets because many consumers are willing to indulge. Many sweet baked goods now incorporate spicy and savory flavors,

> *In Germany, the share of artisanal baked goods declines slightly in 2018 and 2019, especially in cakes and pastries.*

> *There is growing consciousness among many consumers of the health issues linked to a high sugar and fat consumption, with this resulting in many cutting back on their consumption of cakes.*

and tea and coffee flavors are gaining prominence. Hybridization is also a prominent trend in bakery and has seen the rise of products such as the "cronut" and "duffin", which originated in foodservice but are now being made available to the retail market. These incorporations and hybridization will lead to increase consumption and multiple variables consumers can choose from.

FROZEN BAKED GOODS BOOSTED BY WIDENING AVAILABILITY

Free-from diets continues to be a fast-growing trend, not only followed by coeliac patients, but also by the general health-conscious public holding the belief that gluten-free products will help them overcome problems related to bloating or indigestion. In the bakery aisles, the gluten-free trend is moving beyond bread, to the likes of cakes, pastries, biscuits, pasta and even breakfast cereals.

As the strongest performing baked goods category, frozen baked goods sales continue to be driven by an increased availability in modern grocery retailers, with these outlets typically increasing the shelf space dedicated to frozen products. Sales are also being boosted by growing demand for more premium products seen as healthier, notably multi-grain bread, rye bread rolls and organic variants. With a slight decline forecast over 2019-2024, cakes sales are expected to remain vulnerable to health trends. In particular, there is growing consciousness among many consumers of the health issues linked to a high sugar and fat consumption, with this resulting in many cutting back on their consumption of cakes.

In German frozen baked goods, the leading player is Conditorei Coppenrath & Wiese, with this company belonging to Oetker-Gruppe. This player continued to increase its share in 2019 and benefits from a reputation for using high quality ingredients and offering products with a similar taste and mouth feel to fresh pastries. The share of artisanal baked goods declined slightly in 2018 and 2019, especially in cakes and pastries. A greater focus on product variety and more sophisticated recipes offered by artisanal players proved insufficient to fully offset the impact of a long-term decline in the number of bakeries.

THE COVID-19 IMPACT IN THE US

According to the US Consumer Engagement Report drafted by the American Frozen Food Institute,

seven in 10 frozen food shoppers increased the amount of frozen food they have bought since the start of pandemic in the US Importantly, this share is unchanged at 70% among both frequent and infrequent frozen food shoppers, signaling elevated engagement among all frozen food shoppers. Three-quarters of frozen food shoppers experienced out-of-stocks on frozen items they meant to purchase since the onset of coronavirus in the US This has prompted many consumers to divert from the usual. More than two-thirds of consumers have since purchased different frozen food items or types and 72% have picked up different brands than they usually purchase because of unavailability. Across demographics, consumers have been buying more frozen foods than during regular times as well as different items and brands. Millennials, who already were above average buyers of frozen food, are the most likely to have been purchasing more since early March. Frozen foods are also clearly a solution for families, with 81% of households with children under the age of 18 living at home having bought more frozen food since early March versus 61% of households without children living at home. In the past few years, frozen food sales have seen significant growth - on par with center store edibles and far outperforming the fresh perimeter. Above-average interest among Older Millennials combined with high levels of innovation have driven both dollar and volume sales growth for frozen foods.

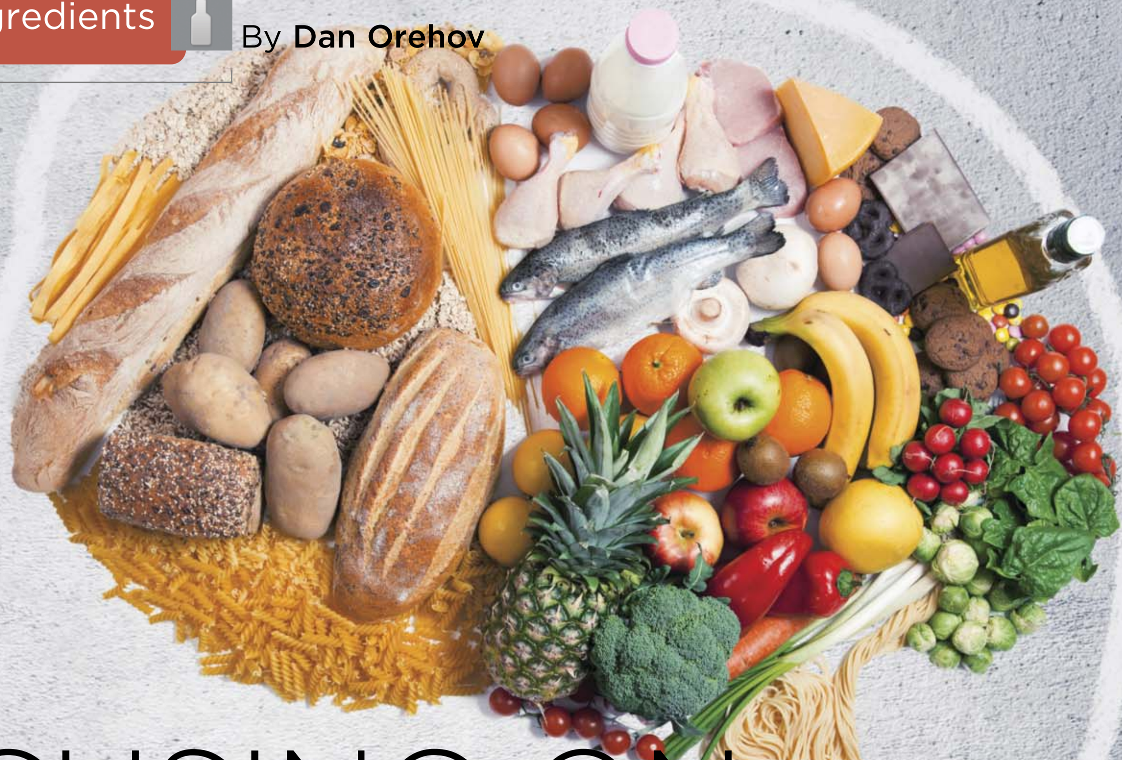
The arrival of coronavirus in the United States upended grocery shopping as we know it, and the sales of frozen food items along with it. While big gains were measured for virtually all food categories starting the second week of March, frozen foods have emerged as a sales powerhouse amid COVID-19 buying. Sales patterns during the first week of March 2020 were much in line with the 2019 results. While non-food sales, such as paper goods and household supplies, started gearing up the week ending March 8, food sales took over starting the week of March 15. Frozen foods quickly emerged as a growth leader, nearly doubling sales the week ending March 22 compared with the same week in 2019. The weeks ending March 15 and 22 were the two big panic buying weeks, but frozen food sales remained highly elevated going into the second week of April.

> *In the bakery aisles, the gluten-free trend is moving beyond bread, to the likes of cakes, pastries, biscuits, pasta and even breakfast cereals.*

A look at the sales during the four weeks ending April 5 (over the height of the pandemic buying) and the building calendar year shows just how much frozen food sales have changed. For the building calendar year, all areas are up double-digits, ranging from 11.8% for dinners/entrees to 26.9% for processed chicken (nuggets). When looking at the four weeks ending April 5, 2020 compared with the similar four weeks in 2019, growth rates are even higher, with triple-digit growth for frozen meat. Both frozen pizza and potato items are enjoying tremendous popularity as well, as convenient solutions for consumers preparing meals at home. With more consumers preparing home-cooked meals, frozen entrees and meal ingredients have a big opportunity to be timesaving, convenient solutions for those consumers who do not have the skill, desire or time to prepare meals from scratch. At the same time, it is important to note that all consumption occasions are seeing a greater share of at-home versus away-from-home, including breakfast, snacks and lunch.

Investing in being on the consumer radar as an immediate and back-up solution for all these consumption occasions among no less than 90% of consumers and 93% of frozen-food consumers who are preparing food at home more often is important to optimize sales now and in the future. ■

By **Dan Orehov**



FOCUSING ON PERSONALIZATION

People increasingly want food and beverage products tailored to meet their individual preferences and nutritional needs. The challenge for the industry is finding large-scale ways to meet these demands. It poses difficult questions surrounding production and distribution. But brands which innovate to find the answers could find themselves at the forefront of a lucrative market.

Surging demand in the natural, free-from, local and organic categories has many drivers. But collectively, they point towards an overarching trend: consumers are going cold on mass produced food and beverages. Many people are looking for an alternative to homogenous offerings and want something that's right for them. Personalization is the logical next step on the journey, according to Leatherhead Food Research (LFR).

DIFFERENT BUT CONVERGING DIRECTIONS

According to LFR, there are four converging factors driving and enabling this trend for the food and beverage sector:

1. **New technologies** - technology is disrupting the industry. New entrants are already using it to their advantage, for instance to connect with consumers directly. Smart fridges are on the rise and drone delivery is soon expected to become a reality. Established players need to find ways to leverage technology and transform the way they operate.
2. **Consumer attitude** - consumer mood is increasingly curious, open-minded and experimental surrounding food and beverage products. New eating habits and products presented in new ways or formats are popular.
3. **Convenience and conscience** - people are more health conscious and aware of issues such as environmental sustainability. But they're also busy and look for convenience. Brands that make it easy for consumers to achieve personal goals and ambitions are onto a winner.
4. **Experiential factors** - the product is only one part of the equation. Overall consumer experience and feelings associated with that also have a part to play. It's about considering wider factors such as provenance and buyer journey as well as sensory aspects at the point of consumption.

Broadly speaking, food and beverage personalization is possible across product, packaging and proposition. LFR says in a whitepaper that early efforts have largely been linked to experiential marketing and cosmetic features, such as putting names and messages on bottles, jars, cakes and sweets. As the market matures, we're going to see this progress towards a deeper level of personalization. "At Leatherhead, we believe personalized offerings around sensory preferences and nutritional requirements represent a rich seam for innovation." This presents business model and manufacturing challenges, for established players and start-ups alike. Barriers for large businesses tend to be linked to the fact

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Leatherhead's report suggests that this new model demands cohesive, cross-functional teams. Specialists need to work collaboratively to anticipate global trends and regulatory changes, seeking to overcome barriers to international growth. With experts in nutrition, science and regulatory affairs informing the innovation agenda, it will be strategically aligned with the shifting global landscape. "It is possible to unpick difficult challenges, such as boosting consumer trust while

that facilities are geared up for low-cost mass-production, making it difficult to accommodate tailored offerings. On the flip-side, start-ups with a personalization-led proposition need to find ways to maintain this cost-effectively as they scale. These are complex matters. But as we see a convergence of technologies in areas such as connectivity, big data, 3D printing and same-day delivery, they can be unraveled. It is a case of putting the pieces together before anyone else does. Leatherhead Food Research says in the past 12 months, technical expertise in nutrition, science and regulatory affairs was increasingly used to shape food and beverage innovation at an earlier stage in the product development process. In its annual trends report, Leatherhead draws on insights from food and beverage organizations including large corporations and start-ups as well as regulatory authorities and associations connected to the industry. This year there has been a notable shift towards consumer and technical expertise driving innovation and development, rather than simply supporting or validating it. The organization believes this is a response to the complex and dynamic issues facing the sector. From consumer empowerment to sustainability concerns and regulatory matters surrounding public health and product labelling, the scope and scale of industry challenges calls for a different approach to innovation.

Mark Butcher, commercial director at Leatherhead, says food and beverage organizations are finding that traditional linear approaches to innovation no longer deliver what they need.

"The sector is in the throes of a perfect storm - even three years ago nobody could have predicted its ferocity," Butcher explains. "Innovation is still vital, but it needs to be purposeful, focused and agile enough to adapt to multiple evolving demands. We predict that in the coming months and years, the most successful food and beverage brands will put scientific, technical and regulatory expertise right at the heart of business growth, on an equal weighting with consumer, innovation and marketing functions. Essentially, consumer and technical expertise will become the starting point of the development process, ensuring new ideas satisfy market requirements and timelines."

improving profitability – these don't have to be mutually exclusive goals," Butcher continues. "However, decisive action needs to be taken, and sooner rather than later. It's about creating the time and space for cross-functional teams to look at the bigger picture, investing in science and applying a global perspective to decision making early on in the innovation process."

CUTTING DOWN ON RED MEAT

A recent survey of 999 adults in the UK found that in the past 12 months, 74% of households have consciously reduced the amount of red meat they consume. Findings published by Science Group company Leatherhead Food Research reveal that 40% are eating 'a bit less red meat' and 32% are 'trying to swap red meat for fish or chicken'. While only 14% of households include vegetarians, more than a third (35%) have introduced one or more dedicated 'vegetarian days' per week over the past year. The perception that it's healthier to eat less red meat was

> *Sharing information about the product should be avoided before testing, so as not to interfere with the expectations of the tasters.*

the biggest driver of change across all age groups, with more than half of respondents (55%) citing this. However, concern about the environmental impact of red meat production was also significant, especially in the 16-35 age group where 51% highlighted this factor. When asked what had influenced their dietary changes, 37% of respondents mentioned that TV programs or documentaries had played a part. With the youngest segment (16-35), talking to friends and family or seeing information on social media also played an important role for 38% and 32% respectively. Cindy Beeren, operations director at Leatherhead, says the findings underline the rising interest in 'flexitarian' diets, where people enjoy meat occasionally but try to avoid eating it too often. She believes this is a lasting trend that will shape the long-term future of the food industry.

"People are becoming more purposeful about food choices in the home, so manufacturers and retailers are changing their offering to meet evolving demands," Beeren explains. "The message from Public Health England about reducing consumption of red and processed meat seems to be taking hold. But it's interesting to see that, for younger adults, environmental concerns are just as important. As this trend gathers momentum, it raises lots of questions about the options for new meat-free products. We expect to see a surge of innovation in this area, focusing on everything from sensory aspects, such as taste and texture, to the nutritional profiling of food."

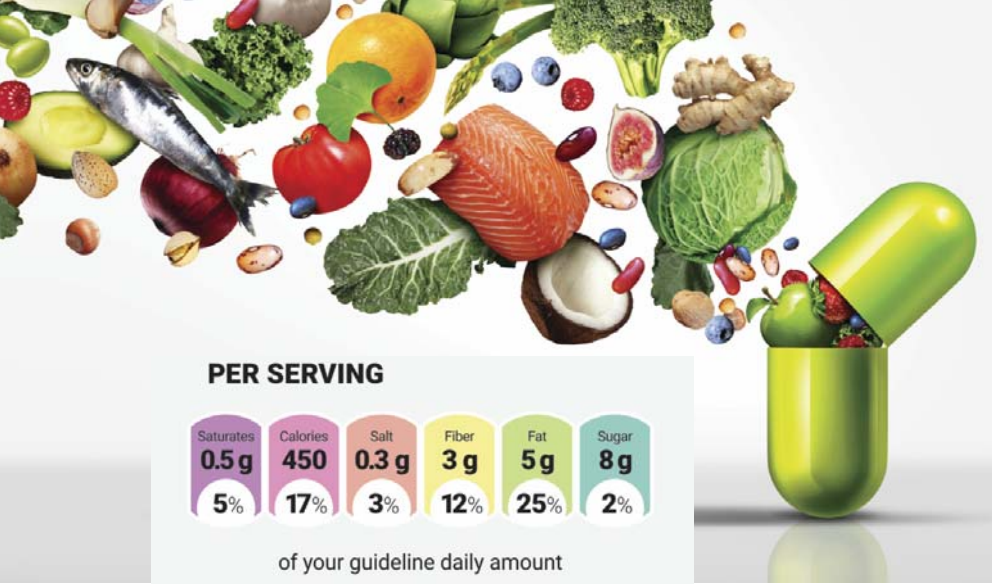
 # 55%
of UK adults believe it is healthier to eat less red meat.

