

July/August 2018  
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# Is Amazon sounding the death knell for the barcode?

Janette Woodhouse



Amazon Go is ruffling more than a few feathers in supermarket land. It opened its first store in Seattle in January 2018 and has just announced intentions of opening two more — one in Chicago and another in San Francisco.

**T**he first store is very different to standard supermarkets. Firstly, you can't get in if you haven't downloaded the Amazon Go app, which is linked to your Amazon.com account. If you are no- or low-income person on the US's Supplemental Nutrition Assistance Program or your phone isn't smart enough to download the Amazon Go app, you won't be able to shop in the store. In fact, you won't be able to get into the store. The app allows users to add others to their Amazon account, so children's and a spouse's purchases can be charged to the same bill.

Once you are in you will simply load your purchases into your bags and walk out — no trolleys or baskets and no checkouts or cashiers. The whole step of scanning the barcodes on your items at the checkout is obsolete — you just walk out of the store, go home and unload your goodies.

Sadly, this doesn't mean you scored your groceries for free. Big Brother in the guise of Amazon has watched your every move in the store and recorded every item you collected. Not long after you leave the shop your Amazon account will be debited for your purchases and you'll get a digital receipt.

## The barcode is dead in Amazon Go

Rather than scanning the 2D barcodes on items, Amazon is fusing computer vision, deep learning algorithms and sensor technology to automate the checkout and payment steps for consumers. This same technology will be used for inventory control and supply chain management.

Multiple cameras in the store's ceiling combined with weight sensors on the store shelves record all items you put into your

shopping bag, essentially creating a virtual shopping trolley. If you change your mind and put the item back onto the shelf, the system removes the item from your virtual trolley.

It hasn't been all plain sailing for Amazon Go to begin operations. The first store was due to open in January 2017 but didn't actually open until a year later. Problems occurred with the sensors' ability to track multiple users or objects within the store such as when children move items to other shelves or when more than one customer has a similar body size and weight.

This first store is very small, just 170 m<sup>2</sup>, and carries a range of prepared foods, meal kits, limited groceries and alcohol. Future stores are expected to be larger.

Anecdotally, there have been rumours that Amazon plans to open 2000 stores in the next 10 years. Amazon has refuted this but other options to extend the technologies employed are possible.

Not least being the potential for Amazon to sell or lease their system technology to other retailers, much as it sells its cloud computing services to other companies.

## What does all this mean for the barcode?

If artificial intelligence and machine vision systems can identify products holistically, does this spell the end for barcodes? It is just 45 years since that packet of Wrigley's chewing gum with the Universal Product Code (UPC) barcode was scanned and now around 6 billion barcodes are scanned. I don't think their demise is imminent, but I assume it is coming. 🐕





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# Food FOR thought

## Foodbank to develop food distribution hub in Ballarat

The Ballarat Foundation and hunger relief organisation Foodbank Victoria are partnering to develop a new food distribution hub to help locals have better access to fresh food.

Run by Foodbank for the next decade, the Ballarat food distribution hub aims to aggregate and supply fresh food to relief programs in the area in order to address food insecurity.

While Foodbank Victoria distributed 1.7 million kg of food to major regional areas in the 2016–17 financial year, very little of it reached the Ballarat and Grampians regions (less than 100,000 kg.)

But this was not due to lack of demand for food relief, as Ballarat has been highlighted as an area that is particularly struggling with hunger.

Monash University and Ballarat Community Health surveyed 100 Ballarat community members to find out about their experience of food insecurity and emergency food relief programs. They found that 78% of the respondents experience food insecurity with hunger and 39% have gone without food for one or more days in the previous week.

So despite Foodbank working to alleviate these numbers, 12% of Ballarat residents still experience food insecurity.

Foodbank Victoria Chief Executive Officer Dave McNamara said the hub would provide a critical missing link in Victoria's regional food relief efforts.

"People have been going hungry in this region for too long due to challenges and limitations around the transportation, storage, handling and distribution of large quantities of food," he said.

"We're extremely grateful that The Ballarat Foundation is passionate about addressing food insecurity and providing the infrastructure required to meet the growing needs of its community."

The Ballarat Foundation has developed the Feed Ballarat appeal in an attempt to provide residents with access to food and is seeking \$3.5 million funding towards three main priorities: the establishment of a food distribution hub; operational costs of the food service charities; and preventive and education programs around food, nutrition and sustainability.

It is hoped the hub will begin operations by 2019. For anyone wishing to donate, visit [www.feedballarat.org.au](http://www.feedballarat.org.au).



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## Carrots are king

Exports of Australian vegetables have experienced an average growth rate of 10% per year for the last five years with carrots being the best performer in 2017, increasing to 110,000 tonnes at a value of AU\$91 million.

Carrots, onions and potatoes currently account for over 60% of total vegetable export value and over 80% of vegetable export volume. Carrots continued to be the best-performing vegetable export in 2017. The top markets for Australian vegetables are Singapore, the United Arab Emirates, Japan, Malaysia and Hong Kong.

Significant private investment is underway in the vegetable sector to boost production and exports. This private investment is being strongly supported by vegetable levy investments through Hort Innovation including projects driving industry capability.

"The industry is well on its way to reach the ambitious target of AU\$315 million in fresh vegetable exports by 2020 as outlined by the industry's export strategy. We are working with growers to ensure they have the skills and know-how to improve their ability to export their produce and capitalise on increasing demand for fresh, Australian-grown vegetable produce," said AUSVEG National Manager – Export Development Michael Coote.





## 175 million tonnes of meat lost in Brazil's truck strike

Brazilian truckers, protesting against fuel prices that have increased by around 50% in the last year, brought the country to a standstill in just nine days. Their strike and blockade all but closed the Port of Santos, the biggest container port in South America, and neither export nor import containers could reach port terminals.

With both imports and exports frozen at the country's main ports the poultry and meat industry was thrown into turmoil.

Brazil is the world's largest poultry producer and exporter but its chicken exports couldn't get out and feed couldn't get in. The Brazilian Association for Animal Protein (ABPA) informed its members that 170 poultry and pork processing plants were halted and 234,000 workers were ordered to go home and wait for the resumption of the production flow.

Lack of sufficient feed resulted in the culling of 70 million chickens and ABPA estimated that the country had lost 120,000 tonnes in potential poultry exports due to the truckers' protest. Poultry industry losses are already claimed to total AU\$462 million.

Perishables rotted away in many trucks that were stuck at the full-to-bursting port facilities, where trucks couldn't get in or out. Nearly 4000 trucks of beef were left sitting on roadsides according to the beef packer trade group ABIEC. Only two of Brazil's 109 beef processing plants continued to operate and even those plants were working at half their capacity.

National beef industry association ABIEC said the sector lost 40 million metric tons of beef exports, equivalent to AU\$225 million in revenues.

The Brazilian meat industry was prevented from exporting 175 million metric tons of meat products since a truckers' strike began blocking highways around the country on 21 May, according to data from industry associations ABPA and ABIEC.

Total losses from animal mortality, lost sales and other costs related to the strike are estimated at over BRL3 billion (AU\$1.06 bn) by the poultry and pork meat industry, and between BRL8 billion and BRL10 billion (AU\$2.84 bn to \$3.55 bn) by the beef sector.

## Industry welcomes WHO's plan to ban trans fats

The World Health Organization's (WHO) call to ban trans fats from the global food supply by 2023 has received support from the International Food and Beverage Alliance (IFBA).

While trans fats are naturally found in dairy and meat products, they are also generated by industrial processes to produce hard fats from vegetable oils, known as partially hydrogenated vegetable oils (PHOs). Manufacturers use them for their long shelf life, but they are associated with an increase in non-communicable diseases.

A diet high in trans fats, including fried and bakery products, is estimated to cause more than 500,000 deaths every year from cardiovascular disease.

WHO and non-governmental organisation Resolve to Save Lives aim to eliminate the use of these fats by 2023. The IFBA — which brings together 12 leading food and non-alcoholic beverage companies such as Nestlé, Unilever and Danone — hopes to help its members contribute to this goal.

WHO guidelines recommend a maximum of 1% of total energy from trans fat and 10% from saturated fats. Two years ago, IFBA member companies committed to reducing industrially produced trans fat to no more than one gram per 100 grams of product by the end of 2018.

Rocco Renaldi, Secretary-General of IFBA, said, "Our progress has been significant — at the end of 2017, on an aggregated basis, we estimate that industrially produced trans fat had been removed from 98.8% of IFBA companies' global product portfolios."

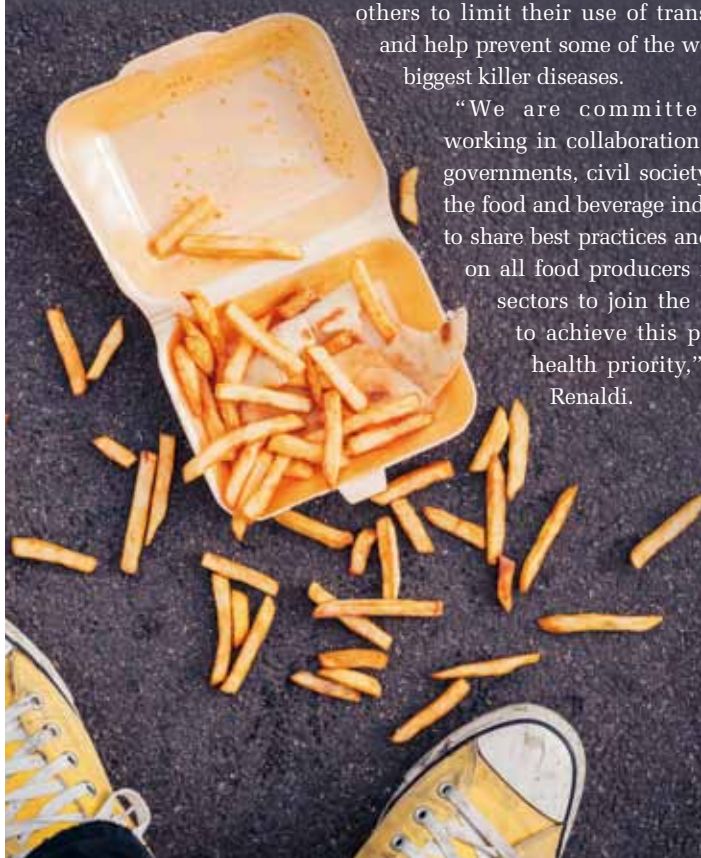
He attributed this success to the fact that companies substituted PHOs with non-PHO solutions, such as using unsaturated fats, without compromising on taste or quality.

IFBA is also working on removing nutritionally negligible amounts of PHOs found in thermal processing, processing aids (release agents), food additives (emulsifiers) and carriers wherever feasible.

WHO has been encouraging the food industry to eliminate trans fats for several years, but despite bans proving successful in countries such as Denmark, scepticism has limited the success of policies in other countries.

Perhaps backing from IFBA will encourage others to limit their use of trans fats and help prevent some of the world's biggest killer diseases.

"We are committed to working in collaboration with governments, civil society and the food and beverage industry to share best practices and call on all food producers in all sectors to join the effort to achieve this public health priority," said Renaldi.





# Food

FOR

## thought



### Walmart enters the food production business

In the US, Walmart has just opened its first milk processing operation — will Australian grocers follow suit and become food manufacturers too?

Sourcing milk from nearly 30 dairy farms in Indiana and Michigan, the milk processing plant will produce Walmart's private label Great Value white and chocolate milk which will be distributed to around 500 Walmart stores in Indiana, Illinois, Michigan, Ohio and Kentucky.

When fully operational, the plant will be the largest 'drinking milk' facility in the US, employing 200 workers plus another 100 third-party contractors to drive trucks.

Tony Airoso, Senior Vice President of Sourcing Strategy for Walmart said about the company's first entry into food production, "This new plant is a perfect example of the kinds of efficiencies Walmart seeks in our supply chain to benefit our customers."



### \$133 million to fight food waste

The Fight Food Waste Cooperative Research Centre (CRC) will commence operations on 1 July 2018.

The mission of the CRC is to:

- Reduce food waste throughout the value chain
- Transform unavoidable waste into innovative high-value products
- Engage with industry and consumers to deliver behavioural change.

It will bring together industry, government and research bodies to tackle the growing international problem of food waste, which is at the heart of future industry sustainability.

Headquartered at the University of Adelaide's Waite Campus, the CRC will have nodes with the Reduce Program based in Melbourne at RMIT University, the Transform Program in Brisbane at The University of Queensland and the Engage Program in Sydney at the Central Queensland University campus.

The \$133 million, 10-year research programs will target food waste to improve the future sustainability and profitability of the Australian food industry. Currently food waste costs Australia \$20 billion per year and directly affects Australia's reputation as a clean, green food producer.

