

March/April 2020
Vol.27 No.6

what's ^{new in} Food _{technology & manufacturing}

**WHAT'S
ON TREND
FOR PACKAGED
BEVERAGES?**

PP100007395

Filling lines & bottling | Resealable packaging | Mixing equipment

Official sponsors of the Australian Institute of Packaging

AUSTRALASIAN PACKAGING CONFERENCE

PACKAGING: FIT FOR THE FUTURE

We are proud members of



WORLD CLASS PACKAGING AND PROCESSING SOLUTIONS

Auspouch brings a wealth of packaging, engineering, processing and consulting expertise together to make winning solutions easy for Australian and New Zealand businesses.

AUSPOUCH Packaging solution partners



contents

March/April 2020



6

food for thought

- 4 Implications of novel coronavirus (COVID-19) for food processing



10

beverages

- 10 What are the current beverage trends?
- 18 Cheers to the perfect beer head



21

packaging & labelling

- 21 Packaging: fit for the future
- 24 Antimicrobial film created to stop pathogens in packaged meat
- 26 Shrimple packaging
- 28 The role that resealable packaging plays in minimising food waste



READ ONLINE!

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



32

bulk handling, storage & logistics

- 32 Post-harvest process to improve shelf life of produce
- 39 How a food processing facility saved thousands
- 44 Watermelons with paddock-to-plate traceability



© Stock.Adobe.com/au/Yeti Studio

45

processing

- 55 Getting the right mix
- 60 3 ways to achieve maximum productivity and flexibility in gummy production
- 62 Frozen food to fork: managing listeriosis risks



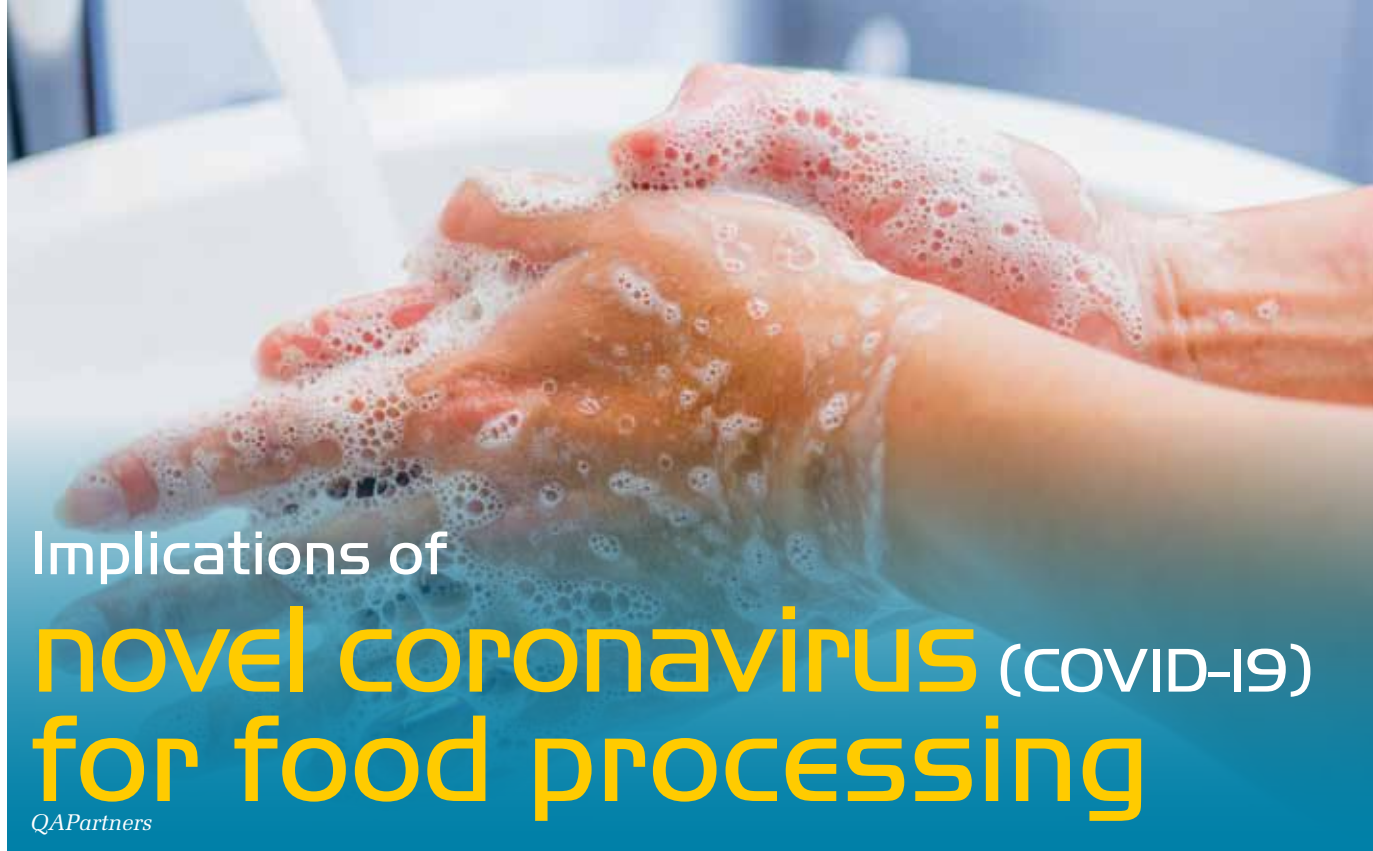
- 68 Ensuring food safety should not increase food waste
- 71 In a spin over designer meat
- 73 Agroterrorism: food and beverage sector needs to minimise risk



74

ingredients & testing

- 78 On the shelf: A berry good Tim Tam



©stock.adobe.com/au/Facile Fotodesign

Implications of novel coronavirus (COVID-19) for food processing

QAPartners

From a food safety point of view, there are a number of considerations regarding the potential risks of COVID-19 to raw materials and associated foods.

The survival of novel coronavirus (COVID-19) in human specimens is still being researched, but it appears to survive in faecal samples as well as in aerosols similar to SARS-CoV. Research on SARS-CoV indicates that this virus is relatively hardy and survives in serum, sputum and faeces for at least 96 hours. In urine, it could remain alive at least 72 hours with a low level of infectivity.¹

Therefore, excellent personal hygiene practices are required to limit the risks of food and raw materials to human pathogens including viruses. This is extensively addressed in modern food safety systems and includes focus on handwashing, suitable toileting facilities, personal protective equipment (PPE), exclusion of food handlers with symptoms of illness including sore throats, coughs and fever, return to work sign-off by a qualified doctor and so on.

There is indication that simple surgical face masks will not stop the transmission of COVID-19 as they are too thin and not well fitting.² In addition, infection can also occur through the eye or if contaminated hands are used to touch the face. Face masks may contain a sneeze to some degree, but to deal with aerosols, sufficient air changes are required to remove the aerosols rapidly from the environment. Minimum air changes in a food processing environment should be six air changes per hour.

If alcohol-based sanitisers are used following hand-washing, 'ethanol, the most common alcohol ingredient, appears to be the most effective against viruses', with 95% ethanol being more effective than 80% for hardy viruses such as Hepatitis A. WHO formulations I and II (ethanol-based and isopropanol-based respectively) were effective against SARS-CoV, and Middle East respiratory syndrome coronavirus (MERS-CoV).³

Research on SARS-CoV showed that these viruses stayed stable at 4°C and at room temperature (20°C) for at least two hours on a range of surfaces and in water.¹

SARS-CoV were inactivated by heat treatments of 90 min at 56°C, 60 min at 67°C or 30 min 75°C. UV irradiation for 60 min of the virus in culture inactivated it.¹

The data reveals some food industries may be more exposed to this threat than others. Any foods that are not cooked to a significant degree are more at risk; this is even the case for foods processed with a 'Listeria-cook' of 72°C for 2 minutes. Also, chilling and most likely freezing is not readily going to destroy this virus and therefore chilled and frozen foods sourced from major outbreak zones should be risk assessed.

Risk assessment should include the regional source, personal hygiene practices at source, production date pre or post December 2019 when COVID-19 was first detected and further or prior heat processing of the raw material.

Also, there is a risk that regional output of raw materials disappears due to illness in the wider population leading to plant closures. Alternative sources will need to be identified in these cases.

The above information gives us an indication of how COVID-19 may behave in human hosts and the environment and specific interventions that could be taken. Much of these are already considered and implemented in modern food safety systems. However, a thorough review of food safety systems in light of this emerging issue is required to ensure a food business's preparedness.

"A rigorous review of the risks posed by novel coronavirus (COVID-19) within the existing food safety management framework will ensure continued safe supply of food," said QAPartners Director Andreas Klieber.

Disclaimer: Please note that the considerations in this paper are of a general nature only and should not be seen as a recommendation to act in specific ways. For more information, contact QAPartners – info@qualityassociate.com.

1. Duan et al., Stability of SARS coronavirus in human specimens and environment and its sensitivity to heating and UV irradiation. (Biomed Environ Sci.2003 Sep;16(3):246-55.

2. Geggel L., <https://www.livescience.com/face-mask-new-coronavirus.html>, accessed 10/02/2020.

3. GoldN.A. and Usha A., Alcohol Sanitizer, updated December 16, 2019, <https://www.ncbi.nlm.nih.gov/books/NBK513254/accessed 3/02/2020>.

We bring colour into view!

Compact pressure sensors and switches with 360° custom-colour status display

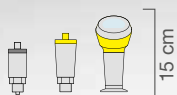


256 colours

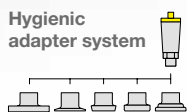
Individually selectable:

- Measurement in progress
- Sensor switching
- Process malfunction

Compact design



Hygienic adapter system



IO-Link



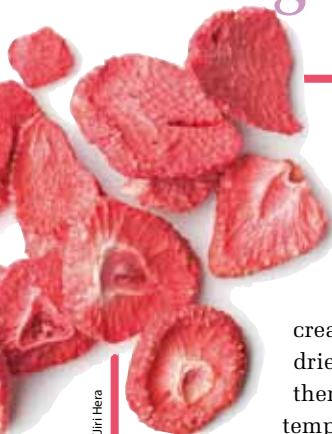
Adjustment via
smartphone



\$547

VEGABAR 39 Clamp 1"

Food FOR thought



Stabilising ice cream with freeze-dried strawberries

Researchers from the Agricultural Research Service (ARS) have found that some freeze-dried berry powders — particularly freeze-dried strawberry powder — can act as stabilisers in ice cream and other frozen dairy desserts. Including freeze-dried strawberry powder in frozen dairy desserts allows them to maintain their shape even after reaching room temperature.

Standard stabilisers such as sodium alginate, guar gum, iota carrageenan, xanthan gum and carboxymethyl cellulose can cause consumers to react negatively to the chemical-sounding names when they appear on an ice-cream label, assuming these must be artificial ingredients. However, many stabilisers come from natural sources; for example, sodium alginate is extracted from brown seaweed.

“We discovered that some of the freeze-dried fruit powders — especially strawberries — completely prevent the meltdown of dairy frozen desserts similar to ice cream made with whole milk, whole whipping cream, sugar and skim milk powder. Freeze-dried berry powder will absorb moisture from the premix base, improving its stability and texture to the point where the frozen dessert will keep its shape even after ‘melting’ to room temperature,” said Christina Bilbao-Sainz, a research food technologist at ARS, and the Healthy Processed Food Research Unit in Albany, California.

This can be attributed to the fibre in the berry powder becoming completely hydrated, which increases viscosity and resistance to meltdown. Researchers found that adding 3.5% of either strawberry, raspberry or blackberry freeze-dried powder reduced the water available for ice crystal formation during stirring and freezing, preventing crystal growth and slowly melting.

It is important to note that using freeze-dried strawberry powder as a stabiliser in frozen dairy desserts also adds strawberry flavouring, which may not be suitable for all ice-cream flavours. The research was published in the *Journal of Food Processing and Preservation*.



Rising trend of recalls due to undeclared allergens

According to Food Standards Australia and New Zealand (FSANZ) data on Australian food recalls, there have been 707 recalls over the past decade between 1 January 2010 and 31 December 2019. Even though 2019 saw a decrease in recalls there has been a steady rise in recalls over the decade, with the average number of recalls per year rising from 67 to 71.

For the last 10 years, most recalls have been due to undeclared allergens (283 recalls or 40% of all recalls during this period) and microbial contamination (181 recalls or 26% of all recalls during this period).

From 2010–19, undeclared milk has been the most common allergen-related recall, comprising 30% of all allergen-related recalls, with ‘multiple allergens’ the second most common type of allergen-related recall, accounting for 18% in this category. 14% of recalls contained peanuts as an undeclared allergen.

From 2010–19, the most common food type (30%) to be recalled due to undeclared allergens was mixed and/or processed food, including snack foods, custard powders and frozen meals. Confectionery was second (14%), with breads and bakery products the third (12%) most common types of food recalled due to undeclared allergens.

2019 saw an increase in *Salmonella*-related recalls due to multiple recalls for *Salmonella* Enteritidis but undeclared allergen recalls was still higher at 32 recalls for the year compared to only 13 recorded in 2010.

For further information, visit <https://www.foodstandards.gov.au/industry/foodrecalls/recallstats/Pages/default.aspx>.

Nestlé invests \$1.5 billion in sustainable packaging

Nestlé has announced plans to invest up to CHF1.5 billion (AU\$3 billion) to shift from virgin plastics to food-grade recycled plastics, and to accelerate the development of sustainable packaging solutions. Alongside its research through the Nestlé Institute of Packaging Sciences, the company will also launch a CHF 250 million (AU\$376.4 million) sustainable packaging venture fund to invest in start-up companies that focus on these areas.

“No plastic should end up in landfill or as litter. Making recycled plastics safe for food is an enormous challenge for our industry. That is why in addition to minimising plastics use and collecting waste, we want to close the loop and make more plastics infinitely recyclable. We are taking bold steps to create a wider market for food-grade recycled plastics and boost



innovation in the packaging industry. We welcome others to join us on this journey,” said Mark Schneider, CEO of Nestlé.

Building on its commitments to make 100% of its packaging recyclable or re-usable by 2025, Nestlé will reduce its use of virgin plastics by one-third, while working to advance the circular economy and clean up plastic waste from oceans, lakes and rivers.

Most plastics are difficult to recycle for food packaging, leading to a limited supply of food-grade recycled plastics. To create a market, Nestlé is striving to source up to 2 million metric tonnes of food-grade recycled plastics, and seeking operational efficiencies to keep this initiative earnings neutral. Packaging innovation, including new materials, refill systems and recycling solutions, is another challenge Nestlé faces to achieve a waste-free future.



Honey supply threat following bushfires

Hive + Wellness Australia called on the federal government for urgent assistance to the beekeeping industry following drought and bushfires. CEO Ben McKee and other team members travelled to a number of areas, where significant beekeeping country has been adversely impacted. “We saw vast swathes of burnt and drought-stricken country with little in the way of flora for bees to feed on. Many of our beekeeping mates have lost hives, while the long-term impact of lost bushland is devastating. Despite recent rainfall, it is going to take several years for some of these areas to regenerate and sustain healthy beehives again — there won’t be sufficient food for some time.” Dr McKee noted that honey bees were important not just for the production of honey, but for the country’s agricultural industry as a whole. “Without bees, fresh produce will be adversely impacted, including apples, cucumbers and other vegetables. Some crops, like almonds, avocados and blueberries, are 100% dependent on honey bee pollination.”

Food businesses could boost SA's energy capacity

Food processing businesses are being invited to participate in a South Australian Government program that could generate 20 MW of demand-side generation.

The South Australian Government will invest \$2 million together with \$2 million from Enel X to provide cheaper, more reliable electricity by utilising backup generators owned by 40 South Australian businesses. The \$4 million Backup Boost Program is designed to provide reliable electricity to South Australia. Enabling businesses to use backup generators and supply the electricity market is expected to provide an additional revenue stream for the businesses, while lowering prices for SA citizens.

“Participating businesses will use their backup generator as a flexible asset in the energy market. This allows them to actively manage energy consumption and costs, earn revenue and maximise their investment in backup generation. Increasing use of these assets which can lay idle means better use of capital,” said Jeff Renaud, Head of Enel X Asia and Oceania.

Enel X encourages food businesses to join the Backup Boost program. Visit www.enelx.com.au



Food

FOR thought

Aussies opting for healthy drinks

A study carried out by researchers at the University of South Australia revealed that Australians are driving sales in the hospitality sector for healthy beverages, including super juices, kombucha products, herbal teas, bottled water and probiotic drinks.

Drink sales make up 40% of the country's \$45 billion annual spend on eating out, with health drink sales reaching \$2.1 billion in 2018. The study examined the sale and provision of healthy beverages across four sectors of the hospitality industry: restaurants, cafes, pubs and quick-service/takeaways.

"Consumer demand for healthy drink options is certainly gaining traction, and it's time the industry and government did more to encourage entrepreneurs in this space," said the study's lead researcher, Dr Rob Hallak, a hospitality expert at the University of South Australia School of Management.

However, selling healthier drink options presents some challenges, as profit margins may be smaller, storage and fridge space is limited and their shelf life can be short.



© Stock-Adobe.com/au/DenisMart

Veolia and Coca-Cola Amatil exploring plastics recycling plant

Coca-Cola Amatil has entered into a Heads of Agreement with Veolia Australia and New Zealand, to explore opportunities for a recycled plastic processing plant in Australia. The potential recycling plant would focus on recycling PET plastic, which is the material used in plastic bottles.

Coca-Cola Amatil's Group Managing Director Alison Watkins said Amatil and Veolia had established a joint project team to consider a potential plant's economic feasibility, size, scale and location, end-to-end requirements and potential integration into each company's value chains.

Watkins said the joint project team would leverage each company's expertise and experience in respective parts of the production and recycling process as part of considering a potential plant.

Veolia Australia and New Zealand CEO and Managing Director Danny Conlon said, "We're delighted to be working with our Amatil colleagues on this important initiative. It comes at a critical time for Australia where we need to be doing more to resolve ongoing issues around plastics and their potential to be recycled. I look forward to future announcements on circular economy solutions."

The joint project team would make a recommendation to their respective companies in the short to medium term.

© Stock-Adobe.com/au/sebra



Soft drink waste could tackle global warming

The by-products of some soft drinks remove carbon dioxide from gas streams and could therefore help reduce global warming, according to new research.

Published in *Microporous and Mesoporous Materials*, researchers from Cornell College and Oak Ridge National Laboratory in Tennessee show how a simple procedure can convert waste soft drinks to porous carbon, which is capable of absorbing carbon dioxide. As well as addressing global warming, this will also help limit the high volume of waste caused by expired soft drinks and the production process.

"In this research, we are looking at turning one waste material into something of value," said Craig Teague, Professor of Chemistry at Cornell College. "We looked at waste soft drinks — asking could we possibly find a way to make that waste useful by doing a simple process in the lab and taking the carbon out? That carbon, by the way we synthesised it, has tiny pores, which are able to capture carbon dioxide."

The researchers reduced Coca-Cola, Push Orange, Diet Mountain Dew and Diet Pepsi to carbon powder using a simple, hydrothermal synthesis process. The remaining carbon powder has micropores or tiny spaces that capture the carbon dioxide.

Although this method of carbon dioxide separation is not ready for industrial use, Teague suggested the research brings chemists closer to finding a cost-efficient waste product.

© Stock-Adobe.com/au/kaewphoto

Expand your food industry connections today



The **Australian Food Catalogue**, powered by Food Innovation Australia Limited, is the only online guide endorsed by Austrade and supported by the Australian Government connecting you with qualified buyers from around the globe.

With a click of a few buttons, buyers can browse profile-pages across 100 product categories to directly source Australian food and beverage products.

Register at www.australianfoodcatalogue.com.au

or **scan the QR code**





What are the current beverage trends?

While traditional drinks took the lion's share of the over 950 billion litres of packaged beverages consumed worldwide in 2019, vermouth, craft beer, non-alcoholic drinks and exotic fruit flavours are all on the rise.

Forecasts for global beverage consumption are looking bright. Worldwide, there was a 70:30 ratio of non-alcoholic to alcoholic beverage consumption, with the total packaged beverage consumption being approximately 947 billion litres in the year 2018 — and experts predict a 3% growth for 2019. The team from the BrauBeviale beverage industry event, held in Nuremberg, Germany in November, 2019, have detailed some of the beverage category trends.

Beer

The global beer market remains creative, with an expanding craft beer movement. Consumers are also showing interest in non-alcoholic beers, low-alcohol beers and beer mixes, all of which demonstrate an overall trend toward healthy consumption.

The global beer market grew by 1.4% in 2018, compared to just 0.4% in 2017, according to market research institute Plato Logic. This has been attributed to growth in the Chinese beer market for the first time since 2013. Globally, according to Plato Logic, craft beer output came to 74.1 million hL in 2018, or just 3.8% of global beer consumption. The total beer volume in the US declined by 1% in 2018, whereas the Brewers Association notes that craft breweries grew by 4% to achieve a market share by volume of 13.2%, with output of 25.9 million barrels (30.4 million hL).

Another trend in the global brewery sector is the shift toward non-alcoholic and light beers. For 2018, Plato Logic reports global consumption of 43.96 million hL in this segment. This is up from 40 million hL in 2016. Europe leads the field with 27.22 million hL, followed by Africa/Middle

East (7.62 million hL), the US (4.6 million hL) and Asia Pacific (4.52 million hL).

In Germany, too, demand for non-alcoholic beers is on the rise. The country now has about 500 different non-alcoholic brands.

Non-alcoholic drinks

The non-alcoholic drinks sector continues to fascinate, with a particular focus on health consciousness, sustainability, convenience, and the combination of tradition and innovation.

For 2019 and beyond, market research agency Mintel perceives three forward-looking trends: the growing demand for sustainable products and improved recycling; the desire for a healthy old age; and convenience. Heading the list of the 2019 Top Ten Trends from Innova Market Insights is products that appeal to consumers interested in new discoveries and experiences.

In general, consumers demand natural ingredients, and imaginative combinations are always popular. Vegetable extracts from ginger to turmeric, vegetable-based ingredients such as those based on almonds, coconuts, oats and rice, and botanicals like basil, lemongrass and mint play a key role, as do new fruit taste nuances. Mintel recently identified asparagus extract, baobab fruit and maqui berries as functional ingredients with the potential to become a trend. For the European non-alcoholic beverage market, tropextrakt views fruits like calamansi, yuzu and mangosteen as rising stars. The company acknowledges that exotic fruits with special tastes or functions tend to be particularly successful if they harmonise well with familiar ingredients.



© Stock.Adohe.com/au/didesign

There are many examples of innovative beverages with additional benefits around the world. One company in the US, for example, markets a coconut and mango drink containing chia seeds in a 296 mL glass bottle, so the chia seeds are clearly visible to the consumer. Another company offers Melon Rosé, a watermelon drink with lemon, mint, rose water and baobab in a 355 mL PET bottle. Australia is home to a probiotic kombucha drink with a pomegranate flavour in a 250 mL glass bottle. A company in the Philippines markets its speciality, a still water flavoured with calamansi, in a 500 mL PET bottle. And in Singapore, tapped birch water comes in a range of flavours, including blueberry and cranberry juice, in a 250 mL carton.

There are all kinds of interesting creations on the European market. One British company, for example, has put new vegetable-based drinks in almond, oat, hazelnut and rice, and coconut and rice flavours on the cooler shelf. These contain spring water and a little sea salt, in addition to the above ingredients, and are marketed in 750 mL PET bottles containing at least 30% recycled PET.

