



YOU DON'T NEED MUCH. JUST THE RIGHT THING.

Do you know your savings potential in adhesive application? Our 8-point inspection report provides valuable data for informed decisions.



Make an appointment now: savings.robatech.com

contents





4 The rise of sourdough



bakery, cereals & grains

12 Cracker company selected for Siemens' emissions trial



processing

- 16 Speeding up pathogenic bacteria testing for lettuce and spinach leaves
- 20 Plant scaffolds developed for cultured meat
- 24 A cleaner future amid rising landfill costs and dangers



- 26 Plant-based yoghurt vs dairy yoghurt nutrional study
- 37 Maximising the benefits of magnetic separators and metal detectors
- 44 Largest trade show in decades to welcome back international exhibitors



46
bulk handling,
storage & logistics

- 46 Keeping seasoning spicy
- 50 Meat processing plants: what factors are critical for survival?



packaging & labelling

- 52 Government rules for packaging in Australia
- 54 Coca-Cola transitions to tethered caps and lighter bottles



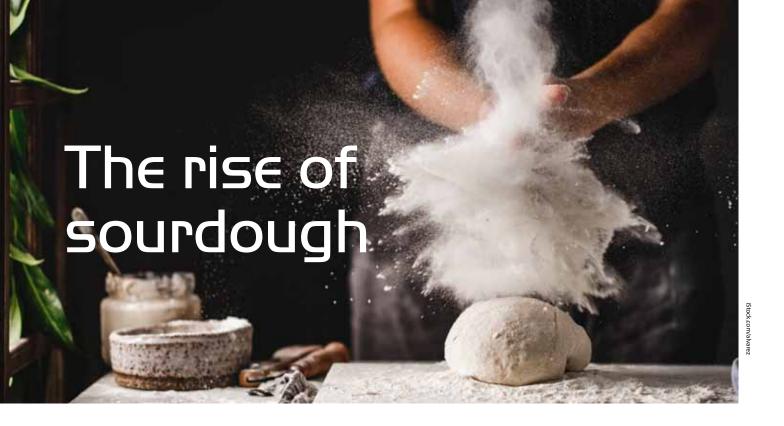
product development & testing

- 55 The conundrum of plant-based alternatives
- 57 The physics of creating shelf-stable gummies
- 58 What's new on-shelf?



READ ONLINE!

This issue is available to read and download at www.foodprocessing. com.au/magazine



n recent years, a sourdough renaissance has occurred in Australia, partly driven by the pandemic and lockdown baking, with Google searches for sourdough increasing by 400% from March to April 2020.

Due to a long fermentation process and a small number of additive ingredients, sourdough is perceived to be healthier, which is a driving factor in its popularity.

Researchers Jaimee Hughes and Associate Professor Sara Grafenauer from UNSW Medicine & Health investigated the health of sourdough when compared with hundreds of Australian bread products, looking into the ingredients and nutritional profile of each bread type.

They found that many sourdough products contained non-traditional added ingredients and that sourdough products were not necessarily more nutritious than others, with the healthiest choices being wholegrain breads.

What is sourdough?

Sourdough is the oldest way of leavening bread, using sourdough starter — a live fermented culture of flour and water — rather than baker's yeast. Typically, the fermentation period for the dough is longer, ranging from four hours up to 72 hours. The resulting bread has a characteristically sour taste.

Sourdough bread should only contain flour, water and salt, something which is reflected in the bread requirements of certain countries such as France. Other jurisdictions, such as the United Kingdom and Australia, do not have any guidance on the definition of sourdough, allowing supermarket chains and industrial bakeries to create bread with non-traditional ingredients and sell it as sourdough.

Supermarket research

The researchers visited four supermarket chains (Coles, Woolworths, Aldi and IGA) and the Baker's Delight franchise in Sydney in October 2019 and October 2021 and surveyed all available bread products across the stores, which grew from 669 in 2019 to 800 in 2021. They collected information such as ingredient lists, nutritional information and claims on the product packaging.

From October 2019 to 2021, the number of products labelled as sourdough grew from 72 to 108, a 50% increase.

This outstripped the growth of the bread category overall, which was 20%.

The researchers found that 83% of sourdough products contained non-traditional ingredients such as yeast, emulsifiers, preservatives and stabilisers.

"You may think that you've got a beautiful sourdough bread, but it's actually got a whole range of other ingredients added to it," Grafenauer said.

In 2021, 26% of the sourdough products had claims on the packaging about the fermentation process. This was an 86% increase from 2019. The researchers did not test the validity of these claims, but Grafenauer said the length of the fermentation period for sourdough products is not the most important nutritional quality.

"A big number of claims were related to fermentation, particularly fermentation time ranging from eight hours to 72 hours. Other research has found that you can actually see changes in the bread with as little as four or five hours of fermentation," Grafenauer said.

Sourdough fermentation has previously been shown to reduce the levels of fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAPs) in the bread, which may assist people with irritable bowel syndrome (IBS). However, these changes were shown to be relatively small and don't require long periods of fermentation.

"People might be taken in by claims about long fermentation time thinking: this is real sourdough," Grafenauer said. "But what they actually need to do is look at the list of ingredients."

The researchers also assessed the nutritional profiles of the different bread products and found the most nutritional were the ones that contained higher levels of protein and dietary fibre, as well as lower levels of sodium.

Whether or not a product was sourdough did not significantly influence its nutritional profile. The more important factor was the type of flour used, with wholegrain breads being more nutritious than white breads. This is consistent with recent research showing that there isn't a particular health advantage to sourdough unless it is wholegrain sourdough.

"If someone is confused about what bread to choose, wholegrain is the best choice," Grafenauer said



Meet your net zero emissions with on-site nitrogen generation

Gain full control over your nitrogen supply with Atlas Copco's on-site nitrogen generation and make bottled nitrogen a history. Generating your nitrogen on-site has a much smaller impact on the environment than traditional bottled/liquid nitrogen. On-site nitrogen is the future!

It's time to leave the bottles behind

If your business regularly consume nitrogen, you're likely aware of what a hassle nitrogen tank rental and delivery can be. These include:

- Safety: Heavy vessels with gas under high pressure represent health and safety risk for its handling
- Environmental impact: The increased carbon emissions transporting bottles to and from site
- Costs: On-going monthly charges which can increase
- Downtime: Replacing tanks regularly causes unnecessary loss of production and added labour costs
- **Example 2** Footprint: Bulky nitrogen cylinders take up a lot of floor space

...and the list goes on.

Make the switch

Here is the overview of benefits you gain with on-site nitrogen generation:

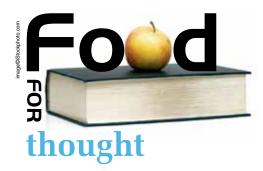
- Carbon reduction: use what you produce. With bottled nitrogen there is always leftover N2
- Freedom: Your own independent continuous supply of industrial gas available 24/7
- Cost savings: Reduce the cost of your nitrogen by 70-80% compared to current bottled/liquid supplies
- Purity control: Set the N2 purity level to meet the requirements of your food or beverage application
- Increased safety: no more safety hazards when handling high pressure cylinders, no more chill burns when handling the liquid nitrogen deliveries, including trucks movement on site

Call our team of experts today and partner with a manufacturer who understands and supports your business. For the past 150 years we are the home of industrial ideas and will continue to innovate into the future.

Scan to learn more!









Kerry opens manufacturing facility in Indonesia

Kerry has opened a &30 million (AU\$47.5m) taste manufacturing facility in Karawang, West Java, Indonesia. The 50,000 m² facility is designed to expand Kerry's taste offering in South-East Asia (SEA), delivering products with Asian flavours to growing markets.

The facility is the company's largest greenfield investment in SEA and its largest capital investment in the region. It will encompass a flavour manufacturing site, research and development pilot plant and a sampling hub, enabling local culinary-driven taste inspired by popular local and traditional cuisines. It will support Kerry's food and beverage systems across all food categories, including beverage, snacks and bakery, the company's fastest growing end-use markets.

Prioritising sustainability initiatives, the facility includes an onsite wastewater treatment plant, with low CO_2 emissions, no waste to landfill, computerised climate control to allow data collection for improved efficiency and local sourcing where possible. All utility equipment has been designed to the latest efficiency standards.



Arnott's making bickies in NZ

The Arnott's Group (TAG) manufacturing facility in Avondale, Auckland, was officially opened on 9 June by the company's NZ Country Director Mike Cullerne, TAG CEO; George Zoghbi; and New Zealand's Deputy Prime Minister, Carmel Sepuloni.

According to the company it's been 25 years since it has manufactured Arnott's products in New Zealand and the first biscuits to run off the line will be its shortbread range in local flavours — Feijoa, Mixed Berry and Doris Plum.

The $4000~{\rm m}^2$ bakery has been designed as an innovation hub for Arnott's sweet and savoury biscuits across the ANZ region and to accommodate further growth of the 180 degrees cracker brand. Having a local manufacturing site will also help it improve supply chain logistics for the region.

New Zealand Food and Grocery Council Chief Executive Raewyn Bleakley said that typically, large food manufacturers prioritised economies of scale, which favoured taking manufacturing offshore, so it was encouraging to see a large food producer like Arnott's bring back local manufacturing.

American tortilla snack expands to Aussie market

Rolled tortilla chip maker Chipoys has expanded into the retail market in Australia and New Zealand. La Fiesta Confectionary will serve as the master distributor, with Aztec Mexican Products distributing the product. The snack brand launched in 2021 in the United States and has since expanded into Europe.

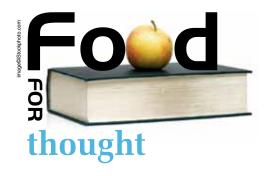
In the standard 56.7 g and 113.4 g bags, the snack has 140–160 calories and 2 g protein, with no trans-fat or cholesterol. It is free from artificial flavours, colours and preservatives, meeting dye and colour regulations in Australia and New Zealand.

Erick Kozin, Co-Founder of Chipoys, said the company hopes to establish the brand as a worldwide household name.



Benefits of new LW radar level sensor The latest sensor solution technology from ifm offers precise monitoring of liquid media in tanks of a height of up to 10 metres, without any blind areas. Ease of use starts at the beginning with IO-Link enabling installation and parameter set up in just minutes. The powerful LW2720 package will quickly translate to benefits in terms of cost savings and efficiencies. **KEY FEATURES:** Simple installation and maintenance-free operation Reliable monitoring of tanks with agitators Splash water or condensate from CIP cleaning is no problem Can be used in large tanks with viscous media Suitable for rapid emptying and filling Remote sensor parameter setting and level monitoring Mixing tanks **CIP Process Storage Tanks Process Tanks**

with agitators





Ernest Hillier Chocolates goes into voluntary administration

Alan Walker and Glenn Livingstone have been appointed as Voluntary Administrators to Chocolate & Confectionery Company and its related entity that owns and manufactures Ernest Hillier Chocolates, one of Australia's oldest chocolate brands.

Following rising raw materials and shipping costs which significantly impacted the companies' margins, voluntary administrators were appointed. The business's distribution network spans Australia and New Zealand, with existing arrangements with supermarket chains Woolworths, Coles and Aldi. It also produced white-label chocolates for some of the world's largest confectionery providers from its facility in Coburg, Melbourne.

The administrators are seeking expressions of interest from parties that could recapitalise or acquire the business and its assets. Alan Walker, WLP Restructuring Partner, said the administrators are working with all stakeholders to save the brand and moving with urgency to understand the business affairs and find a suitable buyer or investor.

In undertaking this process, the administrators made the decision to cease manufacturing activity and stand down employees.

"The company operates a significant manufacturing facility in Coburg, and the Ernest Hillier and Newman's brands have featured on the shelves of Australia's supermarkets for many years. We expect these supply agreements, alongside its relationships with large multinational food and beverage providers, may appeal to potential suitors," Walker said.

Iconic Aussie chocolate to cease production

Nestlé has announced that production of the iconic Australian chocolate-covered caramels, Fantales, is set to cease due to declining sales and the need for significant



upgrades required to continue to produce the confectionery its Melbourne factory.

Andrew Lawrey, Nestlé Oceania Confectionery General Manager, said this is sad news but the decline in sales has been significant and it is not viable for Nestlé to invest and maintain production.

"While investment in the future of Fantales is not sustainable, we're continuing to invest in our other Allen's lollies, including fan favourites such as Snakes Alive, Party Mix and Minties," Lawrey said.

Fantales were first created in 1930 — and for generations the brand has been synonymous with the movies, with its famous 'fan tales' of actors and musicians on its wrappers.

The last production of the lollies will be in mid-July and they will remain available for purchase while stocks last.

As the factory continues to grow, all staff from the Fantales production line will move to other roles within the factory.



Chobani expands in New Zealand

Since launching in New Zealand last August, Chobani Australia has made an impact on the yoghurt category. Products are now being stocked in 180 Countdown stores and the products on offer have doubled in less than a year, with two additional ranges recently launched.

Alongside Chobani 160 g Greek Yogurt Pots, 907g Greek Yogurt Tubs and Chobani Flip, Chobani No Sugar Added and Chobani FiT are now available in New Zealand.

Julia Clark, Chobani General Manager of Demand, said the growth occurring in NZ resembles that which was experienced when it first launched in Australia.

Pieter De Wet, Countdown Commercial Director of Fresh & Food Co, said Chobani has changed the demographics of the yoghurt category, with young people and smaller households choosing to purchase the products.



Across industries and applications, we design specialised solutions.

Bringing together leading brands in processing and packaging equipment for the Value-added industry. Our fryers, ovens, branders, searers and breading/batter applications can prepare and cook the highest quality meat, poultry and seafood products. Whatever your product needs, we can meet it with precision and passion.















Cultivated chicken approved for US plates

Two companies, Upside Foods and Good Meat, have received approval by US regulators to sell cultivated meat, which is derived from a sample of livestock cells that are fed and grown in steel vats. Because cultivated meat is made from real animal cells, the product is subject to similar standards as other meat and poultry products in the US.

Upside's cultivated chicken will be launched at a restaurant in San Francisco after obtaining a Grant of Inspection (GOI) from the U.S. Department of Agriculture (USDA). This follows its announcement earlier this month that its label has been approved by USDA. With this approval, the company can now start commercial production and sales of its cultivated chicken.

In November 2022, Upside received the U.S. Food and Drug Administration (FDA)'s green light for cultivated meat. The GOI and label approval from USDA mean that the food company has demonstrated compliance with USDA regulations for food safety and labelling of poultry products. Since cultivated chicken is grown directly from real chicken cells, the company is subject to similar rigorous inspections and food safety standards as conventionally produced poultry.

Dr Uma Valeti, CEO and Founder of Upside Foods, said: "This approval will fundamentally change how meat makes it to our table. It's a giant step forward towards a more sustainable future — one that preserves choice and life. We are excited to launch with our signature, whole-textured UPSIDE chicken and can't wait for consumers to taste the future."

The company will now continue its work with FDA and USDA to bring its next consumer products to market, including sausages, nuggets and dumplings.

Good Meat also received the final approval from the U.S. Department of Agriculture (USDA) for its first poultry product, cultivated chicken. The clearance means the firm's chicken, which is made directly from animal cells, can now be sold to US consumers and will also be launched at a restaurant in the US.