The CRC will take a triple bottom line approach to reduce and transform food waste to improve industry profitability, tackle food insecurity and enhance Australia's reputation as a sustainable producer of premium food products.

The CRC involves 57 participants from around Australia and overseas, who collectively raised \$103 million that will be matched with \$30 million from the CRC Programme. The bid was led by a committee of industry participants with coordination by the Department of Primary Industries and Regions South Australia (PIRSA).

### Tapeworms and weight loss

People have been eating tapeworms in an attempt to lose weight for years.

Although this route of weight loss is known to be dangerous, Elizabeth Tucker, a distinguished service professor of English at Binghamton University, asserts that the ideas behind it are perpetuated by society's ideals of being thin and losing weight.

"Like tape measures, tapeworms remind us of society's standards for ideal weight," said Tucker. "Dieters try to eat less and get thin, but tapeworms want to eat all they can; in doing so, they represent rebellion against societal restrictions on self-satisfaction."

If you are really keen on this type of weight loss you can go to a 'worm clinic' and pay thousands of dollars for a couple of tapeworms or you can consume lots of sushi (probably lots and lots of sushi).

Earlier this year a Californian sushi consumer was appalled when a 1.7 m tapeworm exited his body, but although disgusting and causing gastro intestinal symptoms, the tapeworm was never going to be fatal.

There are more than 10,000 known species of tapeworm but only a small number can infect humans. Tapeworms from raw or undercooked fish can reach lengths of 25 m but are relatively harmless and easily treated with worming tablets.

However, really, just eat less and exercise more if you want to lose weight.



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# Start packing for Foodtech Packtech 2018

OK, we all know that New Zealand's food industry is world class — their food and beverage exports currently account for around 55% of NZ's total merchandise export value. So why not have a look at what they are up to, what equipment and supplies they are purchasing, talk to some of the main players and basically share in their knowledge and expertise? You can do all of this at Foodtech Packtech (FTPT).

**F**TPPT is New Zealand's largest food manufacturing, packaging and processing technology trade show. This free-to-attend event brings industry professionals and decision-makers together providing a forum for education, discussion and the sharing of knowledge and expertise, critical in the sustainability and growth of the industry.

Held only once every two years, FTPT is a must-attend event providing visitors with the opportunity to come face to face with the experts and discover the freshest ideas, latest technologies and the newest developments entering the food manufacturing and packaging technology industries.

## Two exhibitions in the one trip

Co-locating with Foodtech Packtech is the Materials Handling & Logistics Expo (MHL) — New Zealand's premier trade event for the materials handling, warehousing and logistics industry.

Also free to attend, MHL brings together customers and suppliers from every aspect of material flow management along the supply chain and covers a wide range of industry sectors including: logistics, materials handling, food and beverage, retail, packaging, pharmaceutical, manufacturing, transport, engineering, technology, government, and many more.

It provides industry buyers with the opportunity to view the most up-to-date materials, equipment, services, technology and innovations, and discuss their needs with supply professionals.

## Free entry for food and beverage professionals

Entry to both exhibitions is FREE for genuine food, beverage and pharmaceutical industry professionals. As a strictly trade-only event, children and the general public will not be allowed admittance to the expo. Once registered, visitors are allowed to enter the show as many times as they choose.

Overseas visitors attending the show may apply for a business visa. Australian citizens and residents don't usually need a visa to travel to New Zealand, but if you don't meet NZ's character requirements, you'll need to apply for a visa before travelling. The passport which you hold will determine whether you can apply online or if you need to lodge a paper-based application. Applications need to be made well in advance at the New Zealand Embassy in your country or in some cases can be made online.

Register to attend Foodtech Packtech now:  
[www.foodtechpacktech.co.nz/visitor-information/register/](http://www.foodtechpacktech.co.nz/visitor-information/register/)





# Prepared food





# Action needed to reduce acrylamide



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**Primary producers, food processors and consumers all need to be aware of the parts they can play in reducing acrylamide ingestion.**

“Acrylamide is a probable carcinogen in humans, a Class 2a. This is effectively the highest rating for most chemicals, given that Class 1 chemicals are definite carcinogens, and that is a difficult thing to prove,” said Nigel Halford at a recent Rothamsted Research seminar.

Acrylamide is not a natural ingredient of food — it is basically a processing contaminant formed when starch is overheated to cause a reaction between amino acid asparagine and the sugars glucose, fructose and maltose, the ‘Maillard reaction’. Foods with high starch content such as potatoes, root vegetables or bread, crisps, cakes, biscuits and cereals that are cooked at high temperatures during the frying, roasting or baking process are the most common sources of acrylamide in our diets.

Acrylamide accumulates in a wide range of popular and staple processed foods that have been cooked above 120°C. Managing temperature is in fact the main factor for the formation of acrylamide. A particularly high amount is produced when potato and cereal-containing foods are heated above 180°C and this needs to be considered by those involved in any type of cooking or even pre-cooking during food.

The UK Food Standards Agency initiated a ‘Go for Gold’ campaign, which aims to encourage consumers to become more engaged on the issue, and to cook foods to a light gold colour rather than deeper browns as this reduces the amount of acrylamide being formed.

Colour is a good guide because it’s formed by similar chemical pathways to acrylamide, so it’s a very good indicator of how much acrylamide is forming. So, roast your potatoes to a light brown rather than a dark brown colour, and anything too crispy and dark is not very good.

From April 2018 food business operators in Europe are expected to:

- be aware of acrylamide as a food safety hazard and have a general understanding of how acrylamide is formed in the food they produce;
- take the necessary steps to mitigate acrylamide formation in the food they produce, adopting the relevant measures as part of their food safety management procedures;
- undertake representative sampling and analysis where appropriate, to monitor the levels of acrylamide in their products as part of their assessment of the mitigation measures;
- keep appropriate records of the mitigation measures undertaken, together with sampling plans and results of any testing.

In Australia and New Zealand FSANZ suggests there are a number of ways consumers can reduce their acrylamide intake:

- Potatoes should not be stored in the refrigerator or exposed to light as these environments increase the sugar content of the vegetable, which promotes acrylamide formation.
- Potatoes should be soaked in water for 15–30 minutes or blanched in boiling water before frying or roasting because this reduces the components that promote acrylamide formation.
- Follow manufacturer’s cooking instructions — many of them have adjusted their instructions to reduce acrylamide levels in their foods.
- Cook potato products such as oven fries, hash browns and roast potatoes in a moderate oven (180–190°C) to a light golden colour only. Deep-fried chips should be cooked at a maximum of 175°C. Chunkier style chips are preferable.
- Toast bread or other foods to the lightest colour acceptable to your taste, noting that the crust will have higher levels of acrylamide.

## What can the food industry do?

Wheat farmers can ensure sulfur sufficiency for their crops and minimise the amounts of added nitrogen. Researchers are also identifying cultivars of wheat, rye and potatoes that have lower potential for acrylamide formation. Some food companies in the US are testing for sugar concentration in potatoes at the factory gate and turning consignments away if they are too high.

Food processors can be:

- vigilant in keeping processing temperatures under 175°C whenever possible, even if this increases cooking times;
- accurately monitoring temperatures at all times;
- choosing ingredients with reduced acrylamide formation potential;
- only cooking food to a light gold colour;
- including cooking instructions for consumers that reduce the risk of excessive acrylamide formation.



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# Consumer choice important in aged care

**Nutrition is very important when supplying food to the elderly, but this often causes caterers to overlook consumer choice. This formed the basis of discussions for the inaugural Parliamentary Friends of Ageing and Aged Care meeting.**

**C**o-hosted by COTA Australia (Council on the Ageing), the event was called 'Loving Food At Any Age' and brought together Aged and Community Services Australia (ACSA), politicians, advocates for the elderly and renowned cook Maggie Beer to discuss the main pain points regarding food in residential aged-care facilities.

Firstly, COTA Chief Executive Ian Yates highlighted the difficulties of catering to the individual needs of all residents in aged-care homes.

"Providing good quality food in residential aged care has some challenges — both physical and nutritional. Menu planning needs to take into account the medical requirements of every resident, their nutritional needs, cultural background and capacity to digest food or even eat," Yates said. "In some cases, supplements are necessary to make sure a resident receives the nutrition they need but they should never be an easy or cheap replacement for proper food."

One of the main aims of food businesses is to provide varied and exciting food options for consumers, but many assume this does not apply to the older generations. While nutrition is crucial, Yates argued that businesses should also take into consideration what they want as lack of choice is one of the biggest complaints of aged-care residents.

"Aged-care providers need to do more than tick the basic dietary boxes. With imagination and effort there's no reason


that people living in residential aged care should forgo the joys of great meals just because people assume they're too old to care.

"Tonight's inaugural Parliamentary Friends event on Valentine's Day is about putting love into food and getting people to think beyond mere sustenance for aged-care residents to providing food to which residents look forward."

Although some providers are offering high-quality food to residents, increasing consumer choice would help boost food standards. Yates suggested there is plenty of room for improvement, not only for providers but for the government as well.

"Unfortunately, not everyone can access the providers who are doing the right thing because the current aged-care funding system restricts the way aged-care beds are allocated.

"The government can improve the quality of food by giving residents the funding so they can change providers if their food isn't up to scratch; and allow the best providers to expand in response to consumer demand. The current system actually supports the survival of poorer quality providers — it's way past time this stopped, as has been repeatedly recommended.

It is hoped that this marked the first of many Parliamentary Friends meetings that will facilitate bipartisan discussion around aged-care policy, especially considering the shifting demographic in Australia. 

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## Bias against frozen vegetables is rife

Frozen vegetable purchases in grocery stores are declining even though the products offer similar if not superior nutrition benefits to fresh vegetables and decrease the likelihood of waste.

According to Australian Bureau of Statistics only 7% of Australian adults met the recommended intake of vegetables (5–6 serves/day) in 2014/15 while in the US it is claimed that 87% of the population doesn't eat enough vegetables. This is in spite of the known fact that vegetable and fruit consumption is important for maintaining a healthy diet and reducing risk factors for obesity and obesity-related illnesses.

One of the barriers to fresh vegetable purchases is concern about waste. It seems that some people avoid

buying fresh vegetables because they are afraid they will go off before they are consumed. This is especially true in single-person households.

Frozen foods are highly suited to these situations. The nutrition benefits are equivalent to, or better than, fresh vegetables and consumers can take smaller portions of the vegetables without wasting the remainder.

At Stony Brook University in the US, Paul Connell and Stacey Finkelstein, both associate professors of marketing in the College of Business, collaborated with Florida State's Maura Scott and Villanova's Beth Vallen on a study, *Negative Associations of Frozen Compared with Fresh Vegetables*, which is soon to be published in *Appetite*. Their work documents reasons for the persistent negative attitudes consumers show towards frozen vegetables compared to fresh vegetables (a 'fresh-frozen bias') and explains that these negative attitudes towards frozen vegetables may be impacting consumption of healthy foods.

Stacey Finkelstein said, "In two studies we find that people have a strong negative bias against frozen vegetables when compared to fresh vegetables and that the perceived positive benefits of fresh vegetables decrease when people think about preparing fresh vegetables. We recommend a few strategies for attenuating this fresh-frozen bias including increased exposure to food preparation and nutrition education programs that prevent or correct mistaken beliefs about frozen foods."

## Manna or mania: meal kit madness

Meal kits have become a staple in the grocery landscape. Time-poor consumers are responding to the supply of fresh, preportioned ingredients in increasing numbers.

Of the 9% of Americans who have tried a meal kit, 6% have purchased exclusively online. And as a result, online meal kit companies are seeing tremendous growth.

But traditional retailers are also honing in on the profitable market niche with in-store meal kit ranges. In the US, in 2017, in-store meal kits generated US\$154.6 million in sales, posting growth of more than 26% year-over-year while in the same period grocery, dairy and frozen foods dipped 0.1% to \$374 billion.

While 9% of Americans have bought meal kits, an even more startling 25% of consumers say they would consider trying a meal kit in the next six months. This equates to 30 million households! No wonder that competition is ramping up in this sector.

Nielsen conducted a recent analysis to determine which consumer groups are buying meal kits. The analysis found that 26% of meal kit users classify themselves as gourmet cooks, while only 16% of US consumers consider themselves gourmet cooks.

At the same time, 15% of Americans consider themselves frozen foodies, yet only 9% of frozen food consumers are meal kit users.

What do meal kit purchasers want?

- 60% say value for the money is extremely important.
- 49% say low-cost items are important.
- 56% of consumers disagree that meal kit services are affordable for everyone.

Nielsen has additional insight about meal kits available for download in a new e-book.







## The rise of the user-centred smart kitchen

One of the largest household appliance manufacturers in China, Midea, showed where kitchen appliances are heading at the recent the 2018 Appliances & Electronics World Expo (2018 AWE) in Shanghai.