Water: Measured in terms of growth in per-capita consumption, bottled water will once again record the strongest growth in the traditional non-alcoholic drinks segment in Western Europe in 2019, according to Euromonitor International: from 97.8 L/person in 2018 to 100.7 L/person in 2019.

Soft drinks: There is currently a global focus on sugar-reduction strategies, and many countries have already introduced a tax on excessively sweetened soft drinks. In addition to lemonades, low-calorie or zero-calorie light products enjoyed particularly positive growth.

Fruit juices: Consumption of fruit juices and fruit nectars declined to 31.5 L/person in 2018 (2017: 32.2 L/person). Looking at the global 2019 forecasts for the categories of milk (14.5 L/person),

carbonated soft drinks (21.6 L/person) and juice (7.9 L/person), Euromonitor International rates these segments as largely static compared to 2018, with changes of no more than 0.1 L/person.

Wine and spirits

Gin has been a frontrunner, with gin sales showing the greatest growth in 2018. According to IWSR, this category of spirits grew by 8.3% worldwide, with more than 72 million 9 L cases sold. In the UK alone, the growth rate was 32.5%. By 2023, global gin sales are expected to reach 88.4 million 9 L cases. The key markets are regarded as the UK, Germany, Italy, France, the Philippines, South Africa, Uganda, Canada, Australia and Brazil. Following a doubling of gin sales in Brazil in 2018, the country is already being treated as the new 'gin hotspot'.

Despite the currently booming gin market, market research institute Mintel predicts that the gin trend will be overtaken by a **vermouth** trend. Here too, smaller craft brands are fuelling growth. One example is a sweet vermouth made from cascara, an infusion of coffee cherry husks that are generally regarded as waste that therefore also allows the vermouth to meet the criterion for sustainability.

IWSR says that the spirit category of **whisky** also enjoyed strong growth in 2018, with sales up 7% worldwide. By 2023, an average annual increase of 5.7% is expected. If this happens, around 580 million 9 L cases of whisky will be sold by 2023. One interesting development is the Intelligens single malt whisky created using artificial intelligence (AI) by the Swedish whisky distillery Mackmyra, based on the Microsoft Azure platform. Mackmyra provided Finnish technology company Fourkind with its 75 whisky recipes, which have been compiled over the years. Using this as the raw data, Fourkind built an AI model that generates new recipe suggestions.

The IWSR reports a global decline in **wine** volume of 1.6% in 2018, primarily because less wine was consumed in Italy, France, Spain, Germany and China. In the wine segment too, there is a global trend in favour of higher-quality wines. The sparkling wine category is likely to be even more dynamic and there is talk of an annual sales growth of 1.17%, fuelled above all by sales of prosecco. IWSR also predicts a significant increase globally in alcohol-free and low-alcohol wines.

BrauBeviale is a three-day event for the beverage industry worldwide which is held at the Exhibition Centre in Nuremberg, Germany. The next event will be held from 10–12 November 2020.

ON THE SHELF: Low-sugar Sprite

Coca-Cola in Australia has reformulated its Sprite soft drink with 40% less sugar.

Sprite is one of 26 drinks that the company in Australia has reduced sugar in since 2015 and there is more to come. In 2019, the company committed to reducing the average sugar content by 20% across its entire range of drinks by 2025.

"Reformulation is now a core part of how we do business at Coca-Cola. Whether it's reducing sugar in an existing product like Sprite or introducing a new no or lower sugar option to the market," said Nutrition and Regulatory Affairs Manager Bobbie Crothers.

www.coca-colacompany.com



CASE STUDY

Asahi water bottling saves energy

Asahi beer is a premium product that is now exported worldwide. Not so well known outside Japan — but no less important for the holding — is the local soft drinks and water market. In 2018, Asahi achieved a turnover of over 360 billion yen (around AU\$4.9 billion) in this segment.

With over eight production sites, Asahi Soft Drinks has a selection of products ranging from ciders, teas and milk beverages to still and carbonated mineral waters. The company bottles its 'Rokko No Mizu' water at the location of the same name, which is not far from the cities of Kobe and Osaka. Rokko was one of the first mineral waters produced, and today it's filled into PET bottles to meet consumer demand for sustainable containers.

The company is now manufacturing the bottles using the KHS InnoPET Blomax Series V stretch blow moulder. Asahi Soft Drinks opted for this machine after seeing it exhibited at the BrauBeviale trade show in Nuremberg, Germany, in November 2018. This was also the case in 2008 when a prototype of the InnoPET Blomax Series IV found its way to Japan. Twelve years later the new and meanwhile established Series V is now producing 600-millilitre to-go bottles and large two-litre receptacles of still Rokko mineral water. Around 200 million containers a year are manufactured on the KHS system.



source: KHS Group

Energy consumption reduced by up to 40%

Asahi's systems supplier from Dortmund has made a 40% reduction in energy consumption possible by including a number of further developments in its next generation of Blomaxes.

The Series V saves up to 40% in energy compared to its predecessor through the implementation of an optional

new heating concept. The near infrared (or NIR) heater centrally installed in the closed reflector tunnel forms the nucleus of this. In the heater the preforms pass the centrally arranged heating units to both the left and right. This means that every single NIR heater is used twice, so to speak.

In the Series V, KHS has supplemented its patented AirbackPlus air recycling system for an up to 40% saving in compressed air with its new EcoDry air management system. This uses the residual air from the blowing and recycling process to replace a separate air drier in the base mould area and in the blow wheel, again yielding significant savings in energy.

Asahi has recently announced that plans for a second stretch blow moulder from the new series are already underway.

KHS Pacific Pty Ltd
www.khs.com

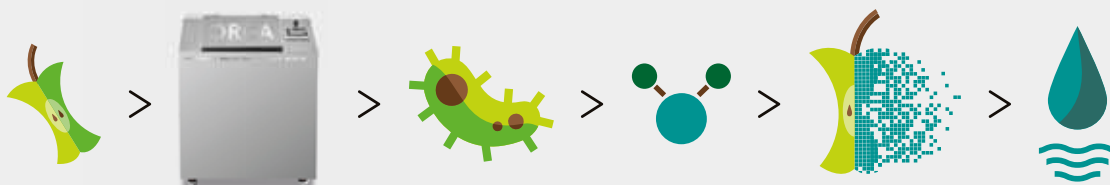


source: KHS Group

Treat your organic waste with an ORCA.

Treat your organic waste on-site, and make a significant impact to the environment and your bottom line. Reduce waste cost and prevent odours and pests by disposing food waste at source.

How the ORCA works



1. Waste Inputs
Compatible food waste is loaded into ORCA unit on site.

2. Micro-Organisms
ORCA's microbial mixtures are added.

3. Oxygen
ORCA oxygenates the food waste, facilitating aerobic digestion.

4. Breakdown
Food waste is digested into smaller pieces, eventually transforming into wastewater.

5. Discharge
Wastewater is filtered safely through a filtration screen into existing plumbing infrastructure.

To book a demo call 1300 048 447 or visit veolia.com/anz/contact-us



Getting ready for digital brewers of the future

Emerson is partnering with Ghent University (UGent) and University College Ghent (HOOGENT) in Belgium to revamp, automate and modernise a pilot brewery, including providing equipment and support services. The two institutions share a common brewery research group in the Laboratory for Brewing and

Fermentation Science and Technology. The laboratory provides hands-on training using the latest digital automation technologies to educate the next-generation workforce, close skills gaps and enable digital transformation throughout the region's brewing industry, where technology is key to keeping pace with the increasing demand for craft beer.

The upgraded pilot brewery, located within the laboratory, is designed to train students, academics and engineering professionals on how to use next-generation automation technologies in a safe, interactive learning environment.

"We are focused on helping train the digital workforce of the future while advancing education, innovation and diversity in the brewing industry," said Roel Van Doren, President of Europe for Emerson's Automation Solutions business. "We look forward to a strong and continued partnership with UGent and HOOGENT."

Once completed, the centre will feature elements of Emerson's Plantweb digital range of IIoT technologies used in brewing automation: a DeltaV distributed control system, Micro Motion Coriolis flow meters, Rosemount wireless measurement technology, Fisher control valves, and analytics software for calculating conductivity, pH and turbidity, as well as remote diagnostics that will allow technicians to monitor the system from Emerson's Belgium office in Diegem, 70 km away.

UGent and HOOGENT are two of more than 350 institutions worldwide, from technical community colleges to four-year university programs at the undergraduate and graduate levels, that Emerson has partnered with to address the skills gap in digital automation technologies.

Bag-in-box systems for beverages

Californian-based manufacturer of bag-in-box packaging systems TORR Industries is now working with Auspouch to bring its expertise to Australia.

The TORR Industries Bag in Box Fillers are used for wine filling, but can be easily adapted to other beverages, such as juice and coffee, and other products. The company manufactures filling lines, from pilot lines and entry-level equipment to high-capacity automated bag-in-box lines. Its solutions can fill the range of packaging in these markets, including flexible pouches that require no box.

The TORR Dispensing Solutions are available for the hospitality and foodservice industries, allowing direct dispensing from the bag, with no oxygen taint. These systems are designed to be cost-effective, can be retrofitted to any bar, club or hospitality setting, and reduce packaging inputs by approximately 90%.

Auspouch can supply packaging tailored to a user's product requirements, which will be designed to meet the user's filling, level of automation and shelf-life requirements.

Metalprint Australia Pty Ltd
www.auspouch.com.au

Biodegradable wine cork

Jet Technologies, in partnership with Vinventions, has released a biodegradable wine cork called SUBR F7. Claimed to be the first glue-free and TCA taint-free cork on the market, it is designed using plant-based materials and technology to achieve sustainability benefits.

The cork uses a glue-free plant-based binder, rather than the commonly used polyurethane glue. The plant-based binder is biodegradable, as well as recyclable, and being glue-free, provides a work-safe product in comparison to handling polyurethane glues.

It is also designed to ensure the integrity and quality of the wine it holds, with a consistent, low oxygen ingress, which maintains the aromas of the wine and performs well for cellar ageing.

Suitable for all wines, the cork decomposes without the risk of migration of polyurethane products. It complies with all established global food safety standards and regulations.

An option for featuring printed wine branding on the sides or ends is also available.

Jet Technologies
www.jet-ap.com



CASE STUDY

Bickford's improves bottling capacity with PET line

Bickford's Australia has installed a complete, flexible aseptic PET line by Sidel in its Adelaide-based facility. The PET line can handle both sensitive beverages and carbonated soft drinks (CSD), improving production efficiency and sustainability.

New product developments in the beverage industry are increasingly focusing on new packaging formats for further diversification in the market. In the beverage industry, PET is projected to remain a consistently prevalent packaging material in future.

Bickford's sought a flexible production line that could handle both still and sparkling beverages, as well as low- and high-acid products with two different short bottle necks and two decoration possibilities.

"Previously, we were mainly familiar with hot-filling PET applications. We decided to partially shift to aseptic PET bottling because we wanted to optimise our production set-up and achieve a better total cost of ownership, which is of course critical if you plan to attract more consumers. Plus, we really wanted to diversify our product portfolio by introducing new references, including dairy products and plant-based alternatives, and by moving some drinks formerly packaged in glass and can to PET," said Angelo Kotes, Bickford's CEO and owner.

Bickford's invested in one complete, versatile PET line, capable of managing both sensitive products and CSD through an Aseptic Combi Predis and a Combi SF300, respectively. This also helped Bickford's enhance its packaging design, due to the PET line's capacity to apply both sleeve labels and pressure sensitive labels. Sidel's dry preform sterilisation technology provided an easy-to-operate and sustainable packaging solution for the beverage manufacturer. The PET line expands the company's manufacturing capacity in terms of volume and type of beverages, while switching from one product to another, processing more than 20 different SKUs including still water, coffee with milk, coffee with almonds, four different flavoured waters and eight types of juices, all in either 250 mL, 500 mL or 1 L formats.

Throughout the project, Sidel collaborated with Bickford's marketing team to launch their products. New containers were designed for Bickford's 1L Aqua Pura branded water, applicable both to sparkling and still water, with the latter supported by a StarLITE base. Sidel also developed a 600 mL design, applicable to a variety of beverages, including flavoured water.

When redesigning the packaging, Bickford's halved the weight of its 1 L juice bottle to 32 g and increased its shelf life by up to eight

months, by changing the production set-up from hot-fill packaging to aseptic PET bottling with dry preform sterilisation. The new bottles are designed with straight body panels and simplified ribbing at the sides to allow the application of sleeve labels or PSL.

"To streamline our decision process, Sidel provided many bottle design alternatives and great conceptual designs with current labels as well as new prototypes. Considering the productivity advantages we gained and the high consumer acceptance around our redesigned containers, we are planning to strengthen the

cooperation with Sidel further and launch a 1 L format for sparkling products, for water as well as CSD," said Beverly Reeves, Senior Brand Manager at Bickford's.

To install the aseptic PET production line, Bickford's reorganised the production set-up and raw material localisation, by removing two out of three hot-fill lines, thereby gaining more floor space. The PET line, set up at the Adelaide plant, includes Tetra Pak processing systems technologies to provide product safety and increase uptime. The Aseptic Combi Predis also features the Capdis system for dry cap decontamination, with a compact and hygienic BlendFILL configuration that combines carbonator and filler in a single system for reduced consumption of CO₂. Gebo OptiDry, a stainless steel drying system, was also integrated into the line, alongside Sidel's Roll Adhesive labeller and a sleever intended to handle PSL.

The PET line can manage both aseptic and regular PET packaging on two different Combis. It is capable of running at 12,000 bottles per hour (bph) for aseptically filled drinks, and up to 18,000 bph for CSD products, leading to a production capacity reaching approximately 60 million bottles per year.

"It is important to note that this fantastic opportunity to switch from one product to another is not compromising the sterility of our production, rather the opposite. The PET aseptic line in our factory runs 10 hours per day and Sidel managed to keep the product in the filler under complete food safety conditions between the last shift of the day and the first one the day after, meaning for more than 12 hours," said George Kotes, Operations Manager at Bickford's.

The Combi Predis PET line reduces the company's environmental footprint, as it does not consume any water and uses very few chemicals. The reduced need for cleaning in place also lowers the PET line's maintenance costs. Bickford's first sellable product from the PET line was introduced to the market in the summer of 2019.

Sidel Oceania Pty Ltd
www.sidel.com



CASE STUDY

Foodmach to supply new filling line for 4 Pines

Packaging automation manufacturer and integrator Foodmach has been appointed as the supplier for 4 Pines Brewing Company's new filling line at its brewery in Brookvale on Sydney's northern beaches. Due to commence operation in September 2020, the line upgrade will enable the Brookvale facility to package bottles and cans.

Chris Willcock, Chief Brewer, 4 Pines Brewing Company, said: "Cans are an increasingly relevant section of the craft beer market and the beer market in general. They're a vessel very well suited to a variety of drinking occasions and something we really needed to provide to our customers alongside our diverse range of bottled beer products. The challenge at Brookvale has been our restricted space, which makes it impossible to build a second pack line exclusively for standard and sleek can filling. Off-site filling was an option, but it's expensive and elevates our risk of problems with product quality."

"In addition, we take our use of resources very seriously. Whatever filling line solution we came up with needed to reduce our water and power consumption."

Taking space constraints into consideration, as well as the 4 Pines sustainability ethos and quality requirements and its desire to produce innovative product and packaging, Foodmach recommended the GEA Vipoll ALL IN ONE filler.

A combined rinser/filler/capper/seamer in a single monoblock, the ALL IN ONE can accommodate both carbonated and still beverages — either hot or cold filling — and fills glass, PET and cans in multiple formats, at up to 30,000 containers per hour. The ALL IN ONE has the potential to reduce the energy used in bottling and canning beer and reduce water use.

Foodmach has designed a medium-speed packaging line around the filler, which includes a new Foodmach bottle/can depalletiser, traceability and inspection systems, conveying and a line control system to link all existing and new equipment.

Foodmach CEO Earle Roberts said: "We use our experience from working with high-speed bottling and canning lines at 2000 cans per minute to ensure that we get the buffering and accumulation right on any speed line. We've designed 4 Pines Brookvale to minimise those short delays and bottlenecks that will otherwise reduce throughput."

Foodmach will install the custom-specified GEA Vipoll ALL IN ONE filler and new filling line in September 2020.



Foodmach Pty Ltd
www.foodmach.com.au



AIR LIQUIDE

Premium Gases safely
keeps your hard work
tasting great



Discover How.

Air Liquide's expertise and
experience can elevate your
beverage production process.

Bushfire smoke-taint risk assessment of wines

Charles Sturt University and the National Wine and Grape Industry Centre (NWGIC) are making facilities and expertise available to help grape growers understand the potential impact of bushfire smoke on their vintage.

NWGIC Director Professor Leigh Schmidtke (pictured) said the centre is working with grower groups to make wine from samples of grapes from vineyards exposed to smoke.

“When vineyards and grapes are exposed to smoke it sometimes results in wines with undesirable sensory characters,” Professor Schmidtke said.

“The impact of ‘smoke taint’ depends on a number of factors including the growth stage of the vine and grape maturity, variety, how long the grapes are exposed and proximity to the source of the smoke.

“Bushfires this summer have created a lot of smoke and the National Wine and Grape Industry Centre is working as part of a wider industry response to help growers gather the information needed about the impact on their vineyards.

“Conducting a small-scale ferment of potentially affected grapes allows wineries to undertake a sensory assessment of the wine to gauge the potential risk for smoke taint to develop.

“This, along with analytical testing of grapes provided through commercial laboratories, will give grape growers and wineries information to make decisions ahead of harvest.”

Local grower groups are coordinating the referral of samples to the Charles Sturt Winery.

“We are pleased to be able to support growers and winemakers by providing our expertise and facilities,” Professor Schmidtke said.

“Bushfires have directly impacted some vineyards, and tourism has been affected in many other wine regions.

“One way we can all help is to continue to visit these regions, buy local wine and support our growers and winemakers.”

Wine grape growers who would like samples fermented should contact their local grower association or the Charles Sturt winemaker Johnny Clark by email: johclark@csu.edu.au.

The NWGIC is an alliance between Charles Sturt, the NSW Department of Primary Industries and the NSW Wine Industry Association.



Cheers to the perfect beer head

A team of scientists is a step closer to solving the puzzle of how to create the perfect head of beer and make it last all the way to the bottom of the schooner.

Lead researcher Dr Richard Campbell from The University of Manchester said his findings solve a long-standing mystery related to the lifetime of foams.

The scientist, whose study is published in the journal *Chemical Communications*, turned to the Institut Laue-Langevin in France for one of the world's most intense neutron sources.

At the research facility, he fired beams of neutrons at the liquids used to make foams.

Dr Campbell said: “For decades scientists have tried to get a handle on how to control reliably the lifetime and stability of foams made from liquids that contain mixed additives.

“While the behaviour of foams made up with just one additive is quite well understood, as soon as mixtures like those used in products were studied the results from research studies failed to paint a consistent picture.”

The team studied mixtures containing surfactant — a compound that lowers surface tension — to come up with a new way of understanding the samples that could help product developers formulate the ideal foam.

In one potential application, beer drinkers might be able to enjoy a pint where the head lasts all the way to the bottom of the glass.

“This is important, as some products benefit from foams that are ultra-stable and others from foams that are very unstable.”

The scientists came to grips with the problem by studying the building blocks of the bubbles themselves, known as foam films.

Through reflecting neutrons off their liquid samples, they devised a new way to relate the stability of foam films to the way in which the additives arrange themselves at the surface of the liquid coating of bubbles to provide the stability needed to prevent them from bursting.

“Foams are used in many products — and product developers have long tried to improve them so they are better equipped for the task they are designed to tackle,” Dr Campbell added.

“But researchers have simply been on a different track, thinking of general surface properties and not about the structures created when different molecules assemble at the surface of bubbles.

“It was only through our use of neutrons at a world-leading facility that it was possible to make this advance because only this measurement technique could tell us how the different additives arrange themselves at the liquid surface to provide foam film stability.

The paper ‘New structural approach to understand the foam film stability of oppositely charged polyelectrolyte/surfactant mixtures’ is published in *Chemical Communications*.

packaging & labelling



**Memjet colour label printer
now in compact format with
the VIP Color VP600**

Label Power
unique labelling solutions
www.labelpower.com.au

NEW FROM LABEL POWER – THE VIPCOLOR VP600 COMPACT MEMJET LABEL AND TAG PRINTER



Rent me
from
only \$46
per week!

The VP600 features

- Fast print speed up to 8 inches per second. That is to say, you get **1,600 4" x 3" labels within 10 minutes**.
- Print one to 10,000 labels anytime on-demand. In other words, VP600 is suitable for **short run label printing**.
- High resolution up to 1,600 x 1,600 dpi. This is great for crisp text, fine barcode. Moreover, you get **brilliant colors for prime labels!**
- Compact size. This makes VP600 the perfect desktop **small color label printer for tight spaces**.
- Individual 200 ml ink tanks to **reduce replacement cost**. You get more labels between ink change and fewer user intervention than many entry level printers

Packaging: fit for the future

2020 AIP Australasian Packaging Conference

The 2020 AIP Australasian Packaging Conference is designed to deliver a two-day educational program that will cover a broad range of topics relating to the theme — Packaging: fit for the future.



© Stock.Adohe.com/au/Alesia Berlezoza

Being held from 1–2 April 2020 at the Crown Promenade, Melbourne, the biennial conference will attract delegates from all facets of food, beverage, pharmaceutical, manufacturing and packaging industries, including packaging technologists, designers and engineers, sustainability managers, marketing, sales, production, design agencies to equipment suppliers, raw material providers, users of packaging, retailers and consumers, environmental managers, procurement, quality teams, government and council, and waste and recycling companies.

The packaging industry is facing many challenges at the moment with global plastic pollution and recycling issues and transformational changes to value and supply chain models, resulting in negative government and consumer perceptions. These challenges are requiring packaging companies, manufacturers and retailers to re-think their approaches and undertake strategic changes to address the challenges of meeting global and domestic Sustainable Packaging, National Packaging Targets, transform supply chains; all the while having clear parameters for driving the 4Rs. The packaging industry globally is looking towards true circular value chains and ensuring that recyclability of packaging, recycled content, reducing packaging wherever possible, replacing problematic materials, designing with new materials, looking at how packaging can be re-used and developing closed looped programs, are the new normal for packaging design.

The additional challenge of ‘halving food waste going to landfill by 2030’ is also another target that food manufacturers need to recognise, and designing ‘save food’ packaging is a challenge that packaging technologists and designers need to start incorporating into all product development.

Packaging design is also changing with new intuitive and innovative packaging being introduced every day. Now more than ever is the time to collaborate, share ideas and success stories, discuss the challenges and journeys the industry is facing openly and what we can do collectively to work towards the same targets.

Run by industry for industry, the AIP conference has been leading the way in professional and personal development for over two decades. There will be over 55 speakers covering a broad range of topics under the theme Packaging: Fit for the Future, and all of industry is invited to attend the 2020 AIP Australasian Packaging Conference.

2020 Packaging Innovation & Design Awards

As a part of the 2020 AIP Australasian Packaging Conference the Australian Institute of Packaging (AIP) will be announcing the winners of the 2020 Packaging Innovation & Design Awards (PIDA). The PIDA Awards are designed to recognise companies and individuals who are making a significant difference in their field in Australia and New Zealand.

