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# Redesigned, and re-energised

**A**t Bell Publishing we've helped you explore the world of food and drink for nearly 20 years.

With the launch of this November issue, we're embracing our heritage while redefining it in a contemporary way, bringing you the same level of information but with a bolder, more captivating look.

*Food & Drink Technology* has been a successful industry publication for many years. We believe our readers want to learn about best practices. For the last few years, we have focused on technologies and applications common across the food and drink industries and on advanced technologies being introduced around Europe. We always look to identify incremental innovation.

Our 2020 vision focusses on strengthening our brand values, including a redesign of all platforms, including print, online and social media. We've introduced a design to be more visual appealing and to signify how *Food & Drink Technology's* content is changing to reflect a pivotal time for food and drink, and a new logo that portrays clear, focused coverage.

The magazine's new look is sharper and allows us to accomplish our stated mission. The magazine remains accessible and easy to read. Content-wise, the changes are more subtle, but no less significant.

*F&DT* will prioritise its coverage of the ways sector manufacturers and suppliers are evolving to deliver sustainable solutions.

We'll be talking to process developers and managers, plant engineers, food technologists and flavourists to deliver insight into how they are meeting the challenge of sustainability.

Our editorial advisory panel – all prominent influencers and sector specialists – will contribute regularly to the conversation.

*F&DT* will report straight from development centres on the ingenuity and innovation raising the bar of customer and consumer satisfaction. The best is yet to come for Processing magazine.

Please tell us what you think of your new *Food & Drink Technology*; please email me at [rodney@bellpublishing.com](mailto:rodney@bellpublishing.com). And as ever, thank you for reading.

**Rodney Jack, Editor, Food & Drink Technology**

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# Flavours, ingredients and culinary techniques to disrupt food and beverage in 2020

THP has released its fifth Flavor & Trend Forecast for 2020 highlighting the latest ingredients, cooking techniques and culinary ideas driving innovation and disruption within the food and beverage industry.

For 2020, THP's culinary experts identified 10 key global trends, many largely concentrated on a common theme of sustainability and conscious consumerism, including:

**Uncultivated botanicals –**

Beyond being beautiful, edible flowers and botanicals like wild sorrel, juniper, maple blossoms, and balsam add a delicate and unique sweetness to a dish that can't be emulated with anything else.

**Zero waste cooking –**

Foodprints (the environmental impact of food) are



swaying consumer purchases. Consumers don't realise is that these discarded products can be used in sustainable and creative ways to elevate everyday dishes and delicacies.

**Vietnamese cuisine –**

Inspired

by street food and fusions, young Westerners on the hunt for rising Vietnamese cuisine stars like bún bò hu – a popular soup made with rice vermicelli and beef – and egg coffee – a drink prepared using egg yolks and condensed milk that give it a creamy flavour.

**Mood food –** The crea-



tion of top food psychologist and professor, Charles Spence, "Gastro-physics" is a way of dining founded on the idea that food can impact the way we feel. Set menus are popping up around the globe that offer a selection of foods that will shift your mood in various directions.

Wood-fire cooking – 2020 is going to be the year that chefs in restaurants around the globe redis-

cover what every scout, pyromaniac, off-the-grid'er already knows to be true: grilling over a wood fire just makes food taste so much better.



## Worrying decline of food controls in Europe

The number of food controls and the resources allocated to them are dwindling across Europe. This is the worrying trends that emerges from the report *Keeping food in check*, published by BEUC, the European consumer organisation.

BEUC is calling on governments to increase resources for controls and on the EU Commission to ensure that member states' reporting is complete, easy to access and comparable across countries.

All member states are required by law to report on their inspection activities every year. BEUC analysed data on official food controls from 12 countries. The main findings are:

- Human and financial resources for food controls are decreasing across the EU, as are the number of checks.
- Some control staff have flagged that they lack the necessary resources to carry out their duties.
- Controls of the foods most likely to cause poisoning – such as eggs, milk and meat – are decreasing.
- Member states' patchy reporting makes comparisons difficult, if not impossible.

- Member states give low to no priority to labelling checks.

Few countries choose to publish the results of inspections of individual operators and to inform consumers about hygiene standards in restaurants and food shops.

Monique Goyens, director general of BEUC said the report shows that national governments are cutting corners.

"Even products prone to causing food poisoning are subjected to fewer and fewer controls," she said. "Consumers then legitimately wonder whether governments are effectively ensuring that businesses play by the rules."



## UKRI FUNDING FOR BIG FOOD CHALLENGES

The announcement of 170m of funding from BEIS and UKRI will provide for 1,700 PhD researchers over five years at 12 academic institutions across the country.

The institutions, known as a doctoral training partnership (DTP) will train doctoral researchers to tackle challenges within food systems and innovate across the agrifood sector.

The DTP is expected to create opportunities across the food and drink supply chain and address challenges of sustainability, efficacy, authenticity and safety in food production systems.

Cranfield University Professor Leon Terry and co-director of the DTP said the new and much-needed FoodBioSystems DTP will provide the "next generation of scientists and ideas for the future."



## Bureau Veritas presses for action on BRCGS rules

Bureau Veritas is pressing packaging organisations to digest the new requirements in the recently published BRCGS Packaging Standard.

Published in August, Issue 6 of the Global Standard marks the first major update to the BRC Global Standard for Packaging and Packaging Materials since 2015 and aims to improve product safety and quality practices when it comes to the manufacture and printing of packaging materials. The revised standard, due to come into force in February 2020, includes several new clauses requiring organisations to take tangible steps to



improve the culture of safety and quality at their sites.

These include changes to the Hazard and Risk Analysis, a new environmental monitoring clause as well as the introduction of the Corrective and Preventive Action (CAPA), not to mention scrapping the previous two-tier hygiene system in favour of a simpler risk-based approach.

Joy Franks, food market director at Bureau Veritas, said: "The upgrade to Issue 6 is set to begin in February 2020, packaging organisations must act now to fully digest the new requirements on audit and certification and ensure compliance."

## Campden BRI to run veganism seminar

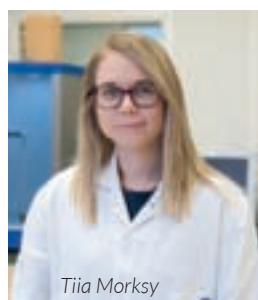
The popularity of veganism is skyrocketing with the number of vegans in Britain quadrupling between 2014 and 2018.

Last year, 16% of new products launched in the UK had a vegan claim.

In response, Campden BRI is holding a seminar on how the vegan market is changing and the issues around developing vegan and plant-based food products. It will also cover reformulation issues.

Topics that will be covered include:

- the need for vegan and plant protein-based products
- labelling and certification of vegan



Tiia Mörsky

and plant-based products;

- the benefits and challenges of plant-based ingredients and vegan foods
- the quality of plant-based protein
- current research on nutrition and functionality of plant-based ingredients
- using specific ingredients

to make vegan products

Tiia Mörsky, ingredients research team leader at Campden BRI (pictured), said speakers will cover future protein-rich plant-based ingredients and potential ingredient solutions.

The seminar will be held on 28 November at Campden BRI.

## NEWS IN BRIEF

### Cargill invests in reformulation

Cargill is investing \$35 million to produce soluble fibres in Europe, which will be available in 2021. According to the business, its soluble fibres will enable sugar reduction of up to 30% in formulations, as well as calorie reduction and fibre enrichment in confectionery, bakery goods, fillings, cereals, ice cream and dairy applications.

### Protein from leaves in 2022

Dutch sugar beet processor, Suiker Unie, has put its Green Protein Demo Plant into operation to produce protein from sugar beet foliage. Green plant leaves contain between 1% and 3% protein. A new process developed and patented by TNO, the Netherlands Organisation for Applied Scientific Research, makes it possible to extract the protein. The ambition is to have the first large-scale production line in operation by 2022.

### Pizza and veg strong in frozen

The frozen food sector experienced total growth of 0.5% for the 52 weeks to 8th September 2019, according to the latest Kantar statistics. The frozen pizza category was the most impressive with a surge in sales – up an impressive 7% in value and 9% in volume. This was flanked by a positive performance from frozen veg, which saw a 1.4% lift in volume and a 0.6% increase in value. Elsewhere, frozen meat and poultry experienced a 9.9% drop in value and a 12% decline in volume.

### EHL investment

EHL Ingredients has installed machinery to reduce risks of cross-contamination of products at the time of production and handling. The company has installed three pieces of machinery in its third site. An automatic filling machine has been designed to portion and dispense dried herbs and spices, as well as handle w/powders, grains, seeds and beans.

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## 84% of consumers think imported food should meet British production standards

The government should ensure that all imported food meets the same high animal welfare and environmental standards in place on British farms.

That's the overwhelming view of the public according to new research carried out by ComRes on behalf of the British Guild of Agricultural Journalists (BGAJ).

ComRes surveyed the public in September and found 84% support the view that imports should match British standards as Brexit threatens to open the door to imports.

The study found that just 16% would buy food they know is produced to lower animal welfare standards if it was cheaper than food produced to a high standard.

BGAJ President Baroness Rosie Boycott said: "With Brexit on the horizon



we're on the brink of potentially seeing lower quality food imports flooding into the country.

"The survey resoundingly shows there's no appetite for it and it's the responsibility of government and the entire supply chain to put the safeguards in place to protect both British farmers and the consumer."

## Approval for Unilever 'breaking the mould'

Approved Food has welcomed an announcement by Unilever that food expiry labels will be reworded, with 'best before' followed by 'often good after'.

The company has campaigned for many years for better awareness of what food labels mean, as part of its fight to reduce food waste.

MD Andy Needham said: "The fact that a major manufacturer is starting to break the mould by saying products are still fine past their best before date is a massive step forward that should be widely adopted."

The new label will be introduced in stages, to avoid wasting packaging, starting with a new range of rice noodle pots launched this autumn in Denmark, Norway, Sweden and Finland.

## Plant-based innovation raises complex issues, advises Oakland

Complex scientific and technical issues must be addressed to ensure plant-based innovation satisfies consumers' sensory and nutritional needs, according to Oakland Innovation.

The company, which is part of Science Group, suggests manufacturers and retailers collaborate strategically with the ingredients supply chain when developing plant-based products. It says achieving palatable taste and texture is just one part of the equation, and that adequate attention must be paid to the nutritional value of food.



Phil Mackie

While there are many sources of plant-based protein, not all are easily digested by humans. They can also contain antinutrients which may inhibit absorption, and the amino acid profile of plant protein is often less complete than that derived from meat products.

Oakland's advice follows a recent study by sister company Leatherhead Food Research where 74% of UK respondents said their household had consciously reduced red meat consumption over the past year.

Phil Mackie, MD foods & beverages at Oakland, says as the plant-based trend gathers momentum, manufacturers and retailers have a responsibility to look at the bigger picture.

"It's about developing good food that people want to eat, while ensuring products deliver the nutritional profile that

consumers demand," Mackie explains. "Plant protein has much potential. However, there are multiple scientific and technical issues associated with the functionality, digestibility, taste and texture of plant protein ingredients and the products they're used in."

Oakland has launched a free whitepaper, *Harnessing the plant-based movement*. <https://www.oaklandinnovation.com/insight/plant-based/>.



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## Cargill meets sustainability goals

Cargill has reduced the amount of plastic it uses for its vegetable oil bottles and containers by more than 2.5 million pounds (nearly 1200 metric tons) globally. These plastic reductions are removing nearly 2,900 metric tons of greenhouse gases (GHGs) per year from the atmosphere, which is equivalent to removing 616 cars from the road.

Across Europe, Cargill has worked with customers to reduce plastic in one litre bottles of vegetable oil. The changes are reducing plastic usage by 720,000 pounds (360 metric tons) a year, removing 790 metric tons of GHGs per year from the atmosphere. Cargill is also working with a German consumer goods customer to incorporate 30% recycled PET in its one litre bottles of vegetable oil. That will mean approximately 235,000 pounds of recycled PET replacing first-time-use plastic. That project, and similar ones launching, are designed to help customers prepare for the European Union's goal of plastic bottles having at least 25% recycled content by 2025 and 30% by 2030.

## UWTSD's receives £350K EU-funding to develop food cloud

The University of Wales Trinity Saint David (UWTSD) is to receive £350,000 over three years as part of a pan-European project to bring together more than twenty years' research into food and its impact upon health and wellbeing. Food Cloud will gather the results of the projects funded by the European Commission relating to food and health and translate them into formats that are accessible to users across sectors and countries. All the data will be open access and FAIR (findable, accessible, interoperable and re-useable). The University's Wales Academy for Professional Practice and Applied Research (WAPPAR) will lead the 7th package out of 8 within the total project. Food technologists, researchers, nutritionists, health care professionals, and food companies will have full use of the FNS-Cloud.



## GERMAN PRODUCERS KEMPER AND REINERT JOIN FORCES

German meat producers Kemper and Reinert, owned by the families Kuhn and Reinert, respectively are to form a new company called "The Family Butchers". Both families have joined forces to respond to current challenges in the meat sector.

The merger will create the second-largest meat processing company in the German market with an annual turnover of €700 million.

The Family Butchers will have a range of products that will cover all the market segments: from low cost to premium.

## Coca-Cola samples bottle made from plastic

Coca-Cola has unveiled its first ever bottle made using recovered and recycled marine plastics. This comes at the same time as Coca-Cola European Partners set out sustainable packaging goals for Western Europe, in partnership with The Coca-Cola Company.

Through a partnership between Ioniqa Technologies, Indorama Ventures, Mares Circulares (Circular Seas) and The Coca-Cola Company, about 300 sample bottles were made using 25% recycled marine plastic retrieved from the Mediterranean Sea and beaches. From 2020, Coca-Cola plans to roll out this enhanced recycled content in some of



its bottles.

A newly formed Packaging Innovation Hub will continue invest in enhanced recycling technologies, as well as alternative packaging solutions for the future.



## PLANT 10,000 TREES

Vieve, a UK-based start-up sport nutrition company, has announced plans to plant one tree for every pack sold of its protein water, hoping to plant 10,000 trees in areas of Kenya affected by man-made devastation.

Vieve has partnered with The Mango Tree Orphan Support Trust and global business giving initiative, B1G1, to support the launch of its brand new Orange and Mango flavour. Vieve is also running a series of social media campaigns where a new tree will be planted for every 10 new online followers.

All Vieve bottles are made with 100% recyclable material.