Some of the highlights included:

- the Fun oven, supported by artificial intelligence (AI) image recognition, that can analyse the food placed in the oven through machine learning and AI recognition technologies before automatically matching an appropriate cooking curve. As an added bonus, the oven also has a built-in camera that can take photos of the dish being cooked and share it on social media;
- a voice-controlled microwave oven series, equipped with a Chipintelli & Conexant voice chip, allowing hands-free cooking as users can give the microwave simple voice instructions such as "Open the door" and "Select the right recipe";
- a dishwasher catering specifically to the Chinese kitchen and that is

optimised for the cooking habits in Chinese households. The dishwasher can complete tasks such as dish cleaning with running water, vegetable and fruit cleansing and garbage disposal;

- a range hood with a steam cleaning feature.

Midea is the world's premier major appliances manufacturer (according to Euromonitor) and has annual sales revenue exceeding US\$23 billion. The company is the No. 1 microwave oven and No. 3 dishwasher manufacturer globally and operates three production bases and two R&D centres in China in addition to a production base in Belarus and R&D centres in Bologna, Italy and Louisville, USA.



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## Qantas's catering businesses sold to dnata

The Emirates Group subsidiary dnata (previously known as Alpha Flight Services) has signed an agreement, subject to approval from the Australian Competition and Consumer Commission, to acquire Qantas's catering businesses. Currently Qantas wholly owns Q Catering, based in Brisbane, Melbourne, Perth and Sydney and Logan City, plus Queensland-based frozen food maker Snap Fresh.

Under the agreement, dnata will supply catering for Qantas flights for an initial period of 10 years, and Qantas will continue to work with key suppliers in menu design and development.

Snap Fresh specialises in making Australian-made frozen meals for airlines and customers in the healthcare and food retail industries.

"This agreement reflects our confidence in Australia as a market and the ongoing growth potential into the future," said Robin Padgett, dnata's Divisional Senior Vice President of catering.

"By combining dnata's network strength and international talent with Qantas's domestic catering expertise, this will allow us to further grow our presence and deliver catering excellence to more customers across Australia than ever before. This includes investing in more infrastructure, starting with a new catering facility in Sydney."

Qantas Domestic CEO Andrew David said the sale would enable Qantas to partner with a global leader in inflight catering and prioritise investing in the airline. He added: "The catering businesses will benefit significantly from dnata's global footprint, catering expertise and ability to drive investment and growth for what is a core focus of its operation."

"Customers will continue to enjoy Qantas's premium service, including unique Rockpool-designed menus for First and Business passengers, showcasing the best of Australian produce for millions of travellers each year."

"Together with dnata, we'll continue to deliver the inflight food and beverage experience we know our customers value, just as we work with catering companies in offshore ports for our international flights."

"We've always said that we would explore the sale of certain assets where it makes sense, just as we've done before, including with the sale of our catering facility in Cairns and Qantas Defence Services," said David.

Dubai-headquartered dnata already operates 11 catering facilities in Australia and employs more than 4000 people across its catering, cargo and ground handling businesses in Australia. Globally the company employs more than 39,000 and has an AU\$4.2 billion annual turnover.

Over the past 12 months dnata has invested significantly in growing its global catering network. Its most recent milestones include the opening of a catering facility in Dublin, Ireland, the opening of its \$50m Melbourne catering facility and an agreement to acquire New York-based caterer 121 inflight catering. It is also currently constructing a facility in Vancouver, Canada.



## Cultures for dairy products

With Chr. Hansen's second-generation FreshQ, dairies can rely on natural freshness and contribute to reducing food waste.

The company has developed a series of cultures even more powerful than the first generation. The cultures offers dairy manufacturers a chance to keep their products fresh and safe longer by using nature's own resources.

The cultures are applicable to more products and applications (in addition to yoghurt, fresh cheese, kefir, quark and numerous other fermented milk products) and have stronger protective properties that make them suited to regions where the cold chain is under pressure. They offer an alternative to even more chemicals and artificial preservatives than the first generation.

The culture works by inhibiting or postponing the growth of yeast and mould in the fresh dairy product. By extending shelf life, the cultures can help reduce food waste.

Today 17% of European yoghurt production goes to waste, in 80% of cases because the use-by date expires somewhere in the supply chain. An extension of shelf life by seven days, which is a conservative estimate of the possible impact of the cultures, would translate into a potential reduction of yoghurt waste by 30% in Europe alone.

In the development of the cultures, the company focused on selecting strains that have a minimal impact on the process and help obtain the desired flavour.

**CHR Hansen Pty Ltd**

[www.chr-hansen.com](http://www.chr-hansen.com)





## Spill mop kit

Rubbermaid Commercial Products (RCP) has introduced a High Absorbency Spill Mop designed for busy food and beverage service and retail environments.

The mop kit and accessories are suitable for dealing with the accidental liquid spills and incidents that occur on a daily basis in the hospitality and retail sectors, presenting a serious slip hazard for staff and customers if not dealt with immediately.

It features a no-touch, quick-release design so the user can dispose of the mop pad after use without coming into contact with any liquid or contaminated substance. The single-use disposable pad is made of highly absorbent, non-drip materials that lock liquid inside to contain mess during disposal.

The company claims the mop dries the floor up to 50% faster than a traditional string mop, cutting cleaning time by half. The mop pad is made of a highly absorbent polyacrylate material which can absorb approximately 1 L of water, or 400 mL of high-density fluid (saline or similar), in 30 s.

The non-drip, no-leak mop pad absorbs and locks in liquid and hazardous fluids, turning it into a gel to prevent dripping, for maximum safety when dealing with potentially contaminated spills. The extendable grip mop handle features an integrated quick-release clamp, so the user avoids contact with the soiled mop during disposal.

Both the retractable mop handle and spill pads are ultracompact and so can be stored close to service areas. A wall-mounted cabinet can hold 20 pads.

**Rubbermaid Commercial Products**

[www.rcpworksmarter.com](http://www.rcpworksmarter.com)



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# What CONSUMERS want

If you are formulating or reformulating products you may find these survey results showing what consumers want in and from their foods and beverages useful.

**T**he International Food Information Council (IFIC) Foundation has released its 13th Annual Food and Health Survey and 36% of respondents admitted to following a diet regime. The most popular diet was intermittent fasting (10%) followed by paleo (7%), low-carb (5%), whole30 (5%), high-protein (4%) and ketogenic/high-fat (3%). Those under 35 were the most likely to adhere to a specific diet.

## What is thought to be the cause of weight gain?

- Sugars (33%)
- Carbohydrates (25%)
- Fats (16%)
- Protein (3%)
- 'All sources' (17%)

## Most desired health benefits

- Cardiovascular health (20%)
- Weight loss or weight management (18%)
- Energy (13%)

## What foods will contribute to the desired outcome?

- Have no idea (62%)
- Protein (10%)
- Vegetables (7%)
- Vitamins and minerals (5%)
- Fruits (4%)

## Organic, natural and sustainability are desirable

- Sustainability is important (59%) — of these
  - Pesticide reduction wanted (33%)
  - Food supply should be affordable (16%)
- Choose products labelled natural (37%)
- Choose products labelled organic (29%)

## Key drivers behind purchases

- Taste (81%)
- Familiarity (65%)
- Price (64%)
- Healthfulness (61%)
- Convenience (54%)
- Sustainability (39%)

## Nothing artificial

- Willing to pay up to 10% more for products without any artificial ingredients (62%)
- Willing to pay up to 50% more for products without any artificial ingredients (42%)
- Willing to pay up to 100% more for products without any artificial ingredients (22%)


## Determining healthfulness

- Shorter ingredient list is healthier (33%)
- Longer ingredient list is healthier (15%)
- Non-GMO printed on label means product is healthier (40%)
- Fresh is healthier than frozen (41%)

## Trust in dietitians

- Aged over 65 — 76%
- Aged under 35 — 65%

So there you have it — confusing as it is. 59% think sustainability is important but this becomes a low-placed sixth as a driver to purchase. Consumers want healthful, nutritious products but not at the expense of taste.

The complete survey results can be seen [www.foodinsight.org/2018-food-and-health-survey](http://www.foodinsight.org/2018-food-and-health-survey). 





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# Going plastic-free

Robert Glass, Global Food and Beverage Communications Manager, ABB

**A Dutch supermarket has opened the world's first plastic-free food aisle and it is likely that more supermarkets will follow this trend; so what are the alternatives to plastic food packaging?**

**W**hile there's been extensive talk about the environmental considerations of food manufacturing and packaging in the last 20 years, these conversations often focused on the carbon emissions and energy usage of food plants. However, since 2016, the world has increasingly grown to realise the environmental impact of plastics.

Recently, Dutch supermarket chain Ekoplaza opened the world's first plastic-free aisle in one of its stores in Amsterdam. This sent ripples through the food packaging industry, with environmental campaign groups calling for more supermarkets to follow the lead. Sian Sutherland, co-founder of one such group, A Plastic Planet, stated, "For decades shoppers have been sold the lie that we can't live without plastic in food and drink. A plastic-free aisle dispels all that."

With that, the gauntlet has been thrown down and more supermarkets will likely follow the plastic-free trend in the coming months and years. Food manufacturers will need to rethink their food packaging materials to maximise their product's market penetration in years to come.

Fortunately for food manufacturers, this will not change their existing processes too significantly as it's simply the material that changes. After all, a nut processing plant that swaps out plastic packaging for biopolymer alternatives won't find that their packing and palletising robot stops handling the product because the material has changed.

However, making the change to sustainable packaging isn't quite as simple as it sounds. The problem with plastics isn't a new realisation in the materials industry, so there are various alternatives available. From chicken feather plastics to liquid wood, there are numerous experimental biodegradable alternatives to plastic, but which are we most likely to see in wide usage in the next few years?

## Glass

Glass has been a staple of the bottling industry for years, but plastic bottles have risen in popularity in the past few decades. While the price difference was initially the main driver for many manufacturers considering switching to plastics, it's likely we'll see industry shift back to glass in the coming years.

Glass is advantageous because it is endlessly recyclable, meaning that it can be used, recycled and recovered repeatedly without a loss in quality or purity. This is in stark contrast to plastics, where the material fibres shorten with repeated recycling and become ineffective and unusable.

With glass bottles, there's also an element of consumer appeal. When global beverage brand Coca-Cola brought back its glass bottles in 2014, it enjoyed an increase in sales.

## Aluminium

According to the labour force survey, one-third of European households only have a single occupant. This isn't specific to European nations either; the US has experienced an increase in single person households since the 1920s. That's why single-serve portions and ready meals have grown in popularity, bringing with them a rise in microwaveable plastic packaging.

As a replacement for these plastic trays, food manufacturers can instead turn to aluminium. Like glass, aluminium is endlessly recyclable and its sustainability means it has a low cost of legislative compliance. Effectively, swapping to aluminium allows food manufacturers to remain as competitive as they were with plastics.


In addition to this, aluminium is also suitable for use with most microwave ovens. While there are some issues with models designed prior to 1960, modern appliances can safely heat products in aluminium containers as long as food is handled sensibly by consumers. Aluminium tray manufacturer Advanta includes a useful guide to microwaving aluminium on its website.

## Biopolymers

While aluminium and glass are effective alternatives, some manufacturers will still require the malleability of plastics for their packaging. That's why materials scientists have been actively developing biopolymer alternatives to serve as sustainable and safely biodegradable plastics.

Most of these originate in by-products of other industries. Liquid wood is derived from lignin, a waste product created in paper processing, while other bioplastics are known to use casein from dairy production or keratin derived from chicken feathers from poultry farms. But by far the most popular are plant-based polymers, typically from sugarcane or potato starch.

The latter produces a material known as polylactic acid (PLA), which has many of the same properties as plastic but degrades far faster when exposed to nature, sometimes in as little as six months. Since the starch replaces the petroleum in the PLA, it produces less harmful chemicals during degradation.

The launch of a plastic-free aisle reflects a wider consumer appetite to reduce the footprint and environmental impact of their food. To remain competitive in the future, food and beverage manufacturers should consider the same things. 



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## Grill with programmable control centre

Midea's FlashGriller combines three cooking technologies and an intuitive programmable control centre.

Using a combination of press grilling, infrared heating and magnetron cooking, the grill is able to take a standard cafe sandwich from 3 to 60°C in 40 s. The systems heat food evenly throughout and create a toasted finish on the surface.

The product is equipped with data collection capabilities to help businesses optimise for menu and service processes.

The programmable control centre is accessible via PC and USB port so cooking processes can be standardised easily across multiple machines. It is capable of storing large quantities of recipe settings, ensuring that each sandwich, panini, bagel or burrito is consistently cooked correctly, regardless of the grill operator or the restaurant outlet. The control centre also records machine usage data to accurately advise when core components need to be serviced before they are depleted, avoiding costly disruptions to restaurant operations.