The Design Innovation of the Year company awards will recognise organisations that have designed innovative packaging materials within each of these five manufacturing categories:

- Food
- Beverage
- Health, Beauty & Wellness
- Domestic & Household
- Labelling & Decoration

There will be three special awards available:

- Sustainable Packaging Design Special Award
- Save Food Packaging Design Special Award
- Accessible Packaging Design Special Award

In addition, there are three awards designed for people who have made specific contributions to the packaging industry.

These individual awards will include:

- Young Packaging Professional of the Year.
- Industry Packaging Professional of the Year.
- Packaging New Zealand Scholarship (This annual scholarship will offer one person from New Zealand the opportunity to enrol in the Diploma in Packaging Technology course, which is an internationally recognised and accredited course.)

The 2020 PIDA Awards will be held on the evening of 1 April and all of industry is invited to attend.

To register, visit: aipack.com.au/event-registration/?ee=251.

Australian Institute of Packaging
www.aipack.com.au

What: 2020 AIP Australasian Packaging Conference
When: 1–2 April 2020
Where: Crown Promenade, Melbourne
Website: <http://aipack.com.au/>



Cadbury trials paper packaging in New Zealand

Mondelez International has launched its Cadbury Energy bar in packaging made from 100% recyclable, sustainably sourced paper, to be trialled by New Zealand consumers. The trial will test the durability and effectiveness of the paper packaging in transport and gather feedback from consumers. Many existing paper-based food wraps used by the company have a thin plastic film to protect the product; however, for this chocolate bar paper acts as a barrier to protect food and provide freshness.

"We are committed to making 100% of our packaging recyclable by 2025. Given this is a world-first for us and the material is at the leading edge of packaging innovation, we're committed to finding innovative solutions to the sustainability challenges facing the planet, and this trial is a great example of this," said Cara Liebrock, Managing Director, Mondelez International New Zealand.

Mondelez International is also working on a range of global and local sustainability initiatives to minimise their impact on the planet, including support for companies developing plastic recycling technology and reducing the amount of packaging used in products.

Technology for recyclable PET bottles

KHS's FreshSafe PET technology offers a wafer-thin protective layer of chemically pure glass on the inside wall of the PET container, which combines product protection with full bottle-to-bottle recycling.

The wafer-thin glass coating applied to the inside wall of the bottle is washed off during the recycling process, producing pure PET. Sensitive products such as juice, wine, sauce and liquid food are protected from oxidation and carbonated beverages from carbon dioxide loss.

Compared to standard composite materials, the coating process provides better barrier quality and ensures longer product shelf lives.

PET bottles coated using Plasmax barrier technology have been recognised as meeting or exceeding North America's Association of Plastic Recyclers' stringent Critical Guidance criteria for recyclability.

KHS Pacific Pty Ltd

www.khs.com



ZIP-PAK

We're Uniquely Flexible.

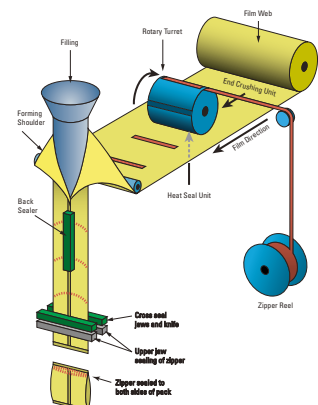
Want to add zip to the package on your FFS or Flow Wrapper?

Zip-Pak is doing this with cost-effective retrofits.

CONTACT US TO MAKE YOUR PACKAGE RESEALABLE

1/77-89 Remington Drive, Dandenong South, Vic 3175

ph +61 (03) 8795 8299 | www.zippak.com



CASE STUDY

Recyclable packaging solution for dry soup powder

Consumer packaging company Mondi Kalenobel has collaborated with Unilever to produce a polypropylene (PP) mono-material solution in Turkey for its Knorr dry soup powder range. Unilever sought to replace a multi-material laminate with a recyclable mono-material film alternative. The polypropylene packaging preserves the shelf life of the food product and does not impact the function of production machines.

Designed by Jindal, the packaging material is certified as recyclable by the Institut cyclos-HTP. Mondi and Unilever collaborated to find a suitable grade of special raw material, with Mondi providing support during the design and implementation process.

“The challenge for us was getting the necessary oxygen and water vapour barriers and all other physical and chemical tolerances with the new mono-material at the same level as the current non-recyclable packaging. We also needed to offer a solution that could use the same



production machine at Unilever’s production sites,” said Cüneyt Karci, Key Account Manager at Mondi Kalenobel.

“The most important step in eliminating plastic waste is preventing it getting into the environment in the first place. That’s why we are committed to collecting and processing more plastic packaging than we sell by 2025. Solutions from innovative partners throughout the value chain, such as Mondi, will help

us on this journey,” said Atahan Özgünay, R&D Package Development Manager for Unilever’s Knorr and Lipton brands in North Africa, Middle East, Turkey and Russia.

With the new packaging solution introduced to the Turkish market for a dry soup powder range, Unilever is considering an expansion of the packaging solution to other products from the Knorr brand.

Mondi Group
www.mondigroup.com/en/home/

SPONSORED CONTENT

Significant growth in the food and beverage market means the same for its packaging. Aerofloat offers sustainable wastewater treatment solutions that address variations in production volume and effluent quality.



An Aerofloat wastewater treatment plant at a NSW brewery.

Washing up food packaging processes more sustainably

Wastewater and washdown water from food packaging processes vary with production. The industry’s wastewater often has high levels of suspended solids (SS), fats, oils and greases (FOG), biological oxygen demand (BOD) and chemical oxygen demand (COD). Managing these variations in effluent volume and contaminants in order to meet local discharge standards, requires the correct treatment design.

Michael Anderson, General Manager at Australian wastewater treatment company, Aerofloat, says it’s important to understand these variations prior to installing or upgrading a wastewater treatment solution.

“Having a thorough understanding of the wastewater constituents and flow variations that are unique to each client’s business is critical to designing a fit-for-purpose solution. Aerofloat’s engineers conduct extensive jar testing and review current data trends prior to the design.”

Space constraints for installing an effective treatment solution can also be a factor in processing plants. Aerofloat’s engineers are

proficient in sophisticated 3D modelling, so any proposed design is clearly presented and understood prior to project commencement.

Aerofloat’s solutions for water re-use and by-product re-use can also significantly reduce water costs and ensure sustainable operations. After completing a number of projects for high-profile packaging firms, Aerofloat knows how to manage even highly inky wastewater.

“Aerofloat has successfully treated significantly contaminated, inky wastewater to a standard fit for re-use within the processing plant or irrigated around the site,” said Anderson.

A robust wastewater system that can keep up with expanding operations is vital to business success.

Contact the Aerofloat team today for an obligation-free consultation regarding your wastewater treatment and re-use needs.

Aerofloat
WASTEWATER TREATMENT SPECIALISTS

Aerofloat (Australia) Pty Ltd
www.aerofloat.com.au



© StockAdobe.com/au/George Delgith

Antimicrobial film created to stop pathogens in packaged meat

Penn State's College of Agricultural Sciences researchers have created a film by bonding an antimicrobial layer to conventional, clear polyethylene plastic typically used to vacuum-package foods such as meat and fish. The researchers believe the findings could be of interest to the packaging and muscle food industries, as well as regulatory agencies that seek to reduce pathogens in the food supply.

The antimicrobial lining of the film comprises a pullulan-based biopolymer produced from starch syrup during a fermentation process, which is already approved for use in foods. Pullulan, a water-soluble "polysaccharide", is essentially a chain of sugar, glycerin and cellulose molecules linked together. To kill pathogens such as *Salmonella*, *Listeria* and pathogenic *E. coli*, researchers infused the pullulan with Lauric arginate, made from naturally occurring substances and already approved for use in foods.

The pullulan film slows the release of the antimicrobial, disbursing it at a predictable rate to provide continuous bacteria-killing activity, explained researcher Catherine Cutter, professor of food science. She added that without being impregnated into the film, the antimicrobial would run off the surface of a food product, such as meat, or evaporate.

Lauric arginate was chosen as the antimicrobial because it is a broad-spectrum antimicrobial compound that proved highly effective in killing and limiting the growth of pathogens that cause foodborne illness, noted Cutter, assistant director of food safety and quality programs for Penn State Extension.

Cutter's research group in the Department of Food Science has been experimenting with antimicrobial films made of pullulan for a decade. But she credits Abdelrahim Hassan, who spearheaded the latest study, for devising a procedure to fuse the pullulan-based antimicrobial layer to the polyethylene plastic — allowing the novel composite to be born. Hassan, who was a visiting scholar in Cutter's lab when the research was conducted, is an associate professor of food safety and technology at Beni-Suef University in Egypt.

"Hassan figured out a way to get the pullulan to attach to polyethylene," Cutter said. "He modified the formulation of pullulan and changed the hydrophobicity of the plastic. These steps were important because polyethylene repels everything — nothing sticks to it. So, the challenge was, how could we get pullulan to adhere to it."

In findings published on 20 January 2020 in the *International Journal of Food Microbiology*, Hassan and Cutter reported that the composite antimicrobial film containing Lauric arginate significantly reduced foodborne pathogens on the experimentally inoculated surfaces of the raw and ready-to-eat muscle foods after refrigerated storage.

Future research in Cutter's lab will evaluate how the composite antimicrobial film affects the shelf life of food products, and investigate consumer perceptions and acceptability of the novel film.

This research was partially funded by the US Department of Agriculture's National Institute of Food and Agriculture.

PREPARED FOR ANYTHING



FILLING
PORTIONING
LINKING



SMOKING
STEAMING
BAKING
DRYING
RIPENING



INJECTING
TENDERIZING



MINCING
MIXING



SLICING
PORTIONING
SHAVING



DICING
STRIP CUTTING
SHREDDING



SAWING
PORTIONING



CBS is a specialist supplier of innovative products from around the world. We strive to supply only the highest quality products to our customers ensuring the backup services to maintain the level of quality through the supply chain.

Our aim is to be your partner and understand your business, so together we can meet the ever growing challenge within the food processing business.

Our in depth knowledge of the food processing environment gives us the edge and is our real point of difference. Starting with processing techniques, through raw material/ingredients, machinery selection/installation, project management, product development, implementation and training.

Our core strength is within the meat processing industry - red meat, small goods and poultry, as well as the convenience foods, ready meals, fish and cheese industries.



MAJA derinding, defatting, membrane skinning, flake ice machines
ASTECH automatic bandsaw, portion cutting
KOLBE bandsaw, mixing/grinding, grinding
TREIF slicing, dicing, portion cutting
SCHRÖDER injecting, brine mixing, massaging
REX vacuum filling, auto linkers, mince lines, forming attachments
STEPHAN cutting, mixing, emulsifying
LORENZO BARROSO clippers
VAKONA vacuum, massaging, tumbling, mixing, marinating
REICH smoke houses, ovens, fermentation rooms, water cookers
BOSS vacuum packing, dip tanks, auto packing lines

CONTACT

CBS foodtech
2/7 Jubilee Avenue
Warriewood, NSW 2102
Info@cbsfoodtech.com.au





Shrimple packaging

Making a plastic alternative from crustacean waste

Prawn punnets and crab cling wrap could soon be a reality thanks to three young entrepreneurs who chose to tackle the fight against plastic packaging.

After winning the University of Sydney's 'Inventing the Future' program, Michelle Demers, Jared Wood and Kimberly Bolton (pictured left to right) used the grant prize to turn their passion for the plastic problem into a business. The trio cofounded Carapac and now, two years down the track and hundreds of prototypes later, the 'shrimple' solution is clawing its way closer to store shelves.

The current trend in the bioplastics market is plant- and even petroleum-based 'plastics', creating slightly different make-ups of the same cellulose, vegetable oil, starch and acid components. The majority of these 'biodegradable plastics' only break down under specific conditions and that process can still take up to five years. As the market for plant-based packaging was tapped and there wasn't as much room for competition, the team asked themselves, "How could we make it easy for people to be more sustainable?"

Their mission to find a more sustainable material base led them to crustacean shells, an abundant nutrient-rich waste source. Frozen food processing plants across the Asia-Pacific region cumulatively produce around 8.1 million tons of crustacean waste per year. "This enabled us to develop a packaging material built from the chitosan contained in crustacean skeletons as a truly biodegradable alternative to plastic food packaging. Given the little amount required to produce the packaging, our research shows there is a market for Carapac as well as a supply of chitosan that can keep up with growing product demand," said Kimberly Bolton, CEO of Carapac.

"Just when we thought we couldn't love a bucket of prawns on a sunny day any more, we were wrong. Crustacean shells embed anti-fungal properties that, when acting as packaging, prevent mould or fungi from growing on produce. Product shelf

life can increase by up to 14 days pending the product type, making prawn plastic an excellent packaging option for fresh foods," Bolton said.

According to the company, the material is safe to use for those with a shellfish allergy as the protein component that causes the reaction is removed. "That protein is part of 35% of the crustacean shell 'waste' left after the chitin extraction process and is turned into a feed for animals given its nutrient content. Interestingly enough, mushrooms also contain chitin, providing potential for a vegan product. This would mean growing a product explicitly for manufacturing, which does not tie into our 'negative waste' philosophy, as there is an abundant waste source available for use," Bolton said.

The company's 'negative waste' philosophy stems from the material being sourced from a waste stream, developed into a purposeful product and naturally repurposed at the end of its life cycle instead of ending up in landfill or recycling.

"Let us be clear, we do not support many current food packaging options and especially single-use plastic. Packaging, however, we do support. Allowing for product unitisation, packaging makes it easier and more economical to pack and transport goods. All over the world a pallet has the same measurements, and we are able to create logistics processes around this. Moreover, especially relating to fresh fruits and vegetables, packaging acts as a protection barrier during transport and also from bacteria, keeping your food fresh longer," Bolton concluded.

Currently the cost of the new material is estimated to be three times that of traditional plastic, but this is expected to decrease as the manufacturing scales up.

Carapac
www.carapac.co

PET containers for hot filling

The KHS wide-neck PET containers are suitable for the hot filling of food. With low weight and good recycling properties, the line-compatible containers are designed to help to reduce the carbon footprint throughout the life cycle. An alternative to the non-returnable glass receptacle, the containers also provide a level of product safety due to the FreshSafe PET coating.

The packaging can be produced on the InnoPET Blomax Series V stretch blow moulder in what is known as the blow-trim process or from preforms with a moulded neck which can be crystalline as required. Heating the blow moulds electrically, KHS manufacturers can thermally condition the containers for standard market filling temperatures. The PET alternative is designed to withstand both the positive and negative pressures which can occur in the closed container after the filling process.

KHS opted for PET plastic for its wide-neck containers, as they are lighter than glass containers. PET preforms are also smaller than their glass alternatives; consequently, they take up less space during transportation and storage. PET containers are also claimed to have a higher energy efficiency than non-returnable glass receptacles. PET can also be a good insulator, as the filling temperatures needed to obtain the necessary number of pasteurisation units is lower than those for glass.

KHS provides customised containers tailored to the customer's requirements, taking the specifications of the filling line into consideration.

KHS Pacific Pty Ltd

www.khs.com



What do you want to **create today?**



Across industries and applications, we design specialised solutions.

For 70 years our solutions set the standard for yield, efficiency, and safety across a wide range of industries.

Our smart and flexible conveying systems keep your line running smoothly. Our innovative, gentle and dependable conveying systems move, size, accumulate and proportionately feed product improving full line efficiency, reducing waste and optimising sanitation.

Whatever your conveying needs, we can meet it with precision and passion.

HEAT AND CONTROL

FastBack

www.heatandcontrol.com | info@heatandcontrol.com





AUSTRALIAN INSTITUTE
OF PACKAGING

The role that resealable packaging plays in minimising food waste

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

The primary purpose of packaging is to contain, protect, preserve, promote and communicate, handle, transport and provide convenience for a product, all the while ensuring the safe delivery of food to the consumer. Without adequate packaging design features and fit-for-purpose packaging, food can potentially be wasted all the way through the supply chain to the consumer. By modifying packaging designs and ensuring that Save Food Packaging guidelines are followed, food waste and loss can be minimised.

As a core participant of the newly established Fight Food Waste CRC, the Australian Institute of Packaging (AIP) has been working on producing Save Food Packaging design criteria and communication material for the implementation into food packaging that will lead to better packaging design, material and format selection to assist retail, food service and consumers to minimise and prevent food waste.

A very important Save Food Packaging criteria is resealable packaging. Under the umbrella of resealable packaging there are many intuitive technologies, including resealable zippers, resealable lidding films, extrudable reseal adhesives, resealable packaging, sliders, resealable zipper tapes and labels, valves and more.

Resealable packaging provides myriad benefits, including extension of shelf life, reduction in spillages, retention of nutritional value and freshness of product, ingress of flavours, prevention of further product contamination, consumer convenience, controlled dispensing and pouring, allowance for multiple uses of the same pack, and easy storage.

Through this innovative packaging design, consumers have the ability to retain the product in the original pack and not add additional plastic film, foil, bags or containers to maintain freshness and quality of the product. All of these benefits in turn ensure the prevention of unnecessary food waste and loss.

Reseal vs reclose

When selecting the best resealable technologies, ensure that the pack can in fact reseal and not simply reclose. There is a significant difference between intuitive resealable designs that guarantee seal integrity and a closure that could compromise



the quality of the product. Choosing the wrong solution can potentially stand in the way of preventing food waste in the household and also damage consumer perceptions of your product.

Undertaking trials

Just like for any other style of packaging, trials need to be undertaken before the resealable packs are commercialised to ensure that the design provides the required freshness, nutritional and food waste

objectives for the product. Integrity of seals, freshness, shelf life and barrier, oxygen, contamination, leakage, etc, can be assessed during trials.

On-pack communication

Consider incorporating on-pack communication that explains the key benefits of the resealable option to the consumer. Extension of shelf life, freshness, quality and the ability to minimise food waste in the home are important for consumers. Food manufacturers need to actively engage the consumers in the journey and to explain the important role that packaging plays in minimising food waste.

Balancing 2025 and 2030 targets

Packaging technologists and designers also need to balance the 2025 National Packaging Targets against the 2030 National Food Waste Targets when designing resealable packaging. The decision to move to resealable design must also include discussions about the recyclability of the packaging in the country in which the product is sold. Making the decision to move to packaging that minimises food waste, all the while meeting the 2025 National Packaging Targets, is obviously the optimum solution and may require undertaking a life cycle assessment to find the sweet spot.

If every food manufacturer made a commitment to incorporate Save Food Packaging guidelines into their packaging development process, then this would be a considerable step in the right direction to minimise and/or prevent food waste in Australia.

Australian Institute of Packaging
www.aipack.com.au



ALL IN ONE FILLER

FILLS GLASS
+ CANS + PET

HOT *and* COLD
STILL + CARBONATED

HANDLES: CROWN SEALS •
CAPS • ROPP • RING PULLS
• SWING ARMS • CAN LIDS

UP TO 30,000 CONTAINERS/HR

The Vipoll ALL IN ONE filler does it all — in a fraction of the space.



See how it could transform your beverage line

sales@foodmach.com.au | www.foodmach.com.au

CALL 1800 FOODMACH

FOODMACH

Automation | Robotics | Integration | Turnkey Projects



Colour label printer with white toner

The OKI PRO1050 UV-resistant colour label printer with white toner is now available from Label Power.

The device prints roll to roll and roll to sheet with durable toners onto many different stocks including papers and synthetic films.

Pre-diecut labels can be printed or digital cutting machinery is also available to enable the printing of labels in any shape or size.

The 5th colour is White Toner and allows the white to be printed under the four colours to enable printing onto clear and silver stocks as well as popular recycled brown kraft label stocks.

If the 5th white colour is not needed it can be turned off, otherwise there is a lower cost four-colour model available — the OKI PRO1040.

The durable labels created by the OKI PRO printers are suitable for vibrant and durable cosmetic, chemical and food and beverage labels.

Label Power Pty Ltd

www.labelpower.com.au

Opening device for packaging

The Essentra Tear Tapes Rippatape X tape-based opening device provides for easy opening across paper, corrugated and fibreboard packaging, protecting goods from damage while also providing evidence of tampering. With cross-tear functionality, it is suitable for the easy opening of paper sacks within the food and industrial sectors. It also has retail packaging applications.

Manufactured using a 75-micron monoaxially oriented polypropylene (MOPP) film, the device provides fast access to a pack's contents. Its water-based, adhesive solution does not impede the recycling of materials, meaning both the tape and board can be processed through established recycling facilities.

The device is designed to remove the need for knives or other sharp implements in the opening of packaging, reducing the risk of product damage or personal injury. The clean and safe opening helps the pack remain intact for potential returns, minimising the impact on the environment from needing to supply extra packaging. The tamper-evident nature of the device

provides an indication if a packaging has been opened previously, providing brand and product protection.

The opening device has been designed to be applied to new and existing production lines at speeds of up to 450 m/min at the point of manufacture using Essentra's custom-built applicators.



Essentra Components

www.essentracomponents.com.au

Results in 10 seconds!

ATP is the universal energy molecule found in organic residues such as microorganisms, food residues and biofilm. Overtime ATP is hydrolyzed to ADP and AMP by metabolic processes, heat treatment, or under acidic or alkaline conditions.



Whilst conventional rapid hygiene systems test for ATP alone the LuciPacA3 patented system detects all three adenylates ATP + ADP + AMP (A3). This results in higher sensitivity and better indicator of sanitation.

LuciPac A3 – Better Detection = Better Protection



Email: sales@fmcgis.com.au
Phone: 1300 628 104 or (02) 9540 2288
www.fmcgis.com.au

Sustainable packaging solutions

Star Stuff Group has a range of sustainable packaging solutions that are 100% recyclable, 100% compostable and can be custom designed to suit users' requirements.

The company's range of print and packaging solutions includes pouches, bags, labels, printed rewind/flow-wrap, sleeves and lidding film, cartons, counter and floor displays.

Established in 2001 and based in Brisbane, Australia, Star Stuff Group supplies print and packaging solutions to several countries, including Australia, New Zealand, South Africa, the US and UK.

Star Stuff Group

www.starstuffgroup.com.au





SENSIENT

We bring life to products

From concept ideation
to product launch,
we partner with you
every step of the way.

Sensient delivers complete
product solutions built upon
innovation, depth of market vision
and creativity.

sensientflavorsandfragrances.com
salesaus@sensient-tech.com
+61 3 9798 3011

Post-harvest process to improve shelf life of produce

Post-harvest losses of fruit and vegetables due to spoilage along the supply chain represent a significant problem which can cost millions. According to FAO (Food and Agriculture Organization of the UN) statistics, almost half of the world's harvest (45%) of fruits and vegetables is lost on its way to the end consumer. The main causes of spoilage are pest or disease infestation and incorrect storage conditions, which can lead to rotting or loss of fresh mass due to respiration and evaporation. The only remedy until now is often the excessive use of chemicals.

Researchers from the Institute of Environmental Biotechnology at TU Graz in cooperation with the Austrian Centre of Industrial Biotechnology (acib) and industrial partners have successfully tested ecological methods that improve the storage of apples and sugar beet — representative examples for other types of fruit and vegetables.

Institute of Environmental Biotechnology Head Gabriele Berg, PhD student Birgit Wassermann and PhD student Peter Kusstatscher have now successfully tested organic apples with a method that combines the use of hot water treatment (HWT) and biocontrol organisms designed by the researchers.

HWT has proven to be a sustainable method for reducing fungal fruit decay after harvest in a large number of crops. In this treatment, apples are briefly dipped into a hot water bath. This 'heat shock' stimulates the apple's natural defence mechanisms, the principle of action has not yet been fully clarified. Nevertheless, there are always outbreaks of pathogens in storage and apples spoil. However, now, using the combined approach with HWT and biocontrol organisms can provide a sustainable and ecologically sound way to reduce apple blight, according to Berg.