Earlier this year in Australia, Vow Group made an application to Food Standards Australia New Zealand (FSANZ) to seek approval for its cultured quail.

This US approval could potentially encourage other product approvals in the US and other countries such as Australia, after Singapore led the way with cultivated meat approvals back in 2020.



Fonterra announces first nutrition science investment

Fonterra has announced a corporate ventures arm to incubate, scale and invest in ventures in the area of nutrition science.

Miles Hurrell, Fonterra Chief Executive, said the Co-op is committed to remaining at the forefront of nutrition innovation and creating new value streams.

"Nutrition science is a segment of the global health and wellness category that goes beyond everyday lifestyle and wellness products. Given our expertise in dairy science, we committed to exploring the potential for Fonterra to play more boldly in this space," Hurrell said.

The Co-op has developed a business case and agreed a way forward, which includes the establishment of a corporate ventures arm with access to Fonterra's dairy science and innovation expertise, combined with the agility of a startup.

"The business will incubate and scale a portfolio of disruptive ventures by developing solutions that combine science, nutrition and technology to make a real impact on human health," Hurrell said.

The business — provisionally named Nutrition Science Solutions (NSS) — will operate as a standalone business within Fonterra with its own board and CEO.

It will adapt the Co-op's existing capabilities and assets, alongside new disruptive capabilities through partnerships and M&A to target opportunities for value creation.

According to Hurrell, NSS will partner with and invest in global startups who will benefit from access to Fonterra's dairy science expertise, and in turn, Fonterra will benefit from access to emerging technologies, advancements in science and novel channels to market.

"This is a new way of working for Fonterra, but one in which we see a lot of potential," Hurrell said. Fonterra's first investment through the ventures arm is US\$10m (AU\$14.8m) for a minority shareholding in Pendulum, a biotech company pioneering the next frontier of metabolic health through its microbiometargeted products.

The NoLo project for South Australian winemakers

The South Australian Government has invested \$1.98 million into a noand low-alcohol (NoLo) trial-scale facility at the University of Adelaide. The centrepiece of the facility will be a machine allowing South Australian winemakers to trial NoLo wine using as little as 150 L of wine. Traditional commercialscale equipment, used to



develop new wine products, requires 10,000 L.

The facility will provide a low-risk environment for South Australian wine businesses, enabling them to access equipment and expertise to develop NoLo wine products at a subsidised cost.

"The NoLo industry is extremely strong in Australia and growing year by year. By accessing the trial-scale facility, they have much lower risk to diversify and experiment to create world-class NoLo products. In time, this could lead to a skilled, specialist workforce and allow the industry to capitalise on significant market opportunities available," said Clare Scriven MLC.

Canning and bottling facilities are also available, so successful trial products can be packaged and used for samples.

The global NoLo market was valued at 1.58 billion in 2020 and is growing rapidly. This presents an opportunity for

the South Australian wine industry, which is working to overcome the threat of oversupply and the loss of the China market.

Australian wine has 5% of the global NoLo market share, but only 3% of the value. It is important for Australian winemakers to enhance global standing through improvements in

sensory perceptions of flavour, texture and aroma in NoLo wines. Wine businesses are looking to diversify their product offering into new and existing markets to build resilience.

The NoLo project is a partnership between the Department of Primary Industries and Regions, the University of Adelaide and the Australian Wine Research Institute. The facility is open to wine businesses now.

"About 70% of Australian wine research happens at the University of Adelaide's Waite campus," said Anton Middelberg, Deputy Vice-Chancellor and Vice-President (Research), the University of Adelaide.

Iain Jones, Head of R&D, Quality and Compliance, Treasury Wine Estates, said, "This new facility will fast-track the development of new products, grow the choice and quality of NoLo wines for consumers and uphold the quality reputation of Australian wine in the global marketplace."



US sustainable packaging producer PakTech has announced its official launch in Australia. According to the company, its technology, manufacturing and products will enable the food, beverage and consumer goods industries to respond to the growing ESG pressures and consumer demand for sustainable packaging and practices.

The company manufactures 100% recycled and recyclable secondary packaging. Later this year, it plans to use its proprietary technology to manufacture 100 million recycled injection-moulded packaging handles for cans, bottles and other containers annually within Australia. The handles are made from 100% recycled HDPE (high density polyethylene), a Type 2 polyethylene thermoplastic.

A contract manufacturing facility in Victoria has now been established by the company together with a proprietary partnership with Visy. This will allow the company to fulfil its vision for made in Australia, recycled in Australia and repurposed again into new PakTech products in Australia.

Unilever to acquire North American frozen snack brand

Unilever is set to acquire Yasso, a brand founded in 2009 by childhood friends Amanda Klane and Drew Harrington that makes a range of frozen Greek yoghurts. The acquisition by Unilever's Ice Cream Business Group will see Yasso joining other premium brands in the portfolio, including Ben & Jerry's, Magnum and Talenti.

Each product in the current Yasso range contains less than 150 calories, responding to growing demand in North America for healthier frozen snacks.

Matt Close, President of Unilever's Ice Cream division, said Yasso has built strong appeal in the fast-growing 'Better For You' segment, which may lead to high growth in this space for Unilever in North America.

The transaction is expected to close in the third quarter of 2023, subject to regulatory approvals and closing conditions.



mage credit: Unilever

CASE STUDY





Food South Australia (Food SA) and Siemens have announced Tucker's Natural as the first food and beverage company in the Southern Hemisphere to run a pilot of Sigreen, an emissions tracking and management solution. The South Australian family-owned company was selected from several other applicants and announced at Food SA's 2023 Food and Beverage Summit.

The pilot process is aimed at local food and beverage companies interested in accelerating sustainability and net zero targets. It will provide the selected company with the capability to track and manage verifiable Product Carbon Footprint (PCF) across its supply chain while maintaining full data sovereignty.

Sam Tucker, founder and Managing Director of Tucker's Natural, said a lack of emissions data across the company's supply chain has been the "key missing piece" in reducing social and environmental risks.



L-R: Milan Bawa, Siemens; Catherine Sayer, Food SA; Sam Tucker, Tucker's Natural

"We look forward to using the data produced from the pilot to make decisions that support our goal of operating and developing our business in a sustainable and responsible manner. Thanks to Food SA, Siemens and the South Australian Government for supporting small businesses and giving us access to the latest global technology helping accelerate sustainability goals," Tucker said.

Tucker's Natural will have an opportunity to engage with its supply chain on a product level and quantify the ${\rm CO_2}$ contribution of individual components and suppliers, enabling a cross-company effort towards decarbonisation, carbon reduction and net zero targets.

Milan Bawa, General Manager of Factory Automation at Siemens Australia and New Zealand, said, "I commend Tucker's Natural on taking the giant step forward on their net zero journey with a commitment to measure and subsequently reduce emissions in their direct supply chain. As the global focus on net zero intensifies, legislation in key global markets such as the US, Europe and the UK will mean that companies in these global supply chains will need to have full transparency on their emissions."

The pilot will start in June and run until October this year with Siemens and Tucker's Natural working closely through the process.

Tucker's Natural will be able to replace highly manual processes, exchange emission data along the supply chain and combine it with data from the company's value creation to obtain a product's true carbon footprint.

Catherine Sayer, Food SA CEO, said, "I'm particularly looking forward to the outcomes of the pilot so we can showcase the importance of being able to understand the environmental impact of supply chains."

Using innovative technologies, Sigreen makes it possible to exchange emission data along the supply chain — from sourcing raw materials and packaging right through to customers enjoying the end product.

Siemens Ltd www.siemens.com.au

CASE STUDY

Byron Bay bakery uses software to help manage operations

Byron Bay-based company The Bread Social has installed Cybake bakery software to manage its business operations.

The Bread Social was established by bakers Tom Scott, Sam Saulwick and Paul Giddings, who set up shop on The Farm, an 84-acre community project and collection of businesses in Byron Bay, New South Wales.

Cybake is a bakery management software system used by retail and wholesale bakers to cut admin, improve efficiency and increase sales, managing everything from orders to invoicing, recipes, production, shop management, waste control, deliveries and more. The cloud-based system is available in Australia, the UK and US.

According to Giddings, Cybake has saved time for the company, especially in its wholesale operation, which allows front-end online ordering.

"Then, from there, we use it for production reporting. This tells the mixer operators how much they need to be mixing for each dough, which is then translated into each product," he said.



Josalyn Price, Cybake Australia Business Development Manager, said the company has added 12 bakery businesses in Australia since its launch in February 2022 and expects more to be added following interest at the Baking Trade Show.

"Cybake has allowed us the opportunity to centralise our office and have a more dedicated team that can solve issues on the run rather than detract from the bakery manager's job of trying to keep production flowing and keep the jobs happening," Giddings said.

Cybake Pty Ltd cybake.com

CASE STUDY

Aussie snack maker automates production line using spiral elevator



Australian food manufacturing company Tixana makes a range of snack foods that includes potato chips, soy crisps and other similar snacks.

The company's Special Operations Manager, Angus McKellar, oversees Tixana's production line facility and together with the production team is introducing additional automation.

"It was evident that the production lines required further upgrading, to allow for greater efficiencies and to minimise WH&S risks," McKellar said.

"We already had an Enmin vibratory feeder which was still operating after many years, so naturally they were the first company I called to discuss our requirements."

After an initial meeting, Enmin recommended its spiral elevator that would lift and cool hot snacks simultaneously.

"It's been so successful and worked so well we've purchased three more," McKellar said.

Enmin is now working with Tixana to integrate another of Enmin's new Generate + modular seasoning systems. This will incorporate an electrostatic system to coat snacks, which is designed to increase efficiencies.

"At Tixana we like to support local industry — the fact that Enmin is a local business who design and manufacture their equipment right here in Australia is an important benefit. They're able to see first-hand our existing production line set-up and use their extensive experience and design skills to provide solutions. They can also ensure their equipment will integrate seamlessly with other components already in place," McKellar said.

Enmin Pty Ltd www.enmin.com.au

Ultrasonic sensors

Leuze HTU200 and DMU200 series sensors are suitable for applications in the packaging industry. The sensors detect objects regardless of their surface structure using a reflected acoustic pulse, making it easier to detect glossy, transparent or dark surfaces, liquids or granular products. The new series offers switching and measuring ultrasonic sensors in a variety of sizes. The devices have operating ranges of between 0.1 and 6 m. IO-Link interface is available in some models.

The HTU200 series is offered in a total of 20 models. These include the HTU208 compact ultrasonic sensors, with a slimline construction (M8 threaded sleeve). As a result, they can be mounted even in tight production space. Thanks to a narrow sound cone, the sensors detect fill levels even through very small container openings. This series also features sensors in sizes M12, M18 and M30 with even longer operating ranges.

The DMU200 series includes eight models of measuring ultrasonic distance sensors, suitable for precise distance measurement due to analog output. The sensors with the M30 construction are intended for operating ranges of up to 6 m. With an IP 67 rating, the ultrasonic sensors are suitable for use in harsh conditions such as environments with steam, humidity, dust or ambient light.

Leuze electronic Pty Ltd

www.leuze.com.au



Coding and marking system

Leibinger IQJET is used for the direct coding and marking of products and packaging. Suitable for the food and consumer goods sectors (FMCG), it also has applications in the industrial sector.

The plug and print solution is equipped with four assistance systems. The SMART.OS operating system has a large 10" touch display and numerous interfaces, including OPC UA and an integrated PLC, which are designed to ensure easy integration into the production line.

IQPRINT technology is designed to help ensure print quality. When not in use, the entire ink circuit, including the print nozzle, is sealed airtight and the ink continues to circulate.

The SMART.EFFICIENCY assistance system is designed to keep operating costs to a minimum, with a consumption rate of \sim 2.7 cc/h for MEK inks.

Thanks to the SMART.CARE function, maintenance is virtually eliminated.

Leibinger

https://leibinger-group.com/

COMPRESSED AIR... Engineering the future

Energy efficient, contaminant-free, compressed air is essential to power the future of the food industry. Rare earth, Permanent Magnet and Variable Speed Control technologies are Kaishan air compressor innovations that ensure the sustainability of compressed air as a viable power source, now and into the future. Kaishan Australia supply, service and support a wide range of highly advanced, energy saving air compressors and in-line components that match and exceed the exacting demands of a dynamic food industry.



KAISHAN COMPRESSORS

products and support for every application

Leak testers for MAP

The WITT LEAK-MASTER PRO 2 tests the leak-tightness of modified atmosphere packaging. It is now available with two larger chambers, allowing food producers to have four chamber sizes to test packages of almost any size.

The device tests packages for escaping CO2, which features in many modified atmosphere packages. To do this, a vacuum is generated in the test chamber. If there is a leak, the protective gas escapes from the test product, which is detected by CO, sensors. The packaging remains intact during the test.

The test takes only a few seconds. Depending on the packaging and the test conditions, leaks down to 10 micrometres can be detected. The test is carried out automatically with a preset vacuum and over a defined period of time. LED illumination of the chamber provides a clearly visible signal of the test result: if the packaging is leak-proof, the chamber lights up green; if the packaging is not leak-proof, the chamber lights up red.



The PRO 2 has a compact design and requires little space. In the standard version, the unit is operated with compressed air. An optional version with an electric vacuum pump is available, for all chamber sizes.

All measurement results including date, time, product details and name of the tester are stored and can be exported for archiving. It is also possible to analyse the data using MS-Excel, for example. It manages up to 1200 products as well as names, passwords and barcodes of up to 60 users.

Niche Gas Products

www.nichegas.com.au



Pneumatic modules for MX-System controller

Beckhoff Automation has announced two new modules for its modular MX-System controllers that allow pneumatic valves from Festo and SMC to be integrated directly into the MX-System as a function.

Beckhoff's MX-System is designed to offer a flexible, spaceoptimised and intelligent system solution that replaces the conventional control cabinet. MX-System modules can simply be plugged in and screwed onto the baseplate to create a housing unit that is waterproof and dustproof, meaning that it can be used directly on the machine or system without any additional protective housing.

Beckhoff has developed two socket modules — the MO2414 for Festo and the MO2424 for SMC — with the standard MX-System interface for the respective valve type. The air supply for up to two Festo VUVG or SMC JSY3000 valves (with up to 500 L/min flow rate, depending on the manufacturer) can be connected. These can be mounted directly on the modules, and different variants such as 3/2-, 5/2- or 5/3-way valves can also be combined with each other. While the MX-System socket module provides the valve air supply and the control signals, the outgoing hoses are connected directly to the respective valve.

The MO2414 and MO2424 pneumatic modules expand the functional scope of the MX-System and consolidate its integrated approach to automating machines and plants. The basic idea of setting up the control cabinet as a distributed system and mounting the control system for actuators and sensors close by is now also an option for pneumatics.

Beckhoff Automation Pty Ltd

www.beckhoff.com



National Sales and Service: 1300 098 901 kaishan.com.au



n an effort to prevent sickness, produce such as lettuce and spinach is routinely tested for foodborne pathogenic bacteria like salmonella, listeria monocytogenes and pathogenic types of *E. coli*. Rapid testing of foods may occur, but it is slow in determining who is sick and from where the contaminated product originated. The current solution, often a recall, becomes damage control.