Other features include a self-adjusting upper plate that moulds to contents, an auto-opening lid that acts as an additional safeguard for product consistency, clear progress display so servers can advise customers of accurate order wait times and automatic power-save mode.

**Midea**

[www.midea.com/global](http://www.midea.com/global)



## Peel and reseal food labels

UPM Raflatac's food labelling product range has expanded, with two peel and reseal film label materials and a corresponding adhesive. Peel-Rseal PP White FTC 60 and Peel-Rseal PP Clear FTC 50 with RC512 adhesive are suitable for applications where the packaging will be opened and closed multiple times. Open-close labels make packaging more user friendly and high-performance reclosing is essential to ensure that food stays fresh.

Both these top-coated PP film face materials are compliant with food safety regulations. The PP White FTC 60 is a white solid film, whereas the PP Clear FTC 50 is transparent and suitable for the no-label look.

They are best paired with RC512, a UV acrylic adhesive specifically designed for open-close labels for food applications.

**UPM Raflatac Pty Ltd**

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## Making reduced-sugar biscuits taste good

Researchers have found that reduced-sugar biscuits containing Taura's JusFruit pieces are perceived to be just as sweet as full-sugar alternatives.

JusFruit pieces are made using Taura's Ultra Rapid Concentration (URC) technology, which concentrates the natural sweetness of fruit. Including them in sugar-reduced recipes creates 'sweet spots' which increase the overall perception of sweetness.

In a consumer sensory panel, reduced-sugar biscuits containing the concentrated fruit pieces were not perceived to be less sweet than a full-sugar alternative, even though they contained 30% less sugar. Furthermore, they outscored both full-sugar and standard reduced-sugar options on overall taste and came closest to optimum sweetness.

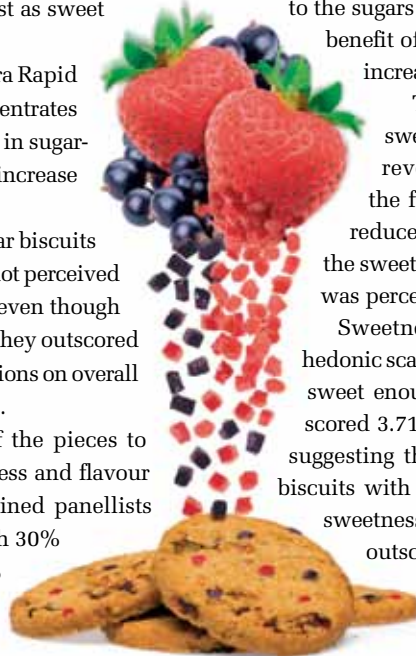
Researchers set out to test the ability of the pieces to overcome the challenge of decreased sweetness and flavour in sugar-reduced biscuits. Twenty-six untrained panellists blind-tasted a full-sugar biscuit, a biscuit with 30% reduced added sugar, and a biscuit with 49% reduced added sugar with JusFruit pieces.

The two reduced-sugar recipes had similar sugar content due to the sugars that occur naturally in the fruit. An added benefit of the addition of JusFruit pieces was that it increased the fibre content of the biscuits by 60%.

The tasters were first asked to evaluate how sweet they thought each recipe was. The results revealed no significant difference between the full-sugar reference biscuits and the sugar-reduced biscuits with JusFruit pieces. However, the sweetness of the standard sugar-reduced biscuits was perceived to be significantly lower.

Sweetness was also evaluated on a seven-point hedonic scale, with a score of four corresponding to 'just sweet enough'. The standard sugar-reduced biscuits scored 3.71, while the full-sugar biscuits scored 4.57, suggesting that they were considered too sweet. The biscuits with JusFruit pieces came closest to optimum sweetness with a score of 4.25. Furthermore, they outscored the other two recipes on overall taste.

Taura Natural Ingredients Ltd  
www.tauraurc.com

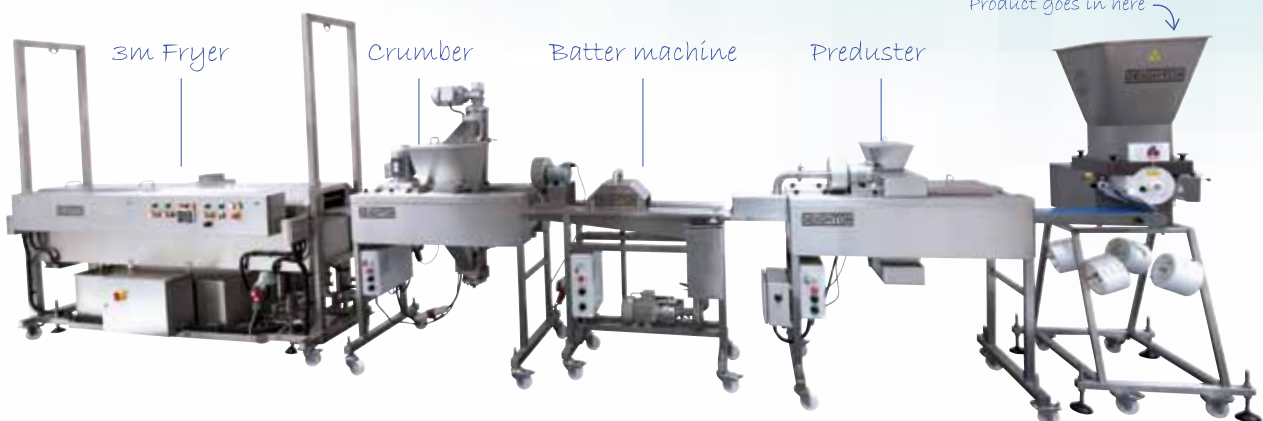


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# Don't ignore hygiene and sanitation

It has been estimated that about 25% of food safety recalls relate to poor environmental hygiene and sanitation controls.

**F**ood and beverage processors must implement and maintain a food safety management system as part of their HACCP plan and the SQF Code Edition 8 Food Safety Code for Manufacturing is a good place to start.

## Hygienic design

Hygienically designed equipment and process lines are quicker and easier to clean and minimise the risk of product contamination by microorganisms, allergens and foreign material. Fast, easy sanitation leads to reduced downtime and reduced risk of product recalls and the 10 principles outlined in the American Meat Institute (AMI) Guidelines for Sanitary Design of Equipment are worth checking:

- 1. Cleanable to a microbiological level:** Food equipment must be constructed to ensure effective and efficient cleaning over the life of the equipment. The equipment should be designed to prevent bacterial ingress, survival, growth and reproduction on both product and non-product contact surfaces of the equipment.
- 2. Made of compatible materials:** Construction materials used for equipment must be completely compatible with the product, environment, cleaning and sanitising chemicals and the methods of cleaning and sanitation.
- 3. Accessible for inspection, maintenance, cleaning and sanitation:** All parts of the equipment shall be readily accessible for inspection, maintenance, cleaning and sanitation without the use of tools.
- 4. No product or liquid collection:** Equipment should be self-draining to assure that liquid, which can harbour and promote the growth of bacteria, does not accumulate, pool or condense on the equipment.
- 5. Hollow areas should be hermetically sealed:** Hollow areas of equipment such as frames and rollers must be eliminated wherever possible or permanently sealed. Bolts, studs, mounting plates, brackets, junction boxes, nameplates, end caps, sleeves and other such items must be continuously welded to the surface, not attached via drilled and tapped holes.
- 6. No niches:** Equipment parts should be free of niches such as pits, cracks, corrosion, recesses, open seams, gaps, lap seams, protruding ledges, inside threads, bolt rivets and dead ends.
- 7. Sanitary operational performance:** During normal operations, the equipment must perform so it does not contribute to unsanitary conditions or the harbourage and growth of bacteria.
- 8. Hygienic design of maintenance enclosures:** Maintenance enclosures and human machine interfaces such as push-

buttons, valve handles, switches and touchscreens, must be designed to ensure food product, water or product liquid does not penetrate or accumulate in and on the enclosure or interface. Also, physical design of the enclosures should be sloped or pitched to avoid use as a storage area.


- 9. Hygienic compatibility with other plant systems:** Equipment design must ensure hygienic compatibility with other equipment and systems, such as electrical, hydraulics, steam, air and water.
- 10. Validated cleaning and sanitising protocols:** Procedures for cleaning and sanitation must be clearly written, designed and proven effective and efficient. Chemicals recommended for cleaning and sanitation must be compatible with the equipment.

## Standard sanitation operation procedures

Good standard sanitation operation procedures (SSOPs) and cleaning protocols are an essential part of every food plant's Hazard Analysis and Critical Control Point (HACCP) system. Each facility's SSOPs should provide:

- Descriptions of pre-operational SSOPs, which are explicitly distinguished from daily sanitation activities, should address, at a minimum, the cleaning of food-contact surfaces of facilities, equipment and utensils.
- Descriptions of operational SSOPs that will result in a sanitary environment in accordance regulations.

The general guidelines for cleaning and sanitising:

- **Remove debris:** Bacteria don't grow on belts but they do on residual organic tissue. Get rid of it. The quality of your sanitation services will be a direct reflection of your microbiological history.
- **Pre-rinse equipment:** This helps remove any residual matter that isn't apparent to the eye. Rinse at a temperature equal to the melting point of fat.
- **Foam and scrub:** Scrubbing is a fundamental that cannot be shortened. This further assists in the removal of residual matter and soils. Use scrub pads or brushes.
- **Rinse:** Watch your pressure. High-pressure water can create aerosolised water droplets subject to contamination.
- **Perform a pre-operational inspection:** Check to see if all organic matter has been removed. Some sanitisers don't perform well in the presence of organic matter.
- **Sanitise:** An additional rinsing may be required if sanitisers require removal once they've had time to do their job.
- **Dry:** Any residual moisture may be conducive to bacterial growth. 





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## Precision size grader for green beans

Key Technology expands its family of rotary sizing and grading systems for green beans, which includes its Sliver Sizer Remover (SSR), Precision Size Grader (PSG) and Rotary Size Grader (RSG). With the 14-roller PSG, processors can replace drum graders with minimal impact to surrounding equipment. It provides four rollers more than previous systems to improve grading performance. The PSG separates beans by diameter, maintaining accuracy over time to help processors make grade while maximising yield.

Suitable for grading snapped and unsnipped whole and cut green beans for fresh pack, frozen and canned product applications, the rotary sizing and grading systems are available in widths of 0.6 to 1.5 m.

PSGs offer a smaller footprint than drum graders with the same throughput, while achieving gentle handling and reducing maintenance. They hold the grade over time, which improves final product quality and increases yield. With an open design, fully welded frame and one-piece block pan, they are said to enhance sanitation.

The PSG separates green beans by diameter. Featuring a series of rollers with gaps in between, thin and curled beans fall through as thicker beans are conveyed across the top. The rollers spin at progressive speeds. Rollers are faceted and textured to create gentle agitation so product is lively across the top to either find a gap or roll along.

The gaps between the rollers of the PSG are easily adjusted to change the diameter threshold to modify the grade or process different green bean varieties or other products such as potatoes or carrots. Rotating the single handle quickly adjusts all the gaps consistently throughout the machine to grade by a new size cross section. The PSG can be adjusted and cleaned to handle a new grade or product in less than 10 min.

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## Automatic benchtop labellers

Packserv has introduced a range of small, lightweight and portable automatic label applicators, the Elf-50 and the Elf-20.

The labellers have a flexible design, allowing them both to be used as a standalone benchtop machine or positioned atop a height-adjustable stainless steel trolley and integrated into current production lines.

With a range of sensors, the labellers are efficient. Hand wheels provide simple adjustments, and enable quick set-up and easy changeover. They have standard one-button touch product and label sensors which can be adjusted for various labelling applications. With the manual position setting, labels are placed accurately on the product.

In compliance with Good Manufacturing Practices (GMP) standards, the labellers are made of 304 stainless steel and anodised aluminium, and guard against the effects of harsher environments.

**Packserv Pty Ltd**

[www.packserv.com.au](http://www.packserv.com.au)



## White cheese starter culture range

DVS WHITE FLORA is the latest addition to Chr. Hansen's white cheese starter culture range. The product series consists of three cultures that aid the formation of rich and aromatic notes in white cheese and ensure cheese quality and robust manufacturing.

The culture can be used with both regular milk and milk concentrated by ultrafiltration.

The first stage in cheesemaking is to ferment milk sugar into lactic acid using a starter culture. This is where cheesemakers can use DVS WHITE FLORA and create complex flavours and taste-development during fermentation. The strains used in the culture system are carefully characterised and selected from 30,000 strains to ensure consistent performance. The three cultures systems in the series achieve the same controlled acidification and have the same tolerance to salt and temperature.

The series can help cheesemakers to secure product differentiation. All cultures within the range offer different flavour notes and nuances in texture, and are developed specifically for white cheese.

