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contents

6 food for thought
4 Sweet success in the pandemic

8 meat, poultry & seafood
8 Colour-change sensor to detect packaged food spoilage
14 Five companies accelerating the cultured meat revolution

20 bulk handling, storage & logistics
20 Route optimisation for delivering ice cream
24 Not a single drop wasted — improving phase separation control to reduce product loss
26 Plastic pallet rental: built for advanced automation systems

30 cold chain & refrigeration
32 Seafood supplier cuts energy costs with a smart solution
33 Frozen food market: what's on trend?

34 processing
34 Sustainable schooner: feeding algae to cut emissions
39 Meet the brewer that never brews the same beer twice
44 Avoiding bottlenecks
46 Dehydrated food: examining the mechanics

58 packaging & labelling
60 It’s time to be truthful about on-pack environmental claims

68 product development & testing
68 Penicillium camemberti: a history of domestication on cheese
74 Probiotic soda innovation

This issue is available to read and download at www.foodprocessing.com.au/magazine
Sweet success in the pandemic

Market analyst IRI has unveiled some key strategies and tactics used by the Australian food and grocery sector to survive and thrive during and post COVID-19.

The four key strategies are:

• Use pricing to maintain and strengthen brands.
• Invest in marketing and advertising to bolster ‘mental availability’.
• Adopt a shopper-led total store view to holistically understand customers.
• Streamline, rationalise and innovate your product range.

According to IRI Chief Commercial Officer for Asia Pacific Alistair Leathwood, during a recession many suppliers delay new product development (NPD) but he believes new products have a vital role during these times. “Because new product activity typically slows in recessions, well-executed NPDs have a higher chance of gaining visibility — and ultimately paying off — as competitors streamline the NPD funnel,” he said.

“Our research has demonstrated that more buoyant consumer segments, as well as those that are more time and cash rich due to COVID-19, will appreciate the novelty and experiential qualities of affordable luxuries. In fact, many Australians will want to alleviate the monotony of buying the same things throughout their extended period at home.”

To showcase this, IRI has created a case study drawing on the IRI Shopper Panel comprising of over 13,000 households to provide insight into the sales and shopper behaviour that changed as a result of the continued focus on innovation during challenging times. The data that was examined in this study compared shopper purchasing information from 21/07/2019 to 19/07/2020.

“The chocolate category in Australia within the grocery channel is worth $830 million and has been identified as a recessionary category that has responded well to attract additional spending from shoppers seeking smaller indulgences to enjoy as they live in lockdown but also seek to save money as we move into a recession,” Leathwood explained.

Within this category Cadbury and Darrell Lea have taken the opportunity to dial up their innovations and bring shoppers a breadth of new flavour-extensions or flavour-rotations despite the pandemic and recession. During this time Cadbury has released its Marble and Caramilk range, and Darrell Lea has introduced 10 unique new chocolate block flavours. The innovation through the introduction of new flavours has not only attracted new shoppers to the category to try but increased the total spent on chocolate compared to 2019.

According to IRI, some of the key findings of the study include:

• 32% increase in the spend on chocolate as a direct result of NPD, compared to non-NPD shoppers spending only 14% more.
• Darrell Lea did not change their price, but new NPD has increased spend on the category by 24%.
• Cadbury Marble attracted 760,000 new shoppers to the category and 420,000 from Cadbury Caramilk.
• Of the Cadbury Marble new shoppers, 13,560 were new to chocolate confectionery altogether. In addition, of the 420,000 new shoppers of Cadbury Caramilk, 14% were new to purchasing Cadbury.
• Pre and young families have been responsible for 17% of the total monetary spend on blocks compared to just 1% last year.

“From these findings we have been able to determine that shopper behaviour has not only changed as a result of NPD in that shoppers are purchasing chocolate when they previously didn’t, NPD also encouraged trial amongst shoppers. Innovation has not cannibalised the category, rather it has added additional spending to the category through existing and new shoppers,” Leathwood concluded.

To learn more about the impact of COVID with IRI’s report “FMCG In The ‘COVID-Quarter’ & Preparing For Recession” visit: https://www.iriworldwide.com.
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Shift to plant-based diet to drive pea protein market growth

Increasing popularity of meat substitutes is expected to drive demand for yellow pea proteins, according to research and consulting firm Future Market Insights (FMI).

The yellow pea protein market for the food processing segment, valued at US$861.4m in 2020, is expected to grow to US$1,492.3m by the end of 2030. Concerns about lactose intolerance among adults together with growing demand for food products free from gluten is also facilitating growth, FMI said.

"Increasing awareness of the enrichment of nutrition has increased the value of dietary supplements and is anticipated to have a beneficial impact on the industry. Growing concerns about cardiovascular diseases associated with the consumption of red meat is expected to remain a favourable factor in promoting market growth."

"Investments in getting new leads from food processing product companies is expected to be highly lucrative in the short term. In recent months, companies have introduced a range of new items, from plant-based burgers to chicken nuggets, and acquired brands to get quality products in the alternative protein room," said a lead analyst at FMI.

Yellow pea protein is used for food processing applications such as meat substitutes, nutritional supplements, snacks, confectionery and baked goods.

Since the last decade, yellow pea protein has also been significantly used in place of wheat, beet pulp, soy and corn fibres in pet foods.

These insights are based on a report on Yellow Pea Proteins Market by Future Market Insights.
Heat and Control reaches two milestones in 2020

Heat and Control marks two major milestones in 2020 — the 70th anniversary of the company and the 25th anniversary of its FastBack horizontal motion conveyor.

Until the 1990s, vibratory conveyors were the industry standard. Blake Svejkovsky, Heat and Control General Manager – Product Handling Systems, was working in the food industry and recognised the need for a robust, reliable, maintenance-free, quiet conveying solution gentle enough to avoid product breakage, segregation and loss of coatings. Together with his father, they created the FastBack horizontal motion conveyor.

The decision to join Heat and Control was simple for Svejkovsky. Besides deep market penetration, Heat and Control was also a family-owned business with a solid reputation in the industry for integrity, reliability, innovative technology and excellent customer service. They introduced horizontal motion technology to the world’s food processing industry, and it continues to provide gentle, sanitary and dependable distribution and seasoning solutions.

With more than 30 patents and more than 20,000 units worldwide, FastBack continues to advance the industry.

After 70 years, Heat and Control now has almost 1600 employees worldwide in more than 30 offices.

Ingredients labelling: keep it clear

Many food and beverage products do not offer clear labelling, according to a survey of 1000 adults in the UK and USA, commissioned by Ingredient Communications.

50% of people surveyed said they are more likely to buy a product if they can recognise all of the ingredients listed on the label. However, in a sign that their needs are not being met, only 19% of respondents said they always recognise all of the ingredients on the pack.

Demonstrating the risks of this, more than one-third of respondents (36%) admitted they are less likely to buy a product made with an ingredient they do not recognise. Conversely, 44% said they are happy to pay a higher price for a product when they recognise all of the ingredients it contains.

The findings of the survey indicate that a large number of consumers consider clear labelling to be a priority but also raise questions about how successfully the industry is catering to their preferences.

Most respondents to the survey also expressed a preference for natural ingredients and an aversion to artificial additives.

Growing steaks in space

Israeli food tech start-up Aleph Farms has launched a program that plans to bring local production of cultivated meat to outer space. Called ‘Aleph Zero’, the program plans to establish BioFarms in extraterrestrial environments.

The core mission of the new initiative is centred on introducing new capabilities for locally producing fresh, quality meat even in the most harsh and remote extraterrestrial environments, such as space. It has a vision for advancing food security by producing fresh quality meat anywhere, independent of climate change and of availability of local natural resources.

To achieve this goal, Aleph Farms is securing strategic partnerships with technology companies and space agencies for long-term collaborative research and development contracts.

“The constraints imposed by deep-space-exploration — the cold, thin environment and the circular approach — force us to tighten the efficiency of our meat production process to much higher sustainability standards,” explained Didier Toubia, Co-Founder and CEO of Aleph Farms. “The program Aleph Zero reflects our mission of producing quality, delicious meat locally where people live and consume it, even in the most remote places on Earth like the Sahara Desert or Antarctica, providing unconditional access to high-quality nutrition to anyone, anytime, anywhere.”
Food quality monitoring throughout the supply chain is critical to ensure global food safety and minimise food loss.

Massachusetts Institute of Technology (MIT) engineers have designed a ‘Velcro-like’ food sensor, made from an array of silk microneedles, that pierces through plastic packaging to sample food for signs of spoilage and bacterial contamination.

Once the design is optimised, the sensor could be used at various stages along the supply chain, from operators in processing plants, who can use the sensors to monitor products before they are shipped out, to consumers.

The sensor’s microneedles are moulded from a solution of edible proteins found in silk cocoons, and are designed to draw fluid into the back of the sensor, which is printed with two types of specialised ink. One of these ‘bio-inks’ changes colour when in contact with fluid of a certain pH range, indicating that the food has spoiled; the other turns colour when it senses contaminating bacteria such as pathogenic *E. coli*.

“Silk is completely edible, nontoxic and can be used as a food ingredient, and it’s mechanically robust enough to penetrate through a large spectrum of tissue types, like meat, peaches and lettuce,” said Benedetto Marelli, the Paul M. Cook Career Development Assistant Professor in MIT’s Department of Civil and Environmental Engineering.

The researchers attached the sensor to a fillet of raw fish that they had injected with a solution contaminated with *E. coli*. After less than a day, they found that the part of the sensor that was printed with bacteria-sensing bio-ink turned from blue to red — a clear sign that the fish was contaminated. After a few more hours, the pH-sensitive bio-ink also changed colour, signalling that the fish had also spoiled.

The results, published in the journal *Advanced Functional Materials*, are a first step towards developing a new colorimetric sensor that can detect signs of food spoilage and contamination.

Marelli’s co-authors on the paper are Doyoon Kim, Yunteng Cao, Dhanushkodi Mariappan, Michael S Bono Jr and A John Hart.

The new food sensor is the product of a collaboration between Marelli, whose lab harnesses the properties of silk to develop new technologies, and Hart, whose group develops new manufacturing processes.

**Testing a deeper detection**

To make the new sensor, Kim first made a solution of silk fibroin, a protein extracted from moth cocoons, and poured the solution into a silicone microneedle mould. After drying, he peeled away the resulting array of microneedles, each measuring about 1.6 millimetres long and 600 microns wide — about one-third the diameter of a spaghetti strand.

The researchers made a bio-ink containing antibodies sensitive to *E. coli* and a second bio-ink sensitive to pH levels that are associated with spoilage. They printed the bacteria-sensing bioink on the surface of the microneedle array, in the pattern of the letter “E”, next to which they printed the pH-sensitive bioink, as a “C”. Both letters initially appeared blue in colour.

Kim then embedded pores within each microneedle to increase the array’s ability to draw up fluid via capillary action. To test the new sensor, he bought several fillets of raw fish from a local grocery store and injected each fillet with a fluid containing either *E. coli*, *Salmonella* or the fluid without any contaminants. He stuck a sensor into each fillet. Then, he waited.

After about 16 hours, the team observed that the “E” turned from blue to red, only in the fillet contaminated with *E. coli*, indicating that the sensor accurately detected the bacterial antigens. After several more hours, both the “C” and “E” in all samples turned red, indicating that every fillet had spoiled.

The researchers also found their new sensor indicates contamination and spoilage faster than existing sensors that only detect pathogens on the surface of foods.

“There are many cavities and holes in food where pathogens are embedded, and surface sensors cannot detect these,” Kim said. “So we have to plug in a bit deeper to improve the reliability of the detection. Using this piercing technique, we also don’t have to open a package to inspect food quality.”

The team is now looking for ways to speed up the microneedles’ absorption of fluid, as well as the bio-inks’ sensing of contaminants.
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CASE STUDY

Cleaning the air for pandemic prevention

Some meat production factories in Australia, Germany and around the world have been experiencing clusters of coronavirus outbreaks, with hundreds and sometimes thousands of workers being infected at one site.

Scientists have been investigating these clusters to determine a reason why the outbreaks are common in such facilities. At some sites, it has been reported that it may be due to the cold temperatures and insufficient air filtration system that allowed the pathogen to spread rapidly.

German meat processing company Tönnies Group has now implemented high-efficiency air cleaners from Camfil as part of its pandemic prevention scheme. The air filtration concept will be installed at its headquarters in Germany in its meat production facility. The aim is to set high-hygiene standards for the sensitive food area and focus on improved indoor air quality at the facility.

To achieve the temperatures of around 6 to 10°C required for meat processing, Tönnies uses convection coolers as they cool the circulating air and return it to the room for re-use. Some scientific studies have indicated that airborne pathogens such as viruses can spread through air recirculation, which could increase the risk of infection for employees.

Tönnies Group has now installed a new multi-level hygiene solution that consists of high-efficiency HEPA air cleaners, certified with EN1822:2019 from Camfil. These air cleaners (CC 6000 and CC 2000) with ProSafe HEPA H14 filters clean the indoor air from the circulating aerosols or viruses and provide clean filtered air to the cooling system for circulation. The systems were positioned at an elevated position so that the air cleaners can get a good flow of air through the production rooms and at the same time do not interfere with operations. Initial measurements, which were carried out shortly after the installation, showed significant particle reduction by more than 50%.

The improved air treatment was tested for several days using cold smoke and particle measurements by a team of occupational hygienists and physicians from the Institute for Hygiene and Public Health at the University of Bonn.

It has been reported that Camfil’s air cleaners are successfully removing the airborne microbes and particles from the Tönnies meat processing facility.

The air cleaners installed at the facility have been designed to ensure a safe production environment for both the personnel and the processes involved.

Camfil Australia Pty Limited
www.camfil.com/en-au

Mobile robot

The OMRON HD-1500 mobile robot has a heavy payload capacity of up to 1500 kg. The robots can automatically calculate the best route for material transportation while navigating safely around people and obstacles without the use of magnetic floor tapes or other guides. It can be used to transport things that would have traditionally been moved using forklifts, such as voluminous materials in the food and commodities industries.

The company’s ‘Fleet Manager’ can control up to 100 mobile robots with different sizes, configurations and payload capacities under one system, allowing customers to use the HD-1500 with OMRON’s existing robots.

Other features include: battery charges in 39 minutes; 360-degree safety scanning lasers used for simultaneous localisation and safety functionality; navigation using adaptive safety zones from LiDAR technology; improved CAPS technology allows for better accuracy and repeatability for docking.

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Abattoir upgrades pump to handle paunch material

A NSW abattoir had installed the Gorman-Rupp Super T Series pump for handling its wastewater stream, which included paunch material. The pump is a self-priming trash pump and the pump (in varying sizes) is installed in many similar applications around the country and around the world. But in this particular application, the pump experienced two issues.

Because of the drought, cattle were eating closer to the ground, ingesting dirt, grit and gravel, giving the pump much more abrasive material to handle. And because the cattle were being hand-fed large volumes of undigested hay, it meant the pump had a huge increase in stringy materials to handle.

These circumstances caused an unusually high incidence of blockages and also premature wear of the impeller and wear plate. A solution was needed to enable the pumping of more solids, with fewer problems.

The team at Hydro Innovations (distributors of the Gorman-Rupp pump range) recommended that the plant install an ‘Eradicator’ upgrade kit with hardened wear plate and to upgrade the impeller to a hardened option.

The Eradicator system comes with an obstruction-free cover plate and a wear plate equipped with a number of notches and grooves as well as a patented ‘lacerating tooth’ that helps break up stringy materials and pass them through the pump without impacting performance or interrupting service.

The internal parts are hardened to 400 Brinell, helping them resist the abrasive action of the pumped media.

The results were an almost total eradication of all blockages. Additionally, the internal parts lasted much longer than when ‘standard’ materials were fitted.

Pumps with this system are available in sizes from 3″ (80 mm) through to 10″ (250 mm), with flows from just a few litres per second (L/s) up to 200 L/s, and with pressures to 90 m. Pumps can operate on suction lifts to 7.5 m and are safe and easy for operators to maintain.

One operator and two spanners are all it takes to perform maintenance and clear chokes and blockages on Gorman-Rupp above-ground pumps.

More information on these pumps may be obtained from info@hydroinnovations.com.au.

To view a video to see how these pumps work, visit https://bit.ly/2F7y1Nz.