Researchers from the University of Delaware have set out to develop a system which detects these bacteria before anyone consumes an affected product by speeding up the testing process. Faculty members Harsh Bais and Kali Kniel, alongside former graduate student Nick Johnson, teamed up with Andy Ragone of Biospection to detect foodborne pathogens in three to six hours. The findings are published in the *Journal of Food Safety*, UD and Delaware-based startup Biospection.

"While the produce industry is working diligently to reduce risks associated with microbial contamination, tools like this have incredible potential to improve risk reduction strategies," said Kniel, professor of microbial food safety. "Collaborations like ours between academics and biotechnology companies can enhance technology and impact food safety and public health."

These pathogens easily find their way into plants, which are welcoming hosts. Plants use defence mechanisms to fight disease, but some human-borne pathogens have learned to push open a plant's open-entry gates, called stomates — pores in the leaves or stem — and enter.

"Because these bacteria are not true pathogens for plants, you cannot physically see early signs that the plant is under stress," said Bais, UD professor of plant biology. "Biospection's technology allows us to say, very quickly, if the opportunistic human pathogen is present in the plant."

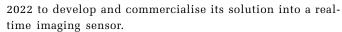
The researchers combined their interdisciplinary expertise to create a multi-spectral imaging platform to look at plant sentinel response. A goal is to use this technique directly on a conveyor, scanning lettuce before it ever heads to the grocery store.

The technique scans the leaves via multispectral imaging and deep UV sensing when the plant is attracting these pathogens. When the researchers looked at benign bacteria, they observed little change. But, with harmful, human-borne pathogens, the test can spot differences in the plant under attack.

"Using Listeria as an example, in three to six hours, we see a sharp drop of chlorophyll pigments," Bais said. "That's a strong signal that the plant is responding physiologically—a marker of unusual bacteria."

The multi-spectral imaging technique is non-invasive and fast compared to current tests, where a lab scientist extracts a leaf, grinds it up, plates the bacteria and looks for disease. Biospection was awarded a National Science Foundation Small Business Innovation Research grant in





"Harsh and Kali were certainly instrumental in the techniques that we developed with multi-spectral imaging and the use of deep ultraviolet fluorescence," said Ragone, founder and chief technology officer of Biospection. "We built a portable instrument that could be commercialised."

Vertical farming is an agricultural sector that can reap the benefits of this technology. Using less water and less space, vertical farms are a step towards more sustainable agriculture. They are, however, just as vulnerable to disease as traditional agriculture. One incidence of *E. coli* means a vertical farm must throw away an entire harvest.

Biospection is already working with agricultural companies to embed the imaging sensor into vertical farms' shelves and, for outdoor farms, crop drones.

"Working with UD, we've laid the scientific foundation to create better instruments," Ragone said. "We're working toward an instrument that's portable, automated and can give an answer in a matter of seconds."

For future research, Bais has his eye on determining if this technology can differentiate between different microbes.

"If the sentinel response is different from one microbe to the other, that gives us the identity of the microbe based on plant sentinel response. We haven't gone there yet, but that would be the ultimate achievement," Bais said.





Pouch loader and rack

The MULTIVAC Pouch Loader (MPL) for chamber belt machines is a semi-automatic solution that is designed to improve the filling of the film pouches and the loading into the packaging machine.

According to the company, up to a 40% reduction in personnel costs and increased efficiency can be achieved when compared to manual loading.

The operating principle of the MPL is simple: one operator positions the products on the infeed conveyor of the machine. Two other people then load the products by pulling the film pouches over the loading conveyor, so that the product can be conveyed automatically from the conveyor into the film pouch. Then it is simply sufficient to turn the film pouch through 90 degrees, before it is placed on the machine conveyor and subsequently vacuum packed and sealed.

When compared with the manual procedure, which generally requires at least five people, only three operators are necessary with this semi-automatic solution.

Another benefit is in the hygiene and ergonomics: when filling the film pouches, the operators no longer need to lift the products and place them in the pouches. As there is less contact with the product, the risk of contamination is reduced.

Thanks to its compact design, the pouch loader, which can be individually configured, can be easily integrated into line solutions from MULTIVAC, with either the B 425, B 525 or B 625 chamber belt machines.

The dismantling of the various components can also be performed quickly and without tools.

The MPL can be combined with the MULTIVAC Pouch Rack (MPR), which can take up to 10 different stacks of various pouch sizes. Thanks to special pouch opening aids, the individual film pouches can be easily separated from the stack and removed from the rack.

The pouch solution can accommodate pouch lengths in a range of 200 to 800 mm, as well as pouch widths between 150 and 600 mm.

MULTIVAC Australia Pty Ltd

www.multivac.com.au

Online configurator for manifold

The SY series from SMC Corporation Australia New Zealand (ANZ) is one of the company's flagship products. This all-purpose valve manifold is available in three sizes: SY3000, SY5000 and SY7000.

According to the company, this scalable solution offers flexibility, space savings and increased flow rates. Piping can be mounted on the top, bottom or side of the manifold, with various port size connections on offer.

One of the benefits of the SY series lies in its power. It can drive larger cylinders with reduced cycle times, meaning that larger, more costly solenoid valves are no longer required. With careful configuration, the company said it can achieve flow rates of up to 1500 L/min through the biggest valve, mounted on the manifold.

In addition, the SY series reduces power consumption, making it a good choice for users seeking energy-efficient solutions. The SY series — when configured with SMC's optional safety configurations — can deliver enhanced safety. For instance, the addition of a supply shut-off spacer on the valves makes it easy for maintenance personnel to access the system, even while the rest of the manifold is still pressured, explained the company spokesperson.

Adding to its appeal is the easy-to-use SY online configurator that can be found on SMC's website. Here, users can design their own manifold to meet their exact requirements within minutes. Users can select their I/O type, a specific valve for each station and a blanking plate for future expansion. After designing the manifold, users can download the CAD model for assembly purposes.

During the configuration, users select the manifold type, select the piping redirection and choose the connection type and solenoid valve size. Once four steps have been completed, the user simply selects "create customised configuration" to receive the CAD drawing and part number required for assembly.

SMC Australia | New Zealand www.smcanz.com





Light signals

The TL 305 series tower lights from Leuze offer bright and homogeneous illumination as well as an optional IO-Link interface.

Tower lights are needed in machine and system construction as well as in intralogistics: they make states, faults and ongoing processes clearly visible from a distance. They light up brightly, enabling optimum signalling — whether at the machine, on the conveyor belt or for access control. The compact towers are available preconfigured with three, four or five segments. The range includes the TL 305 models with predefined colour assignment as well as the TL 305-IOL models with IO-Link interface. The IO-Link variants allow different operating modes and provide a wide selection of colours, which are also available with additional acoustic signaller on request.

The M30 thread and M12 connector make them easy to install, and matching accessories are available to simplify installation. The aluminium housing allows the tower lights to be used even in demanding industrial environments.

The IO-Link version TL 305-IOL with its different operating modes offers maximum flexibility. Segment mode enables the segments to be actuated individually via IO-Link. This allows colour, intensity and lighting sequences to be configured individually. Level mode is used to visualise fill levels. If fast commissioning is required, users can actuate eight predetermined or user-defined configurations via the three external trigger inputs even without an IO-Link connection.

Leuze electronic Pty Ltd

www.leuze.com.au



Plant scaffolds developed for cultured meat

Cultured pork grown using the edible cell culture scaffolds.

research team from the National University of Singapore (NUS) has 3D-printed an edible cell culture scaffold using common plant proteins, allowing more sustainable lab-grown meat to be served on the table.

Cultured meat is growing in demand as environmental consciousness increases. It is produced by taking skeletal muscle cells from animals and growing them on three-dimensional constructs called scaffolds, which provide structural support as the cells multiply and develop into tissues.

Typically, the scaffolds are made from synthetic or animalbased materials, which are both expensive and inedible. The researchers, led by Huang Dejian, Deputy Head of the NUS Department of Food Science and Technology, looked into plant proteins, which are biodegradable and biocompatible with animal cells. They also satisfy requirements for food consumption, making them suitable for culturing meat.

"By using readily available cereal prolamins as biomaterials for high-precision 3D printing technology, we open up a new method for manufacturing edible and structured scaffolds to produce cultured muscle meat slices with fibrous qualities," Dejian said.

The researchers developed the scaffold using prolamins, a family of plant storage proteins that, due to their specific amino acid profile, have low nutritional value. Prolamins are usually generated as waste in the starch and vegetable oil industries, making them a sustainable resource. The researchers used mixtures of prolamins derived from corn, barley and rye flour, which acted as the ink for electrohydrodynamic printing, a high-precision 3D printing technology commonly employed in biomedical applications.

To assess whether the prolamin constructs were fit for meat cultivation, they were submerged in the cell culture medium and inspected seven days later to examine any structural changes. Under a scanning electron microscope, the scaffolds held their structure and did not collapse, though multiple holes did develop on their surfaces. According to the re-

searchers, however, these pores are more likely the result of enzymes secreted by the cultured cells rather than evidence of structural weaknesses.

Scaffolds must be biocompatible with muscle cells from agricultural animals to be useful in cultivating meat, meaning they need to be able to accommodate these cells and support their growth and development.

To test this, the researchers seeded the prolamin constructs with stem cells from pig skeletal muscle and measured cell proliferation over the following days. They found that the cells divided extensively on the scaffolds, reaching a maximum count 11 days after they were inoculated. When compared against a standard scaffold, the pig cells seeded onto the prolamin constructs proliferated much faster.

"Scaffolds made from plant proteins are edible and have diverse and variable peptide sequences that can facilitate cell attachment, induce differentiation and speed up the growth of meat. In contrast, synthetic scaffolds such as plastic beads used for cultured meat have no functional group, which makes it difficult for animal cells to attach and proliferate. In addition, synthetic scaffolds are not edible and extra steps are required to separate the scaffolds from the meat culture," Dejian said.

As a proof of concept, the researchers developed an actual slice of meat by culturing pig skin stem cells on a plant scaffold and allowing them to mature into muscle. The experiment turned out to be a success. Within 12 days, the research team was able to culture meat that was similar in texture and overall appearance to real animal meat.

The researchers are working on refining the technology. Further study is needed to better determine how the structure and composition of the prolamin constructs might impact the growth of animal stem cells and how they form muscle tissue.

"Moreover, we need to ensure the resulting meat products are market-ready, with safety profiles that will satisfy rigorous regulatory demands and nutritional compositions that will fulfil recommended dietary needs," Dejian said.



Hygienic double-seat valves

Alfa Laval has released two new hygienic valves — the Alfa Laval Unique Mixproof CIP and Unique Mixproof Process, extending its hygienic double-seat valve range to meet market demands.

The CIP double-seat valve is designed to manage the flow of cleaning media during cleaning-in-place (CIP), while the Process one is a compact version of Alfa Laval double-seat valves, which is configurable and available in various sizes to meet manufacturers' hygienic processing requirements. Both are capable of simultaneously routing two different fluids without the risk of cross-contamination.

Alfa Laval double-seat technology with seat lift is designed to keep the fluids separated, ensuring efficient cleaning and protection against the intrusion of harmful microorganisms. With a fully balanced design, the valves can easily handle high pressure without the risk of pressure shocks. They are also certified according to FDA, 3A and other recognised standards.

Both the valves are compact, modular in design and available in types and sizes that suit different applications. Using the valves in combination with the Alfa Laval ThinkTop control units can provide users with more flexibility and control.

Built on the Alfa Laval Unique SSV and Mixproof platforms, the hygienic top-loaded double-seat valves are designed to minimise the risk of unplanned downtime while also reducing time and resources for routine maintenance.

Alfa Laval Pty Ltd www.alfalaval.com.au

Feeders & Conveyors



for **Every Challenge**



Compact Feeders

- · Energy efficient electromagnetic drives
- · High Speed models for rapid On/Off cycling
- High Deflection models for fine powders, leafy, and sticky products

See us at Foodpro = 23-26 July, Melbourne = Stand L31

Mechanical & Electromagnetic Conveyors

- Low profile models
- Wide range of screener options
- Models for every application

Eriez.com.au | 613 8401 7400 | = | = |





Services to switch to recycled PET

Sidel has launched its RePETable portfolio of services that are designed to help the packaging industry make the transition to rPET bottle production while offering support to improve the circularity of primary packaging.

The service solutions will enable users to adopt up to 100% rPET without impacting bottle production. Sidel can also offer support to develop more sustainable primary packaging materials that are designed for recycling.

The RePETable offer is a range of services dedicated to rPET, designed to extend virgin PET benefits to rPET and achieve consistent production performance and bottle quality. Users can to pick and choose services that best suit their specific needs. The service is additional to its packaging optimisation services for lighter bottle weight, helping users make a cost-efficient transition to recycled PET.

Sidel's investment in its small-scale recycling pilot line is supporting primary packaging suppliers in innovating with new materials for closure, sleeve, glue, label, additives, colouring and any other primary packaging material. The pilot line is being used to recreate every step of the recycling process from washing, drying and pellet extrusion to crystallisation and solid state polymerisation, including dedicated process and laboratory controls at every step. Sidel packaging and equipment experts study all aspects of the process from post-consumer PET bales to flakes, including pellets ready to be injected into preform up to rPET bottle blow moulding and industrialisation.

With the RePETable offer, Sidel is committed to using its comprehensive expertise to create a virtuous closed-loop process for food-grade rPET bottles.

Sidel Oceania Pty Ltd

www.sidel.com

Online condition monitoring software for pumps

Using artificial intelligence, the Alfa Laval Analytics for online condition monitoring is designed to help hygienic industries prevent unplanned downtime, extend lifetime of valuable assets and help to reach sustainability targets.

The easy-to-use solution is designed to detect potential machine faults before they occur and help diagnose the root cause. Suitable for new and existing pump installations from Alfa Laval, the solution includes a one-year subscription, including online installation, training in use of the dashboard and ongoing support.

The Al-based solution works by collecting and analysing pump vibration data around the clock. Analytics can provide a clear and intuitive overview of the health condition of the equipment through a simple dashboard — green for ok, yellow for pay attention, orange for warning and red for immediate action.

With its ability to predict failure and identify parts that need repair or replacement, the solution can help with implementing predictive maintenance strategies that eliminate extra cost and prevent unplanned downtime.

At the same time, the solution is designed to support the sustainability agenda by allowing plants to do more with less and enhance energy efficiency, which can help to reduce carbon emissions.

Designed to be a cyber-secure solution, all data is transmitted via mobile network and requires no connection to the plant's internet.

Analytics is part of the Connected Services program from Alfa Laval.

Alfa Laval Pty Ltd

www.alfalaval.com.au



ENGINEERING □ PROJECTS □ FOOD

LINEAR CHILLER, CONTINUOUS FRYERS, CONVEYORS, PLATFORMS, PROJECT MANAGEMENT.



DESIGN AND MANUFACTURING SPECIALIST

- 1 FPS LINEAR CHILLERS can take your product from 90 deg c to 5 deg c in
- FPS/Allan fryers can fry nuts cracker etc. We have now established a strong presence with Australian snack and nut processors.
- FPS/SAS electrostatic seasoning system, calculations show a massive saving in seasoning with it attaching to all parts of your product.
- FPS design and manufacture speciality conveyors like the angle of repose which meters the product into fryers.
- We have an experienced thermal engineer for your products resulting in a very accurate cook times recovery times and chill factors.
- FPS is Brisbane based. Give the team

WWW.FOODPROCESSINGSYSTEMS.COM.AU



iling food and beverage waste into landfill poses many hazards and high environmental and business costs. It releases toxins into the environment, leachate into water tables and high volumes of greenhouse gases into the air, including methane, which is 25 times more potent than carbon dioxide.