Vieve also donates 1% of all profits to Mind, the mental health charity.

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## QMS STRENGTHENS TEAM

Quality Meat Scotland (QMS) has strengthened its marketing and communications team with the appointment of two new members of staff.

Lesley Cameron (right) who has over 20 years' experience within the food and drinks industry, and Carol McClean, who previously worked with NFU Scotland for six years, join to promote and market red meat to consumers across the world.

They will support activities to pursue a positive image, understanding and sales of the Scotch Beef PGI, Scotch Lamb PGI and Specially Selected Pork brands on behalf of the Scottish red meat industry.



## NIZO appoints Jeroen Koot as CEO

Jeroen Koot has been appointed CEO of NIZO Group. Koot will lead the organisation into a new era of research projects in the transition from



animal to plant based protein, health benefits and food safety. He has a track record in repositioning companies and implementing strategies for growth.

## Parker appoints division lead



Parker Bioscience Filtration has appointed Guy Matthews to lead its marketing teams across the biopharmaceutical, food and

beverage and infection control markets. Matthews based at Parker Bioscience Filtration's site in Birtley, UK, which underwent an expansion adding extended laboratories and new clean room, manufacturing and testing facilities.

## Murray is pladis MD

David Murray has been appointed as managing director for pladis UK & Ireland. Murray will have direct oversight for UK&I manufacturing operations, research & development, sales and marketing, and responsibility for the region's financials.

He spent much of his career at PepsiCo, most recently serving as SVP & general manager for PepsiCo's Global Concentrate division.



## PIEPER JOINS SENATE

Romaco Group's CEO, Jörg Pieper, has been appointed to the Senate of Economy (Germany).

The Senate made up of personalities from industry, science and society who help to practically implement the Senate's objectives around the pursuit of common



good, and sustainability in the interests of the eco-social market economy. Romaco is an international supplier of processing and packaging equipment.

## SQF adds Innovation Team



Sleaford Quality Foods (SQF) is responding to consumer demands around sustainability by forming an Innovation Team to offer customers full traceability from farm to fork.

The team consists of Tracey Siddy, head of innovation and marketing; Laura Griffin, product innovation and marketing – project manager; Susie Camm, new product development; Hayley Williams, innovation technologist; Richard Oke, marketing manager; and marketing consultant, Murray Carmichael-Smith.

## Bakkavor welcomes 2019 intake

Bakkavor Group has welcomed 48 new young starters as part of its 'grow your own' people strategy. The group has recruited 20 graduates and 19 apprentices who will be based across a number of UK sites in specialist roles. In addition, a further nine graduates have started Bakkavor's International China Graduate Programme due to the Company's growing presence in the region.



## Technical baker for Bako NW

Preston-headquartered bakery products distributor Bako North Western Group has appointed Claire Powell as technical baker. Powell's role will see her develop new products for the Bako Select range at the company's state-of-the-art development bakery.



## INSIGHT...Supply Side – Phil Williams, MD, Victor Manufacturing

In June 2019, I made the decision to take over Victor Manufacturing because...having been part of the company for almost 20 years, I wanted to continue the great work that Victor has become renowned for: good customer service and a trusted quality product. With rapid growth over the last five years, experiencing a turnover increase from £5 million to £9 million, I felt there was a clear gap in the market for Victor to continue the development and expansion of the core business.

I feel the industry needs to...begin by improving legislation and standards across the food service equipment industry to aid international trading across the various



continents. I think new directives need to be created to ensure organisations within the worldwide catering markets are collaborating to develop and adhere to the same global standards.

My appointment as the new president of the European Federation of Catering Equipment Manufacturers (EFCEM) means...I'm going to be very busy! The principle objective is to defend and promote

EFCEM's members' interests within the European Parliament and the EU Commission. I will also be attending October's Annual Global Food Service Summit in Milan where we will discuss how all countries can work together to improve legislations and regulations throughout the food service industry to aid international

trading, so this is a focus for the near future. Through such high-level representation, EFCEM can lobby and influence on current and anticipated legislation and regulations. With over 65% of legislation originating in Brussels, EFCEM is the heartbeat of the foodservice equipment industry in Europe.


I have amassed extensive experience...in the food global service industry both within the UK and on the wider global platform following my work within EFCEM and also through Victor's extensive customer base worldwide. I have also gained 20 years of extensive experience regarding catering equipment, appliances and machines. Basically, anything made of metal and installed in kitchens designed for hotels, restaurants, schools, universities, canteens, hospitals, nursing homes, retirement homes...for the purpose of preparing and serving food.


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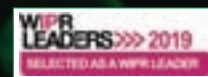
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# The protein mix for 2050

How can we provide healthy and sustainable protein that people will want to eat? F&DT outlines some of the findings of a recent Bühler whitepaper

**A** genuinely sustainable food system needs to increase the diversity of protein sources, as well as reduce losses and waste.

## Rethinking food

Attitudes to food, and to our food system, are changing. Many young people want to eat less meat – vegetarianism is cool, flexitarian is a new consumer group. This arena is popular, so it's a very good move to go in this direction and improve these products even more.

"We should come up with entirely new plant-based, protein-rich categories," Professor in the Institute of Food, Nutrition and Health, ETH explains.

One possible way of providing meat products is cultured meat – the in-vitro cultivation of meat from animal cells. This remains a nascent sector, however there are significant issues in terms of scaling, and there are regulatory and consumer acceptance aspects that will need to be addressed.

To enjoy long-term success, plant-based meat alternatives and protein-rich drinks need to win over consumers by making sure they pay attention, above all, to taste.

Here, texturised plant protein products as meat substitutes have been leading the way for more than 15 years, and while they represent a huge opportunity to reduce meat consumption they should really be regarded as a short-term solution, says Alexander Mathys.



Professor  
Mathys Alexander  
Institute of Food,  
Nutrition and Health

## Diversity equals resilience


Microalgae represent a vast untapped resource. While this means it is hugely promising, the lack of development means it also has a "low technology readiness level," says Mathys. "There are some highly optimised large-scale production facilities, but compared to plant protein sources such as soy or even pea, it's niche. "Diversity is a benefit, because it is more resilient. The future will be diverse. It must be diverse."

## The insect buzz

Insects are high in protein, contain a healthy amount of fats, minerals, and vitamins and require less farmland, less water and emit a lower carbon footprint than conventional meat products. It is also possible to envisage blends of insect species to match the protein profile of chicken, pork or even beef.

Insect protein has the potential to address a new resource of food by-products and food waste, and upgrade that into high quality protein," says Kees Aarts, CEO of insect protein and nutrition company Protix.

For every kilogramme of fish eaten by humans, for example two to three kg is currently fished from the ocean.

"This is where the impact can be significant," says Aarts. "At the moment, the amount of protein in the total amount of food waste is about the same as the total amount of protein used in global animal feed. From the perspective of unlocking a new resource, the potential is enormous." 

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# FI Europe 2019: news and highlights for Europe's biggest ingredients show



**At FI Europe 2019, we're getting a glimpse at the future...**

It's time for FI Europe 2019, the 33rd year of Europe's leading trade show for ingredients. On 3-5 December, the Parc des Expositions Paris Nord Villepinte is opening its doors to brands from 135-plus nations for a sublime showcase of all the latest and greatest food and drink ingredients and technologies.

We're talking 27,000 visitors, 1,700 exhibitors occupying 80,000 square metres of show floor space, from all sectors – including product developers and decision-makers from the food and beverage industry, as well as representatives of major brand companies. Key topics of this year's event are clean label, reduction and reformulation, healthy and functional and plant-derived ingredients.

## Insights from international experts

This year, Fi Europe & Ni will feature free-to-attend presentations on industry trends and key market

insights, a programme on food processing quality and safety in collaboration with IUFOST, as well as a special 'Plant-based Experience' with ProVeg International featuring cooking shows, tastings, panel discussions and guided tours. The paid-to-attend conference programme will offer leading-edge expert insights into current and future opportunities for F&B professionals.

Keynote presentations, panel discussions and master classes at the two-day Fi Conference (3/4 December) will focus on tackling current challenges and identifying immediate opportunities for professionals in the F&B industry. At the pre-event Future of Nutrition Summit (2 December) independent futurist thinkers, start-

ups and pioneers from across and beyond the industry will share their insights.

The Women's Networking Breakfast (4 December) and the Food Evolution Breakfast (5 December) are also ideal opportunities to participate in key discussions and network with peers. Once again, the Fi Innovation Awards will celebrate companies and organisations breaking new ground in the food and beverage industry, while the Startup Innovation Challenge will provide a showcase for the most exciting innovations coming from small startups, which remain largely unknown to the wider industry.

## Guiding the industry for 33 years

Over the last three decades, Fi Europe & Ni has established itself as a 360° event and comprehensive platform for the food industry. Numerous country and theme pavilions from 'Free from' to 'Natural ingredients' and from China to USA will help guide visitors sourcing specific specialty ingredients. At the Expo FoodTec Pavilion they will also be able to source bespoke ingredient processing and packaging solutions and services – more on page X. At the new Tasting Bar, visitors will have the opportunity to taste and learn more about exhibitors' products all in one central location.

Avebe was one of the first exhibitors since the launch of the show. Marieke Kanon, communication manager, says: "We are actually one of the founding partners of Fi Europe & Ni and have exhibited since the very first one back in 1986. Fi Global shows are a really great way to increase our presence around the world, and to promote our expanding products and reach."

Fi Europe & Ni brand director Julien Bonvallet adds: "This year we are back in Paris – and the future co-located set-up of Fi and Hi Europe will alternate between France and Germany covering the two most important markets for the European food and beverage industry." 







# A who's who of food ingredients

## Reducing or eliminating sugar content is a necessity to address the world's health issues

**I**n order to find solutions, **Alland & Robert** (E130 in Hall 6) is showing its developments in acacia gum. You can also hear about **Sydeo** – a range of blends of natural and vegetal hydrocolloids.

Promising a super eye-catching space (booth 6M51), **Faravelli** will put the spotlight on "The Best ingredients for a tasty life".

FI Europe 2019 will give **FrieslandCampina Ingredients** Food & Beverages the opportunity to discuss the three trends it identified in its first annual Trend Report. Products on show include **Excellion** and **NutriWhey** and **Refit**.

**GNT** (stand 6C80) supplier of **EXBERRY** Coloring Foods, will reveal its 2020 colour trend forecasts. The company will also provide a plant-based food and beverage experience.

**Arla Foods Ingredients** (stand 6C120) will showcase a range of whey protein products, including **Lacprodan HYDRO.PowerPro**, which offers the sports nutrition benefits of whey protein hydrolysate without the bitter taste, and **Lacprodan ISO.WheyBar** – a blend of whey protein isolate and casein.

**Palsgaard** (stand 6B120) will discuss its journey to carbon-neutral production as well as the use of emulsifiers.

**Taura Natural Ingredients** (stand 6N101) Taura is launching **Jus Fruit Fibre+**, which taps into demand for high-fibre products.

**Glanbia Nutritionals** (stand 6G60) will introduce **CreaBev**, a patent pending encapsulation technology that facilitates a soluble and stable creatine monohydrate. Alongside this, Glanbia will highlight its experience in bar formulation.


**Avebe** (stand 6C91) has developed the **Perfectasol D** range, which consists of potato starches and potato protein, offering clean label options.

**Rousselot** (stand 6F110) is presenting its new business segment organisation for the first time in Europe. Rousselot will exhibit two of its three business segments.

**Corbion** (stand 6D80) will showcase its range of solutions for enhancing nutrition, stability and flavour profiles.

**Bell Flavors & Fragrances EMEA** (stand Hall 6 J141) will demonstrate its new range of natural beef profiles.

**Chaucer** (stand 6C41) is inviting NPD specialists to try out food and drink items created with its products and see how both can support each other's developments.

**Hydrosol** (stand 6D90) will present free from for melted cheese preparations, plant-based alternatives, dairy, deli and meat. 

## Coloring food with food



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plant-based colors

# GEA: strength in food processing and safety



GEA liquid nitrogen freezer pilot plant

At the leading trade show for food ingredients, Fi Europe, taking place in Paris, France, December 3-5, GEA will showcase its solutions for the manufacture of food and dairy ingredients, freeze-dried foods and instant coffee at booth 6F141 in hall H6

**G**EA experts will be on hand to cover key topics such as hygienic design, product quality, plant efficiency and safety, and how best to achieve the highest quality product results. From standalone equipment to integrated solutions, GEA focuses on solutions that maximize plant flexibility and overall efficiency, while ensuring repeatable processing and high product quality.

"Fi Europe is a key event for GEA. We have extensive experience in the food ingredients sector with a significant number of plants installed for processing and drying of ingredients products. It's a valuable opportunity for us to come together with our customers and discuss their needs and requirements directly. These discussions shape our offering, so every opportunity to engage with them is of paramount importance," says Christian Rolf Jacobsen, vice president, GEA. This year, equip-

ment featured at the booth will include a newly developed GEA liquid nitrogen freezer pilot plant and GEA's trusted MOBILE MINOR R&D spray dryer:

## GEA liquid nitrogen freezer

At the booth, visitors will be able to explore GEA's newly developed liquid nitrogen freezer pilot plant. Designed for extremely fast freezing, the system optimises the production process and throughput and ensures the ideal conditions for downstream lyophilisation of fermentation-derived ingredients.

With the nitrogen freezer pilot plant, customers are able to rent a unit for small-scale testing at their own location before investing in a full-scale industrial plant. Bacterial cultures decay rapidly after fermentation, therefore having the ability to freeze rapidly and conduct tests onsite next to the fermentation line is very advantageous. With the LNF-6 Pilot Plant, we can deliver demonstrable benefits to our customers at a low cost.

**GEA spray dryer** Also featured will be GEA's trusted Mobile Minor R&D spray dryer, designed to produce small-volume powder samples that can be scaled up to production volumes with the highest levels of accuracy. This flexible and easy-to-handle spray dryer has become a benchmark system in the R&D departments of many leading manufacturers, independent research institutes and universities worldwide. Its inclusion on the stand will allow visitors to fully understand the processes involved and how working closely with GEA can help to achieve strategic objectives with greater speed and efficiency. A clear advantage of the spray dryer is its full scalability to industrial conditions, for which GEA has a strong portfolio of solutions. 

gea.com  
GEA at FI Europe 2019



Mobile Minor spray dryer



# Fi Europe: a one-stop shop for food processing technology

With processing technology heading in new directions, keeping pace with the latest developments is more important than ever. Food companies need to keep their eyes open and be prepared

**T**he Expo FoodTec pavilion is the must-attend zone where processing-related topics meet processing technology, supply chain management and food safety. As well as bespoke exhibitor content, the Expo FoodTec Pavilion will host a conference in co-operation with the International Union of Food Science and Technology (IUFoST).