How was it tested?

Wassermann explained the experimental set-up: "We infected organic apples with two of the most important putrefactive

agents, then treated them with hot water and a biocontrol agent designed by us. This combined approach enabled us to either kill the post-harvest pathogens completely or to reduce the infection diameter to a maximum in about 60% of the apples treated in this way." Compared to the control group — apples that were only treated with HWT — the combination method showed 20% better results in the resistance of the apples to storage rot. The additive protective effect of the biocontrol agent obtained from the apple microbiome of native organic apples for the control of the storage moulds could be clearly demonstrated. The results of the study were published in the journal *Frontiers in Microbiology*.

Does the apple microbiome remain intact?

Together with an Austrian organic fruit company, the researchers were able to show in a trial on an industrial scale that the natural microbiome of apples remains unchanged through HWT treatment, whereas harmful fungi are almost completely contained. This proves that HWT leads to the release of certain plant defence metabolites that kill pathogens without affecting the natural apple-associated microbiome. The close connection between the plant and its microbial symbionts is thus confirmed once again.

Other applications?

The research also has applications in the sugar beet industry, which can suffer from millions in losses every year due to storage rot. In cooperation with acib, the research team has developed an environmentally friendly crop protection agent together with one of the largest European sugar producers and the Graz start-up Roombiotic. acib researcher Peter Kusstatscher designed his own biocontrol agent for this purpose and tested it under industrial conditions. In addition, a process was developed that shows which beets from which fields are particularly susceptible to storage rot even before the beets are harvested and therefore indicating which beets must be processed quickly.

© Stock.Adobe.com/au/Krafla



ADVANCED COMPRESSED

- Higher energy savings
- More efficient air supply
- Expanded range
- Greater support & service

GLOBAL LEADERS IN ENERGY SAVING INNOVATION



KAISHAN AUSTRALIA PTY LTD www.kaishan.com.au

Engineering the future



Smart camera

The LCAM 408i is a robust smart camera by Leuze electronic, featuring IP65/67 anodised metal housing and an easy-to-clean glass pane. The camera is suitable for monitoring the production processes of machine tools.

The camera includes a cooling lubricant and a 5 MP IP camera with Gigabit Ethernet interface and high image quality. The camera can also provide insight into the processing centre under harsh operating conditions. The 408i camera can be integrated in the machine control via the M12 connections and 24 V voltage supply. Configuration requires a standard web browser or can be performed directly from the control panel. Additional software is not required. The option for optics cleaning via compressed air connection is also available.

Leuze electronic Pty Ltd
www.leuze.com.au

Vented packing crate

The A Plus Plastics AP36 is lightweight, well-ventilated and flexible 36 L crate, which is suitable for perishable food like fruit, vegetables or meat. The crate is part of an expanding range of stackable, vented crates, with this model particularly suited to produce due to its size and durability.

With a height of 177 mm, the crate is low and wide (609 x 469 mm) and a full pallet is able to incorporate 80 units (stacked 2 m high). The crate can also be stacked or nested, by turning it 180 degrees.

Putting crops such as garlic in unventilated crates would result in mould developing during the drying phase. The ventilation in the AP36 eliminates this issue, making it a viable option for general distribution as well as produce.

Available in a variety of colours, as well as custom colour orders, the crates are made from food-grade virgin polypropylene.

A Plus Plastics
aplusplastics.com.au



Food-grade conveyor belts

Global manufacturer of food-grade conveyor belts Ammeraal Beltech will exhibit its solutions for confectionery and snacks at ProSweets Cologne. The company will be exhibiting a range of application-specific conveyor belts, such as the

non-stick, low-friction PTFE, silicone-coated belts, which can work safely at temperatures between -70°C and up to 260°C. The soft-lip UltraScraper will also be displayed, along with the Ropanyl cooling tunnel processing belts, designed for chocolate tempering, and the Soliflex PRO mini.

The company designs and manufactures custom-made synthetic food-grade belts to cover a range of specialist requirements. The belting solutions are also designed to meet HACCP programs and comply with the main international food standards. The conveyor belts are distributed in Australia by Rydell Beltech.

Rydell Beltech Pty Ltd
www.rydell.com.au

AIR TECHNOLOGY



**LIFETIME
AIREND
WARRANTY***
Our commitment to quality and to your peace of mind

*Terms & conditions apply.
See website for details

We can supply the right machine to suit your application

1300 098 901

Metal detection range

The Eriez metal detection product line is in demand due to the increase in incidents involving metal contaminants, such as needles hidden in fruit during production.

The Xtreme MD is capable of detecting needles, pins, packaging staples, clips, studs and nails, razor blades and knife blade chips inserted into food and alerts users when a metal contaminant is found.

In its base package, the metal detector offers a large 7" (175 mm) easy-to-use touch screen interface, multiple pre-programmed languages, easy set-up and reporting, multiple USB and interface ports, remote access and the standard high-pressure washdown design. In addition to its hygienic design and rugged construction, the unit has an easy-to-use setup, operation and reporting, all from a large, well-designed graphic interface.

The units are available in various heights, widths and pricing options.

Eriez Magnetix Pty Ltd

www.eriez.com.au



Modular conveyor belting solution

The uni Ultra Clean Belt (UCB) from Ammeraal Beltech is a cleanable plastic modular belt, suitable for food and food packaging applications. Due to its health and safety features, the modular belt is suitable for moving foods of all kinds, from meat and fish to bakery items. The modular belt is partnered with the uni UltraClean Two-Part Sprocket. The design of the UCB belt features hybrid hinges, which enable water flow for cleaning around the hinges and pins when opened on the back of the belt and, when closed, prevent food loss into the hinges around the sprockets.

The lightweight UCB is claimed to be able to match the performance of heavier belts, and is easy to operate, maintain and clean. The modular belt is also claimed to have a lower CO₂ footprint, lower water and cleaning chemicals consumption, and a reduced manpower requirement for maintenance. The light weight of the belting enables OEMs to engineer lighter conveyor frames and use a lighter drive system. The UCB can transport over one tonne per metre width, without compromising its energy requirement.

Rydell Beltech Pty Ltd

www.rydell.com.au

Compact distributed I/O platform

Weidmüller's compact distributed I/O platform 'u-remote' delivers a streamlined design while providing features such as hot-swappable slices, an integrated self-configuring web server interface and simple plug-in connections.

The u-remote platform is an advanced solution that's built to ensure faster installation and set-up and is designed to improve performance and productivity. At only 11.5 mm wide per modular slice, its slim design and high-channel density makes it one of the most feature-rich distributed I/O platforms available.

Being vendor neutral, it supports integration with all major fieldbus networks including EtherNet/IP, PROFINET, EtherCAT, Modbus TCP, and many more for seamless compatibility with existing plant/machine networks.

An integrated web server helps speed up installation and provides real-time diagnostic access to up to 64 I/O slices/cards connected. Its high-speed system bus also provides good electronic performance and works with as many as 256 DI/DOs in just 20 µs cycle time.

Features include: vendor-neutral support for all major fieldbuses; compact design high density; wide range of I/O modules for all applications; and easy-to-use webserver for set-up and diagnostics.

Weidmüller Pty Ltd

www.weidmuller.com.au





THE COOLEST SOLUTION

Oxford Cold Storage isn't alone in experiencing a constant stream of cost pressures. With retailers dropping prices for their consumers, flow-on austerity down the chain means tighter margins for distribution companies. For Oxford Cold Storage, implementing a fleet of Automated Guided Vehicles (AGVs) from Dematic offered long-term savings. Able to operate around the clock and run overnight with the lights out, the addition of AGVs in the freezer warehouse meant a reduction in OH&S issues and elimination of human error. Plus, the increase in operational throughput provided by switching to automation allowed the company to remain in their existing warehouse rather than build a new facility, potentially providing savings in the millions. Learn more at dematic.com.au/oxford-cs.

 **Ask us.**

+61 2 9486 5555

info.anz@dematic.com

www.dematic.com.au

We **Optimise** Your Supply Chain

DEMATIC

Robotics | [Order Fulfilment](#) | [Automated Storage](#) | [AGVs](#) | [Software & IT](#) | [Conveyors & Sortation](#) | [Service & Support](#)

CASE STUDY

Vibratory equipment: a key ingredient in chocolate line

Founded in New Zealand by JH Whittaker over 120 years ago, Whittaker's remains a family-owned and -operated company. Now managed by the third generation of Whittakers, Andrew and Brian, along with the fourth generation, Matt and Holly, the company's factory in Porirua, Wellington, has nearly 200 staff.

Whittaker's produces high-quality chocolate products for both the domestic and export markets. During the 1950s it developed the Peanut Slab, which has become an iconic product and the recipe has not changed since. In the 1990s the company started to make its first chocolate blocks, now one of New Zealand's favourite blocks.

Whittaker's is a 'beans to bar' company, controlling the whole process — from roasting the beans to the final product — to ensure chocolates of the highest quality are produced.

Continuing its pursuit of innovation in chocolate, the company has introduced the Artisan and Destinations Collections — chocolate made with delicious ingredients sourced directly from NZ's finest artisan producers and chocolate made from unique ingredients sourced from destinations all over the world.

Whittaker's Engineering Manager Herbert Aregger's first experience with Enmin was the purchase of a solitary vibratory feeder back in 2013. It was this initial experience with the Enmin vibrators that was instrumental in Aregger requesting Enmin to design and build a custom piece of equipment for its new product line. The new equipment would need to facilitate up to six different flavours of chocolates being weighed and put into assorted bags.

Enmin's custom design and build abilities were ideal for this project, which required a multipack delivery system connected to a six-split multi-head weigher. A full 360° turnkey installation was required by Enmin and the new equipment needed to integrate seamlessly with existing components.

"Right from the start, the communication from Enmin was outstanding. Every question was taken

seriously and every challenge was addressed and discussed. Starting with an erecting plan of the platform, the entire project was designed using Enmin's state-of-the-art software, Autodesk Inventor," Aregger said.

All components were prefabricated and then shipped over to New Zealand for assembly.

"The integration with the other components was seamless. All the mechanical components fitted with minimal or no modifications and electrical interfaces were also prepared by Enmin. The entire process was well thought through by them," Aregger said.

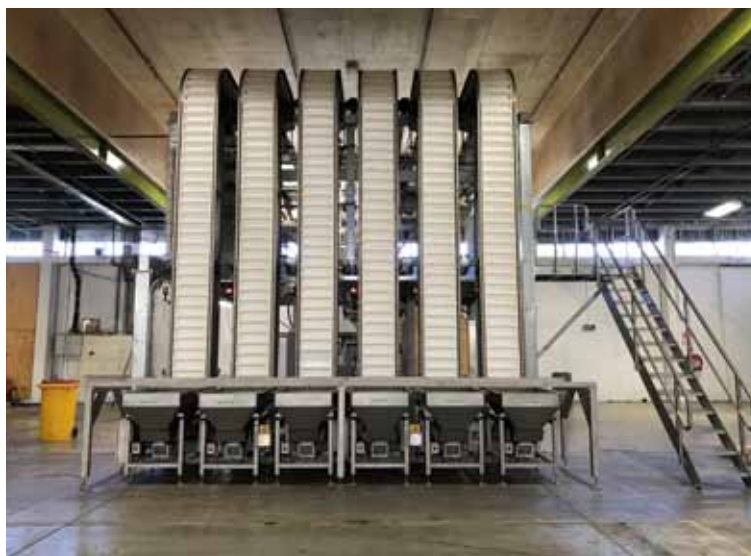
"Cabling of the equipment was also prepared and any modifications requested (mechanical or electrical) were taken seriously and executed in a timely manner with good workmanship. Overall it was a great install with no major issues," Aregger continued.

Testament to Enmin's thorough planning and commitment to customer service is that the entire installation was delivered in the original time frame. "Since the installation, it has become a very efficient and reliable line that's gone above projected sales," Aregger added.

Whittaker's also recently commissioned a mixing line that was once again designed and built by Enmin. "Enmin has helped us increase our efficiency and productivity and we are very pleased with this new equipment; manual handling has been reduced by 70% and our output increased by double," Aregger said.

"Enmin are an important business partner who will continue to assist us in making delicious chocolate using the best possible ingredients coupled with world-class people and world-class machinery," Aregger concluded.

Enmin Pty Ltd
www.enmin.com.au



Camera-based positioning sensor

The IPS 400i from Leuze electronic is a camera-based positioning sensor for double-depth compartment fine positioning. The compact device requires little space on the high-bay storage device. It detects round holes or reflectors in single- and double-depth bars, thus determining the position deviation relative to the target position in the X and Y directions. The positioning sensor is suitable for use in double-depth pallet high-bay warehouses. An additional model with integrated heating suitable for use in refrigerated warehouses down to -30°C is also available.

The positioning device is user-friendly, requiring simple programming via a web-based configuration. Printed configuration codes are read in without a PC via 'Code Generator', enabling configuration adjustments to be made directly on the high-bay storage device. An alignment system, consisting of four feedback LEDs, facilitates the commissioning process.

The positioning camera is equipped with in-built IR LED lighting that provides a range of 2.4 m and is compatible with different types of warehousing technology. Its integrated TCP/IP interface and PROFINET RT allow the IPS 400i to be directly integrated into the network environment, enabling location-independent diagnostics. Condition monitoring and predictive maintenance are performed using a quality score that detects deterioration in the reading performance of the sensor at an early stage.

Leuze electronic Pty Ltd
www.leuze.com.au



Bulk bag unloading system

Sterling Systems & Controls, Inc. has released a line of bulk bag unloading systems designed for food industry applications such as the baking and snack industries. The unloading systems include bulk bag discharging, material weighing and batch dispensing, along with the controls required for automatic operation.

A typical system incorporates the mechanical structure which houses and supports the bag discharge, alongside material weighing, dispensing (flexible screw conveyor) and control panel components.

The mechanical components are provided to unload the bulk bag, weigh the desired amount of material as set for a batch by the operator and then dispense the batch of material into a container for production use. Dust containment around the bag tie is available (as a 'glove box'). Process controls can also be provided.

Sterling Systems and Controls Inc
www.sterlingcontrols.com

BUSY WAREHOUSE CONFINED WORKING SPACE?

With its ultra-compact design
 and incredible manoeuvrability,
 the Mitsubishi FB-TCB
 electric forklift is unbeatable
 in confined working areas



MITSUBISHI
 FORKLIFT TRUCKS



Now available
 with lithium-ion
 battery

For a free site evaluation contact MLA now.

1300 000 652

www.mlaholdings.com.au



Forklift range

Yale is introducing its UX Series of counterbalance lift trucks to the Asia-Pacific region. Available in six different capacities from 1.5 to 3.5 tonnes, the series provides an option for users requiring materials handling equipment without needing advanced functionalities.

The trucks are designed to provide reliable handling solutions in applications where they are required to work intermittently as required over a working week, typically up to 4000 h/year. Suitable for use outdoors and indoors, the trucks are developed for low-hour applications.

The UX series of trucks are backed by a network of specially chosen, experienced, independent distributors, professional dealers and service providers who offer a range of support services.

The range is designed to be easy to operate and maintain, delivering an efficient solution to suit individual user needs.

Hyster-Yale Asia-Pacific Pty Ltd

www.hyster-yale.com

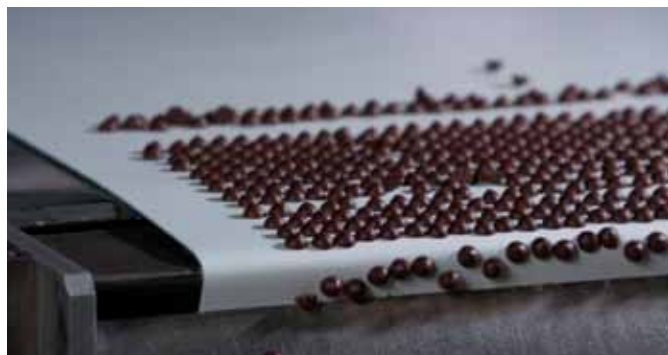
Confectionery and snack conveyor belts

The Ammeraal Beltech Ropanyl Premium Plus specialist conveyor belts are designed for the food industry. The conveyor belts are flexible, non-stick and shrink-free, and offer non-fray performance with strong release properties.

Designed for confectionery and snacks, the conveyor belts provide belt tracking and splicing solutions across the range. The belts are designed to reduce system and maintenance costs and boost output, while preserving food safety and product quality in line with international food standards.

Rydell Beltech Pty Ltd

www.rydell.com.au



PRODUCT INSPECTION EQUIPMENT SPECIALISTS

The Xavis FSCAN series of X-ray Inspection systems' offer high speed and high performance inspection for detecting foreign materials in food products. The intuitive software has the ability to detect missing or broken product, leakage, seal integrity and fill level. FSCAN can detect undesirable contaminants such as metal, stone, ceramic, glass or plastic with high density and automatically reject the non-conforming product from the production line.

We supply a complete range of Weigh and Product Inspection equipment such as;

- Weighing scales & systems
- Checkweighers
- Metal Detection
- X-ray Inspection
- Vision & Identification systems



1300 989 709 | www.ofiinspection.com.au



How a food processing facility saved thousands

A lamb processing facility in the Bay of Plenty, New Zealand was experiencing severe carryback on a conveyor in their lamb processing room. The conveyor was seeing over 20 kg of carryback per day, which meant a huge amount of product waste and a hit to the bottom line of the company.

There are eight conveyors in the lamb cut room, two modular and six white nitrile plied belts. The two modular belts experienced the most carryback and presented challenges for the site. These two belts were located in the cold-boning lamb processing facility, which operated two, eight-hour shifts per day.

A counter-effective system

The meat processing company originally had a cleaner which consisted of segmented blades mounted onto a head pole. This cleaner was then mounted onto the head pulley with the blades tensioned via a counterweight system.

“The cleaner was of poor design, but that was all the market had to offer at the time,” explains Peter Mueller, Senior Supervisor in the Lamb Cut Room.

“Meat would accumulate between the cleaner tips and the belt’s surface, the build-up would cause such tension between the cleaner and the belt that the force of tension would eventually cause the cleaner to flip over. Often, this problem occurred during a shift where the counterweight system was tied firmly in place.”

The counterweight system did not work well in the application, with the blades needing to be cleaned every 15–20 minutes, causing production to stop three or four times per hour.

The main reason for excess stoppage in production was the counterweight system, which was extremely difficult to tension, explains Mueller.

The excessive amount of carryback also meant that whole cuts of meat would bypass the cleaner, travelling onto the return side of the belt and drop to the floor, making it unfit for human consumption.

The company was losing hundreds of dollars per week in lamb that was being dropped onto the floor because it wasn’t able to be sold and contribute to the profit of the company.

In search of a solution

In search of a solution to these production-halting issues, Mueller visited the Flexco stand at the Foodtech Packtech

tradeshow in Auckland, New Zealand in 2016 where Flexco was exhibiting the Food Grade Primary (FGP) Cleaner. As mentioned before, the product offered a solution to fill a gap in the market space, where no solution of the same calibre was available.

Implementing a solution

Mueller made the decision to implement the Flexco stainless steel FGP cleaner, which features an FDA approved, metal detectable blade. After installing the cleaner, the company saw an almost complete and immediate reduction in carryback, with 20 kg worth of product being saved per day, just on the one conveyor. The cleaner was installed in 2016 and two years later, the results still stand — with room for the same outstanding results to be seen on other conveyors in the lamb processing room.

By reducing carryback, the company salvaged “up to 20 kg per day, depending on cuts and room speed”, Mueller said. The company was able to add to their stock levels, instead of constantly throwing spoilt meat in the bin. This meant added profitability for the company.

By installing the new cleaner, Flexco also eliminated the need for the cleaning system to be constantly cleaned and maintained.

As Mueller explains: “as long as the tension is set correctly, they do not need clearing all day,” allowing production to be constant throughout both eight-hour shifts without interruption. By eliminating the need for constant maintenance, the company saved labour charges of over NZ\$2,500 per year.

Apart from monetary savings in wages for the excess labour required, the company also gained time and increased productivity as staff were now free to perform other productivity-boosting tasks instead of constantly reacting to the same problem.

Flexco’s FGP Cleaner was able to increase productivity by reducing the amount of labour-intensive hours spent cleaning and maintaining tension on the previous, ineffective cleaner. Flexco was also able to save the company a considerable amount of money, which could be put to more effective uses, adding to the profitability of the company and toward the purchase of additional resources to better the company’s output.

Flexco (Aust) Pty Ltd
www.flexco.com.au



Detect · Reject · Protect

CEIA metal detectors by Heat and Control



Improve inspection results with the world's only multi-spectrum metal detector.

CEIA's unique technology achieves the highest sensitivity to small metal fragments by applying a broad spectrum of frequencies simultaneously and continuously - with no reduction in sensitivity.

CEIA metal detectors from Heat and Control assure precise, consistent detection and rejection of metal contaminants.



Heat and Control is the exclusive distributor
for CEIA in Australia and New Zealand
info@heatandcontrol.com | www.heatandcontrol.com

Compact pneumatic actuator range

The small and robust Firestone Airomatic pneumatic actuator range has been tested to five million cycles and is suitable for food, beverage and clean product manufacturing and conveyor applications.

Metal- and maintenance-free, the smallest in the range is the 50-P-10 Airomatic Polyactuators, which can achieve a stroke of 10 mm at maximum pressure of 3.5 bar (50 psi) and a diameter of 50 mm inflated, yet can exert forces of up to 38 kg at 3.5 bar (50 psi).

Constructed from layers of polyurethane welded together to form a tight seal, the Airomatic range was originally designed for the conveyor industry due to its compact design. Airomatic applications now include transfer sections and roller brakes, and can be used in almost any industrial actuation application requiring small pressure and stroke. The three-barb fitting design facilitates easy installation of standard industrial tubing.

Designed for small spaces and light forces, the latest Firestone Airomatic Polyactuator range is the smallest of the Firestone actuator and isolator family that includes Airstroke actuators and Airmount isolators in individual stroke capacities up to 40,000 kg and measuring up to a metre across. The range can be customised to meet specific sizes for a wide variety of materials handling and processing applications. These compact actuators have no pistons, rods or sliding seals, so friction, bending, scoring and wear are claimed to be not a concern. They are designed for easy washdown and don't require lubricants.

Air Springs Supply Pty Ltd

www.airsprings.com.au



CASE STUDY

Reducing hazards while screening dusty food powders

Manufacturers are opting for machinery that can meet high product demands without compromising operator safety, in response to increasingly strict regulations. Companies are also trying to reduce the risk of dust and fume inhalation with manual handling solutions and product containment and ventilation equipment.

Raw materials and ingredients such as flour, sugar, milk powder, spices and flavourings supplied in industrial-sized bags can be heavy to repetitively lift and support, and can emit hazardous quantities of dust when unloaded into industrial sieves or hoppers. Russell Finex supplied an operator-friendly bag tipping sieve to a food manufacturer seeking a solution to these hazards.

After consultation, it was determined that the food manufacturer required an industrial sieve for screening food powders, with a bulk bag unloading station and dust containment solution to protect operators.



Accordingly, Russell Finex installed the Russell Compact 3in1 Sieve — a bag dump screener with dust extraction, designed to sieve food ingredients through low-level bag emptying.

A manual bag dump station is integrated into the industrial sieve, while dust control curtains are fitted into the dust hood to protect operators and minimise dust inhalation. The PVC strip curtains provide added dust control measures, alongside an optional dust extraction system to protect operators and the surrounding environment.