A lot of fuel energy is used in getting waste from processing facilities to landfill facilities, with some of it ending up on public roads in the process, creating concern and creating sizeable clean-up costs.

The costs of landfill will rise as Australia implements its greenhouse gas reductions targets and the federal government's National Waste Policy, which outlines the five key principles for waste management, including:

- · Avoid waste
- •Improve resource recovery
- Increase use of recycled material and build demand and markets for recycled products
- Better manage material flows to benefit human health, the environment and the economy
- Improve information to support innovation, guide investment and enable informed consumer decisions.

According to Michael Bambridge, environmental engineer and wastewater treatment specialist, landfills will become scarcer and more expensive, leading to food processors focusing on waste prevention instead of finding a cure. Bambridge's company, CST Wastewater Solutions, has installed various wastewater treatment plants in Australasia, including for leading food and beverage companies such as McCain, Simplot and Golden Circle plus major NZ fruit and vegetable processors and multiple breweries, meat processors, dairy organisations, and municipal WWTPs in Australia and New Zealand.

Frontline components of WWTPs — including more efficient screening and dewatering — are fundamental to efficiently extracting waste and ensuring solids output is delivered in a cleaner and drier state, making it more suitable for composting.

Technologies already employed by leading processors range from better screening and waste extraction and dewatering technology through to anaerobic digestion of organic streams in wastewater to produce biogas to replace fossil fuels.

"It just makes sense in both an environmental and businesses sense — sodden, hazardous waste can cost \$150 a tonne to transport to landfills — and landfills themselves are an increasingly expensive and scarce resource. Some Australasian councils are already warning that their landfill facilities will be full before the end of this decade, and there is strong community opposition to opening new ones," Bambridge said.

CST Wastewater Solutions invested in the local production of its range of rotary drum screens which, with high-performance dewatering, reduce the volumes of solids to be transported and placed in landfill.



The rotary drum screens are now being manufactured in Sydney, increasing quality and supply to Australasia and South Asia.

Locally engineered screens, built for widely varying local conditions, withstand shock loads and larger solids that most other screens using lighter mesh construction cannot — and which may cause them to fail prematurely in peak load conditions, such as floods or spills often encountered in Australasia.

More efficient drum screening technology — featuring a 0.5 mm rotary screen, complete with compactor — was used by a subsidiary of Kraft Heinz to replace the previous plant. In service, this installation has allowed improved and greater removal of solids from the wastewater, with considerably better solids capture. The compact system also permitted removal of a tall existing structure and hoppers, making solids handling more accessible for the plant operator, improving operational efficiency and enhancing OH&S benefits by reducing solids handling.

Examples of engineering features contributing to maximum reliable service life include all-stainless construction, including being fully enclosed for OH&S odour and aerosol control.

Typical industries to use the Rotary Drum Screen include general food processing, beverages, slaughterhouses and abattoirs, tanneries, pulp and paper mills, textile plants, plastic manufacturers and many more industries. Municipal treatment plants also use the screens for fine screening of raw sewage, pre-MBR (membrane bioreactor) screening and sludge thickening for easier handling, transport and disposal.

The screen and compactor technology — which is a first line of defence in preventing downstream process issues, overflows and bypassing to the natural environment — is integral not only to processing operations, but also to the sustainability of livestock industries sharing valuable water resources with nearby communities and wishing to maintain their social licence to operate.

Another clean, green waste management technology introduced to the Australasian market is the KDS sludge dewatering technology that reduces waste volume by up to 90%.

The multi-roller system eliminates processing spillages by producing a drier waste that is more easily transported and recycled. It cuts landfill needs while reducing transport costs and helps prevent any potential spillages onto public roads during transport.

It is engineered to overcome the limitations of technologies such as screw presses, belt presses and centrifuges typically used to treat sludge. It uses very little power and no water for washing.

KDS applications also include thickening and dewatering of Dissolved Air Flotation (DAF) sludge; the KDS captures solids of 95–99% sludge at a dryness of 15–20%. Waste activated sludges are typically 15–18% dryness.

Used on fruit such as apples and pears, the technology dewaters wet, sloppy screened waste, reducing waste volumes by up to 90%.

"It transforms wet waste to a much drier product that is easier to handle, resulting in a more hygienic and cleaner product to transport for recycling to stockfeed and composting," Bambridge said.

The KDS typically handles 6 m³ (approx. 100–150 kg) per hour of watery waste containing leaves, twigs and unsuitable fruit. The output is transformed into waste for disposal or stock food that is cleaner and healthier to handle.

"Reducing waste volume by up to 90% radically reduces transport costs and helps prevent any potential spillages onto public roads during transport. Both issues are very important, with rising specialised waste disposal transport costs and with local communities and councils very mindful of how companies treat waste," Bambridge said.

CST Wastewater Solutions www.cstwastewater.com



he plant-based yoghurt market is expected to explode from \$1.6 billion in 2021 to \$6.5 billion in 2030. Now a University of Massachusetts Amherst food science major has researched plant-based and dairy yoghurts to find out how they compare on a nutritional basis.

Astrid D'Andrea, lead author of the paper which was published in Frontiers in Nutrition, said plant-based yoghurts have less sugar, less sodium and more fibre than dairy, but also have less protein, calcium and potassium.

"But when looking at the overall nutrient density, comparing dairy yoghurt to plant-based yoghurt, with the nutrients that we looked at, almond yoghurt has a significantly higher nutrient density than dairy yoghurt and all other plant-based yoghurts," she said.

Working in the lab of senior author Alissa Nolden, a sensory scientist and assistant professor of food science, D'Andrea collected nutritional information for 612 yoghurts, launched between 2016 and 2021, using the Mintel Global New Products Database, accessed through UMass Libraries.

She used the Nutrient Rich Foods (NRF) Index, which assigns scores based on the nutrient density of foods. "This allowed us to compare the nutritional density of the yoghurts based on nutrients to encourage (protein, fiber, calcium, iron, potassium, vitamin D) and nutrients to limit (saturated fat, total sugar, sodium)," D'Andrea writes in her paper.

The NRF model was chosen based on the nutritional benefits of dairy yoghurt, which provides a complete protein that plant-based products are unable to provide.

Of the 612 yoghurts analysed, 159 were full-fat dairy, 303 were low- and non-fat dairy, 61 were coconut, 44 were almond, 30 were cashew and 15 were oat. The researchers

used the NRF Index to rank the yoghurts from the highest to lowest nutrient density: almond, oat, lowand non-fat dairy, full-fat dairy, cashew and coconut.

The high scores for almond and oat voghurts were attributed to their low levels of total sugar, sodium and saturated fat.

Hybrid yoghurts of the future

The findings could be used to help the food industry

find ways to improve the formulation and nutritional composition of plant-based yoghurts in the future.

One option the researchers suggested is to create a hybrid yoghurt that is both plant- and dairy-based. This type of blending could provide advantages by combining the complete protein and gelling structure from dairy that the plant-based products are unable to replicate, while minimising total sugar, sodium and saturated fat.

"If we can blend plant-based and dairy yoghurt, we can achieve a desirable sensory profile, a potentially better nutritional profile and have a smaller impact on the environment," Nolden said.

The team said further research is warranted for the development of a product that maximises the nutritional and functional characteristics of voghurt.

If we can blend plant-based and dairy yoghurt, we can achieve a desirable sensory profile, a potentially better nutritional profile and have a smaller impact on the environment.

AFFORDABLE AUTOMATION SOLUTIONS.

BLEND-FLAVOUR-PACK



Until now, adding automation to your production line could be an expensive exercise. But Enmin's new Generate+ systems changes all that. A range of affordable modular systems that slot easily into an existing line; reducing labour costs, boosting

productivity and improving quality.

Designed and built right here in Australia they feature the same quality, reliability and safety that Enmin is renowned for. Plus, they can be added to and extended as your business evolves.













Through-beam photoelectric sensors

Leuze LS25CI through-beam photoelectric sensors are able to transilluminate any type of packaging film, including dark, metallised films, and detect products inside. The infrared light used by the sensor is powerful enough to transilluminate a human hand, but is, at the same time, claimed to be harmless and eye-safe. Both the transmitter power and the receiver sensitivity can be adjusted quickly and intuitively via potentiometers, enabling it to detect individual, transparent films.

The robust housing has degrees of protection IP67 and IP69K. It has been ECOLAB-certified for use in harsh environments where frequent cleaning is necessary. For metallised and extremely strongly absorbing films, there is the more powerful LS25CI.XX super power transmitter model that does not require any adjustment.

Leuze electronic Pty Ltd www.leuze.com.au

Extensive Range of Stainless Steel & Plastic Enclosures Kraus & Naimer Pay Ltd WWW.krausnaimer.com.au P: 1800 567 948 F: 02 9797 0092 E: salesaus@krausnaimer.com Linked with an Australian Wide Distribution Network

Oil-free air compressors

ELGi Equipments has enhanced the energy efficiency of its AB series oil-free screw air compressors, realising improvements in specific power consumption and increases in free air delivery across the range. For additional energy savings, the three larger models in the range now include a super-premium efficiency IE4 motor as standard.

Contaminant-free and high-quality compressed air is critical for many sensitive applications in the food and beverage sector. Available from 11 to 110 kW, the water-injected AB series of oil-free screw air compressors from ELGi deliver certified 'Class 0' high-quality air in compliance with ISO 8573-1 and ISO 8573-7.

ELGi has recently enhanced the performance of the AB series models, delivering improvements in terms of both specific power consumption and free air delivery. This includes an average 10% improvement on the turndown ratio across the variable frequency drive (VFD) range. The result of these improvements is enhanced energy efficiency and reduced power consumption.

In addition, the 75 to 110 kW models are the first in the series to now come as standard with IE4 motors. These motors deliver further energy efficiency and reliability gains as well as a higher service factor and lower waste heat output.

Energy efficiency and zero mineral oil residue help to provide a minimal environmental impact, thereby lowering carbon footprint. The AB series produce high-quality air, free of microbiological contaminants, with free air delivery (FAD) from 0.82 to $15.85 \, \text{m}^3/\text{min}$.

Elgi Equipments Ltd www.elgi.com.au



LET'S AUTOMATE IMPROVE YIELDS REDUCE COSTS

Let CBS Foodtech help you automate your processing. Reduce your costs and improve yields for your current and future production needs.

We are a specialist supplier of innovative European processing equipment, supplying only the highest quality products to our customers together with the backup services that ensure you can maximise your value from your investment.

As your partner we will work with you to understand your business. Our in-depth knowledge of food processing gives us the competitive edge. Providing expertise in processing techniques of raw material and ingredients, machinery selection, process development, project management, site configuration and installation procedures.





www.cbsfoodtech.com.au



































The growing market for nutraceuticals and functional foods leads to additional challenges for metal detection that can be solved through the use of multi-spectrum technology.

Nutraceuticals are increasingly becoming a part of the food industry as consumers seek products that offer health benefits beyond basic nutrition. Nutraceuticals are driving collaborations between the food industry and pharmaceutical companies that can facilitate the development of innovative products that combine the expertise of both sectors.

The progressive integration of nutraceuticals into the food industry can be observed in several ways:

- Functional foods: food products that have been fortified or enriched with additional bioactive compounds or ingredients to provide specific health benefits, such as vitamins, minerals, antioxidants, probiotics, prebiotics, omega-3 fatty acids, and plant extracts.
- Dietary supplements: concentrated sources of nutrients or other bioactive compounds that are intended to supplement the diet, usually available in various forms, including capsules, tablets, powders, and liquids.
- Health and wellness products: products that may include nutraceutical ingredients known for their health-enhancing properties, such as herbal extracts, superfoods, and

functional beverages, with examples including energy bars, herbal teas and protein shakes.

Nutraceuticals also often require specific packaging to preserve their potency and stability. The food industry has responded by incorporating specialised packaging technologies, such as barrier packaging, airtight containers, and UV-protective packaging, to maintain the quality and efficacy of nutraceutical products. These packaging solutions ensure that the bioactive compounds in the products remain intact and protected from external factors that can degrade their effectiveness.

Metal detectors in food and nutraceutical production

Overall, metal detectors play a crucial role in food and nutraceutical manufacturing by safeguarding product integrity and consumer health. They help prevent potential hazards associated with metal contaminants, ensuring that the final products meet the required quality standards and regulatory guidelines.

The use of metal detectors in nutraceutical manufacturing serves as a critical quality control measure to identify and remove any metallic contaminants that may be present in the products. These contaminants can originate from various sources, such as raw materials, processing equipment, or packaging materials. Metal contaminants can pose serious risks to consumer health if ingested, and their presence must be eliminated or minimised.

How metal detectors work

There are several types of metal detectors, and each uses a different detection method to operate. In the food industry, metal detectors usually apply the balanced coil method. These metal detectors are equipped with a transmitter coil, which generates an electromagnetic field, and two receiver coils. The receiver coils have an equal but opposite output, creating a balanced state

When a conductive object passes through the detector, it interrupts the balanced state of the electromagnetic field and causes a signal that is detected by the receiver coils. The electronics unit in the metal detector then analyses this signal, evaluates it, signals a metal detection, and either activates the automatic reject units that separates the contaminated product from the production line or alerts the operator.

Factors that lead to false detections

There are two main factors that can lead to false positives in metal detection: environmental factors and product factors.

Environmental factors

Most food and pharmaceutical manufacturing and packaging lines involve the movement of product via conveyors, and the metal detectors are often installed close to the conveyors and often other electromechanical equipment. The preference today for the use of variable frequency drives, mainly to maximise energy efficiency, means that there is an increased potential for electromagnetic interference across a wide spectrum of frequencies.

Such interference can often lead to disruption of the field of the balanced coils in a typical single-frequency or multi-frequency metal detector, leading to a false detection.

Product factors

Some products contain salt, iron, and moisture — each of which can alter the detector's field and can trigger a false detection. This effect increases with higher inspection frequencies that are typically used to detect smaller particles and can lead to significant levels of wasted product and downtime.

In the case of nutraceuticals, the risk of false positives increases, due to the specialist packaging and the fact that many of the supplements used in nutraceuticals contain various types of metallic and conductive additives.

Types of metal detectors

There are three main types of metal detector technologies: single-frequency, multi-frequency and multi-spectrum metal detectors.

Single-frequency detectors

The majority of metal detectors on the market use only one frequency when inspecting product. The selected operating frequency depends primarily on the product being inspected. This is satisfactory when the product is dry and non-conductive. Single-frequency metal detectors have limited abilities to work with different products and are difficult to optimise for varying conditions of temperature, water content, and packaging types.

Multi-frequency detectors

Using a metal detector that offers more detection frequencies can result in more sensitive metal detection and fewer product



The CEIA THS/MS21 is the world's only multispectrum metal detector.

effect errors, as well as being able to use the machine on products with differing characteristics.