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# VentX

## Ventilated Reinforced *Stretch Wrap*

The **Omni VentX** is the perfect solution for wrapping products likely to get damaged by ripening gases, humidity, rust, mould or condensation, as well as products that need to chill or to freeze quickly.

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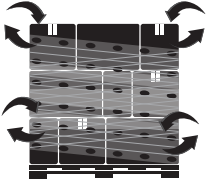


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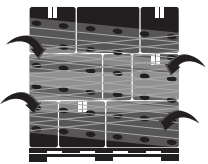
## Eliminate Film Breakages & Reduce Cool Room Costs?

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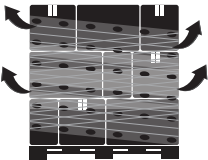
### **Avoid fresh produce damage with load ventilation**

Ventilated stretch wrap is perfect for wrapping loads of fresh produce that are likely to get damaged by ripening gases, humidity and mould. VentX is used to prolong the shelf life of fresh produce by allowing it to breathe while in storage and transit.



### **Reduce freezing time with load ventilation**

Ventilated film is also ideal wrapping loads that require fast cooling as convention stretch wrap acts as an insulation for the load, therefore increasing cooling time. Wrapping pallets with ventilated film that isn't isolative means that the freezer temperature isn't required to be as low, therefore reducing electricity costs.



### **Avoid damaged hot loads with load ventilation**

Wrapping pallets of hot fill products with ventilated film allows the load to breathe, preventing rust and condensation. VentX film will also reduce cooling time of hot products as convention stretch wrap acts as an insulation for the load.



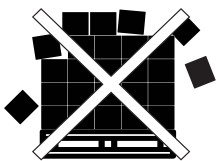
### **Eliminate film breakages**

The reinforcement strips through the film make the VentX tear resistant, eliminating all breakages. Reduce your pallet wrapping downtime and increase your warehouse efficiency.



### **Increase your stretch yield**

Maximise your stretch film usage efficiently and save on pallet wrapping costs. A 300% stretch yield means a 1300m roll of stretch film can be increased to 3900m in length.



### **Improve your load containment**

The load containment force of VentX is significantly higher than conventional film due to the reinforcements holding the pallet secure. Over 50% of pallet load damage is due to ineffective pallet wrapping, costing companies millions per year. Don't risk it, ensure your pallets are secure.



### **Reduce stretch film usage**

The VentX is guaranteed to use over 50% less film than conventional stretch film. This reinforced film with ultra-thin gauge requires less wrapping rotations while significantly higher holding force. Save the environment and save on plastic disposal costs by halving stretch film usage.

*Contact us for a **Free Trial***



## CASE STUDY

# Riviana benefits from packaging design service

Kirk Group has launched a bespoke agency, Task by Kirk, to provide consumer brands with an end-to-end design execution service, taking package design concepts to shelf-ready printed products.

Task recently worked with Riviana to rebrand the Always Fresh line of products in just two months, halving the time from the previous process and at half the budgeted spend.

Riviana Retail Strategy Manager Georgina Vergunst said she was impressed that Task was able to handle such a difficult brief so quickly, which involved producing colour-accurate press-ready artwork for a wide range of global print partners.

“Task helped us navigate the complicated world of design to print,” Vergunst said. “It just made the whole process so much easier and they were able to take care of whatever came up.”

John Kapiniaris from Task explained that providing an end-to-end service was vital in getting products to shelf faster, which had huge financial implications given the competitive retail market, where retail shelf space was at a premium and failure to launch products on time could cost businesses.

“This also runs the risk of your product being replaced by your competitor’s products or private label, with the long-term issue



of having to renegotiate new shelf space, with no guarantee your products will get back on the shelf,” he said.

Task by Kirk’s graphics specialists can advise on design suitability for printing, with the final design then rolled out across all product lines and sizes, drawing on their print expertise to ensure artwork is accurate and print-ready first time.

By being involved at the back end of the design execution process, Task helps clients to avoid mistakes that could have been anticipated, can advise of potential printing problems and can offer tailored solutions to avoid duplication and agency fees.

The company claims it saw a gap in the market that could make the packaging design and printing process more streamlined, eliminating process duplication and time-consuming errors so product is delivered to shelves more quickly.

With this service users have an opportunity to improve the quality of the final printed product, reproducing colours and designs to meet the original brand vision.

*Task by Kirk*  
[www.taskbykirk.com.au](http://www.taskbykirk.com.au)

## Weather-resistant bag packing system

The BEUMER bag-in-bag system quickly packs filled paper bags individually or in groups with a weather-resistant plastic film. This protects the contents against moisture, dust, insects and other environmental influences during storage and transport. It is easy to integrate into existing filling and packaging systems.

The impermeable film keeps dust from escaping from the filled bags and prevents product losses. The films have thicknesses of 30 to 100  $\mu\text{m}$ . The outer packaging in the paper bags does not require an intermediate layer made of PE, which increases filling performance.

Offered to users in cooperation with Tentoma, the product has a wide range of uses. The technology is suitable for goods with lengths of up to 8 m and product circumferences of 600 to approximately 5600 mm. Thus the system can also be used for bar stock, insulation materials or consumer goods. Users can integrate it seamlessly into their work processes by installing it in the existing feeding line.

The system is designed for inline packers with a capacity of up to 800 bags/h. The flexible system can be configured for three different applications: a semiautomatic insular solution; a fully automatic depalletising, packaging and palletising line; or an integrated solution in which machines can be switched on individually.

**BEUMER Group Australia Pty Ltd**  
[www.beumer.com](http://www.beumer.com)

## Multilayer film with sealing capabilities

Coveris has developed a multilayer film with sealing capabilities that enables current polythene-lined packaging trays to be more easily recycled.

Technical engineers have worked to formulate a thin, multilayer, polyester barrier solution that enables plastic lidding film to be heat-sealed direct to the packaging tray through capabilities within the material. Traditionally, film is sealed to the pre-lined tray using a polythene (PE) bonding layer, which currently makes the PET tray more unlikely to be recycled.

The finished format offers a sustainable, high-quality, high-performance product for tray packed goods.

The packaging has been developed in collaboration with Tulip. The product is formulated using nine-layer extrusion technology and converted to form a high-performance laminate, and delivers the same, if not better, seal integrity, visual clarity and shelf-life benefits as before. The film also uses burst-peel functionality to offer a more consumer-friendly, easy-open product.

**Coveris Australasia**  
[www.coveris.com](http://www.coveris.com)

## Junk food should have graphic warnings: study

Cigarette packaging uses hard-hitting graphic images as a deterrent to smoking, so why shouldn't junk food do the same?

A poor diet deteriorates your health over time and can lead to obesity and obesity-related chronic diseases like diabetes and heart disease, but a study has found that mandatory health warnings may encourage consumers to make healthier food choices. And apparently, the more negative the message, the better the outcome.

Researchers at the University of Melbourne and Cancer Council Victoria monitored the brain activity of 95 hungry participants who were shown images of 50 snack foods ranging from chips to fruits. They asked participants to rate how much they would like to eat each food at the end of the experiment, and repeated the exercise after showing them a number of different health warnings.

Negative text combined with images was twice as effective at prompting participants to exercise self-control compared to text-only messages, or the same images with positive text.

University of Melbourne researcher and study co-author Stefan Bode explained that the food industry relies on positive cues that promote food, such as making it look appetising. Since these cues are dangerous when it comes to unhealthy foods, this research suggests using cues to discourage consumption. For example, an image of a diseased heart on a chocolate bar would make it significantly less appealing.

"The study shows that if you want to stop people choosing fatty and sugary packaged foods, health warnings actually work," said Bode. "It sheds light on the mechanisms in the brain that underlie the effects of health warning messages on food processing."

While products often display the sugar, salt and fat content on the back of packaging, this is not enough to prevent consumers acting on impulse. The Health Star Rating system, introduced in 2014, is a front-of-pack labelling system that rates the healthiness of products, and Cancer Council Victoria behavioural researcher and study co-author Helen Dixon called for the government to make it mandatory.

"Strong cues, like anticipated taste, tend to work on us in a more unconscious way, and therefore health messages need to disrupt these more impulsive, hedonistic responses to foods and make people consciously consider the health implications of their choices," Dixon said.

The research is published in the journals *NeuroImage: Clinical* and *Appetite*.



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## Foodmach stretching into automatic pallet wrappers

Pallet stretch wrappers from Italian company Robopac are being added to Foodmach's range of packaging line automation design and turnkey solutions. Now Foodmach will be able to supply complete end-of-line packaging solutions to Australian manufacturers.

Foodmach will be responsible for sales, service and support of all Robopac fully automatic

stretch wrappers in Australia and also have access to the complete range of Robopac case packers, including Dimac and Prismatic.

"Robopac fully automatic pallet wrappers come with revolutionary cube technology," explained Tim Baron, Product Manager at Foodmach. "This intelligent technology automates the pallet wrapping process and provides exactly the right amount of film, at the right position on the load, with the right containment force to correctly wrap loads and ensure that they reach customers in as-made condition. They also reduce film usage by up to 55%."

Smart technologies like Robopac cube technology allow Foodmach to deliver on its vision to give packaging line managers more speed and control than ever before.

"This announcement follows on from our distribution agreement with Markem Imaje in December last year and endorses Foodmach's position as a highly respected and capable partner for premium packaging automation suppliers from Europe," said Foodmach Chief Customer Officer Earle Roberts.

"All new solutions complement our ability to design and deliver a complete packaging line solution, from end to end, with local automation, engineering and manufacturing expertise supplied from our Echuca factory," he continued.



## Scent permeation through induction-sealed closure liner

A patent has been granted to US company Tekni-Plex for its Sniff Seal technology, which is the first liner to enable scent permeation through an induction seal closure liner without affecting the seal or compromising the contents.

This technology will enable consumers to experience a scent in the retail aisle without compromising the seal or the product contents. The technology is suitable for use in food, beverage, personal care and cosmetics.

Use of this technology will mean consumers can find what a product smells like in store without breaking the seal and hence compromising the product's integrity and the tamper and/or pilfer evidence will remain in place.





## Tetra Pak turns to paper straws

In an attempt to address the issue of plastic waste, Tetra Pak has announced it is working to replace the plastic straws used in its small drinks cartons with paper ones.

Straws are an important part of portion packages, but it has come to the company's attention that these plastics are not being disposed of in the correct way. It initially encouraged consumers to push the straws inside empty cartons after use to enable them to be collected with the rest of the packaging, but this was not a successful solution to the problem.

This prompted Tetra Pak to focus its efforts on the development of a paper straw alternative.

"It sounds simple enough," said Charles Brand, executive vice president, Product Management and Commercial Operations, "but in reality, there are a number of significant challenges to producing a paper straw with the required properties."

These challenges include creating a material that is robust enough to withstand the liquid while in use, but also one that is biodegradable and environmentally friendly.

"That said, our development team is confident they can find a solution, and that we'll have a paper straw alternative ready to launch by the end of the year."

Tetra Pak's packaging is currently about 75% paperboard, and its focus on paper straws marks another step towards the company's ambition to offer an entirely renewable portfolio.

This follows other initiatives that aim to reduce plastic waste. For example, the Last Straw campaign was developed to help end the use of plastic straws and highlights the Australian venues who have made this commitment.

The UK also recently announced it is banning the sale of plastic straws and other single-use plastics, but Prime Minister Malcolm Turnbull said Australia is not making the same formal commitments. Instead, he said the focus would be on preventing plastic waste from polluting oceans.



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## Automatic inspection solution

The I 410 model from MULTIVAC Marking & Inspection is an automatic inspection solution. With high-resolution and height-adjustable line scanners and image processing, it is designed to ensure reliable marking and quality inspection from above and below. The space-saving inspection system can be used flexibly as a standalone solution at the end of a packaging machine or it can be integrated into a line.

The areas of use range from completeness checks on the packs, through to presence and position inspection of the labels, and up to checking the print — this includes pattern and character recognition, character verification and inspection of legibility and codes. The image-capturing technology enables images in high resolution to be transmitted and verified at high speeds within the packaging procedure.

It has a hygienic design for use in the food industry and is equipped with a separate transport conveyor. The packs can either be fed in manually or transferred from an upstream transport unit. Since a motorised ejection device ensures that reject packs are ejected consistently, compressed air is not required to operate the inspection system.

The system is operated via the MULTIVAC HMI 2.0. It is controlled centrally via the control terminal of the packaging machine, and all processes can be controlled intuitively on the 12" LCD touchscreen. Line Control ensures efficient line integration and enables product changes to be carried out quickly since the setting parameters for the particular product are saved in the recipe. The inspection results are also transferred to the line-motion control of the machine, so that packs detected as rejects can be tracked and ejected from the line. This ensures that only faultless packs reach the retail outlets.

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## Paper-surfaced membrane for cans

Sonoco has introduced its SoftPeel membrane, a new closure option for cans that delivers improved cut-finger protection, printable billboarding space and a more natural look and feel than all-foil options.