Alongside its manual bag-tip station, the Russell Compact 3in1 Sieve provides a magnetic separator to remove ferrous contamination from food ingredients. The stainless steel magnetic grid acts as a further quality-check procedure to control ferrous contamination when check-screening dry powders. The industrial sieve is available in stainless steel, and can be disassembled and cleaned without the need for tools.

Russell Finex
www.russellfinex.com/en/



Weidmüller 

PROtop - The next level in industrial power supplies

Tough enough to survive Australia's most difficult conditions

The PROtop series of high-end power supplies have been designed to meet – and exceed – some of the most demanding requirements found in industry. PROtop series delivers industry-first, built-in ORing MOSFET redundancy technology and direct parallel connection for N+1 redundancy without the need for external diode modules. Featuring DCL (Dynamic Current Limiting) technology, PROtop can reliably trip DC circuit breakers downstream with a top boost reaching 600 percent, while in addition, it can deliver overloads from milliseconds to seconds ensuring powerful motor starting with ease. Efficiencies up to 94.5 percent reduce power losses significantly which allows the PROtop to reach new levels of space saving – only 39 mm width for a 10 A device. With a maximum operating temperature of 70°C, and high resistance to vibration, it can survive in some of the harshest industrial environments. Let's connect.

www.weidmuller.com.au



Stainless steel inspection ports

Alfa Laval tank covers provide openings for convenient visual inspection or entry to tank interiors, meeting requirements in the dairy, food, pharmaceutical, beverage and home-personal industries.

The covers securely fit the openings of high-, low- or non-pressure tanks, both above and below the liquid level, with two models available for hygienic purposes. The oval-shaped Alfa Laval LKD tank cover is made from stainless steel and is suitable for tanks or containers in various hygienic industries. For inspection purposes, the cover can be turned into the tank. For personnel entry, the cover can either be removed at the double hinge or swung out of the tank. The seal is hygienically positioned and is not affected by positive or negative pressure in the tank.

The Alfa Laval LKDC tank cover is also constructed from stainless steel and is supplied with a replaceable, self-sealing double lip seal to prevent fluids from spraying out during CIP cleaning or similar processes. The small and mid-sized LKD and LKDC inspection ports and the larger personnel entry ports are approved in compliance with the American 3-A Sanitary Standard and the US Food and Drug Administration (FDA) Declaration of Conformity. 3.1 Material Certification, in accordance with EN 10204, is also supplied with the covers.

The tank covers are available in AISI 304 or AISI 316L stainless steel with EPDM, NBR, FPM or Q (silicone) seal materials. Surface finishes include electro-polished, brushed and acid pickled, ranging from Ra 0.8 to Ra 0.4 to meet requirements of hygienic processes.

Alfa Laval Pty Ltd

www.alfalaval.com.au

Stainless steel roll lifter

The Packline Materials Handling and Ultrasource LLC roll handling solution has an extended reach which allows rolls of film and foil to be picked vertically to and from a pallet and then carried to a vertically loading packing machine feed. Constructed mainly from stainless steel, the roll lifter is suitable for the pharmaceutical and food industries and other hygienic applications.



This Vertical Spindle Attachment has been designed to suit the lifting and handling of rolls of film, foil, paper and other packaging materials. The machine provides powered vertical lifting and lowering only, with no rotation of the roll. Safe and easy to operate, the attachment features high load capacity, strength and durability.

The extended reach allows the rolls to easily attain the correct loading position. Wider and longer frame legs maintain stability and strength while lifting and transporting the rolls at the fixed extended reach.

The attachment has a manual handwheel for gripping and release action, with rolls gripped securely and supported by the core. Three gripping fingers on the attachment feature a fitted torque limiter, to minimise over- or under-tightening. This enables the operator to safely and confidently lift and handle the rolls.

With a full bespoke design service, the machine has fully interchangeable attachments that are easy to fit and remove from any model of Compac lifting machine that is fitted with the quick-release system. This lifter has a 60 kg maximum capacity; however, larger capacities and lifters to suit greater roll widths may be available on request.

SiteCraft

www.sitecraft.net.au



Customisable bulk bag unloading systems

Sterling Systems & Controls has produced a line of bulk bag unloading systems that can be customised.

Customised bulk bag loading systems can include bulk bag discharging, crane bag lifts, bag massagers, dust containment and collection systems, tramp metal separation, material weighing and batch dispensing, and complete

controls for automatic operation can be incorporated into automatic batching and weighing systems, and more.

Sterling Systems and Controls Inc

www.sterlingcontrols.com



Safety lights for materials handling equipment

Narva has introduced three Safety Light models that are designed to help increase situational awareness for both drivers and pedestrians who work alongside materials handling equipment. The lights can be fitted to machines such as forklifts, elevated work platforms and excavators. Depending on the model selected, each unit projects light to the front, sides or in zones around the vehicles, clearly alerting pedestrians of their presence.

The three models include: the 10–60 V Blue Spot model, 9–80 V Red Safety Line Lamp and 9–64 V Red Safety Zone Lamp. All feature high-power Cree 3W LEDs for maximum visibility.

The 10–60V Blue Spot Safety lamp can be used on forklifts, emitting a crisp blue square-shaped light on the ground forward of the vehicle through its four LEDs. The added visibility is suitable for anyone crossing from a blind angle, such as in between racking or in front of an oncoming forklift. The model is sealed to IP66, making it suitable for both indoor and outdoor use.

The 9–80 V Red Safety Line Lamp projects a red 'Do Not Cross' safety line to one side of the vehicle from its six LEDs, alerting nearby pedestrians and other vehicles of ongoing works and potential hazards. As this light is more likely to be used in outdoor environments, it is rated to IP66 and IP67.

The 9–64 V Red Safety Line Lamp features 12 powerful LEDs, making it a good addition to construction equipment like excavators and mining vehicles, where it can identify danger zones around the machine.

All three lamps are impact-resistant due to their aluminium die-cast, powder-coated housing and polycarbonate lens. Each is supplied with stainless steel brackets for convenient fitment. For added longevity in the tougher conditions, both the 9–80 V Red Safety Line Lamp and 9–64 V Red Safety Zone Lamp are vibration tested to 7G. The latter is also fully sealed and waterproof to IP68 and IP69K, making it suitable for off-highway environments.

The three products join Narva's existing 9–110 V 'Blue Spot' model.

Brown & Watson International

www.narva.com.au

Intermediate bulk container cleaner

The Tecpro A30R Hydrokinetic cleaner is suitable for cleaning intermediate bulk containers (IBCs) and small tanks, particularly those used in the food industry. By using the cleaning water to drive rotation, the IBC cleaner does not require oil or grease. This reduces the risk of contamination and the cleaner requires minimal maintenance, thereby reducing downtime. The IBC cleaner features 360° rotation, due to its drive assembly and turbine design. It uses three injectors on a planetary gear to produce low speed and high torque in a compact unit.

As the IBC cleaner does not require oil or grease, it is suitable for industries that must minimise the risk of contamination and spoilage, such as food and beverage manufacturers, wineries, breweries, cosmetic manufacturers, and council and agricultural uses. Manufactured with AISI 303 stainless steel, the

IBC cleaner is resistant to harsh chemicals, and can work with water temperatures up to 90°C, and water flows between 10 and 30 L/min.

All hydrokinetic heads are preset and factory tested to determine their compatibility with water flow and pressure rates. Consumers are advised to consult Tecpro to ensure the correct selection of hydrokinetic head to suit their application.

Tecpro Australia

www.tecpro.com.au



Highest Level of Protection Against Dangerous Tramp Metals

RE7 Xtreme Rare Earth
MAGNETIC SEPARATORS

Prevent metal contamination in your product or process flow. Available in a range of designs to suit your specific needs.

Eriez.com.au | 613 8401 7400

ERIEZ



© Stock Adobe.com/au/juliana_n

Watermelons with paddock-to-plate traceability



Queensland seedless watermelon grower Andrew Martens of Marto Farms is using a blockchain end-to-end consumer traceability and marketing system designed by FreshChain Systems. The system provides end-to-end traceability that allows consumers to track the watermelon from its origin and learn more about the farmers that grew it.

"The world has changed and people simply want to know more about their food, its location and those who produce it," said Barton.

FreshChain is a fully integrated, blockchain-enabled, paddock-to-plate assurance system that verifies the product. In just a few seconds, the system is designed to provide traceability throughout the supply chain and provide insights to help consumers make better decisions during a product's life cycle.

By simply scanning the QR code of the label attached to the Marto Farms watermelon, consumers can find out detailed information about the harvest, conditions and certifications, as well as handy hints relating to that specific melon.

"This represents a great opportunity to showcase our world-class products, passions and farming practices," said Barton. "Inviting consumers to learn more about the product they are buying will only enhance our offer and create long-lasting

connection and loyalty in both local and export markets. We simply can't risk losing the trust of the next generation of consumers who have money to spend by not being more open. We should all be involved in initiatives to secure the fresh food future of Australia."

Dianne Fullelove from the Australian Melon Association believes the technology could have wider applications for safeguarding not only the melon industry but all fresh food. "We want consumers to be able to enjoy, with full assurance, that the products they are eating are fresh and safe, and educate on how to store food correctly to help eliminate food waste. This benefits our whole community," she said.

Greg Calvert, founding Director at FreshChain, said: "We want consumers to make an informed decision on their choice of products — to choose products produced responsibly, by growers who are passionate about what they do. Blockchain technology allows us to share reliable information with consumers in an accessible way. Our goal with FreshChain is to become the global standard for end-to-end traceability and consumer connection, and what better place to help realise that vision than in the food bowl of Bundaberg, Queensland.

FreshChain Systems
freshchain.com.au

Processing



Clean, energy efficient
solutions for your fresh
food requirements

Atlas Copco



MEET THE ALL NEW 'ZR' ATLAS COPCO ROTARY OIL-FREE SCREW AIR COMPRESSOR...

Simply plug and run

Setting the standard in energy efficiency, quality and reliability

The shortest route to superior productivity is to maximise output while expending the minimum amount of inputs. The Atlas Copco ZR 90 - 160 VSD+ compressor series is focused on delivering the greatest volume of 100% guaranteed oil-free compressed air while using the least amount of electrical input energy and with minimal amounts of maintenance intervention.

And not just today, but day after day, year after year, with built in reliability and durability to ensure very long, trouble free service life.

Highest reliability

For over 50 years, Atlas Copco Z compressors have set the benchmark for durability. They are built using long-standing internal engineering practices, and are designed and manufactured according to ISO 9001, ISO 14001, ISO 22000 & OHSAS 18001. The high-end ZRVSD+ uses time-proven state-of-the-art screw technology, in-house designed and manufactured electric motors and inverters and provides you with the highest reliability and durability.

100% oil-free compressed air

The ZR 90 - 160 VSD+ offers you 100% pure, clean air that complies with ISO 8573-1 CLASS 0 oil (2010) certification. This means zero risk of contamination of compressed air; zero risk of damage to your products; and zero risk of damaging your company's hard-won professional reputation.

Maximum energy efficiency

The ZR's superior oil-free screw elements provide the optimum combination of high Free Air Delivery (FAD) with the lowest energy consumption. Ample sized cooling, low pressure drops and an extremely efficient drive train including motor and inverter result in the highest compressor package efficiency.

The most complete package

With the ZR compressor, Atlas Copco provides a superior solution without hidden costs. The totally integrated, ready-to-use package includes internal piping, coolers, motor, lubrication and control system. The Full Feature version even integrates an IMD or IMDG adsorption dryer to deliver dry compressed air for even the most sensitive applications with virtually no dryer energy consumption.. Installation is fault-free, commissioning time is short and no external instrument air is required. You simply plug and run.

Global presence - local service

Our aftermarket product portfolio is designed to add maximum value for our customers by ensuring the optimum availability and reliability of their compressed air equipment with the lowest possible operating costs. We deliver this complete service guarantee through our extensive highly trained service organization, maintaining our position as leader in compressed air.

Your benefits

- 100% Oil-free Air (Class 0)
- Next generation world class compression element.
- Unique Z seal design guarantees 100% certified oil-free air.
- Atlas Copco superior rotor coating for high efficiency and durability.
- More compact, improved rotor profiles and cooling jackets for maximum efficiency and durability.

Advanced touch screen monitoring system

- User-friendly Elektronikon® Touch, with enhanced connectivity potential.
- Integrated smart algorithms to optimize system pressure and maximize energy efficiency.
- Included warning indications, maintenance scheduling and online visualization of the machine's condition.

High efficiency motor

- IP66 Permanent Magnet water cooled motor with oil lubricated bearings.
- Class-leading efficiency (IE5 – 97%) and rock-solid reliability.
- Full regulation between 15 to 100% of the maximum capacity.

Optimal control

- Dual motor drive design incorporating Atlas Copco's most sophisticated Variable Speed technology.
- Reduced energy consumption, operating costs and environmental impact.
- Constantly optimizing the motor speed by ensuring optimum performance for every single pressure and flow.

Reliable cooling

- Cooler with highly efficient water separator for higher reliability.
- Stainless steel enlarged surface coolers to ensure top performance over a long lifetime.
- Pipes with star profile form bi-anodised aluminium for preventing corrosion and maximised cooling surface.
- Easily removable for quick, cost-efficient maintenance.

Compact design

- Smallest possible machine footprint on the market.
- Saves valuable and often expensive floor space in a facility.
- Highest ratio flow/footprint on the market.

Reducing food recalls with rapid *Salmonella* detection tech

A rapid test developed by researchers from the Fraunhofer Institute for Cell Therapy and Immunology, Branch Bioanalytics and Bioprocesses can help detect *Salmonella* in food in eight hours. When it comes to detecting the presence of *Salmonella* in animal products, traditional microbiological techniques can take up to four days — this can be too long for food manufacturers, who need to distribute their products.

Along with German microbiology and food analysis laboratory Selektis, researchers from Fraunhofer have developed a rapid test that can determine whether food is contaminated with *Salmonella* in less than eight hours. Enriching bacteria is a time-consuming process that involves cultivating and propagating microbes, which are available in limited quantities, in a liquid culture medium overnight, so there is a high enough bacterial count for subsequent detection. This process can take 18 hours, with three further days needed for the selective enrichment and incubation of the salmonellae in liquid media, for the streaking of a bacterial culture on agar plates and for the serological test. Researchers have now reduced the time needed for the enrichment process from 18 hours to between four and six hours.

“We did this by creating a rapid culture with growth conditions optimised for salmonellae. By means of an innovative enrichment method, we are able to increase the concentration of the bacteria to such an extent that we can detect them using molecular biological methods after only a few hours. To do this, the DNA of the salmonellae is amplified and

automatically detected, something we achieve by extracting the DNA of the salmonellae and amplifying them by molecular biological means to such an extent that they can be detected after a further 30 minutes. For the rapid test, we design the molecules that specifically detect the DNA of the salmonellae,” said Dr Harald Peter, Research Group Leader at Fraunhofer.

Researchers must obtain as high a concentration as possible of *Salmonella* DNA in a short time frame for the detection process. Researchers can then use fluorescent dyes to label the replicated DNA and detect it using capture modules. For this project, researchers developed a system that automatically performs all procedures that are done manually, such as cultivation, enrichment, molecular biological replication and detection. In the future, all necessary components will be integrated into a compact device; using molecular biological techniques, researchers will be able to skip certain DNA purification steps, thus simplifying the process of *Salmonella* detection.

The German Food Hygiene Act stipulates that a sample of 25 grams of meat must not contain a single *Salmonella* bacterium. Consequently, the new rapid test has to be capable of detecting a single bacterium within six to eight hours — that is, within an average working day. A further task is to distinguish the salmonellae from other microorganisms,” Dr Peter said.

Another advantage of the test is that it can also be applied to other food pathogens, by adapting the capture molecules to other organisms using a computer and gene databases.



Washdown gun

Available in stainless steel or a brass and stainless steel combo, the Blue Princess washdown gun by Tecpro Australia is designed to use 26% less water than regular guns.

The lightweight washdown gun is durable due to its sturdy hinge joints and dual internal seals. Its nozzle is designed to provide even water distribution and can be adjusted from a wide cone to a narrow point. This versatile spray direction allows the user to clean in tight corners and remove stubborn material, without dripping.

The device uses less than 20 L/min of water at 4 bar. It can accommodate temperatures up to 95°C and water pressures up to a maximum 25 bar. The compact washdown gun also features a soft rubber surface trigger grip.

Suitable for use with a range of chemicals, the device comes with FDA-approved EPDM seals.

Tecpro Australia

www.tecpro.com.au



Inline air regulator

The ToolReg inline air regulator is designed to ensure that only the required pressure is used for each individual pneumatic tool.

Compressed air is expensive to generate as it uses a lot of energy (electrical and mechanical). Therefore, compressed air usage must be managed correctly in order to ensure energy efficiency and reduce costs.

Higher compressed air pressures require far more energy to produce. On average, the air compressor requires 1% more energy for every 0.15 bar increase in compressed air pressure.

Each pneumatic tool is designed to perform best at a given pressure. Operating the tool at a higher pressure not only reduces the performance but can also shorten the possible lifecycle of the tool.

The ToolReg is designed to ensure the energy efficiency of a pneumatic tool. This can result in optimising performance and lengthening the lifespan of the pneumatic tool, as well as preventing loss of production time due to the damaged tool being out for repairs.

Factory set to prevent pressure changes, the regulator is fully tamper-proof and ensures that only the required pressure is used for each tool. The automatic secondary pressure relief releases all the residual pressure in the pneumatic tool to prevent unexpected activation (common in nail guns and staplers).

Compressed Air Australia Pty Ltd

www.caasafety.com.au



FLOW AIDS

OLI has created a product line of pneumatic vibrators, aerators and electric vibrators specific for flow aids applications. The products have been tested and certified to meet the most stringent, international standards. Reliability and high availability from over 50 subsidiaries worldwide make OLI the international leader in vibration technology.

OLI VIBRATORS
EFFICIENT DISCHARGE SOLUTIONS

**DESIGNED FOR MILLING:
MAX RELIABILITY MOTORVIBRATORS**

OLI Vibrators Pty Ltd.
7 Jellicoe Drive
Scoresby Vic 3179
Telephone: +61 3 9764 9988
Mail: info@olivibrators.com.au

WWW.OLIVIBRA.COM

Spiral element product line

The Sani-Pro spiral element product line is designed to meet the requirements of membrane separations within the food, beverage and life science markets. Sani-Pro elements are constructed for higher pressure operation and to withstand harsh chemical cleaning without impacting performance. The line is also designed to be energy efficient, thereby increasing productivity, reducing operating costs and decreasing contamination risk.

The sanitary spirals have a range of applications, such as animal- and plant-based protein concentration and purification, fermentation broth clarification, product recovery, gelatine concentration, juice colour concentration, sugar separations and sweetener clarification. The elements are compliant with applicable FDA, 3A EU and Halal standards and regulations. All Sani-Pro elements are drop-in replacements and available in all common product configurations.

Koch Membrane Services

www.kochmembrane.com

Using texture analysers for burger quality testing

First invented in the 1900s in America, hamburgers are now one of the most popular food in the world. They are widely available at dining places from fast food outlets, pubs, high-quality restaurants and even at home. As they are competitively priced, the quality of the burgers can vary from 100% prime ground meat to poor-quality meat that is mixed with a high percentage of additives such as fat, bulking agents, salt and other preservatives.

© iStockphoto.com/Nelisa Razantseva

The meat quality is largely determined by a number of factors such as tenderness, juiciness and the degree of distribution of marbling. Meat tenderness, in particular, is an important attribute for meat texture and palatability such that any variation may influence a consumer decision to repurchase.

A texture analysis machine can be used to evaluate the meat tenderness. Texture analysis can be employed at different stages for quality testing. In the research and development stage, it can compare the new and alternative ingredients with existing ingredients. In the production stage, it can be used to measure and control other process variables such as temperature, humidity or cooking time that influence the meat tenderness. Various types of jigs and fixtures can also be used for different types of testing.

TA1 texture analyser

The TA1 texture analyser is an easy-to-use, cost-effective solution for performing mechanical texture analysis on applications up to 1kN. The load cells used for the testing feature anti-rotation collars to facilitate easy axial alignment and to avoid load train twist. This high-performing instrument is also equipped with built-in intuitive, user-configurable NEXYGENPlus software for fully-automated texture analysis. The analyser features a large working area to facilitate the testing of larger specimens and a calibrated texture tester run by software using fundamental algorithms. An extensive range of special probe fixtures, probes and jigs can be fitted into the machine for testing food textures and integrity of food packaging.

Texture analysis method

The TA1 texture analyser provides the objective measure of a patty's consistency by using a new test jig determining the texture of uncooked patties. The main textural characteristics to be measured are the degree of toughness, cohesiveness and juiciness.

The burger patty is firstly placed on the support plate mounted on the base table. A cylindrical probe with an open out in an inverted cone shape with a flat end of 25 mm diameter is used to apply force to the patties. With this test, the meat tenderness is measured as the force or energy required to penetrate or deform the burger patty. It basically simulates the biting action in the mouth by replicating the effects of two bites of the burger patty sample with the help of NEXYGENPlus texture analysis software. Through NEXYGENPlus software, users can monitor the force, distance and time during the entire simulation process and calculate texture critical parameters such as adhesion force, chewiness, hardness, springiness, resilience and other factors.

The TA1 texture analyser also allows external plug-and-play devices such as temperature and humidity probes to be connected to the system to monitor them against force, distance, and time during a test. Other test jigs can also be used for testing reformed cooked meat such as ham or spam. The TA1 texture analysers can also be used with other meat texture testing method such as Warner Bratzler test or Kramer Shear Cell. They can be easily done by changing the blades required to perform specific testing.



BESTECH
Sensors & Testing Equipment

Bestech Australia Pty Ltd
www.bestech.com.au

Thermo-chiller range

The SMC smart range of thermo-chillers comes in an array of sizes, from standard and basic types to the high-level triple inverter-type chillers that adapt to the variable heat and flow requirements, and is claimed to achieve substantial power savings of up to 53%.

In terms of how it works, the recirculating fluid of the chiller removes the heat from a customer's heat-generating industrial device. The heat is then removed from the fluid by an air-cooled (or water-cooled) refrigeration circuit. The coolant temperature stability is $\pm 0.1^{\circ}\text{C}$ within a set temperature range.

According to the company, when properly sized and selected, a thermo-chiller can improve productivity and the quality of the final product, protect valuable process equipment, and reduce costs. Thanks to proactive controls via a remote control, the units can provide self-diagnosis readings for customers to anticipate and easily manage any incidents.

The HRS-R Series is resistant to dusty environments or environments with water splashing. It has a cooling capacity of up to 5000 W (60 Hz), is IP54 rated and has a large capacity tank of 12 L; features a metal panel and a stainless-steel panel can be selected on request; and ambient temperature of 5 to 45°C.

The series HRR (rack mount) temperature control device is mountable in a 19" rack that provides for space savings. Features include: temperature stability: $\pm 0.1^{\circ}\text{C}$; temperature range of 10 to 35°C; cooling capacity: 1.2/1.8/2.4/3.0 kW (60 Hz); easy front access; easy to operate without removing the unit from the rack; and add-ons such as flow switches, pressure switches, filters, fittings and tubing are also available to order.

SMC Australia | New Zealand

www.smcnz.com



Easily insert fillings inside food casings

RHEON[®]

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.