Multi-frequency metal detectors can only use one of the available operating frequencies at a time, however. The operator may need to switch from one frequency to another when changing products, or in more advanced multi-frequency systems, the metal detector will switch back and forth between two or more frequencies in rapid succession. However, only one frequency (one electromagnetic field) is capable of ever being on at any given time, and to prevent false rejections on more difficult product, reducing the sensitivity typically is still required.

Multi-spectrum metal detectors

Developed by Italian company CEIA, these metal detectors operate over an entire spectrum of frequencies that are simultaneously analysed and applied to completely eliminate product effects and interference, allowing for an improved inspection of the product.

Equipped with advanced computer technology and patented algorithms, CEIA's multi-spectrum metal detectors can not only eliminate false positives, but can 'learn' the product being scanned, and perform automated testing to ensure correct detection, minimising false negatives.

A long history of leadership in metal detection

CEIA was founded in 1961 in Turin, Italy – initially to produce electronic components and systems for industrial automation. In 1971 the company began developing metal detectors, their products first gaining recognition in the security industry. They developed advanced walkthrough metal detectors for high-security applications, such as airports, government buildings, and public venues.

CEIA later expanded its metal detector range, developing devices now widely used in applications such as food processing, pharmaceuticals, textiles, plastics, mining, and recycling. CEIA focused on developing metal detectors specifically designed for the unique requirements and challenges of these industries.

CEIA is at the forefront of technological advancements in metal detection. They introduced the world's only multispectrum technology to enhance detection capabilities by simultaneously using multiple frequencies. The CEIA THS/ MS21 has unique detection capabilities and extreme sensitivity to magnetic, nonmagnetic, and even 316 stainless steel metal contaminants.

The THS/MS21 is suitable for nearly all variations of food and nutraceutical product characteristics — and can detect foreign objects while operating simply, efficiently and at high speed — at the same time, collecting and retaining important production run data. The technology is capable of detecting particles as small as 0.25 mm (depending on the aperture size) including 316 stainless steel, and can be integrated into modern automation systems. Product data can be accessed from anywhere via a cloud service provided by CEIA.

Don't risk your brand's reputation with inferior equipment. Heat and Control can help you innovate your inspection process with high-performance metal detection solutions. For more information get in touch at info@heatandcontrol.com or visit www.heatandcontrol.com.



CASE STUDY

Nestlé's pizza toppings sorted to improve safety



Nestlé pizza brands use TOMRA Food's Smart Sort technology for its safety check on toppings.

During harvesting of the vegetables used for frozen pizza topping, foreign materials, such as sticks, stones, glass and plastics, can get mixed in with the crop. Farmers and suppliers implement safety checks before sending these products to processors, but further screening from Nestlé is designed to eliminate this risk. The company's safety inspections use advanced sorting technologies to ensure that only the highest quality ingredients are used on its frozen pizza.

With a goal of continuous improvement, Nestlé's pizza factory in Germany tested the capabilities of several sorting machines and decided to implement the TOMRA sorting technology.

How it works

The quality check process involves taking raw material out of cases, putting it through a series of inspections and then putting it back in cases after it has been determined safe and desirable.

The first two examinations see the toppings pass through a bulk X-ray machine and then over a magnet to remove any remaining metals. The final check sees the remaining good materials travel through the TOMRA optical sorter before finally returning to the cases.

According to Adam Weber, Senior Expert Supplier Quality Management, Nestlé R&D, a key strategic advantage of the technology is its ability to segregate material defects across an entire batch and use this data as input to suppliers.

Employing TOMRA sorters has positively impacted Nestlé's procedures, adding a point in the process to reduce the risk of foreign matter ending up in final products.

Using the TOMRA Nimbus, Nestlé processes around 6.8 million kg of raw material at its Ohio facility in a year, where it distributes toppings to three other production locations around the US. The machine allows production lines to run the highest volumes while collecting data to help notify suppliers of product quality trends earlier in the supply chain.

"Based on our previous equipment testing and the growing relationship, Nestlé trusted TOMRA's experience and equipment and remains confident in our partnership. The equipment's quality and reliability minimised the need for support or interaction. After the initial commissioning and training by TOMRA, the local team has been able to operate the unit independently. They've barely had to interact with it, except to change a program or recipe to accommodate the different incoming frozen veggies being screened, and that speaks volumes," said Will Hutson, Quality Manager, Nestlé R&D.

Nestlé uses TOMRA optical sorters for its Frozen Food operations at Solon (United States) and Nonnweiler (Germany). TOMRA Sorting Solutions Pty Ltd www.tomra.com





Tel no: +61 (02) 9969 0370 | **Mike Jackson:** jacko@globalms.com.au











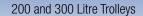


See the VIDEO @ backsaver.com.au



Vacuum Tumblers from 200 to 10,000 Litres













Scales for 200 and 300 litre Trolleys

Phone: + 61 (0)2 9969 0370 | Mobile: + 61 (0)417 690 370 | www.globalms.com.au



Labelling papers

Avery Dennison has introduced four labelling papers made from recycled pulp and alternative fibres aimed at the premium packaging segment including wine and spirits, craft beverages, gournet food, beauty and fragrances.

The range consists of three papers made from 100% recycled fibres and one from hemp fibres.

Fasson rPaper Black FSC 100% recycled (50% PCW and 50% PIW) is a black, core tinted, uncoated paper designed to provide a visually striking label for various applications. Its black colour is designed to have a seamless look, avoiding white edges or revealing whiteness from the back of wine bottles. This paper can eliminate bleeding problems in ice buckets and has printability and embellishment compatibility.

Fasson rMartelé Black FSC 100% recycled (50% PCW and 50% PIW) is

an uncoated, matte paper with a 'hammered' tactile embossed finish. It matches the current portfolio's non-recycled Martelé Black, allowing for integration into existing labelling solutions. Similar to the rPaper Black, this paper can also eliminate the problem of black ink bleeding in ice buckets and, being pulp-coloured, provides a clean appearance by avoiding the label's white edge and backside.

Fasson rMartelé Blanc FSC 100% recycled (50% PCW and 50% PIW) is also an uncoated, matte paper with the same 'hammered' tactile embossed finish as rMartelé Black. This specific product will be available later this year and it matches the non-recycled Martelé Blanc in the current portfolio, allowing for integration for existing lines of wine and other high-end products. Additionally, it offers printability with all the standard print methods and embellishing techniques.

Fasson Hemp 50% FSC paper provides a natural and bulky touch and feel with its white uncoated, matte surface — suitable for premium organic products. It offers a sustainable alternative to traditional wood pulp only-based papers and uses 50% hemp fibres. Its high-grammage facestock also makes it suitable for labels that feature embossed or debossed details.

Avery Dennison

www.averydennison.com



CASE STUDY

Produce suppliers switch to paper pallet wrap



Mondi has collaborated with Silbo to upgrade its pallet wrapping from plastic stretch film to Mondi's craft paper Advantage StretchWrap. Silbo installed its first EW Technology PaperWrap machine at its plant in Żory, Poland, providing more sustainable flexible packaging for its range of customers, including those supplying fruits and vegetables.

The Advantage StretchWrap is made with responsibly sourced fibres and does not contain plastic or coating. It is made from wood and is fully recyclable in existing paper waste streams, supporting the transition to a circular economy. An independent life cycle assessment (LCA) commissioned by Mondi showed the StretchWrap performed better than standard plastic stretch film in several important environmental impact categories. It has puncture resistance and high stretch properties providing robust protection for goods during transportation.

This switch from plastic to paper was made possible by a close working relationship between Mondi, Silbo and EW Technology. A complete reel of Advantage StretchWrap can be applied to the fully automated machine without any need to rewind. With larger dimensions, a replacement is only needed every 400–600 pallets.

Marcin Śpiewok, Silbo CEO, said the company is passionate about supporting global producers in transitioning from plastic to sustainable alternatives. He said the development will support the company's reputation for sustainability, benefiting its customers and the end users.

Bartosz Babicz, Product Manager for Advantage StretchWrap at Mondi, said the collaboration illustrates the company's commitments to using paper as a renewable and recyclable material.

"Advantage StretchWrap offers an efficient alternative to plastic film and the products still get the same protection, with a very important benefit: the installation offers a sustainable solution for all of Silbo's customers, improving the sustainability journey of all their pallets on a global scale," Babicz said.

Mondi Group www.mondigroup.com/en/home



HUGE RANGE OF SPARE PARTS!

VACPAC is your one-stop shop for high-quality vacuum packaging OEM spare parts, tools and accessories.









SCAN TO FIND OUT MORE ABOUT OUR FULL RANGE OF SPARE PARTS



PROUDLY REPRESENTING THESE BRANDS PLUS MANY MORE:













Call or email us today for solutions to all your vacuum packaging needs.

EMAIL: sales@vacpac.com.au

CALL: (07) 3806 5972

www.vacpac.com.au

Freezer-rated AGVs

Dematic has launched its latest freezer-rated automated guided vehicles (AGVs), with a third-generation model featuring advancements in sensor and navigation technology that meet recently updated global safety standards. The full range of AGVs — including high-reach and counterbalance — are now all rated for deployment in freezer environments.

An AGV system removes occupational health and safety risks associated with workers exposed to cold environments, as well as the reduced productivity, because it can operate full-time in temperatures down to -25°C — picking and transporting product in freezer environments.

AGVs operating in Australia are covered under the recently updated Australian Standard - AS 5144-4 (equivalent to international standard - ISO 3691-4). This standard specifies clear procedures for achieving safety for both manufacturers and operators.

Dematic third-generation freezer-rated AGVs include safety features such as 360° safety scanning system with automatic slowing and stopping, easily accessible emergency stop buttons, visual and audible warning and alarm lights, redundant and safety-rated features and a compliant system and solution design.

Dematic Pty Ltd
www.dematic.com.au





TransChem has been an **award winning source of ingredients** for over 25 years for nutraceuticals and pharmaceuticals.

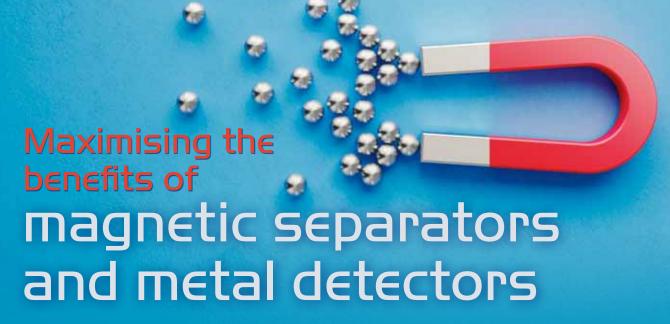
Now the food & beverage sector can benefit from the premium value, quality natural ingredients that we independently source from around the globe. We know the value of key natural ingredients, which will enhance the health and wellness offering in your product.

Contact us now to find out more about the difference we can make sourcing and distributing for you:

+61 2 9887 1688 or visit transchem.com.au/food-beverages







agnetic separators and metal detectors play a crucial role in enabling food and packaging processors to meet strict purity standards and safeguard their equipment against damage. To optimise the effectiveness of these systems, it is essential to incorporate magnetic separators and metal detection equipment throughout the entire food processing journey, with particular emphasis on the initial and final stages.

The strength of magnets and the sensitivity of metal detectors vary widely by manufacturer and equipment model so it's important to match the equipment to suit the user's application challenges and requirements.

In most cases, a combination of magnets and metal detectors within the processing line will yield good results. This integration offers an additional layer of protection by allowing the two pieces of equipment to work in tandem. While metal detectors identify and remove various types of metals — including ferrous, nonferrous and stainless steel — magnets can remove smaller ferrous and magnetic stainless steel particles that may evade detection by metal detectors alone.

By strategically placing a magnet immediately upstream of a metal detector in the processing line, ferrous contaminants



can be removed before reaching the metal detector. This arrangement can minimise the number of detections made by the metal detector, leading to fewer production disruptions and reduced loss of good products.

Eriez Magnetics Pty Ltd www.eriez.com.au



AMS have been suppliers of instrumentation and calibration equipment to all industries since 1973 representing some of the world's leading manufacturers of the equipment in their field.



The Liquid Measurement Experts





Gas Analysis





Dew-Point, Humidity and Oxygen Specialists







Leaders of Inline Process Control Solutions





Combustion Gas Analysis



Analytical Process Division



www.ams-ic.com.au sales@ams-ic.com.au



Packaging portfolio

The Nature MultiPack (NMP) machine joins beverage cans or PET bottles together to form stable packs with a few dots of adhesive — without any additional outer packaging. Saving up to 90% in materials, this technology has been consistently developed, with a universal adhesive applicable to most outer coatings on both aluminium and tin cans.

To determine which style of packaging has which impact on the climate and whether a conversion for a stretch blow moulder, for instance, has a positive effect on the carbon footprint or not, KHS has developed a number of carbon calculator tools. This service has been developed together with the Hamburg Institute for Environmental IT.

KHS has developed modular automation systems for format changeovers during the packaging of beverage cans and PET bottles. Up to 80% of all manual tasks required in conjunction with a line changeover are now superfluous in all KHS packers in the Advanced series and PB palletiser models. This allows operators to save up to 30 minutes for each packaging and palletising format changeover.

The Innopal PLR high-performance palletiser helps to further boost efficiency at the packaging and palletising end of a line. This combines the benefits of low-feed machines with the capacities provided by palletisers with a high infeed. With the help of robots, this machine processes up to 625 layers per hour, which amounts to a nominal capacity of 135,000 cans an hour depending on the can diameter. This machine also palletises PET containers and glass bottles.

KHS Pacific Pty Ltd

www.khs.com





Did you know your food waste could be powering your business operations?

As energy prices soar, disposal levies increase and concerns around climate change grow, the race is on to divert organic waste from landfill

So what's the solution?

A Biogas plant is a proven, reliable and cost-effective waste management solution for the food sector.

Anaerobic Digestion technology can treat your organic waste on-site to produce renewable energy that can be utilised back into your operating facility. Overall you will save on waste disposal and energy costs, reduce odours, divert tonnes of waste from landfill and reduce your impact on the

Managing Director, Jason Hawley from Finn Biogas says: "We are seeing an increasing interest in the environmental advantages of AD in Food & Beverage industries." Many businesses moving towards sustainable trade waste management include:

- Food & Beverage manufacturers
- Breweries
- Abattoirs
- Dairy Producers
- Poultry Producers
- Farming operations

"Finn Biogas have recently designed a new biogas system to tackle the growing need for cost-effective and sustainable waste disposal," Hawley says. "We are delighted to be bringing to market the 'FLEX' system, which ranges all the way from the FLEX20 to the FLEX2000 and is flexible based on your needs."

The smallest of the range, the FLEX20 is a 'plug and play', on-site waste management system that adopts the CSTR (Continuously Stirred Tank Reactor) technology and is ideal for small food & beverage manufacturers, farming operations, dairy producers. breweries, and abattoirs. The system is designed to ensure flexibility in operation, and compatibility with a variety of waste feedstocks, such as food & beverage factory waste, agricultural waste, meat and fish waste, manure, biosolids, bakery and grains waste. The biogas is combusted in the plant's CHP unit to generate reliable, on-site renewable energy + heat which can be used to offset electricity costs, whether it's the lights in your facility, fridges or boilers.

"The Flex20 can take up to 200 - 500 tonnes/ year, producing 6kW continuously which is roughly enough to power 3-4 houses per day," Hawley says.