The multilayered, paper-surfaced membrane is easier to peel and softer to the fingers than its all-foil counterparts, especially full-panel aluminium closures.

The membranes are initially available in 401 (99 mm) and 502 (127 mm) diameters, with additional sizes under development.

**Sonoco Australia Pty Ltd**

[www.sonoco.com/sonoco](http://www.sonoco.com/sonoco)



Weigh, Wrap and Label



## WM Nano Auto Wrapper

Bench-top sized with Weigh, Wrap and Label application. The Japanese designed Ishida WM-Nano combines the features of a high end automatic wrapper in a compact unit. Easy to operate, LCD colour touchscreen and wraps up to to 15 packs per minute.



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## Cask for beverages and liquid products

Jet Technologies' cask is suitable for all types of drinks and offers a high preservation quality.

The cask can be custom printed to maximise branding on shelf and allow companies to brand their drink products without the need for additional external packaging.

The bags are flexible, self-supporting and come in 1.5, 2, 3 or 5 L sizes with a choice of aseptic options. They allow companies in Australia and New Zealand who sell fruit juice, wine, dairy, olive oil, cold brew coffee and any other liquid or beverage to maintain the quality of their product beyond a traditional bag-in-box product.

Shelf life is extended due to the film structure of the packaging, which provides a barrier to oxygen and ensures the preservation of the product for a longer period of time. For example, this permits wine to be kept for up to eight weeks in ambient environments after opening and up to six weeks after opening for many other drinks including fruit juice.

The shaped pouches have a modern look and a carry handle that helps with pouring.

**Jet Technologies**

[www.jet-technologies.com.au](http://www.jet-technologies.com.au)

# The true role of packaging in minimising food waste

Prof Pierre Pienaar\*

**W**hat I have seen and experienced in my global travels over recent years reinforces the fact that packaging plays a very important role in creating sustainable food chains.

Packaging has a very simple role; it protects products from damage, spoilage and contamination. Sadly, the current conversations have shifted the focus off the fact that packaging is at the forefront in the development of global food systems and serves an important function to transport food from paddock to the plate.

The question of 'What is the true role of packaging in minimising food waste' continues to be asked all the way around the world as consumers are having difficulty understanding the difference between food waste, packaging waste and the true purpose of packaging when talking about food. Consumers need to understand that packaging is fundamental in helping the prevention and reduction of food waste.

Unfortunately, so much of the current conversations are focused on managing the end-of-life disposal of food, instead of looking at ways of preventing the wastage in the first instance. When you shift the conversation to the food production end of the supply chain you can then focus on the reduction area

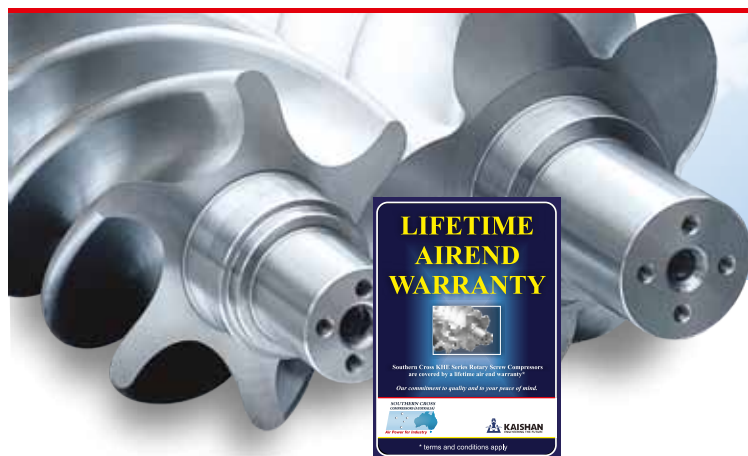
of the food waste hierarchy. This discussion then focuses on reduction of physical food waste and also the role of packaging in minimising food waste.

It is important that consumers have a better understanding of the serious and health-related role that packaging actually plays in extending shelf life, keeping food protected and not contaminated, ensuring that the food can be transported across long distances, not spoil and so much more. This is not to say that we can't take a serious look at developing more sustainable packaging along the way and it is time that the brands stopped and looked at their packaging life cycle and the environmental issues that it may cause at end-of-life.

Unfortunately, packaging alone cannot fix the dire global issue of food waste. Packaging can, however, make a VERY big difference to how much more food makes it to those in need, rather than being wasted along the supply chain. The packaging industry can't do this alone.

Before we consider:

- packaging design,
- packaging materials,
- innovative products,



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- technological advancements,
- responsibility,
- sustainability,
- reusability,
- environmental-friendliness,
- enhanced user experience,
- smart packaging technologies, or
- shelf life enhancement technologies,

we MUST understand and appreciate where packaging actually fits in the supply chain.

A third of all food produced in the world goes to waste. That amounts to 1.3 billion tonnes of food per year.

In our region, from start to finish of food production, approximately

- 30% of cereals/grains are wasted
- 45% of root foods, fruit and vegetables and oil seeds are wasted
- 20% of meat and dairy go to waste.

The commodities that one would expect go to waste most easily — meat and dairy — have the lowest percentage waste. Why is this? I ask myself why these products have managed to


reduce waste when half of all fruits and vegetables go to waste. Could this not become a major focus for the packaging industry?

Packaging can not only extend shelf life, preventing waste at retail and in homes, but it can also influence consumer behaviour through smaller portion sizes, disposal systems and re-use opportunities. While the value of packaging as a strategy to minimise food waste continues to gather attention, packaging remains an undervalued strategy in comparison to other approaches.

We require an in-depth analysis into packaging opportunities and shortfalls in the retail environment, as well as more comprehensive analysis into consumers' relationship with packaging in the home. This data should provide much more meaningful insight into how packaging can support the fight to minimise and reduce food waste.

I want to emphasise the need for education from a very early age to bring greater awareness that we CAN reduce food waste and thereby reduce global poverty. The packaging industry places a very large emphasis on the importance of packaging education and all the associated elements to creating an effective pack.

The ability to minimise food waste has enormous implications from a financial, environmental and a social perspective that could lead to significant benefits. The understanding and acceptance that packaging is a solution to food waste is emerging but there are still many negative perceptions that must be overcome before people understand the role that packaging can play in finding a long-term solution to this issue.

As a part of its commitment to the National Food Waste Strategy and the United Nations Sustainable Development Goal 12:3 Responsible Consumption & Production of Food, the Australian Institute of Packaging (AIP) is focused on providing long-term education and training on The Role of Packaging in Minimising Food Waste, Save Food Packaging, Sustainable Packaging and Lifecycle Analysis. The AIP also has a representative on the Department of the Environment and Energy National Food Waste Steering Committee and is a core participant in the Fight Food Waste Cooperative Research Centre. 

*\*Professor Pierre Pienaar FAIP, CPP is the Education Director – Australian Institute of Packaging (AIP) and the President of the World Packaging Organisation (WPO).*

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## *Saccharomyces diastaticus* detection tool

There are a variety of yeast and bacteria that act as beer spoilers and can cause unintended fermentation. *Saccharomyces diastaticus*, a wild yeast, presents a challenge for brewers and quality personnel due to its persistence in the environment, its evasiveness and its ability for spoiling beer and risking unstable packaged product.

An incident of *Saccharomyces diastaticus* can cause the need for a massive clean-up of the brewery and possibly a wide-scale recall. Detection methods such as traditional culturing and sensory perception can often be inaccurate and inefficient.

brewSTAT, powered by Veriflow, is a molecular platform that is designed to be accurate and easy to use.

The Veriflow platform utilises DNA Signature Capturing Technology to detect and quantify *Saccharomyces diastaticus* with easy-to-interpret data available in as little as four hours from sample collection. brewSTAT can be deployed on-site at any sized brewery, with only minimal equipment and training required.

brewSTAT is available from AMSL Scientific.

**Australasian Medical & Scientific Ltd**

[www.amsl.com.au](http://www.amsl.com.au)



## Tamper-proof sealing of cartons

The Tamper Evident Labeller from LSS is in compliance with the European Falsified Medicines Directive (FMD) 2011/62/EU. Part of this directive is the requirement for tamper-proof security of cartons. The labeller seals the carton. As an option, a printer and vision system of any brand can be integrated to provide each carton with a unique identification for track and trace and serialisation.

The labeller has a capacity of up to 300 cartons/min. It provides tamper-proof sealing of reverse tuck end and airplane closing cartons. The flexible machine handles cartons ranging from 50 to 220 mm in width, 15 to 120 mm in height and 40 to 120 mm in length. Both transparent and non-transparent labels can be applied. Due to its small footprint, the labeller is easy to fit into any production area, and can be used as an offline or inline unit. The user-friendly HMI makes the machine easy to operate. The product is designed with focus on minimising the time spent on batch change and line clearance.

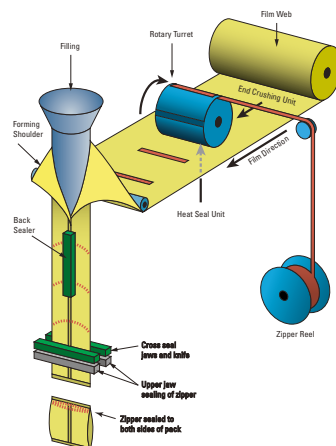
When entering the labeller, each carton's position and length is registered. The labeller can stop and restart the process at any position and still maintain a safe product register.

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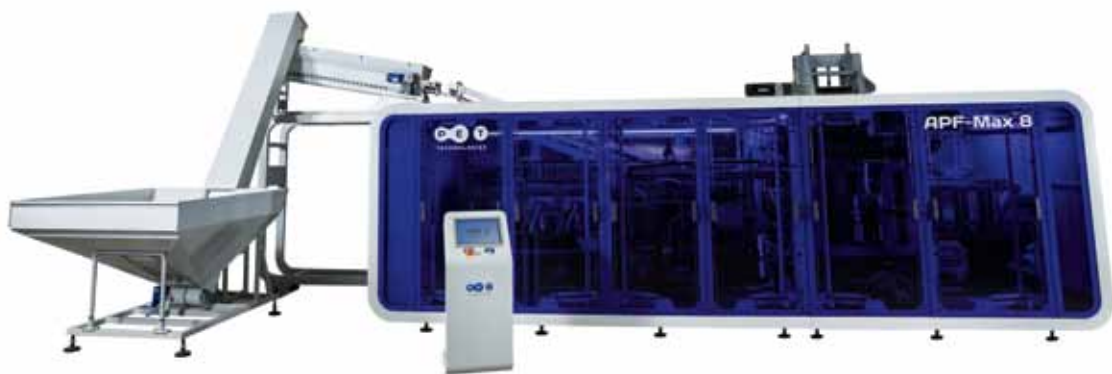
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## High-speed blow moulders

PET Technologies has announced the 4th generation of PET stretch blow moulding machines APF-Max with output range 6000–14000 bph for bottles volume of 0.2–3.0 L. The product range consists of three basic models: APF-Max 4, APF-Max 6, APF-Max 8 and its modifications.

It features a user-friendly interface, streamline form and corporate colouring, electric cabinet backside and communications connected via the top of the machine.

The series has 4-, 6-, 8-cavities configurations that match APF-Max 4, APF-Max 6 and APF-Max 8 models. All the mould cavities are separated, so users can easily install and remove one, and it takes 15 min to change the blow mould and start to produce another PET bottle format.

The automatic blow moulding machines have six servo drives to provide stable PET bottle manufacturing and high output. They are embedded in the mould closing unit, preform stretching, heater, preform transfer to the blowing part and bottle outfeed system. Automatic temperature regulation and preblow are also controlled via PLC form B&R.

The blow moulder is equipped with the special shortwave near infrared heating system. Preform heating is more efficient and fewer kilowatts are consumed. The heater itself is significantly shorter. The output is higher and its dimensions are more compact.

### PET Technologies

[pet-eu.com/pages/en/first.html](http://pet-eu.com/pages/en/first.html)

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## Beverage canning fibre laser

The Domino F720i Fibre Laser is designed to meet high-speed coding demands of the beverage canning sector, delivering legible and durable codes on aluminium cans.

The laser is IP65 rated and capable of maintaining continuous output in harsh and humid environments reaching up to 45°C and features a unique cooling system for low energy consumption.

The device incorporates a 3D power concentration — a focused optical laser beam that is distributed in short intense pulses. This produces accurate, permanently readable codes without affecting the structural integrity of the can, ensuring end users meet legislative compliance and long-term traceability standards.

The F720i applies standard codes at a rate of 90,000 cans/h and has the capability to deliver complex codes and promotional data of over 60 characters at a rate of 42,000 cans/h.

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## All-round thermoforming machine

WEBOMATIC's high-capacity all-round thermoforming machine ML-C 5600 can be smoothly integrated into automated packaging lines for medium to high capacity. Even demanding premium skin-packaging that stand out at the POS are easily produced with the product's skin version.