FOOD FORMULATION AND SENSORY ANALYSIS

According to information by BRF Ingredients, a company present in over 140 countries, there are many factors to be considered in the decision-making process of buying food. Currently, aspects such as brand reputation, nutritional value of the product, sensory experience of the product with the brand, the company's relationship with the environment and type of packaging, for example, are very important for the purchase decision in a way that was not observed 50 years ago.

The sensory profile of a product is extremely important to define its acceptance with consumers.

"One of the biggest challenges that food formulators around the world face is to make sensorially pleasant, nutritious and healthy products, however, with not much appeal in terms of aroma, flavor, texture and appearance," BRF experts say. "And one of the most important steps in this mission is sensory analysis. Whether in the formulation of new products or in the substitution of ingredients in existing formulas, this type of analysis is crucial to predict the attractiveness that the food will have to its target audience. Therefore, we will understand more deeply the importance of sensory analysis for the food industry, in addition to knowing more deeply the methodologies used to make it happen," they add.



WHY IS SENSORY ANALYSIS USED?

The answer to that question may seem obvious at first. However, something still unknown to some people, is that the sensory study of food is a complex science from which a range of very important information can be extracted. Sensory analysis is characterized as the measurement of attributes involving the five senses: sight, hearing, taste, smell and touch. After all, the experience of consuming a food involves all of them and understanding the relationship of consumers with them can help in the decision of which characteristics should be highlighted in a product. For example, the crispness of potato chips, related to the hearing sense, is an essential feature when developing a product of this type. It doesn't matter if the taste, aroma and texture are pleasant. Without the hearing sensation provided by the crispness, potato chips would hardly have the same acceptance. BRF says that like any scientific procedure, one must be careful when conducting a sensory analysis. Among the procedures for it, we can mention:

- Neutrality in the sample's presentation;
- Elimination of factors that may highlight preconceived ideas by the tasters.

If well conducted, sensory methods can answer the following questions:

- What does the product taste like?
- What are the organoleptic characteristics?
- How can a change in production, packaging or storage affect the sensory characteristics of the food?
- How does my product compare to my competitor's?
- How can I improve the sensory characteristics of my product?
- Is my quality control being effective?
- Is there a difference between batches?
- How can I promote my product based on its sensory characteristics?
- What are my consumer's expectations regarding the labelling claim or a new product that I want to launch?

In addition, this type of analysis can help companies, scientists and technologists to predict the sensory characteristics that consumers will encounter in a food. All intrinsic aspects of a product can be investigated through sensory analysis, such as appearance, color, shape, size, aroma and taste/flavor. Likewise, aspects extrinsic to the product such as sensory experiences have been increasingly explored.

HOW TO CONDUCT A SENSORY ANALYSIS?

Some basic requirements are necessary to conduct any sensory analysis, as BRF experts detail. Firstly, the testing site should preferably have individual spaces

Food and beverage personalization is possible across product, packaging and proposition.

to accommodate the assessor/taster and samples. The lighting should be natural in most cases or colored when you want to eliminate the sample's appearance as a test variable. The temperature must be maintained around 71°F to 77°F and the test site must be a certain distance from the place where the samples are prepared, to avoid the contact of the tasters with it. The time of conducting the test also needs to be taken into account, as the excess or lack of appetite can influence the result of the analysis. The recommendation, therefore, is to conduct the experiment two hours before or after meals. The test procedure must be clearly presented to the judges. The rules must be explained before the analysis begins, reinforcing standard procedures such as cleaning the palate with water, bread or apple between tasting one sample and another and always starting the tasting from left to right.

Sharing information about the product should be avoided before testing, so as not to interfere with the expectations of the tasters. To reinforce this aspect, the samples must be presented in a homogeneous way, reducing the chance of external interferences in the result. Usually, the judge is taken to the individual booth, samples are delivered along with an assessment form, the procedure and basic information is given by the conductor of the analysis and the booth is closed for the test to take place. In some cases, such as analyses in which it is desired to obtain the sensory profile of the product, it is necessary to form a trained panel for the analysis, especially to reduce errors and sources of variation. The panel is then recruited based on the suitability of its advisors/judges to the objectives of the specific analysis. Over the course of a few sessions, the panel is trained in the attributes that will evaluate until a good ability to differentiate the samples and repetition of results is identified by the team, and so the test itself can take place.

14%
of UK households include vegetarians.

WHAT SENSORY ANALYSIS METHODOLOGIES CAN BE APPLIED?

BRF says that this will depend on the purpose of the analysis. There are three types of sensory tests that can be conducted: the first group is discriminative tests. In these, the objective is to verify qualitative and quantitative differences between samples. They are generally used to check the quality control of a product and whether the exchange of a key ingredient in a formulation affects the sensory characteristics of a food. Affective tests, on the other hand, are used to express the consumer's subjective impressions in relation to the product. As such, it can have high variability in results. Therefore, to minimize this effect, a large number of tasters is necessary - between 80 and 120 people are recommended. Affective tests are widely used in the formulation of new products. The third type of test is the one of preference. As its name suggests, it will test whether one sample is preferred over another. Here, it is not being evaluated whether the judges can distinguish differences between samples, as in the first group, but which one is more attractive for them.

To conclude, the sensory profile of a product is extremely important to define its acceptance with consumers. The results of this type of analysis can be used in several areas of the industry, from research and development to marketing. Knowing the norms and methodologies of sensory tests helps to select the ideal experiment for the established objective, in addition to helping to minimize sources of errors and variations to ensure accurate and reliable results. ■

People are becoming more purposeful about food choices in the home, so manufacturers and retailers are changing their offering to meet evolving demands.

Ebrofrost
Simply better ingredients

PASTA CUISINE. EBROFROST - INNOVATIVE KEY PLAYER IN THE PASTA MARKET

Many pasta manufacturers endeavor to stand out from their competitors primarily by using new shapes. Ebrofrost takes a different approach and differentiates itself through recipe innovations, offering its customers better technological processing, and product safety. Most recently, the medium-sized company set a groundbreaking milestone in hygiene. A ready-to-eat pasta line has been certified in its Danish factory, following the certification of its plant in Great Britain. This now enables Ebrofrost to offer ultra-safe solutions, even for extremely delicate pasta that customers no longer need to heat before processing.

Furthermore, last year the specialist in fully cooked ingredients was awarded halal certification for a pasta line in its German production plant.

ON THE STARTING BLOCKS

Manufacturers of one-pan meals and ready meals are increasingly focusing on alternative raw materials for their ingredients. It is another area in which Ebrofrost's customers have awarded them the role of leading innovator. This is because Ebrofrost product developers are constantly experimenting with alternative raw materials and ingredients, which are unusual for pasta, such as mushroom, red jalapeño, courgette or beetroot. Their expertise enables them to quickly develop solutions even for more exotic requests.

CHICKPEAS AS PASTA?

Chickpeas are considered to be a superfood. They contain about one fifth protein and lots of fiber, vitamins A, B, C and E, the mineral magnesium and the trace element zinc. In addition, they are rich in the essential amino acids lysine and threonine. Ebrofrost uses chickpeas as a particularly nutrient-rich ingredient, to produce a classic pasta shape - fusilli. Like the traditional version, they will also mostly be used for dishes with sauces and for pasta bakes.

www.ebrofrost.com

By **Dan Orehov**

EUROPE IS DISCUSSING FRONT OF PACK LABELING

As of December 2016, Regulation (EU) No 1169/2011 on the provision of food information to consumers requires the vast majority of pre-packed foods to bear a nutrition declaration, often provided on the back of food packaging, to allow consumers to make informed and health-conscious choices. The mandatory nutrition declaration must include as a minimum the energy value and the amounts of fat, saturates, carbohydrate, sugars, protein and salt.

This declaration can be complemented by a voluntary repetition of its main elements in the principal field of vision (known as the 'front of pack', FOP), in order to help consumers to see at a glance the essential nutrition information when purchasing foods. For this repetition, other forms of expression and/or presentation (e.g. graphical forms or symbols) can be used by food business operators or recommended by Member States, in addition to those contained in the nutrition declaration (e.g. words or numbers), provided that they comply with the criteria set out in the Regulation. In a recent study by the European Commission's Joint Research Centre (JRC), results show that there are a variety of FOP schemes–all voluntary as per EU law that have been developed by public institutions, public health Non-Governmental Organizations (NGOs) and the private sector, sometimes collaboratively. These vary from purely numerical schemes that repeat some of the information contained in the nutrition declaration (so-called reductive schemes), to color-coded versions thereof, to summary scoring schemes.

Nutrition labelling aims to inform consumers about the nutritional contribution that specific foods and drinks make to the overall diet. It is defined as 'a description intended to inform the consumer of nutritional properties of a food' and consists of two components: 1) the nutrient declaration; and 2) supplementary nutrition information. Nutrient declaration is further defined as 'a standardized statement or listing of the nutrient content of a food'.

Consumers have been reported to perceive classical nutrition declaration tables, commonly found on the back of food packages, as inaccessible and hard to understand. Several attempts have therefore been made at making nutrition information simpler, more practical, and easily accessible. For example, the Keyhole symbol was introduced as a FOP signposting scheme in Sweden as early as 1989 to identify nutritionally favorable options within certain product categories. Many other schemes have been developed and implemented since then. Worldwide, some 40 countries are using government-endorsed FOP schemes and in Europe this holds for 15 countries. Recent reports on the matter by national authorities and international organizations, as well as the ongoing work by the Codex Alimentarius Committee on Food Labelling, highlight the continued interest in and relevance of FOP nutrition labelling as a public health policy tool.

GERMANY COULD ADOPT NUTRI-SCORE LABELING

The German Frozen Food Institute (dti) has endorsed the results of a survey of German consumers carried out by the Federal Ministry of Food and Agriculture on the topic of enhanced nutrition labeling. In this science-based study, participants were presented with four different options that could complement the existing nutrition labeling scheme. Respondents clearly favored NutriScore as the option which would make their food choices easier. dti sees in this clear consumer preference an opportunity to advocate for greater transparency and informed consumer decisions. The results were announced by Julia Klöckner, federal minister of Food, Agriculture and Consumer Protection, who has also taken the opportunity to voice her support for the NutriScore. Following the study, German plans to establish a national voluntary food labeling scheme in the coming year. In Germany, some food companies have already voluntarily committed to NutriScore labelling, for example, Danone. The NutriScore type of labeling is already in use in France and Belgium, and other EU member states, as well as Switzerland, are looking to introduce it. For dti members, the results provide the basis for implementing a label solution that can be recognized across Europe. Therefore, the institute welcomes further action of the Federal Government to promote the adoption of the new labeling system. Nutri-Score classifies foods and beverages according to their nutritional profile by using a color-coded system with a scale ranging A (healthy choices) to E (less healthy choices).

TYPES OF CLASSIFICATION

The UK Food Standards Agency (FSA) has developed the UK MTL scheme, which hybridizes the Reference Intakes scheme information with traffic-light colors (and optionally wording). For each of the nutrients displayed, the colors indicate low (green), medium (amber), or high (red) levels. Green color thresholds comply with the requirements for a 'low in' nutrition claim as defined in Regulation (EC) No 1924/2006. Nutrients are labelled red if the amount of the nutrient per 100 g or 100 ml of the food represents more than 25% (for food) and 12.5% (for drinks) of an adult's recommended daily maximum intake for that particular nutrient. Color coding is thus determined on a 100 g or 100 ml basis. In the case of products with a portion size larger than 100 g or 150 ml, for example a 300 g ready meal or a 250 ml can of soda, per-portion thresholds apply for assigning the color red. These additional criteria ensure that products which contribute more than 30% (for food) and 15% (for drinks) of an adult's recommended maximum daily intake for a particular nutrient in a single portion or serving are labelled red for the respective nutrient, regardless of their content per 100 g or 100 ml. A Portuguese retailer also uses this system.

> *An essential condition for nutrition labels to have any effect is that consumers must be exposed to and aware of them.*

The Evolved Nutrition Label (ENL) scheme was initiated in 2017 by a group of multinational food companies. The approach builds on the Reference Intakes label and adds colors similar to the UK MTL scheme. However, the ENL uses less than 100 g as the reference base for assigning the colors amber and red for products considered to be consumed in small portions (e.g. sweet spreads, cookies). For the green color, a per 100 g basis is applied to align with the 'low in' nutrition claims as per Regulation (EC) No 1924/2006. In November 2018, the companies involved communicated their decision to suspend/cease label trials for food.

Another portion-based FOP traffic-lights scheme has been put in place by a Spanish retailer (see Annex). It applies a green color when calories/nutrients per portion represent less than 7.5% of the maximum daily intake, a yellow color when they represent between 7.5 and 20%, and a red color when they represent more than 20% of the maximum daily intake.

A different approach to FOP labelling consists in attributing an overall rating for a product's nutritional quality/healthfulness. Rating can be expressed by various means. For example, the Nutri-Score, a scheme developed under the aegis of the French Ministry of Health and implemented in France in 2017 and in Belgium in 2019, displays five letters (A, B, C, D, and E), which correspond to a nutritional rating of the food from best to worst. The A is colored in dark green, the B in light green, the C in light orange, the D in orange, and the E in dark orange. The letter corresponding to the rating of the food is made larger than the four remaining letters. The general algorithm to calculate the score considers a food's content of energy, sugars, saturated fat, sodium, fruit, vegetables, legumes and

> *If consumers are skeptical of food labels, they will be negatively affected by them. However, the study shows that just because a label is accepted, does not mean it will be effective.*

nuts, fiber, and protein. Three updated algorithms apply for cheeses, beverages, and added oils/fats to improve alignment with French dietary recommendations for these food groups. The FOP scheme SENS (Système d'Etiquetage Nutritionnel Simplifié) was developed by French researchers and used for some time by a major retailer. SENS classifies foods into four categories on the basis of their nutritional composition and indicates the recommended consumption frequency: (1) very often; (2) often; (3) regularly in small quantities; or (4) occasionally or in small quantities. It displays a triangle assorted with a ribbon of the following color: respectively (1) green, (2) blue, (3) orange and (4) purple. A monochrome type of graded rating system called Health Star Rating is in place in Australia and New Zealand. It displays a semi-circle with five stars and a numerical rating. The rating ranges between 0.5 and 5 by increments of 0.5, a rating of 0.5 denoting a poor nutrient profile and 5 an excellent nutrient profile. A strip with nutritional values for several nutrients can be added at the right of the star rating.