Adaptable for all levels of technical expertise, the system allows operators to take either a "minimalist" approach to operation or fully immerse themselves in data logging and monitoring through the use of our

integrated control system. The FLEX system is a game-changer in supporting bioenergy as an alternate renewable option, achieving carbon neutrality and responsible waste management for small Australian businesses.

Finn Biogas is a Brisbane-based company that has built biogas solutions for clients throughout Australia, Europe, the Americas and South East Asia including projects for piggeries, chicken farms, dairy processing facilities, abattoirs and municipal sewage plants. We undertake all stages of the plant delivery — from concept design and feasibility studies, to procurement, construction, commissioning and monitoring. At Finn Biogas, we aim to help businesses divert emissions, meet environmental targets and manage waste in a responsible way.

Call us on: (07) 3379 5853 or Email: info@finnbiogas.com

www.linkedin.com/company/finn-biogas/





Finn Biogas Pty Ltd finnbiogas.com







Contrast sensors

The Leuze KRT 3C contrast sensor can be integrated into packaging processes because of its multicolour capability and small size. It is able to detect small contrast differences on glossy surfaces or highly reflective materials. This is made possible by the multicolour functionality: red, green and blue light as well as white and laser red light will not allow any object or printed label to pass through unnoticed. This allows users to select the right light source for any material and contrast mark colour for packaging and labelling processes.

The product is designed to detect contrasts precisely and with a response time of 50 μ s (laser: 125 μ s) and minimal signal jitter. With its small dimensions of 11 x 32 x 17 mm, the sensor is designed for tight installation spaces. This means it can be fitted almost anywhere. Users can set up the KRT 3C via the integrated IO-Link interface. This also speeds up product format changeovers.

Its housing is robust, protection rated to IP67 and IP69K and ECOLAB-certified. It can handle aggressive cleaning agents.

Leuze electronic Pty Ltd

www.leuze.com.au

Easily insert fillings inside food casings



With Rheon machinery you can create your designer fillings – sauces, vegetables, condiments, pizza, cheese and insert them into meat, chicken, seafood, bread products, cookies, arancini and lots more.





















Phone: (61 2) 9939 4900 **Email:** ssyme@symetec.com C22/148 Old Pittwater Road, Brookvale NSW, Australia

www.symetec.com

CASE STUDY

Potato grower partners with Coles and Detpak for sustainable packaging

Mitolo Family Farms, a leader in Australia's potato and onion category, has partnered with Coles and Detpak to create a kerbside recyclable paper bag for fresh potatoes.

The packaging innovation will see Mitolo Family Farms' Gourmandine potatoes sold in paper bags, delivering a 64% reduction in plastic, with 8.2 t less plastic being used each year when compared to the previous packaging of the product.

The paper packaging extends on previous sustainability steps taken by Mitolo Family Farms, which cut its use of plastic packaging by 60 t in 2022 by reducing the thickness of plastic used to bag potatoes.

A result of more than three years of rigorous development, it is hoped that the packaging innovation will lead to fresh produce items being packed in a way that makes it easy to support recycling efforts.

According to Frank Mitolo, Mitolo Family Farms Managing Director, it has taken immense work to ensure the bag is sustainable without compromising the quality of the potatoes. The companies considered supermarket lighting levels,



breathing holes that don't tear, new sealing solutions, bag strength and more while developing the product.

Tom Lunn, Detmold Group General Manager of Innovation and Sustainability, said Detpak used proprietary technology to deliver on sustainability and efficiency outcomes.

"We're very pleased to have been able to draw on our in-house development capabilities in order to assist Mitolo Family Farms with their desire to transition their Gourmandine product away from plastic packaging," he said.

Mitolo Family Farm's Gourmandine potatoes are exclusively available in Coles supermarkets.

Tim Nitschke, Coles Business Category Manager for Vegetables, said, "Coles has partnered with the Mitolo family for over 25 years and we are pleased to work closely with them to develop this innovative paper packaging solution for the Gourmandine range available exclusively at Coles."

Forming & Portioning machinery with a difference

Meat, Chicken, Vegeburger, Falafal, Seafoods



- Continuous coating & fry lines
- Auto forming & traying machines
- Auto Stacking formers
- Auto buttering machines



Phone: (61 2) 9939 4900 Email: ssyme@symetec.com C22/148 Old Pittwater Road, Brookvale NSW, Australia

www.symetec.com



Modular automation system

Enmin's Generate+ range of off-the-shelf modular automation systems are designed to slot into an existing production line to improve manufacturing efficiency and quality. The range comprises inline blending, seasoning and packaging systems.

Like all Enmin vibratory equipment, the three components are designed and manufactured in Australia and meet all Australian safety standards. They are constructed of 304 stainless steel for maximum durability and have an IP66 rating, ensuring the systems can withstand high-pressure washing.

The inline blending system is designed to be operated as a 'loss in weight' system. Using universal hoppers, multiple ingredients can be added to any of the storage hoppers and the recipe function will recognise the product and end mix ratio required. Minimal operator intervention is required at the start of the process when setting up the hopper. The operator can either choose a pre-loaded recipe and follow the screen direction for loading a specific ingredient into a pre-nominated hopper or the recipe can be adjusted by the hopper and saved for future use. The system is designed to handle all three loading processes: hand loaded, bin tipped or via bulk bags. The entire system is controlled by Enmin's recipe-based 'smart' PLC control unit. Based on the recipe, the desired product weight is nominated and that weight will be dispensed over a desired time period to ensure the correct mix is obtained.

The second component in the range is the seasoning system, which is designed to provide an accurate way of flavouring or seasoning a wide variety of dry snack foods. By understanding the volume of the base product, the system can deliver the seasoning or flavouring at a controlled rate to ensure product quality is maintained and the product is manufactured within specification. The product passes through the seasoning drum and is coated at a controlled rate; the product is then delivered into either a bulk bin, bulk bag for offline repackaging or directly into the packaging system.

The final piece of equipment in the range is the packaging system, which can seamlessly integrate an existing multi-head weigher, vertical form fill seal or pouch packaging machine into Enmin's materials handling system. The system uses the full washdown Mi-CON elevating conveyor which, like the operator platform, can be delivered flat packed if required for easy shipment and installation.

Suitable for small, medium and large food processors, the modular automation system is designed to eliminate equipment redundancy as it can be easily added to, extended and modified in the future, to meet user requirements.

Enmin Pty Ltd www.enmin.com.au

Radar level sensor with IO-Link

With the LW2720 level sensor, levels of liquid media in tanks with a height of up to 10 m can be monitored, without blind areas. The non-contact radar measuring principle is designed to prevent malfunctions or failures of the sensor caused by the adhesion of viscous media or damage from agitators.

The 80 GHz frequency used is designed to ensure stable and precise measurement results, even in the presence of steam or condensate in the tank. The sensor is designed for use in hygienic areas, so that even CIP and SIP processes or the use of spray balls do not impair its proper functioning.



Safety controller

HMS Networks has released a new version of the lxxat SafeT100 module allowing users to implement safe I/Os for FSoE — Functional Safety over EtherCAT. Previously available for PROFIsafe and CIP Safety, the new version supports FSoE according to ETG 5100 V1.2.0.

lxxat Safe T100 is an all-in-one safety solution that allows device manufacturers and machine builders to implement configurable, safe inputs and outputs in applications up to SIL 3 and PLe Cat.4. It is designed to work hand in hand with Anybus CompactCom, also from HMS Networks.

While Anybus CompactCom handles the standard non-safe communication with the EtherCAT network, the Safe T100 handles the safe communication, in this case over FSoE.

A typical application for lxxat Safe T100 is a safe emergency stop function for automation equipment such as drives, robots or process controllers.

HMS Industrial Networks

hms-networks.com

Ether CAT.

Ether CAT.



Valencia based company Lacteos Romar has historically specialised in producing traditional Iberian cheeses, using high-quality ingredients and controlled production processes.

The company was seeking a packaging solution for its flagship cheese flan product, with the aim of maintaining product quality while increasing production capacity to support market growth.

Lacteos Romar opted for a packaging line by G.Mondini to deliver the solution. The line uses an aluminium pack to

support the baking process of the flan without compromising on quality. It also uses patented ZERO technology that utilises 100% of top film — removing all skeletal waste. This can result in the saving of more than 25% of top film to provide cost savings. Furthermore, the production line is increasing the cheesemaker's production capacity.

G.Mondini www.gmondini.com

MTI PE200 SWING DOORS

The most robust solution for food industry, retail and logistics



The new PE200 HDPE double acting impact traffic door, exclusively available from MTI See-Thru, offers the perfect solution for insulation, functionality and durability.

Benefits of the MTI PE200 Swing Door;

- Made of solid polyethylene non breakable
- Hygienic (EU/FDA approved)
- Maintenance-free
- Made to measure
- Short production time
- Easy installation
- Long service life
- PVC finger protection
- 10 year guarantee on door leaves
- Stainless steel hinges

Trusted by food and retail companies worldwide;

- Kraft Foods, Bahrain
- Nestlé, Germany
- · Aldi, Ireland
- Lidl, Germany, England
- Edeka, Germany
- Kaufland, Germany
- IKEA, Turkey





Contact M.T.I. Qualos today to discuss your industrial door needs.



INDUSTRIAL DOOR SOLUTIONS

www.mtiqualos.com.au Free call: 1300 135 539 sales@mtiqualos.com.au



Largest trade show in decades



19 - 21 September 2023
Auckland Showgrounds

to welcome back international exhibitors

verything from packaging, food processing equipment, ingredients, food safety and sustainability will be on show 19–21 September at Foodtech Packtech 2023.

Held at the Auckland Showgrounds, organisers are reporting the floorplan is almost sold out of exhibiting space across its four halls. This will be their largest trade show in decades, making it a must-attend for the wider industry.

Importantly, the event will also welcome back international exhibitors for the first time since the pandemic, showcasing advancements in technology from around the globe.

A key drawcard for attendees is the opportunity to evaluate new technology and meet new suppliers. With over 250 exhibitors, there will be no shortage of opportunities to do just that. International companies such as Vemag, Auspress, Schurstar, Lima and Mettler Toledo are back at the show to launch and share the latest global advancements; everything from meat processing equipment, food-grade hydraulic presses, flexible packaging options, food processing equipment, precision instruments for weighing — and that's just a start!

The event features a new food ingredients area. Coined 'The Pantry', Exhibition Manager Deb Haimes notes this feature has been a long time in development and comes off the back of visitor feedback. The Pantry promises to be a unique opportunity to explore the latest trends in the industry and will even touch on plant-based food ingredient alternatives. Examples of exhibitors in The Pantry include ICMD, Formula Foods and Carmi Flavours — and Reward Hospitality will be bringing its commercial kitchen onsite to utilise these ingredients, creating a sensory experience to see, taste and smell the featured ingredients on offer.

Of course, the event is not just about showcasing new technology and products. It's also an opportunity to learn and collaborate with industry peers. Haimes is promising three very full days of seminars covering all the show's categories, providing an immersive platform for attendees to learn about the latest advancements in food technology and to collaborate on solutions that will shape the future of the industry.

In addition to the seminars, the event promises to be an excellent opportunity to come together, network and develop ideas with like-minded individuals that will help future proof your business.

As the event draws closer, organisers XPO will be releasing news on the extensive seminar line-up in upcoming issues of What's New in Food Technology & Manufacturing magazine. It's important to note that the event is entirely free to attend, making it accessible to industry professionals from all backgrounds.

The strategic partners supporting this event recognise the importance of innovation in the industry and are committed to driving it forward. Callaghan Innovation, a government agency committed to supporting innovation in local food technology and manufacturing, will be there — offering a range of services, including funding, research and development, and innovation expertise. The New Zealand Institute of Food Science and Technology is a professional organisation that strongly supports the education and development of the food industry — and will once again be hosting a dedicated area of seminars.

As a proud media partner of the show, the *What's New in Food Technology & Manufacturing* team will also be onsite to talk with exhibitors and industry visitors face to face.

Packaging is a crucial aspect of the food and general manufacturing industries. Sealed Air, Prime Pac, Packtech Moulding and Oji Fibre Solutions are examples of such exhibitors displaying innovative packaging solutions for the food industry.

Sealed Air, for example, will showcase its Cryovac Darfresh vacuum skin packaging, which is designed to extend shelf life for fresh meat and seafood products. Prime Pac will display its range of flexible packaging solutions, including its stand-up pouches and barrier films, designed to enhance the shelf life of various food products. Packtech Moulding will demonstrate its expertise in injection-moulded packaging solutions, including containers, trays and cups, while Oji Fibre Solutions will display its paper-based packaging solutions.

Packaging solutions providers will also offer valuable insights into the latest packaging trends and innovations in the industry. Attendees can learn about sustainable packaging solutions, packaging materials and how to enhance product shelf life, among other topics.

Foodtech Packtech featuring the Materials Handling & Logistics Expo runs from 19–21 September at the Auckland Showgrounds — an event that promises to be an exciting opportunity for industry professionals to come together, learn, collaborate and showcase the latest advancements in food technology. With support from strategic partners and the largest trade show in decades, it's an event not to be missed.



Register now to attend for free at www.foodtechpacktech.co.nz and stay tuned for more news and updates as the event draws closer.

XPO Exhibitions www.xpo.co.nz

Turn accountability into opportunity with InformationLeader

InformationLeader is a web-based data capture, management, and reporting platform.

It is globally recognised as a compliant replacement for costly paper-based forms and processes.

For over twenty years InformationLeader has helped some of the biggest names in food manufacturing and export.

Give us a call today to learn how InformationLeader can help you. +61 7 3275 0800 informationleader.com









the most literal items that add spice are the myriad of seasonings that people use on food daily. To keep these products fresh, grocery store staple seasoning manufacturers require efficient operations in their spice warehouses.

TA Services assisted an American food company that markets, manufactures and distributes spices, seasonings, condiments and other products around the globe to streamline its warehousing operations. Despite substantial company growth, with manufacturing and R&D locations across the globe, the manufacturer prefers to keep new warehousing and milling operations local in the US.

The manufacturer's operations include three locations, all with specialised purposes:

- A 1858 m² warehouse for storing garlic blends to prevent the smell of garlic leeching into other products.
- A 5759 m² warehouse that stores raw and unprocessed materials before they are prepared and packed for consumption.
- A 14,994 m² location that houses other commodities for the distribution network, including specialty services for large spice shipments, like relabelling, shrouding and palletising.

These warehouses total nearly 23,000 m² and house hundreds of tonnes of spices and seasonings, all destined for a customer

The company distributes worldwide and sources its products from across the globe, often storing products for months in its US distribution centre. Its shipments contain large quantities of potentially perishable spices and seasonings, all with different storage requirements and oversight considerations.

During the pandemic, the supply chain experienced significant delays in receiving vital goods from across the globe, ranging from microchips to car parts.

With many restaurants and dining establishments mandated to close operations to comply with social distancing measures, consumers were forced to prepare more meals at home, shifting demand.

The manufacturer recognised that increased demand could cause shortages, and in response, placed large orders for the most popular herbs, spices and seasonings to avoid delays and keep products on hand for packaging and shipping.