The Expo FoodTec Hub will present insights on the latest developments and technologies by food technology experts and leading associations. In the pavilion itself, around 50 exhibitors will cover an entire spectrum of technological topics, including R&D, consultancy, analytical and laboratory equipment, food safety, packaging and certification.

## Amongst the companies attending are:

**Andritz Separation** asks visitors to trust in its experience as it brings a collection of its comprehensive portfolio of brands to meet any type of mechanical or thermal separation challenge.

At the show will be: the cold milk separator; and dryers – drum, helix, and paddle.


The multifunctional **FoodSafety-IRD (FS-IRD)** can be used for sterilisation, roasting, coating, drying, and killing insects and larvae in spices,

herbs, seeds, teas, vegetables, fruits, and nuts. **Brace**, the specialist for microsphere and microcapsule production, will show three products:

1. instant spheres – a patented process used to produce perfect microspheres or microcapsules that can be vacuum/freeze dried to produce quickly soluble particles.
2. microcapsule/micro encapsulation – a nozzle process producing real microcapsules with a solid shell and a liquid or solid core in a single step.
3. micro encapsulation/micro granulation equipment via the Spherisator series, which can be a scalable laboratory/pilot/production unit.

**Glatt** will present methods for enhanced product design with natural ingredients for sports nutrition, dietary supplements and beverage applications.

**OMVE Lab & Pilot Equipment** designs, engineers and supplies small-scale processing equipment for labs & pilot applications in the liquid food and food-related industries.

**Revtech** specialises in custom-made industrial units for the heat treatment of dry ingredients. Its technology can be used for steam pasteurisation of herbs, spices, botanicals, seeds and nuts; and stabilisation of cereal products and enzymatic inhibition of seeds and beans. 



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# Platform for natural solutions and organic ingredients

This year's Food ingredients Europe & Natural ingredients will reflect the green consumer trend even stronger than before. As companies focus on natural ingredients and organic provenance, the size of the event's Organic Pavilion has more than doubled. The natural ingredients zone has grown by more than 50 per cent

**E**xpect to see companies from all over the world including the agar specialist Setexam (Morocco), natural vanilla expert Eurovanille (France), the flavour house Enrico Giotti (Italy) and plant ingredients manufacturer Peruvian Nature (Peru). Trade visitors looking for natural alternatives will find what they are looking for both in this specialised area – and beyond.

The Organic Pavilion, with more than 50 exhibitors already confirmed such as oleoresins and extracts producer Jean Gazignaire (France), import/export trader DO-IT (Netherlands) and natural fibre specialist Interfiber (Poland), offers an excellent overview of the immense diversity of organic quality alternatives that now exist.


In addition, Fi Europe & Ni will provide an extensive range of information and education opportunities on a variety of natural and organic topics. For instance, within the free-to-access Organic Spotlight trade visitors can gain insights into the latest trends in the organic sector, as well as regulatory issues and market analyses. The "Plant-based Experience" will focus on plant alternatives in particular: together with NGO ProVeg International, an extensive programme

featuring live cooking events, lectures and innovation tours has been created. Meanwhile, the Fi Conference will focus on innovative concepts for clean labels, amongst other key areas.

## The green engine

In 2019, the "green consumer" has already influenced two categories of Innova Market Insights' top ten trends: while the "The Plant Kingdom" charts the increasing market for plant alternatives, "The Green Appeal" outlines current consumer demand for sustainability – stretching from responsible sourcing via upcycling ingredients and strategies against food waste to eco-friendly packaging solutions.

Although the claim "natural" has no exact definition – contrary to the term "organic" – all major analysts agree that there is growing market for natural alternatives.

Besides products that are free from artificial additives, colourants and flavours, and minimally processed foods and drinks, this also includes GMO-free solutions. According to the Mintel Global New Products Database, natural product claims appeared on 29% of global food and drink launches between September 2016 and September 2017. 



# Top-tier programme with highly renowned F&B experts

**F**i Conference and Future of Nutrition Summit Experts will discuss both current and future opportunities for the food industry. The Future of Nutrition Summit offers the opportunity to network, engage in debate and be inspired by pioneers on 2 December. During the exhibition on 3 and 4 December, the Fi Conference agenda provides a top-class programme exploring cutting-edge innovations and the most current industry solutions. The Future of Nutrition Summit will take place at the Novotel Roissy, the day before the show opens. The main focus will be on developments that will shape the industry during the next five years and beyond.

After “Open Innovation: Reshaping the Food Systems of Tomorrow,” the afternoon will offer attendees the choice between a stream on sustainable food systems and one providing insights into new food technologies.



Prof. Dr Alexandre Mathys



Albert Meige



Eran Blachinsky




Udi Lazimy

The speakers will include:

- Albert Meige, CEO of the open innovation platform Presans: “Get ready to sail the winds of disruption”.
- Prof. Dr Alexandre Mathys, Sustainable Food Processing, ETH Zurich: “In search of a circular economy: novel protein sources to tackle food system challenges”.
- Udi Lazimy, global sourcing and sustainability director, JUST: “Food innovation begins with breakfast”.

The Fi Conference takes place during the first two days of the show and is dedicated to tackling current challenges and identifying immediate opportunities for the F&B industry. In the Discovery Theatre on the exhibition floor, keynote presentations, lectures and discussions on clean label, plant-based ingredients, healthy and functional ingredients, as well as reduction and reformulation, are on the agenda.

At the same time, four master classes will concentrate on dairy, beverages, bread and bakery, and confectionery and snacks. Speakers include:

- Dr. Emilia Nordlund, research leader VTT: Hybrid Ingredients with high functionality for plant-based foods.
- Eran Blachinsky, CEO, Better Juice: Better Juice: naturally reducing sugar from 100% fruit juices. 



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**Food Ingredients Europe**  
Paris, France  
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Discover deZaan TrueDark; the first natural dark cocoa powder that delivers intense flavour and colour without alkalisation.

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“ Our kitchens are the first point of contact for customers, which reinforces our visible commitment to developing innovative tastes at the forefront of our operations ”





# ‘CULINARY TASTE IS AT THE HEART OF EVERYTHING WE DO’

**Griffith Foods is primed to serve up fresh offerings at this year’s Fi Europe. Greg Rhodes hears what the producer has in store**

**G**riffith Foods is celebrating a centenary of dedication to developing seasonings, sauces and coatings to a model that has seen it expand to a global brand with operational presence in more than 15 countries.

“Our kitchens are the first point of contact for customers,” Hans Schinck, vice president, marketing and sales for Griffith Foods says, “which reinforces our visible commitment to developing innovative tastes at the forefront of our operations.”

Nearly a year in post, Schinck is busy exploring the market potential for Europe, his region of responsibility. With development centres in Germany, France, Italy, Belgium, the UK and Ireland, the family-run business stays close to its customers, an MO that applies globally.

Centres of operation across Europe reflect culinary diversities of countries.

“There’s a massive difference between the UK and Italy for example, which is why we have separate sales and culinary development centres in

each country,” Schinck says.

Griffith runs discrete regional operational divisions, each with its own president and each sourcing locally for its home customer base.

“We are close to customers and our raw materials,” Schinck stresses. “It’s a sustainable model operationally and for the bottom line.”

That includes running longstanding partnerships with farms and farmers in each region to source the raw materials for Griffith’s blends.

“We are the first choice product development and services partner that creates nutritious and delicious solutions in the snacks and protein market,” he states.

“We connect, collaborate and partner for the long term, always following our purpose – to blend care and creativity to nourish the world.

“Our promise is always to deliver outstanding quality in taste, texture and speed to market via a highly sustainable supply chain.

“Big enough to make a significant and positive impact around the globe, Griffith is agile enough to adjust quickly to changing market conditions and trends,” he says. ▶

An 85 per cent sustainable supply chain is impressive but Schinck is seeking more still. "I'm looking at 100 per cent by 2025," he promises.

### MOVING EAST

Equally eye-opening is the pledge to continue pounding out double-digit growth in Europe "over the next five to seven years", fuelled in part by expansion into new countries," compared with typical growth of two per cent per annum".

"We're starting to move further east, Russia for example," Schinck explains. "Here we see high volume and high value growth. That market is maturing and increasing its focus on high-value products and that's an area where we really can contribute."

Griffith benefits from its position as "a well-balanced operation, covering all the bases" from B2B retail, quick-service restaurants and foodservice developments. "If one sector stutters, we have the other focuses of the business," Schinck says.

As he so rightly states: "Some macro economic trends we cannot influence but people will always need to eat."

However, he cautions: "We are not growing just for the sake of it but as part of a commitment to serve customers and their aspirations to benefit both topline and bottom line.

"It's about understanding customers needs and shortening the time to market for products and working in an open and trusting manner."



### EUROPEAN UNVEILING

After building "a trusted reputation for innovation and expertise" in taste and texture for seasonings, coatings and sauces, there's no surprise in learning that Griffith will serve up more fresh offerings by the turn of the year.

A powerful presence at Fi Europe this December marks a watershed for Griffith, as the producer unveils fresh innovation to tempt and satisfy the European palate.

The international event offers Griffith a chance to reinforce its technical strengths in developing seasonings and coatings and to keep innovating, driven by market needs.

Its Never Fry crispy coating, launched two years ago, satisfied a requirement for a fry-free product that reduces oil content and is "nicely perceived as a healthier option for what is regarded as strictly indulgence foods", Schinck explains.

New to the market this year is Veggie Never Fry, with vegetable extracts added to the coating to deliver "another sensory element".

Here's an opportunity to transform traditional expectations, he believes. "Because there's no frying required, we can create exciting colour options – purple or green – which would be destroyed when the food was fried. Oven heating retains the colours and the coating conveys perceived healthier options by consumers."

Innovated in-house, Griffith underwent extensive product testing with its partner "to ensure the application is already a proven product" when it comes to market – "part of our strategy of creating ideas our customers buy into".

"It's one of a menu of inspiring flavour concepts, showcasing our expertise," Schinck announces, "as is Sous Vide and Sodium Flex reduced salt products."

Coming from a background of gelatin manufacturing and lactic acid applications, Schinck will stand on a new stage at the show as he gets to grips with the European marketplace.

### US LEARNINGS

In the US, Griffith is working with superfood brand Kuli Kuli, which has raised \$5m to launch its Moringa ingredient business while continuing to scale its Moringa powder, bars and shots business.

Can we expect any developments from this for the European market?

"It's early for the partnership in Europe and we are conducting feasibility checks to establish if the market is here," Schinck says.

"We are exploring the commercial, technical and regulatory aspects and should know by the end of 2019 if it's a no or no go. Timing and balance and quality are important to get right. If we

bring this to market, we do it diligently, with trust and knowledge.”

Griffith is proud of its ability to foster long-term, stable collaborative partnerships in what has to be a mutually trusting relationship.

“That’s the only way it can work,” Schinck states.

All part and parcel of the family core values that drive the business forward to build customer success and allow Griffith to realise its greatest potential.

“We’ve created an expressed culture of working closely together with partners globally,” he adds, such as their involvement with the Netherlands-based Green Protein Alliance.”

## CONSUMER PANELS

Keeping abreast of how food requirements may change is clearly critical to maintaining and building market share. Griffith conducts regular “food safaris” with customers – they ran them recently in the UK – “to stay on top of trends,” Schinck says.

Maintaining market visibility as a food business committed to R & D, with its own team of chefs working closely with customers on news tastes and flavours, forms another key strand of the Griffith philosophy.

Among its portfolio of capabilities in developing sauces, dressings and coatings, “taste remains king”, states Schinck. “It all depends what customers want – alternative sweeteners, artificial sweeteners, lower sugar, low or zero salt. We are reinventing 20 to 30 per cent of our portfolio,” he reveals, “with health and balanced nutrition always the priority. Our own culinary chefs create bench concepts for initial tasting and approval before scaling up.”

The importance of taste in the Griffith strategy is highlighted in the company’s involvement with sensory panels. Operating on different levels of product development, they are active continuously to explore sensory analysis.

“Whether we are creating products reactively or proactively, this is currently a very human element of the development process and covers a panoply of sensory research,” Schinck explains.

“We use panels in different ways depending on the end-product and the customer and our sensory managers monitor them stringently, retraining and recalibrating them when necessary.

“In-house specialist panels comprise all demographics and consist primarily of women, Schinck continues, “as they show a stronger ability to perceive taste.”

As in everything, “it depends what we want to achieve”.

External consumer panels on the other hand can reach 200 strong, far larger than the “dozen or so” populating a typical specialist group.



“ Whether we are creating products reactively or proactively, this is currently a very human element of the development process and covers a panoply of sensory research ”


The emphasis on sensory panels is key not only because of the need to develop the right flavour profiles but also because of seasonal variation of ingredients.

“Specialist panels operate in clearly defined and controlled environments. No panel member is allowed to drink coffee before testing, for example,” says Schinck.

From resulting consumer research, the company can share learning to drive developments forward internally, he adds. “Innovating in house on snacks and protein processes allows us scalability from concept, working under a network of partnerships with external agencies and collaborating with customers as closely as possible.”

Such sophisticated proven methods of experimental design and testing give Griffith what it considers are leading advantages in what is the ever challenging food marketplace.

The fourth generation of the family dynasty has moved into post – Brian Griffith as chairman of the board. Has Schinck adapted to the corporate culture the company has built over the last century?

“On my first day in the job, I felt right at home straightaway – a welcoming atmosphere.” Before recruiting, Griffith explores whether applicants have the right “cultural DNA” he adds. If they do, opportunities open up for “newbies like me”. 



Hans Schinck,  
vice president,  
marketing and sales  
for Griffith Foods





*The factory of the future will be characterised by unmanned processing areas*

# FOOD PROCESSING – THE FUTURE

**There is no doubt technology is transforming production but what form will it take? Jake Norman, innovation manager, OAL, provides insight**

**T**he future of food processing can mean different things to different people. At OAL, it means a flexible unmanned process from goods in to end of line packaging.