Hydro Innovations
www.hydroinnovations.com.au

Hygiene solution for meat and sausage manufacturer

Since 1953, German meat manufacturer Sutter has grown from a small country butcher’s shop to a modern but still traditional craftsman’s business, which is still run as a family business today. The company specialises in the production of cooked cured products such as ham, smoked pork and pork belly, as well as of scalded sausage products such as wiener. The range also includes meatloaf, ham sausage, mortadella and much more.

In order to ensure the best possible hygiene in the production process, the company uses various technologies, including Kronen UVC disinfection locks for surface disinfection using UVC radiation.

Three UVC disinfection locks are used at two of Sutter’s production sites for disinfection of sausage casings or ham coatings before further processing into sausage and ham slices. Between 10 and 30 tons of product are disinfected per day with a lock, depending on the product. The process is designed to improve the shelf life and food safety of the products.

The sausage casings and ham coatings are disinfected in the ‘high-care’ production areas before these products are cut and packaged as sausage or ham slices. This reduces the transfer of any germs that may be adhering to the mantles of the cut surfaces.

Thomas Eckart, Head of Department at Sutter, sees disinfection using the UVC lock as an important processing step to kill bacteria and prevent microorganisms, and is very satisfied with the results. “The Kronen disinfection locks can be adapted very well to our work processes because they are mobile and, eg, can be moved out of the high-care area for cleaning. The machines are easy to clean and the lamps are of very high quality and have a long service life.”

With service provided by Kronen and the implementation of the required adjustments, the machines work reliably — which is why, after testing the first disinfection lock, the two additional machines were purchased to manage the increasing production volume.

Reactive Engineering Pty Ltd
www.reactive-eng.com.au
Look closely at who supplies the food industry with the very best food safe materials, services and equipment.

What do these companies and others like them have in common?

www.haccp.com.au
Over the last few years, companies around the world have been racing to bring cultured meat products to market.

Cultured meat products, meat-like products grown in a lab from cells extracted from animals without requiring the animals to be slaughtered, are being developed with an aim to allow the world to continue eating meat without the environmental and ethical issues that surround the conventional meat industry.

This article highlights five companies at the forefront of the cultured meat revolution, based on analysis from the recent IDTechEx Research report, ‘Plant-based and Cultured Meat 2020-2030’.

**Mosa Meat**

Mosa Meat was founded in 2013 by Dr Mark Post of Maastricht University. In August 2013, Dr Post cooked and tasted the claimed world’s first cell-cultured hamburger in front of a crowd of journalists in London. The hamburger was produced from bovine muscle cells grown in the lab and reportedly cost over 250,000 (AUS$40,557) to produce. Luckily, things have moved on since then, with Mosa Meat currently claiming it can grow a ’beef’ patty for around 9 (AUS$14.6).

To grow its beef patties, Mosa Meat takes myosatellite cells, which are muscle stem cells, from live cattle via a small biopsy. The cells are then proliferated in a bioreactor resembling the bioreactors that beer and yoghurt are currently grown in, until there are trillions of myosatellite cells. By changing the growth medium they are fed, the cells then differentiate into muscle cells, forming myotubes, which are primitive muscle fibres less than 0.3 mm long. The myotubes are placed in gel that is 99% water, which helps the cells form into muscle fibres, which can then be harvested as meat. Mosa Meat is aiming for a small-scale commercial release within the next few years, following scale-up of production facilities and regulatory approval.

**Memphis Meats**

Memphis Meats is a Californian cultured meat start-up founded by cardiologist Dr Uma Valeti and cell biologist Dr Nicholas Genovese in 2015. Much like Mosa Meat, Memphis Meats uses myosatellite cells to grow meat products, with the company having produced cultured chicken nuggets and beef meatballs, as well as duck tissue.

In 2020, the company completed a $161 million Series B fundraising, by far the largest funding round ever completed by a cultured meat company, which the company intends to use to construct a pilot production facility. With over $181 million in private funding from backers, including Richard Branson,
Bill Gates and meat industry giant Tyson Foods, many are expecting Memphis Meats to be the first company to successfully release a cultured meat product. Nevertheless, CEO Uma Valeti has urged caution from the cultured meat industry around releasing a product too soon and stressing the need to get the release right. A rushed release in front of a sceptical public could tarnish the image of the cultured meat industry for years and severely hamper its growth.

Aleph Farms

Aleph Farms is an Israeli start-up developing cultured meat products. Whereas most cultured meat companies are developing “unstructured” meat products such as burgers and nuggets, which are technically easier to produce, Aleph Farms is going one step further by creating cultured steaks using proprietary 3D technology.

The process involves using a specially designed scaffold to co-culture muscle, fat and connective tissue, alongside vasculature, to produce a fully formed steak within 3–4 weeks. Aleph Farms claims its technologies allow several types of cells to grow together into a complex shape, something which has historically been a major hurdle to developing structured meat products. After seeding in a bioreactor, the cells grow directly into the structure of a steak on the scaffold, rather than needing to be manually combined afterwards. The company is aiming to reach the market with a limited launch within 3–4 years. Steaks will be grown in ‘bio-farms’ — large facilities with tanks similar to those seen in dairy factories or breweries.

BlueNalu

Not all cultured meat companies are focusing on beef and chicken. BlueNalu is a start-up based in San Diego, California, that is developing cultured seafood products. In August 2019, BlueNalu released design schematics for a large-scale production facility and described a strategy for commercialising cultured meat.

Its commercialisation strategy involves five phases, starting with R&D and small-scale pilot testing, before moving onto market research testing and culminating with 13,935 m² facilities, each of which can produce up to over 8 million kg of cultured seafood from finfish, crustaceans and molluscs, the equivalent of 72 million 110 g seafood fillets. In June 2020, the company signed a lease for an expansion to its administrative, R&D and manufacturing space with a new facility in San Diego that is more than 3530 m², a sixfold increase over the current BlueNalu space. The larger facility will include a Good Manufacturing Practices (GMP) pilot-scale food production plant that will be designed for the commercial production of BlueNalu’s various cell-based seafood products in its initial test markets.

BlueNalu intends to produce seafood from species that are overfished, primarily imported, contain high levels of pollutants such as mercury and/or are difficult to farm raise, with the initial focus being on seafood that commands a premium price with strong consumer familiarity. The company intends to release products into a test market in two to three years, before opening its first large-scale production facility within five years.

Finless Foods

Another company working on developing cultured seafood products is California start-up Finless Foods, which is currently attempting to develop cultured bluefin tuna. Bluefin tuna is an expensive and endangered animal that cannot be farmed using aquaculture, and so there is a pressing need to develop an alternative. Finless Foods believes that there are several advantages to developing cultured fish meat compared with cultured mammal or bird tissue.

Fish have a much lower body temperature than mammals or birds, so cells are cultured at 24–26°C. Fish cells are also more tolerant to temperature shifts. This reduces energy costs and simplifies production. Creating an accurate texture is also easier with cultured fish meat. Fish naturally has a thin, sheet-like texture, which is simpler to recreate through culture than the complex 3D structure of animal muscle.

The company believes that the path to success in cultured meat is through delivering new experiences, rather than simply replicating meat, and delivering an inferior copy. For example, rather than culturing cod meat that Western consumers are familiar with, culturing cells from species that Western consumers have never had before, delivering an exciting new experience.
BeefLedger has bagged two awards — ‘Service Design - Commercial Services’ and ‘Design Strategy’ — at the 2020 Good Design Awards.

Streamlining transactions in the beef supply chain

With food fraud costing around AU$40 billion a year globally, BeefLedger developed a blockchain technology-enabled beef provenance tracking and credentialing platform. Employing export smart contracts to streamline cross-border payments, the platform is designed to strengthen consumer confidence and protect Australia as a premium producer of safe, high-quality produce.

BeefLedger was the winner of the 2020 Good Design Awards ‘Service Design - Commercial Services’ category, with the jury commenting: “A strong design combining mature approaches with newly developed blockchain technologies for an elegantly simple result. It’s a great example that demonstrates the intersection of data and design.”

Connecting Australian producers and Chinese consumers

While BeefLedger is an integrated blockchain-enabled food provenance and smart contract transaction platform, BeefLegends is its design-led consumer engagement strategy. BeefLegends combats food fraud by embedding authentic regional stories in the data that credentials Australian beef exported to China. It is designed to connect two ends of the supply chain for mutual benefit.

BeefLegends was the winner of the ‘Design Strategy’ category at the 2020 Good Design Awards, with the jury commenting: “BeefLegends embodies positive innovation connecting two ends of the supply chain for mutual benefit for the first time. It’s exciting to see a truly transdisciplinary approach bringing together technical expertise in blockchain and smart contract development; legal expertise in international trade, policy and governance; and humanities expertise in food provenance and consumer culture. Purposeful area for design which has been integrated into their strategy representing good thinking of the broader ecosystem.”

BeefLedger Chairman Warwick Powell said that receiving recognition for design excellence speaks volumes for the team’s creativity in solving problems and bringing new approaches together to create new value. “The BeefLedger project is more than a standard ‘track and trace’ with technology activity. It is an ecosystem design underpinned by the idea of data-driven value in motion incentivising behavioural change in supply chains by transparently rewarding the pursuit of excellence,” he said.

Both projects were designed by BeefLedger in collaboration with researchers at Queensland University of Technology. The design and development was undertaken as part of the Export Smart Contracts Project, funded jointly by BeefLedger, Queensland University of Technology and Food Agility CRC.

Dr Brandon Gien, CEO of Good Design Australia, said: “Receiving a Good Design Award is a significant achievement given the very high calibre and record number of entries received in 2020.”

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Series 6000 static mixers
The Counter-Swirl Series 6000 static mixer from H2O Rx is a ‘spool’ type mixer, bridging the 2850 Series and 3050 Series, while providing additional benefits. The mixer offers engineers a solution for their mixing problems, with three curved fins welded to a pipe interior. The two side fins are welded upstream of the centre fin, with the third fin welded downstream of the injection port. Developed by Westfall Manufacturing and Alden Laboratories engineers, Model 6000 features a headloss coefficient of 1.26 and a mixing COV of 0.025, which makes it better than 1 and 2 state 3050s, and 0.9 Beta 2850s. The Series 6000 sits between the two existing ranges.

The mixer is compact, reducing space requirements before samples, off-takes and branches. Up to three injection ports can be provided, all in the same line as the main process pipe, and on one side only. This simplifies the arrangements for dosing lines, access and maintenance, particularly when more than one dosing point is required. The mixer is designed with one to three injection nozzles and can fit in tight spaces where short lay lengths are required. The mixer is designed to reduce pressure loss to a K factor of 1.26, with incoming fluids or gases entering the high-shear zone of turbulence after the additive is introduced.

The mixer can be custom designed and made to suit different applications. It resists fouling, requires minimal maintenance and is easy to install. The mixer has a size range from DN20 to DN3000 and is available in most common pipe materials. Depending on the application, it can be 3D printed, with injection ports built in. The Model 6000 is CFD designed and tested, with no external energy requirements and no moving parts.

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www.h2orx.com.au

Bluetooth cold chain solution
The Verigo Pod environmental data logger records and wirelessly transmits temperature data and excursion alerts to the user’s smartphones and tablets through Verigo’s app; no cables or readers are required. Verigo’s app for Android or iOS is installed on the user’s smart device. Users can customise their Pod for each monitoring session by inputting a distinct name, scanning a product barcode, setting temperature thresholds and fully configuring for any application. During use, the mobile app allows users to view all Pods up to 30 m (100 feet) away in real time with their current temperature readings and alerts.

Users can wirelessly connect to the Pod to view full data graphs and detailed alerts indicating threshold excursions. For further analysis, the app’s share function can be used to email data as a PDF or CSV straight from the user’s mobile device. All data is stored in the cloud automatically via Verigo’s secure Web App, allowing users back at the office to search complete records of all Pod data, view location points and generate PDF and CSV files for data review and analysis. All Pod data is automatically synced through a mobile device to Verigo’s web app. Users simply log in and start searching current and past Pod records.

The device allows users to remotely view and see Pod data from across their supply chain. It helps bring traceability to the supply chain and identify patterns to help users improve their cold chain processes.

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AUSTRALIA WIDE SALES AND SUPPORT 1300 098 901 Engineering the Future
A leading Australian supplier of poultry products has improved the quality of waste products produced at its facility in Queensland by implementing a new cooling solution from HRS Heat Exchangers.

Scraped-surface heat exchangers were required because of the highly viscous nature of the MDM being cooled.
The plant in question produces a range of butchered and prepared chicken products, and therefore also generates waste in the form of trimmings and material not required for human consumption, such as ground chicken necks, backs and feet. The new solution allows this material to be sold as a pet food ingredient.

Federal regulations require that ingredients for both human and animal consumption are kept at an appropriate temperature (typically below 4°C) during processing. Because of the highly viscous nature of the material, and the risk of freezing during cooling, it was determined that a scraped-surface heat exchanger would thoroughly mix the product during cooling and prevent freezing. The thick, viscous nature of the material means that a phenomenon known as ‘slugging’ can occur. This means a channel of warmer product travels down the centre while the product at the tube wall does not move. As the cooling medium (in this case glycol) is less than -5°C, this creates the risk that the product at the tube wall will freeze, while the material in the centre is not cooled sufficiently.

Chris Little, Director of HRS Heat Exchangers, said that in a traditional tubular heat exchanger this product would be likely to freeze on the tube walls due to the low fluid velocities.

“The HRS R Series has scrapers which turn at high velocity, mixing the product and increasing heat transfer. As a result, we can specify a heat exchanger with a smaller surface area, lower working pressures, a smaller footprint, and lower capex compared with other designs. Due to the limited space available, creating a solution with a small footprint was a key priority for this product.”

The chilling system is based on three HRS R3 Series scraped-surface heat exchangers providing continuous cooling. Using three units in a parallel arrangement means that any two heat exchangers can continue to work (with a standard treatment capacity of 2,500 kg/h) while the third is cleaned, serviced or just on stand-by. However, at times of peak production all three units can be run simultaneously, giving the system a maximum treatment capacity of 3,500 kg/h.

To ensure efficient and reliable operation with this difficult product, HRS adapted the internal scraper configuration to achieve the high performance necessary, while implementing a heavy-duty gearbox to withstand the higher torques required to keep the product moving. A glycol cooling system reduces the temperature of the product from 23°C to just 3.5°C in a continuous pass, with a total retention time around 4 minutes. An autonomous control system ensures that any outgoing product which has not reached the required temperature is diverted back to the start of the process for further cooling.

As well as the main heat exchangers, the system supplied included a receiving hopper with auger feed, an HRS BP8 piston pump (which is ideal for viscous materials) to propel product through the system and the necessary heat exchangers and pump for the glycol cooling system, as well as the standalone control system. The solution was constructed from stainless steel and mounted on a skid to facilitate quick and easy installation and commissioning.

“Although this system is designed for poultry waste products, it is equally suitable for mechanically deboned meat products where the same cooling requirements exist, for example in sausage production,” Little said.

“Using three triple tube R Series heat exchangers also means that we have been able to save space and money compared to a system which would otherwise require nine individual heat exchangers, while providing the same performance capacity.”
With more than 1600 customers ranging from petrol and convenience stores, to supermarkets and leisure centres, covering over 150 postcodes and a fleet of 13 vehicles, SEQ Ice Cream was searching for a new way to map its routes in order to improve efficiency and increase customer–driver face time.

Acknowledging that much of the business had previously been run with human behaviour and knowledge rather than system-driven processes, Don Mackaness, Distributor, SEQ Ice Cream, said: “We had some staff turnover, and we quickly realised that we lost the ability to retain the knowledge they had about the business, because we were more human process driven than system driven.

“We needed to look at the bigger picture, to look at the whole system and work out how we could become more efficient.”

With this in mind, SEQ Ice Cream approached route optimisation software provider PTV to develop a new solution for planning and scheduling.

The solution
With PTV on board, the first step was to take 10 months of sales data and model it in the PTV RouteOptimiser system.

Mackaness said this would have been a major job without PTV’s software: “Historically, we would have done this manually by looking at maps etc; with PTV we managed to analyse all of the data in just two days.”

For SEQ, a major priority in this exercise was to ensure that a majority of the drivers were able to keep the same customers they had before the reroute, while also making the routes more efficient.

“In our brief with PTV we wanted to keep good relationships with our customers. We were thrilled when we were able to ensure that 80% of our trips kept the same driver even after the reroute, this was a big win for us,” Mackaness said.

“Using smart tools created a system that is 90–95% correct. Now we are looking at the bigger picture and the seasonal data for stage two. We have the smart tools, but also we want the knowledge and information from our drivers, which is what we are continuing to collect.”