CONSUMER PREFERENCES AND ACCEPTANCE

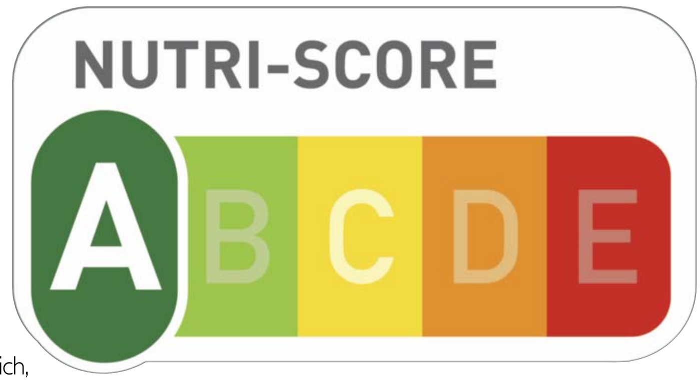
Whether a FOP nutrition label gets the attention of consumers and manages to convey information adequately is partly determined by consumer preferences for and acceptance of FOP nutrition labels. If consumers are skeptical of food labels, they will be negatively affected by them. However, the study shows that just because a label is accepted, does not mean it will be effective. For example, in the studies by Ducrot et al. and Gregori et al., the label that was most accepted differed from the one that led to the best understanding. However, if labels are not accepted, their message may be ignored even though they are noticed. Therefore, FOP scheme acceptance is a very relevant dimension to consider. The literature can be divided into those studies that examine isolated characteristics of individual FOP schemes and those that make comparisons between specific FOP schemes. Another characteristic is the level of directiveness of FOP schemes, i.e. to what extent the label already evaluates for the consumer whether the product is nutritious or not. Some consumers might like directive labels because they allow for a quick decision. Others may react negatively to being told something is 'healthful' in the absence of any nutritional information. Hodgkins et al. argue that classifying FOP schemes according to their directiveness leads to a better understanding of why some labels might be more effective than others in particular situations or for particular consumers and they propose that schemes combining both directive and non-directive elements can be an effective format.

UNDERSTANDING THE SCHEMES

An essential condition for nutrition labels to have any effect is that consumers must be exposed to and aware of them. Exposure, however, does not imply effectiveness as the effect will be mediated by consumer understanding which,

> *In Germany, some food companies have already voluntarily committed to NutriScore labelling, which is already in use in France and Belgium.*

in turn, will be affected by consumers' nutrition knowledge. Usually authors differentiate between conceptual and substantive understanding. The former refers to consumers' ability to understand the general concept behind a specific FOP scheme and the meaning of specific codes and/or colors, while the latter refers to whether respondents interpret the information on the label correctly. In addition to affecting people's attention to and liking of FOP schemes, specific labelling scheme characteristics may also influence how well people objectively understand and are able to use a given type of FOP scheme correctly. The reference unit on which the nutritional information is based (e.g. 'per 100 g', 'per portion', 'per 100 kcal') is one such characteristic and its impact usually depends on the task to be completed. Lastly, the study shows that the way in which the benefits of nutritious foods (or the risks of foods of poor nutritional value) are framed has also been tested in FOP nutrition labelling research. Health messages can be framed in a way that highlights either the benefits of some actions (a gain frame) or negative consequences of not taking that action (a loss frame). For example, informing consumers of the health benefits of consuming food that is more nutritious would be a gain-framed message, while informing consumers of the negative health consequences of failing to consume nutritious food would be a loss-framed message. ■




TOMRA

Optical Sorting

By Dan Orehov

LATEST TECHNOLOGIES MINIMIZE WASTE

Frozen food products have typically gone through most of the processing line before they are frozen. During processing, multiple sorting steps – both mechanical and optical – have already taken place and eliminated most foreign material (FM) and other unwanted products. Sorting on the frozen end usually occurs immediately prior to packaging. To ensure no FM makes it into a bag of final product, end-of-line sorting is an important safety step.

Because each processor is unique, there is no 'must have' list that satisfies every application and budget. Popular options include the following:

- Combine laser scanners and color cameras on a sorter to detect the widest variety of FM and defects.
- Leverage sensors with higher resolutions to detect smaller FM and defects.
- Add Pixel Fusion technology to find the most difficult to detect FM and subtle defects while minimizing false rejects.
- Combine top-and-bottom- or front- and rear-mounted sensors to see all sides of each object to detect and remove more FM and defects.
- Add Sort-to-Grade software to achieve the most complex final product quality specifications without operator intervention while increasing yield and eliminating mechanical length grading equipment.
- Add Information Analytics software to turn a sorter into a data center that collects, analyzes and shares production and product data with the enterprise to optimize line management.
- Add FM-Alert to inform the operator on the floor and/or the control room each time a piece of FM passes the sorter. It takes a picture of the FM and stores it in a database, enabling a processor to make process improvements to avoid these FMs from occurring again.

REDUCING WASTE

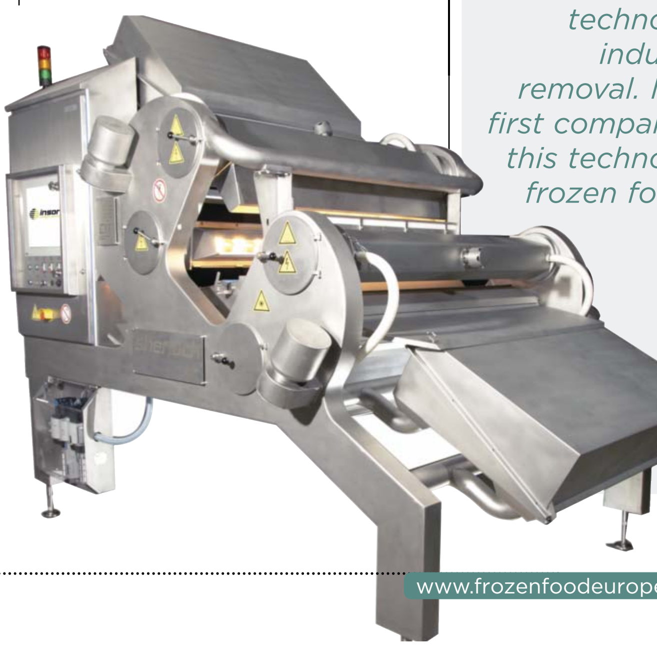
According to Karel Van Velthoven, Advanced Inspection Systems Product marketing manager at Key Technology, to reduce waste and improve sustainability, food processors are increasingly using sorters equipped with powerful Sort-to-Grade (STG) software. Suitable for a variety of frozen fruits and vegetables, a STG-enabled sorter recognizes and categorizes every surface defect and the dimensional characteristics of every individual object and makes each accept/reject decision based on how it will impact the aggregate 'in the bag' grade as defined by the processor. By controlling the output for defect types and product dimensions that must be managed to a particular grade or "spec," STG accurately maintains the most complex final product specifications without operator intervention while increasing yields by 1 to 3% and enabling processors to eliminate mechanical length grading. Moreover, according to Key's representative, in digital sorting, performance is often measured as a 'defect removal rate' as well as a 'good-to-bad ratio.' Sophisticated sorters typically achieve defect removal rates of 90% to 99% or higher. The good-to-bad ratio depends on the nature of the product, the effectiveness of the sorter's infeed and the pitch of the sorter's

> An innovation is the SORTEX FA with 3 chutes launched in 2019. It is our answer to the market trend towards high capacity process lines above 15 tons per hour.
> Buhler

ejection system, among other things. The goal is to lose as little good product as possible while sorting out as much FM as possible and the right amount of defects to make grade. For some applications, the reject stream might be used to remove a wide variety of by-products, so a little more good product in the by-product stream could be acceptable. For valuable products and the best sustainability, processors can maximize sort performance by installing a recycle loop that will re-sort the reject stream to recover any good product that might have been taken out. Regardless of the application, the best sort performance is achieved when specialized conveying solutions are seamlessly integrated for a customized solution from one source. "Given every frozen food product starts fresh at the beginning of the processing line, Key offers sorters that are ideal throughout, from produce in-take to the end of the line. Our Herbert Oculus sorters enable frozen food processors to inspect the whole product at receiving. Our VERYX family of sorters includes unique belt-fed sorters typically used on the wet end of the line as well as chute-fed sorters that are perfectly suited for the frozen end of the line. All are high-performance sorters that can sort a wide range of whole, cut, sliced and diced fruits and vegetables. Beyond our state-of-the-art sorters, we have a range of mechanical sizing and grading systems that we can integrate pre- and post-sorting," Van Velthoven explains.

SORTING IN DIFFERENT STAGES

Another company contacted for this article, Tomra Solutions, believes that the only way to be sustainable is to make sorts in different stages. In some industries Tomra offers sorting machines in the pre-processing area, on the fresh side of the process area, and after the freezer. On every stage the company can help to increase efficiency, reduce the labor and be more sustainable. The second step takes into account the performance of the detectors. With BSI+ Tomra provides an example of being more accurate in detection, and reduction in false detections. In combination with faster and accurate air guns, Tomra can keep the rejection of good product to a minimum, which results in a higher yield and less food loss. "No matter what type of frozen food you're sorting, removal of foreign material and potentially dangerous matters is critical. Tomra offers different sensor technologies. For the frozen food industry specifically, we have besides our laser and pulsed LED technology we have the newest technology Biometric Signature Identification or BSI+. This is a new technology which will detect more complex defects with a higher performance without losing more product. The standard BSI module is ideal for the removal of foreign material, while the BSI+ scanner deploys a wider spectrum and also detects visual irregularities identifying not only foreign material but also product specific defects," explain Tomra representatives. According to equipment manufacturer Insort GmbH, it is very important to size the equipment correctly for the application. Undersizing equipment is a frequent cause of yield loss. Rejection mechanisms are already at a very fast speed and it doesn't seem like there are huge development jumps in the pipeline of cylinder and air nozzle manufacturers. Processing speed is increasing and new and more powerful GPU processing technology is being developed for automotive industries, etc. which the sorting industry will benefit from. A quicker and more accurate way of detection (more data, better algorithms, etc.) will be the foundation of the next big improvements to sorter speed. Sorters have a huge impact on yield and profitability of the production process. A good set-up is key for ensuring maximum yield. Recovery sorting and inline quality control in real time are further essential contributors. Providing the processor quickly with the information needed and allowing for adapting the sorting process to best meet the target are a must. "The diverse range of FM that the frozen food industry is dealing with on a day to day basis requires the most modern, reliable and stable equipment in order to be efficient. NIR technology is essential for a good FM detection on any sorter. Black and white, RGB and laser technology have proven to be inefficient when it comes to FM detection on the highest level," explain Insort experts. "Multispectral NIR camera systems are a



> Hyperspectral Imaging proves to be the best technology in the industry for FM removal. Insort is the first company applying this technology in the frozen food industry under the Chemical Imaging Technology (CIT®) brand.
> InSort GmbH

Tomra offers different sensor technologies. For the frozen food industry specifically, we have besides our laser and pulsed LED technology we have the newest technology Biometric Signature Identification or BSI+.
Tomra

big step forward from these technologies, but the wider the range in the NIR spectrum and the more data points generated the better. This is why Hyperspectral Imaging proves to be the best technology currently available in the industry for FM removal. Insort is the first and only company applying this technology in the frozen food industry under the Chemical Imaging Technology (CIT®) brand. With this technology any type of organic and inorganic FM can be detected with highest accuracy independent of size shape, surface or density. Plastic, stones, wood, plant debris, metal, rodents and even glass are detected with highest reliability. In addition to the unmatched detection performance CIT® makes it possible to teach the whole range of the good product in one model, covering all varieties, seasonal and natural changes of the raw material. The combination of CIT® and Safeguard Drop Gates on the Sherlock Hybrid, set a new benchmark in FM removal efficiencies and food safety in the frozen food industry," they add.

MORE TECHNOLOGIES IN ONE PLATFORM

Bühler's current and leading sorting solution for the frozen produce is the SORTEX FA PolarVision, including four technologies in one platform, to achieve the latest product safety standards in the IQF industry. Proven and trusted by the leading IQF producers as it can handle subtle defects, extraneous vegetable matter and all foreign bodies. According to Stefano Bonacina, head of Segment Fruit and Vegetables, the SORTEX FA PolarVision range is the preferred choice in the market, with around 70-80% of the leading frozen vegetable and fruit brands utilizing a SORTEX sorter in their process line, positioned directly before packaging. "An innovation is the SORTEX FA with 3 chutes launched in 2019. It is our answer to the market trend towards high capacity process lines above 15 tons per hour. Ejector plus an ejector system can cope with very large and very small objects at the same time, thus being a good solution for maintaining a high reject ratio," explains Bonacina.

According to Buhler's Product Manager Joel Chase, the company's platforms are the SORTEX FA range and the SORTEX E range, which will be customized with various technologies according to the customers specific needs from the frozen fruit and vegetable industry.

"We offer a flexible configuration from one to three chutes. All major technologies are tailored for frozen fruit and vegetable applications. Among the key benefits of our latest machine the SORTEX FA, we include the highest capacity sorter in the frozen market - the SORTEX FA is available in three machine sizes – 600mm, 1200mm, 1800mm – with an overall maximum footprint area of 9 m². With our largest machine the SORTEX FA3 a re-sorting setup can be configured, further increasing yield," Chase explains. "The SORTEX FA optical sorting platform is our most hygienically designed sorter. It is manufactured in stainless steel, featuring food-grade safe fixings, sloped surfaces, and is FDA-approved for cleaning and complete wash-down. This sorter combines two proprietary detection technologies to identify all types of foreign materials including light and dark colored plastics, wood, glass, snails, and cardboard from 0.6 mm in size. With more than 85 sales offices and 98 service stations worldwide one of our experts is always close to our customers' facility," he concludes. ■

Our Herbert Oculus sorters enable frozen food processors to inspect whole product at receiving. Our VERYX family of sorters includes belt-fed sorters, as well as chute-fed sorters that are perfectly suited for the frozen end of the line.
Key Technology

SORTEX FA PolarVision:

The most trusted Optical Sorting solution for the IQF market.

Why Europe's leading IQF brands choose the SORTEX FA range:

For frozen fruit and vegetable processors, the SORTEX FA PolarVision represents the highest standards in food safety, hygiene design, performance and foreign material detection.

The SORTEX FA range of optical sorters is now available in 600mm, 1200mm and 1800mm chutes for the most flexible and highest capacity requirements in the market.

Find out more at
www.buhlergroup.com/sortexf-polarvision

Innovations for a **better world.**

BÜHLER

By **Dan Orehov**

SINGLE-DIGIT GROWTH EXPECTED

The global frozen pizza market was estimated at USD11.11bn in 2016, and is expected to reach USD17.29bn by 2023, advancing at a CAGR of 6.4% from 2017 to 2023, according to the latest reports.

Rise in demand for convenience food, increase in craving for gluten-free frozen pizza, and development of retail network in emerging economies drive the growth of the global frozen pizza market. On the other hand, lower sales of frozen pizza in developing countries due to negative consumer perception, and presence of poor freezing facilities in semi-urban and rural areas curb the growth to some extent. However, advancements in freezing technologies, increase in the number of fast food outlets, and growing urban population are expected to pave the way for an array of opportunities in the near future.