Thanks to the historically low cost of labour in the UK, our food factories have had access to high numbers of operators to carry out tasks through-

out the production line. However, with labour costs rising, a growing understanding of the problems of human intervention, for example the risks of cross-contamination and health and safety challenges, as well as the possibilities that are already available thanks to automation and robotics, it's clear we need to catch up to our European neighbours and start thinking about smart food manufacturing and the factory of the future.

## AUTOMATION RELIABILITY

The factory of the future will be characterised by unmanned processing areas. Removing operators from the ingredient handling process using robotic solutions, such as the APRIL Robotics Ingredient Handling system, will bring a number of benefits to food manufacturers, including eliminating cross-contamination, increasing accuracy and improving food safety and traceability, while maintaining flexibility.

Robots are inherently more reliable than humans. When people are involved in food processing, they make mistakes; that's human nature when performing repetitive tasks during an eight-hour shift. However, when operators are dealing with allergens, this can have sometimes fatal consequences. If the wrong ingredient is chosen or a label is missed, it can lead to risk to consumer safety.

Unmanned facilities remove this risk as once programmed, they can't make mistakes. With a mean downtime of 30 minutes per year, they also don't need to stop to maintain their effectiveness, helping to boost manufacturers' productivity.

The factory of the future will also be paperless. Having access to relevant, real-time information at the touch of a button will allow for full traceability and allows manufacturers to monitor and optimise performance. In this way, manufacturers will be able to protect consumer safety, as well as their brand and their bottom line.

Automated systems will not only allow for unmanned operations, they will also eliminate the need for paper throughout the factory.

Reliance on paper-based checks is time-consuming as the operators must fill in the paperwork, then management must double sign them off, wasting valuable time and adding to manufacturers' labour costs.

Using paper also leaves manufacturers open to error as management is reliant on operators completing the checks at the correct time and accurately reflecting what happened – with the added difficulty of trying to find the right piece of paper when you need it. Having data logged to a database that can't be tampered with is much more reliable.

## FEAR NOT...

While it's clear that the factory of the future will have more unmanned areas, there is no chance of humans becoming obsolete in the production chain. Tasks are more likely to be automated away, rather than entire jobs.

Repetitive, routines, such as weighing out ingredients or checking date codes, will become automated, removing potential health and safety issues. For example, we will no longer need humans to weigh out powders so they won't be

“ By combining connected devices with automated systems, food manufacturers can become more efficient, saving time and money and often simultaneously reducing emissions ”

exposed to the dangers of dust inhalation and the occupational asthma that goes with it. Similarly, robots can pick up heavy items, so musculoskeletal disorders should be avoided.

With the introduction of automation, we will still employ operators to interact with the line but use them in other areas. There will be a need for more skilled and value-adding roles, such as controlling robots or maintenance of equipment etc. The challenge will be to ensure that our workforce has the right skills to meet this future vision.



*By combining connected devices with automated systems food manufacturers can become more efficient*

By combining connected devices with automated systems, food manufacturers can become more efficient, saving time and money and often simultaneously reducing emissions. It's clear that there are steps to be taken before the industry can achieve this factory of the future. Unfortunately, food and bakery facilities tend to be a lot less connected than factories in other industries, such as automotive, with sometimes siloed ways of working alongside standalone equipment on the factory floor. Bakers must therefore take a holistic view of their operations and start to share data between departments before it becomes a possibility. Working with manufacturers, such as OAL, can help food manufacturers dip their toe into the smart world and give them the confidence to undertake a more radical transformation. [71]

# A vision of the future

Combat food waste with collaborative robots, writes Mark Gray, UK sales manager, Universal Robots

According to the Food and Agriculture Organization of the United Nations, about one third of the food produced in the world is wasted or lost each year, equating to around 1.3 billion tonnes. The EU alone disposes of 88 million tonnes annually. While these numbers may shock and shame consumers, the truth is that the bulk of this never even makes it to our kitchens.

In fact, in the UK more than £1bn worth of food is thrown away before it even leaves the farm. The reasons for this are rooted in human error, damaged produce and premature harvest, leading to substantial amounts of food being unnecessarily discarded.

## Fussy eaters

In the western world, we have become accustomed to a vast and varied selection of foods. With supermarkets providing us with seemingly limitless rows of products, we tend to hold the produce to an exceptionally high standard. If they have a slight imperfection, fail to meet our high aesthetic ideals or the packaging is damaged, they will not be chosen and supermarkets will ultimately reject them before they hit the shelves. Consumer behaviour plays an influential role in contributing to food waste, but this is only the tip of the iceberg. Before food reaches our households, there are a number of stages where oversight may lead to loss. This includes agriculture to post-harvest handling, such as packaging and distribution, where simple and easily avoidable errors may lead to food waste.

## Assume responsibility

As humans, we are inclined to make mistakes. If a product is dropped on the factory floor or is mishandled, it will be jettisoned instantly. This is common practice, as the food manufacturing market has regimental hygiene regulations in place. It would be fair to assume then, that if human error is eradicated, this problem will be

*A team at Cambridge University recently designed a cobot to assist with the harvest of lettuce*





solved. Indeed, this can be the case.

Forward-thinking manufacturers can address this concern by utilising technology. One such solution are collaborative robots, or cobots, which provide the framework to avoid this costly and preventable inevitability. Engineered to complete repetitive, high-precision tasks, cobots can assume responsibility of manual jobs, such as pick and place or packaging, allowing the human workforce to focus on other projects that demand creative-thinking or specific skills. This not only allows manufacturers to meet consumer or seasonal demand but crucially protects produce, having a knock-on effect on reducing food waste.

### Productivity boost

In addition to reducing waste, automating production lines enable manufacturers to dramatically boost productivity. This is exemplified by Italian egg production company, Cascina Italia. Since incorporating a UR5 cobot into its manufacturing chain, the company has eliminated product errors and increased throughput. Cascina Italia deploys its cobot to pick-up egg trays and place them in larger containers for distribution. Although a delicate process, the UR5 is equipped to complete this task without damaging the eggs. This was previously completed by hand which saw the company subject to losses due to eggs being dropped or damaged in the process. Using its cobot, the company can now relieve its human workforce of strenuous, repetitive tasks while improving its operational efficiency and enabling workers to engage in more rewarding duties.

### Cobot harvester


Beyond the factory floor, cobots are also proving instrumental earlier in the supply chain. In fact, a team at Cambridge University recently designed a cobot to assist with the harvest of lettuce. Using a computer vision system, the cobot can determine whether the lettuce is ready for picking. If ripe, it delicately harvests it without crushing or damaging it, ensuring that it is supermarket ready. By leaving lettuces that aren't mature, the cobot contributes to reducing food waste. Currently, fields are typically harvested once a day.

Traditionally, this results in unripe fruit or vegetables being picked prematurely, and later discarded as they don't meet supermarket standards. A cobot harvester can be trained to only select ripe crops, and unlike its human counterparts, it can work around the clock, ensuring maximum productivity of produce that are ready to be consumed. In an area of work



*Cascina Italia deploys a cobot to pick-up egg trays and place them in larger containers for distribution*

where fulfilling positions is becoming increasingly challenging, the cobots offer a great way to keep operations going.

In an age of political and economic uncertainty, cobots offer food manufacturers a reliable and safe future investment. In agriculture, as the pool of available labour continues to meander an uncertain wave, cobots can take on simple and laborious harvesting tasks, allowing operations to safeguard this business regardless of the outcome. On a factory level, cobots can be configured to complete various tasks to match seasonal demand. Their flexibility and ease-of-use brings real value to the industry. In fact, existing staff can quickly re-programme cobots with little training making them the ideal solution to allow manufacturers to achieve more. 



*Forward-thinking manufacturers can address human error by utilising technology*

# THE NEW SUPPLY CHAIN



Jim Hartshorne

Digitalisation is increasing efficiency, agility and flexibility, writes Jim Hartshorne, MD, retail and consumer UK & Ireland DHL Supply Chain

As with many industries FMCG, and particularly food and drink, is rapidly changing, with retailers and manufacturers having to constantly respond to new trends and threats. To keep pace, the handling, storing and transportation of goods are having to adapt and become more flexible. This has added complexity to the supply chain, but running in parallel has been major developments in the technologies available to support and improve supply chain reliability and efficiency.

## Track and trace

Tracking and tracing is an essential tool to achieve more control at the different touch-points throughout the logistics process. The closer stock levels are monitored, the faster a business can react to customer demand, which in turn increases productivity.

New technology means that track and trace can now provide accuracy down to a packet level, something which pallet systems have historically been unable to do. This is particularly useful when dealing with quality issues as the specific batch can be quickly identified and removed without affecting the whole shipment, meaning less wastage. In addition, being able to accurately trace a product back through the supply chain when handling returns is essential for efficient stock rotation and a significant cost saver.

## Smart working

Connected warehouses should be working hand in hand with track and trace as they can increase the transparency of all assets through the tagging of individual items, pallets, and operational equipment. These smart items can transmit information about their current task, condition, and position, enabling powerful analytics to improve planning and visibility, process efficiency


and asset utilisation, as well as maintenance.

Of equal importance is having visibility of the inbound supply chain from the point, or points, of origin. For companies that depend on the timely delivery of ingredients, using technology and AI to identify, manage and mitigate the impact of supply chain disruption is becoming more pressing as customers' expectations continue to rise.

With the growing complexity of multi-tiered supply chains, logistics control towers can analyse the performance and exposure to risks such as the volatility in international trade or extreme weather conditions that are becoming more common and have impacted the supply of products from wine to crisps in recent months. More visibility of the upstream supply chain can give manufacturers early warning of volatility and time to implement contingencies before problems occur.

## Digitalisation

It is vital for businesses to not only adopt new technologies but also ensure they are seamlessly integrated into existing processes. Working with an experienced third-party supplier such as DHL in this area can be beneficial in managing this process as they can implement industry best practise and offer unparalleled expertise in times of peak.

Logistics companies, in turn, need to become more sophisticated in order to provide customers in the food and drink industry with greater visibility and agility. Digitalisation is fast becoming the norm, and logistics firms will be able to adopt new technologies more quickly and cheaply than ever before, providing customers with the right information at the right time, in order to make the right decision. Improved methods of managing product and data will lead to increase productivity, improve the end customer experience and ultimately reduce waste. 



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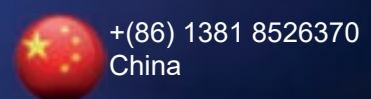
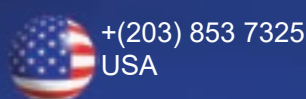
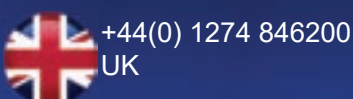
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# KEEPING COMPETITIVE

George Walker, MD of Novotek UK and Ireland, offers practical tips to automate your business for growth



**W**ith an overall turnover of €1,109bn and more than 4.5m people employed across the continent, the food and drink industry is undoubtedly one of the most economically important industries in Europe. Add to this the fact that there are 294,000 European companies active in the industry and it becomes plain to see why the ability to remain competitive is vital for food manufacturers.

The food and beverage manufacturing industry is one of narrow margins, high demand and strict regulatory requirements. And as interest around Industry 4.0 and the Industrial Internet of Things (IIoT) has grown, more senior managers at food businesses are considering digitally

transforming operations.

However, the trouble with concepts such as Industry 4.0 is that they are ambiguous. IIoT, for example, includes everything from automatic process control and improved data collection to advanced data analysis and virtual reality (VR) supported maintenance. There are lots of potential benefits offered by this cornucopia of technologies, but they are often too conceptual for most food manufacturers to truly grasp.

### Value add

Instead, we must look at the technologies that can offer tangible value to manufacturers. For many, control systems and process automation are the prime areas for development. In fact, a report published by the Food and Drink

Federation found that manufacturing process automation was the second biggest focus area for innovation by food manufacturers, with 73 per cent of manufacturers investing in this area.

Automation is of particular interest for food manufacturers as it offers a meaningful way to achieve the benefits promised by the IIoT. For example, a fourth-generation HMI/SCADA software can oversee and control certain connected processes. As part of a larger networked automation platform – for example, GE Digital's Predix – this software could contribute to the effective deployment of a smart predictive maintenance program.

With such a program, food manufacturers can minimise downtime by having a system in place to monitor equipment health and automate certain maintenance tasks in a proactive, predictive manner. However, this can only happen if a manufacturer has suitable quantities of relevant operational data.

### The first steps

For food manufacturers making their first moves into modern automation systems, the first step should always be to identify why managers want to automate. In our food automation whitepaper, we explain – among other things – that this involves developing what we refer to as a technology adoption profile.

Once a manager determines what they want to achieve, the first port of call should be to ensure a system is in place that can collect and store an effective amount of data from machines, sensors and systems. This is where Historian software proves invaluable.


For food businesses, Historian software ticks the right boxes for traceability and for process management and improvement, because it stores accurate operation and production data. This data should form the basis of any effective automation strategy, as plant managers can easily identify the key areas that require optimisation or improvement.

Crucially, Historian systems don't require substantial changes to an existing system configuration; they simply slot into existing technology infrastructure, connecting easily to a wide range of data collection and reporting tools. Some best-in-class Historian systems, such as GE Digital's Historian, make integration even easier via fast software installation and integration.

Historically, the challenge here has been one of price. Currently, Historian software is typically built around a model where manufacturers pay upfront for an amount of tags, irrespective of whether they are actively analysed or even used at all. The result is that medium to large

size enterprises are paying high costs, while smaller companies are being priced out.

To tackle this, Novotek has teamed up with GE Digital to provide Enterprise Historian software using a subscription-based model, making the system affordable to food manufacturers of all sizes. With this model, users can store data in several tags but only pay for the tags that they analyse, which reduces the barrier to entry for digitalisation and allows managers to retroactively analyse collected data.

This model helps food manufacturers in remaining competitive. Not only does the insight provided by the Historian software allow for greater analysis and improvement of processes, but plant managers can attain this without paying over the odds. From here, food manufacturers can determine how their automation journey progresses – whether it's down the route of innovation or improved overall equipment effectiveness. 