**MODELS TO
SUIT ALL
MANUFACTURERS,
BOTH LARGE
& SMALL**



symetec EST 1995
Unique Food Machinery

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

www.symetec.com

Air conditioners

Enclosures are designed to shield equipment from the environmental effects of rain, humidity, ambient temperatures and acidic chemicals such as salt or other corrosive substances found in processing plants. However, containing heat sources could lead to high temperatures internally and hot spots due to the heat load, solar radiation and enclosure size.

Excessive temperatures could affect the life of electrical equipment inside, as balancing the cooling ability is sacrificed by enclosure IP rating and cost of cooling. Pfannenberg offers a range of solutions that perform in high IP environments while focusing on efficiency and sensitivity for effective cooling of temperature sensitive equipment.

Pfannenberg's range of DTS and DTT cooling units feature flexible supply voltage options and robust slim tool-less designs, and claim to be capable of reducing energy consumption by up to 43%. The DTS and DTT systems are designed for 1-person installation and can be ordered as a side- or top-mounted machine with power ranging from 300 W to 6 kW.

Both series are constructed powder-coated, with an optional stainless steel and epoxy coating on all exposed copper tubing to ensure environmental compatibility, and feature active condensation management to reduce water drain-off. Both series are suitable for a range of applications, including mining, chemical process plants, food and beverage, or environments with washdown or high dust/debris areas.

Control Logic is selling selected Pfannenberg DTS and DTT cooling units for a limited time.

Control Logic Pty Ltd

www.controllogic.com.au



Forming & Portioning machinery

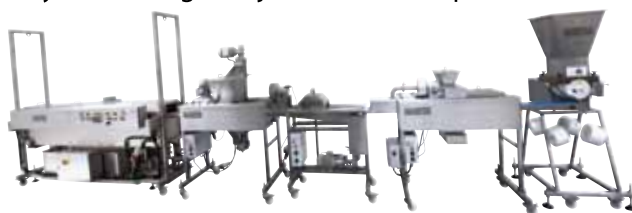
with a difference

Meat, Chicken, Vegeburger, Falafal, Seafoods

**Cookies, Snacks,
Health Foods**

- ▶ Compact benchtop to larger free-standing models to suit any size manufacturer
- ▶ Models & throughputs from 1,000 to 36,000 pieces per hour
- ▶ Easy & fast weight adjustment of the product

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





Fizzy tech

CSIRO has found a way to pull carbon dioxide (CO₂) out of the atmosphere and put it into beer and other beverages.



CO₂ is in global demand for a range of applications, including making fizzy beverages and food packaging. While CO₂ levels in the atmosphere continue to rise, there have been shortages in industrial supplies of the gas over the past decade, and this has had an impact on the beverage industry.

The new CSIRO technology is called Airthena, and was developed in partnership with Monash University, Energy Infrastructure and Resources, and H2H Energy. While Airthena won't make any immediate impact on cutting global CO₂ emissions due to its scale, it is designed to help businesses with a more reliable source of the gas for their everyday operations, while reducing their carbon footprint.

The technology works by capturing CO₂ directly from the air using tiny sponges known as metal-organic frameworks (MOFs), and can be scaled up for commercial production.

CSIRO project lead Aaron Thornton (pictured) said the solution draws on recent breakthroughs in advanced filtration methods

and had broad applications across a wide range of industries.

"As it requires just air and electricity to work, Airthena offers a cost-effective, efficient and environmentally friendly option to recycle CO₂ for use onsite, on demand," Dr Thornton said.

"It also provides a more reliable source of CO₂ for use in small-scale applications ranging from beverage carbonation to controlling pH in swimming pools and industrial cleaning."

The unit only needs about 2 kWh of electricity per kilogram of CO₂, equal to around 20c/kg at minimum solar energy prices of \$0.1/kWh at its current scale.

The technology is capable of capturing two tonnes of CO₂ from the atmosphere a year, making it suitable for small-scale applications right now, but Dr Thornton says it is scalable.

"We are now exploring options for taking Airthena to market, which include reducing the cost of the unit for small-scale applications and having it tested to ensure it meets food quality standards, or working with the food production industry to scale up the technology for larger applications," Dr Thornton said.

10.1" stainless steel panel PC

The ViTAM-810 10.1" Stainless Steel HMI Panel PC is a fully sealed IP66/IP69K all-in-one computer. To comply with IP66/IP69K standards, the device uses M12 sealed connectors for all I/O connections. The result is a panel PC that can withstand high-pressure, hose-down cleaning.

The ViTAM-810 is based on the Sixth Generation Intel Celeron N2930 1.8 GHz processor with up to 8 GB of DDR3L memory to provide a high-performance industrial control solution. Standard I/O connections provided include USB2.0, LAN, RS232/422/485 and 9~36 VDC power. Two optional I/O connections can also be installed. Users can choose from optional USB2.0/3.0, LAN/LAN PoE, COM or CAN bus. An internal 2.5" HDD/SSD drive is provided for storage. A Mini-PCIe slot is provided for WiFi/BT cards and an RFID front panel module is also available. The 10.1" 1280x800 flat panel LCD screen touch panel options include resistive touch, projected capacitive touch or a no touch glass front bezel.

Housed in a grade 304 or optional grade 316 stainless steel enclosure the ViTAM-810 will not corrode and is easy to clean. To assist the cleaning of the display, the device includes a touch on/off button that allows the touch screen to be temporarily disabled during the cleaning process. This allows the display to be hygienically wiped down without having to shut down any process control applications.

Standard 3540 nits and optional sunlight readable 1000 nits display brightness is available. ViTAM-810 supports a wide-range operating temperatures from -20 to 60°C.

VESA 75 mm mounting holes allow the device to be arm or wall mounted, with an optional ergonomic yoke mounting also available.

Interworld Electronics and Computer Industries

www.ieci.com.au



3D printing of chocolate, a new approach

Advances in three-dimensional (3D) printing technology have focused on edible material, enabling it to be shaped into unique and complex 3D designs. Researchers at the Singapore University of Technology and Design (SUTD) have now developed a method for the 3D printing of chocolate-based products at room temperature by cold extrusion instead of the conventional hot-melt extrusion method. The new approach eliminates the need for stringent temperature controls, providing further potential for 3D printing of temperature-sensitive food.

The hot-melt extrusion method is widely used in 3D printed chocolates where the chocolate is required to be between the temperatures of 31 to 36°C so that it can be melted and dispensed accordingly. While this method has its advantages in simplicity and accessibility, the narrow range of operating temperature can be highly restrictive and inflexible.

Conversely, cold extrusion does not require the manipulation of temperature as it depends solely on the rheology of printing ink that is added to chocolate at the operating temperature. However, due to the lack of inks possessing suitable rheological properties, cold extrusion in 3D printed chocolate has not been demonstrated to date.

To bridge this gap, researchers from SUTD's Soft Fluidics Lab developed a new approach, 'Chocolate-based Ink 3D Printing' (Ci3DP), to print chocolate-based inks at room temperature by cold extrusion.

Using the Ci3DP approach, readily available chocolate products such as syrups and pastes were mixed with cocoa powder to alter the rheology of the ink. Chocolate-based inks with high concentrations of cocoa powders exhibited shear-thinning properties with high viscosity; the inks also possessed a toothpaste-like property that did not flow at rest.

To highlight this capability, 3D models consisting of chocolate syrups and pastes were demonstrated. The same method was extended to the fabrication of a chocolate with different textures by using multiple types of inks. For instance, a piece of chocolate was fabricated with a semi-solid enclosure and liquid filling at the same time, further demonstrating the flexibility that this approach provides.



MI-CON, IT'S FROM ENMIN NOT IKEA.

The first hygienically designed full wash down conveyor system to offer standardised components.

Delivered flat packed in a box.

- Mi-CON can be added to, extended and modified in the years ahead
- Eliminates equipment redundancy and expands with your business
- Provides maximum flexibility to suit your product and production needs
- Is suitable for any food and ingredient manufacturing facility
- FDA approved components



enmin[®]
VIBRATORY EQUIPMENT



Manufactured in Australia | T: +61 3 9800 6777 | W: enmin.com.au



Redefine the future of food

Australia's largest food manufacturing
& processing show is back

5 — 8
JULY 2020

Melbourne Convention
& Exhibition Centre
foodproexh.com

Once every three years – foodpro brings together the latest products and developments in processing and packaging, plant equipment, drink and liquid foods, ingredients and logistics and handling.

Don't miss your opportunity to increase business productivity, advance product offerings and be at the forefront of industry trends and developments.

Join, contribute and be inspired by key industry experts covering the latest in industry trends, topics and discussion at free key note seminars.

DON'T DELAY REGISTER FREE NOW
foodproexh.com

The logo for foodpro, featuring the word "foodpro" in a bold, sans-serif font, with a stylized graphic of three curved lines above the "o" in "pro".

Trade Only Event

Getting the right mix

Measuring viscosity wirelessly

Mixing is a fundamental process in the manufacture of many products; in many cases, it is an exact science, as over- or under-mixing can leave various component materials unevenly distributed, or change the state of the end product. Viscosity measurement is believed to be the most accurate way to carry out mixing; however, rotating mixers can lead to tangled wiring. Here, Mark Ingham of Sensor Technology addresses wireless solutions as a viable alternative.

When mixing sauces, such as tomato sauce and mayonnaise, any notable change in texture or viscosity could dissuade consumers from purchasing products. Mixing is thus a crucial process for the food industry.

While there are a number of technologies available for measuring viscosity, a popular option is the rotational viscometer, which measures viscosity by monitoring the torque required to rotate a spindle at a constant speed within the fluid. The torque, generally measured by determining the reaction torque on the motor, is proportional to the viscous drag of the fluid. The rotational viscometer can run throughout the mixing process, logging data to provide a log of the change in viscosity over time. This profile can be compared with historic data from earlier mixes to provide information that would not be available from final target viscosity readings.

Torque can also be difficult to measure; due to the rotating spindle, wires attached to a torque sensor on the shaft would wind up and quickly snap. Approaches using slip rings are available, but unsuitable due to set-up time and wear and tear. A wireless alternative has been developed using TorqSense rotary torque transducers from Sensor Technology. These do not require a physical connection to the rotating shaft, as they use a radiofrequency (RF) link to send power to the sensing element on the spindle, and to receive torque reading signals from it.

The sensors use two surface acoustic wave devices (SAWs) made of ceramic piezoelectric

material containing frequency resonating combs. The SAWs are glued into the drive shaft at 90° to one another. As the torque increases, one comb expands and the other contracts proportionally to the torque, acting as strain gauges, measuring changes in resonant frequency.

An RF transmitter/receiver mounted near the spindle emits radio waves towards the SAWs and collects them when they are reflected back. The change in frequency of the reflected waves identifies the current torque.

In the rotational viscometer, the sensor is mounted between the motor and the paddle. A double bearing eliminates any side loads, while a torque provides protection, if the paddle mechanism seizes. With the motor operating at constant speed, the transducer provides an output of torque that changes according to the viscosity during mixing, allowing the operator to measure the viscosity of the mix.

The system can also be pre-calibrated using specific paddles immersed in fluids with a known viscosity. By calibrating the viscometer to a known sample, the absolute torque figure can then be derived in the application from the relative torque figure and the required viscosity then measured.

TorqSense rotary torque transducers are designed to simplify the design of rotational viscometers while increasing accuracy, providing a good solution when mixing requires accurate viscosity data.



Sensor Technology Ltd
www.sensors.co.uk

CASE STUDY

Visy Packaging solves wastewater pumping problems

Visy Packaging has a state-of-the-art drink-can manufacturing plant in Stapylton, Queensland. It employs over 50 people and produces export-quality cans for local and overseas markets. The company was, however, having some reliability issues with its submersible wastewater pumps. After many years of trying to solve the issue, Paul Carter (Engineering Manager – Beverage and Food Can) spoke to one of his contractors, who suggested he look at Gorman-Rupp self-priming wastewater pumps, which had been successfully installed at the Pacific Fair shopping centre.

Carter instantly saw the benefit of this style of pump equipment due to them being surface mounted and their maintenance and reliability benefits. Being surface mounted meant they would be easier to access for monitoring and service. He said that “the Submersibles couldn’t pump against back pressure and wouldn’t allow us to change the design, but



the Gorman Rupp units have allowed us to achieve that, and we now have no issues with our system”.

The most suitable pump for the Visy application was the Gorman-Rupp T2A65-B. This is a 50 mm self-priming trash pump, which is capable of self-priming to depths of 7.5 m and able to handle solid particles up to 38 mm in diameter and also stringy materials such as rags. If anything too big gets into the pump, it has a large inspection cover-plate for operators to

access the pump interior.

The Gorman-Rupp T2 is able to deliver flows up to 10 L/s, but larger pumps in the range are capable of flows to 200 L/s. Pumps also come in various materials of construction to cope with abrasive and/or corrosive wastewater.

Hydro Innovations
www.hydroinnovations.com.au

Thermal mass flow meter

The ST80 thermal flow meter range from AMS Instrumentation has been expanded to include a Profibus-DP solution, along with its existing Profibus-PA capability. The added Profibus-DP expands communication between a plant-wide Profibus communications system for air and gas flow metering measurement and control. The thermal mass flow meter can be configured as a field instrument PA device or a system RS-485-based DP device.

The device provides air/gas flow rate, totalised flow, temperature and instrument health diagnostics over the Profibus digital bus. It has also been evaluated and certified by the Profibus organisation to ensure its integration with Profibus control systems. The ST80 flow meter also includes standard output options of dual 4–20 mA analog outputs (NAMUR NE 43 compliant), HART (Version 7) I/O and Modbus RTU. The flow meter is designed to combine reliable electronics with a selection of application-matched flow sensors and calibration, for use in a range of gas flow meter applications.

With its no-moving parts thermal dispersion flow sensor, sturdy transmitter enclosure and selection of process connections, the ST80 provides application compatibility with ease of installation and limited maintenance. Designed with an optional backlit information LCD, the flow meter provides digital and bar graph readouts of process flow rate and temperature, totalised flow, alarm conditions, diagnostics feedback and a user-defined label field. The flow meter is suitable for pipe diameters from 25 to 2500 mm and air/gas temperatures up to 454°C. The flow meter features an accuracy of $\pm 1\%$ of reading, $\pm 0.5\%$ of full scale and repeatability of $\pm 0.5\%$ of reading with flow rates up to 305 NMPS and 100:1 turndown. The flow meter is also available for powering by either 85–265 AC or 24 DC.

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



Cleaning with microbubbles

Researchers from Purdue University, supported by the US Department of Agriculture, have found a way to simplify the process of cleaning and sanitising food processing equipment, without requiring chemicals. This is achieved by creating microscopic bubbles in water, which reduce the need for both chemicals and copious amounts of water. The microbubbles can be used for cleaning, as well as foams used in foods, rapid DNA and protein assessments, destroying dangerous bacteria and more. Published in the journal *Scientific Reports*, the research describes the speeds at which pores made in films close, which is comparable to similar processes when bubbles are formed.

“When injecting air from a needle into a bubble, the bubble neck keeps thinning and the bubble forms. Understanding the collapse of a pore is going to help us understand the pinch-off point of bubble generation,” said Jiakai Lu, assistant professor of food science at the University of Massachusetts Amherst.

When a pore or hole is formed in a fluid, it has two options and will trend toward the one that uses the least amount of energy. If the hole is large it continues to expand, while smaller holes collapse, closing themselves up. Understanding the speed at which the pores closed has been challenging because, as a hole collapses,

its curvature becomes infinite and a singularity is formed.

“This touches on a deep problem in physics. When that singularity is formed, the equations that govern the process don’t work any longer. We found ways to go around this problem to predict when the hole is going to collapse and use that to predict the volume of the microbubbles and the time it will take to form them,” said Carlos Corvalan, associate professor of food science.

In viscous fluids, pores close at a constant rate, but in water, the speed at which a pore closes continues to accelerate. For fluids with intermediate viscosity, the pore begins closing at an increasing rate, with the rate becoming constant until the pore closes. Using high-fidelity computational models, researchers predicted the point at which the speed changes from ever-increasing to constant. Using that information, researchers then designed pumps that can create the right size of bubbles.

“Although we have a singularity, the speed for the collapse becomes essentially constant,” said Corvalan.

In order to control the volume of microbubbles, researchers need to determine when the neck of the bubble will collapse. By predicting when it will collapse, researchers can also control the bubbles’ formation.



Most advanced safety light curtain on the market

Allen-Bradley GuardShield™ Light Curtains offer the latest technology including the first CIP Safety over Ethernet module on the market along with integrated laser alignment, muting, blanking and cascading.

To find out more, contact your local NHP specialist, go to nhp.com.au or call 1300 NHP NHP.



AUS 1300 NHP NHP
NZ 0800 NHP NHP



nhp.com.au
nhp-nz.com



NHP19565 01/20

Air safety fuses

If a pressurised air line bursts, or a hose coupling accidentally releases, this can result in a thrashing hose becoming a dangerous projectile. The dangers increase dramatically if an air tool is attached or the line is a large diameter. Installing an air safety fuse can eliminate whiplash hazard and guard against accidental puncture or unexpected maintenance issues.

Protect-Air HoseGuard air safety fuses offer simple and effective protection of your most valuable assets: your employees, machinery and equipment. The device immediately shuts off the air flow should the volume of air exceed a set value. This value is factory preset to allow normal air consumption when using air tools.

In the event that the air line is severed and the air consumption exceeds the set value, an internal piston instantly shuts off the main flow. An integral bleed hole allows a small amount of air to flow through, enabling the device to automatically reset once the main break is repaired.

The innovative system is designed to protect compressed air hoses and pipes. The lightweight and compact product is suitable for all industry situations where compressed air is used.

**Compressed Air
Australia Pty Ltd**

www.caasafety.com.au



Wireless vibration sensor for asset monitoring

Emerson's AMS Wireless Vibration Monitor is an easy-to-deploy vibration sensor that performs prescriptive analytics on vibration data using negative software to automatically identify failure modes and prevent potential problems involving rotating assets. The device makes it economically feasible to monitor motors, pumps, fans and other plant equipment to reduce downtime and achieve reliable operations.

The vibration monitor collects and contextualises vibration data to generate actionable information. By applying Emerson's PeakVue Plus technology, the device identifies when and how assets fail, and also why. Technicians can quickly identify and prioritise common mechanical issues such as bearing defects, gear wear, under-lubrication and pump cavitation, enabling them to focus more on operations-critical tasks.

The embedded prescriptive analytics enable plant managers to add wireless vibration monitoring to their maintenance toolbox without having to train current staff to perform complex analysis. The company's Plantweb Optics asset performance platform allows users to receive machinery health alerts anywhere with a mobile device. The alerts can be aggregated with data and asset health information from other sensors and systems, allowing users to run analytics on a range of assets from a single application. This provides a complete picture of the operation's overall health while generating specific alerts when processes or performance are at risk.

The vibration monitor operates on a plant's existing WirelessHART network and supports the vibration analysis tools included in Emerson's AMS Machine Works software. A triaxial sensor is used to capture data in three dimensions to generate a complete picture of the machine condition.

Emerson Automation Solutions

www.emerson.com/au/automation

**Protect your product, brand & customers
from foreign metal contamination
with certified**

RE80™ MAGNETIC SEPARATION SYSTEMS

Now with **NEW DURA-SLIK™**
Abrasion-Reduction Technology

- ✓ RISK REDUCTION
- ✓ PRODUCT PURITY
- ✓ PRODUCT SECURITY
- ✓ CUSTOMER SATISFACTION
- ✓ BRAND NAME PROTECTION



CONTACT US TODAY!

+61 2 4272 5527

magnets@magnattackglobal.com

MAGNATTACK™
GLOBAL

WHEN RELIABILITY MATTERS

NEWS

How the cookie crumbles: texture affects health perception

Research from Anglia Ruskin University (ARU) has revealed that changing the surface texture of food products could change consumer perceptions and promote healthy eating. Led by consumer psychologist Dr Cathrine Jansson-Boyd, the study investigated people's perceptions of identical biscuits with six different textures, with findings from the study published in *Food Quality and Preference*.

"The findings are really exciting as they give food manufacturers a means to design foods that can help consumers make healthier choices," said Dr Jansson-Boyd, Reader in Psychology at ARU.

The research involved 88 people rating six oat biscuits on healthiness, tastiness, crunchiness, chewiness, pleasantness and likelihood of purchase based on their visual appearance, not taste or touch. Prior research has revealed that packaging, labelling and the texture of a cup or plate can alter people's perceptions of food.

"A sweet item, such as a biscuit, benefits from having an appearance as being less healthy as that increases the perception of tastiness and increases the likelihood of purchase. To guide healthier purchasing decisions, food producers can therefore look to use non-healthy-looking, smoother textures to overcome this perception that healthy is not tasty," said Dr Jansson-Boyd.

Researchers selected oat biscuits as they represent both a 'healthy' and 'unhealthy' snack. The research found that the surface texture of the oat biscuit clearly communicated to people how healthy it was likely to be, with participants perceiving biscuits with a pronounced texture to be healthier. However, biscuits with a less explicitly textured surface were perceived to be tastier, crunchier and more likely to be purchased. Perceived tastiness also increased as healthiness decreased, while the likelihood of purchase increased with low healthiness and decreased with high healthiness.

Having a 'healthy-looking' texture was considered to be a negative attribute as it reduces perceived tastiness, a key criteria for purchasing biscuits. The research findings have implications for a range of food producers. With the World Health Organization declaring an obesity epidemic, food producers need to consider how to encourage improved eating patterns.

CLEAN-IN-PLACE GAS BLANKETING CARBONATING

STAINLESS STEEL SURFACE POLISHED VALVES IDEAL FOR DAIRY PROCESSING, BEVERAGE inc MICRO BREWERY, FOOD, PHARMACEUTICAL, CHEMICAL PLANTS.



WE HANDLE PRESSURE®



PRESSURE & SAFETY SYSTEMS

Tel: (03) 9699 7355

www.pressureandsafety.com.au

PROCESSING

3 ways to achieve maximum productivity and flexibility in gummy production

Edward Smagarinsky, Group Product Manager, tna

Growing at a compound annual growth rate (CAGR) of 4% between 2016 and 2022, the global gummy candy market has entered an era of endless opportunities for manufacturers wishing to expand their market share.^[1] The challenge now lies in keeping pace with ever-evolving consumer preferences, and delivering new, on-trend products to retailers' shelves as quickly as possible to stand out in a crowded marketplace.

From manufacturing to packaging, increasing flexibility and efficiency is essential to achieving the desired result; tna expert shares insights on how the latest equipment solutions address producers' complex needs:

1. Increased flexibility in starch moulding

Starch moulding technology allows manufacturers to create a wide array of product types with a single piece of machinery. Highly versatile, it enables the production of jellies and gummies in all manner of formats, sizes and shapes — while also providing the flexibility to process other confectionery masses, such as liquorice, fondant cream and marshmallow foam.

The depositing process delivers multiple opportunities to accommodate various product types and colours. The pumps are often available in a range of piston diameters and configurations, suiting different recipes — from light aerated mass to heavy liquid-based syrups. Meanwhile, other pump variations are designed to deposit single colour or side-by-side colour articles. This is in addition to centre-fill, layered and striped confections. Implementing starch moulding technology will allow gummy manufacturers to meet all

consumer needs without compromise, reduce production overlaps and increase efficiency.

2. Adding the finishing touch

The latest innovations in seasoning technology mean that confectionery products can be sugar coated automatically, increasing production speeds, while also improving yield. Conventional sugar-coating techniques involve passing a moulded jelly through a steam bath and then running it through a curtain of sugar in a tumble drum. A more recipe-driven approach, however, demonstrates that tacking agents, applied at a very specific rate via specialised coating equipment, allow the coating of a gummy without drenching it. A controlled delivery can then be used to bring the sugar or citric acid powder into a small tumble drum. The result is a shorter retention time with improved product quality. The process also gives manufacturers greater flexibility in flavour application, since dry ingredients, or even flavoured tacking agents, can be added at a specific rate to cater to different consumer preferences.