TYPES AND DISTRIBUTION CHANNELS

According to a report by Allied Market Research, based on distribution channel, the retail segment generated the major share in 2016, holding 89% of the global market and would also register the fastest CAGR of 6.50% by 2023. North America accounted for nearly half of the total market revenue in 2016, and is predicted to retain its dominance during the estimated period. The Asia-Pacific region, on the other hand, would cite the fastest CAGR of 8.8% from 2017 to 2023. Based on crust type, the regular thin crust segment contributed to three-fifths of the total market share in 2016, and is expected to lead the trail till 2023. The same segment is also

> *The standout feature of the frozen pizza market in recent years has been the manufacturers' efforts to drive up perceptions of quality and premiumization of the frozen pizza category.*

89%

of the global pizza market belongs to the retail segment.

projected to grow at the fastest CAGR of 6.9% during 2017–2023.
The growing consumer inclination toward vegan frozen pizza has been identified as one of the critical frozen pizza market trends. Research company Technavio says that the health and food safety concerns associated with animal-based food products have driven health-conscious consumers to shift toward a plant-based diet. A vegan diet is rich in folate, magnesium, potassium, vitamin A, vitamin C, and vitamin E, and offers multiple health benefits, including lowering the risk of cardiovascular disease and other metabolic disorders.
The rising popularity of vegan diet has also resulted in increasing demand for vegan frozen pizza among consumers. To cater to this growing demand, several producers are offering new vegan frozen pizza products. For instance, One Planet Pizza has already announced plans to launch vegan frozen pizza products made from flaxseed-enriched dough, homemade tomato sauce, and hand-selected toppings. Similarly, Goodfella's Pizza launched a vegan frozen pizza featuring a thin crust and topped with spicy tomato sauce, vegan cheese, red and green peppers, black beans, red onion, sweet corn, and salsa drizzle. The increasing vegan population across the world and new vegan frozen pizza product launches will boost the growth of the market throughout the next five years.
According to the frozen pizza market forecast report by Technavio, the launch of new products will also contribute to the growth of the market. Producers are increasingly focusing on new product launches to increase their market share. For instance, Cappello's launched a new line of gluten and grain-free frozen pizza featuring an almond crust and made from cage-free eggs, cassava flour, and other ingredients. Similarly, Caulipower LLC launched a low-calorie and gluten-free frozen pizza product with a cauliflower crust and available in different varieties, including Three Cheese and Margherita. Such product launches will increase the number of available options for consumers and consequently fuel the growth of the frozen pizza market at a CAGR of over 6% by 2023.

PREMIUMIZATION AND HEALTH

The standout feature of the frozen pizza market over the past three years, as evidenced by trends in new product launches, is a concerted effort on the part of manufacturers and retailers to drive up perceptions of quality in the category, in particular by emphasizing 'genuine' ingredients and more authentic styles that create the experience of 'dining out, at home'. This marks a move away from a more limited focus on toppings and flavors and implies, increasingly, an emphasis on the quality or authenticity of the pizza base itself, as well as the way the pizza is cooked - especially traditional 'wood-fired' or 'stone-baked' methods.
According to analyst Jonathan Thomas, across much of Western Europe, the frozen pizza market has stepped up quality levels in recent years. This can be illustrated by the emergence in greater numbers of more premium products (e.g. stone baked and delicatessen pizzas, plus products with improved toppings), as well as pizzas which more closely resemble their counterparts from the foodservice industry. In the latter instance, these are frequently marketed under sub-brands such as Takeaway. Other branding activity has addressed consumer health demands. This has been most apparent via the launch of gluten-free pizzas, to capitalize on the booming demand for 'free from' products, which exists across much of the food industry.
Pizza manufacturers have also launched products geared towards snacking occasions in a bid to broaden frequency of usage, as well as extended frozen pizza into the sweet sector by introducing dessert-style varieties. One of Western Europe's most significant branded suppliers of frozen pizza is Germany's Oetker Group. Its range includes sub-brands such as Ristorante (which are thin and crispy), Big Americans (which are deep-pan), Rustica (which feature a light and airy base), Die Ofenfrische (which are oven baked), Pizza Burger (snack pizzas in a hand-held burger bun) and Veggie, which are targeted at vegetarian consumers.
To sum up, brand activity remains important across the European frozen foods industry, especially given the increased competition from the own-label sector, which exists within the market. Much of this has been driven by improved quality levels, coupled with the fact that consumers are becoming more price-conscious. As such, manufacturers have attempted to capitalize on a range of current trends to attract consumers, a development which has been highly evident in the pizza and ready meals sectors. Typical tactics have included the launch of products with a more premium look and taste, as well as items geared towards alternative occasions, such as snacking. Last but not least, the pizza sector has also responded to the growing popularity of so-called 'free-from' foods, and to the 'meatless' trend, which appeals to vegans, vegetarians and flexitarian consumers. ■

> *The growing consumer inclination toward vegan frozen pizza has been identified as one of the critical frozen pizza market trends.*

6.5%
is the estimated CAGR of the global frozen pizza market by 2023.

La Pinsa Romana

SVILA®

It's not a Pizza, but a PINSA!

PIZZA IS OUR PASSION SINCE 1974

The great Italian and international success of the Pinsa is to be found in the general health trend which tends to reward those products characterized by eating healthily and genuinely.
The lightness of the Pinsa derives from a higher hydration of the dough unlike traditional pizzas, and therefore a better digestibility. Consequently, the type of water used to make a Pinsa is a fundamental element to obtain its taste.
Even the ancient Romans, from whom the recipe comes, knew its lightness, so much so that they used the Pinsa in its original oval form, like an edible dish on which they spread the main dish, usually meat or fish.
Svila, the company that has been producing exclusively bakery products, for over 45 years, masterfully approached the ancient Roman recipe of Pinsa, maintaining all the features connected with tradition. The company is nestled in the Sibillini mountains, above, where the air is always sparkling, uses pure water that has always distinguished all its production, guaranteeing an index of lightness and purity among the highest in the category. **The lightness and tastiness of Svila Pinsa is also the result of the raw materials used: a mixture of wheat and cereal flours, carefully selected, which make the product crispy on the outside but extremely soft inside. The high digestibility of the Svila Pinsa is guaranteed by an exceptional water that perfectly hydrates the dough, from a very long leavening and above all from the pinsatura made by hand, without ever stressing the base. It is this slow movement that brings us back to the real name of Pinsa, which comes from the gesture of stretching, of enlarging, in fact the Latin word is pinsere!**

When you open a Pinsa produced by Svila , you already recognize the quality by eye: the presence of its innumerable alveolus represent the essence of its lightness. The crunchiness of its crust preserves the secret of softness!
Svila has been producing baked products every day for 45 years. Millions of hours of experience that pass from wise daily gestures. The choice of excellent raw materials, combined with a constant care for product control. Because everything done in Svila, before others, is eaten by them and their children. This is their quality assurance !

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By **Arijita Pani,** senior research associate - & Rinkal Dawra, team Lead - Food & Beverage, Marketsandmarkets

INCREASING INNOVATION IS EXPECTED TO DRIVE THE MARKET

The global frozen food industry has witnessed strong growth trends in the last few years, and this is evident from the innovations and developments taking place in the business space. Frozen food products are increasingly becoming an integral part of the daily diets around the world, especially in European countries, such as Italy.

Busy lifestyles have been driving growth in convenience foods, and the food manufacturing industry is actively investing in the production of new items that could meet the rising consumer demand for convenience food, in turn, fueling the overall frozen food market. International trade of these products has gained prominence with their increasing demand, complemented by improved transportation facilities.

OPPORTUNITIES EXIST

Italy provides ample opportunities for frozen food products. Among all frozen food categories, the vegetable segment has the highest market share due to the increasing market penetration of frozen vegetables such as potatoes, broccoli, cauliflowers, and carrots. Also, the increasing health awareness among consumers and the rising preference of a vegan diet are factors projected further to drive the market growth of frozen fruits & vegetables.

The Italian ice-cream market has a high potential to grow in the coming years due to its increasing demand from quick-service restaurants (QSRs). Gelato is one of the popular desserts in Italy and witnesses a high demand in the country, as it is low in calories and is perceived healthy. Nowadays, a typical Italian customer is cautious about the choice of food that essentially falls in line with the current lifestyle. Fast-paced lifestyle and rapid increase of women in the workforce are also pushing the demand for ready-to-eat frozen food across Italy, while the proliferating number of single households is also expected to increase the consumption of frozen food across Italy in the next few years.

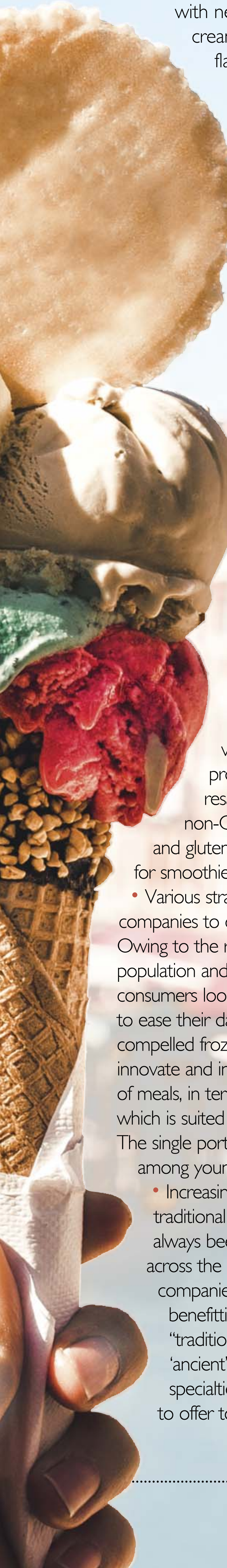
Moreover, the growing awareness and increased market information about the products have also increased consumer demand. Consumers have realized the advantages of frozen food products in resolving some of the critical issues accompanying a hectic modern-day lifestyle. Besides, benefits such as value for money (attractive price points, owing to stiff market competition), focus on health and convenience are some of the reasons that increase the adoption of frozen food among locals. Also, it facilitates waste reduction due to green and eco-friendly packaging formats. This factor has increased the sale of frozen vegetables, meat, and fish for day-to-day consumption. According to the data published by the Italian Institute of Frozen Foods (IIAS), in 2017, Italian frozen food sales grew by 2% in volume terms to 841,500 tons in 2016. This growth was led by the retail channel, which witnessed a +3.1%, i.e., 531,500 tons growth in product sales while catering witnessed a +0.3%, i.e., 310,000 tons growth. In terms of category, the highest growth was in the fish and seafood category (+5% compared to the previous year), pizzas (+2.1%), and vegetables (+1.8%).

CONVERGENCE OF MEGATRENDS

Changing lifestyles of people, along with the busy schedules, have enabled consumers to include frozen meals in their regular diet, which is driving the demand for new innovative, on-the-go, and healthy frozen food options. This change in consumer behavior and lifestyle has compelled manufacturers to expand and update their product portfolios. The country has witnessed various innovative solutions to offer better products to consumers. Some of the instances are as follows:

- In October 2017, a Veneto-based company won the Italian Food Awards at the Summer Fancy Food Show in New York. This award was given for the "creativity and innovation" category, owing to its Organic Frozen Cauliflower Pizza Kit. The product is organic, as well as gluten-free.
- In October 2018, the frozen vegetable processor, Rolli, of Italy, has won the Silver SIAL award for product innovation. Under the brand, Industrie Rolli Alimentari SPA, the company was awarded Silver for its pesticide-free frozen vegetables sold in a paper-based bag.
- In May 2018, Tonitto, an Italian-based company, created a new inter-pretation of gelato.

IL GELATO was created for consumers who prefer to experiment with new tastes. The product is introduced with new textures, including creamy, crunchy, and better flavor compared to average "gelato."



FACTORS IMPACTING THE MARKET IN ITALY

- Rising consumer shift toward vegan foods, free-from, and clean-label products - The vegetarian and vegan population are the primary consumers of frozen food in Italy. This factor has propelled the demand for frozen vegetables in the country. The demands were also boosted by new food trends, such as organic produce. In 2018, approximately 1.2 million tons of frozen fruits and vegetables were eaten in Italy, an increase of 2.8% compared to 2017. Another addition to vegetable and fruit products is represented by resalable pouches of frozen non-GMO, organic, non-dairy, and gluten-free vegetables and fruits for smoothies.
- Various strategies undertaken by companies to capture the local market - Owing to the rising working women population and hectic lifestyles in Italy, consumers look forward to ready meals to ease their daily lifestyle. This factor has compelled frozen food companies to innovate and introduce a broader variety of meals, in terms of packages and sizes, which is suited for different meal timings. The single portion is also getting popular among youngsters.
- Increasing demand for frozen traditional food - Italian cuisine has always been accepted by consumers across the globe. As a result, Italian companies are also focusing on benefitting from the ongoing "traditional food" trend. From 'ancient' ingredients to regional specialties, Italian cuisine has a lot to offer to global consumers looking for traditional and food. This factor has boosted the country's pizza as well as the ice-cream markets. Italy's traditional pizza and gelato have been in high demand abroad. Thus, this factor has further propelled the market of frozen pizza and ice cream in the country, as it accelerated the export business.
- Rising marketing and exhibitions to encourage the frozen food segment in the country.

The country is witnessing various exhibitions to promote frozen food. Companies do realize that marketing and branding will play a pivotal role in the acceptance of frozen food among middle-class families. Owing to this, exhibitions are playing a key role in encouraging and exhibiting the frozen food segment in the country. For instance, in May 2019, TUTTOFOOD, an Italian global food exhibition, witnessed new entries, such as TUTTOFROZEN and TUTTOSEAFOOD, during the event in Milan. These two sections were dedicated to frozen food and fish products.

CHALLENGES OF THE ITALIAN MARKET

To some consumers, frozen food is thought of as a product that is an inferior substitute for fresh food, which is one of the major restraints for this market. There is a notion that food processed a year or more before it is consumed could not be nutritious. However, statements such as "frozen produce can be just as good as the fresh stuff in terms of nutrition" from the US Food and Drug Administration (FDA) and the International Food Information Council (IFIC) about the nutrient content of frozen food are changing the consumer perception. Nutrients such as vitamin C and folate can modify with the change in temperature, while food items stored at varying temperatures can lose their nutrients. Since frozen foods are stored at a constant low temperature, they do not lose such essential nutrients. This factor is restraining market growth. At the same time, in terms of the sale of frozen meat products, especially red meat, the market has witnessed a downfall of 2.3% in 2017, due to consumers embracing a more vegetable-rich diet. This factor is hampering the growth of processed meat products in the frozen segment.

IMPACT OF COVID-19

Recently, Italy has been badly hit by the COVID-19 pandemic. This factor has forced the government to impose a lockdown. Many industries faced losses at this period. However, frozen food witnessed a sudden surge in demand. In Italian supermarkets, the sale of frozen food has increased sharply, owing to the increasing household purchases for processed food. Consumers prefer to store food products with longer shelf life and frozen food, which has proved to be a perfect solution, as it keeps the freshness of food products intact for a longer period without compromising with its nutritive value.

WHAT DOES THE FUTURE HOLD FOR THE INDUSTRY?

The increasing adoption rate is a clear evidence of the acceptance and trust of consumers in frozen food in Italy. The rising focus in not just food products but also in the packaging of frozen food is expected to propel the market in the coming years further. Additionally, innovations in frozen food to increase the product offering are also expected to play a key role in accelerating the market in the future. Moreover, the ongoing COVID-19 crisis and lockdown are proving positive for the frozen food market, as consumers prefer to stock their kitchens with products with a longer shelf life, which are healthy as well as nutritious. This factor is expected to maintain the current demand for frozen food for at least the next year. ■

By Dan Orehov

SPIRALING UPWARDS

Raw dough, baked bread, proven pastries, cakes, pizza dough represent a wide variety of frozen bakery products and applications requiring specific solutions to match the targeted product quality through the freezing process.