With the combination of the vacuum chamber machine SuperMax I and the manual shrink tank ST 40, a small and convenient shrinking line for shrunk pouches will be presented for small to medium charges. An operator places one or more packed and sealed bags on the immersion platform and triggers the immersion process so that the bag is shortly dipped into the hot water causing the pouch material to cling tightly and aesthetically to the product.

Especially if high versatility is requested, the semiautomatic tray sealer TL 250 convinces through flexibility in tray formats and simple film change for small to medium charges. The robust machine quality is visible in the design, and the integrated PLC control unit allows transparent data analysis.

Additionally, a new automatic tray sealer with skin and MAP on the same die is easily integrated into packaging lines for medium to high capacities.

**Focus Trading**

[www.focustrading.com.au](http://www.focustrading.com.au)

## Desktop label finishing system

Virgo from Label Power is a compact desktop finishing system that unwinds, laminates labels for durability, digitally die cuts, removes excess label material around each die-cut shape, slit and rewinds helping users to professionally cut and finish labels.

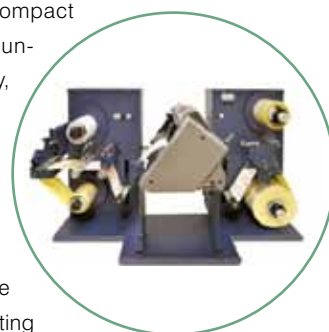
The system provides an accurate label finishing solution using cutting plotter technology with reduced dimensions. This allows users to cut different types of materials and shapes on the fly without the added cost of dies.

The unit is equipped with a cutter management tool that works in tandem with a camera forming an integrated optical black-mark registration system providing cutting speed optimisation and avoiding synchronisation issues.

The core features offer the user flexibility and variations in label design with a smooth workflow. The digital label finisher is suitable for those using digital colour label printers and presses.

**Label Power Pty Ltd**

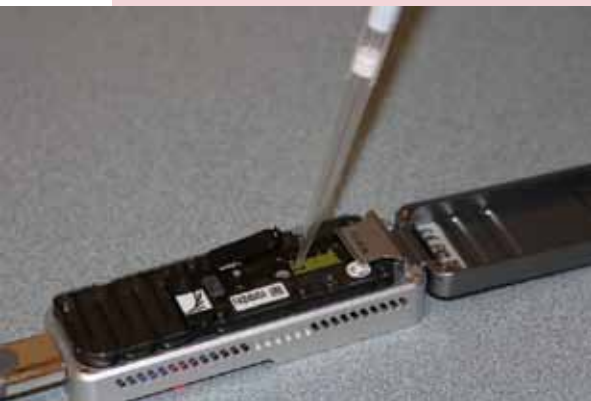
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## Faster food pathogen identification

Ensuring foods and drinks do not contain pathogenic bacteria before a product is released into the market is ideal but not always achieved. If a food is contaminated, quick, efficient pathogen detection and fingerprinting is essential in limiting the spread of foodborne disease.



Currently, detecting and subtyping pathogens are separate processes and, using standard methods, it can take up to two weeks to identify the serotype of a pathogenic *Salmonella*. Now, University of Georgia Center for Food Safety College of Agricultural and Environmental Sciences food scientist Xiangyu Deng has created a system that can identify foodborne pathogens in a fraction of the time taken by traditional methods.

Deng has combined the two steps through a process called 'metagenomics analysis'.

Traditionally, the pathogen is separated from the food sample by growing the pathogen in bacterial cultures, which takes 24 to 48 hours, Deng said.

To shorten the culture process, researchers in Deng's lab apply tiny magnetic beads coated with antibodies that pull the pathogen cells out. Then they amplify the DNA of the captured pathogen cells so they have enough DNA to sequence.

"Using a new, very small sequencing tool that's about the size of a USB drive, we can sequence while capturing the data in real time," Deng said.

Compared to the mainstream genome sequencer that produces sequencing data after running for a day or two, the small sequencer generates enough data for pathogen detection and subtyping in about an hour and a half, he said.

Deng tested the process on raw chicken breast, lettuce and black peppercorn samples treated with *Salmonella* and retail chicken parts that were naturally contaminated with different serotypes of *Salmonella*. In one case, a small amount of *Salmonella* was detected and subtyped from lettuce samples within 24 hours.

Deng's work has been published in *Applied and Environmental Microbiology*.

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# Smartphones to become detectors for foodborne illnesses

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**F**oodborne illnesses have received significant publicity recently, whether it's *Salmonella* in infant formula or *E. coli* in flour. Researchers from Purdue University may have found a way to limit the prevalence of these outbreaks by turning smartphones into on-the-spot detectors.

The Food and Drug Administration estimates there are about 48 million cases of foodborne illness annually in the US, and the most recent to gain public attention was the deadly outbreak of *E. coli* O157:H7 linked to romaine lettuce. As of 8 May 2018, it has infected 172 people from 32 states and so far has caused one death in California.

A number of emerging technologies have investigated ways to deliver quicker and easier detection of these pathogens to ensure greater food safety. Using a downloadable app and a smartphone cradle, the new technology from Purdue researchers allows the phone to be used as an on-site luminometer, an instrument used to measure light.

Rinsing the lettuce or other produce with an enrichment liquid containing a modified phage, a virus for bacteria, would infect harmful foodborne bacteria, causing them to emit a light when a substrate is added. This light is detected by the smartphone's camera through the app and a green dot appears on the screen. The researchers said the cradle on the phone maximises the




photon collection by using diffusive reflection material to help capture a maximum amount of light, which may not be visible to the naked eye.

"This technology could be used on a farm or in a food processing factory to provide on-the-spot detection," said Euiwon Bae, a Senior Research Scientist in the Purdue School of Mechanical Engineering, who developed the technology along with Bruce Applegate, a Professor in the Purdue Department of Food Science. "This rapid detection is critical for getting safe produce to consumers."

While current detection methods require sending a physical sample off to the lab — which can take several days to return results — the smartphone technology and phage can test food samples much quicker.

Applegate, the developer of the phage technology, compared it to reprogramming a computer. He stated: "We take the technology and manipulate it to detect various harmful pathogens that are present."

According to the researchers, the technology is not only useful in detecting strains of *E. coli* such as the one responsible for the US outbreak. It can also detect other foodborne pathogens that cause *Listeria* and *Salmonella* infection outbreaks, and contaminants in water.

The technology is commercialised by Phicrobe, a Purdue University-affiliated start-up founded by Applegate. 



## Portable colorimetric chlorine test kit

The Electro-Chemical Devices HCA1 Portable Colorimetric Chlorine Test Kit is suitable for testing free and total chlorine in drinking water, waste water, environmental waters, cooling towers and rinse waters in the food and beverage industry.

The portable test kit is designed to use the Micro Strip reagent delivery system. The kit is supplied with 100 test strips for free chlorine and 100 test strips for total chlorine. Test strips for combined chlorine, chlorine dioxide, high-range chlorine and peracetic acid are also available for the HCA1 Chlorine Plus meter.

The DPD test system used in the kit is accepted by most health departments because this test is USEPA (DIN Standard 38 408 G4, ISO 7393/2) accepted for testing requirements for free and total chlorine. All tests have been calibrated using certified reference standards and standard analytical spectrophotometric methods. The algorithm in the software of the test kit mirrors the AWWA, US EPA, DIN and ISO reference test methods for chlorine.

The HCA1 Chlorine Plus System, with the Micro Strip CL (DPD-1), is said to repeatedly agree with an EPA-compliant reference method greater than 99% ( $R^2=0.9989$ , 0–6.0 ppm). The HCA1 Chlorine Plus Advanced Photometric System has been factory calibrated for users' convenience. Users can expect the fixed calibrations in the meter to be valid for the life of the meter due to the long life LED, the photo cell and the software.

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### Food texture analyser

Bestech Australia has released a cost-effective texture analyser from Lloyd, the TA-1. It is easy to use and capable of providing rapid and detailed texture analysis on test applications up to 1 kN. The test system can be used to evaluate the textural properties of a wide range of products.



Textural analysis is an important step in the production process for continuous improvements and quality improvement opportunities. The TA-1 analyser is suitable for testing compressive, tensile, shear, extrusive, puncture and hardness tests within food and pharmaceutical testing applications. It is capable of measuring these properties due to the change in process variations, such as temperature, humidity and cooking time.

The device also features a large working area for testing a larger sample, thus providing flexibility for a wide range of applications. It offers load accuracy of  $\pm 0.5\%$  and a high-speed data sampling rate up to 8 kHz. Users can program up to 10 test set-ups and store up to 600 test results for easy traceability.

All purchases of Lloyd instruments include built-in test software for data analysis and enhanced performance. The advanced NexyGENPlus data analysis software is recommended for upgrade as it can interface directly with Excel, Word and current operating systems. It also provides capabilities to capture force, distance and time during the tests, allowing the calculation of some textural parameters such as: adhesion force, firmness, modulus, adhesiveness, fracturability, resilience, chewiness, gumminess, springiness, cohesiveness, hardness and stringiness.

**Bestech Australia Pty Ltd**  
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### Food and wine specific analytical solutions

The BioSystems Food and Wine Solutions range of analytical reagents and instruments for agro and wine laboratories is now available from Metrohm in Australia and New Zealand.

The Spanish company's FoodQuality and Enology reagents and instruments range includes photometric analysers (automatic or semiautomatic), colorimetric (enzymatic and chemical) reagent kits, ELISA kits and rapid tests.

The Enology line was specifically developed for wine laboratories, offering instruments and reagents designed and validated for the wine industry.

The FoodQuality line provides analytical and control solutions for various sectors within the agri-food diagnostic industry, such as: juices and other beverages, meat and processed foods, fish and seafood, milk and dairy products, cereals/nuts and derivatives, etc.

**Metrohm Australia Pty Ltd**  
[metrohm.com.au](http://metrohm.com.au)







## Near infrared analyser

FOSS's FoodScan 2 is a near infrared (NIR) analyser offering process and quality control possibilities to meet time-critical testing requirements.

Building on FoodScan, it uses rapid NIR analytical technology to give a time to result of 15–25 s and provides more parameters for labelling and quality control purposes of dairy products and meat.

Sub-scans are made simultaneously to ensure a large share of the sample is measured in a short time. This reduces dependency on the sample homogenisation step.

Quality controllers can perform a colour measurement simultaneously with compositional tests. This is achieved using NIR transmission and transreflectance technology in the one unit.

Further time savings are offered by the artificial neural network (ANN) calibrations. Based on a pool of global data, the calibration models avoid the burden of maintaining many calibration models because significantly fewer are required than with other methods.

Instrument standardisation makes it faster to install new units while networking facilities save costs on routine maintenance and reporting via remote support services such as FossAssure.

The instrument is designed for rapid installation with backwards compatibility to FoodScan. Software facilities allow calibration models to be moved onto the new platform with ease. The networking aspect allows a technician to move calibrations across multiple units and sites in one action performed from the desktop. An automatic backup of all test data ensures that results are available for traceability.

Models include a Lab TS for laboratory operation, a Pro model for use in the production environment and a Lab model with a keyboard for users not requiring the touchscreen interface.

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## Study compares performance of ATP hygiene monitoring systems

A study found not all hygiene monitoring systems produce the same quality of test results, but 3M's Clean-Trace Hygiene Monitoring and Management System came out on top.

The ZERO2FIVE Food Industry Centre at Cardiff Metropolitan University in Wales, UK, compared the performance of nine ATP hygiene monitoring systems. 3M Food Safety announced the results, which concluded that 3M's system was the only one to provide stable and consistent results across time and temperature.

Each system tests for the presence of adenosine triphosphate (ATP), an indicator molecule for biological residue that can be found after cleaning and provides an overall measure of cleanliness in production environments. They help food and beverage processors manage risk and identify areas with potential high contamination, which is why it is important that their results are reliable, consistent and able to meet demands of food manufacturing environments.

To test the stability of results of the nine systems, a known amount of ATP was applied on the swab and read repeatedly over two minutes. The researchers analysed how the results varied over time, with tests conducted at 10, 20 and 35°C.

The study revealed ATP systems vary in the quality of their results, with only the 3M Clean-Trace Hygiene Monitoring System producing acceptable results at all times and temperatures, the company said.

"In food production, starting the manufacturing process is a high-risk decision placing the health of your business and consumers at stake," said Tom Dewey, 3M Food Safety Global Marketing Manager. "A reliable ATP monitoring system that provides stable and consistent results allows you to proactively manage risk in your operation and feel comfortable making the decision to go ahead with production."

3M Food Safety said it commissioned the research to help the food and beverage industries optimise the quality and safety of their products and to support consumer protection.



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## Protect your caviar without revealing where it is

Streamr and VTT Technical Research Centre of Finland have developed a prototype adhesive ID tag based on blockchain technology, which enables valuable goods to be protected without revealing their location.