The increased volume of the products raised concerns about storage and shipping. Some products kept in the US warehouses required strict temperature control and other storage requirements to preserve freshness and quality. Some of the commodities and pre-packaged goods sent through the warehouse require special SAP labelling and need to be repalletised and sealed for shipment.

Capacity management challenges were also brought about by the pandemic, leading to concerns about where to store



extra inventory with the global economy shutdown. With demand increasing, the manufacturer needed to work with a third-party logistics (3PL) provider to keep pace across its warehouses. The provider needed to be flexible enough to work out of any of the three facilities, provide the same level of quality as the manufacturer's staff members and ensure positive brand reputation.

The manufacturer chose to partner with TA Services, a familiar resource it had worked with in other US locations.

TA Services has worked across a variety of industries ranging from construction equipment to fresh produce. It has implemented measures to align with the manufacturer's current operations to ensure that processes are executed efficiently and correctly.

For example, TA Services pulls daily reports from the manufacturer's SAP system, allowing it to track operations and address urgent shipping needs. This includes extra services such as the shrouding and relabelling of containers, in addition to repalletising products for distribution. TA is tied to the manufacturer's SAP system, giving TA real-time actionable data on areas like inventory wastage and swift spikes in demand.

With experience in freight and warehousing operations, TA Services is able to maintain ambient temperature and humidity across all areas in the US locations, maintaining product quality and freshness.

The manufacturer was able to operate efficiently during the pandemic with TA's help, even with supply chain disruptions.

TA was able to:

- •help manage nearly 3.6 million kg of dry, raw, and precleaned spices and seasonings across three different warehouses
- improve visibility across the manufacturer's Baltimore warehouses for real-time product traceability
- enable efficient shrouding and labelling operations to move any volume of material at a moment's notice
- •upgrade warehouse monitoring technology for improved accuracy on product inventory during demand peaks.

TA Services' solutions streamlined warehousing operations and have allowed the household staple seasoning manufacturer to fulfil orders quicker while keeping quality high.

"We are in the logistics industry to make a difference in shippers' supply chain. Being able to help this company with the flexibility of their warehouses as well as being a fullservice provider at all of their locations is a reminder of why we do what we do," said David Bowers, VP of Warehouse Operations at TA Services.



Sensors and Al for factory automation

Dr. Ola Friman Head of Research & Development Machine Vision, Leader I4.0 Deep Learning Initiative, SICK AG

Machine Learning methods based on Deep Neural Network models have in recent years made breakthrough strides in automated perception of data, e.g., for interpretation of images, speech and text. Whereas research results hold a promise of the next leap in automation levels there are also challenges concerning data, engineering, processes and communication that are important for successful adoption. Addressing these challenges will be key to get past technology pilot phases into operational deployments.



Industrial factory automation relies on sensors such as cameras, LiDAR, light grids, RFID and encoders to provide the perception capabilities necessary for decision-making and control, e.g., for sorting, robot picking and quality inspection. Computational algorithms broadly referred to as Artificial Intelligence (AI), process the raw sensor data to extract relevant information and to form decisions. Traditional algorithms consist of rules and mathematical operations designed and parametrized by human experts. A simple example application is to discard a produced item if a hole dimension is not within a given tolerance threshold, where both

the mathematical operations to extract the hole dimension from an image and to set the tolerance threshold value are design questions for human domain experts.

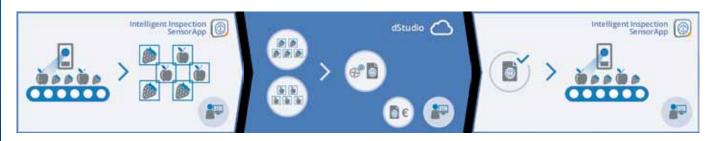
Machine Learning offers a different algorithmic approach to the above inspection problem in which the human handcrafting is replaced by an optimization of the parameters in a Machine Learning model that maps the raw sensor data as input to the desired output decision to reject the item or not. What is ultimately left for the human is to give examples of correct mappings, i.e., to supply training images of holes with the right and wrong dimensions respectively.

One advantage of the Machine Learning approach is that the underlying mathematical optimization procedures can handle millions of model parameters, which is impossible to handle for a human. It can thereby also find solutions that are not obvious to a human. A consequence of this advantage is however that the Machine Learning solution often becomes a black box where the inside decision mechanisms cannot be understood, with consequences for life cycle management and general trust in the system.

In recent years, the use of so-called Deep Neural Network models have been



Object classification is one example of a machine vision recognition task. In this user case, new and used bottles are classified in the infeed zone at the bottlewasher machine



A typical workflow starting with collection of the raw data by the sensor using a SensorApp, the training takes place in the cloud service and the trained Deep Neural Network is finally uploaded to the sensor again to be used to directly classify images in the factory

shown to outperform human handcrafted algorithms within the machine vision and speech understanding domains. For factory automation, one application of Deep Neural Networks is to mimic the outstanding human visual perception.

This is achieved by optimising the neural network to reproduce human responses to visual data for tasks such as visual defect inspection, localizing objects in the camera field-of-view, sorting based on visual appearance or spotting foreign items in food production. In parallel and in conjunction with the advancement in Al technology, related disciplines also experience strong development, including robotics, connectivity, Internet of Things, miniaturization of computing power and cloud technology. This paves the way for the next generation digital transformation manufacturing systems with a high degree of automated and optimized decision-making, leading to improved production flexibility, resource utilization, waste minimization and product quality. This paper discusses opportunities and challenges for the next decade 2020-2030 related to sensor development and Al in form of Deep Neural Networks towards digital transformation production systems. The following sections highlight opportunities and challenges in adopting the Deep Neural Network technology for factory automation.

Opportunity 1: Sensor perception

The most obvious way Deep Neural Networks may contribute to more efficient production processes is by automating tasks that have not been tractable by means of conventional algorithms. Until now, such tasks either have required the interpretation skills of a human or were simply not possible at all.

Opportunity 2: Measurement utilisation

While predictions around AI typically often revolve around solving new automation applications, an overlooked aspect is to utilize improved perception skills to simplify existing applications by a more efficient utilization of the measurement data. A straightforward example would be to replace high-resolution 2D cameras with lower resolution ones, but one can also foresee examples where a 2D camera plus improved AI can accomplish the same task as a larger 3D camera. Trends in this direction can be seen within the robotics domain where Deep Neural Networks

trained on CAD models can estimate the six-dimensional pose, 3D location and 3D orientation, of an object from a 2D image of it. A practical consequence may be that one can make lighter and small-sized sensor solutions fitting more narrow spaces.

Opportunity 3: A new configuration paradigm

A key property of Machine Learning and Deep Neural Network approaches is that they are configured in a fundamentally different way compared to a traditional algorithmic approach, i.e., through a well-defined procedure from collecting the raw data, annotate the raw data, train and finally deploy a neural network.

For more information on Deep Learning capabilities in food manufacturing and distribution applications please contact SICK Australia and New Zealand.



SICK Pty Ltd www.sick.com.au

Meat processing plants: what factors are critical for survival?

he pandemic highlighted the vulnerabilities of large meat processing plants in the US with shutdowns and staff shortages leading to reductions in capacity by about 40% and higher meat prices. The government is now introducing new initiatives aimed at increasing meat processing capacity and industry resilience which are often aimed at small and medium-sized plants — but is this the best use of such funding?

A new study from the University of Illinois Urbana-Champaign has looked at meat processing plants across the US to identify characteristics associated with meat processing plant survival.

According to co-author of the study Sarah Low, the main goal of the study was to understand what factors are associated with meat processing plant survival for the benefit of policymakers who want to invest in these plants. The results of the study also provide some interesting insights into optimum location and size of meat processing plants.

The researchers analysed data from 1997 to 2020 for US non-poultry meat processors with more than five employees (poultry was excluded due to a unique industry structure). The analysis included 7839 plants, focusing on plant-level characteristics, local context and concentration.

The study showed the majority of meat processing plants are located in the Eastern half of the US, although small and medium-sized plants are more dispersed throughout the states. Many plants are clustered around major cities in proximity to large customer bases and available workforce — in fact, 86% of plants are located in metro or metro-adjacent counties.

The researchers found the average plant survived 9.7 years and 62% of the plants failed at some point during the study period, with small and medium-sized plants more likely to fail than large plants.

"We did find a difference in factors associated with survival for the small and medium plants, compared to the large plants, as well as for urban versus rural plants. For small plants, survival was closely related to business diversification. If they added a retail or wholesale meat market, they were more likely to survive," explained Catherine Isley, lead author on the study.



"For larger plants, we found that local context, including workforce-related variables, was more closely related to plant survival. We didn't find much evidence for the impact of concentration, except for large non-metro plants, where concentration was related to increased survival. This finding suggests that policies aiming to support small and medium meat processors by breaking up larger processors might negatively impact output and industry capacity," Isley said.

If plants are spread out across the country, then workers would have to be spread out as well, Low noted. "There are locations in Nebraska or Kansas where whole communities are set up to serve immigrant workers. If you want to break up these big processors and have plants in small towns, who's going to work there? We currently have a shortage of labour nationwide, and many plants rely on an immigrant workforce," Low said.

Policy initiatives for large plants need to address labour availability issues and support the labour force effectively, Low and Isley pointed out. This could include, for example, increasing the number of visas for immigrant workers, training new workers, improving working conditions and investing in research and development to automate processes.

For small and medium-sized plants, there is a different set of policy implications.

"To allocate federal or state dollars in the most efficient way, it would make sense to support plants that are diversified and more likely to survive," Isley said. "But on the flip side, the

goal might be to support plants that are more likely to fail, because otherwise those local communities wouldn't have a plant. However, this approach would only work in areas where the market can support value-added niche products. There's not necessarily a one-size-fits-all solution for small plants."

The researchers also found that small plants managed by women in rural areas are less likely to survive. Thus, an additional target for investments could be technical assistance for very small women-operated plants in rural areas, including entrepreneurial training and ecosystem building.



Sarah Low (left), professor and head of the Department of Agricultural and Consumer Economics, part of the College of Agricultural, Consumer and Environmental Sciences at Illinois, and Catherine Isley, senior business analyst at The Context Network and lead author on the study.

NEW 2023 REFRIGERATED HIRE FLEET AVAILABLE TO HIRE

Refrigerated fleet sizes from 1 ton to 25 ton Ridged and 40ft Tri axle trailers

AVAILABLE TO ASSIST YOU WITH REFRIGERATED HIRE 24 HRS-7 DAYS A WEEK

- Self Drive
- Off Engine Drive-Diesel Stand Alone-Single and 3 Phase Electric Stand by
- 2 Ton Retractable Tailgates
- Reverse camera-Driver and passenger side air bags
- Allison Automatics-Air bag Suspension
- Meat rails
- Duel temperature zones
- Prime safe

We are all Australian Refrigeration Transport Licensed technicians and conduct our own in house repairs.

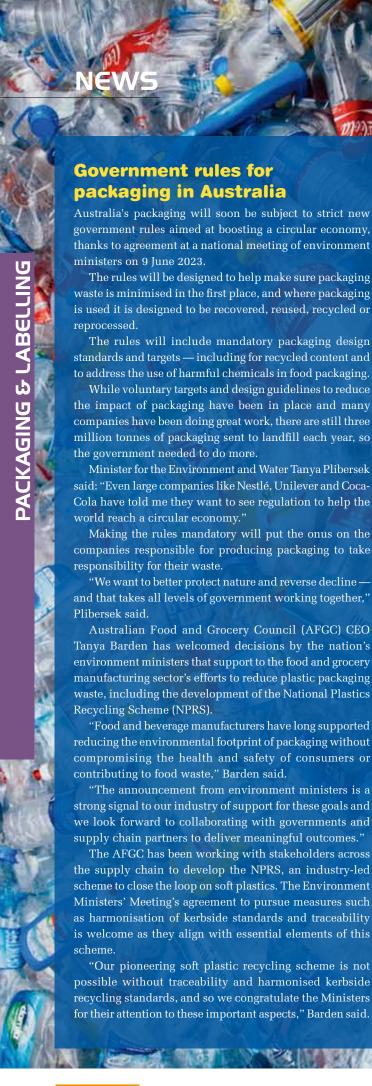


1300 364 575

www.refrigeratedtransporthire.com.au









Seals for fruit and vegetable trays

When it comes to the marketing of fruit and vegetables, plastic-free and recyclable packs are very much on trend. In addition to full wrap labelling, which has already become established in the market, MULTIVAC has two other sustainable packaging solutions for fresh produce trays: whereas Top Wrap involves applying a label to the top and both sides of the tray, Top Close seals the tray closed just with a label from above. Both concepts are suitable for fresh products, which do not have to be packed under modified atmosphere or airtight in a vacuum. This means that a label can be used to simply seal the tray closed and label it at the same time in one resource-saving operation.

The self-adhesive labels on a backing material not only offer a large area for product information and marketing purposes, they also open up a wide range of possibilities for product presentation in terms of material thickness and label shape. It is possible for example to have cut-outs in the label, as well as adhesive-free zones, so that contact with the product is prevented. Perforations serve as opening aids and make the handling of the packs easy for the consumer.

Depending on the type of tray and its content, as well as the packaging materials used, a wide variety of solutions are available with MULTIVAC conveyor belt labellers, which support sustainable and recyclable packaging concepts. Common to all these solutions is that the trays are automatically labelled on the run, and they are either fed in manually or transferred automatically from an upstream module. This can provide cost savings and efficient processes, when compared with manual packaging solutions.

MULTIVAC Australia Pty Ltd

www.multivac.com.au

Using paper bands to bundle products

Mondi has collaborated with Swiss converter ATS-Tanner to create a paper band that can hold individually labelled products or bundles, reducing plastic usage.

ATS-Tanner uses Mondi's kraft paper Advantage MF SpringPack and converts it into a band by adding a functional barrier on both sides of the paper. The paper is then sealed using ultrasound, without any need for adhesive. This ensures the products are secured using minimal packing while reducing waste. ATS-Tanner markets the coated bands under the brand name TruePaper.

The paper can hold weights up to 20 kg, making

the band suitable for fruit and vegetable bundles as well as multipacks of bottles and other consumer goods. The paper can also be used for printing, meaning brand, product, return and responsible waste management messaging can be communicated to the end user.

Mondi's kraft paper is made from renewable products and is recyclable in existing paper recycling streams across Europe.

Mondi Group

www.mondigroup.com/en/home



Recyclable hotmelt adhesive launched

Dow and Avery Dennison have developed a hotmelt label adhesive solution enabling polyolefin filmic labels and polypropylene or polyethylene (PP/PE) packaging to be mechanically recycled together in one stream.

The adhesive is approved by Recyclass for recycling in the \mbox{HDPE} coloured stream – Class B.

Hotmelt adhesives are suitable for labels in chilled applications but standard hotmelts reduce the usability of recycled PP/PE material. This olefinic hotmelt is based on the same chemistry as PP/PE packaging and can be treated as a mono-material when combined with a polyolefin facestock.

The adhesive's development was driven by Avery Dennison's design-for-recycling thinking and made possible using Dow's polymer science expertise. It is based on Dow's AFFINITY GA polyolefin plastomers and sold by Avery Dennison under the name CF3050 in the Europe, Middle East, North Africa (EMENA) region.