The companies contacted for this article agree that the freezing process starts with the selection of the spiral conveyor belt (stainless steel or acetal) and belt drive system to prevent from product marks or product movement. The air temperature setting and type of airflow are other parameters which influence product quality. As an example, a too low air temperature would 'burn' bread product surface resulting in cracking after defrosting. Production time is also driving the spiral configuration. For long operating time, a sequential defrosting of the freezer evaporators must be adopted to prevent for performance decrease due to frost accumulation. And spiral freezer layout must match processing line constraints. Infeed/Outfeed orientation, single drum/twin drum spiral, up-go/down go spiral are some of the possible spiral configuration parameters to match site layout.

THE COEFFICIENT OF PERFORMANCE

According to German-headquartered technology company GEA, in terms of energy consumption, natural refrigerants are offering the best Coefficient of Performance (COP) and should be the first choice for industrial freezing applications. Ammonia and CO_2 are the natural refrigerants used in spiral freezers. They also offer lower maintenance costs compared to freons which would lose their efficiency across years when refrigerant leakages are changing the concentration of compounds part the refrigerant mix. Secondary refrigerants are more dedicated to chilling applications with recirculating of glycol into the heat exchanger and offering an easier control of air temperature.

"GEA is providing a modular spiral design with multiple configurations and options to match product and processing line requirements," company representatives say. "GEA's portfolio is covering all spiral solutions for bakery applications including proofers, ambient coolers, chillers, freezers, combination of cooler + freezer for baked bread and combination of proofer + freezer for pastries (croissants, chocolate rolls). All those solutions are available with multiple outfeed/infeed orientation options and with single or twin drum to match site layout. We propose stainless steel belt with low-tension system or acetal belts with low-tension or direct drive system particularly adapted to high capacities and belt load in bakery. Floor is proposed with basic chequer plate option or fully welded modular floor option for stringent hygienic requirements. Same for the enclosure with two options, typical cold room panels or GEA manufactured fully welded enclosure. Our evaporator options include sequential defrost system to run up to 14 days continuously," GEA reps add.

MEETING DESIGN GUIDELINES

Design guidelines are available for spiral freezer material, frameworks profiles and assemblies to match hygienic requirements. For Europe those guidelines are issued by the European Hygienic and Engineering Design

Guidelines (EHEDG) and by US Department of Agriculture (USDA) and 3-A Sanitary Standards for North America. They define the type of material to be used in freezers (Stainless Steel grade, Plastic material) and the type of assembly to prevent from dirt accumulation which would results in bacteria contamination. As an example, they recommend fully welded Stainless Steel 304 structure in food product zone corresponding to the area where product is conveyed in a spiral freezer. This means bolted structure generating a risk of dirt trap at the assembly interface must be avoided. In addition, all box structures must be avoided. Open profiles are highly recommended for ease of cleaning. Materials in direct contact with food product like spiral belts must comply to regulations. A certification of compliance to those standards must be issued by the manufacturer for each spiral chiller or freezer before the start in production.

"The main components of an IQF system are the belt to carry the product, cooler to control the air temperature, the belt drives, the air circulation fans and the control system. Typically, the most important element to the customer is the belt as this carries their product. The innovation in belting has been significant with suppliers developing easier to clean, easier to maintain and stronger belts. Recent invaluable belt innovations have been direct driven belts, which make historically difficult applications very reliable. The greatest innovation has been in the control systems and the flexibility that gives the customer, and also allows us to remotely monitor and support customers all around the world," say representatives from technology

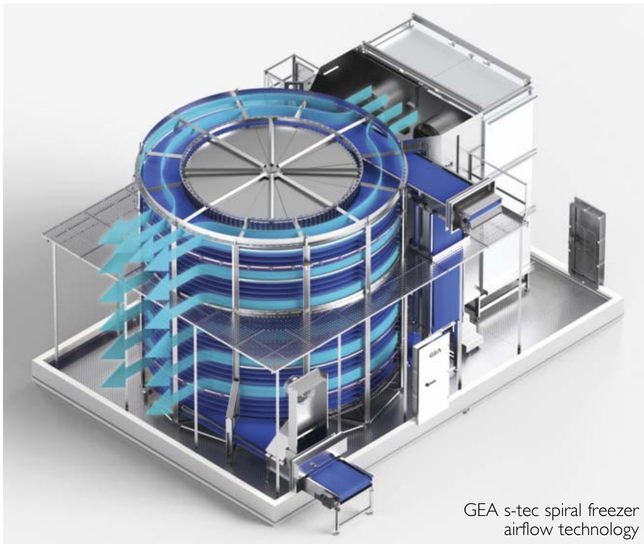
> *The main components of an IQF system are the belt to carry the product, cooler to control the air temperature, the belt drives, the air circulation fans and the control system.*
> *Starfrost*

manufacturer Starfrost. "We offer food processors complete flexibility to create the ideal process for their product, for proofing, cooling, chilling and freezing using the best components available on the market with our custom design to deliver a truly custom solution. We can design a system that allows minimal compromises and maximum flexibly the customers current and potential future requirements," Starfrost reps add.

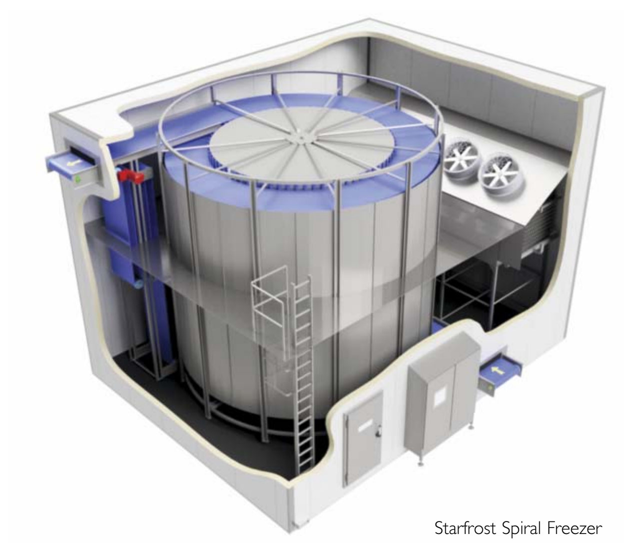
With regards to saving energy during freezing, Starfrost specialists believe that the major energy consumption of any cooling system is the temperature changed required in cooling of the product. The focus has typically been cooling the product as quickly as possible and reducing the size and capital cost of the freezer. This is gradually being reconsidered as the cost of energy is being scrutinized. If it is possible to maintain product quality whist cooling product more slowly with less cool air, then the energy and capital cost savings are significant. For example, it may take up to 5% longer to freeze a product in -38^{0}C compared to -40^{0}C, but there is at least a 6% reduction in energy to achieve the same cooling and also a reduction in refrigeration plant capital cost. In addition to considering the key design conditions of a system, we also have smart technologies that allow the air temperature to be maintained or adjusted to suit product heat load and capacity requirement.

"Starfrost has and always will be customer focused in our design and innovation. We listen to our customers and develop systems to suit their product, process or environmental requirements. An example of this is that we have seen the requirement for reduced plastic waste and taken the opportunity to develop a custom freezing solution that surface freezes the product by contact prior to entering the freezer. Typically, this was carried out using a thin single use plastic film, but we have developed a system that uses a thin food grade plastic belt that can be easily cleaned and has proven durability of over 12 months. The spin off benefit of this development due to its low operational cost is that it has also been used for new applications to improve product quality of product or increased capacity of existing freezing systems," Starfrost reps conclude. ■

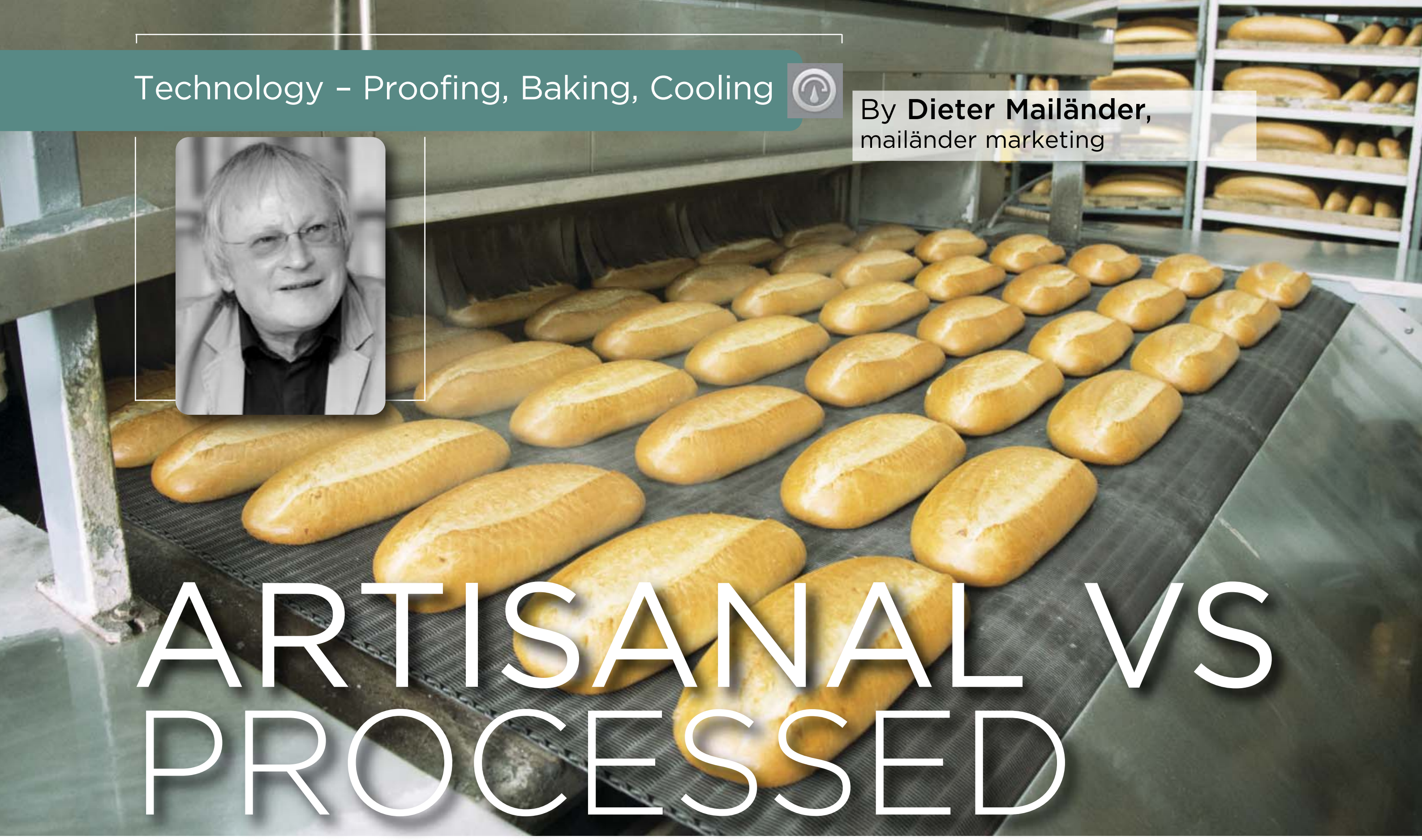
> *GEA's portfolio is covering all spiral solutions for bakery applications including proofers, ambient coolers, chillers, freezers, combination of cooler + freezer proofer + freezer.*
> *GEA*



GEA s-tec spiral freezer airflow technology



Starfrost Spiral Freezer



By **Dieter Mailänder,**
mailänder marketing

ARTISANAL VS PROCESSED

Bread, rolls, and bakery product snacks are firmly established in almost all European countries. Either special devices or hot-air steamers are used to warm up fresh or even deep-frozen bakery products wherever possible just in time. Most of them fulfill the traditional basic functions. But there are differences with special applications.

Bread plays an important role in almost every European country, whereby the range of offers varies widely from country to country. In the Mediterranean area, fresh bread is served at almost every warm meal at home as well as in restaurants. This custom is less common in Northern and Eastern Europe. But this doesn't mean that bread and bakery products play a tangential role there. The differences lie in the eating habits.

AROMA MARKETING

For many years, the great significance of bread, rolls, and other bakery goods (in Germany alone, one is acquainted with 3,200 different bread specialties) render this product group interesting for hypermarkets too. In-store bakeries that often offer a wide range of products are frequently located at their entrance areas. With their aroma, they cast a spell on their customers (aroma marketing). Traditional bakeries are seldom there, and usually cooled or deep-frozen pieces of dough are crisped up.

ARTISANAL & PROCESSED

The situation is different with community catering. Hospitals and nursing homes, in particular, cooperate often with local bakery trade businesses, which deliver bread and rolls, sometimes even cakes to them in the morning fresh for the meals of their patients and residents as well as their guests. This applies at least to the German-speaking countries, in which breakfast plays a considerably greater role than with their southern neighbors. It is not uncommon that pieces of dough are warmed up there too. But what sounds uncomplicated (pre-heat the oven to the right temperature, select the program, place the bakery goods on the racks or sheets and push them into the oven, close the door, regenerate and/or bake – done!) has its pitfalls. This is particularly true if cooled dough pieces are made from sophisticated dough like flaky pastry, which "rests" in several stages of preparation and then has to be baked.

A SPECIAL CHALLENGE: FLAKY PASTRY

In a number of countries in Europe, consumers value bakery products and snacks made from flaky pastry (Examples: Bulgaria - Baniza [a filling with brine cheese]; Portugal - Pasteis de Nata [a filling with vanilla pudding]; Finland - Joulutorttu [windmill-shaped cookies]). This dough is particularly sensitive and requires a quiet and constant climate in the baking chamber, supported by steam clouds so that the slices of dough can rise evenly. Afterwards the baking temperature must be reached quickly at 100% humidity in order to stabilize the unstable framework of the hardened dough. In order for the flaky dough to obtain a thin, crispy, stable crust, one has to extract moisture slowly and moderately in the next step, which the steam generator has generated in the baking chamber, but which also escapes from the slices of dough. Both of these together affect the climate considerably

> Hospitals and nursing homes, in particular, co-operate often with local bakery trade businesses, which deliver their products.

during the baking process and therefore the quality of the baked goods. Both parameters presuppose that sensitive sensors register even marginal climate fluctuations and provide a permanent control system for the climatic precision control.

A VARIETY OF TECHNICAL SOLUTIONS

In all of the community catering segments throughout Europe from hypermarkets up to nursing homes, hot-air steamers belong meanwhile to the basic kitchen equipment. It is state of the art to already record a variety of different programs. A convergence can be observed with the manufacturers. In the past, kitchen professionals could cook resp. regenerate main meals and their components in one of the devices; today they can use baking programs too. Other producers have specialized in devices for bake houses, bakeries, and in-store bakeries but have now recorded cooking programs too.

Whoever needs the entire range of applications from cooking to baking can choose from a broad range of providers and product lines. One can assume that they satisfy the basic functions in a comparable way. But depending on the expertise of the producers there are differences with special applications. Some of them are very good while others don't cover your needs at all. This is particularly true if different types of spicy and sweet bakery snacks are supposed to be crisped up on site.