George Walker



“ Once a manager determines what they want to achieve, the first port of call should be to ensure a system is in place that can collect and store an effective amount of data from machines, sensors and systems ”



Q  
&  
A

# ROBOTICS IN FOOD PROCESSING

**More processors are turning to robotics to eliminate tedious tasks, freeing workers to focus on higher value work**

**Q. What are the main drivers for automated processes in food processing?**

**A.** Automation continues to be a key trend with processors increasingly looking to find ways for machines to take over what can be very labour-intensive processes. The uncertainty around Brexit and the potential impact on the availability and cost of labour is helping to fuel this. Automation is about improving productivity and, ultimately profitability, but it is also about food hygiene. If you can minimise the need to handle a meat product then in doing so, you are significantly reducing the potential for product contamination.

**Q. Are robots starting to have a more pivotal role?**

**A.** In the last 12 months, we've seen robotics and higher levels of automation becoming a more common feature in food processing operations. An example is Weber who we represent in the UK and Ireland, with its WPR pick robot and WSS flexible product transport systems. Weber is known as a slicing company so we were originally seeing it adopted in slicing lines. But now we are seeing interest from a much wider range of applications, including ready meals and other make up lines.

**Q. What are the main advantages afforded by robots?**

**A.** Robots provide a precision and speed that is not achievable through hand-picking, as well as improving efficiency and consistency/repeatability. The WPR features an integrated camera system, which checks that each individual portion is picked and placed accurately to ensure optimum positioning and orientation within the package. The WSS system is a transport system that can solve many issues in complicated lines.

**Q. Are there any other areas that could benefit from greater use of automation?**


**A.** End of line packing is an area in which auto-



mation is increasingly being applied. In addition to the packing of boxes, a further example is the precision that automation can offer in accuracy of weighing. Modular grading systems ensure accurate weighing of various sizes and weights of meat products as they are transported across a single weigh-conveyor. This can also be integrated with other operations, such as a depositing system, which can automate the hand salting and curing process for bacon.

**Q. Are there opportunities to automate processes in terms of quality checking?**

**A.** Yes, this is a real area of development. A consequence of introducing automated case packing is that it allows a reduction in the number of operatives, thereby offering cost savings. However, in doing so, this removes, or significantly reduces, manual quality checks.

Through Sparc Systems we offer SparcEye which provides fail-safe label and print Sverification on packaging. It checks every character on the label of every product – including the date code, the 1D or 2D barcode, the label/product ID and any over-printed data – to ensure it matches those in the database. 



Andre Clareboets, group divisional manager, high risk, slicing, Interfood Technology



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\* A handful, 30g, is the daily recommended amount, which offer 2.7g of ALA.

# ENZYMES: DIRECTED EVOLUTION

*Food & Drink Technology* looks at some of the latest developments



Kjeld van de Hoef, business director baking at DSM

**T**he importance of enzymes is on the increase as consumers demand more natural products free of chemical additives.

Enzymes play a major role in food processing due to their ability to catalyse a precise process under specific conditions (temperature and pH) and deliver reliable and consistent results.

“These processing aids deliver a functional benefit, such as producing baked products, which stay fresh for longer due to delayed staling, products with lower levels of emulsifiers, salt, acrylamide or other additives, or baked goods that are gluten-free,” Kjeld van de Hoef, business director baking tells *Food & Drink Technology*.

Enzymes can also enable manufacturers to produce food faster, in a more sustainable, consistent, and simpler way, and with the use of less energy than with alternative methods.

Enzymes — natural proteins that act as catalysts for biochemical reactions — provide a wide range of quality improvements. For centuries, enzymes have helped bakers, for instance, get



Staling is associated with a loss of freshness



*Pasta aficionados want that ‘al dente’ bite, but it can be challenging to recreate an authentic experience when cooking dry pasta*

the best from their raw materials.

DSM’s family of baking enzymes enables bakers and millers to produce a better product, naturally and more efficiently — with the characteristics that consumers expect, like a good crumb structure, consistent appearance and improved shelf life.

There are several baking enzymes that offer different properties, depending on baking manufacturers’ needs. For example, fungal alpha amylases and xylanases support flour correction, while maltogenic amylases help keep baked goods fresh, and phospholipases help strengthen the dough used in breadmaking.

## CREATING VALUE

Roughly one third of the food produced globally for human consumption — approximately 1.3 billion tonnes — gets lost or wasted every year. Food losses and waste amount to roughly US\$ 680 billion in industrialised countries and US\$ 310 billion in developing countries, putting manufacturers under ever-increasing pressure to find solutions to reduce food waste.

“Across the baking industry, the challenge lies in extending the shelf life of baked goods by preventing mould growth and delaying staling in breads and cakes, in a way that is natural and that also meets consumers’ clean-label demands,” van de Hoef stresses.

Bread and cake staling is responsible for

significant financial loss for both consumers and producers. Staling is associated with a loss of freshness in terms of increased crumb firmness, decreased crumb elasticity and loss of moistness. Bread staling is a complex process involving a combination of physical, chemical and sensory changes, making the product less acceptable to consumers. Bread staling can be quantified as crumb firming, crust staling or organoleptic staling. Crumb firmness is the most widely used indicator of staling.

DSM's BakeZyme (for use in bread production) and CakeZyme (for use in cake production) allow manufacturers to delay the onset of crumb firmness, preventing staling and keeping products fresh for longer, while also enabling the production of finer, more consistent baked goods. The BakeZyme range can also allow manufacturers to create applications with a more tolerant, stable, elastic, and less sticky dough, which simplifies and speeds up the manufacturing process.

### 'PACK TO PLATE'

Another food stuff, pasta, has been the subject of research leading DuPont Nutrition & Biosciences to launch a range of enzymes to maintain the quality of durum pasta "from pack to plate".

DuPont's PowerPasta helps to maintain product quality across eating, cooking and serving by reducing stickiness, preventing overcooking and improving shape and appearance. According to DuPont, PowerPasta can also help food companies to make raw material cost savings by potentially using less expensive locally or regionally sourced wheat.

"All pasta aficionados know to look for that 'al dente' bite, but it can be challenging to recreate that authentic experience when cooking dry pasta," says Allyson Fish, global food enzymes & food protection business leader. "Our enzymes help the producers bring that cultural authenticity to customers from around the world."

Paal Ladsten, regional industry leader, Middle East & Africa, adds: "Our PowerPasta range of enzymes offers a solution that leads to an improved eating experience while helping producers to push for greater profits by sourcing local wheat."

### GENERATING CHANGE

Attacking today's challenges biologically means that the food and beverages sector has the ability to come up with a range of solutions.


The year has seen firms enter the industry with enzyme technologies to address evolving consumer concerns – from reduced sugar to free-from foods – and, in turn, make processes predictable, definable and reproducible.

Israeli start-up Better Juice has developed an enzyme technology that can cut the amount of sugar in orange juice by up to 80 per cent. Better Juice's process harnesses a natural enzymatic activity in non-GMO microorganisms to convert a portion of fructose, glucose, and sucrose sugars into fibres and other non-digestible natural sugars. The non-fermentative process works on all types of sugars. Yet the process preserves the flavour and the full complement of vitamins and other nutrients inherent in the fruits. The technology was developed in collaboration with Hebrew University in Rehovot, Israel.

### PROCESSING SUPPORT

With a thorough understanding of the formulation, processing environment and end goals, the right enzyme or enzyme system will work to formulate the right food product.

DSM carries out extensive market research and baking trials, including sensory panels, for dough tolerance, shape, volume, softness and texture to help manufacturers create high-quality, great-tasting and consumer-inspired baked goods in an efficient and effective way with the use of enzymes.

Whether the challenge lies in improving production yield, consistency or shelf life, or developing softer, tastier bread, enzymes in combination with the right level of expertise can support manufacturers in achieving the desired results. 



*Enzymes can enable manufacturers to produce food faster, in a more sustainable, consistent, and simpler way*

“ Across the baking industry, the challenge lies in extending the shelf life of baked goods by preventing mould growth and delaying staling in breads and cakes, in a way that is natural and that also meets consumers' clean-label demands ”





# Insect protein flour, what else...?

The buzz about insect protein is not new, but large-scale insect farming for both human consumption and animal feed is leading to exciting developments to meet future demands for protein worldwide

**I**nsect protein flour has been on the horizon for a while now. Only a few years ago the prospect of insect-based food products was viewed in the West with, at best, concern and, at worst, derision. Fast forward to 2019 and now we see them as a very valuable and sustainable source of protein and carbohydrates. There have been several significant financial investments reported by start-up companies – and with the global market for edible insects expected to reach \$1.53 billion by 2021, it is easy to see why.

of plant proteins by proteases breaks down the large protein molecules into peptides exposing the functional amino acids to produce novel proteins with greater functionality and digestibility increasing their suitability to a wider range of products and applications.

The same approach can be applied to insects to achieve a very specific protein flavour profile, degree of hydrolysis, and/or produce bioactive peptides. I'm quite interested to see when these types of products will be made available from insects.

“ What I envisage coming next is a hydrolysed insect protein produced using a blend of protease enzymes ”




**AUTHOR**  
Valeria Valkova,  
business manager,  
Biocatalysts

With more than 2,000 types of edible insects to choose from, it is no surprise to see a number of protein products made from insects already on the market. Insect companies, EXO, Chapul, Entis and Finnish company Fazer have all produced products containing cricket flour. This uptake in insect-based foods is also reflected in the retail industry with grocery chains including Sainsbury's in the UK, Loblaw in Canada, and Whole Foods stocking bug-based items.

What I envisage coming next is a hydrolysed insect protein produced using a blend of protease enzymes. As discussed in a recent pea protein technical paper, enzymatic hydrolysis

## But is it just protein everyone is looking at?

No, of course not. The exoskeleton of insects contains a substance known as chitin. Chitin is a polysaccharide, which naturally boosts the immune system, thus eliminating the need for antibiotics. The extraction and purification of chitin is quite complicated due to the nature of the polysaccharide; however, insect chitin has been identified as a very valuable source for use in nutritional and pharmaceutical applications. Several companies are accessing this valuable source of chitin via an enzymatic approach to produce high quality chitin. This is just another example of how enzymes can help valorise the myriad opportunities insects can give us. I believe we have only just scratched the surface of the value that can be obtained from insects and I am excited to see what comes next. 

# IN SAFE HANDS

Get to grips with the guidelines on dust from flour and enzymes through AMFEP's and FEDIMA's webinars



**F**lour is a traditional ingredient in the baking industry and, with the introduction of modern baking technology, enzymes have also been widely used due to their valuable contribution to the quality of finished baked goods as well as fulfilling the need for sustainable ingredients.

Bakers and plant employees are repeatedly exposed to bakery ingredients. Usually referred to as flour dust, it is known to cause allergy and baker's asthma when exposure is not well controlled. Enzymes are proteins and, similar to other proteins, may act as respiratory sensitisers if individuals are repeatedly exposed to airborne dust that contains them. Such sensitisation may ultimately lead to a respiratory allergy, but it is important to note that not all individuals who become sensitised to enzymes develop symptoms. Moreover, it has been demonstrated that the potential for this respiratory sensitisation and allergy can be controlled by proper process controls, product formulation, and adherence to appropriate handling instructions.

Allergy by inhalation caused by flour or enzymes is similar to the respiratory allergies that are caused by well-known allergens like grass-pollen, house dust mites or cat dander; and the symptoms are also similar. Some individuals are more prone to sensitisation than others. Experience from more than 40 years of handling enzyme products in the detergent industry has proven that enzymes can be safely used in the workplace. This valuable experience and knowledge is now being applied to the baking industry to make it a safer place in which to work.


## Why the series?

In every working environment, employers are responsible for the protection of the health of their employees. Most countries have regulatory requirements in place to protect the health and safety of employees.

With this webinar initiative, AMFEP and FEDIMA strive to bring together the insights, best practices and tools to control dust exposure. The aim is to transmit this information to as many people as possible that are active in the bakery sector. The webinars are a voluntary initiative and the content is developed by a group of experts from the AMFEP and FEDIMA membership. Each webinar will be presented by enzyme experts from different companies.

## What's being done?

AMFEP (Association of Manufacturers and Formulators of Enzyme Products) and FEDIMA (Federation of European Manufacturers and Suppliers of Ingredients) have taken joint responsibility to safeguard the safety of workers, and have been collaborating for years on education and improvement of the handling of raw materials and ingredients that contain enzymes.

In 2018, it published an industry guidance document, entitled: *Guidelines on the Safe Handling of Enzymes in the Bakery Supply Chain*. It also produced an easy-to-read poster. 

## WHAT TO EXPECT

Participants at the webinars will get an overview of the steps that should be taken to mitigate the risks in all sectors of the baking industry; from milling and bakery ingredient production, to craft and industrial bakeries. The webinars will describe:

- Health hazards associated with enzymes
- Current regulatory framework concerning the use of flour and enzymes in the baking industry
- Management procedures required to ensure adequate controls and staff training
- Process and equipment design to minimise and maintain low exposure levels
- Air monitoring procedures to assess enzyme exposure levels
- Recommendations on health surveillance

AMFEP and FEDIMA recommend that the webinars as well as their other materials are consulted in conjunction with any existing local and/or national regulatory requirements that pertain to the industry.



## Discover the innovations transforming the future of the food and drink industry

From the latest sugar reduction solutions through to packaging designs tackling plastic pollution Food Matters Live 2019 brings together the brightest and the best global innovators, who are taking a fresh look at how technology can transform the industry.

More than 15,000 people will attend the two-day event on 19 and 20 November at ExCeL London, which also features the UK's largest ingredient exhibition of healthy, clean-label and better-for-you foods, live demonstrations and a world-class educational programme.

### Naturally sweet solutions

At the heart of the event is the 'Innovative Ingredients Live' theatre where industry insiders will focus on solution-driven new technology.

Sponsored by Intertek, the programme will feature exciting new natural innovations, which address government and consumer pressure to reduce the sugar content in food and drinks sessions. Amongst those taking to the stage will be Mike Bagshaw, owner and founder of International Taste Solutions. He'll be explaining the ground-breaking technology, which cuts sugar content in half with no impact on taste.

And, as recent research by Leeds University reveals some yoghurts containing more sugar per 100g than cola, Dr Eric Johansen (Chr. Hansen A/S) will explain the science behind a unique yoghurt starter culture, which promises a naturally sweeter solution.

### Vegan challenges

With one in six food products launched in the UK in 2018 claiming to be vegan or free of animal ingredients (Mintel) Food Matters Live also takes a look at some of the challenges and manufacturing solutions to creating delicious ranges of vegan food. At the forefront of developing the right texture for plant-based meat and dairy applications is Dutch company Avebe.