For an ice cream distributor, seasonality also needs to come into planning and this aspect can be complicated. Having more time instore with customers allows SEQ to retain this kind of information. So for SEQ, this exercise was not just about efficiency.

“Efficiency is one thing, but the drivers have a relationship with their customers. This is extremely important in the growth of the business,” Mackaness said. “Relationship and visibility instore is everything — if we can’t see the freezer then we need more accurate information from the customer.

“For many of our customers we don’t get an order every week, so it’s important that our drivers know the customers and the capacity they have instore.”

For SEQ, route optimisation is about giving their drivers as much time with the customer as possible.

The result
For SEQ, this is the first step in the right direction. “By finishing this initial exercise with PTV, we’re 30–40% there already,” Mackaness said. “Our drivers have confidence in the system and its abilities and we are looking forward to planning more efficient trips and spending more time with our customers, which is the core aspect of our business.”

Mackaness is thrilled with how the optimisation is going. The fact that PTV was able to do a full strategic review of SEQ’s operation in a matter of days was invaluable to SEQ and its ability to improve the efficiency and time spent with customers. “The initial reroute has had great results already, and now we’re fine-tuning and working closely with PTV to optimise our service offerings even further.”

A year later, SEQ now runs a fleet of 19 vehicles and has 3500 customers, delivering product from Noosa (Qld) to Grafton (NSW).
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Camerons Brewery is an independent brewer in the north-east of England, with a brewery capacity of 1.5 million hectolitres and an estate of 75 houses.

To ensure its supply chain operations are as safe and productive as possible, the brewer equipped its fleet of four Jungheinrich trucks with Keg Clamp attachments supplied by B&B Attachments. Each attachment is capable of handling up to 18 kegs at a time.

Richard Forster, Logistics Manager at Camerons Brewery, said the Keg Clamps provided an effective solution for improving productivity when it comes to product handling.

The attachments enable secure clamping of kegs and casks and ensure ease of movement of both full and empty barrels around the yard and production facility. They provide the driver with good visibility when approaching the load, while also increasing driver confidence and ensuring safe and secure handling on-site.

The kegs are securely clamped between the three tines of the attachment. The tines include a special rubber insert to prevent keg slippage and to secure any slightly smaller rogue kegs which may be included in the overall stack.

A vertically adjustable, articulating load stabilising frame moves downwards and holds the keg stack securely in place.

The product’s standard features include: low profile; fast-moving keg pack stabilisers; a long-lasting rubber pad; wear indicators on tines; and end-of-stroke cushioning on side shift movement.

B&B Attachments Ltd
www.bandbattachments.com

Portable dry block temperature calibrator
IKM Instrutek has introduced a calibrator with touch display and a calibration interval up to three years. It is designed to meet the market requirements to save cost by extending the calibration interval.

With a contemporary design, the TC65 portable dry block temperature calibrator is developed to meet the toughest demands of environments.

The unit is compact and robust, designed for marine, industrial and laboratory use, approved according to DNVGL-CG-0339:2019(parts of). This is to ensure that users are able to calibrate a vast range of temperature sensors, thermometers and temperature switches/thermostats.

TC65 specifications include: temperature range from 30 to 650°C; stability ±0.1°C; accuracy 1 year ±1.5°C; and accuracy 3 year ±3.5°C.

The dry block principle excludes the use of oil or other liquids. A dry block insert with various diameters ensures thermal contact to the sensor being tested.

To use, place the sensor to be calibrated in the calibrator. Set the temperature. When stabilisation occurs, read the true temperature from the calibrator and re-calibrate the sensor or system accordingly.

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Phase separation is an extremely important process in the Food & Beverage industry, being responsible for product losses and quality issues if not controlled well. But what is the best way to control it?

Let’s start with the basics.

**Why is phase separation so important?**
At the end of each batch, it is possible that a significant amount of product remains in tanks, pipes and other equipment. By flushing the process with water, product can be recovered to storage tanks prior to cleaning to ensure not only the efficiency of the Cleaning in Place (CIP) process — by reducing the amount of chemicals used — but also to reduce the organic load sent to the wastewater treatment plant.

Likewise, at the start of a new batch it is likely that some water remains and, in this case, product is needed to be pushed through until completely drained.

This is a critical process as a delay or incorrect valve switching can lead to product losses, increased water consumption and even affect product quality if water is pumped to storage tanks.

There are several ways of controlling product recovery and water drainage. The simplest and most common being used across the industry are either manual or time-based methods.

**The manual method**
Involves operators manually controlling a valve or providing instructions to the control room based on what they see through the sight glass installed in the pipes.

Although functional, this is an ineffective and often inaccurate way of control since the ‘setpoint’ to operate the valves varies from operator to operator. The method is also subject to failures if something happens during the visual inspection.

“Considering a flow of 30 m³/h, a deviation of only 3 seconds per day during the product recovery step can represent a product loss of 9125 litres/year. Interesting right? Now imagine if you have more than one line and assume the time delay be-
ing approximately 3 seconds and multiply it by the cost of your product. In some cases, the loss can go up to 500 thousand dollars per year,” said Scott Allen, Senior External Sales Engineer from Endress+Hauser.

The time-based method
The time-based method is another approach commonly used across the industry to control phase separation.

In this case, the time needed to completely flush the lines to drain or storage tanks is determined during the plant commissioning and used as a control parameter in the Programmable Logic Controller (PLC).

However, the time-based approach is not reliable in the long term since it relies on several mechanical components such as valves and pumps to be operating in spec. As components inevitably decline during their lifespan, this ultimately affects the effectiveness and accuracy of the process control.

This leads to both major product loss and an increase in the resources used for waste treatment. These will accumulate until someone recalculates the timing and updates the PLC code.

But wait, is there a better way to have a proper control of the phase separation?

Yes, there are several approaches available to solve this problem in a reliable and consistent way, let’s explore some of them:

The volume method
The volume method of controlling product recovery involves using a flow meter to totalise the volume of product or water needed to flush the line. This is an effective approach if the product properties don’t change and isn’t impacted by changes in the mechanical characteristics of pumps and valves.

Nevertheless, the setup of a volume control can be extremely time consuming, especially if the process dimensions and product characteristics varies (eg, the volume of water used to push a product with high viscosity will be different than the volume used to push a product with lower viscosity).

The conductivity method
The conductivity method is often used as a resource to check for the presence and concentration of chemicals during CIP processes but it can also be used as a tool to identify water vs product if there’s a significant difference in conductivity between them.

Some examples are applications involving the separation of water and organic components — such as alcohol, oil or fat. Due to non-existent or very low conductivity observed in organic components, it’s possible to have an accurate and reliable monitoring with a very simple installation.

Additionally, positioning conductivity sensors at the inlet of filling machines brings an added benefit of reduced risk of chemical bottling which improves production efficiency and product safety.

The colour/turbidity method
The colour/turbidity method can be used in cases where the conductivity between the water and the product isn’t significantly different or, in applications where fast response time is required. In these situations, the use of optical sensors is the most reliable solution.

Based on the colour or turbidity variance it’s possible to identify not only different products but also gradient (mixing volume between product and water) to use as a parameter for process control, reducing product loss and ensuring process reliability.

The main advantage of using dedicated sensors is the possibility to install them in strategic points — eg, close to drains and valves — to optimise the phase separation control, ensuring the best efficiency in product recovery and less waste generation.

Picking the right method for your process
If like many companies in the food and beverage industry you are still using manual methods for managing phase separation, it is time to evaluate the options.

The first step is to select the method best suited to your process.

Endress+Hauser Australia Pty Ltd
www.au.endress.com
When characterising modern industry it is no exaggeration to conclude that Australia is undergoing major changes in its logistical and supply chain landscape and setting new standards for the future.

While considering the enormous amount of investment in technological advances already made in such things as artificial intelligence (AI), robotics and communications, most companies will be reflecting on the strategic direction it is likely to take in the coming years. This is particularly relevant in view of the government’s recent Budget announcements to stimulate the economy.

While significant changes will take place in the short term, some things of course will remain the same; this does not mean that improvements in design and functionality cannot be undertaken with traditional equipment.

Take for example the standard Australian pallet, which is still likely to be a necessary requirement for many years to come. The nature of the materials used, however, and the capabilities to integrate easily into what appears to be increasingly demanding and complex automated warehouse systems (ASRS) cannot be ignored.

New systems design engineers and end users must anticipate potential downtimes brought about by damaged or poor quality pallets. This will mean a necessary reassessment of what standard and type of pallet is used in order to mitigate against issues likely to stop production and increase costs. When coupled with higher hygiene, safety and durability expectations in the food and pharmaceutical industries, a plastic pallet that can meet these demanding standards and be rented at competitive rates is worth further investigation.

Advances in plastic pallets

While renting plastic pallets in Australia has been an option for many years, according to the National Marketing Manager for Ozkor, Alan Morgan, there is now an advanced choice of plastic pallet for industry to consider.

Ozkor is an Australian ISO 9001 certified company that specialises in the design development and manufacture of injection-moulded plastic materials handling products such as plastic pallets designed to meet specific industrial applications.

Morgan said the company’s latest PPX-1165 plastic rental pallet can handle a load of 1350 kg in drive-in racking without the need to use a steel framework. Made with specialised virgin polypropylene copolymer, it is designed to operate in extreme temperatures ranging from freezer temperatures of -30°C to as high as 50°C in warehouse environments.

Vertical side blocks are given extra protection against MHE (materials handling equipment) damage by incorporating patented nylon inserts inside the block structure, which enhances impact resistance in what is a normally vulnerable area.

“The PPX is a heavy-duty workhorse designed for long-term re-usable use along the dimensional lines of a standard timber pallet but by far exceeds the operational, hygiene and longevity of pallets traditionally used.” Morgan said.
Sorting and grading machine for delicate fruit
The Zetapack sorting and grading machine is suitable for ripe and delicate soft fruit, including varieties such as apricots, persimmons, peaches, pears, nashi pears, nectarines and apples.

The machine works in a circular motion with the fruit positioned on the belt in cups. Using software, an automatic traffic LED signal process can be programmed to indicate fruit that meets the specific size, weight and colour required. When the light signals on the machine, the operator can then select the fruit and move it from the belt and to a specific cell.

If the fruit is not selected, it continues to circulate on the machine and thus the machine can minimise any damage to the delicate fruit during the grading process.

The machine has been designed to reduce energy consumption, using 1 kW of energy per hour for the motor and 0.5 kW for the electrical parts.

Suitable for sorting soft fruit that is currently sorted by hand, the machine can automate the fruit selection process while minimising any damage to the fruit.

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Hygienic fluid handling service kits
Alfa Laval’s Hygienic Fluid Handling Service Kits are designed to conduct planned maintenance and servicing as quickly as possible.

The service kits contain all the necessary spare parts to tackle breakdowns, repairs and scheduled preventive maintenance.

The service kit removes the need for the customer to buy many individual items resulting in less packaging and associated administration.

Each kit has a single part number, eliminating the need to carry and administrate a large spare parts inventory.

They come complete with a manual containing all relevant QR code links.

The box includes all relevant wear parts, such as shaft seals and elastomers, and links to practical service maintenance videos.

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4.3” handheld human-machine interface (HMI)

Industrial automation supplier IDEC Corporation has introduced the 4.3” LCD screen size HG1P handheld human-machine interface (HMI).

The HMI can enhance operator interactions for automated machine tending and robotics applications.

At 500 g and with contoured hand grips, a hand strap and a hanging-wall bracket, the ergonomic design makes it comfortable for long-duration and fatigue-free use by technicians and engineers.

It also features high-resolution TFT colour LCD touch panel displays at 480x272 pixels to provide clear visualisation while only consuming 3 W.

The touchscreen is bordered with 12 physical momentary function keys (F1 to F12) with click-feedback which write to internal memory bits within the HMI.

The HG1P is configured with the same WindO/I-NV4 software as other products offered in the IDEC HMI portfolio, which has multiple language functions built in.

Connectivity to automation platforms is via a standard 19-pin connector, using optional cables from IDEC up to 7 m long or user-created cables up to 15 m long, which are easily replaced if damaged.

The cable transmits power, hardwired signals and digital communications.

Available in both serial and Ethernet models, the HG1P supports major industrial communication protocols such as Modbus TCP/IP, Modbus RTU, FTP client, FTP server, webserver and user communication.

IDEC Australia Pty Ltd
www.idec.com/australia

HACCP-certified pallets

CMTP has received HACCP certification and can now produce a special range of Pal-giene certified food-safe pallets.

The company already has ISPM-15 Export certification but decided to get the HACCP certification to meet the increasing hygiene and quality demands of food and beverage customers. It worked closely with HACCP International to ensure it met the strict criteria required to earn the certification.

CMTP anticipates the certification will lead to new opportunities and peace of mind for their existing and new customers.

CMTP
www.cmtp.com.au

Pneumatic vacuum

EXAIR’s EasySwitch Wet-Dry vacuum simplifies the filter change process when switching from vacuuming a dry material to a liquid or vice versa.

This pneumatic vacuum uses minimal compressed air and is suitable for wet, dry, light and heavy applications. The fast and tool-less conversion to vacuuming liquids is done by releasing one latch, removing the filter element and securing the latch. Users can reinstall the filter into the lid assembly for dry materials.

Designed to handle tough industrial clean-up jobs, the vacuum rests on any 205 L drum. It uses a standard or HEPA certified filter when vacuuming dry material. The system creates a powerful vacuum at a quiet 79 dB, without the need for electricity. Because the vacuum generator has no moving parts and uses no electricity, there is little concern for failed parts, motor failure or working with liquids associated with electric industrial vacuums.

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COVID-19 has been found living on the outside of packaging, which could present a risk to cold chain workers, an investigation found on Saturday.

The Chinese Center for Disease Control and Prevention (CDC) said the coronavirus was detected and isolated from positive samples of imported frozen cod carried by workers in Qingdao, China.

The CDC said this was the first confirmed instance of the virus living on packaging outside the laboratory and that the contaminated packaging can cause infection.

It also confirms that it can survive on the outer packaging of items for a long time under specific conditions such as cold chain transportation.

It is also suggested that the novel coronavirus uses cold chain items as carriers, which could present a risk to cold chain workers who import and export goods across borders.

The CDC suggested regulators should consider monitoring cold chain items in a similar way to how countries have closely regulated the travel of persons.

However, despite the findings, the CDC maintains the risk of the virus circulating through countries’ cold chains and the chance of infection for the general public from contact with or eating cold chain food is “very low”.

The report said China’s 24 provinces submitted 298 million copies of the test results — 67 million tests on cold chain and food packaging, 124 million tests on employees and 107 million on environmental tests — for the investigation.

Only 22 articles of food and packaging contained the nucleic acid of the novel coronavirus.

The CDC said the main route of transmission of COVID-19 is still through respiratory droplets and close contact.
Purger for refrigeration plants

GEA has launched its latest version Purger for refrigeration plants that use the environmentally friendly natural refrigerant R290 (propane). The ‘plug and play’ device operates independently from the main refrigeration system and is simple to install indoors or outdoors. It requires minimum maintenance and benefits from maximum energy efficiency with minimum power consumption.

Air and other non-condensable gases can dissolve in the refrigerant and enter the cooling system circuit, where they can cause an increase in condensation pressure due to their different/higher partial pressures, even in small concentrations. Cooling systems must therefore be kept largely free of non-condensable gases. This is done most effectively with an automatic venting system, as this reacts immediately to the ingress of non-condensable gases into the system.

After a time loop, the purger operation starts as soon as the concentration of non-condensable gases in the liquid receiver is 2% or more. It automatically shuts off again when the concentration has dropped to 1%. The effective displacement of non-condensable gases helps ensure long-term efficient operation of the refrigeration system. Since the average concentration of non-condensable gases is much lower throughout the installation, this value represents an average concentration of less than 0.1% throughout the installation.

The extended use of the Purger is an important part of GEA’s natural refrigerant initiative and fully complies with the F-Gas Regulation (EU) of 1 January 2020 on fluorinated greenhouse gases. From 1 January 2022, the F-Gas Regulation will no longer permit commercial refrigerators and freezers to be placed on the market with the refrigerant R134a (tetrafluoroethane).

For existing refrigeration, air conditioning and heat pump systems, processed or recycled F-Gases with a GWP >2500 are permitted for maintenance purposes only until 2030. As a result of all these measures, recycled R404A refrigerants will also be phased out and there will be a noticeable shortage of supply. As a result, many operators of R404A plants are switching to natural refrigerants such as ammonia or propane. Propane, also known as natural refrigerant R290, is claimed to have a very low GWP factor of ‘3’ and is therefore environmentally friendly and above all represents good thermodynamic performance.