NEW ACQUISITIONS – CRITICAL TESTING

If a new device is purchased, it makes sense in any case to set up a precise profile, test two or three alternative devices with identical processes within your own operations and assess them according to standardized criteria. It is advisable, among others, to check the following details:

- How precisely can one regulate the climate in the cooking/baking chamber, especially the temperature, the amount of steaming, off and baking times?
- Are there different velocities for different types of ventilators?
- How precise is one able to control the addition of steam (water vapor) - automatically or manually? If necessary, can more steps of the steam injection be combined?
- Is there a "re-baking" feature?
- Is there an automatic feature for rapid cooling?
- Does the device make recommendations for off-times?
- Can the device be heated up automatically?

RELIABLE BASIC EQUIPMENT

Most devices are equipped very well. For example, they have interactive (touch-screen) displays, offer a wide program diversity and enough storage for individual baking and cooking programs, enable the storage of HACCP relevant data, have different interfaces, network suitability, (automatic) cleaning programs and more.

Baking products are ideally suited to attract customers and guests. The retail industry uses this possibility in businesses on all scales as well as baking snack stands in pedestrian zones or hospitals in their cafeterias. The manufacturers have developed the technology of their devices to the point that complete baking processes can run on site. But alternatively, the people responsible can heat up resp. regenerate even cooled or deep-frozen pieces of dough or snacks. But what is decisive is to define the requirement specifications of a device precisely as well as to test it thoroughly and unbiased on site. Then there is nothing to get in the way of an excellent baking result. ■

By **Jason Troendle**, director of Market Intelligence and Research at the Global Cold Chain Alliance (GCCA)

COVID-19 AND ITS IMPACT ON THE COLD CHAIN INDUSTRY

Since it began, the pandemic has had a ripple effects globally on human life and social and economic activity. Countries, states, provinces, and local communities have implemented various methods to reduce the effects of the virus. Various agencies have made strong efforts to track the effects of the virus related to number of illnesses, deaths, and medical capacities to treat the virus. Less information is available on the economic or operational effect of the pandemic on specific industries.

To help understand the ripple effects of the pandemic on the cold chain industry, the Global Cold Chain Alliance (GCCA) conducted a survey between April 28, 2020 and May 11, 2020. The survey captured qualitative data from all types of GCCA members companies including warehouses, industry suppliers, asset and non-asset-based transportation and construction (design/build/thermal envelope contractors) across the industry. The survey questionnaire covered 12 questions and had 170 usable responses. A full set of the questions can be found at the end of the document.

BUSINESS CHALLENGES AND RESPONSES

The pandemic has caused many challenges that businesses have needed to address and work through. The most frequently selected challenge was supply chain disruptions (e.g. keeping up with demand surge, slowdowns in food service, production/manufacturing challenges) and selected by 87 of 165 respondents. Many of the other top-selected challenges revolved around care of employees and creating the most clean and safe environment for working, including access to personal protective equipment and cleaning supplies. Responses to the crisis were consistent with the top challenges, with a focus on people, a safe workplace, and maintaining business continuity. The top COVID-19 response, selected by 90% of all respondents, was to take extra measures to protect the workforce (e.g. staggered shifts, social distancing, remote working). The next-highest issues were maintaining overall business continuity and workforce morale (e.g. extra communication, appreciation pay, providing lunch, highlighting individuals/teams on social media platforms, sharing family activities).

FINANCIAL IMPACT

Anticipated business operations and revenue projections have changed due to

the pandemic. When asked about actual Q1/Q2 revenue versus Q1/Q2 pre-crisis revenue expectations, 54% of all respondents reported some type of a decrease, 11% saw no change, and 35% reported an increase in revenue. Looking into the future, respondents believe the next six months may look very similar to the past few months, with 54% believing there will be some type of a decrease, 10% see no change, and 36% believe they will see an increase in revenue. For those who believe they will experience a decrease in revenue relative to pre-crisis expectations, respondents believe they will experience less significant decreases than what has previously occurred.

COSTS

In addition to impacts on revenues, the costs of doing business have changed due to COVID-19. Approximately 80% of respondents indicated an increase in costs, with the most common uptick of costs between 1-5% increase.

GOVERNMENT RESPONSE

Governments and authorities have taken various actions to help mitigate the effects of the pandemic - some more specific or applicable to the cold chain. Respondents indicated access to PPE and cleaning as the top priorities on which they would like to see governments focus.

FUTURE OUTLOOK

Because the virus is thought to spread mainly through person-to-person contact, operations across the cold chain have been changed to reduce contact. While these measures were done out of necessity, the changes also provided an opportunity to adjust or try new processes or controls that, if effective and efficient, may remain in place after the pandemic ends. Nearly three quarters of all respondents indicated that, in the future, they will develop more robust SOPs/emergency plans as well as implement strict protocols for driver check-in (e.g. paperless, calling to check in). For those who responded to the question about percentage of employees working remotely, approximately 4.5% of their workforce worked remotely prior to the pandemic. That has increased to 19.8% of the workforce during the pandemic, and there is an expectation that about 10.6% of the workforce will continue to work remotely. This could lead to an increase of 6.1% of the workforce working remotely moving forward.

About three quarters of all respondents think that the pandemic will cause an increase in the growth of e-commerce/direct to consumer delivery of frozen product relative to the growth path pre-COVID.

73%
of respondents believe that global trade opportunities will either decrease.

INDUSTRY TRENDS

Given the crisis has reshaped and adjusted operations, outlook on future trends have shifted. About three quarters of all respondents think that the pandemic will cause an increase in the growth of e-commerce/direct to consumer delivery of chilled and/or frozen product relative to the growth path pre-COVID. Even stronger demand for data and predictive analytics is expected in the future, and respondents are optimistic that the growth rate will be even more significant because of the pandemic. On the flip side, 73% of respondents believe that global trade opportunities will either decrease or remain the same relative to pre-COVID expectations.

The Global Cold Chain Alliance (GCCA) has also recently released the first-quarter data showing the general major cost structure of operating refrigerated warehouses. The cost of labor was once again the largest share of expenses, followed by property rent or lease expenses. The rates that cold storage warehouses charge customers for providing third-party logistics services such as storage and shipping of perishable foods have been challenged as arbitrary and steep. In order to improve the economic information available to industry participants, the Global Cold Chain Alliance has commissioned a Cold Chain Index (CCI), reported since the end of 2018. The CCI tracks the growth rates of costs using predominantly official sources of economic data. The CCI can be customized to the region and state where a warehouse facility operates. The CCI includes five classes of expenses: labor, electric power, rent, supplies, and repairs; the cost shares typical of a North American refrigerated warehouse are as follows: labor was the largest share of expenses, at 46% of the total; property rent or lease expenses represented nearly 35% of total expenses; electric power accounted for 10% of total expenses; the "other" category included the leases on material handling equipment, expenses on utilities other than electric power, and un-specified other expenses.

To conclude, GCCA's Cold Chain Index is a valuable tool for third-party warehouses – and their customers, such as food retailers and wholesalers – in contract negotiations that reflect actual costs of the major inputs for producing the 3PL services – labor, electric power, rent, supplies, and repairs. Today's 3PL services are not commodities; they are tailored in many cases to specific customers, and many 3PLs are offering value-added services such as case picking, blast freezing, GDP Audit Certification, SQF Certification, and much more. The CCI helps purchasers of 3PL services understand the basic costs and it's up to the 3PL to discuss the ROI of the value-added services. ■

Today's 3PL services are not commodities; they are tailored in many cases to specific customers, and many 3PLs are offering value-added services.

By **Dieter Mailander**

FOOD TRENDS IN TIMES OF CRISIS

***Trend researcher Karin Tischer**, who is highly requested and recommended throughout Europe, travels around the globe to track down trends where they arise. In her research and development institute food & more, in Kaarst/Germany, she and her team develop system-compatible concepts, innovations and recipes. In this interview, she discusses consumer behavior and trends during the pandemic.*

Karin Tischer, Food-Trendscout & Corona Crisis Manager, food & more, together with her team, are specialists for lectures on trends, creativity and other workshops as well as leadership and team coaching. Her independent food innovation center is nationally and internationally acknowledged and active in the areas of industry, out-of-home market, B2B and trade across large as well as medium-sized companies in the food industry. In times of the Corona crisis, they offer the following help online and in person: risk management, pragmatic workshops, strategy and innovation workshops, individual consultation and webinars, crisis-specific coaching of managers and teams.

If you look at the different regional cuisines of Europe do you discover common features?

The regional kitchens of Europe have a lot in common and there are products, which are equally accepted and valued in all European countries. However, in relation we see more differences than similarities, which turns every single European kitchen particularly interesting and unique. For example, chicken nuggets are popular everywhere, but they are implemented dissimilar, depending on the country, the different meat qualities and processing, breading/coating, seasonings and the differences in the taste of cooking fat for preparation. There are also clear regional variances in food and ingredients within individual countries. For example, a north/south and west/east gradient draws character to the sensory preferences. There are similarities in Europe, but above all an incredible culinary variety. Each country has its unique, interesting, multifaceted expression and provides exciting impulses. There are differences in the sensory preference of the countries and that makes it exciting, for example, people eat much saltier in the north than in the south, but in the Mediterranean countries much sweeter than in the north and in Germany.

Which food developments for the coming two years are clearly identifiable?

A variety of trend developments play a role. Especially now due to the COVID-19 pandemic, 4 movements are strongly recognizable. The first one is the megatrend "health" with a higher need for healthy, fresh and health-promoting products. Food has become lifestyle and religion. In addition to the vegetarian diet, vegan has a particularly strong appeal, despite the small target group (currently 1.6% in Germany). They are both symbolic of the great new development for the majority of the population, the trend towards a more plant-based diet, the so-called "Plantarismus". Sustainability and Back2nature, the consumers' desire to get a bit closer to nature is shown by the stronger focus on local and regional products and suppliers as well as vertical farming. On the other hand, there is a greater need for comfort food in this uncertain and special time; these are anchor points that give back a bit of normality. In addition, topics like Food 4.0

- the big change due to stronger industrialization or digitalization and snacking instead of big meals - especially exciting, international street food - play a big role. Pleasure & Quality are in a constant field of tension with each other.

Which food trends do you see medium-term?

The so-called new trade performance: the food retail trade is becoming increasingly gastronomic; there is still a great need for development and potential. Above all the trade needs suitable convenience and frozen solutions, in order to serve the field. Digitalization will also continue and snacking will be even stronger, especially healthy snacks, as well as more alternative drinks, beyond smoothies in hot & cold versions. It should become more casual and convenient for the consumer. In this context, the development and optimization of plant-based alternatives will continue to pick up speed.

Do you see any effects caused by the Corona-Pandemic?

Yes, we are experiencing an absolute exceptional situation with total deceleration respectively change with simultaneous development in rapid time-lapse. Depending on how long the corona pandemic lasts and how much damage it will cause, whether medical, social, economic, agricultural, democratic, actually in every respect, the effects will be different. Due to the rapid increase of the number of people who stayed at home (home office, closed daycare centers and schools, etc.), more is cooked at home and the topic of home cooking receives new attention and appreciation. On the one hand, according to the trend of individualization, personal and unique dishes are being perfected even more. On the other hand, eating together as an emotional experience and structuring element is rediscovered in everyday life. NoSex Food or Unisex Food will be strengthened through communalization in this crisis. The perception of shop-ping is changing: online shopping in virtual supermarkets has increased a lot and acceptance of the previously hesitant development is increasing. In addition to the increased home cooking and supplying the family, you can see a significant demand for products that are suitable for an uncomplicated life at home. This is how many frozen products, e.g. Pizza, baked goods, vegetables, fruit and much more, are currently enjoying a significant boost. Also, the delivery business grows significantly due to the severe restrictions in foodservice and catering sectors.

How will the consumption of pork, beef and poultry develop?

Two directions are recognizable. On one hand there is a growing understanding and desire to put animal-welfare, -health, -fitness, -origin, -feeding, -keeping, technological processing etc. up front and to pay attention to higher quality products. On the other hand, there are movements to conserve resources and concepts arise where the whole animal is used and not just premium cuts. Further development enables new culinary experiences, which correspond very much to the spirit of the time and wishes of the consumers. The trend towards less and at the same time more valuable meat consumption is tending slightly. Depending on the period and the expression of the corona crisis, the gap between the users of cheaper discount products and higher priced quality products will further widen. There is a chance a new characterization of premium and luxury will arise. In terms of healthy eating, poultry has been of great importance for a long time. It has a positive image and is likely to become even more important than before. On one hand, the trend towards high protein meals likes to use poultry for bowls, snacks & co. On the other hand, more turn to home cooking in times of the COVID-19 pandemic. Poultry is easy to prepare for the consumer and versatile. A stronger development can be expected in the future.

Which new food products will make a mark on the industry?

There will be developments in different product groups. Sauces will take a new, even more important role because they are often responsible for the definition and character of the food. A never seen unprecedented, gigantic variety with contrasts, that are colorful, lively, innovative and international and which provides a "fresh up" for the increased number of convenience products. Vegan and vegetarian dishes often need support with the taste profile and sauces serve this aspect, e.g. in form of spreads. They also contribute to the big trend of snacking. Furthermore, new products in the field of meatless or vegetable alterna-tives will grow. There are currently many exciting approaches that stand for variety in protein supply in general or high protein products for fitness lovers. Hemp is interpreted as a new, interesting, trendy ingredient in numerous product catego-ries. In addition, the consumers need for

There is a lot of research around the world and there are currently around 35 laboratories working on in-vitro meat. But there is still a long way to go to achieve financially lucrative and operational implementation possibilities, as well as a general acceptance.

"Pleasure & Quality" offers space for new creations, for example a burger patty made from beef and mushrooms.

What role will meat substitutes play?

They play an increasingly important role and are going to offer space for many new product developments. For some time, we have recognized a movement towards a more plant-oriented diet, the so-called "Plantarismus". The number of new product developments in this area is enormous as well as the continuous optimization process of these products. It hits the nerve of consumers and further investments are worthwhile. There is a lot of research around the world and there are currently around 35 laboratories working on in-vitro meat. But there is still a long way to go, to achieve financially lucrative and operational implementation possibilities as well as a general acceptance. In-vitro meat is still viewed critically, especially in the German-speaking countries.

What do think about insects?

Insects already play a more important role than a few years ago and are differently established in every country. In addition, the search for alternative protein sources will further increase the use of insects. Convenience products as successful processing of largely unfamiliar raw material are here in demand. The use of insect flour as part of new products is in the focus, e.g. in burger patties, schnitzel, balls, sticks, bars and other snacks. This is not only recommended for financial and sensory reasons, but also looking at the whole crawling animal or insect, is a greater obstacle for many consumers than insects processed to flour and used in a product. In many places, insects are establishing themselves in small steps from the exotic "test of courage" to a new component, but they will not replace the steak on the plate and probably will not play the full role in Europe like they have been playing for years in other countries (especially in Asian countries).

The use of insect flour as part of new products is in the focus, e.g. in burger patties, schnitzel, balls, sticks, bars and other snacks.

Will we see a change in consumer habits within the next few years?