Marketing manager Jaap Harkema will be speaking at the Innovative Ingredients Live theatre and explaining how they have developed a range of texture solutions based on potato starch and potato protein. This protein gives vegan burgers and sausages bite and firmness, makes creamy plant-based yoghurts and provides a good melt and stretch to pizza cheese alternatives.

Another company responding the demands of the vegan and flexitarian market for new alternative proteins is Innovopro. Taking to the stage

is vice president of business development Guy Manor, who will be introducing the company's unique new technology, which produces a plant-based protein concentrate made from chickpeas.

And visitors interested in discovering more innovative vegan ingredients and products should also make time to visit the new Food Matters Live 'Plant-Based Pavilion'. Supported by PB&Co, the pavilion showcases the world of fresh and exciting plant-based food and drink products and the teams who have developed them.

### Alternative packaging

One of the biggest technological challenges facing the food and drink industry is plastic pollutions and developing sustainable packaging solutions. Taking centre stage during the Food Matters Live 2019 seminar programme will be innovative R&D solutions, which focuses on transforming the packaging industry.

Supported by the British Contract Manufacturers and Packers Association (BCMPA) sessions include an in-depth look at how the industry is transforming to create a transparent and sustainable packaging system. It also looks at the pioneers accelerating change with innovative packaging technologies and how the industry can shift mindsets on reusables and recycling.

Speakers at the inspirational programme include packaging pioneer Dr Cait Murray, the co-founder of Cuan Tec, which turns waste langoustine shells into recyclable food packaging. She will be joined by Damien Lee, co-founder of SoluBlue, which has developed a range of biodegradable cups and straws.

Expert speakers will also look at the latest trends disrupting packaging design. Chaired by Paul Foulkes-Arellano, founder of the Sustainable Design Alliance, this session will include talks by Mike Webster, director of 3D Structure at 1HQ Brand Agency, who will look at how packaging design will evolve to meet the current and future needs of consumers.

Rupert Wyllie, principal at Wyllie Projects, will examine how to improve the environmental performance of packaging and Maria Coronado Robles, senior consultant in natural resources at Euromonitor International Sustainability, will take a 360° look at a holistic approach to sustainable packaging.

Other sessions will look at how the industry is working together to create a sustainable packaging system, pioneering change with the development of new eco-friendly materials and innovative packaging technologies. **F2U**

### FIND OUT MORE

Food Matters Live takes place at ExCeL London on 19-20 November 2019. [www.foodmatterslive.com/2019](http://www.foodmatterslive.com/2019)





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# SEEING THE INVISIBLE



Bühler BioVision

**P**lant managers are on a never-ending quest to become more efficient and effective in segregating materials that flow through their facilities.

Operationally, the sorting challenges faced today are not so different from those of 10 years ago. But advances in sorter technology mean that plant teams can better manage high quality commodities, reduce labour costs and increase throughput.

“Today, sorters have in-built flexibility to manage a wider range of defective product and foreign materials (FM), so even the removal of unforeseen contaminants can be accomplished,” Alexander Prömer, head of optical sorting at Bühler tells *Food & Drink Technology*.

## MEETING SPECIFICATIONS

During the past decade, some of the biggest advancements in sorting technology can be found with optical sorting systems that use light to identify various materials.

In the last few years Bühler has launched several technologies to meet the specifications demanded from its customers.

BioVision for instance is relied upon in the almond and walnut industry for the delivery of FM free product. Another example is the removal of unwanted polymers with PolyVision, which is used to ensure the recyclability of PET and

**Companies looking to improve quality, maximise yield and eliminate food safety issues know that a vital part of the process is the sorter. Here are some of the most recent innovations**

thus increase efficiencies in customers’ plants. CrystalVision ensures glass free rice.

Cameras are capable of recognising the subtlest of colour and shading contrasts in materials and foods, which significantly increases detection rates for foreign materials, potential choke hazards or contaminated foods, Ben Deefholts, senior research engineer at Bühler says.

The UK-developed technology uses hyperspectral imaging to record wavelength data that generates highly accurate colour and shading contrasts for specific products.

“This data is then statistically analysed to create algorithms that inform the sorting camera of exactly what colour and shading contrasts to look for when detecting contamination or a foreign object in a production process,” Deefholts explains.

Bühler’s technology gathers large amounts of data and then uses it to optimise a conventional narrow band digital camera. It is capable of quickly and efficiently detecting very specific things, whether it is shells in nuts, foreign materials in a vegetable production line or even different grades of polymers in a recycling plant.

Andy Avery, technical product manager at Sealpac UK distributes Raytec Vision, a machine capable of accurately inspecting large volumes of products very quickly.

Avery says one manufacturing customer, who supplies chopped carrots, has seen a “substantial





Raytec Vision

reduction in costs” since the introduction of Raytec. The business has been able to achieve a higher quality output, while lowering waste.

By using Raytec alongside a chopping machine, the customer has been able to extract more from items that would previously have been wasted or given away as horse feed. These items are chopped then inspected, with any unwanted bits ejected. This has produced a saving on waste and ensures they are getting the most out of every product they hold.

### TACKLING WASTE

From farm to fork, the issue of food waste is rife across all aspects of the supply chain and all corners of the globe. There isn't just one solution to help reduce the impacts of food waste, however actionable steps can be taken.

Even though, we are in the midst of a food waste crisis, Prömer says a response can be sought through efficient sorting and the flexibility to handle all types of difficult sorting requirements from contaminated crops whether they have come directly from the field or been stored incorrectly. He adds: “By helping to recover product that is safe to eat, as is possible with LumoVision – a digital sorting technology for the removal of mycotoxins in corn – we can reduce food waste.”

Tomra agrees – and uses technology to improve yields and remove unnecessary food losses. Take the humble French fry as an example – globally, French fry production is 21 million tonnes, using 41 million potatoes. Through implementing efficient sorting technology, there can be an increase in both yields and food quality and bring the number of tonnes of potatoes used closer to the number of tonnes of French fries produced.

The improvement in yield enhancing technology is not simply about ensuring that food can be used for its initial purpose, but also identifying alternative uses for produce.

Developments in technologies, such as a 360° surround view of the produce for optimal inspection, combined with detection and rejection technology, result in more valid decisions about the quality of the product.

This technological progress not only improves the quantity of available food, but it also maintains the levels of quality consumers expect.

### CATALYST FOR CHANGE

As a manufacturer of sensor-based food sorting systems, Tomra Sorting Food is acutely aware of the food waste issue and works closely with farmers, processors and retailers to reduce food waste, optimise yields and maximise profits.


The introduction of the Tomra 3A sensor-based sorting machine for freshly harvested root crops, addresses such issues.

It is typically used at the entrance to a potato storage shed, where it provides a final clean-up immediately after freshly harvested crop has passed through a mechanical grader and soil removal equipment. The sorter employs an in-flight inspection and ejection process to detect and remove stones, soil clods and other debris. The TOMRA 3A is designed to operate at high capacity, because of the time pressures of short harvesting seasons, and to gently move the product without risk of damaging or bruising it.

Jim Frost, product manager at Tomra Food, says: “This machine gives farmers exactly what they've told us they want: greater capacity, green potato removal, no product bruising, greater robustness and excellent reliability, easy to use and to move around, more data and statistics, and lower cost of ownership.”

Ben Deefholts says advances in technology have enabled Bühler to develop LumoVision, a sorter that reduces waste and increases food safety.

“It's the first optical sorting technology able to identify aflatoxin based on direct indicators of contamination, while simultaneously using real-time, cloud-based data to monitor and analyse contamination risk,” he says.

“It can process up to 15 tons of product an hour and eliminate up to 90 per cent of contamination. It works on corn but we would like to extend it to other foods at high risk of aflatoxin such as peanuts, rice and dried fruit.” 



Jim Frost  
product manager at  
Tomra Food



Ben Deefholts  
senior research  
engineer at Bühler



Tomra 3A





Key's chute-fed  
VERYX C140 at  
Emblème Canneberge  
sorts cranberries

# Digital sorters: an expanding role

By expanding a sorter's role as a data centre, new data-driven decision making creates new opportunities to win new competitive advantages, writes Karel Van Velthoven, advanced inspection systems product marketing manager at Key Technology

**T**he primary objective of a digital sorter has always been to remove all foreign material (FM) and the right amount of product defects to make grade while minimising false rejects so the food processor optimises product quality and maximises yield. With redesigned mechanical architectures, next-generation sensor technology and intelligent new software, today's state-of-the-art sorters achieve these goals better than ever before – and they do much more.

Powered by Industry 4.0 methodologies and IIoT (the Industrial Internet of Things), modern sorters are increasingly being utilised as data centres at the same time they sort product. Equipped with sophisticated information

analytics software, a sorter can collect, analyse and share big data across a processor's enterprise to reveal patterns, trends and associations that help optimise operations and create a competitive edge.

We'll look at how disruptive new sorting technologies deliver important capabilities.

## Ushering in the data revolution

Digital sorters are uniquely qualified to contribute to the data revolution. They're able to see 100 per cent of the product on the line, recognising colour, size, shape, structural properties and chemical composition, depending on the cameras and/or laser sensors in use. Their powerful computers can continuously collect and analyse information about the sort pro-

cess and the product flowing through, whether that data is used to make sort decisions or not. Equipped with an OPCUA-compliant infrastructure, sorters can seamlessly integrate with virtually any factory automation system to share data and can leverage IIoT to facilitate remote access via a secure portal. To be an effective smart device within the Industry 4.0 framework, the flexibility to support a variety of data formats and connectivity protocols is essential.

The ease of harnessing large amounts of valuable data on a digital sorter is rapidly improving, and with larger data sets comes the opportunity to cultivate more valuable insights and actionable information. Highly customisable and ever expanding, specific product data categories of interest can be identified by plant managers from all the available real-time data. By analysing the information and generating useful reports, raw data becomes knowledge that is harnessed to better manage incoming raw materials and optimise processes upstream and downstream of the sorter to achieve the next level in operational efficiencies.

There are almost as many examples of how information analytics can be used to improve operations as there are food processors. At the front of the line, analysing the quality of incoming product by lot or by supplier enables a payment scheme that rewards higher quality. A sorter located after a transformational process can collect data to control the upstream process. Or it can offer predictive analysis, issuing a smart alarm if certain conditions begin trending in a problematic direction. For processors that operate multiple sorters on different lines or production facilities, data can be compared to help managers optimise line performance.



*Featuring lasers and cameras, along with Pixel Fusion, VERYX maximises sort accuracy at Quebec Wild Blueberries*


### Other sorting developments

At the same time today's modern digital sorters are beginning to be used as data centres, they continue to sort, with recent advancements enabling new standards of performance.

For one, new mechanical architectures for belt-fed sorters position bottom-mounted sensors, along with light sources and backgrounds, away from product splatter. This enables the sorter to sustain top and bottom viewing for all-surface inspection throughout the longest production cycles in the most demanding environments.

Beyond today's four-channel cameras and laser sensors that offer twice the resolution of previous generation sensors to detect smaller defects and FM, one of the biggest developments in sensor technology comes from multi-sensor Pixel Fusion. This powerful

detection capability combines pixel-level input from multiple cameras and laser sensors to produce higher contrasts to find and remove the most difficult-to-detect FM and defects without 'false positives.'

Greater automation is minimising the need for labour and enhanced ease-of-use is reducing training requirements. Superior sanitation, simplified maintenance, greater operational efficiencies and lower cost of ownership further differentiate contemporary sorters from legacy equipment. 



*Equipped with 'Information Analytics' software, digital sorters can collect, analyse and share big data across the processor's enterprise*

# PACKAGING IN AN ERA OF INDUSTRY 4.0

**Digital transformation in the food and drink sector is essential for progress and efficiency drives**

**S**econdary packaging company TrakRap is the designer and manufacturer of the TrakRap System, an award-winning packaging system built on digital technology.

TrakRap combines machinery and 100 per cent recyclable packaging for food and drink manufacturers supplying supermarkets and retailers. The system uses an orbital cold wrapping process to apply a specially designed, ultra-thin stretch film to products, eliminating the use

of heat tunnels and shrink wrap from the packaging process and reducing energy consumption by as much as 90 per cent and materials usage, including plastic, by as much as 70 per cent. By eliminating the use of heat, the TrakRap System can be used to package fresh, frozen, chilled and ambient products, while the machines are also flexible enough to wrap a wide variety of products including jars, cartons, trays, films and tins.

In addition to reducing its customers' carbon footprints, the TrakRap System is built on Siemens technology, allowing it to provide customers with all the benefits of manufacturing digitalisation. Using the latest operating platforms, the system controls the speed, angle and tension with which the film is applied, enabling it to wrap collated products regardless of their size and shape, making it suitable for use with 90 per cent of all packaged products, including lightweight, delicate or high pressure items, such as aerosols.