Roxset™

HEALTH AND SAFETY FLOORING
SLIP RESISTANT • ULTRA CLEAN • IMPERVIOUS



1800 ROXSET
1800 769 738
www.roxset.com.au



Do you need **flooring** for your **Food** Facility?

Food Factories, Meat Processing Facilities, Bakeries,
Hotels, Nursing Homes, Hospitals, Restaurants, Retail
Outlets, Seafood and all other Safety Surfaces.





© Stock-Adobe.com/au/Maris Kiselov

3. Packaging made easy

Selecting effective bagging technology that maximises packaging speed and product throughput can go a long way in meeting rising demand for gummy candy. Vertical form fill and seal (VFFS) equipment, for example, enables rapid and easy bagging of a wide variety of confectionery types, including gummies. Next-generation solutions can even package products at speeds of over 250 bags per minute, provided that all elements of the packaging line can achieve similar output levels. These systems also reduce waste through the incorporation of stripper tube closures, which ensure high seal integrity. This is especially crucial for sugar-coated gummies, whereby the sugar can often hamper seal quality.

The latest VFFS equipment also supports manufacturers in meeting ever-evolving consumer needs. For example, smaller, convenient bags are gaining popularity as people around the world live healthier, but increasingly busy lifestyles. Traditionally, producers require varying equipment and components that must be changed between each production run to offer different bag sizes. Next-generation VFFS technology, however, has been

designed with flexibility in mind. No mechanical adjustments are needed when changing product or film, and digital data settings have been incorporated into the systems for rapid product or pack changes. Additionally, these systems offer a wide range of bag-size options.

Preparing for growth

Adapting quickly to emerging consumer and market trends is crucial for gummy producers to not just retain or gain market share, but also keep the momentum of growth in the industry. Flexible processing and packaging equipment are effective solutions that allow manufacturers to create gummy products in all shapes, formats and sizes efficiently. Selecting the right piece of equipment that supports producers' unique and often complex needs is, however, crucial to achieving the desired result and providing peace of mind. With decades of experience and in-depth technical know-how, tna can help gummy manufacturers increase the flexibility of their processes and maximise efficiency.

[1] Global Data, Gums and jellies 5-year growth (2017-2021)

tna solutions Pty Ltd
www.tnasolutions.com



Industrial
Automation & Control
Distributor



the definitive modular display experience

screen size 7" to 24"



The innovative RXi Industrial Panel PC by Emerson delivers ultimate flexibility by leveraging its unique modular design. Swap your screen size without changing your module. Swap your module to increase functionality without replacing your screen.



SELECT, UPGRADE, SWAP

OPTION ONE

COMPUTING MODULE WITH PANEL PC

OPTION TWO

MINIMALIST MODULE WITH WEB PANEL

OPTION THREE

A/V MODULE WITH INDUSTRIAL MONITORS

THE MODULAR, ADAPTABLE PANEL PC SOLUTION.

1800 557 705 | sales@controllogic.com.au
www.controllogic.com.au/panelpc

Find us on LinkedIn
Search Control Logic

Frozen food to fork: managing listeriosis risks



© Stock-Adobe.com/au/victoria

Cornell research funded by the Frozen Food Foundation developed a modelling tool to assist the frozen food industry with understanding and managing listeriosis risks. The findings are published in the December 2019 issue of *Journal of Food Protection*.

The frozen vegetables market in the US is worth approximately US\$4.4 billion (AU\$6.3 bn). While the frozen product is intended to be consumed after following validated cooking instructions provided on the package, some consumers are not following instructions and instead adding the frozen product directly to smoothies or salads for example. This growing consumer trend may contribute to the risk of foodborne listeriosis.

The goal of this study was to therefore understand to what extent consumer preparation methods contrary to package instructions impact the risk of listeriosis.

The study developed a decision-making tool — Frozen Food Listeria Lot Risk Assessment (The FFLLoRA) — that incorporates several factors including individual facility attributes, *Listeria monocytogenes* (Lm) prevalence and

consumer handling to estimate listeriosis risks. The model was designed to assess the lot-level listeriosis risk due to Lm contamination in frozen vegetables consumed as a ready-to-eat food.

"While Lm-related foodborne illness is rarely associated with frozen foods, the frozen food industry is focused on better understanding *Listeria* to prevent a listeriosis event from occurring," said Frozen Food Foundation Executive Vice President Dr Donna Garren. "That's why we invest in scientific research from the frozen food facility to fork."

While researchers demonstrated that low levels of Lm in frozen vegetables did not typically cause illness, the study also revealed the significance of production practices and finished-product testing, along with the role of consumers to follow validated cooking instructions.

"The goal of the research was to develop a tool for companies to assess individual production lot risks based on various scenarios," said Cornell lead researchers Dr Renata Ivanek and Dr Martin Wiedmann. "FFLLoRA helps interpret and evaluate finished-product testing results and may support food safety decisions to prevent recalls."

The lead author of the study, Dr Claire Zoellner, added, "Importantly, the study also identified key data gaps that will be prioritised in future research, including quantifying the need for consumers to follow validated cooking instructions."

Cornell's research on Lm will continue throughout 2020 to provide a better understanding of Lm prevalence in frozen food facilities and related risk assessment.

The Frozen Food Foundation is affiliated with the American Frozen Food Institute.

Control & Power Switches

Extensive Range of
Stainless Steel &
Plastic Enclosures



Kraus & Naimer Pty Ltd
BLUE LINE switchgear



www.krausnaimer.com.au

P: 1800 567 948 F: 02 9797 0092

E: salesaus@krausnaimer.com

Linked with an Australian Wide Distribution Network



Hose reels

The Ramex HR Series hose reels are designed and made in Italy. With strong support arms and a robust body, the hose reels are suitable for a variety of operations, such as fuel, air, water, chemicals and oils.

The series comes in four materials: powder-coated steel, 304 stainless steel, 316 stainless steel and cathodic coating.

Powder-coated hose reels are suitable for compressed air, grease and oil, while the 304 stainless steel reels are designed for regular use.

Hose reels made from 316 stainless steel are designed for marine operations, whereas reels with a cathodic coating are more suited to harsh environments, where chemical resistance is more important.

All hose reels come in spring-retractable, manual or automatic models.

Tecpro Australia

www.tecpro.com.au

Cushioned linear pneumatic vibrator

The K Type LF cushioned vibrator by Oli Vibrators is designed for use on hopper silos, vibrating feeders, compaction tables and channel lines. Its lightweight anodised aluminium body and lubrication-free design provides longevity of performance in challenging environments. Its linear force enables the detachment of hygroscopic and granular materials, and the compaction of dustier products. The K Type vibrator is a versatile pneumatic vibrator, with a working temperature range of -20°C up to 130°C and an operating pressure of 2.0 bar to 6.0 bar.

The K Type linear vibrator assists in moving product in many environments, including plastic, food, chemical or construction. Its variable frequency and transference of the required force, alongside its compact design, make it suitable for difficult and hard-to-get-at applications. The linear vibrator provides efficient air consumption and comes in a range of five sizes, including Models K15LF, K22LF, K30LF, K45LF and K60LF.

Oli Vibrators

www.olivibrators.com.au





SALES 

24/7 SERVICE 

ANALYSIS + ADVICE 

PROJECT SOLUTIONS 

more air. more savings. and so much more.

With KAESER dry running rotary screw compressors you can be assured that you are investing in high quality - Made in Germany, energy efficient and Industrie 4.0-ready compressed air technology that delivers more air and more savings. But, it doesn't stop there. When you choose KAESER to be your compressed air partner you get so much more. From Australia-wide 24/7 service support, analysis and advice to a range of bespoke solutions - our expert team are on-hand to ensure that your compressed air system operates at its optimum, reliably and efficiently throughout its lifetime. For more air, more savings and so much more, make KAESER Compressors your compressed air partner!

1800 640 611
au.kaeser.com






UHT liquid processing range

SPX FLOW offers a range of ultra-high temperature (UHT) processing solutions, including direct heating systems such as steam injection, and indirect heating systems, such as tubular heat exchangers.

The Infusion UHT plants provide heating and cooling with holding times to produce products with extended shelf life (ESL) and fresh tastes. The system can be used across a range of products and viscosities.

The patented design of the infusion plants includes a lobe-style pump with holding times that can be varied to meet application needs. The InfusionPlus process can heat products up to 157°C, with short holding times, preserving the natural characteristics of the product and producing a 'fresh' pasteurised milk flavour.

For products with higher viscosities, the Instant Infusion plant can treat high fouling products with up to 58% total solids. The system has also been shown to produce 70% less vitamin loss compared with other technologies.

Standard 'Express' solutions provide economical UHT processing, offering customers a solution with a short lead time. Express packages are available for capacities between 3000 and 26,000 L/h. Although these are 'standard' solutions, customers can select from a range of options, such as types of balance tank, w/wo CIP, filters, number of loops, different tube configurations, homogeniser types, deaerator and insulation and heat protection.

The design of the packages is based on SPX FLOW's engineering experience, offering technology with the benefits of a customised tubular UHT plant. Tubular UHT Express systems can perform for long run times, with their design minimising energy, water and CIP chemical usage. The systems are also straightforward to maintain.

SPX Flow Inc

www.spxflow.com/au

Meat analyser

Recently launched in Australia, the DA6200 low-cost NIR analyser has been approved by AUSMEAT for Chemical Lean determination.

The meat analyser is designed to help improve profit, quality and consistency in all types of meat production. Users can analyse fat, moisture, protein and more, quickly, easily and accurately. It can also be used to verify incoming meats, in-process blends and finished products. With its on-the-spot analysis capability, the device can help users run their plant more efficiently.

The system measures a wide range of raw meats, filling products and final meat products. Compact, lightweight and battery operated, the analyser can be easily moved between raw material intake and production sample points. It uses robust solid-state diode-array NIR technology and has no moving optical components to provide reliable operation, accurate measurements and optimal uptime.

Key features include: analysis of all types of meat samples; measures fat, moisture, protein and more in less than a minute; easy operation by anyone in production facilities; cost effective and low maintenance; and compact and portable.

**Perten Instruments
Australia Pty Ltd**

www.perten.com





L

Forerunner. Yesterday. Today. Tomorrow.

The Sensor People have been setting technological standards in industrial automation for more than 50 years. This is how we ensure the success of our customers in an industry that is ever evolving. We have been a forerunner from the start, and we are working on standardizing industrial communication. Among other things, we make sensors that are capable of transmitting data to control systems and the cloud via IO-Link and OPC-UA.

sales.au@leuze.com
www.leuze.com.au

Leuze

The Sensor People

Durable, low energy, dry claw vacuum pumps

Atlas Copco has released a robust pump designed to increase productivity in conveying, clamping, drying processes or environmental applications. The DZS 100 VSD+, DZS 200 VSD+ and DZS 400 VSD+ dry claw vacuum pumps are equipped with corrosion-resistant materials, enabling them to withstand harsh environments. For this purpose, they also have a durable internal coating.

Cleaning or replacing the pump claws does not require complex gearbox stripping and retiming, facilitating uncomplicated maintenance. Service technicians or users can remove product residues from the pump by accessing the inside of the pump, without necessitating new synchronisation during the subsequent assembly. This reduces downtime and service costs for the operator.

A VSD+ inverter drive is integrated in the motors to control the pumps, allowing users to control the performance points of the claw pump, reducing power consumption and the user's CO₂ footprint. The DZS VSD+ pumps are oil-free, certified to ISO 8573-1 Class 0.

The range features longer-life bearings and seals, with straightforward access to the pumps' internal mechanisms for cleaning and maintenance. The lower power consumption of the pumps also facilitates a low noise level while in use.

Atlas Copco Compressors Australia
www.atlascopco.com.au



Hygiene-compliant, food-safe plastics range

Engineering plastics manufacturer Cut to Size Plastics has introduced the Wefapress Beck + Co Food Secure Products (FSP) range of food-safe plastics to Australia and New Zealand. The range can be used to optimise food equipment hygiene compliance.

Plastics used in food preparation and processing areas need to conform to a special set of regulations, to ensure that all food they come in contact with remains safe to eat. As work in the food industry is subject to strict hygiene standards that apply to plastics, the FSP range is certified to EU Regulation 10/2011 and can be coloured in a distinctive blue to make the products identifiable as compliant.

The food-safe plastics range is suitable for applications in the drinks and bottling, agriculture, food and plant engineering industries. It is also suitable for the mechanical, paper and chemical industries, and in conveyor systems and automation.

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

WASTEWATER TREATMENT for the FOOD & BEVERAGE INDUSTRY



Aerofloat has extensive experience in treating wastewater for the food and beverage and packaging industries.

Aerofloat's solutions for **wastewater** and by-product reuse can also significantly reduce costs and ensure sustainable operations.

Contact the Aerofloat team today for an **obligation-free consultation**. www.aerofloat.com.au

Aerofloat
WASTEWATER TREATMENT SPECIALISTS



Batching instrumentation with traceability and validation

Sterling Systems & Controls has announced that lot tracking or ingredient material traceability is available with all of its batching process control systems and can be customised to meet the needs of the customer. Material Traceability and Batch Validation can be instrumented on all semiautomatic hand-add, kitchen-type systems or automatic batching control systems.

The customised batching instrumentation and control systems can include as little or as much tracking and traceability as the customer wants to implement. It will depend on the customer's ability to fund and implement the tracking system.

Several inventory strategies are available. FIFO is the most common. Operators will be required to enter a valid lot number before the system will proceed. This data entry can be done by scanning a barcode, manual data entry and by RFID.

The Batching Control System will include an Ingredient Lot Table. This contains records for each unique lot number of each ingredient. New records are added to this table when the ingredient is received.

Sterling Systems and Controls Inc

www.sterlingcontrols.com

Energy-efficient hand dryer

The Dyson Airblade 9kJ is an energy-efficient HEPA-filtered hand dryer. Designed to dry hands hygienically in 10 s, it provides an alternative to single-use paper towels.

The motor and airflow technology is claimed use up to 87% less energy than warm air dryers in Eco mode, with 85% less carbon dioxide emissions per day than paper towels.

The hand dryer features a stainless steel body that is tested to withstand washroom conditions. It also has touch-free operation, using 'time of flight' sensors that detect hands to activate air.

A fleece-lined glass fibre HEPA filter captures 99.95% of particles, including bacteria and viruses from the washroom air.

The hand dryer features silencers made from open-cell foam and perforated discs, reducing noise as airflow passes through the motor.

Dyson Appliances (Aust) Pty Ltd

www.dysonairblade.com.au



AUSTRALIA'S Largest Range of Cleaning Systems & Equipment

**High quality Stainless
Steel Hose Reels**

**Washdown Nozzles,
Guns and Foaming Units**

**316L Stainless
Steel Spray Nozzles**

CIP Tank Cleaning Heads



Tecpro
AUSTRALIA
Technical Solutions You Can Rely On

**Call (02) 9634 3370 or
email sales@tecpro.com.au**

www.tecpro.com.au

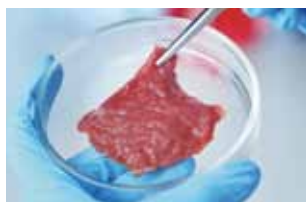
CASE STUDY

Using technology to measure meat quality

Scientists at Sechenov University, Moscow, alongside their colleagues from Australia, have proposed a quicker and cheaper way to assess meat quality, based on exposing a small sample to UV light and measuring the spectrum of emission. Traditionally, the quality of beef is evaluated by specialists analysing its colour, pattern of fibres (marbling) and carcass weight. However, this method is time-consuming and relies on a subjective opinion of experts. The findings from the study are published in the *Journal of Biophotonics*.

Fluorescence spectroscopy is the proposed alternative, as it can detect and measure the concentration of various compounds that can emit light of a specific frequency range. These substances include many organic molecules which are found in meat. The scientists behind fluorescence spectroscopy linked the spectrum of the fluorescence of meat with its quality defined by three categories: MSA3, MSA4 and MSA5. Further histological (cell and tissue) analysis measured the concentrations of water and fat in samples, and validated the results.

Scientists used five pieces of meat for each of the three categories: MSA5 marks slices of the highest quality, with MSA3 the lowest among the qualified meat types. Six samples, each 8



mm in diameter, were cut from different sites of the meat steaks, where the relative content of fat and muscle tissues varied. The samples were exposed to light with the wavelength of 250–350 nm (near and middle ultraviolet) and measured the spectrum of fluorescence in a range of 285–635 nm (middle ultraviolet to the border between visible light and infrared). The intensity of the emission was set on the matrix 'frequency of excitation – frequency of emission'.

The results revealed that the spectra of fluorescence of the samples with various ratios of muscle and adipose tissues are discernible. On the matrices of samples with adipose tissue, scientists distinguished spots that match the spectrum of fluorescence of fat-soluble vitamins (A, D, K1, K2 and K3), vitamin B and its components. The spectrum of the samples with muscle tissue coincided with the spectrum of amino acid tryptophan it contains. Scientists selected features that enabled them to define the category of any piece of meat, with research revealing that the highest quality meat (MSA5) had the most intensive fluorescence, and can be distinguished from the lower quantity samples by the difference in brightness of various ranges. The data also revealed that the presence of connective and adipose tissue makes meat more tender, while fat is responsible for its marbling.

ragazzini

Advantages:

- Yoghurt, Oils, Cherries
- Food Grade hoses available
- Flows 0.2 to 180,000 l/h
- No Oil Filled Casings
- Early leak detection
- Easy hose changes
- Easy C.I.P or S.I.P



Gordon@HydroInnovations.com.au
02 9898 1800
www.HydroInnovations.com.au/WNEW/

HYDRO
INNOVATIONS



Ensuring food safety should **not increase** food waste

Matt Hale

© Stock.AdoBec.com/au/somegirl

The first duty of any food or drink manufacturer is to supply its consumers with a product that is safe.

Due to their organic nature, natural products such as milk, cheese, yoghurt, fruits, vegetables and meat products are all subject to spoilage by bacteria and fungi. While maintaining good equipment hygiene through the use of effective protocols, such as semiautomated cleaning-in-place (CIP) systems, is essential, it is also economically important that usable products are not discarded as part of routine cleaning operations.

One in six Americans get sick from the food they eat, with up to 3000 people dying each year; a trend which has steadily increased since the late 1990s. This resulted in the *Food Modernisation Act of 2011*, a wide range of standards for growing and harvesting fruits and vegetables, inspecting food production, improving food safety for consumers and mandating product recalls. Hazard Analysis and Critical Control Point (HACCP) principles are a legal requirement for meat and poultry plants, used in most sectors of the food and drink industry.

CIP systems are not labour-intensive, reducing costs and allowing frequent and effective routine cleaning of systems to be carried out. This helps maintain food safety and prevent the growth of microorganisms which could spoil products or pose a risk to health. CIP systems are useful for processing equipment, such as pipework, heat exchangers, pasteurisers, fillers and pumps. There are many different types of mechanical and automatic cleaners employed in the food industry, using everything from plain water or suitable cleaning chemicals, through to ultrasonic and UV cleaning techniques. However, before any CIP can be carried out, as much product as possible must be removed from the equipment to be cleaned.

Traditional flushing and 'pigging' systems (which physically push products through the system) are used but they often result in the loss of product, the value of which can soon add up. While processing incurs roughly 5% of the total losses from the food supply chain, the cumulative costs associated with the land, energy and fertiliser used could negatively impact the economy.

Food and drink businesses need to implement CIP regimes which meet all sanitary standards, while minimising the loss or damage of saleable products. The HRS R Series of scraped surface heat exchangers physically remove product without additional pigging systems. The R Series is suitable for heat transfer applications, enabling high-viscosity products to be pumped with reduced back pressure and lower energy use. The helical spiral scrapes the surface of the tubes to prevent fouling in normal use and can also be run in reverse, thereby enabling product to be recovered prior to routine cleaning or product changeover. This means that the HRS R Series can be emptied of the majority of product without additional pumps or pressure systems.

Monitoring by the HRS R Series helps validate the effectiveness of CIP and ensures that following a cleaning cycle, only product that meets specification is allowed to proceed. This ensures daily cleaning in the food industry is properly validated and recorded.

Advantages of recovering more product include less wastage, decreasing disposal costs such as storage, transport and treatment. The effectiveness of CIP and the requirements of HACCP analysis continue to be met, ensuring food safety for consumers.

HRS Heat Exchangers Australia New Zealand
www.hrs-heatexchangers.com/au/



Screw compressors

The BOGE C-2 screw compressors are suitable for a range of applications in industrial, health and food manufacturing plants. The compressors are available as a complete solution, ready for connection together with compressed air receiver and dryer, or as a standalone version for larger complete systems.

The compact machines are designed to be maintenance-free and ergonomic. Fitted with a sound insulation hood and optional super-soundproofing, the compressors are quiet, with a range of individual configuration options available. The compressors are belt-driven, directly coupled, frequency-controlled and also directly coupled at the same time in the same casing. While the compressors are fitted with

an IE3 motor, an IE4 motor is also available for increased efficiency.

From 7.5 kW, the compressors are available with frequency-controlled fans, thereby adapting the cooling capacity to the environmental conditions. A dryer can also be integrated across the series, with a control system adapted to user requirements. This enables users to choose between the basic control and the focus control 2.0 version.

The compressors provide a complete compressed air station as a plug-and-play solution suitable for small spaces, with or without a receiver. Both options are ergonomic and designed to be user-friendly, with a control panel built in to the front plate or angled. Easy-to-remove plates enable maintenance parts such as the control cabinet and belts to be easily accessible.

Boge Compressors Ltd

www.boge.net.au

green GLUING

ro

interpack
PROCESSING & PACKAGING
7.-13.5.2020
BOOTH G70
HALL 11

EASY AND SMART CONTROL

Control and monitor all functions in the gluing process from the location of your choice. Robatech Control System – The best approach to straight-forward system integration. www.robatech.com/easy-and-smart-control

swiss
QUALITY

GLUING SOLUTIONS **ROBATECH**



ems.

Our **electronic monitoring service** is the latest in targeted pest control technology for facilities that store, distribute and prepare consumables.

- Reduces pest presence by up to 61%
- Satisfies health standards beyond requirements
- Offers client reassurance and long term benefits
- Reduces negative media impact
- Reduces use of toxic chemicals by up to 80%
- 24/7/365 monitoring and data analytics
- Low environmental impact

At Adams we work alongside you to tailor and manage your pest control effectively.

Our 24/7/365 **ems.** enables us to closely target pest activity throughout your premises.

We understand the importance of a pest controlled environment in an industry that is reliant on maintaining health standards and customer contentment, which is why we highly recommend **ems.**

Get a Fast Quote Today!

MELBOURNE.

+61 3 9645 2388

info@adamspest.com.au

ADELAIDE.

+61 8 8297 8000

sa@adamspest.com.au



adams.

PEST CONTROL

www.adamspestcontrol.com.au



Vibrating fork, paddle, capacitance and vibrating rod switches

Emerson's range of Rosemount solids level switches are designed to optimise operations, increase safety and reduce waste by providing reliable point level monitoring and supporting overflow prevention. The switches enable Emerson to offer a portfolio for continuous and point level solids measurement. The vibrating fork, paddle, capacitance and vibrating rod switches within the range monitor solid materials such as powders, grains and pellets in all silo types across industries, such as food, beverage, agriculture, chemical, power, cement, mining and plastics. The compact switches require low maintenance and are suitable for operation in high temperatures, high pressures, dust and risk of explosion.