On one hand, digitalization will continue to advance therefore bringing more changes and development with it. Whether through home office or delivery options, the COVID-19 pandemic is driving digitalization massively. Agriculture is also changing, because mechanization is linked with changes. At the same time, emotional and personal needs are further driven by the corona situation. In addition to the great importance of open farm shops, market stalls and regional suppliers, the trend "home gardening" is experiencing a new dimension, whether tomatoes grown on the balcony, vegetables in the allotment garden associations or urban gardening, e.g. in community gardens on the roofs of skyscrapers. This is not primarily about securing basic supply, but rather about the very personal harvest experience. "Back2nature", getting closer to nature again, seems to be very important right now. Snacking will continue to grow, whether in nature style or as a convenience.

What about the frequency of cooking at home?

In general, the movement is unstoppable that consumers are able to and want to cook less and they are going to use more and more convenience products.

Furthermore, consumers are supplying themselves with food out of home, whether on site, ordered or delivered in this fast-growing segment. The corona crisis is currently toppling everything upside down in private and professional life, i.e. loss of habit. Food can take over the function of newly gained or perceived control e.g. in the form of daily rhythm and self-selected dishes. On one hand, cooking at home is rediscovered - in part involuntarily - on the other hand, there is currently a stronger focus on eating healthy and fresh foods. Eating also becomes compensation for many things and provides structure in everyday life. At the moment, it is a consolation of soul, an expression of "joie de vivre" or simply occupational therapy in the sense of eating as a "new reassurance". At the same time, people look forward to being able to experience the gastronomic offer again and everything that comes with it, especially the hospitality, but also the fact that they no longer have to cook by themselves.

What dishes of other cultural regions will influence ours?

In a European comparison, Germany is very open to international dishes and curious about global impulses. Many popular country kitchens (Asian- especially Vietnamese and Korean, Italian & Mediterranean) are firmly anchored in Europe, especially in Germany and are still the top players. French cuisine has been rediscovered, especially in gastronomy. However, the world is currently standing still and has a different focus. Snacks, especially street food, delight the consumers, from baked goods, oriental, sushi, smoothies, high protein bowls, healthy snacks to many other international specialties. Burgers and their companions are still top sellers. The Mediterranean, but also the German regional cuisine are also in high demand. In the context of "sharing dinner", concepts and dishes that promote a sense of community are currently not possible but will become even more important as soon as this crisis has been overcome. 98% of all trends start in the foodservice sector, are then transferred to the products for retail and end consumers. This means that these two areas have their own peculiarities and differences, but they are closely linked. Changes of one area almost automatically affect the other. ■

By **Dan Orehov**

RETAIL UP, FOODSERVICE DOWN

In a recent talk I had with Adrienne Seiling, Vice President of Strategic Communications with the American Frozen Food Institute (AFFI), we tackled the state of the frozen food industry in the United States, on the background of the COVID-19 pandemic, a market worth over USD57bn.

How would you characterize the current market for frozen food in US retail?
Retail sales for frozen foods are continuing to hold strong. After a 94% surge in mid-March, overall frozen food sales held at 30-35% increases in April and May 2020 vs. a year ago.

What impact has the COVID-19 pandemic had on the foodservice businesses?
According to Datassential, foodservice sales are down an average of 65% across the whole industry, but it's not the same story for everyone. On-site segments are significantly more optimistic they'll recover from COVID-19 stronger, like healthcare and K-12 foodservice, because they have essential roles to play right now. Restaurants are completely discretionary for all consumers at this point, which is why they're significantly more worried about permanent closures. The positive news for frozen in the foodservice segment is that operators are purchasing less frequently and are turning to frozen foods for its longer shelf life which means less wasted food. In addition, the versatility of frozen foods allows the operator to be nimble with their menu options and planning.

What are some of the best-selling frozen food categories in the US and how do you explain their success?
We're seeing elevated sales both for full meal solutions, including frozen breakfast foods, entrees and pizza, and meal ingredients, such as frozen fruits and vegetables, potato dishes, meats, beverages and baked goods.

48%
of Americans seek healthy ingredients in frozen food.

The positive news for frozen in the foodservice segment is that operators are purchasing less frequently and are turning to frozen foods for its longer shelf life.

I think the most challenging issue our members are facing is business continuity – staying operational during the COVID-19 pandemic. That's why AFFI is focused on providing its members and the entire frozen food supply chain with the best available guidance and resources from public health agencies to manage the spread and impact of the new coronavirus. In addition, AFFI as part of the Food and Beverage Issue Alliance is working collaboratively with the US Centers for Disease Control and Prevention (CDC), US Food and Drug Administration (FDA), US Department of Agriculture (USDA), State Governors and food industry leaders to inform consumers about the most factual and science-based information available regarding COVID-19.

Please refer to the free-from trend and its impact on the frozen food industry in the US.

We know that our core frozen food shoppers are highly interested in health and production claims. Nearly half look for healthier ingredients (48%), items with a better nutritional value (47%), such as high in protein or low in fat or calories, and no artificial ingredients (41%). In addition, production claims matter as well. Based on our research, the top three production claims shoppers look for in the frozen food aisle include: "real" ingredients (48%), fresh frozen (39%) and no artificial ingredients (38%).

What informative actions has the AFFI taken and will continue to take to let consumers know about the benefits of frozen food?

AFFI will continue to tell the story of frozen foods and the companies who make them. Part of this story is going beyond convenience - the frozen food aisle provides so much more. It's about the taste, quality, variety and consistency of the food itself. We're calling this the Frozen Advantage. We're excited to share those attributes and provide our members with the tools and resources for them to share their stories too. Some of these tools and resources are available at www.frozenadvantage.org.

How do you expect the frozen food industry to evolve in the next couple of years?

Frozen will remain a category heavyweight for months and years ahead as it attracts new and returning customers who are relying on a variety of frozen foods to provide much-needed convenience, nutrition and satisfaction. ■

35%

retail growth in frozen retails sales was recorded in April and May 2020.

AFFI, as part of the Food and Beverage Issue Alliance, is working with the CDC, FDA, USDA, State Governors and food industry leaders, to inform consumers about the most factual and science-based information available regarding COVID-19.

By Dan Orehov

"INDUSTRY GROWTH, SUSTAINABILITY AND LABOR ARE PRIORITIES"

In this exclusive interview with the newly-appointed Chief Executive Officer and President of the Global Cold Chain Alliance, Matthew Ott shared with me details about his vision for the future of the GCCA, but also of the cold chain industry overall and his personal evolution in this business.

Please briefly describe your career path so far in the industry, up until becoming CEO and President of GCCA.
Believe it or not, I am a third-generation association executive. So, for me, the association business was the family business. Over the course of my career I have worked with a number of associations to ensure the programs and services being provided to the membership were as impactful and relevant as possible. I have also served as an advocate of the industries that I was representing. For the past decade, I have worked for with the National Grocers Association (NGA), most recently as EVP and COO, as well as serving as Executive Director of the NGA Foundation. And it has been a great honor working with the independent grocery industry, wholesalers, CPG companies and service suppliers that comprised our membership.

What motivated you to assume this role, starting June 1?
I was initially drawn to this role because of the numerous similarities between the NGA and GCCA memberships. First, the composition and diversity of the memberships are very similar. Both associations have a number of categories of membership and are comprised of companies of all shapes and sizes. And of course, there is the fact that they are both part of a coalition of associations within the food industry. Most importantly, both organizations play significant roles in ensuring that people across the world have access to the safest, highest quality food and pharmaceuticals possible. This is now more important than ever. And the opportunity to come in and serve GCCA and our member companies was one that I just could not pass up. I am extremely excited to work with this high-performing team on continuing the great momentum that the organization and industry has established over the years.

How do you intend to approach your new role in the GCCA and what are some of your priorities?
I am fortunate to come into an organization with a tremendous staff and volunteer leadership. There are solid strategic plans in place, but I would like to evaluate any ways that we can enhance or improve them. So first and foremost, I am going to listen. I want to talk to our staff and our members about what we are doing well, and where we have opportunities to improve operations and grow our influence worldwide. We will be evaluating our existing member programs, services, and events to ensure that they are providing extraordinary value and are helping to serve the needs of all of our member companies worldwide. We will be looking at ways that we can improve the value proposition from a global perspective, seeking to add to our list of partnerships and member companies worldwide with a goal of improving international connectivity. We will also continue our work on developing a world-class industry relations and member engagement plan that enhances the profile and tells the story of the vital work of GCCA's member companies. I would also like to note that I am extremely excited to visit our members in Europe and beyond to hear first-hand how I, and GCCA, can better serve your company and the industry.

What are your thoughts on the current industry of temperature-controlled warehousing and logistics?
Areas to consider are industry growth, sustainability, and labor. Consolidation in the cold storage industry continues. The industry has garnered investor attention because of strong financial performance over the last several years, and due to cold chain industry characteristics – we're recession-resilient, have growing populations to feed, and see customer diversification over many product types.
Sustainability is integrated into 3PL operations to different extents

> *Sustainability is integrated into 3PL operations to different extents depending on region; Europe much more so than the US.*

> *Automation is a very high priority in our strategic plan and 41% of respondents in our COVID-19 survey anticipate increases in investment.*

depending on region; Europe much more so than the US. Overall, energy is the second highest cost for temperature-controlled warehouses, so the adoption of best practices and new technologies is a high priority for many of our members. We launched an Energy Excellence program to meet member needs. For transportation, the increasing use of electric hybrid transportation refrigeration units is creating a shift in infrastructure among trucks and trailers, as well as requiring infrastructure changes at facilities that need to have the ability to accept plug-ins.

Labor turnover in the industry differs by segment and by region but tends to be higher overall than other industries. For example, cold storage warehouse turnover is down while there is a shortage of refrigerated trucks on the distribution side. Our research shows a slight decrease in turnover rates compared to the previous year.

Please share your thoughts on the pandemic effects on the global cold chain industry, from challenges to solutions you foresee.

The effects include increasing customer diversification, e-commerce growth, and revenue volatility. 3PLs are overcoming supply chain disruptions (e.g. keeping up with demand surge, slowdowns in food service, production/manufacturing challenges) by shifting their operations and reevaluating value-added services. Responses to COVID-19 include updating existing crisis recovery plans and changing operations. Actions taken included staggered shifts, social distancing, and remote working. Our research shows a likely modest increase in the workforce working remotely moving forward. All of this impacts revenue. Comparing Q1 actual to forecast quarterly revenue, 54% of all respondents reported some type of decrease, 11% saw no change, and 35% reported an increase in revenue. Respondents to our COVID-19 Cold Chain Business Impact Survey believe the next six months may look very similar to the past few months.

How has frozen food specifically been affected by the pandemic, in your view?

The American Frozen Food Institute reports a large consumer increase in purchase of frozen foods. About 75% of all respondents to our recent survey think the increase will continue for the chilled and/or frozen product categories.

If you were to compare Europe with the US, Latin America and Australasia, which world region is using the most state-of-the-art temperature-controlled warehousing and logistics?

Automation is a very high priority in our strategic plan and 41% of respondents in our COVID-19 survey anticipate increases in investment. Europe is the most advanced in terms of automation due to high costs for real estate and labor in the region. Urban pollution regulations have also toughened significantly across Europe, which has pushed refrigerated transportation to shift to more environmentally friendly solutions such as CO2-refrigerated trucks and electric trucks for last-mile delivery. Companies in other developed markets focus on cost reduction and increased efficiency. In Australia, Canada, and the United States, automation has gradually increased over the past few years, and will continue to grow slowly unless labor becomes a greater challenge. In most emerging markets, warehouses aim to improve customer service and concentrate on core activities, as labor remains relatively inexpensive. We tend to see higher standards demanded for high-value products that are being exported or imported. However, greater demand and willingness to pay for safe, quality food is increasing with the expansion of the middle class and an increase in purchases of home refrigerators and freezers.

What message would you like to relay to the GCCA members if you were to refer to only one?

Member or not, if you are working within the cold chain industry, we are here to serve you. Please never hesitate to reach out to me, or any member of the GCCA team if there is anything that we can do for you or your company. ■

By **Dan Orehov**

CREATING A LEANER BUSINESS FRAMEWORK

Even though the COVID-19 pandemic has everybody talking about it, major issues like sustainability and environmental damage are still of great importance. Clemens Berger, member of the managing board at Syntegon Technology GmbH, talked to me in this exclusive piece about sustainable packaging and the impact of plastic on the environment, the importance of hygiene in packaging, innovation, as well as the recent transition from Bosch Packaging to Syntegon.

Please provide details pertaining to the takeover of Bosch Packaging by CVC Capital Partners (CVC).

At the beginning of this year, Syntegon presented itself as an independent company under a new brand. Processing and packaging for a better life - that is our mission. We remain a global partner for the pharmaceutical and food industries and provide even more intelligent and sustainable solutions for our customers. This newly gained independence enables us to be faster and even more flexible. While we used to be part of a large corporation with different divisions and a fixed organizational structure, Syntegon can now create a business framework that is leaner and a better fit for the industry with a stronger focus on the key challenges and demands of our customers.

What are your expectations regarding turnover and market, on medium- and long-term?

Syntegon generated annual sales of EUR1.33bn in 2019, slightly above the previous annual figure. As a result, our performance has remained stable, despite the sales process and a downturn in the mechanical engineering sector. In 2020, forecast statements are very difficult due to the dynamics of the corona crisis and its unforeseeable effects on the global economy. Nevertheless, we are cautiously optimistic since we work in industries that are especially in demand during the crisis. In the medium and long term, we will continue to grow with the food and pharmaceutical industries due to the increasing global demand for food and medicines.

Which are the most challenging areas at present, with regards to the packaging industry for processed foods?

We are active in the food market within the framework of various trends. We have noticed an increase in product variety in the double-digit percentage range for some time now. Consumers are demanding regional, seasonal and specialized products, including organic, vegan or gluten-free products. Food manufacturers want to meet this demand while also distinguishing themselves from other market participants through their products. Fast product launches play an important role in this regard. E-commerce is growing rapidly, particularly in Asia - with growth rates of 20%. As a result, the demand for smaller batch sizes is on the rise, resulting in shorter production slots and individual orders. To meet this trend, manufacturers need machines with high levels of flexibility for fast change-overs and pack style variety. The prevailing shortage of skilled workers and rising labor costs are leading to increasing automation rates. We expect the market demand for robot solutions to grow more than double in the coming years.

What are your thoughts on sustainable packaging and the impact of plastic on the environment?

Sustainability is a particularly prevailing topic - especially in Europe but also increasingly in North America, Asia and Australia. Monomaterials and paper solutions as alternatives to packaging made of plastic materials are as much in demand as food safety and transparency when it comes to product ingredients. Consequently, we are directing our R&D efforts into this field. We have also established a company-wide sustainability team with experts in various fields that works closely with our customers on sustainable packaging solutions. Syntegon's strategy is primarily based on designing machines for environmentally-friendly packaging and retrofitting existing systems for alternative, more sustainable packaging material, such as paper and monomaterials. Monomaterial packaging is suitable for frozen food products in particular. When developing future-oriented packaging solutions, we also cooperate with competent partners. We accompany our customers not only as a machine supplier, but also as a consultant on the way to a sustainable future.

How does the Internet of Things (IoT) and Smart Packaging impact the food industry?
The future demand for machine diagnostics and predictive maintenance solutions for food packaging will increase. This technology ensures real-time support and minimizes unplanned downtime through early warnings of failures. Internet-based packaging platforms are being used as communication interfaces to collect, generate, manage or share relevant data with customers. Track and Trace solutions such as QR codes will also play a central role in transparency throughout the food chain in order to increase consumer trust and comply with food regulations. Consumers look up product information on the packaging itself or use smartphones to look for product information. Retailers and brand owners can communicate directly with consumers through packaging interaction technologies, such as RFID (UHF, NFC), which means these features can be used to boost marketing future opportunities.