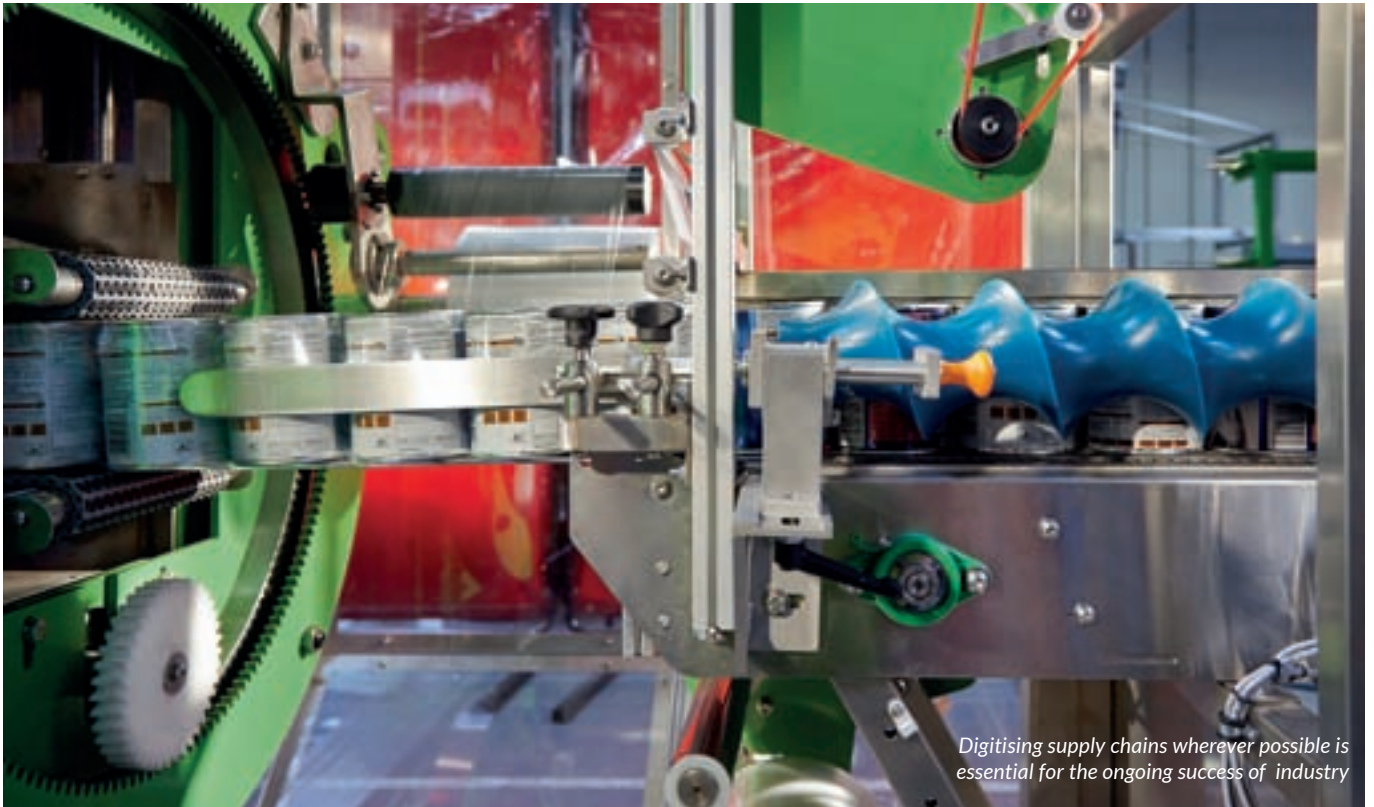
TrakRap's machinery also features digital twin technology – a digital version of the physical machine, which is used to run the machine virtually in a new environment and eliminate any potential issues, ensuring it is fit for purpose before the physical version is installed. By eliminating the physical prototype stage, digital twins reduce time to market by 40 per cent and cut development costs by 30 per cent.

Digital twins also allow the stretch



*By eliminating the use of heat, the TrakRap System can be used to package fresh, frozen, chilled and ambient products*





*Digitising supply chains wherever possible is essential for the ongoing success of industry*

wrapping process to be simulated, making it easy to establish the most effective way to wrap new products, such as tall and thin items which are unstable and require the film to be applied more slowly and gently to ensure they don't fall over.

Similarly, the use of digital twin technology enables TrakRap to monitor its machines and support its customers more efficiently after a physical machine has been installed. The digital version of the machine lives in the Internet of Things where it monitors the performance of the physical machine, enabling predictive maintenance to be carried out and allowing engineers to fix any problems remotely before they occur, increasing efficiency and productivity, and reducing operating costs and downtime. This also allows TrakRap's customers to guarantee uptime, which is extremely important in modern manufacturing environments where profit margins are under extreme pressure.

The TrakRap machines' smart production systems are also able to learn, develop and improve continually through increased connectivity and the use of data analysis, enabling them to take advantage of future developments that could improve sustainability further still.

By enabling TrakRap to pre-empt issues with the machines, digital twins allow it to schedule maintenance within a specific window to minimise disruption or provide more focused operator training and advice. This helps customers minimise servicing and call out costs, with TrakRap estimat-

“ The system controls the speed, angle and tension with which the film is applied, enabling it to wrap collated products regardless of their size and shape ”

ing typical reductions in call outs of 53 per cent and a 72 per cent reduction in machine down time thanks to digital twin technology.

Furthermore, TrakRap customers can also place their digital twin into a virtual factory, enabling it to work as part of a larger production line where it can link customers' packaging systems with collaborative robots, which can load the machine, or assist with automatic palletisation.

Martin Leeming, CEO of TrakRap, says: “We now think of our machine not so much as a physical entity but as a flexible software platform that can adapt to different types of environment, product and set up, enabling us to predict quality, throughput and timescales.

“We know that food and drink manufacturers are notoriously risk averse but digitising their supply chains wherever possible is essential for the ongoing success of the industry. The number of benefits digitalisation delivers – like increasing productivity by enabling greater flexibility or faster changeover times – far outweigh any perceived risks, while also improving overall equipment effectiveness (OEE) and improving companies' bottom lines.” <sup>[7]</sup>



## lunch! excels yet again with packed aisles as buyers flock to the trade show highlight enticing visitors with the latest delights in the convenience sector

As the lines between mealtimes and snacking continue to merge, fast food and food-to-go (FTG) have blended to offer healthier, broader ranges, with both hot and cold products – sandwiches have been relegated to value-led last resorts.

With a growing population (the UK's is expected to reach 70 million by 2030) and a larger, busier working population facing increasingly longer commutes – the average stands at 57 minutes – demand for convenient yet healthy food on the go is only going to rise.

According to Simon Stenning, strategic advisor to the foodservice industry and author of the Future of Foodservice 2025-2030 report, the food-to-go market is currently worth £20bn, and significant growth is predicted over the next five to seven years, to around £23bn by 2025, and is expected to reach £29bn by 2030.

Deciding where to go can be an ongoing challenge for consumers with big chains adapting their offerings to appeal across the board. McDonald's is upping its coffee game by trialling baristas in its

stores, Greggs is expanding its vegan range, and Caffè Nero has overhauled its food offering to be "as good as its coffee" with an artisan deli menu.

The prevalence of food-to-go counters in supermarkets such as Tesco Metro and Sainsbury's Locals are also fighting for an audience through competitive meal deals and wide-ranging products.

It can be hard for start-ups to find their place among the big names so it's important for them to have something different to offer consumers in what Caffè Nero's CEO Will Stratton-Morris says is a saturated market.

"The market is tough but it's not Brexit that's the issue, it's competition," he said. "There's so much choice for consumers, we have to educate them on why we're the best and they should spend their money with us."

However, Brexit is still high on the list of concerns for those in the food-to-go market, as so many staff members are from overseas.

"Our biggest Brexit concern is for our people," said Stratton-Morris. "It's heart-breaking to see their anxiety and uncertainty over their futures,



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and not being able to help.”

Supply chains, ingredients and manufacturing are major concerns for stores, especially small enterprises.

“If I need tomatoes for my recipes and can't get them what do I do – I have to go to the supermarket and pay their prices. And what if they don't have any because of supply issues. What then?” said one audience member.

### Products that do good

With consumers seeking an array of healthier products, start-up businesses responding to the trends are experiencing strong demand.

Trends in the sector were clear to see – vegan/plant-based functional products that do something while looking and tasting great, free from products and new methods of production to get familiar items into our bellies in new ways – freeze-dried fruit anyone?


High protein and fibre were major claims being shown by many exhibitors, from vegan gooey protein bars (Pro2Go) to puffed pork scratchings from The Curators and keto-friendly crunchy

popped cheese snacks (Cheesies).

Affordable nutrition is also a key trend. Take GoBites for example. It's hitting the affordable protein/energy trend to make “healthy food more accessible” with its energy balls costing just £1 a pack, rather than the £3 or more some brands can charge.

Kind tapped into the clean label trend with its nut protein bars – each contains “real ingredients you can see and pronounce”. At lunch! Kind was showcasing its new flavours: Honey Nut Sea Salt and Blueberry Cashew.

Brands such as 5th Season are looking to make fruit easier to consume by freeze-drying it, locking in all the nutrients of regular fruit while delivering an intense flavour hit.

Pre- and probiotics are another trend that is gaining traction beyond health food stores and yogurt drinks. Biotiful Dairy is launching a kid's range of kefir – a fermented milk made from kefir grains, a specific type of mesophilic symbiotic culture, and Yorvale introduced its range of Yorlife kefir ice creams, including a lactose-free variant. 

### INNOVATION CHALLENGE AWARDS



Six lunch! exhibitors struck gold at the show, winning Innovation Challenge Awards. Designed to promote and celebrate new ideas in the market, this year's judges called it a “bumper year for innovation” with a record 110 new products taking part in the competition (15 were voted through to the live final by visitors and VIP buyers at the show).

Gold award-winning innovations included:

- Berrington Spring Water's Aluminium Refill Bottle
- DRGN Turmeric Superdrink (Citrus flavour)
- Flower & White's Salted Caramel Meringue Bites
- Jack & Bry's Jackfruit Pepperoni
- Lord Sandwich/FullWrap's Full Wrap
- Magrini's B285 Blender with App Control.

Cheesies, Deli Lites, Enviroware, Good Root Bakery, PLAYin Choc and Vita Mojo Operating Systems received silver awards. Bronze awards went to Deli Lites, Fitch Brew Co, and The Curators.

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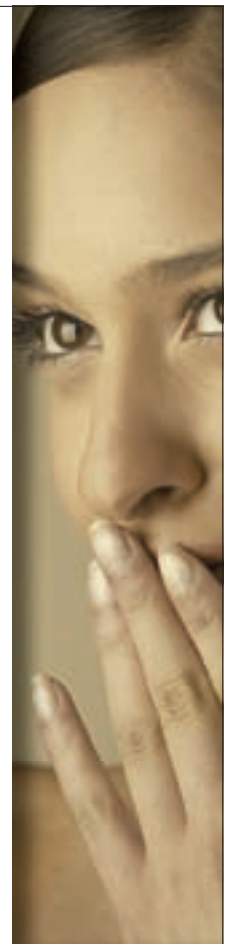
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## Leading the way

**T**echnology and sustainability were the big themes as this year's PPMA Total Show 2019, the UK's largest processing and packaging machinery exhibition, held at the NEC, Birmingham (1-3 October).

Much work has been done in these areas with more businesses working to better utilise materials, make more efficient use of resources and reduce waste.

More than 450 exhibitors and 2,500 brands showcased the latest innovations in smart manufacturing, processing equipment and packaging solutions for a host of sectors at the trade exhibition. Food and beverage figured heavily and the Total Show was the perfect platform for visitors to see real-time demonstrations of advanced technologies as well as artificial intelligence and the integration of vision equipment and robotics into existing production lines.

### Smart theme

**Sick** invited visitors to gain an insight into its Industry 4.0 smart sensor production facility in Freiburg, Southern Germany. Demonstrations showed production driven by Sick smart sensors, laser scanners and vision cameras, with the entire facility managed via control software.

Sick also revealed further developments in its AppSpace platform.

The collaboration between Sick and **AutoCoding Systems** saw the first fully-automatic smart vision inspection system for printed coding and marking on consumer goods packaging.

**4Sight** puts no requirement on owners to teach a camera what to look for. No fixturing is needed and the software works automatically with variations in artwork, background and text

location. It can also be set for inspection.

**Brillopak** took visitors over the highlights of its award-winning UniPAKER crate loading robot for fresh produce factories. The system has been specifically designed to improve pack presentation in retailer crates and handle products carefully to prevent bruising.

UK control automation manufacturer **Trivision's** VisioPointer brought together cameras and software to increase production yields and reduce food waste. Engineered as a full in or end-of-line inspection system, the VisioPointer is being used by Arla Foods to detect packaging errors such as seal contamination, quality defects and incorrect labelling.

**ABB** brought together the elements of a factory of the future to demonstrate its extensive automation and digital portfolio. Among the highlights was high speed merging and dividing of product flows. ABB's SCARA and FlexPicker robots showed how they can help increase productivity and flexibility in pick and place and packing applications.

### Pack and fill

**Ilapak** discussed the evolution of its existing equipment, machine updates and their benefits. Speaking mid-exhibition, we were told the most significant request was for recyclable films and the possibilities for their use. Ilapak predicts an industry-wide move over to ultrasonically sealed PE films for packaging bagged fresh produce.

Another major request was automation in a



bid to reduce costs. We were told Ilapak is experiencing increasing demand for flow wrappers integrated with robotic feeding systems. In the past year, Ilapak has supplied systems with the flexibility to run various product types and sizes and pack in different configurations.

**ULMA Packaging UK** displayed a range of equipment, including the vertical bagging machine, the VTI 640 VFFS. It also had the compact thermoformer range TFS 200 MSV for the first time in the UK. Two horizontal flow wrappers, the FR200 HFFS and the Flow Vac 35. We were also provided insight into the Tight Bag and Venturi systems. The first works by pulling air from individual bags using a patented jaw arrangement in the cross-seal area; the second creates a vacuum underneath the product and accelerates it down the tube.

**Mettler-Toledo** concentrated on product integrity with the C35 dual lane checkweigher, a versatile machine that can check two lines at once in real time, ensures compliance with weights and measures and prevents over- or underfill. Accompanying the C35 was the X34 x-ray inspection system where physical contamination from multiple sources is a potential risk.

**AVE UK** showcased its range of monobloc (filler/capper) or unibloc (rinsler/filler/capper) bottling equipment, which is capable of handling a variety of different materials within a single machine. Steve Bradley, sales and marketing director highlighted requests for equipment to handle sustainable materials such as aluminium bottles as well as machines that can handle multiple substrates – both plastic and non-plastic.

### Association news

The **BCMPA** (Association for Contract Manufacturing, Packing, Fulfillment and Logistics) was on hand to chat with attendees about what they can offer the industry, and getting packagers and contractors together with

people who want to market products but need someone to blend, fill, store, pack and work out the logistics of delivery, or any combination.

The association's 150 members are featured on its website's search facility. The BCMPA will also sort out, via an online enquiry form, a list of members for a request, free of charge. It offers tips for startups on the website, looking at food marketers looking to scale up, and offers answers to questions about key issues. [FTU](#)

## PPMA Group Industry Awards



The evening of the first day of the show also saw the return of the annual PPMA Group Industry Awards.

With 103 nominations received across 12 industry categories, the number of awards submissions this year was high. It was also the first time that the judging panel had to introduce a three-stage voting process due to the volume and quality of the nominations received.

The highlight of the evening was the announcement of two lifetime achievement awards – a first for the PPMA Group Industry Awards. They were presented to Michel Podevyn, president of Spiroflow, and Chris Holland, managing director of Holmach, for their influence and long-standing service to the industry.