GEA Australia
www.gea.com

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When Aus Asia Foods (AAF), a Brisbane-based fish importer and retailer, acquired two new, large freezers, the company was looking for a solution that would fulfil two key criteria: lower energy costs and increase the lifespan of the machinery.

To achieve these goals, they called up the expertise of Keep It Cool Refrigeration and Koldpak. They ran a test on the two freezers, setting up one freezer with energy-saving technology, an Altivar Process VSD from Schneider Electric, and the second freezer with a standard ‘direct on line’ (DOL) set-up.

Processing around three tons of product each month, the business heavily relied on its refrigeration capacity to keep the food products safe and compliant. In a normal refrigeration compressor set-up, the compressor is either on all the time or completely off. This means that the compressor needs to ramp up quickly and powerfully whenever the temperature in the refrigeration unit gets too high. A VSD solution adds smart control to the compressor, allowing it to operate at the exact speed needed to ensure temperatures are kept optimal. This means less energy is needed overall to achieve the same outcome.

With the two same-sized freezer rooms located alongside each other, Koldpak and Schneider Electric worked together to set up the study, running the VSD solution on just one of the 7.5 kW compressor freezer rooms. The other freezer used a standard direct on line (DOL) set-up. Care was taken to ensure both rooms were loaded with similar stock levels and were used in a similar fashion.

A Schneider Electric Altivar ATV630 Process Drive was chosen for the project. The drive has extensive graphic dashboards, including an energy consumption monitoring dashboard that would allow AAF to monitor the energy savings of the unit. The drives also have an integrated power measurement function, which is accurate to within 5%. The ability to monitor and analyse input power, energy produced and the KPIs directly from the process management system saved AAF the hassle of needing a separate piece of software or device to check their usage.

Running the two refrigeration units alongside each other, one with the drive and the other without, clearly demonstrated the energy savings with the help of the variable speed drive. After one month, 1316 kWh energy savings had been made, which amounts to monthly savings of close to $150. AAF decided to add the Schneider Electric energy-saving technology to the second freezer also, with the savings recorded from the second unit over a period of six months being 5216 kWh — almost $900.

“We are saving between $100 and $125 on each unit, per month. With the two units running the conservative estimated savings, each year we are saving around $3000 thanks to the Schneider Electric Altivar Process VSDs,” said Jacky Mo from AAF.

As the estimated cost of $/kWh 0.11 cents is low, the real-life savings could be twice that amount, approximately around $6000 a year. The solution offered by Koldpak and Schneider allowed AAF to reduce energy usage and cut costs significantly. The project demonstrates comprehensively the savings that can be made when upgrading from a DOL starter to a VSD for the compressor.

Schneider Electric
www.schneider-electric.com
Frozen food market: what’s on trend?

According to the Frozen Food Market - Forecast (2020 - 2025) from ResearchAndMarkets.com, the global frozen food market size was worth around US$228 billion (approx. AU$162 billion) in 2018 and is estimated to grow steadily with a normal CAGR of 3.5–5% through to 2025. The ready meals segment of the frozen food market is expected to grow at a standard CAGR of 2.5–4%.

Some of the key trends and drivers for growth of the frozen food market identified in the report include:

**Increasing demand for preservative-free food**
There is a growing trend of consumers cooking fresh meals at home, which are free from any preservatives. High-quality frozen foods from extensive categories of dairy-free, vegan, gluten-free, sugar-free, low fat, etc, are in demand.

Recent trends in technology have introduced cryogenic freezing, which prevents the addition of any artificial preservatives while maintaining negligible growth of microorganisms at the same time.

**Appetite of millennials**
Convenient and ready-to-use frozen food is on trend for millennials. This generation is ready to experiment and invest in novel things, but they want products that preserve their time and are easy to handle while meeting their nutritional needs.

**Cold chain demands**
One of the basic challenges faced by the frozen food market is the fear of cold chain system failures. Since frozen foods require a set optimum temperature around -18°C, even the slightest failure in a cold chain system can result in wastage. A thoroughly functioning power backup and consistent vigilance are required for assuring negligible frozen food loss.

In order to make sure that the frozen food market continues to grow, there is a trend towards employing better supply chain management systems. Refrigerator (reefer) trucks are being used to consistently maintain an optimum environment for frozen foods to stay fresh. These trucks are now being fitted with third-party GPS technologies for timely deliveries.

**Freezing techniques**
The report also notes a rising trend in the use of the IQF technique. IQF stands for ‘individually quick frozen’, which implies that all the items in a frozen food packet are frozen individually and not as a block. The method involves passing every individual piece of food through a blast chiller on a conveyor belt to assure freshness in the food items, even after thawing. The report notes, for example, that peas frozen using IQF technique and packed in a carton, lidded tray or crystalline PET tray will sell faster than ones using an ordinary refrigerant technique.

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www.hannainst.com.au
Young Henrys’ brewers, along with scientists from the University of Technology Sydney Climate Change Cluster (C3), are capturing carbon dioxide (CO₂), a brewing by-product, to feed algae, and in turn cut emissions.

The 400-litre algae bioreactors at Young Henrys are the centrepiece of the project — they produce as much oxygen as one hectare of Australian forest.

Algae are photosynthetic organisms that form an important part of all aquatic food webs and ecosystems. The two main types of algae are: macroalgae, which consists of kelps and seaweeds, and microalgae, which are tiny, microscopic plants that can grow both in fresh and salt water.

The CO₂ from fermentation of just one six-pack of beer — brewing produces 35 g of CO₂ per litre of beer — takes a tree two full days to absorb. Algae is up to five times more efficient than trees at absorbing carbon. In addition, the algae that is grown from sucking up all that CO₂ can go on to have another life, and it can be used in creating products in the food, pharmaceuticals and bioplastics markets.

“We were inspired by the work the C3 group were doing and wanted to get involved. Some of the skills we have as brewers managing yeast have an analogue in growing algae — it’s almost like they have an inverse relationship. We thought it would be worth exploring how microalgae could work in a brewing operation to lower our carbon footprint and produce real-world solutions,” said Young Henrys Co-Founder Richard Adamson.

Professor Peter Ralph, Executive Director of the Climate Change Cluster, said, “Young Henrys is the type of company that takes leadership in the sustainability space; this partnership between UTS Climate Change Cluster (C3) and an industry leader allows us to showcase that it is possible to have action today on climate change.”

“This project really showcases how research, together with industry, can create practical and innovative solutions to address global problems today.” On their role of leading change, Young Henrys Co-Founder Oscar McMahon said, “As a business we believe that the private and public sector can lead the way in enacting change within society to reverse our impact on climate change. We feel as an independently owned Australian company, we need to do our bit and hopefully set a good example.”

The first phase of the partnership between UTS and Young Henrys is the research and set-up of the algae in the brewery. The second phase, which has yet to launch, will be a long process with the hope to achieve more carbon capture to create a large biomass of algae. More details related to phase two will be released in the coming months.
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Boot cleaning system

The German-made AQUA Cube Bootwasher is a manual boot cleaning system made from UV-resistant polyethylene.

With internal stainless steel tubing and spray jets, it is designed for use in harsh environments. It features an encased design that minimises water splashing and aerosols.

Cleaning the soles of safety shoes or boots is simple — users turn the first ball valve to allow water to spray out towards the base; this with the bottom and side brushes offers a hands-free boot cleaning system.

The addition of the water feed hand brush provides an additional cleaning mechanism. By turning on the second ball valve, users have full control to clean the soles as well as the sides of the boots.

And that is not all — the wastewater is captured and channelled away towards the ½” hole minimising cross-contamination and keeping the area clean.

The cleaning station includes — UV-resistant PVC enclosure to minimise aerosols and splashing; stainless steel tubing for corrosion-free equipment; bottom spray jets for hands-free cleaning of shoes; water feed hand brush for additional mobile clean; two separate ball valves for better control; outlet for wastewater which can be plumbed away; brass sanitiser dosing system.

FMCG Industry Solutions Pty Ltd
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Denmark-based Bilwinco produces cost-effective weighing and packing lines for a wide variety of food products. From standalone multi-head weighers to complete integrated packaging solutions, the company develops and supplies custom-built wet or dry multi-head weighers. Either platform-mounted or mobile weighing systems are available to suit production needs and maximise ROI.

There are many challenges associated with processing fresh salad and fruit, including: very sticky; fragile, must be treated with exceptional care to guarantee shelf life; frequent product changeovers require distribution tool flexibility and easy cleanability; all fresh fruit products are processed just-in-time, meaning packaging line downtime costs grow exponentially.

The Bilwinco Linear Drive radial feeder vibration system transfers even lettuce leaves or sticky fruit to the weighing hoppers with minimum damage using a soft drop option. With a new clean design, periodic cleansing and product changeover is completed with minimal downtime.

Other features include: higher constant throughput of difficult products with Linear Drive vibration (Patent pending), keeping productivity high and product quality unmatched; less giveaway — direct weighing principle ensures 20-30% less giveaway compared to traditional weighers; low cost of ownership.

Bilwinco has improved performance weighing by completely rethinking the way product is handled, from the infeed over the centre cone and into the individual weigher heads. Its high-performance vibrator technology can be set to move almost any product carefully and efficiently, including difficult products such as wet, sticky/greasy and fragile products.

Select Equip
www.selectequip.com.au
Process automation solution for routing liquids

The ABB Ability Liquid Routing Library provides a control engineering inventory for food and beverage manufacturers, and other liquid-related industries, including tank farms, pharmaceuticals and chemical resin plants.

The process automation technology provides users with optimal routing and CIP to help increase efficiency and reduce costs.

The digital application draws on ABB Ability System 800xA and will support routing and cleaning in place (CIP) functionalities needed for liquid-led production.

It can be used wherever products are transported, stored or processed in tanks and lines and is particularly relevant to dairy, brewing, sugar, mills and edible oil application programming.

Ready-made objects, including libraries, typicals, and templates for product routing, with recipe-based CIP track and trace, preventive plant maintenance, Excel-based bulk data tools, are made available for users through the library.

Functionalities include alarm handling, alarm propagation between different units, queue handling for online production changes, control and supervision of process objects, interlocks and transfer of product and equipment settings like product codes, unit names and unit states.

The technology is designed to minimise the cost of developing an automation solution while maximising plant operability, and are designed to improve operator effectiveness.

ABB Australia Pty Ltd
www.abbaustralia.com.au
Taihu Brewery likes to surprise the market with innovative approaches, such as tea-flavoured beers or sours with smoked Taiwanese plum.

“When it comes to developing recipes and designing labels, for many of our beers we take inspiration from Asian culture,” explained Peter Huang, one of the firm’s original founders and today its General Manager.

But for the brewing process itself, the brewer adopts a stringently scientific approach: “Our brewery is like a laboratory, in which we rigorously test every step, every altered ingredient, and keep detailed records. Our paramount goal is to continually improve our beers. We never brew the same beer twice: sometimes we alter the fermentation temperature, sometimes we use new hop varieties. You see, we never regard anything as perfect, we’re always striving to become even better,” he explained.

For these trials and small brews, Taihu has installed a Steinecker MicroCube. With its size of 10 hectolitres, it’s ideally suited for trying out new combinations, and these beers are subsequently tested for popularity in one of the firm’s own six taprooms in Taipei. If a recipe proves successful, Taihu can then use its CombiCube B in the brewhouse to make batch sizes of up to 50 hectolitres.

The brewery was using a MicroCube from its very first day — but the choice of this model was more or less coincidental. Originally, Taihu contacted Krones only for the bottling kit. “We thought we’d be able to manage the brewing ourselves, since we have very experienced staff in the brewhouse, particularly. But when it came to the bottling operation, we wanted to be on the safe side, in order to create a stable, long-shelf-life product of consistently high quality,” Huang explained. “During these meetings, we then found that for brewing operations, too, Krones offers solutions for the small output range... A short time later, we ordered the MicroCube, and then immediately began planning a second, larger brewhouse centred around the CombiCube B.”

Besides the brewing equipment from Steinecker, the brewery ordered the bottling kit as well, of course: a filler-closer block from Kosme.

Although the brewery itself is still young, there’s a team behind it overflowing with experience and passion. Taihu’s Head Brewer is Winnie Hsu, who has clocked up more than 11 years of experience in the craft beer business.

The craft beer market in Taiwan is still a relatively small one: Huang estimates the number of breweries at about 10. Taihu ranked among the pioneers, since its taproom in Taipei, opened in 2014, was the first to serve exclusively craft beer. The idea came during the planning phase for the brewhouse: “The government was not used to craft breweries, and it took a relatively long time before we had all the requisite approvals on file. So we decided to make good use of the delay and test our beers for popularity and acceptance,” Huang said. The principle involved was a simple one: no food and no chairs, just craft beer. “We wanted to do more than just serve beer, we wanted to bring people together,” he explained. Meanwhile, Taihu’s beers are available not only in its own taprooms, but also in other bars, restaurants, hotels and supermarkets.

It’s not only in its beers and recipes, but also in the design of its containers that Taihu invests such passionate creativity: the brewery has already packed about 30 different types in cans or bottles — and each of the associated labels has its own story to tell. While some play with the various flavours and raw materials involved, others picture Taiwan’s magnificent scenery.

In Taihu’s logo, too, even the details are significant: “The shape is a hulu, a traditional vessel for alcohol in Chinese culture. In the centre is a tiger, recalling the times when Taiwan ranked among the four Tiger nations and was thus one of the fastest-growing economies in Asia. The hop cones surrounding it stand for our product, you see, while the Chinese characters describe our name: the ‘tai’ stands for ‘Taiwan’, the ‘hu’ for ‘tiger’, “ Huang explained.

Krones (Thailand) Co Ltd
www.krones.co.th
With hand hygiene being considered as one of the most important contributing factors in food poisoning incidents, gloves play an important role in many food handling processes and are a vital tool in controlling food safety risk.

Gloves can provide an important physical barrier between a food handler and the food to be consumed. By extension, they serve to protect the food business, its customers and its reputation. That alone should make product selection an important purchasing decision.

A ‘food-safe’ glove is not just about food contact material (eg, EU1935) — too many buyers only consider this characteristic. Obviously, the material itself is a major component but other matters are vital too.

Relying on material qualities alone is a start — but not sufficient for such key products. There are many characteristics to be considered when assessing what type, and which make, of glove is appropriate for such tasks.

Karen Constable and Heloise Lam at HACCP International have written a 25-page white paper — Gloves in the Food Industry; A White Paper — that considers the various use cases for gloves in the food industry; both in foodservice and in food manufacturing sectors. It dives into the food safety benefits and risks associated with using gloves and it provides advice on the proper selection and use of gloves.

HACCP International certifies certain disposable and reusable gloves as food-safe and suitable for food handling in operations governed by a HACCP-based food safety program. Gloves carrying the HACCP International certification mark are fit for purpose in every respect.

HACCP International’s certification requires much broader compliance, which is described in the white paper. It also contains a glossary of glove-related terms, plus references to all research papers cited.

The white paper can be downloaded from the HACCP International website: https://haccp-international.com/gloves-in-the-food-industry-a-whitepaper/.
Retractable tank washer

The UKD Retractable Tank Washer is suitable for use in the pharmaceutical, chemical manufacturing, dairy, brewery, winery and food and beverage industries. In fact, anywhere that uses mixing tanks as part of the manufacturing process.

The washer can be placed on the top or along the sides of a tank without interfering with the mixing blades. The reason is, only the hollow cone washing head is located within the tank while the rest of the unit sits outside the tank wall.

Using a pneumatic drive, the washing heads move through the tank to target every hard-to-clean area. The design also allows for additional, short cleaning cycles to be programmed into the usual cleaning sequence.

The washer is made from AISI 316L stainless steel and EPDM. The cleaning head is fixed with a tri-clamp for easy access for servicing. The standard hollow cone washing heads have a 100 Lpm capacity at 3 bar, but customised designs are available.

Tecpro Australia
www.tecpro.com.au

Pressure sensors with display

Balluff’s latest range of pressure sensors provides a programming function, a visual display of the current pressure and a diagnostics window into the sensor. Their configurable functionality allows users to select an analog, digital or IO-Link output. This is particularly important for machines with high utilisation.