The switches can provide standalone point level monitoring to help optimise filling and emptying cycles, and can be deployed within an overflow prevention system, to prevent wasted materials, environmental impact and damage to the silo. The Rosemount 2511 and 2521 vibrating fork switches are suitable for applications involving light, fine-grained and powdered materials that require high measurement sensitivity. The switches are certified from the European Commission ATEX (Atmosphères Explosibles) to be installed in explosive areas, and all wetted parts are made from corrosion-resistant stainless steel, making them suitable for hygienic applications.

The Rosemount 2501 rotary paddle switch can be used as a full, demand or empty detector in storage silos or process vessels, as the paddle is designed to withstand heavy loads and temperatures of up to 1100°C. The Rosemount 2555 capacitance switch can be installed in pipes as a limit switch and spillage detector, and is suitable for use with materials that have dielectric values as low as 1.5. It is designed to prevent material build-up when there is a risk of coating. The Rosemount 2535 vibrating rod switch provides high chemical resistance, as it is made of food-grade stainless steel.

Emerson

www.emerson.com

In a spin over designer meat

Lab-grown meat is touted as a means of providing a greener, more sustainable alternative to meat production. However, more work is required to develop large-scale production and improvements in the feel and taste of the product.

Inspired by the process of creating fairy floss, researchers at the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) have now grown rabbit and cow muscle cells on edible gelatin fibres produced by 'immersion rotary jet spinning' to mimic the texture and consistency of meat. The research has been published in *Nature Science of Food*.

Animal meat consists mostly of skeletal muscle (and fat tissue) which grows in long, thin fibres — as can be seen in the grain of a steak or when shredding pork or chicken. Reproducing these fibres is one of the biggest challenges in bioengineering meat.

"Muscle cells are adherent cell types, meaning they need something to hold onto as they grow," said Luke Macqueen, first author of the study and postdoctoral fellow at SEAS and the Wyss Institute for Bioinspired Engineering. "To grow muscle tissues that resembled meat, we needed to find a 'scaffold' material that was edible and allowed

muscle cells to attach and grow in 3D. It was important to find an efficient way to produce large amounts of these scaffolds to justify their potential use in food production."

To overcome these challenges, the researchers used a technique developed by Parker and his Disease Biophysics Group known as immersion Rotary Jet-Spinning (iRJS), which uses centrifugal force to spin long nanofibres of specific shapes and sizes. The team spun food-safe gelatin fibres to form the base for growing cells.

The researchers used mechanical testing to compare the texture of their lab-grown meat to real meat products.

"When we analysed the microstructure and texture, we found that, although the cultured and natural products had comparable texture, natural meat contained more muscle fibres, meaning they were more mature," Macqueen said. "Muscle and fat cell maturation in vitro are still a really big challenge that will take a combination of advanced stem cell sources, serum-free culture media formulations, edible scaffolds such as ours, as well as advances in bioreactor culture methods to overcome."

Still, this research shows that full lab-grown meat is possible.



© Stock Adobe.com/au/Firm

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

10 YEAR
GUARANTEE
on door leaves



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

INDUSTRIAL DOOR SOLUTIONS

www.mtqualos.com.au

Free call: 1300 135 539

sales@mtqualos.com.au



Cookie weight control technology

Baker Perkins has designed a cookie weight control technology for wirecut machines that make cookies, filled cookies, bars and filled bars. The TruWeight assisted control weight system for wirecuts is designed to reduce variations in cookie piece weights by individually adjusting the output from each die cup.

The patent-pending system can provide savings in dough and waste by enabling operators to detect and compensate

for process variations. Process variations can affect piece weights over time and across the width of the line. The system gathers and processes weight data, instructing operators on the adjustments necessary to each lane. During production, prompts guide the operators through a systematic weight check procedure, with the data fed to the PLC via Ethernet or IP.

In tests, standard deviation on sugar dough improved by 52%, from 1.26 to 0.60 g (on 49.2 g pieces); while chocolate chip dough deviations improved by 33%, from 1.57 to 1.05 g (on 42.7 g piece). The tests indicate that the offset between the average and target weight of dough piece can be reduced, decreasing giveaway without producing underweight product.

The technology calculates average weights, compares them with the target stored in the recipe and provides machine operators with recommendations of which lanes to adjust, and by how much. Manual and stepper-motor actuators are available, with the latter enabling changes to be made without stopping the wirecut machine.

The product range can be extended with an encapsulation module, to include cookies and fillings completely enclosed by dough. This allows products to be produced on a standard wirecut at high production rates.

Baker Perkins

<http://www.bakerperkins.com>

PREMIUM doors for food processing areas

Flexible PVC



Insulation



External Security



flexible pvc
visiflex strip doors
swingflex doors
traffic doors
grp hygienic doors
rapid roll doors
coldsaver doors
foldup doors
air curtains

Select from our complete range of Australian made, or premium German products

Free call 1800 281170 Aust wide

Web www.dmf.com.au
Email sales@dmf.com.au

DMF are manufacturers, and also Australian partners for

EFAFLEX 
safe high-speed doors

dmf
INTERNATIONAL



Agroterrorism:

food and beverage sector needs to minimise risk

Many people are familiar with the financial risks associated with cyber attacks, but agroterrorism — the intentional disruption of the food supply chain with the intention to harm the population — is an increasing risk. Although the consequences of agroterrorism are relatively high, there has been little attention on minimising this type of threat. Connected automation systems are making food and beverage manufacturing more efficient, productive and cost-effective, but this greater connectivity creates greater opportunities for agroterrorism. Darcy Simonis, Industry Network Leader for ABB's food and beverage segment, discusses the need to integrate data protection into a wider plant safety system.

The food and beverage industry has historically been a slow adopter of technology, but this is changing. A high level of connectivity allows plant managers to gather and monitor multiple data points spanning all areas of the production line, including changes in temperature, equipment performance and the quality of ingredients. This can reap multiple benefits such as increased efficiency, quality, profits and improvements to human safety. Unfortunately, many automation systems like this are prime targets for cybercriminals looking to disrupt a business or industry.

Data vulnerability can fall into several risk categories: for example, theft, public exposure, data corruption or loss, and data manipulation. Making sure that process data is protected against cyber attacks should be a priority for all food and beverage manufacturers.

A major risk of data breaches is the malicious manipulation of recipes. Over two million people die from food-related illnesses every year and more than 1.3 billion tons of food are discarded due to spoilage. According to a Trustwave Global Security report, the retail, food and beverage sectors are more commonly attacked than banking and financial firms. With increasingly automated production lines, hackers have the potential to hack into programmable logic controllers (PLCs) to poison a food supply or endanger food safety by shutting down refrigeration systems. This could not only impact suppliers but also impact transporters, distributors and restaurant chains.

Unlike the banking and financial sector, food manufacturing is not widely regarded as a high-risk industry. Therefore, it is common that food and beverage companies lack comprehensive cybersecurity programs. However, as evidence suggests, this can risk causing illness and fatalities through tainted food, thus incurring legal battles, fines and negative impact on the brand. That is not to mention the costly downtime associated with shutting down a production line until the problem is dealt with.

Many operational technology systems are interconnected with IT networks, leaving them more exposed as there are

multiple access points for cyber attacks. Insecure remote access, operating system flaws and a lack of staff training can all impact the cybersecurity strength of an organisation. However, there are steps to minimise the likelihood of attacks.

Simple measures, such as implementing firewalls, timely deployment of security updates and using antivirus software, can protect against some common attacks. Security zones should also be essential so that all data can be protected. To ensure safety systems are adequately secured, risk assessments should be carried out to detail each potential threat area and assess the identified vulnerabilities for their likelihood.

Threat detection aims to track and monitor the status of all operational devices and configuration of parameter settings, preventing any unauthorised interventions. Continually monitoring these systems provides plant managers with an early warning sign of any unauthorised changes or malicious events.

Services like the ABB Ability Cyber Security Services can provide manufacturers with customised cybersecurity solutions with multiple layers of control. Delivering protection for the entire system life cycle, from identification of security risk to the recovery of compromised systems, ABB's service can identify the vulnerabilities that exist in a system, so that the areas of weakness can be addressed and security controls implemented.

Plant managers should also opt for safety systems with cloud infrastructure built into the platform, allowing them to securely store their data.

Food and beverage manufacturers must adhere to fast production cycles to preserve nutrition value and freshness, while meeting the high-quality standards that the industry demands — and it's clear that automation is the key to remaining competitive and achieving these goals. However, an effective cybersecurity solution should be integral to keeping these systems safe.

ABB Australia Pty Ltd
www.abbaustralia.com.au

Peracetic acid test strips

The LaMotte Insta-TEST Peracetic Acid Test Strips are used for the determination of peracetic acid in solution. Results are obtained in 10 s with a simple dip-and-read procedure.

Peracetic acid is used in many sanitation applications including food processing, dairy industry, beverage industry and canning plants to name a few. Peracetic acid levels need to be closely monitored to ensure the sanitiser is working effectively. Too little sanitiser will allow the growth of harmful bacteria and too much can be toxic and corrosive to equipment.

The test strips are designed to provide a fast, reliable and affordable way to monitor sanitiser levels.

The strips are packaged in LaMotte's patented PopTop bottles with features designed to protect the test strips for longer. Each bottle contains a moulded desiccant liner for moisture protection, eliminating the need for loose desiccant bags. The packaging is airtight and waterproof to lock out damaging moisture and UV light, and each bottle has a hinge guarantee for 1000+ openings.

Each pack contains 50 test strips and is available in three different measuring ranges: 0 · 5 · 10 · 20 · 30 · 50 ppm; 0 · 10 · 20 · 50 · 85 · 160 ppm; and 0 · 50 · 100 · 250 · 500 · 1000 ppm.

Vendart Diagnostics Pty Ltd

www.vendart.com.au



Analytical workflow facilitates pesticide residue testing

Thermo Fisher Scientific's validated ion chromatography tandem mass spectrometry (IC-MS/MS) analytical workflow is designed to enable food testing laboratories to overcome the challenges associated with IC-MS/MS analysis of polar anionic pesticides in complex sample matrices.

The Thermo Scientific Anionic Pesticides Explorer is a high-throughput, sample-to-result, IC-MS/MS-based analytical workflow, comprising the Thermo Scientific Dionex Integriion High Performance Ion Chromatography system coupled with the Thermo Scientific TSQ Altis Triple Quadrupole MS, for the multi-residue detection, identification and quantification of anionic pesticides at low concentrations in complex food matrices.

Anionic polar pesticides, such as glyphosate, are widely used in agriculture, but are difficult to analyse using LA-MS/MS-based methods. This has contributed to the infrequent monitoring of these pesticides in the global food chain.

The out-of-the-box, easy-to-implement, analytical workflow provides food testing laboratories with increased workflow productivity and simple methodology through access to a single multi-residue method for high-priority anionic polar pesticide and metabolites. It also offers enhanced chromatographic retention, resolution and sensitivity with modified Quick Polar Pesticides Method (QuPPe) sample preparation protocol for a wide range of matrices.

Thermo Fisher Electric also provides a fully documented, ready-to-run workflow supported by a system-suitability test and detailed guidance documents, enabling consistent performance during routine operation, according to EU SANTE method performance criteria.

Thermo Fisher Scientific

www.thermofisher.com.au





**YOUR ONE ANSWER TO ON-SITE
FOOD AND BEVERAGE TESTING**





Food analysis for bakery products, egg products, fish oil, dairy products, nuts, oils and fats, and more.



Beverage analysis for beer and wort, wine and must, and more.

For more information, contact us on
(02) 9882 3666 or at orders@amsl.com.au

amsl.com.au



Colouring foods range

Colouring foods refers to food ingredients that contribute to the colouring properties of foods and are derived from traditional foods such as vegetables, fruits and plants. They undergo careful processing to ensure the preservation of the valuable ingredients from the natural raw material sources.

Opalis is Sensient's range of natural extracts and concentrates derived from edible vegetables, fruits and plants that deliver colour to enhance food products.

By carefully selecting high-quality raw material and applying advanced processing technology, Opalis provides a range of special formulations with good stability and colouring efficiency, which provide advantages for various applications. The range is designed to respond to consumers' expectations and manufacturers' needs; for example, with clean labels, authentic ingredients and health and wellness.

As the food and drink industry continues to shift away from artificial colour, natural colour sources will continue to provide clean-label value to many brands' products.

Due to the specialised processing, the Opalis products are natural ingredients that maintain essential characteristics of the source material, which is designed to strengthen the consumer's connection to nature and perception of authenticity.

Many of today's consumers turn to their everyday food and drinks to provide them functional benefits for health and wellness.

The Opalis range is suitable for water-based and oil-based systems that include solutions (clear), dispersions (cloudy), emulsions (clear and cloudy), powder and agglomerates.

Sensient Technologies

www.sensient.com



3M Science.
Applied to Life.™

Have confidence from start to finish with 3M Food Safety.

- ▶ Petrifilm™ Plates
- ▶ Pathogen Detection
- ▶ Allergen Testing
- ▶ ATP Hygiene Monitoring
- ▶ UHT Beverage Testing
- ▶ Sample Handling and Media Solutions

For more information, visit:
go.3M.com/SafeFoodAU or
go.3M.com/SafeFoodNZ



© 3M 2020. All rights reserved.

Detecting rice labelling fraud with smartphone photos

An investigation conducted by the Complutense University of Madrid (UCM) and the Scintillon Institute of San Diego has revealed that a photograph taken with a mobile phone can detect

irregularities in the labelling of rice. Scientists developed an algorithm based on deep learning — a field of artificial intelligence — that uses the images taken with the smartphone to determine whether that rice is really the one described.

“What we contribute compared to other detection methods is simplicity and we show the consumer that you do not need large sums of money to verify whether a certain type of rice is the one mentioned on the label,” said José Santiago Torrecilla, Professor and researcher from the Department of Chemical Engineering and Materials of the UCM.

Researchers used five types of rice that were ground to distinguish the type of rice not only when it is in grain form, but also when it is ground into flour. Algorithms based on convolutional neural networks were designed and optimised to process the information contained in the images for classification based on the type of rice, with final precision models between 93% and 99%. This technology can also be extrapolated to other types of cereals or food, with many potential applications in the food industry.



© Stock Adobe.com/au/marilyn barbone

FOOD QUALITY CONTROL SOLUTIONS



- Compositional and functional testing
- Ingredient performance analysis
- Improve quality consistency
- For the grain, dairy, and processed foods industry

Learn more at www.perkinelmer.com and www.perten.com


PerkinElmer
For the Better

Copyright © 2020 PerkinElmer, Inc. 65324 All rights reserved. PerkinElmer® is a registered trademark of PerkinElmer, Inc. All other trademarks are the property of their respective owners.

Enhancing food chain traceability

Products are sold on trust. Trust that the food or beverage is what it says it is. Historically, this trust was built face-to-face, as shoppers bought their bread directly from the baker, their milk directly from the milkman, and so on. However, this is no longer the case today for the majority of consumers. The average supermarket carries over 33,000 items that have travelled 2,400 km, if not more. Even the most basic of products can involve thousands of suppliers from all around the world. With this lack of connection to the food producers, consumers are asking for visibility of the journey their food has taken to get to their table.

Trust requires transparency and certainty. For food, transparency and certainty in where the foods we are buying are grown, harvested and processed becomes complex, particularly as the food supply becomes globalised. Add to the mix recurring scandals — ranging from accidental tainting, right through to those cases of intentional food fraud — and it is no wonder that consumer trust in the food supply chain is eroding. This mistrust is not misplaced as evidence does show that consumers today are at an increased risk of buying lower-quality food than what they paid for, or worse, eating food with unsafe ingredients or undeclared allergens^[1]. As a result, consumers are increasingly demanding transparency from farm to fork.

In a global food chain, transparency can only be achieved through effective traceability systems. Traceability is the ability to track food products through each of the stages of production, processing and distribution^[2]. More and more, this is being done through the use of electronic tracking systems. There is a wide range of platforms available, each with varying capabilities to capture and manage the unique data that arises from each stage of a product's journey.

"We are seeing businesses doing ground-breaking things with leveraging data and integrating blockchain technologies to achieve transparency and traceability. We are seeing businesses wanting to provide real-time evidence around the origins and safety of food in the modern digital marketplaces that consumers

are now moving in," said FIAL General Manager of Innovation, Barry McGookin. Importantly, traceability capability is also valuable when things go wrong. When a product has to be recalled for consumer safety, having a good traceability system is key to rapid response as it allows visibility of where products are in the supply system. That transparency can go a long way in minimising exposure of the public to any risk.

Innovative producers are using traceability software technologies in combination with on-pack scanning options. This allows visibility, via consumers' smartphones, of the full journey of a product from farm to shelf. This level of detail, previously thought to be unnecessary, represents a major shift in consumer buying behaviour. Those businesses that embrace it can differentiate themselves.

Implementing traceability systems can be a costly exercise but the incentive is there. Albeit a relatively new area of research, evidence suggests that consumers are willing to pay more, and even change their buying habits for companies that are transparent^[3]. Those businesses that do transparency right can potentially benefit from boosted profits. The sole deciding factors when making food purchases are no longer price, taste and convenience. One of the overarching value drivers is now transparency. This presents an alternative route for honest producers to regain market share from fraudulent yet low-cost products.

"The number of enquiries related to traceability we are getting from industry is absolutely

increasing and is one of the hottest topics in our industry right now," said McGookin.

However, traceability is only one part of the transparency picture. Consumers need to also have confidence in the credence claims products are making. Australian-grown and made products already benefit from a reputation for being clean, green and safe. This has helped our products gain a strong foothold in dynamic international markets where consumers are seeking healthy, nutritious foods. This positioning does demand the provenance, or origin, of a product can be backed up with proof if needed. Unfortunately, the higher the value or demand of a product, the more at-risk it is of counterfeiting. Labels such as 'organic' and 'free-range' can be used fraudulently; processed and mixed products can be tainted with cheaper substances; liquids can be diluted. Only scientific testing can verify that the beef is in fact from King Island, or the honey is Manuka. Therefore, an opportunity exists for food producers to maintain consumer trust in their products by incorporating the results from forensic testing into the data they are capturing and making available to verify the provenance of their product.

The expectation by consumers for traceability is fast-moving. Companies may not have the time or resources to allow them to capitalise on the opportunity. FIAL can assist by connecting companies with appropriate specialists through the Food Matrix.

"Traceability is driving major changes in our industry. While certainly a challenge, it is a massive opportunity for businesses to harness digital technologies in exciting new ways. If implementing a traceability system is a challenge for your business, we urge you to utilise our Food Matrix and connect with a qualified expert to assist you in addressing this," said McGookin.

FIAL is an industry growth centre committed to growing the share of Australian food in the global market place. The Food Matrix is a web-based collaborative portal, connecting food and agribusinesses with qualified experts to address an innovation challenge facing their business.

[1] <https://www.foodsafety.com.au/blog/consumers-fooled-by-fake-food>

[2] <https://www.foodstandards.gov.au/industry/safetystandards/traceability/pages/default.aspx>

[3] <https://medium.com/v@lJGKeogh/why-traceability-is-not-provenance-bb53d3c781c8>

 **FIAL**
Food Innovation Australia^{Ltd}

Food Innovation Australia Limited
www.foodmatrix.com.au
www.fial.com.au

ON THE SHELF

A berry good Tim Tam

Since 2013, South-East Queensland-based My Berries has been finding innovative ways to decrease the amount of fruit waste generated each year. In the 2019 strawberry season, My Berries saved approximately 55 tonnes from landfill with its food-service range and in collaboration with other manufacturers across Australia.

Following on from its successful frozen fruit production, its most recent project involved a collaboration with Brisbane-based Nutradry and Arnott's to produce a special edition Tim Tam flavour called the 'Sunshine Coast Strawberries and Cream Tim Tam'. The biscuit features premium Sunshine Coast strawberries that have been rejected from our supermarkets.

Sourcing much of their fruit from the Sunshine Coast Growing Region, owners Stuart and Allison McGruddy are passionate about locally grown, sustainable fruit and actively work with growers in the area. Their collaboration with Arnott's sees My Berries taking its production a step further providing Australian-grown berries to a wider manufacturing market.

The launch of the new Tim Tam has been a positive, and equally, busy time for the company. Allison said all the strawberries used for this product are sourced from the Sunshine Coast growing region. "We accept peak season fruit that supermarkets reject simply because the market is flooded or the strawberries aren't the right size, shape or colour. During the seasonal glut, supermarkets are unable to accommodate the surplus of first-grade fruit. Historically, farmers often have had no choice but to dump some of the season's most beautiful and delicious fruit."

How are the strawberries processed into powder?

Allison said the strawberries are collected and processed the same day they are picked from the field. "We remove the green calyx then wash, dry and freeze the strawberries so they are ready to be turned into powder. When they arrive at Nutradry, they use their own unique low-temperature drying technology to turn the strawberries into powder. They specifically use a proprietary heat transfer technology to gently remove moisture from delicate products. Once the optimal point of drying has been reached, the heat no longer penetrates the raw food, preserving its natural colour, flavours and nutrition which would otherwise be lost due to overheating or overprocessing."

My Berries and Nutradry have specifically designed the strawberry powder process to meet Arnott's manufacturing requirements.

"We hope to work with more food and beverage companies across Australia in the 2020 season," Allison McGruddy said.



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

Assistant Editor: Ashna Mehta

Publishing Director/MD: Geoff Hird

Art Director/Production Manager: Julie Wright

Art/Production: Colleen Sam, Veronica King

Circulation: Dianna Alberry, Sue Lavery
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

Nikki Edwards
Ph: 0431 107 407
nedwards@wfmedia.com.au

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

Subscriptions for unregistered readers
- price on application



March 2019 total CAB audited circulation (Aust + NZ):
6,528 readers (95% personally requested)

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.

Complete Food Packaging Solutions

- Filling and Packaging machines
- Bulk Packing lines
- Cheese Cutting and Packaging machines
- Can Seamers
- Thermoform, Fill and Seal
- Cup Filling and sealing
- Pouching and Cartoning machines
- Casepacking Systems

GRUNWALD
Dosing · Filling · Packing



Bucket Filler

ALPMA



Cheese Cutting

KHS
Filling and Packaging – Worldwide



Pouching Machine

GRUNWALD
Dosing · Filling · Packing



Rotary Cup Filler

ALPMA



Cheese Wrapping

ferrum



Can Seaming

PO Box 378

44-46 Catalina Drive, Tullamarine, VIC 3043 Australia

T: +61 3 9335 1211 F: +61 3 9335 1331

E: info@khspacific.com.au

Beamex MC6-T

New revolutionary temperature calibrator



AMS

The Beamex MC6-T is an extremely versatile portable automated temperature calibration system. It combines a state-of-the-art temperature dry-block with Beamex MC6 multifunction process calibrator and communicator technology.

With the ability to generate temperature as well as measure and simulate temperature and electrical signals, it offers a really unique combination of functionality. In addition to temperature calibration abilities, the MC6-T also offers electrical and pressure calibration capability, all in one device.

It offers versatility, that no other temperature calibrator can match.

AMS INSTRUMENTATION & CALIBRATION PTY LTD
Unit 20, 51 Kalman drive
Boronia VIC 3155
AUSTRALIA

Phone: +61-3-9017 8225
Fax: +61-3-9729 9604
E-mail: sales@ams-ic.com.au
Internet: www.ams-ic.com.au