Competition was extremely strong in all award categories, especially within the Innovative Packaging Machinery category that received the highest number of nominations. For the second year running, the PPMA BEST (Business, Education, Skills and Training) Award, again served to highlight the importance of addressing the skills shortage. This award went to Mettler-Toledo Safeline in recognition of its excellence and commitment to employee training and skills development.

Continuing the theme of industry education, Jack Woolmer, an apprentice at Mettler-Toledo Safeline was named Apprentice of the Year 2019.

The PPMA Group Industry Awards was hosted by comic and TV impressionist, Jon Culshaw.



# FachPack 2019

## FachPack 2019 review – what is driving the industry?

*Food & Drink Technology* takes a look back at FachPack 2019 and discusses some of the highlights

Customer driven innovation is the name of the game in a dynamic and increasingly diverse packaging marketplace highlighted at this year's FachPack in Nuremberg.

Brand owners are pushing for new solutions and technologies that fit their requirements or strengthen consumer engagement rather than merely focussing on what's already on offer or more routine business processes.

Sustainability remains the dominant theme of the packaging industry. You couldn't ignore it at the fair. According to exhibition manager Cornelia Fehlner, nearly half of the 1,591 exhibitors presented the theme "sustainable packaging" in their stands. Not surprising, because all packaging must be recyclable or re-usable in 2025.

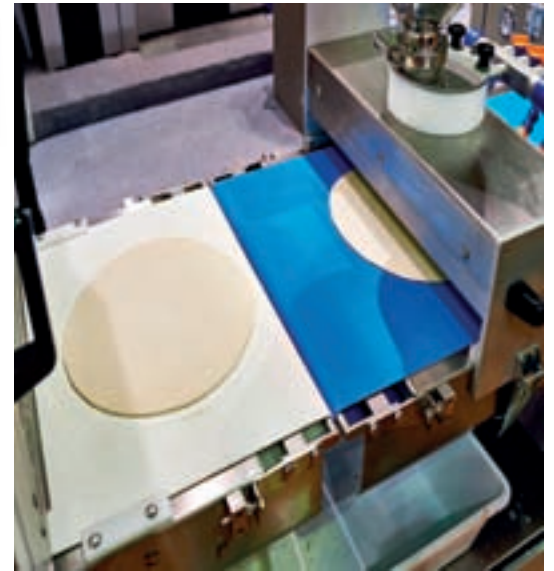
**Mondi Group** used the trade show to showcase its collaborative approach with customers. Not only does Mondi want to create packaging that is fit for purpose, either paper or plastic based, but can also help guide customers to choose the most sustainable packaging solutions for their product. Mondi's offerings illustrated its belief that packaging should be sustainable

by design and that it can innovate with its partners. EcoSolutions is Mondi's customer-centric approach, collaborating with clients to deliver on their sustainability goals and commitments. PerFORMing is a new tray made of Mondi's Advantage Formable brown paper with a respective barrier that replaces plastic while StripPouch is a fully recyclable, mono-material, stand-up pouch that is cradle-to-cradle.

**Sonoco Europe** demonstrated that branding, high convenience and sustainability can go hand in hand. Visitors to the stand could see first-hand how this thinking works via all-around-decorated cardboard cans to individually shaped IML containers – designed for individuals.

**Multivac** showed sustainable packaging that meets the current demands for recyclability and for minimisation of plastic consumption in the production of packs. One example of this is the Multivac PaperBoard range, which is made up of a wide variety of paper fibre-based materials for producing MAP and vacuum skin packs on thermoforming packaging machines and traysealers. The exhibits included the X-line machine generation, presented at the trade fair in the form of the RX 4.0 thermoforming packaging machine





equipped with a new generation of cross web labeller. The TX 710 was the centrepiece of a fully automated packaging line, which also includes a L 310 conveyor belt labeller for the wrap-around labelling of packs.

**Multipond** demonstrated the patented ARGUS-03 camera for monitoring an optimum product flow for weighing difficult products such as meat or salad. Multipond's camera-monitored weigher guarantees controlled filling of the weigh hopper thanks to the automated response to the image data.

Another solution on show was for the deposition of fines when weighing sugared products using a multihead weigher and evacuation ring. Sugar is funneled out of the system through specially designed outlets at the end of the feed trays. This sugar is passed through the outlets to a rotating ring, called an "evacuation ring", and is drawn off by a vacuum.

**Ishida Europe's** DACS-GN checkweigher assists in all aspects of maintaining the highest quality standards. The DACS-GN-SE checkweigher features an intuitive and robust display with an easy to learn menu for quick set up and operator training, together with an open frame design that provides easy cleaning and maintenance. It can also be fitted with Ishida RRC (retailer reject confirmation) to help food manufacturers meet the retail codes of practice.

**Nitta** expanded its product line of PU conveyor belts. The thermoplastic polyurethane (PU) material is resistant to grease, oils and chemicals. The PU belts are flexible, easy to clean and have an extremely long life. Thanks to a new production machine, Nitta can now manufacture a wider range of PU belts with widths exceeding 3 m. The PU conveyor belts are ideal for food processing applications such as bakeries, confec-

tionaries, sweets and chocolates manufacturing.

System manufacturer **Loesch** celebrated its centenary this year. The confectionery packaging specialist displayed both historical and modern packaging machines at the trade fair. Loesch presented a restored machine – one of the world's first high-performance fold wrapping machines for traditional bar products with two packaging materials from 1935 – alongside current models. Following various events and festivities, the anniversary year will culminate in May 2020 at interpack, where the company will proclaim "the start of a new era." The focus then will be on expansion.

The **Schur Flexibles Group** presented an extensive product portfolio including packaging options that are recyclable, made from renewable raw materials or are extremely reduced with regard to the use of raw materials.

The company had four innovations at the show: the recyclable thermoformable film VACUflex(re) EX-T for meat, processed meat, cheese and fish products, the FoodTray – a new tray concept predominantly made from fibre – for the packaging of fresh foods, the mono PE EcoString bag for cosmetic and hygienic/toiletry items, as well as the CoffeeGuard(re) aluminium-free flow wrap for coffee and dry foods.

The packaging solutions displayed at FachPack showed support for customers' needs in terms of offering something they can customise but is also more environmentally friendly. The focus was clearly on the circular economy and ensuring everything that is used goes back into a new product or is recycled.

Sustainability will, no doubt, remain a key issue over the next few years. Industry now has to provide solutions that are effective in meeting both business needs and environmental ones. [21]

### FachPack 2021

The packaging sector is set to meet in the Exhibition Centre Nuremberg from 28 - 30 September 2021

# FOOD FRAUD: too much data, not enough information?

Applying technology promises to increase transparency and add efficiencies, but adoption will have some limitations, writes F&DT editorial board member Lisa Jack

**F**ood fraud and technology are very much linked together. The 'Horsemeat Scandal' of 2013 in the UK and elsewhere in Europe had scientists looking for new devices to test food composition and management consultants developing new risk assessment tools for technical teams. Blockchain is being cited as the answer to preventing food fraud in the future. Horizon scanning is an internet based tool to provide alerts on potential weather, disease and conflict issues that might provide the conditions for food fraud to take place.

We have carried out various projects looking at counter fraud techniques; best practices in traceability and the potential use of AI to assist with the identification and investigation of incidents. What we find is that there is indeed a great deal of data related to food but rather less analysis leading to information and knowledge. In all the conversations since 'Horsemeat', data management and analytics appears to be as yet under-utilised.



## What is food fraud?

Food fraud is the mislabelling, substitution, adulteration or counterfeiting of foods for the purpose of making profit. On the one hand, it is a commercial and public health issue. The risks of fatal allergic reaction, or effective poisoning have to be considered, as well as long term health issues from poor nutrition and ingestion of non-food substances. There can be significant reputational damage for businesses. On the other hand, it is crime that might be prevented or prosecuted.

## Data analytics

Let us take three types of data that are generated and consider the issues involved:

1. Diagnostic test data: not every food item can be tested and resources for testing in companies, and in public health laboratories are constrained. Even so, what we are told is that food testing generates a large amount of test data. Finding a pathogen, or evidence of adulteration leads to food recalls, notifications to the Food Standards Agency and the risk of costly bad publicity. However, despite the quantity of test data, we find that there is very little data analysis that could identify trends, recurrent incidents or correlations, for example. Opportunities are being wasted to create information out of the banks of data.
2. Quality management systems collect data in computerised and manual systems about quantities, weights, x-ray and food safety tests and labelling. Certification provides assurance that the systems are working. Yet it appears they are rarely tested for evidence of individuals over-riding the system and altering data. Admittedly, it takes time for internal auditors to carry out traceability challenges and mass balance exercises

3. Financial data can be analysed using computer aided audit techniques to look for evidence of fraudulent activity. There may be irregular payments to suppliers, mismatched quantities of ingredients ordered against items sold using those ingredients or evidence of kickback schemes, for example.

It should be possible to apply anomaly detection techniques to find unusual occurrences and patterns in one system and link them with those in another system. What you run into is the data quality issues that plague many businesses. *Information Age* magazine summarise these as:

- Master data being held across multiple applications, often with different data architectures.
- A dependency on the end-user ensuring their information is updated regularly, despite the user not having any motivation to do so.
- Updating data in only one application even though it should be updated in multiple systems in real time, without impacting the existing set up.


There are also niggling issues of variations in spellings of products, company names and scientific terms, and different formats in which data is kept. To run anomaly detection algorithms, structured, clean, consistent data is required. Applications are rapidly being developed that can

take different formats from different sources and present them in one required format.

The potential of companies having this integrated and structured data, is that there is more opportunity to identify potential incidents of fraud and food safety breaches through novel and unexpected patterns in the systems that surround food production.

### Blockchain to the rescue

The most highly publicised approach is the use of blockchain for food traceability. Producing the traceability audit trail becomes a much quicker exercise. Essentially, though, blockchain is a data structuring solution. Results of extensive scientific testing need to be included in the data, as the food itself might yet not be authentic.

A single blockchain can be used to identify the point where a food safety incident originated. To detect fraud, machine learning algorithms would need to look across all the blockchains to identify potentially falsified certificates and documentation, or irregular transactions or test results. The challenge for the industry and researchers is to generate information to safeguard individual consumers and to prevent fraud – but the first step is to sort out the data. 



#### AUTHOR

Lisa Jack is a professor of accounting at the Portsmouth Business School. She set up the university's Food Fraud Group, offering courses to the food and beverage industry.



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**Web:** bellavita.com/gb/london

### Nov. 12-14

### BrauBeviale2019

**Location:** Nuremberg, Germany.

**Web:** braubeviale/en

### Nov. 19-20

### Food Matters Live

**Location:** ExCel, London

**Web:** foodmatterslive.com

### Nov. 21-23

### World Tea & Coffee Expo

**Location:** India

**Web:** worldteacoffeeexpo.com

## DECEMBER

### Dec. 3-5 Fi Europe

**Location:** Paris, France

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## FEBRUARY 2020

### Feb. 2-5

### ProSweets Cologne 2020

**Location:** Cologne, Germany

**Web:** prosweets.com

### Feb. 09-11 Fish International

**Location:** Bremen, Germany

**Web:** fishinternational.de/en/

## MARCH 2020

### Mar. 07-09 Food Expo Greece

**Location:** Athens, Greece

**Web:** foodexpo.gr/en/

## APRIL 2020

### April 20-23 MBK

**Location:** Int'l Milling Industry, Bakery, and Confectionery Fair

**Location:** Brno, Czech Republic

**Web:** bvz.cz/en/mbk/

## MAY 2020

### May. 2-5 Interpack 2020

**Location:** Dusseldorf, Germany.

**Web:** interpack.com/

### May 11-14 Cibus

**Location:** Parma, Italy

**Web:** cibus.it/en/

### May 12-14 VitaFoods

**Location:** Geneva, Switzerland

**Web:** vitafoods.eu.com

### May 26-27

### PLMA'S World of Private Label

**Location:** Amsterdam, Netherlands

**Web:** plmainternational.com/

## JUNE 2020

### Jun. 3-5 Fi Europe

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# Sixty seconds with ...

## Robert Cumming



Robert is a dual-qualified trademark attorney and solicitor at Appleyard Lees. He manages large international portfolios and complex multi-jurisdictional disputes for market-leading businesses.

Robert's expertise lies in the strategic positioning of a brand.

**Describe yourself in three words**

A lucky grafter.

**What does a typical day look like for you?**

Wake up, check my emails and then dress and feed my baby daughter before we cycle to nursery together with her in a trailer. There is a point at the top of a hill where I have to stop and I always take the time to look down the valley across the hills and try to appreciate the view.



It gives me perspective and clears the head from the morning panic. In the office, I chat with the team at 10 o'clock coffee break about random stuff but it often catalyses marketing ideas and fosters collaboration. There are 12 of us in my immediate team plus management, HR and marketing. I head up a wider group of trademark attorneys and solicitors across the firm too – we all work independently but I get asked a lot of questions.

If I can then I'll run on the canal or go for a swim at lunch with colleagues. At home it's the usual choreographed chaos – baths, food, homework, bed – until lights out.

**How does what you do impact innovators and brand owners in the food and beverage industry?**

It is exciting to work with start-up brands. The enthusiasm is tangible because only people who are passionate about their craft tend to innovate. It is a privilege to be in that crucible of ideas.

**What are trademark-related issues brand owners should be thinking about now?**

There is a lot of talk about increased regulation for high-sugar foods. I think we will see that erode brand owners' rights in a similar way to the tobacco industry. The argument is that it is better for the nation's health, which seems a noble cause. Brand owners should have a vision of where they want the brand to be in ten years' time. They can work backwards from there.

**What's your biggest professional achievement?**

Having a happy team of dedicated professionals around me.

**How did you get to where you are today?**

By recognising that you can walk away from anything and still get to where you want to be. It takes a lot of guts to believe in yourself, drop everything and figure out a new path.

**If you weren't in your current position, what else might you be doing?**

Probably a forester. I love the outdoors and I am fascinated by the idea that I can plant a tree today, which will bring



pleasure to people 50 or a 100 years in the future. The same applies to brands. At some point the most famous brands today were just an idea in someone's head and now they are loved around the world and are iconic.

**Tell us something about yourself that few people know.**

Hmm. I'm pretty open about most things so there aren't many secrets. I can recite pi to 20 decimal places – does that count?! My dad taught me it at primary school and it stuck.

**What's your favourite indoor/outdoor activity?**

I enjoy cycling in Yorkshire, a real lung-buster and then having a coffee and a chat with the lads. 🚲





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