Suitable for use in many industries, including food and beverage, packaging, metalworking, metallurgy, mobility and energy, the primary applications are pressure measurement at a hydraulic power unit and level measurement in a storage tank. The sensors come standard with IP67 protection and offer the option of IP69K.

With built-in condition monitoring, the sensors also provide pressure peaks, internal temperature and operating hours. Other key features include: flexible application with configurable outputs — analog, digital and IO-Link; broad temperature range: -40…+125°C; additional diagnostic functions; one system — from the sensor to networking and connectivity in a single source.

Balluff Pty Ltd
www.balluff.com.au

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Drive solutions for the bakery industry

With its lightweight, corrosion-resistant gear units, smooth surface motors, frequency inverters and motor starters in washdown-optimised aluminium housings, NORD DRIVESYSTEMS has a range of hygiene-friendly products for mixing and agitation processes in the bakery industry. The range is suitable for agitators, conveyor systems, weighing and filling plants or packaging machinery.

The manufacturer’s inverter technology is designed to ensure high positioning accuracy and reliable implementation of dynamic sequences. The drive units can also be controlled individually, for example, to regulate kneading and conveyor speeds and to prevent blockages or control the dough process. Due to their modular structure, the drive units are also service- and maintenance-friendly.

The nsd tupH surface treatment provides an anti-corrosion treatment for gear units, smooth motors, frequency inverters and motor starters in washdown-optimised cast aluminium housings. nsd tupH drive units are a robust and durable alternative to painted geared motors or stainless steel drive units. A respective treatment is available for all NORD products made from aluminium. In nsd tupH aluminium drive units, all DIN and standard components, including drive shafts, are made from stainless steel.

MAXXDRIVE industrial gear units from NORD DRIVESYSTEMS are designed to ensure reliable operation in industries using mixing and agitation processes even under extreme conditions, offering high output torques up to 282 kNm, along with quiet running and long service life. The compact combination of MAXXDRIVE industrial gear units, the new SAFOMI IEC adapter and an energy-efficient electric motor from NORD is used for mixers and agitator applications to reduce the number of wearing parts and attached components.

NORD DRIVESYSTEMS has application-specific equipment options specifically designed for pumps, agitators and mixers with high process-related radial and axial bearing loads. This includes an agitator version (VL2 bearing) with large bearing spacing and reinforced bearing, as well as a Drywell version (VL3 bearing) with additional oil drip plate and leakage or oil sensor. For the VL2 and VL3 bearings, the bearing spacing is increased with attached components whereas the gear unit size remains unchanged. NORD also offers bearings that were intentionally oversized to meet the requirements of applications such as agitators in the bakery industry.

NORD Drivesystems (Aust) Pty Ltd
www.nord.com
Packaging and labelling fork sensor

The GSX 14E — sensor from Leuze is a two-in-one fork sensor suitable for packaging and labelling machine manufacturers.

The GSX fork sensor combines two detection methods — ultrasonics and optical detection — in a single housing, bringing together the advantages of both principles.

The versatile fork sensor provides users with the flexibility to work with all types of labelling materials. A wide range of labels can be detected precisely and at a fast speed, regardless of the type of material and surface characteristics. This increases the machine throughput and avoids downtime.

Even labels made of inhomogeneous pockets of BOPP material can be detected through the optical operating principle. The forked sensor is well suited for applications in which various types of labels need to be detected on the same line. Until now, this often required several different forked sensors. The user can now save not only the space of an additional fork sensor but also extra time and costs of installation.

The forked sensor can be quickly and easily set up via the teach button in order to teach the label-carrier combination. Only one universal mounting position is required for all types of labels.

Leuze electronic Pty Ltd

www.leuze.com.au
Bottlenecks in food and beverage manufacturing are inevitable from time to time and rather than being an issue themselves, they are often a symptom of a deeper problem.

Understanding the type of bottleneck causing the disruption is the first hurdle and they usually come in three forms: product bottlenecks, process bottlenecks or people bottlenecks. Each one of these bottleneck genres can severely reduce throughput, cause delays, annoy customers and impact employee morale, so should be taken seriously and resolved quickly.

**Product bottlenecks**

Nothing affects profitability more than not being able to fulfil orders, whether through a lack of raw materials or lengthy delays in the manufacturing process. When a customer places an order they must be able to trust that they will receive the quantity and quality of goods ordered within the delivery window. Lost sales and customers going to a competitor can have a very deep and lasting impact on the bottom line and can even drive manufacturers out of business.

The quality and safety of food and beverage products is incredibly important as the health of consumers is at risk if defective products are sold to them. The issue with bottlenecks in food and beverage companies is that it often results in the disposal of raw materials that have expired, or perished goods due to other delays or problems. These symptoms are indications that something is not right on the shop floor.

Identifying the exact cause of product bottlenecks is made easier by being able to trace the faulty end product back along the production line. This can also significantly reduce waste if the raw ingredients are bad, the process does not run the fault to the end. If the problem is at the end of the production line, the rest of the process may be able to continue without stoppages, so ingredients and time are no longer wasted.

**Process bottlenecks**

Efficient manufacturing requires every process to be working as expected. If goods are failing quality checks, product recalls are regular, or if poorly maintained machines are performing poorly or even malfunctioning, there is going to be an underlying issue that needs resolving.

Unfortunately, with food and beverage production, raw ingredients can be unpredictable, causing them to perish before expiry, often resulting in shortages. Manufacturers can also end up with excess inventory that expires before sale when inaccurate sales forecasting is sent to the shopfloor.
Implementing a paperless warehouse management system will allow producers to automate repetitive and predictable processes across inventory, sales and distribution, while gaining a real-time view of stock levels and orders.

Supermarkets expect manufacturers to know the total cost of production. From the ingredients they buy to the cost of warehousing products, and the tools they use in their back-office to the distribution and sales value. An ERP system will surface this data across the entire process supply chain helping manufacturers to know where to intervene to better manage cash flow, control stock levels and maximise profits.

**People bottlenecks**

In food and beverage production, people are still one of the most crucial elements of the factory floor. Where employees are not performing at their best, productivity or quality will always suffer. Whatever the issue, the most important thing an operations manager can do is to go onto the shopfloor and find out why. A great ERP system will provide the right information to make better management decisions, but it cannot replace the human touch.

The principles of great management are the same the world over and that means culture starts at the top. How companies work with and motivate their staff has a direct impact on waste and productivity, so management need to be alert to signs of people bottlenecks when they see high staff turnover and absenteeism due to a negative company culture, as well as excessive human error and low productivity due to a lack of accountability.

People bottlenecks can be caused by insufficient training. They can also be affected by a remote management style, meaning that there is poor visibility from management of what is happening on the production line. Conversely, a micromanagement style can give the perception of a lack of trust by management.

If the issue is unacceptable productivity or performance output, it may have to do with how clear management are on what staff are meant to be doing. This can be addressed through a better induction process and further training and mentoring to upskill.

An ERP system can help to identify problem areas that could be related to staff performance. If a machine is operating normally but running slowly, the issue could be the operator’s skill or motivation level.

Adding more people to a problem is not necessarily the right solution. Where systems are overly complex or vulnerable to error, automating them can both solve the bottleneck and free up staff to perform more valuable tasks.

**Conclusion**

In order to try and solve a bottleneck, it is important to identify it, work backwards to ascertain what is causing it and then come up with an effective solution to solve the issue because bottlenecks that are not rectified can drastically impact a company’s bottom line.

An ERP system can schedule and run regular checks, so potential problems are never missed. It will identify when a piece of equipment needs attention but will also use that data to predict future maintenance requirements. In a connected, lean manufacturing environment, the system can identify these needs well in advance and because it knows so much about the manufacturing process; it can also identify the best moment to bring it offline to avoid significant disruption.

One of the greatest challenges for food and beverage manufacturers is meeting a growing list of local and international regulations, which vary from country to country across Asia–Pacific. Where a production line relies on staff to adhere to or notice breaches of food safety requirements, issues can easily be missed. An ERP system can follow the process from receipt to shipping, quarantine or release the product at each process step, managing the quality control and provide bidirectional traceability, implement recalls and produce detailed audit trails.

Automated machines that can learn and behave predictively will continuously build a better system. Process bottlenecks can be solved with a manufacturing execution system (MES) integrated with an ERP system, which collects and analyses data to measure and report on overall performance, improving workflow and productivity. Implementing a paperless warehouse management system will allow producers to automate repetitive and predictable processes across inventory, sales and distribution, while gaining a real-time view of stock levels and orders.

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Researchers at the Queensland University of Technology (QUT) have used supercomputers to examine the mechanics of food plants, and take a closer look at what happens when they are dehydrated or dried.

Lead investigator Dr Charith Rathnayaka, a computational scientist from QUT’s Faculty of Science and Engineering, said, “By developing the computational model, it is possible to estimate how the cells are being damaged when they are being processed for preservation, storage or packaging.

“This innovation has the potential to influence the future of food-drying processes globally in terms of reducing cost, optimising food processing, energy conservation and increasing dried food shelf life.”

Published in journal PLOS One, the study used a computational model to look at how plant cells behave under different types of mechanical forces. The model conclusively demonstrated that it can simulate the micromechanical behaviour of dried plant cells. The results could lead to better designs for industrial drying processes of fruits, vegetables or other plant biological material.

As an example, Dr Rathnayaka described the process by using fresh fruit such as apples, which were simultaneously dried and imaged and then compared against the predictions from the simulations.

The research showed that by controlling the processing conditions such as temperature, pressure, humidity and processing speed, it was possible to control the damage on apple cells to extract the best nutritional value. Dr Rathnayaka said the results also showed that at extreme dryness levels, the cells naturally get damaged even without processing.

“Due to the high pressure in the cells at fresh conditions, they are highly vulnerable to higher forces that take place during processing such as cutting, packing or extruding,” he said.

“This provides valuable insights for not only processing apples but many other comparable fruits and vegetables.”

Dr Rathnayaka said the study’s findings have implications for further research into food processing under drought conditions. He said there is a need to find innovative ways to investigate harvesting and processing produce under extreme climatic conditions.

“Currently there is a research gap in accurately evaluating and predicting drought and heat resistance of plant-food tissues,” he said.

“The COVID-19 pandemic has placed even more of an emphasis on the ever-growing importance of plant-food security and more efficient ways to quantify and predict the performance of agricultural produce during droughts.”

The research was co-authored by Dr Chaminda Karunasena from the University of Ruhuna, Dr Chathura Wijerathne from Uva Wellassa University and Dr Wijitha Senadeera from the University of Southern Queensland, with supervision by QUT’s Professor YuanTong Gu. Research imagery featured in the journal Soft Matter.
**Virtual commissioning and engineering software**

ABB’s Virtual Commissioning software for variable speed drives is designed to save time, reduce risk and increase engineering productivity in the development and operation of industrial automation systems without the need for hardware. The software can simulate real-world variables, sensors and feedback loops within ‘Drive Composer’, eliminating the need for lengthy commissioning, long execution times and safety risks.

Virtual testing and simulation early in an implementation project can reduce costs by up to 25%, reducing engineering time in preconfiguration, dimensioning and programming drives. The software enables users to verify control logic and respond to errors such as faulty sensors, recovery scenarios and timing behaviour. Users can also create a space to deliver training for machine operators or to test solutions to improve productivity.

The virtual commissioning software allows integrators to test design concepts, saves engineering and commissioning time, and enables machine operators to improve training and test configuration changes offline. ABB, in conjunction with Control Logic, is running a free licence promotion for the Virtual Commissioning software for a limited time.

**Control Logic Pty Ltd**

www.controllogic.com.au

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**Electronic pressure controller**

The Series EDA Electronic Pressure Controller produced by Dwyer Instruments is a compact package that can replace a separate gauge, two switches and a transmitter in a system.

This can not only save money and installation time, it can also conserve panel space.

Available with the “-HV” option, the EDA can be powered with 120–240 VAC eliminating the need for a step-down transformer and reducing the installation time, cost and complexity in applications where only 120–240 VAC power is available.

The EDA also has a test and fail-safe mode, reducing the time and the amount of test equipment needed for setup and installation.

Made weatherproof, the electronic pressure controller can perform pump alternation for duplex pump applications for both indoor and outdoor installations.

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A New Zealand food processing company will implement a sludge dewatering technology engineered to cost-efficiently reduce the sustainability footprint of food, beverage and wastewater treatment.

The NZ producer — which cannot be named because of contractual confidentiality provisions — is installing a KDS multidisc Roller system from CST Wastewater Solutions to dewater wet sloppy screened waste from the peeling process.

This transforms fruit waste from a wet and sticky heavy mass to a much drier product that is less messy and easier to handle and transport for stockfeed or landfill.

The technology is designed to reduce fruit waste volume by up to 90%, thus reducing transport costs and helping prevent any potential spillages during transport.

CST Wastewater Solutions Managing Director Michael Bambridge said the processing company has committed to environmental excellence and has become the country’s first adopter of a sludge dewatering technology.

“Heavy cakes of by-product from growers and food processors can cost upwards of $150 a ton to dispose of, including the specialised transport from the places where trade wastes are generated to centres where compacting, drying, recycling and disposal can take place in controlled environments,” Bambridge said.

The NZ producer is adopting its KDS technology to handle a highly variable quality and volume of up to 5 m³/h.

“This first NZ adopter of the KDS technology had previously tried alternative technologies, but none handled the variable volume involved or dewatered the fruit waste enough to prevent excess water and product from creating an unhygienic site and causing leakage,” Bambridge said.

The NZ producer selected a model SS611 KDS with a longer press zone, to achieve dewatering of the sloppy and wet mix of peelings, leaves and pulpy fruit material.

“The dewatering concept being employed in this instance is to spread the waste over the table width and dewater a mat of material, to maximise the surface area and minimise water retention,” Bambridge said.

Suitable for the food and beverage industry, the largest KDS unit can handle about 100 kg dry solids an hour at 98% solids capture. It uses minimal energy, consuming as little as 0.06 kW per hour of electricity and operates at low (63 dBA) non-intrusive noise and vibration levels.

CST Wastewater Solutions
www.cstwastewater.com

Washdown gun

The AKBO Blue King washdown gun is designed to use 16% less water than a regular cleaning gun, representing water savings for industries such as food manufacturing, dairy processing and industrial kitchen. The washdown gun is also able to withstand temperatures up to 90°C and water pressures up to 30 bar. It has FDA-approved EPDM seals and rubber protection, and comes in two styles — with or without a trigger guard.

The trigger guard is made from stainless steel covered with rubber insulation. For user comfort, the lever and handle are ergonomically designed and also covered in soft rubber, while the body of the washdown gun is made from brass.

For safety, there is an arrow to indicate the direction of water flow, which can be useful when using hot water. Inside the spray gun, there are double seals for added security and durability.

The design of the spray outlet provides even water distribution and is drip-free, even at the widest spray pattern. Adjusting the spray is also easy and does not require tools.

Tecpro Australia
www.tecpro.com.au
Crossbelt sorter

The Interroll Crossbelt Sorter MX 025H automatic sorting solution is capable of handling up to 20,000 conveyed goods per hour. This model has an increased conveying speed of up to 2.5 m/s, compared to 1.8 m/s for the still available Interroll Crossbelt Sorter ST 6160.

The MX 025H high-performance sorter allows for the transport of much heavier and larger goods, up to 50 kg. In addition, the width of the carriers has been increased by 50%, which allows flexibility when sorting goods of different dimensions.

Maintenance is easy, as the drive chain has been replaced with a rubber belt. This means there is no need for lubrication and it is also designed to be easier and faster to replace the belt. However, according to the company, this won’t need to be replaced for many years, even with 24/7 operations. The carriers can also be replaced much faster, and wear parts are also less expensive; all this contributes to lower maintenance costs — claimed to be around 50% less than with a conventional crossbelt sorter.

Using a mechanical drive concept, the sorter operates quietly — below 67 dB(A) — even at the highest throughput rates.

Other features include: number of electronic components kept to a minimum; designed for long lifetime, minimum operating costs and short payback periods; energy savings of up to 50%; and the drive system can provide power efficiency rates of over 85%.

The modular sorter platform also includes in-feed conveyors and terminals that can be customised to meet user needs.

Interroll Australia
www.interroll.com
Campbell’s Australia was sceptical that new motor technology could deliver big energy savings at a factory in Shepparton. The proof was in the power bill.

The giant soup can that overlooks the Campbell’s Shepparton factory in northern Victoria is heritage-listed; a nod to the importance of the factory in a regional city which has played such a pivotal role in Australian food manufacturing.