How can modern packaging equipment help processors achieve savings in energy, time and reduce food waste?
When it comes to machine design, the following features are key: quick and easy changeovers, good cleanability and hygienic design. In addition, services such as predictive maintenance can minimize downtime and increase the overall equipment effectiveness (OEE). From an operator perspective, machines have to be easy and intuitive to use. Additionally, when it comes to maintenance or format changes, operator training and guidance tools (I4.0 Solutions Maintenance Assistant and Operations Assistant) are of great value. Our tools are already installed at customer sites and benefit manufacturers' daily operations significantly. Further automation can increase the efficiency of modern packaging equipment in an effort to prevent human failure. Robotic solutions are crucial with regard to automation and taking a step towards "dark factory". Today, approximately 5,000 Pick and Place robots are purchased in the global food sector each year. According to a study by the International Federation of Robotics, the market demand for robotic solutions will triple by 2025.

Considering the current pandemic, please discuss the importance of hygiene in packaging design.
In Europe, the European Hygienic Engineering and Design Group (EHEDG) defines procedures for the analysis of critical control points (HACCP) in food production as well as specifications for the hygienic design of production and packaging machines. In the US, this is regulated by the FDA Food Safety Modernization Act (FSMA). These institutions aim to improve product safety, eliminate all sources of error and prevent harm to consumers. In the frozen food industry, product safety and quality are determined by the processing speed, measured in the IQF standard (Individually Quick Frozen), and the processing and packaging machines' level of hygiene. In vertical bagging, a recent challenge lies in the use of non-perforated films, while at the same time reducing the air content within the bags, e.g. for efficient secondary packaging. Air expulsion innovations allow manufacturers to package their frozen products safely and efficiently while complying with the highest hygiene standards. For this reason, non-perforated packaging is gaining more traction on the market. Flexible equipment is key in times of rapidly changing packaging designs and style; the need for flexible packaging equipment is as high as ever. Machines that can be adjusted to different sizes and formats make it possible to design the ideal packaging for each product without losing valuable production time on format changes. Compact packaging allows for easier transportation, only requiring little space. It also saves space on supermarket shelves as well as simplifying the secondary packaging process.

Please refer to the innovations in packaging machinery in your company's portfolio.
Our new PHS 2.0 sealing system, which is integrated in our vertical bagger SVC 4020, is ideal for frozen food packaging. The PHS 2.0 can process 20-micron-thick BOPE monomaterial and creates consistent and high-quality seals with almost no free-skirt. The narrow seals and thin material enable a material reduction of up to 50 percent. The SVC 4020 is a flexible vertical bagger allowing for easy change-overs between the predominant pillow bag style and up-and-coming stand-up bags. Retail demand for frozen food is increasing during the corona crisis; flexibility is therefore key for producers who want to package low-cost products in pillow bags and premium products in stand-up pouches, such as corner-seal or doy-style bags. In terms of secondary packaging, our new Kliklok ACE (Advanced Carton Erector) platform is an example of Syntegon's intelligent technologies. The platform features high-speed forming capabilities and can handle a wide range of carton sizes. It forms cartons and trays without glue, instead using a special lock-style or ultrasonic technology for this purpose.

Considering that CVC Capital Partners has taken over Bosch Packaging, what makes Syntegon stand out in this very competitive market?
What makes us unique is that we can offer a wide range of innovative processing and packaging technologies for solid and liquid food applications. We provide our customers with a new level of simplicity and efficiency. We are a reliable partner throughout the entire machine life cycle. Our comprehensive efforts in the field of sustainable packaging help us stand out in the market. We focus not only on reducing the use of resources (energy, packaging material), but also on minimizing product waste by developing safe packaging and sealing solutions that protect against contamination and extend the shelf life. ■

MINI PIES BY EVOIKI

The delicious mini pies of Zimi Psachnon, with the unique puff pastry (a perfect fluffy dough of fine flour and margarine) or shortcrust pastry (crunchy, biscuit-textured dough), are made using the purest ingredients and always with the same loving care. Mini pies are ideal to eat any time of the day, as a snack for children at school or during lunch break for adults at work. They need baking for only 20 minutes and are ready to be served at parties, family and friends' gatherings. All types have fairly enthusiastic fans with sweet, savory and spicy flavors (feta cheese, sausage, spinach, ham, kasseri cheese, apple, vanilla cream). Mini pies of Zimi Psachnon are distributed in all Europe.

www.evoiki-zimi.gr

"BOLAS": THE NEW OVEN SNACK BY RISSOLARIA!

Rissolaria presents the new product line by Rissolaria Tradicional – "Bolas". Available in four different varieties, (meat, vegetables, chicken & sardines), this snack is delivered frozen and pre-baked, for maximum commodity and taste. Just unfreeze and it's ready to eat. As always, the dough recipes from Rissolaria are made with the best extra virgin olive oil from Portugal, as well as fresh and high-quality ingredients, for a supreme delight. Healthy and light, great for any time of the day! To complete the oven line, don´t miss our wide range of gourmet pot pies, with more of 10 different flavours, inspired in the Portuguese traditional cuisine.

exportacao@rissolariatradicional.com

TWIX COOKIES & CREME ICE CREAM BAR

Mars has presented its newest ice cream product the TWIX Cookies & Creme Ice Cream Bar. Inspired by the TWIX Cookies & Creme Chocolate Candy Bar, it is packed with vanilla ice cream mixed with chocolate cookie pieces, topped with crunchy chocolate cookies. This frozen treat offers an exciting new twist on the classic ice cream bar, and is available in the US at grocery and convenience stores in Singles (2.9 oz), and Multipack boxes (11.58 oz), with a standard retail price of USD4.29. Headquartered in McLean, Virginia, Mars operates in more than 80 countries and reports annual global sales of over USD35b.

https://marschocolate.com/

MINUTE MAID® 100% JUICE STICKS

&J Snack Foods Corp. is introducing Minute Maid® 100% Juice Sticks, which are available in two variety packs, featuring classic Minute Maid® flavors. Each 28 g stick has 25 calories, 5 grams of sugar, and is free from common allergens including peanuts, tree nuts, dairy, egg, gluten and soy. The product also contains no sweetener. Minute Maid® 100% Juice Sticks will be available in the frozen dessert section of retailers nationwide for an SRP of USD3.99 – USD4.99.

"We are thrilled to expand our more than two-decades long partnership with Minute Maid® by adding these 100% juice sticks to our frozen novelty portfolio," Alissa Davis, vice president of marketing for J&J Snacks Foods Corp said.

https://jjsnack.com/

EDITORIAL PLAN 2020

1 JANUARY/FEBRUARY
Ad closing 31.01/Publishing 14.02

Frozen Pasta for Catering and Foodservice
product innovation, manufacturers, suppliers
Bakery and Pastry
key market players, producers, suppliers
Frozen Desserts
market dynamics, new product development
Bio and Organic Products for the Food Industry
clean label and energy saving products
Frozen Potato Market
innovative products and European overview
Frozen Potato Technology
cutting, slicing, peeling, dicing
Technology & Logistics
conveyor belts, spiral ovens, IQF freezers & chillers
Technology and Equipment for Frozen Bakery
proofers, ovens, coolers, freezers
Technology in Food Processing
equipment innovation and evolution
Ice Cream Market in Europes
evolution and estimates
Nutrition & Ingredients
for frozen bakery and potato products

Trade fairs: Biofach, Gulfood, Internorga, FoodEx Japan, CFIA, FoodExpo Greece, Wabel Frozen Summit, M.A.D.E., Modern Bakery, AFFI-CON 2020, Snackshow-Parriza, Foodex Birmingham

2 MARCH/APRIL
Ad closing 27.03/Publishing 10.04

PLMA, CIBUS & INTERPACK SPECIAL EDITION

Appetizers, Snacks and Pies
high convenience, filo pastry products, pizza, ready meals
Frozen Vegetables, Fruit, Mushrooms, Green Herbs
trends and market overview
Technology Innovation for Frozen Vegetables & Fruit
cutting, slicing, peeling, dicing
BeNeLux Market Review
major players and new products
Cooked & Pre-Cooked IQF products for the Food Industry
rice, pasta, sauces, cereals, noodles, vegetables
Technology & Logistics
industrial freezing equipment
Packaging Technology
state-of-the-art equipment and solutions
Meat & Poultry Products
categories and market evolution
Technology in Professional Kitchens
multifunctional cooking devices
Private Label Food
innovation, new products, producers, retailers
Frozen Fish & Seafood
sustainable practices, market overview, major processors
Nutrition & Ingredients
vegetables, fruit and herbs
Frozen Food in Germany
market overview

Trade fairs: PLMA Amsterdam, Cibus, Interpack, Alimentaria, Seafood Expo - Processing Global, NFRA Convention

3 MAY/JUNE
Ad closing 29.05/Publishing 12.06

SUMMER FANCY FOOD SHOW NEW YORK SPECIAL EDITION

Frozen Food from Italy
market overview for retail and foodservice
Frozen Pasta & Sauces Market
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 Food Industry
for pasta, pizza, ready meals (herbs, rice, vegetables, mushrooms, processed meat)
Frozen Finger Food, Fried or Baked Mix Balls
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: Summer Fancy Food Show

4 JULY/AUGUST
Ad closing 31.07/Publishing 14.08

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 Market Update
frozen fries market overview in retail & foodservice
Potato Technology Innovation
new equipment for frying, cooking and seasoning
Vegetarian and Vegan Food
product trends, innovations
Technology & Logistics
trends in cold storage and warehousing
industrial freezing equipment
Frozen Food in Spain and Portugal
latest market developments
Dishwashing Machines for Professional Kitchens
hygiene & resource conservation
Nutrition & Ingredients
trends for coated and breaded products

Trade fairs: Sial, Polagra Food-Tech

5 SEPTEMBER/OCTOBER
Ad closing 18.09/Publishing 02.10

SIAL SPECIAL EDITION 2

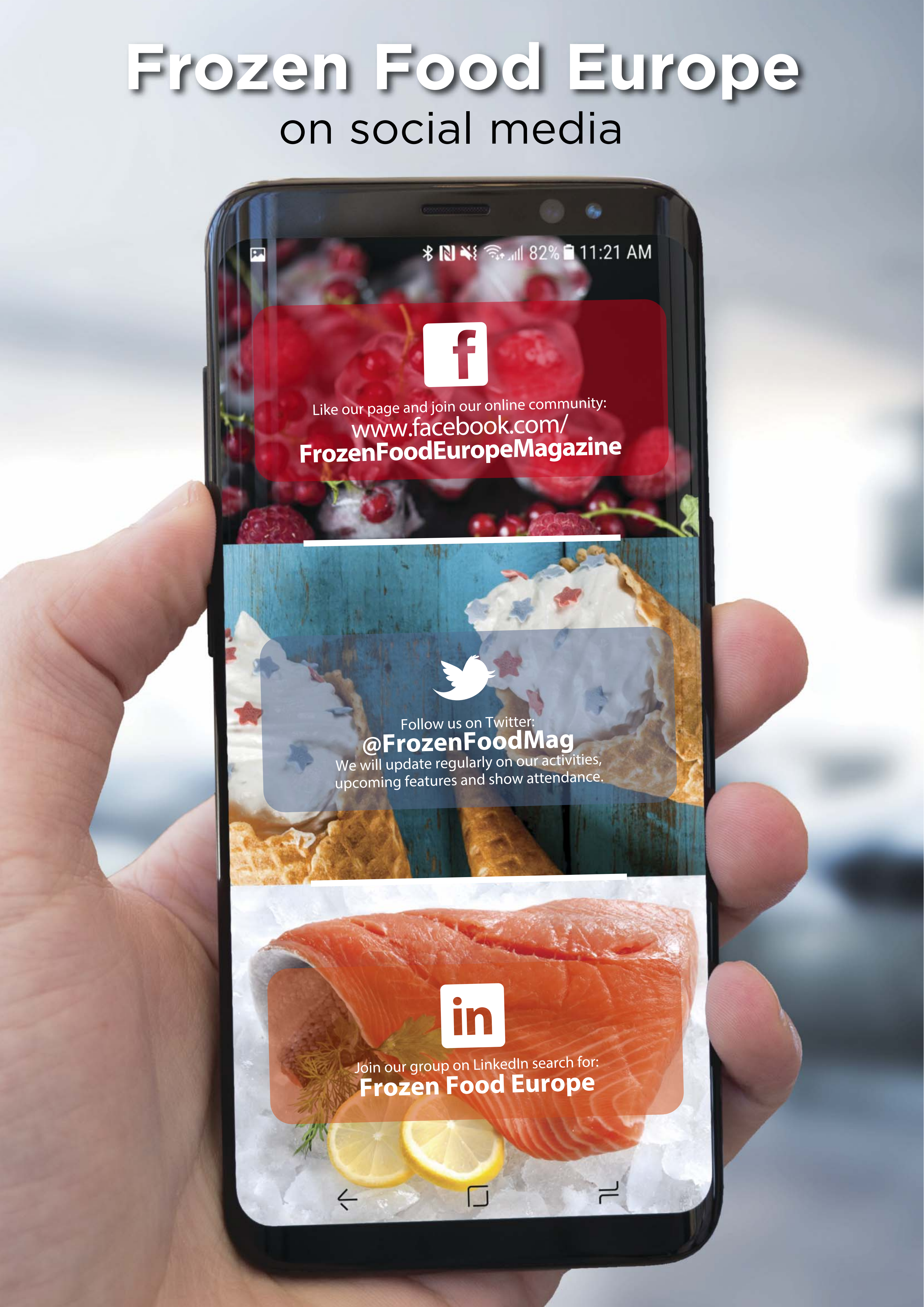
SIAL Food Trends
special report
Key Exhibitors Road Map at SIAL
latest product innovation
Bakery & Pastry
new product innovation, suppliers, producers
Frozen Vegetables, Fruit, Mushrooms, Green Herbs
solutions for retail and foodservice
Technology Innovation for Frozen Vegetables and Fruit
cutting, slicing, peeling, dicing
Technology & Logistics
trends and solutions in packaging equipment
Technology Automation
saving cost, manpower and time
Meat and Poultry Products
market overview in EU vs USA
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, südback, Alimentaria Foodtech, Agro Prod Mash, Interpom/Primeurs, Process Expo, PLMA Chicago, Gulfood Manufacturing, Pack Expo, Global Cold Chain Expo

6 NOVEMBER/DECEMBER
Ad closing 25.11/Publishing 11.12

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
Burgers, Grilled and Party Products
meat and substitute products for vegetarians
Technology & Logistics
freezing and chilling equipment
Quick Service Restaurants & Bar and Snack Channel
market evolution, leading operators in Europe
Food Management Systems
efficient processing of data in professional kitchens
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 2021, Fruit Logistica 2021, Marca Bologna 2021, Sigep 2021, Gulfood 2021


Frozen Food Europe
on social media
82% 11:21 AM
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Follow us on Twitter:
@FrozenFoodMag
We will update regularly on our activities,
upcoming features and show attendance.
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Frozen Food Europe