Avery Dennison

www.averydennison.com

Listeria Detected in 25g

To minimise this risk FMCG Industry Solutions is now offering a new unique anti-listeria product called **PhageGuard Listex.**

Contact us now for more information how this amazing product can stop the spread of listeria in the environment and Ready to Eat (RTE) Foods.



Official

Distributor

PhageGuard



Email: sales@fmcgis.com.au Phone: (02) 9540 228 www.fmcgis.com.au



CASE STUDY

Coca-Cola transitions to tethered caps and lighter bottles



In line with Europe's upcoming single-use plastic law, Coca-Cola Europacific Partners (CCEP) has made the decision to introduce tethered caps for its PET bottles before July 2024. With the help of Sidel, CCEP has also identified the opportunity to move to a more sustainable, lighter neck for its carbonated soft drinks (CSD) plastic bottles.

Sidel and CCEP have collaborated for over 30 years at a global group level, across multiple projects in equipment, packaging development and supporting services. CCEP's introduction of attached caps and the implementation of a lighter neck, saving 1 g, provided some technical challenges relating to the correct selection of preforms and caps as well as the right technical equipment configurations to switch across all its existing PET packaging lines in Europe.

During the initial definition and planning phases of the project, CCEP had to rationalise the solutions to implement in terms of caps, preforms and OEM technical modifications on the equipment. Pilot tests were handled on two different lines during the planning phase, including one Sidel line in Barcelona, converted to accommodate both tethered capping and the lighter neck GME30.40 that was developed and made available for industry. Sidel worked closely with CCEP to assess the specifications, along with the equipment configuration to ensure efficiency on the line, validate quality requirements of new necks and allow CCEP to conduct a small-scale market evaluation to understand consumer acceptance.

According to Geert Marse, Technical Packaging Lead at CCEP, project management between CCEP and Sidel was key to getting the lines ready. The Barcelona pilot helped the companies learn and identify any potential issues, before the

first sellable bottles were released on the Great Britain market in May 2022.

In some cases, Sidel combined line conversion with line overhaul, while CCEP conducted maintenance to deliver product execution and highest level of line performance.

"The majority of converted lines achieved line efficiency objective. We are fully satisfied with the preparation, including line status assessment, the pilot line tests and the great collaboration in working together to make this project successful," Marse said.

Once the Barcelona testing was finalised, CCEP asked Sidel to convert all of its lines within European factories. This varied between factories, with some requiring significant development, including adaptation of different equipment such as the preform feeder, blower, capper, cap feeder and labeller.

A large number of lines across the EU required conversion. The first line to be concerted was completed in April 2022 in East Kilbride, Scotland, which produced CCEP's 1.5 L bottle, before a second single-serve line was completed at the end of 2022.

"To support this switch, Coca-Cola launched a broad communication campaign to explain how to use this new cap and to help gradually change consumer habits, collecting all consumers' feedback and taking corrective actions if needed," Marse said.

Sidel has converted one-third of CCEP's European PET bottling lines for CSDs, with the final line conversion scheduled to be completed by the end of the first quarter of 2024.

Sidel Oceania Pty Ltd www.sidel.com



he global plant-based food market is predicted to triple in size over the next decade, with plant-based food sales forecast to surge by over 12%. This increase in sales of highly manufactured meat and dairy product alternatives has raised concerns among some experts.

Dr Hazel Mactavish-West, Australian food scientist and founder of Seedlab Australia, believes many 'plant-based' alternatives are failing to deliver on taste, promise, price and nutrition.

"There are basic nutritional building blocks that as humans, our cells and bodies need and crave - vitamins, minerals, salts, protein, sugars, fibre, fats — the list goes on. The reality is that some highly manufactured meat and dairy alternative products are masquerading as real foods, and are not providing the nutrition our bodies require, the wow factor that our taste buds expect, and may not be worth the higher price point they command," Mactavish-West said.

Many companies have switched from incorporating mushrooms, nuts, legumes and vegetables as ingredients in meat alternatives to highly scientific food technology processes that look and attempt to taste like meat and dairy through a blend of extracts, isolated food components and single chemical ingredients.

The plant-based food sector has recently seen the plateau of plant-based meat sales in the US predicted to soon play out in the Australian market, with UK meat brand Heck reducing its alternative range from 15 to two and v2food closing its Wodonga, Victoria plant.

In a 2022 study into sensory expectations around plantbased burgers and cheese alternatives by Kerry, the global R&D, consumer insight, food safety and manufacturing company found that 60% of Australian consumers began eating plantbased products because they are considered 'healthier' than the alternative, while 51% did so for environmental reasons.

"Outside of vegetarian and vegan communities, consumers are purchasing these products either for novelty reasons, because of enticing branding and packaging that positions the product as being 'better-for-you', because social media made them trendy, or because they were on special," Mactavish-West said.

Initially, plant-based meat alternatives presented an opportunity to address nutritional, ethical and environmental issues in a unique and impactful way, by incorporating wholefoods including nuts, mushrooms, legumes and vegetables into these products.

Mactavish-West said the conundrum comes when alternatives for meat products are made from extracts, concentrates, isolates, thickeners, sugar, oils and dextrose with a percentage of mushroom, pea and rice protein and potato starch.

"Just because something has a slight resemblance to the look and texture of meat or cheese, it doesn't mean it delivers the same nutrients that the human body needs.

"I believe we need to continue to support and encourage producers and food manufacturers to look for sustainably produced, nutritious ingredients including wholefoods that deliver holistically on taste, nutrition, economics and environmental responsibility," Mactavish-West said.



Adhesion starch

The clean-label, wheat-derived, native adhesion starch from food ingredients specialist Loryma is not modified and does not need an E number. Thanks to its production process, Lory Starch Saphir pure is designed to be as efficient as conventional modified starches and provides good adhesion properties for all types of substrate coatings.

By simply declaring it as "wheat starch", the adhesion starch meets current consumer preference for an easy-to-understand

ingredient list without E numbers. This product is a superior version of Lory Starch Saphir and replaces it in the Loryma range. Suitable for air bubble-free coating, the product has good adhesion properties and forms vapour permeable films. This allows steam to escape through the coating, which binds to various substrates such as meat, fish or plant-based alternatives.

Used as a functional ingredient in batter and tempura or as a pre-dust, the product provides a crispy surface while reducing fat absorption in the fryer. The wheat starch itself is neutral in taste and has a low viscosity, making it easy to use.

Loryma

www.loryma.de/en/



Red and pink colour for plantbased meat and seafood

Oterra has launched its ready-to-use Red and Pink ColorFruit and FruitMax blends for plant-based meat and seafood.

The blends help food manufacturers meet the growing consumer demand for clean label plant-based products that mimic the look and behaviour of traditional animal-derived variants.

The colour blends are free from palm oil, and made from plant- and vegetable-based raw materials.

The ready-to-use blends are not only convenient to use and suitable for reducing complexity in the manufacturer's process, they are also good for creating stable tailor-made shades for all types of meat and seafood substitute products, be it burgers, sausages, minced meat, meatballs, deli slices, salmon or tuna steaks.

Designed by Oterra's technical team, the new Red and Pink blends expand upon traditional colours for plant-based products, by using a special pigment combination that means the colour not only looks good in the first instance but also mimics animal-based meat by changing colour during the cooking process.

Oterra Australia Pty Ltd oterra.com



Plant-based fat alternative

Gavan Technologies' FaTRIX is an alternative fat solution. It offers a series of protein-based fat substitutes that serve as alternatives to butter and other commonly used fats in a variety of bakery products.

The patented, plant-based fat-protein matrix is designed to replicate the functionality of animal fat. It is designed to: be sustainable, be clean label, reduce saturated fat by up to 80% and it is trans fat-free

FaTRIX is composed of three natural ingredients: the extracted protein acts as a base on which plant oil and water are bound, creating a protein-enriched texturised fat.

The composition of oil, water and protein delivers binding and cooking abilities, making it a suitable solution for food formulators. It also has a high melting point and fat-holding capacity, preventing it from leaching during processing or heating.

Gavan Technologies

www.gavan.bio/

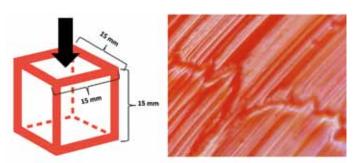


The physics of creating shelf-stable gummies

or gummy candies, texture might be more important than taste. It is disappointing to bite into a gummy expecting a burst of sweetness, only to be met by a hard, stale treat. Formulation and storage, both of which alter how the molecules in the candies link together, are vital to keeping gummies in good condition.

In AIP Publishing's Physics of Fluids, researchers from Ozyegin University and Middle East Technical University conducted a series of experiments to explore how changing key parts of the gummy-making process affect the final product, as well as how the products behave in different storage temperatures. These results were used to identify the most shelf-stable combination for gummy candies.

The group adjusted a variety of inputs while making the gummies, from the glucose syrup-to-sucrose ratio to starch and gelatine concentrations. They sought to understand how these changes affected features like candy texture, moisture content and pH.



Gummy candy as a food model for texture. Image credit: Suzan Tireki

They then studied the resulting features of the candies before and after storage. Storage conditions vary from 10-30°C for 12 weeks or 15-22°C for a year.

These extensive combinations of procedures presented hurdles during the study, with the main challenge being a high number of parameters, according to author Suzan Tireki.

"We had eight different candy formulations, four different temperature conditions and two different storage times. Another challenge was to try to find a common model for all these eight formulations, as each of them behaved differently," Tireki said.

To account for all the variables, the researchers used a statistical model to describe how each combination affected the quality parameters of the gummy. They explored the chemical crosslink distances — the length of bonds between molecules in the candy.

"The most innovative part of our study was investigating the texture of the gummy candies by estimating the average crosslink distances using the hardness data coming from texture profile analysis," Tireki said.

The moisture content and pH, for example, were heavily dependent on the glucose syrup-to-sucrose ratio, whereas the gelatine content affected crosslink distances.

"Our most surprising finding was that hardness and average crosslink distance were not affected by the amount of starch," Tireki said.

By identifying the most stable combinations for gummies, the shelf life can be extended and candy quality in different climates and across the industry can be improved.

The researchers next look to explore the role of plant-based formulations, mould shapes and packaging types.

What's new

Flavoured chocolate, carbon-neutral pork and boxed wine are some of the items hitting the shelves this winter.



Boxed wine

Unbottled Wines has boxed 5-star wines from Australian winemakers in a 2 L box that is designed to keep wine fresh for 40 days after opening.

www.unbottledwines.com



Cadbury has announced the latest addition to its SLICES range, Vanilla Passionfruit, inspired by the bakery Passionfruit Slice.

www.cadbury.com.au





Carbon-neutral pork

Coles has released a range of pork that is certified carbon neutral in accordance with the Australian Government's Climate Active Carbon Neutral Standard. The pork range is available nationally and includes eight cuts: rib rack, cutlets, schnitzel, diced, leg roast, porchetta as well as porterhouse and tomahawk steaks.

www.coles.com.au

Island flavour chocolate

Tim Tam has launched its Coconut Cream flavour, with two crunchy biscuits sandwiching a creamy coconut-flavoured centre, all coated in chocolate.

www.arnotts.com/brands/tim-tam





High-protein milk

Betta Milk has added a high-protein lactose-free milk to its range of white milks, creams and flavoured milks. Already rich in calcium, vitamins and minerals, the high-protein lactose-free full-cream milk contains 50% more protein than Betta's regular full-cream milk.

bettamilk.com.au

Premium bottled water

DKSH Grocery Connect has announced a partnership with Nestlé to promote its portfolio of premium water brand Perrier across Australia.

www.perrier.com





Westwick-Farrow Media A.B.N. 22 152 305 336

www.wfmedia.com.au

Head Office

Unit 7, 6-8 Byfield Street, North Ryde Locked Bag 2226, North Ryde BC NSW 1670 Ph: +61 2 9168 2500

Editor: Carolyn Jackson wnift@wfmedia.com.au

Editorial Assistant: Vanessa Boumelhem

Acting Publishing Director/MD: Janice Williams

Art Director/Production Manager: Julie Wright

Art/Production: Linda Klobusiak, Marija Tutkovska

Circulation: Dianna Alberry circulation@wfmedia.com.au

Copy Control: Mitchie Mullins copy@wfmedia.com.au

Advertising Sales Manager Kerrie Robinson Ph: 0400 886 311 krobinson@wfmedia.com.au

If you have any queries regarding our privacy policy please email privacy@wfmedia.com.au

Printed and bound by Bluestar Print Print Post Approved PP100007395 ISSN No. 1039-8414

NOTICE:

All material published in this magazine is published in good faith and every care is taken to accurately relay information provided to us. Readers are advised by the publishers to ensure that all necessary safety devices and precautions are installed and safe working procedures adopted before the use of any equipment found or purchased through the information we provide. Further, all performance criteria was provided by the representative company concerned and any dispute should be referred to them. Information indicating that products are made in Australia or New Zealand is supplied by the source company. Westwick-Farrow Pty Ltd does not quantify the amount of local content or the accuracy of the statement made by the source.



The All New Event Uniting the Australasian Processing and Packaging Industry

Machinery, Equipment, Materials & Packaging, Food Processing & Industry Services

12-15 March 2024

MELBOURNE CONVENTION AND EXHIBITION CENTRE



Hitting a wall discharging solidified bulk material?

HYDRAULIC RAMS

crush and loosen solidified bulk materials safely and easily

FULL-HEIGHT DOORS

with safety interlocks disable operation when open

HYDRAULIC SCISSOR LIFT WITH TURNTABLE

allows conditioning of the bag on all sides at varying heights



ARCHED DOORWAY MASTS

increase overhead clearance for greater forklift access

PROGRAMMABLE CONTROLS

allow user adjustment of bag height/rotation and number/force of ram actuations

HYDRAULIC PUMP

efficiently generates the power to force rams through solidified bulk materials

No problem with BLOCK-BUSTER® Bulk Bag Conditioners

BLOCK-BUSTER® Hydraulic Bulk Bag Conditioners loosen hygroscopic chemicals, spice blends, heat-sensitive products, and other bulk materials that have solidified during storage and shipment. These self-contained systems are ready to plug in and run.



Left: Stainless Steel Bulk Bag Conditioner designed and constructed to sanitary standards. Right: Bulk Bag Conditioner integral to Bulk Bag Discharger reduces cost, footprint and loading time of separate equipment.

flexicon



See the full range of fast-payback equipment at flexicon.com.au: Flexible Screw Conveyors, Tubular Cable Conveyors, Pneumatic Conveying Systems, Bulk Bag Unloaders, Bulk Bag Conditioners, Bulk Bag Fillers, Bag Dump Stations, Drum/Box/Container Tippers, Weigh Batching and Blending Systems, and Automated Plant-Wide Bulk Handling Systems



WATCH

IT WORK

1 300 FLE

sales@flexicon.com.au 1 300 FLEXICON +61 (0)7 3879 4180

AUSTRALIA



USA SINGAPORE INDONESIA MALAYSIA SOUTH AFRICA

MALAYSIA SOUTH AFRICA UK SPAIN FRANCE GERMANY +1 610 814 2400 +65 6778 9225 +62 81 1103 2400 +60 10 282 2400 +27 (0)41 453 1871 +44 (0)1227 374710 +34 930 020 509

+33 (0)7 61 36 56 12

+49 173 900 78 76