The history is on the outside; inside, there’s a strong push for modern, energy-efficient technology and waste reduction across the production line, as part of the company’s target to reduce energy consumption by 20% by 2025.

Nevertheless, when local ABB Value Provider A1 Electric Motors suggested a motor and drive upgrade with impressive projections for the energy savings, Campbell’s Shepparton Environmental and Safety Manager Mark Hyland was hesitant. “I wanted to see another factory make the first move, so I could read the case study about it and act on it then,” says Hyland with a laugh.

Facilities and sustainability fall under Hyland’s remit at Campbell’s Shepparton, but he was dubious. A1 Electric Motors was telling him he could realise 14% energy savings by installing an ABB IE5 SynRM — synchronous reluctance — motor and variable speed drive package.

“The design of our SynRM motors is key to their energy efficiency,” explains John Rieusset, Food and Beverage Sector Lead at ABB Australia. “The rotor has neither magnets nor windings and suffers virtually no power losses. And, because there are no magnetic forces in the rotor, maintenance is as straightforward as with induction motors. They also run a lot cooler, extending the life of the motor.”

Electric motors use one-third of the world’s electricity, with numbers predicted to double in the next two decades, so technologies that improve their energy efficiency can play a key role in lowering global emissions.

Hyland is a long-time employee at Campbell’s Australia and rightly proud of the improvements in sustainability he’s overseen at Campbell’s Shepparton, including water savings of more than 90 million litres a year. All the same, he was reluctant to pull out a working motor to run the trial of the ABB SynRM technology.

“Then a few months after A1 Electric Motors had been to see me, a motor failed on one of the refrigeration compressors, and that made it an easier decision to try the ABB SynRM technology,” says Hyland. “We were able to retrofit a SynRM motor and variable speed drive package to that compressor and we did indeed achieve the 14% energy reduction on that machine. It was good luck that the motor failed, because if it hadn’t we probably wouldn’t have four of them onsite now!”

The improvements in energy efficiency on that first retrofit of ABB SynRM technology was all the evidence Hyland needed to upgrade the remaining three refrigeration compressors. “All except one of them run 24/7 in our refrigeration plant, so because the runtime is continuous, it justifies the expense quite easily.”

The first SynRM motor saved Campbell’s Shepparton plant just shy of $15,000 on its electricity costs and an estimated 131 tonnes in CO₂ emissions in the first year, and delivered significant noise reduction, lower running temperature, smoother operation and reduced vibration. “That motor paid for itself well within the first 12 months, as did the others,” says Hyland, adding that the remaining three already had some efficiency upgrades, such as variable speed drives, but still delivered 6–7% energy savings.

Other motors in the plant don’t have the same runtime as the compressors, so at this point they won’t retrofit more operational machines. “But it’s not the end for us; when we have failures and install new technology, we’ll most likely replace it with SynRM,” he says.

“The timing of the arrival of the SynRM technology was perfect for us,” says Hyland. “We see all sorts of technologies coming up and it’s key to understand the fit for your business — because not everything will be right. These motors came as we saw soaring energy prices, and their efficiency also supports our big focus on global warming. It’s very important to us, and this kind of technology certainly makes my role easier and makes our environmental targets easier to achieve and easier to quantify.”

Hyland is doing proud by the Big Can. It began its life in the ‘60s as a water tank for the factory and the trade dress on the monster model is to scale with an actual soup can. Just as the can has stood the test of time, Hyland is sure the ABB SynRM motors will too. “Instead of reading the case study, we became the case study,” he says, “and I’m very glad we did.”

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**Industrial monitors**

The Advantech FPM-200 series industrial monitors are built with IP-66 rated front panels to provide protection from water and dust ingress. These monitors can withstand rigorous cleaning from high-pressure water jets, making them suitable for industrial environments. Designed with the same slim, compact form factor as TPC touch panel computers, this series is built with a die-cast aluminium enclosure to provide complete protection against shock, vibration and corrosive liquid/gas. The monitors can support various mount options, including panel, desktop and VESA mounting to ensure easy deployment in industrial environments.

The series is built to withstand 24/7 operation in industrial environments with harsh conditions, such as excessive vibration, temperature and power fluctuations. The monitors offer a backlight lifetime of 50,000 h, for an estimated service life of more than 5 years under constant load.

Five models of the Advantech FPM-200 series industrial monitors, FPM-212 (12″), FPM-215 (15″), FPM-217 (17″), FPM-215W (15.6″) and FPM-221W (21.5″) are available via Dove Electronics (NZ) and Pacific Automation (WA).

**Citrus extraction technology**

The use of citrus in the beverage sector has grown significantly in recent years; some 47% of flavoured waters and 38% of sports and energy drinks contained citrus profiles in 2019.

Kerry Taste & Nutrition has now released a citrus extract technology that is claimed to be more effective than traditional methods.

The non-thermal liquid/liquid extraction process — brand named New! Citrus Extract — has a wide variety of applications and can be applied to numerous types of citrus fruit.

The technology delivers highly concentrated extracts with a reduced level of terpenes and sesquiterpenes, which can result in richer flavours and a more full-bodied finish.

According to the company, the process enables the extract to meet all of the natural flavour criteria, allowing food and beverage developers to label it as a ‘natural extract’.

**Humane poultry euthanasia**

Gas separation specialist Oxair has developed a nitrogen-based system, which is designed to humanely euthanise egg-laying poultry at the end of life.

The new method gradually puts the birds to sleep within 2-3 min after injecting them with nitrogen. At no time do the birds regain consciousness or experience distress.

The equipment can be mounted on a portable system enabling ease of transport, and large and small models can be custom built as per customer requirements.

This removes the costs involved for farmers that ship the birds off to processing plants, which is often commercially unviable.

In addition, the application is not restricted to poultry and can be successfully used for other small animals such as commercially farmed rabbits.

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Compact flash pasteuriser

The Innopro BoxFlash compact flash pasteuriser was developed to meet the demands of small and medium-sized breweries.

Developed by German manufacturer KHS, the Innopro BoxFlash was initially only used in keg racking.

Now compatible with the glass, can and PET container segments, its compact design on a frame means that users benefit from lower logistics costs and faster installation.

Besides attaching the machine feet and mounting the overpressure valve to secure the buffer tank, all that remains to be done onsite is to connect up the relevant lines and the Innopro BoxFlash can go into action.

The pasteurisation temperature can lie between 60 and 75°C and the heat retention period is 30 s.

It also features an integrated IO-Link communication system that improves the monitoring of the extensive sensor set-up.

It permits constant communication between the sensors and the controller and a permanent feed of diagnostic information right down to sensor/actuator level.

This means that the Innopro BoxFlash is prepared for predictive maintenance and geared up for Industry 4.0 in the future.

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Food-processing

Electromagnetic
flowmeter

The MagneW Neo PLUS/Two-wire PLUS+ is the successor to the SMT3000 smart two-wire electromagnetic flowmeter.

With its patented method of direct current excitation and variable excitation current, power consumption is reduced without compromising the high level of performance. Available in integrated and remote types, the flowmeter can be used in a wide range of settings, including explosion-proof and outdoor environments.

The performance is greater than the previous two-wire electromagnetic flowmeter, with capabilities equivalent to a four-wire electromagnetic flowmeter (except for use with slurries).

Because it runs on two-wire 24 VDC, installation costs are lower as it can use the same wiring as instruments such as pressure and temperature gauges, and it can run off of a direct supply from a DCS as well.

The design helps to save energy; it uses less than 1/100 the power of a four-wire electromagnetic flowmeter.

The device is compatible with HART and CommPad communicators as a standard feature. Communication with CommPad is supported as in previous models.

Communication superimposed on an analog signal can be used by selecting the HART communicator function.

AMS Instrumentation & Calibration Pty Ltd
www.ams-ic.com.au

Antimicrobial bacteria prevention ingredient

Kemin Industries has launched the BactoCEASE NV antimicrobial solution for the food industry. It is designed to delay the growth of bacteria in meat, poultry and seafood products, and to keep the total viable count of microorganisms within the regulated standard. An antimicrobial shelf-life solution, the product is suitable for use in both ready-to-eat and cooked meat products, such as marinated meat, freshly cut meat and processed meat.

As a naturally-derived, acetic acid-based ingredient, it can delay the growth of foodborne microorganisms and meets microbiological food safety criteria of total aerobic microbial count and total coliform microbiological standards under food regulations.

The antimicrobial solution is a suitable alternative to synthetic solutions, meeting the consumer demand for clean-label ingredients. It can increase the shelf life of food products much like synthetic preservatives without negatively impacting the product’s texture or flavour. It is also a suitable alternative to sodium lactate, sodium diacetate and other artificial antimicrobials in food production.

Kemin Industries Inc
www.kemin.com

Food-grade touch screen display

Interworld Electronics FABS-119PH is a food-grade stainless steel projected capacitive touch screen suitable for operator panel and HMI control application.

The 19” 1180x1024 resolution LCD with a 7H anti-scratch screen is housed in a fanless aluminium enclosure with a 304 or optional 316 grade stainless steel bezel that provides IP-66/IP69K front panel protection. It has been optimised to meet the hygienic design requirements of DIN EN 1672-2 and DIN 42115, Part 2. These European standards establish high standards for food and beverage processing equipment.

It features a 900 cd/m² high brightness sunlight-readable LCD screen and is suitable for agricultural application where exposure to direct sunlight may occur. For indoor processing facilities, the display is available with a standard 250 cd/m² LCD panel. If a touch screen is not required, the FABS-119G is supplied with a plain glass anti-reflection protective screen.

The FABS-119 Series supports DC 9–36 V power input and an operating temperature range of 0–50°C. The displays are only 64 mm deep and can be panel or VESA mounted making the FABS Series convenient to install.

Interworld Electronics and Computer Industries
www.ieci.com.au

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Located in the north-east of Spain, Ramón Ventulà is a family business that produces a range of meat products, including traditional Catalonian and Spanish sausages, as well as bacon and serrano ham.

With four plants producing 5000 tons of food every year, the business makes 90 separate products in 750 packaging formats. To help process these products, the manufacturer has installed a slicing and packaging line from GEA which brings together scanning, slicing and thermoforming technology from a single source. The line is designed to achieve improved yields, greater efficiency, less downtime, reduced use of packing materials and greater product flexibility and consistency.

Pilar Ventulà, Managing Director at Ramón Ventulà, said that making the traditional Catalonian and Spanish sausages starts with selecting the best quality raw materials then putting them together in a meticulous process. “This requires us to employ precise and reliable process technology,” she said.

GEA has a long experience of designing automatic slicing, loading and packaging systems and can provide a modular approach to designing production lines specifically to meet individual customer needs.

According to Norbert Brunnquell, Senior Product Manager Slicing & Loading for GEA, it is this modularity and compatibility of all the GEA equipment that allows the company to create holistic production systems for a wide range of customers.

“Each part of the line is perfectly matched and synchronised with each other to create a seamless process that is efficient, safe and environmentally sustainable in today’s market,” Brunnquell said.

The process line
Ramón Ventulà required a process line that provided the finest quality slicing, easy handling, low give-away and high output.

To achieve this level of productivity and control, GEA advised the use of its GEA DualSlicer II 1200 slicer with its new GEA PowerPak PLUS thermoformer, which are designed to work together with supporting control equipment.

The complete line, the GEA OptiScan is used to scan two logs at a time for density and shape prior to slicing. This helps ensure accurate weight control of each package and provides high yield with the minimum give-away.

The DualSlicer with interleaver can slice two calibrated product logs such as a round sausage or an uncured ham at the same time. The system synchronises all components to produce perfect slices with the minimum give-away, maximum yield and a high percentage of on-weight packs.

The interleaver is designed for high-speed operation, operator safety and easy handling. With two separate film drives the slicer can process each log independently even if the products are different. The interleaver film is positioned in between every single slice in the slicing process of the product and makes it convenient to separate the portions. Operators can fix the overall paper length for each portion, which allows the tare weight to be set into the calibrated checkweigher GEA Check 4000. This prevents unnecessary rejected packs. Paper jams can be cleared without stopping the machine.

The GEA ShingleLoader 600 automatic loading system provides a continuous flow of product to the thermoformer. It also allows the products to be overlapped within the package to create a more attractive shelf appeal and to reduce the size of the overall packs to minimise the use of plastic materials and make the best use of available retail space.

Thermoforming is performed by GEA’s new PowerPak PLUS thermoformer. The new machine includes features that combine to improve packaging quality, reduce film consumption, make handling simpler for operators and improve overall reliability. These advancements have allowed GEA to reduce the forces on the top web by around 75% allowing the use of thinner films (and even mono films) without losing structural integrity or pulling the labels out of shape.

The line at Ramón Ventulà is completed with the GEA PowerGuide Speed that funnels multiple pack lanes into one for final packaging. The integration of the GEA equipment throughout the line enables it to produce slices of the highest quality, with consistent thickness and an output of 1600 kg/h.
**Flash pasteuriser for beer**

When producing beer and juices, thermal product treatment can extend the product’s shelf life. Krones’ VarioFlash B flash pasteuriser enables the microbiologically safe filling of beer, while meeting the requirements for product quality and microbiological safety. The flash pasteurisers are equipped with sliding PU control and an adapted hot-water circuit, to heat up the product gently and safely. This utilises the full buffering capacity, and monitors the heat-up temperature.

Express pasteurisation is also claimed to provide improved beer quality, with a shortened heat-holding time and increased heat-up temperature. If production stops, the ‘Eco Hygienic Sleep Mode’ reduces water and energy consumption by up to 90%, without compromising on microbiological safety.

With an output from 18 to 600 hectolitres/h, the pasteuriser is aimed at large breweries, craft brewers or breweries running small batches. The VarioFlash B can be combined with bottle or can fillers, but also with lines for filling kegs.

The small variant of the pasteuriser has been designed for small breweries, and is suitable for the output range from 19 to 45 hectolitres/h. Due to its compact size, the flash pasteuriser can fit inside one container, thus facilitating installation and commissioning. The horizontal buffer tank allows the output to be automatically adjusted in the event of production fluctuations, thus reducing product losses and media consumption. The reduced number of components, alongside the study engineering, are designed to reduce maintenance costs.

*Krones (Thailand) Co Ltd*

www.krones.co.th

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Pact Group and Fonterra unveil plant-based milk bottle

Pact Group has unveiled New Zealand’s first plant-based milk bottle in partnership with Fonterra, the company announced.

The milk bottle is composed of HDPE made from sustainably sourced sugarcane, a natural and renewable resource that captures carbon dioxide (CO₂) as it grows. The bottle is also 100% kerbside recyclable at the end of life.

The packaging is being released into the North Island as an additional product to the existing Anchor range, with the plant-based resin being used to produce the Anchor Blue 2 L milk bottle packaging.

It is the latest innovation to come as part of a longstanding partnership between Pact Group and Fonterra.

Eric Kjestrup, Pact Group Executive General Manager – Consumer and Industrial (New Zealand), welcomed the announcement, which serves as a step towards uncovering alternative and sustainable packaging solutions.

“This type of outlook, committing to exploring and defining new solutions, will be critical in helping lift the bar and raise the ambition around what can be achieved in sustainable packaging,” Kjestrup said.

Pact Group was the recipient of funding from the New Zealand Government as part of its Waste Minimisation Fund.

This has meant the manufacturer will have the capability to produce 100% rPET food packaging, including meat trays, bakery trays, and deli containers.

The news comes after Pact Group announced the company strives to eliminate all non-recyclable packaging and offer 30% recycled content across its packaging portfolio by 2025.

‘Big Olive’ food processing facility + super lots.

77 Big Olive, Tailem Bend SA.

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Paper bottles: the future of beverage packaging?

Diageo has created a 100% plastic-free paper-based spirits bottle, made entirely from sustainably sourced wood. The bottle will debut with Johnnie Walker scotch whisky in early 2021. This comes after Diageo’s partnership with Pilot Lite, a venture management company, to launch Pulpex Limited, a sustainable packaging technology company.

Pulpex Limited has established a partner consortium of leading FMCG companies in non-competing categories including Unilever, and PepsiCo, with further partners to be announced later in the year. The goal of the consortium is to ensure that the technology is developed so it can be used across industries. The consortium partners are expecting to launch their own branded paper bottles, based on Pulpex Limited’s design and technology, in 2021.

“We are constantly striving to push the boundaries within sustainable packaging and this bottle has the potential to be truly groundbreaking,” said Ewan Andrew, Chief Sustainability Officer, Diageo.

Pulpex Limited has developed a scalable paper-based bottle designed and developed to be 100% plastic-free. The bottle is made from sustainably sourced pulp to meet food-safe standards and will be fully recyclable in standard waste streams. The technology will allow brands to rethink their packaging designs, or move existing designs into paper, while not compromising on the quality of the product.

PepsiCo has also developed and scaled a recyclable paper bottle, initially developed by Diageo and Pilot Lite. PepsiCo is working on developing innovative solutions through partnerships with Pulpex Limited, Carbios Consortium on enzymatic recycling, NaturALL Bottle Alliance to develop a renewable bottle and Danimer Scientific to develop compostable and bio-based flex films.

PepsiCo expects to test its own branded paper bottles, based on Pulpex Limited’s design and technology, in 2021. Through this innovative effort, PepsiCo is closer to achieving its goal of reducing virgin plastic content across its beverage business by 35% by 2025. The company is also working to make 100% of its packaging recyclable, compostable or biodegradable by 2025.

“Innovative solutions and partnership are critical to driving meaningful progress toward a circular economy. The Pulpex consortium is well positioned to deliver sustainable packaging at scale and across industries, having impact beyond what any organisation could achieve alone. We’re proud to be a part of it,” said Simon Lowden, Chief Sustainability Officer, PepsiCo.

Pulpex Limited’s technology can produce a variety of plastic-free, single mould bottles that can be used across a range of consumer goods. The packaging is designed to contain a range of liquid bottles and will form part of Diageo’s commitment towards Goal 12 of the United Nations Sustainable Development Goals: ‘Responsible Consumption and Production’.

Richard Slater, Chief R&D Officer at Unilever, stated that the company plans to halve its use of virgin plastic and reduce its use of plastic packaging by more than 100,000 tonnes in the next five years.

“Joining forces to develop and test paper bottles is an incredibly exciting step forward, and we’re delighted to be working together to tackle one of the biggest environmental challenges of our time,” Slater said.
It’s time to be truthful about on-pack environmental claims

*Nerida Kelton MAIP, Executive Director for the Australian Institute of Packaging (AIP) and the ANZ Board Member for the World Packaging Organisation (WPO).

Gone are the days when brands could get away with simply writing ‘recyclable’, ‘biodegradable’ or ‘compostable’ on their packaging.

Now, more than ever, consumers are demanding brands to be honest about their sustainability journey including the choice of wording and logos on-pack.

With the 2025 National Packaging Targets significantly shifting the packaging design landscape in Australia, a critical element that is coming up short is truthful and accurate on-pack environmental claims. The use of statements like the ‘Do the right thing’ logo, the Recycle ‘Mobius loop’ logo or the Plastic Identification Codes (PIC 1 to 7) often confuse the consumer. The 2025 targets offer the perfect opportunity for businesses to review all environmental on-pack symbols and wording.

Codes and confusion

As many of you may be aware, the use of the Plastic Identification Code (PIC) — or the symbol of the chasing arrow with a number in the middle — identifies the type of plastic the packaging is made of. For example, PET is classified as 1, HDPE is 2, PVC is 3, LDPE is 4, Polypropylene is 5, Polystyrene is 6 and 7 is Other or mixed plastic types. This voluntary coding system adopted in 1990 assisted the collection, recovery and management of used plastics in Australia. However, to most consumers they think it means that the product is recyclable or simply that you should be responsible and make sure the product goes in a rubbish bin at the end-of-life!

The Do the Right Thing slogan and symbol was a part of a marketing campaign launched in the 70s that was intended as a Don’t Litter campaign. According to Keep Australia Beautiful, when the Do The Right Thing campaign was launched, 80% of people recognised the catch phrase, and in 2015, only 38% said they knew the phrase. What does the symbol mean in the world of sustainable packaging and to consumers today? Are there more important and less confusing symbols that should be on-pack to ensure that packaging is placed in the right bin at end-of-life?

Sustainable claims

Another challenge is when brands decide to use words like ‘biodegradable’ or ‘compostable’ on-pack. Having packaging that is biodegradable or compostable may seem to be a good environmental initiative but stating this on-pack is often confusing to consumers. If there are no available consumer collection or composting facilities that will accept this type of packaging in the country of sale, then this type of wording can be misleading. The AIP has spoken to many people over the last couple of years who assume that saying ‘compostable’ or ‘biodegradable’ on packaging is enough.

The use of the term ‘biodegradable’ also leads consumers to believe that, no matter where disposed, biodegradable packag-
ing will disappear to nothing within a short period. This can lead the consumer to erroneously believe it is acceptable to litter biodegradable packaging, or that it will solve the ocean plastics issues.

Similarly, the use of plastics that may ‘compost’ if placed in the right composting environment can be very misleading if consumers do not have access to facilities for the collection and composting of compostable packaging with organic waste. Incidentally, the packaging may compost, but they do not create compost (nutrient-rich soil).

Before selecting compostable packaging, a responsible brand should be identifying whether there are facilities available to their consumers to collect compostable packaging with their organic waste. If there are, then communicate this information on-pack so consumers understand the end-of-life process.

There are currently two other options available for the use of compostable packaging. The first being to establish ‘closed loop facilities’ for the collection of compostable materials and certified packaging. These closed loop systems are designed to facilitate the collection and recycling of nutrient-rich organic material, such as food scraps, along with the certified compostable packaging and return the nutrients into the soil rather than allowing them to rot away in landfill. The second option is to identify home-compostable certified packaging and encourage customers to dispose of packaging via their home composting. The concern with this, however, is that many customers will either contaminate the recycling system with this packaging or think they are doing the right thing and put it in the rubbish bin.

The Australian Bioplastics Association (ABA) provides a voluntary system to companies or individuals wishing to have their compostable and biodegradable plastics packaging certified. There are two certifications available: Australian Standard 4736-2006, compostable and biodegradable plastics — ‘Biodegradable plastics suitable for composting and other microbial treatment’ and Australian Standard AS 5810-2010 home composting — ‘Biodegradable plastics suitable for home composting’.

Symbols and logos
There are many variants of a recyclable logo or symbol and when consumers see these types of symbols on pack, they presume that the packaging is going to be recycled if placed in the correct bin. The question that needs to be asked is ‘can this packaging truly be recycled in the country we sell the product in?’ The answer needs to determine the logos you use on-pack moving forward. Brands need to be redesigning their on-pack communication with honesty and clarity.

So, where to from here?
In April 2018, the Australian Packaging Covenant Organisation (APCO) launched a nationwide labelling scheme to help consumers recycle products effectively and assist brand owners to design packaging that is recyclable at end-of-life. In conjunction with partners Planet Ark and PREP Design, this scheme aims to increase recycling and recovery rates and contribute to cleaner recycling streams.

The APCO Packaging Recycling Label Program is a nationwide labelling program that provides designers and brand owners with the tools to inform responsible packaging design and helps consumers to understand how to correctly dispose of packaging. The two elements of the program are the Packaging Recyclability Evaluation Portal (PREP) and the Australasian Recycling Label (ARL).

Packaging Recyclability Evaluation Portal (PREP)
PREP provides a way for brand owners, manufacturers and designers to assess whether an item of packaging could be classified as ‘recyclable’ through kerbside collection in Australian and New Zealand. PREP produces a report for each ‘project’ that is evaluated. A project will list the recyclability classification for each ‘separable component’ plus the user may nominate a scenario where the separable components are joined at the time of disposal (eg, bottle and cap). Combining technical recyclability and collection coverage, PREP provides the evidence base for applying the Australasian Recycling Label on-pack.

Standardised labelling
The Australasia Recycling Label (ARL) is an evidence-based, standardised labelling system that provides clear and consistent on-pack recycling information to inform consumers of the correct disposal method. The ARL is designed to be used in conjunction with PREP, which informs the user of the correct on-pack ARL artwork for each ‘separable component’ of packaging. It is a simple and effective method for improving consumer recycling behaviours.

Training
The Australian Institute of Packaging (AIP) has also developed a range of training courses to assist organisations with their sustainable packaging journey. The development of the 2025 National Packaging Targets provides businesses an opportunity to stop and review on-pack information to ensure they are communicating effectively and honestly to consumers about your sustainable packaging.
Using cartonboard during the packing process for fruit and vegetables has, until now, been quite inconvenient as it was far less automated than film, resulting in slower production and added labour costs. Ravenwood’s linerless technology was a key driver in developing a packaging solution that is a like-for-like alternative for flow wrap yet, unlike flow wrap, yields sustainable benefits.

Using linerless labelling technology, Iceland has achieved an innovative pack format that delivers a 100% reduction in plastic and is entirely recyclable. As a result, the retailer has estimated that it will save 15 tonnes of plastic per year.

The pack retains ample surface area for product information and branding whilst offering a die-cut solution to view fruit within the pack. Allowing product inspection at all times can ensure consumption within the use-by date and prevent food waste.

Fresh produce can be packed using an automated packaging process that can run at equivalent speeds to flow wrap. Linerless labelling can provide the benefits of reduced costs and greater productivity. With no liner, a roll has the ability to carry nearly double the number of labels, meaning roll changes are reduced and efficiency is boosted. Similarly, the freight costs can be reduced by up to 50% and waste disposal costs can be reduced.

The Nobac 5000 range of linerless applicators apply cardboard, film or paper labels in various formats including top labelling, die-cut and shaped to stretch wrap trays, top seal trays, and vacuum skin and thermoformed packs with various protrusion levels.

For its conference pears packaging, UK-based retailer Iceland has used Ravenwood’s linerless technology with a ‘Fruit Lid’ linerless label applied to a cardboard tray. Both the label and the tray are fully recyclable and the label application was deployed via the Ravenwood Nobac 5000L Linerless Applicator, fitted with an extended outfeed. A thermal printer was also integrated into the applicator to print date and traceability information.

**Landfill-biodegradable bubble wrap**

As plastic mounts up in landfills, BioGone has now introduced an environmentally friendly bubble wrap that will still offer the same level of protection and quality.

Through its propriety technology, BioGone’s landfill-biodegradable bubble wrap will biodegrade away when it’s disposed.

Unlike conventional bubble wrap that does not break down, this green alternative will be entirely digested by the natural microbes in a landfill.

This innovative process is thanks to the addition of an organic additive, which is mixed with conventional polyethylene at the time of manufacture.

Made with a green tint, to highlight its environmental benefit, the wrapping is suitable for safely shipping delicate products.

The product is designed to provide users with the peace of mind that they are using a product that won’t be left for future generations to deal with.

The 100 m long roles are available in two different widths, 375 and 500 mm.

**BioGone**

www.biogone.com.au
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Packaging & Labelling

Flow wrapper with robotic integration

Bosch Packaging Technology is introducing its entry-level Pack 102 horizontal flow wrapper light automation using a Fanuc Scara robot, which can be used in small to medium-sized bakeries and other companies.

The flow wrapper is able to wrap products of various sizes, such as cookies, crackers, croissants and other baked goods. It has an output of 150 packages/min, with a corrosion-resistant, stainless-steel design for easy cleaning.

The Fanuc robot is able to carry out 50 picks/min, with up to three robots included in the Pack 102 system. The robot picks individual cookies from two baking trays and places them into the infeed chain of the flow wrapper. When a product is broken, the robot is able to detect it using vision and will not pick it up.

As a result of the vacuum technology, products are handled gently as they are picked from the baking sheets.

The controls for both the flow wrapper and the robot are integrated into one human machine interface (HMI). This provides machine operators a central place to adjust speed, picking heights and other parameters.

Robert Bosch (Australia) Pty Ltd
www.bosch.com.au

Engineering thermoplastic

Cut to Size Plastics’ Wearace chemically resistant engineering thermoplastic is designed for machine building applications and production of machinery components.

Suitable for use in food, beverage and agricultural processing and production of precision medical, electrical and electronic components, the copolymeric acetal has good wear properties with a low coefficient of friction.

The latest product in the Wearace acetyl range is produced according to ASTM D 6100. It is porosity-free and most formulations are approved for contact with food (BfR, FDA and EU 10/2011 compliant).

Cut To Size Plastics Pty Ltd
www.cuttosize.com.au

Plastic-free packaging

Israeli start-up W-Cycle has developed a plastic-free packaging made of sugarcane waste.

Called SupraPulp, the packaging is claimed to be fully compostable and safe, yet durable enough to be used for greasy, wet or hot food.

Packaged food with SupraPulp can be frozen and heated with either an oven, convection oven, steam cooker or microwave.

The food-grade, compostable packaging is designed as a replacement for plastic, aluminium or foam containers.

The containers are made from 100% renewable sugarcane fibres, called bagasse — the dry, pulpy fibrous matter that remains after sugarcane or sorghum stalks are crushed to extract their juice.

They are compostable, non-coated and free of toxins and metals.

Suitable for a range of food applications such as prepared food, fresh meat, poultry and seafood, the packaging can be frozen to -40°C and reheated to 270°C.

W-Cycle
https://w-cycle.com

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Coca-Cola to make bottle from 100% recycled paper

Coca-Cola in Europe has unveiled its plan to create a bottle made from 100% paper.

The concept, made in collaboration with the company’s partner Paboco and the three other companies in the Paboco Pioneer Community, is at the stage of a first-generation prototype.

Stijn Franssen, EMEA R&D Packaging Innovation Manager at Coca-Cola, said the company’s vision is to create a paper bottle that can be recycled like any other type of paper, and the prototype is the first step on the way to achieving this.

“A paper bottle opens up a whole new world of packaging possibilities, and we are convinced that paper packaging has a role to play in the future,” Franssen said.

The company said the first-generation paper bottle will contain some plastic as it’s still a fair way away from achieving a plastic-free bottle.

“This prototype still consists of a paper shell with a plastic closure and a plastic liner inside. The plastic we use is made from 100% recycled plastic that can be recycled again after use,” Franssen said.

“The next step is to find a solution to create a bottle without the plastic liner.”

Just like other types of packaging, a paper bottle of the future must adhere to the same high safety and quality standards for food packaging that currently apply.

Franssen said the company is putting the bottle through comprehensive testing in the lab to see how it performs in the refrigerator, how strong it is and how well it protects the drinks inside.

“We also reflect on how our consumers will react to this paper bottle. Topics like when and where it could be sold and how it can be recycled are all considered. The bottle must be explored from every perspective to ensure that we make the bottle the best it can be,” Franssen said.

The concept is part of Coca-Cola’s sustainability initiative, a World Without Waste, which aims to collect and recycle a bottle or can for every one the company sells by 2030.

The initiative will also see the iconic bottler substantially reduce its use of virgin packaging materials and only use packaging materials that are 100% recyclable.

Flow wrapper

The Syntegon Pack 202 flow wrapper is a fully automated horizontal flow wrapping machine for low to medium speeds. Suitable for bars, bakery products, cookies and crackers, as well as non-food applications, the machine is designed to produce up to 300 packs/min at a film speed of 50 m.

Supported pack styles include pillow, gusseted and easy-to-open packs. It also features several cross- and fin-seal improvements that were first introduced on the Pack 403 flow wrapping machine last year. The machine is easy to operate, clean and maintain, which reduces downtime and maximises overall equipment effectiveness.

The finwheel modules have been synchronised and the new machine features an improved canting mechanism — at the turn of a knob, operators can tilt the fin modules and adjust them easily for tighter or looser packs. The cross-seal unit has also been improved — the standard double-spring kit offers consistent and stable seals, while the adjustment resolution has been doubled, thus enabling more precise and repeatable crimper adjustments.

Syntegon Technology Singapore Pte. Ltd

www.syntegon.com
**Shaped paper pods**

Syntegon Technology and BillerudKorsnäs have developed Shaped Paper Pods, using Syntegon’s TPU paper form, fill and seal machine and 3D formable FibreForm paper from BillerudKorsnäs. Shaped Paper Pods is a packaging system for uniquely shaped and right-sized packaging, with a tactile feeling that reflects the brand and product content. The sustainable solution is suitable for product samples, inserts, refills, portion packs and disposable packaging.

The TPU paper form, fill and seal machine forms the Shaped Paper Pods with a filling volume of just a few and up to 100 millilitres. The FibreForm paper is shaped by air pressure and embossed by press force. Using heat-sealing technology, the Shaped Paper Pod can be sealed with a range of heat-sealable lidding materials, with barriers customised to customer needs.

Syntegon Technology and BillerudKorsnäs have previously showcased the ‘Pearl’ packaging concept. A variety of shapes can be formed from the FibreForm paper, for a range of applications. FibreForm is designed to be a natural alternative to plastic, allowing for up to 10 times deeper embossing than regular paper, resulting in 3D effects. The packaging system is suitable for individual portion packs and products that would usually be packed in blisters. In addition to cosmetics or samples, Shaped Paper Pods can be used to package dry, chunky or viscous food due to a thin barrier layer. Be it spreads, margarine, biscuits or Advent calendars in paper trays — the TPU paper forming machine offers manufacturers a range of filling and sealing systems for sustainable packaging at an output of up to 15,000 Shaped Paper Pods per hour.

**Syntegon Technology Singapore Pte. Ltd**
www.syntegon.com

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**Plant-based food-grade antifog coating**

Palsgaard’s Einar 1122 is an antifog coating for industrial packaging that is designed to keep food looking fresh at low temperatures. The product is the result of the company’s participation in the United Nation’s Sustainable Development Goals (SDG) Accelerator Programme. As consumers have shown an inclination to purchase visually appealing products over those with foggy packaging, the product is designed to help reduce food waste.

The product also performs well in applications such as stretched polyolefin and polyester films, where it is claimed to compare well with fossil-fuel-based products.

The antifog coating is plant-based and food grade, sourced from sustainably produced vegetable oils.

**Savannah BioSystems Pty Ltd**
www.savannah.com.au
The Roll ‘n’ Recycle program, initially created by PREP Design, is based on the idea that consumers could be part of the packaging recycling solution by rolling ‘semi-rigid’ plastic pouches into a 3D shape so they could be suitable for Australia’s kerbside recycling systems.

O F Packaging has been working in conjunction with PREP Design to create a single-polymer 100% recyclable pouch packaging with a pre-attached label that is suitable for the program.

Basically, how it works is the flexible packaging is turned from soft plastic into a 3D semi-rigid plastic ready for kerbside recycling when the user rolls up the pouch and sticks it together with the label. A ‘semi-rigid’ plastic monomer film is one that is at least 80 micron thick, keeps its shape and is self-supporting once it has been rolled up in a cylinder.

PREP Design founder and CEO Anthony Peyton said: “Whilst various programs are already minimising landfill, semi-rigid plastics continue to be a problem and the introduction of Roll ‘n’ Recycle enables households and businesses to effectively dispose of these plastics with the convenience of the kerbside recycling bins without changing the resource recovery process.

“We are proud to bring such an exciting and innovative program to the recycling landscape,” Peyton said.

A founding partner of the Roll ‘n’ Recycle program, O F Packaging has been involved in the program’s trials in 2019 at Recycled Plastics Australia (RPA) in Adelaide, which confirmed that the pouches could be successfully captured as part of the ‘lightweights’ stream. The team also confirmed this view with Visy rPlastics in Smithfield, NSW, and confirmed the demand from Plastic Forests for the recovered lightweights.

With that knowledge, another trial was conducted at the Suez Spring Farm Materials Recovery Facility (MRF) in June 2020 to assist in validating the claim that monomer pouches and other semi-rigid films can be recycled via kerbside when the consumer rolls up the pouch/film as directed.

To ensure clear communication to consumers, relevant information is on the pack, in addition to the label to ensure the process is followed correctly. For the Roll ‘n’ Recycle certification to be used on packaging, the following requirements must be met:

- Brand owners need to ensure they partner with a manufacturer who supplies packaging that is monomer “recycle ready” and satisfies Roll ‘n’ Recycle’s technical and style guidelines;
- Manufacturers must include the Roll ‘n’ Recycle sticker and logo on approved packaging; and
- Consumers must follow the directions outlined on packaging by rolling and applying the supplied sticker where indicated.

O F Packaging Managing Director Joe Foster said: “The Roll ‘n’ Recycle program is something both ourselves and our customers are very interested in, because we’re all looking for more sustainable packaging solutions and innovations that can be utilised across the market.

“Every brand owner wants the highest quality of packaging protection for their product, but that packaging also needs to be recyclable. We are passionate about the program and have been involved from the early days because we genuinely think it’s a big step forward in diverting semi-rigid plastics from landfill.”

The Roll ‘n’ Recycle program has been under development by Anthony Peyton, Director of PREP Design since registering the trademark in Australia in 2016. He has subsequently registered the mark in the European Union, USA, New Zealand, South Korea and China.

o.f pack
www.ofpack.com.au
A study has shown the white, fluffy layer covering camembert cheese resulted from human selection.

The French National Centre for Scientific Research found the mould *Penicillium camemberti* is the result of a domestication process that occurred in several stages, similar to the way humans domesticated dogs from wolves.

According to their work, a first domestication event resulted in the blue-green mould *P. biforme*, often used to make fresh goat’s cheese. A second, more recent domestication event resulted in *P. camemberti* — the mould we know and love today.

Both domesticated species mature faster and whiter compared to similar species that occur naturally. The cultivated cheeses also prevent undesirable moulds, and do not produce — or do so only in minimal quantities — a toxin that is potentially dangerous to human.

These positive findings may have an impact on cheese production as cheesemakers start to steer the selection of moulds according to the desired characteristics.

However, while the results seem to indicate cheese production heading towards better quality and safer products, it can just as easily have the opposite effect.

The domestication of species can lead to a lack of genetic diversity, causing severe disadvantages that were previously unknown.

This has been observed in a range of new diseases and mutations in more modern dog species as the genetic pool becomes smaller and further distanced from its wild wolf ancestors.

The findings from the study raise similar questions about the use of a limited number of clonal strains for cheesemaking.
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Value through expertise
Antioxidant powders from blueberry waste

Scientists are exploring options for transforming fruit and vegetable by-products — such as peels or pulp discarded during processing — into nutritious food ingredients and supplements. Now, researchers reporting in ACS’ Journal of Agricultural and Food Chemistry have shown that blueberry and persimmon waste can be made into antioxidant-rich powders that might have beneficial effects on gut microbiota.

In recent years, fruit and vegetable powders have become popular as a way to add beneficial compounds, such as polyphenols and carotenoids (two types of antioxidants), to the diet, either by consuming the powders directly or as an ingredient in food products. However, in many cases these healthful compounds are present at similar or even higher levels in by-products compared to those in other parts of the fruit or vegetable.

Noelia Betoret, María José Gosalbes and colleagues wanted to obtain powders from persimmon and blueberry wastes, and then study how digestion could affect the release of antioxidants and other bioactive compounds. They also wanted to determine the effects of the digested powders on gut bacterial growth.

The researchers obtained powders from persimmon peels and flower parts, and from the solids left behind after making blueberry juice.

The type of powder, drying method, fibre content and type of fibre determined the release of antioxidants during a simulated digestion. For example, freeze-drying preserved more anthocyanins, but these were more easily degraded during digestion than those in air-dried samples.

Then, the team added the powders to a faecal slurry and conducted a mock colonic fermentation, sequencing the bacteria present before and after fermentation. Incubation with the fruit powders resulted in an increase in several types of beneficial bacteria, and some bacteria grew better with one powder compared to the other. These findings indicate that persimmon and blueberry waste powders could be included in food formulations to boost the content of carotenoids and anthocyanins, which could have a positive impact on human health, the researchers said.

Beetroot-based pink food colouring

GNT Group has introduced the EXBERRY Micronized Powders Shade Fiesta Pink, which is made from beetroot and carrots.

Alongside its liquid, powder and oil-dispersible colouring foods, GNT has a variety of micronised powders that maximise the visual intensity of colour shades in certain applications.

Due to their reduced particle size, these specialised colouring foods can create a homogeneous colour effect in solid mixes such as instant beverages and desserts, pressed tablets and seasonings for chips and snacks, as well as chocolate for decoration and compound coatings.

The range already includes yellow, red, purple, blue, green and pink shades. GNT has now added a further option with the Shade Fiesta Pink — a new pink shade with a hint of blue.

Made from beetroot and carrots grown by GNT’s own farmers, the product is pH independent, offers good light stability and has a 24-month shelf life below 25°C.

EXBERRY Coloring Foods are made from fruit, vegetables and edible plants using gentle, physical processing methods and no chemical solvents.

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www.exberry.com
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Our compliment of regional flavours such as Canadian cranberry, Amalfi coast orange, Sri Lankan cinnamon, Madagascan Vanilla, Tahitian lime and hand picked northern European raspberry to name a few.

Our relationship with many leading co-packers we will also be able to recommend a partner dependent on your marketing, branding and packaging requirements.

Get in touch with our food & beverage technologist Helena to find how we can help unpack your next flavour.
High number of breaches on alcohol packaging standards

The Alcohol Beverages Advertising Code (ABAC) in Australia has continued to see high levels of activity this quarter, with 53 new complaints and 23 determinations.

ABAC spokesperson Harry Jenkins said the organisation had seen a higher number of breaches over the past year, with the most notable increases relating to packaging and social marketing.

“The past 12 months the panel found 15 alcohol labels in breach of ABAC standards, up from four in the previous 12 months, with most of the breaches relating to the prohibition on alcohol packaging having strong or evident appeal to under 18s,” Jenkins said.

“The past quarter has seen this to be the most common standard breached across marketing types, attributable to five breaches of product packaging.”

ABAC engaged Youth Insight to provide observations on the themes, designs and imagery that 14- to 17-year-olds find strongly appealing and unappealing in product marketing in light of the trend.

Jenkins said the work will assist ABAC panelists and pre-vetters in assessing alcohol marketing communications against the relevant ABAC standard.

It has also been used to update the ABAC Guidance Notes and Alcohol Packaging Compliance Guide to assist alcohol marketers to meet this standard.

“ABAC strongly encourages all alcohol companies, their marketing staff, agencies and designers to proactively take measures to achieve compliance with responsible alcohol marketing standards, with particular attention to packaging and social marketing,” Jenkins said.

ABAC urged alcohol marketers to visit its website, which includes various resources to show what is and isn’t acceptable when marketing alcohol. The organisation is also hosting its annual industry webinar in November, which is suitable for those involved in alcohol marketing in Australia.

For more information, visit www.abac.org.au.

‘Concept to consumer’ new product development

Victus International provides a service to help with approvals for new drink product developments that meet the specifications of the larger retail ranges, ready for summer and the fast moving market.

During these unprecedented times, the company acts as a strategic partner to help formulate and bring innovative ideas to market so that Australia and New Zealand remain ahead and lead global trends.

In keeping up or leading these trends we can look at Seltzers as an example. Seltzers continues to have great success in the US and this trend is growing here. The appeal to a new health-conscience consumer on claims such as gluten-free, fat-free, low carbohydrate and low sugar is appealing to an ever changing demographic.

Education, including fermentation, using alcohol sources other than standard vodka bases, along with flavour development with identified source is a niche that is worth considering and developing in our current markets.

Partnering with a developer who understands ‘concept to consumer’ is paramount. Victus prides itself on this service and its current offerings are said to be well received in the industry. Having access to technical knowledge and complete product development, with all organoleptic properties along the way, may be difficult to achieve for common trading companies, which can lead to a slower product to market.

Victus International’s aim is to support new product developers to ensure their innovations lead the way and get to market.

Victus International
www.victus.com.au
**Functional ingredients for iced tea**

Iced tea has long been popular as a healthy beverage due to its antioxidant properties, and many products now carry superfood claims. One way to further boost its nutritional value is to add whey protein isolate (WPI), which is claimed to be good for building and maintaining muscle mass.

However, delivering on the promise of a protein-rich beverage while maintaining tea’s clean, refreshing taste can be difficult. Arla Foods Ingredients has three different processing-stable WPI solutions that are designed to overcome this challenge, allowing the creation of high-protein iced tea beverages.

**Lacprodan ISO.Water** can be used to make UHT-stable beverages with a clean and water-like taste.

**Lacprodan ISO.Clear** can be used to make clear beverages with a natural and refreshing taste profile.

**Lacprodan ISO.WaterShake** can be used in a clear and water-like ready-to-shake iced tea that delivers 20 g of protein and no sugar or fat.

Arla Foods Ingredients is a 100% owned subsidiary of Arla Foods in Denmark.

*Arla Foods Ingredients*  
www.arlafoodsingredients.com

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**Dairy cultures**

DuPont Nutrition & Biosciences has launched a range of dairy cultures that are designed to enable faster fermentation and higher probiotic counts.

The YO-MIX PRIME cultures are designed to help food manufacturers create mildness and creamy texture for consumers. They enable the reduction of added sugars and a high probiotic count, while helping to maintain quality throughout distribution channels. They can also help to save on formulation costs by reducing protein addition in recipes and provide greater process flexibility due to fast fermentation and full control of acidity before cooling and packaging.

DuPont’s YO-MIX FAST 1.0 cultures can deliver thick and smooth texture, and are adapted to different yoghurt recipes and processes.

The DuPont Danisco LPC 80 cultures are said to allow for refreshing beverages without too much acidity, while maintaining high *Lactobacillus* bacteria count until the end of product shelf life. They are a suitable choice in low-sugar recipes.

DuPont’s HOWARU Bifido combined with YO-MIX cultures is said to create opportunities for a higher dose of documented probiotics in probiotic yoghurt.

*DuPont (Aust) Limited*  
www.dupont.com.au
Australian brand Nexba has launched a range of probiotic sodas. The Australian brother-in-law founders, Troy and Drew, spent years working on the formula development that led them to the Bacillus coagulans probiotic strain. The strain is claimed to survive the harsh journey to the stomach and also remain effective in non-refrigerated environments.

Here we ask Drew Bilbe (DB) Co-CEO and Co-Founder to explain some further details about this new product development:

What inspired you develop this soda product?

DB: Consumer demand for probiotics has skyrocketed in recent years as people are increasingly aware of the role of gut health for general wellbeing. It’s estimated that roughly 50% of Australians have some form of gut health concern (CSIRO, 2019), so this really is an area that consumers are demanding innovative and natural solutions for. We also know that consumers are constantly seeking products that deliver in both the health and taste department, which is why we landed on Probiotic Soda as the perfect combination of these three major trends in the beverage space. Functional gut health benefits, combined with naturally sugar-free product formulation and most importantly, an epic full-flavour taste. One thing we’re so passionate about at Nexba is ensuring that every product we make always blows the consumer’s mind when it comes to flavour. People expect ‘healthier’ drinks to taste bad and we prove just the opposite!

What were the main challenges you faced when manufacturing this product, particularly when it came to processing probiotics?

DB: Each can of our Probiotic Soda contains a billion live probiotics. We spent years researching the best probiotics available and understanding the nuances between the different strains. All of our functional products, including our new Probiotic Soda, contain the Bacillus coagulans probiotic strain, which is proven to be one of the most efficacious when it comes to surviving the journey to the gut, and also in non-refrigerated environments. Unfortunately there’s lots of probiotic products out there that simply aren’t effective due to the probiotic strain they use not being able to reach the gut alive or survive at room temperature. All of the Nexba products that use probiotics, including our new Probiotic Soda range, guarantee that at least 85% of the probiotics will make it to your gut alive.

In terms of processing probiotics, the biggest challenge is maintaining the efficacy of the probiotics whilst also protecting the liquid from any unwanted bacteria. It’s a fine balancing act and requires a great partnership between the producer and manufacturer, which thankfully we’ve developed by working really closely with our whole supply chain over the years.

How was the ‘Boosts immunity’ proven claim achieved for the packaging?

DB: All of our claims are submitted to and approved by FSANZ. We know that immunity is something consumers are increasingly looking to product innovations to assist with and help develop naturally. Given the efficacy of our probiotics we were confident in achieving this.

Made using the company’s patented Naturally Sugar-Free formulation, each 375 mL can in the new range is claimed to contain a billion live probiotics. Flavours include cherry cola and pineapple, and the four-pack packaging includes the ‘Boosts immunity’ proven claim.
250% Productivity Boost

Automation at Asahi’s DC achieves results worth raising a beer to.

When consolidating its multiple Brisbane sites into the new Heathwood DC, Asahi made the decision to upgrade from previously very labour-intensive operations to a fully automated warehouse solution, eliminating manual handling of pallets.

With the introduction of a satellite ASRS solution, Dematic helped Asahi maximise storage capacity, reduce operating costs, and improve efficiency and productivity to better meet the needs of its customers.

Read more and watch the video at Dematic.com/asahi
Flow meters and controllers for low flow rates of gases and liquids

Bronkhorst offers the widest range of low-flow (mass) flow meters and controllers on the market. Numerous styles of both standard and bespoke instruments are offered for applications in laboratory, machinery, industry and hazardous areas.

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