The tag is based on a smart contract, using blockchain technology, between the owner of the goods and the transport company. The contract defines the terms and conditions of transportation and storage and the fee. For the purpose of monitoring the terms of the smart contract, a range of smart sensors are embedded in the tag which identify issues such as the location, acceleration and temperature. Parties previously unknown to each other can use blockchain technology to co-produce and maintain databases in a decentralised and reliable manner.

For example, the owner of the product cannot see accurate transport information on the goods unless the terms are violated. Data is processed either in encrypted form or managed by a third party, such as Streamr, which provides platform data and smart contracts for presentation and processing.

"In the future, there will be more demand for online applications of this kind, which ease everyday life based on decentralised technology and smart contracts. Similar systems have already been tested for the needs of the healthcare sector," said Research Scientist Visa Vallivaara of VTT.

## Managing coldroom humidity saves money

In the high humidity environment of food storage and coldrooms, off-the-shelf equipment is frequently out by up to  $\pm 6\%$ . This inaccuracy can result in increased spoilage, reduced yields, decreased quality, poorer recipe repeatability and increased labour costs.

Now, a University of Vermont Extension professor has invented DewRight. This device increases humidity measurement accuracy by 67% (accuracy  $\pm 2\%$ ).

According to the inventor, Chris Callahan, this US\$300 device could save produce growers an average of \$6500 annually in improved storage conditions and artisanal cheese and meat producers up to \$10,000 a year in higher yields during processing.

Unlike off-the-shelf devices, DewRight also functions accurately at lower temperatures that food storage and processing facilities often require and does not fail in the continuous high humidity environment, as conventional versions do over time.

The device makes use of wet bulb psychrometry, where an ordinary thermometer and one that is enclosed by a wet wick are spun in the air by the user. The difference in temperature between the two — the wet one will show a lower temperature as the evaporating water cools it — indicates the amount of moisture in the air, its relative humidity.

Callahan's innovation was to make an electronic version of the mechanical device with improved accuracy in temperature measurement. The DewRight also automates the measurements, removing human error.

The new technology has been licensed and is being commercially developed, with assistance from UVM Ventures and the Vermont Agency of Commerce and Community Development, by Vermont Energy Control Systems, which has added monitoring, data logging and control technology to Callahan's device that will automate operation and allow remote access.



## Halal food companies use blockchain for traceability

Traceability in the supply chain is a concern for all consumers, but it is particularly important to ensure that halal food is from reliable and certified sources.

TE-FOOD and UK-based HALAL TRAIL recognised this, and partnered to track chickens and lambs from farm to table to confirm halal food is prepared according to Islamic law.

There are two billion Muslims worldwide and it is estimated that the global halal food market will reach US\$2.55 trillion by 2024.

The top-to-bottom solution combines food traceability with blockchain technology — where all traceability data will be stored to verify its credibility — to reassure consumers about the origins and preparation of their food. This includes physical identification materials such as security seals, and mobile apps for both farms and distributors, and consumers.

This month, HALAL TRAIL will use TE-FOOD's technology on two pilot projects that track chickens and lambs in Lancaster, Tunbridge Wells and Manchester in the UK as a reference to be implemented globally.





## Markem-Imaje and Cognex develop advanced 'Mark & Read' technology

Markem-Imaje and Cognex are collaborating to develop the next generation of Mark & Read applications for global fast-moving consumer goods (FMCG) companies.

Products with incorrect, unreadable or missing codes make traceability difficult, if not impossible, during recall situations and retailers may fine manufacturers or reject them.

Since 2015, the companies have worked together on their automated Cognex camera and Markem-Imaje printer verification solution, Mark & Read, to help companies ensure the accuracy of coding on their packages, reduce unnecessary waste and ensure non-coding-related recalls run more smoothly.

Deepening their existing partnership, both companies' research and development and commercial teams will be working to integrate their printing and reading solutions, collaborating at regional and global levels on opportunities and projects in the packaging market.

By working together earlier in the engineering design process, they aim to provide even quicker and more accurate code verification, and deliver a more intuitive user experience from set-up through to full production for manufacturers.

"We are excited to combine our Mark & Read solution and proven Cognex's vision solution," said Vincent Vanderpoel, CEO of Markem-Imaje. "This combination will allow us to capitalise on our major customer references, helping them minimise rework due to missing or unreadable text and barcodes, reducing waste from using incorrect data in printed messages and avoiding scrapped product due to incorrect packaging materials being used on the production line."

"Together with Markem-Imaje, we are building new capabilities to improve new global standards for printing product quality, eliminating production errors, lowering manufacturing costs and exceeding consumer expectations for high-quality products," said Robert Willett, CEO of Cognex Corporation.

The new generation of Mark & Read solutions is expected to be available by the end of 2018, with a range of additional improvements available in 2019.



## Canning concept could cut food loss

Food loss could be significantly reduced in the future following Tata Steel's development of its mobile canning line concept.

Whether it's through postharvest handling, processing or distribution, the United Nations Environment Programme claims that a third of all food production worldwide is lost or wasted before it reaches consumers. However, the mobile canning line concept aims to address this issue, as it would enable farmers to create a production line to make and fill cans on-site.

By processing produce immediately, this would eliminate the risk of spoiled food, which would not only reduce food loss, but also generate additional revenues.

Steven Dijkstra, Head of Marketing Packaging & Nordics at Tata Steel in Europe, explained the potential benefits the canning line could provide.

"In India, 44% of food harvested is lost before it reaches consumers through the postharvest stages, often because it simply cannot be packaged and preserved quickly enough," he said. "Tata Steel's mobile canning line will allow farmers, even in the remotest of rural areas, to preserve their harvest, producing canned foods, ready for distribution on-site. In India alone, we have the potential to save 84 million tonnes of food per year."

Dijkstra also noted that using canned foods alone was another positive outcome: "Canned foods retain high quantities of nutrients and also have a longer shelf life than their non-canned counterparts, helping to decrease food loss and waste further still."

The canning line and food processing facilities would be easily transportable as it would be housed in two trucks, allowing it to reach remote areas. Distribution trucks would also collect and deliver cans straight from the farm.

Since they are easy to produce and are durable, two-piece drawn and redrawn (DRD) cans made from Tata Steel's Protact — a specialist laminated steel with a polymer coating — would be used. The Protact circular blanks would be fed directly into the canning line and once created, they would be taken to the filling truck for processing.

After sorting the fruit and vegetables to ensure optimal quality, they would then be washed, prepared, canned, seamed, sterilised, visually checked and labelled all in situ. The trucks would be loaded with the filled cans ready for distribution to consumers.

Tata Steel is already communicating with interested parties and hopes its mobile canning and processing line will be available in the next three years.



Image credit: Tata Steel



## BlockGrain partners with Clear Grain Exchange



*BlockGrain's Caile Ditterich and Clear Grain Exchange's Nathan Cattle.*

Clear Grain Exchange and BlockGrain, an Australian agriculture and technology start-up, are working together to allow farmers who have on-farm storage to market their grain.

BlockGrain helps farmers track their commodities from paddock through to the consumer using blockchain technology. This allows for the recording and storing of millions of transactions which are securely protected in one single computer network, providing consumers with trustworthy data about the supply chain.

"BlockGrain's on-farm storage application is the first of its kind and establishes data integrity for grain stored on-farm. By linking it with a trusted platform like Clear Grain Exchange, our customers can access an open network of buyers in Australia to ensure they achieve true value for their commodities," said Caile Ditterich, CEO of BlockGrain.

"We are very excited to be working alongside the best in the business. Clear Grain Exchange have a track record of returning value to farmers by operating an open and independent exchange where all buyers can purchase grain direct from farmers. This sits well with our ethos, which is to return as much value to farmers as we can."

Clear Grain Exchange is Australia's largest online grain marketplace, and Managing Director Nathan Cattle said the collaboration will help the company address consumer requests to trade grain stored on-farm. He continued by stating that BlockGrain's applications fit well with their exchange technology.

"Integrity around grain data is important for participants to have confidence in what they are buying and selling on an electronic exchange.

"BlockGrain are a young and dynamic business looking to solve the gap of accurate information for grain stored on-farm, which is something we are motivated to support."

While BlockGrain was initially developed for the grain industry, it has also recently partnered with West Virginia's Mountain State Brewing Company to track where beer comes from.

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This versatile materials handling equipment can be used in narrow workspaces. The reach facility solves the problem of stacking over product and unloading trucks as the reach function moves the load forward.

Electronic power steering and proportional lifting and drive make the ERSP range easy to manoeuvre. Ease of operation improves operator safety and increases productivity. A maximum mast lift height of 5500 mm means it can be used in most warehouse situations.

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# Australasian Waste & Recycling Expo

**Registrations are now open for the ninth annual Australasian Waste & Recycling Expo (AWRE) taking place on 29–30 August at ICC Sydney, Darling Harbour, Sydney.**

**A**WRE connects industry professionals, service providers, product manufacturers and industry associations across the different waste streams, offering collaboration opportunities throughout the entire waste and recycling supply chain. The two-day event facilitates business opportunities for a more profitable and sustainable waste and recycling industry.

AWRE 2018 attendees can expect to discover an exciting showcase of innovative products, sustainable solutions and cutting-edge technology to collect, process and recycle waste across machinery and equipment, software and services, bins, vehicles, food and organics, and more.

The free-to-attend Speaker Series offers over 10 hours of learning. With topics including:

- The role of plastics in the circular economy
- The future of recycling in Australia
- eWaste: Re-use or repair
- Recyclable, compostable or reusable packaging

Speakers including the UK's leading plastics expert Dr John Williams, Aquapak Polymers; Tony Khoury, Waste Contractors and Recycler's Association NSW (WCRA); Suzy Cenedese, Local Government NSW; Mike Ritchie, MRA Consulting Group; Brooke Donnelly, Australian Packaging Covenant Organisation; Anne Prince, A.Prince Consulting and more will discuss the most topical trends, developments and strategies on the Australian waste and recycling landscape.

The Australasian Waste & Recycling Expo takes place on 29 and 30 August at the ICC Sydney, Darling Harbour. Attendance is free for industry professionals — visit <https://register.awre.com.au/AWRE18S/> to register. 🐮

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With Robatech's AntiSlip Gluing solution for pallet stabilisation, a hot melt adhesive application directly onto the packaging units is ensuring a stable pallet. The need of wrapping it with plastic foil and intermediate layerpads is reduced significantly so resources can be saved and costs reduced.

Lines or spirals of hot melt adhesive are applied directly onto the packaging units, ensuring that the units stick together and reducing the risk of damaged goods. It ensures safe and stable transport and storage as no shifting or slipping occurs due to the bonding. A simple depalletising with little waste is possible so it is environmentally friendly and cost-efficient.

The system can be integrated into the production process or retrofitted.

**Robatech Australia Pty Ltd**

[www.robatech.com.au](http://www.robatech.com.au)

## Bulk bag conditioner with laser safety curtain

The Block-Buster Bulk Bag Conditioner from Flexicon features a laser safety curtain that automatically stops the system's hydraulic rams, scissor lift and turntable if the laser beam is obstructed, eliminating the need for safety-hinged doors and interlock switches for operator safety.

The conditioner loosens densely packed bulk solid materials in bulk bags by means of hydraulic rams with contoured end plates that press and release opposing sides of the bag. A hydraulically actuated, variable-height scissor lift with accordion-style dust skirt and turntable allows conditioning of the bag on all sides at all heights.

The number and pressure of hydraulic ram actuations, the height of the turntable and the number of 90° rotations are user adjustable. The system controller and hydraulic pump can be mounted on the exterior of the frame or remotely.

The conditioner is intended for bulk bags containing hygroscopic chemicals, certain types of spice blends, heat-sensitive products and other materials prone to solidifying to the point at which pneumatically actuated flow promotion accessories integral to bulk bag dischargers can be inefficient or ineffective.

Available as a standalone unit or integrated with bulk bag discharging systems, the unit measures 2210 x 3378 x 1981 mm, accommodates bulk bags of all popular sizes and requires only an electrical power connection for operation.

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## SCARA robot

Epson T series SCARA robots, which have a built-in controller and are designed for maximum simplicity of installation and usability, are suitable for automating simple material handling tasks.

The T6 boosts productivity by handling payloads up to 6 kg, making it suitable for transporting larger, heavier parts or to carry multiple parts at one time.

Applications of the T series include automation of test machine loading/unloading, and as a replacement for multiple low-cost single-axis robots that take up a lot of space and require adjustment and maintenance work.

The built-in controller saves space and simplifies robot set-up and redeployment. It features a batteryless motor unit that reduces maintenance and manufacturing line downtime.

The end-effector I/O ports are provided near the end of the robot arm and supplied with 24 V power. These ports make set-up easier by simplifying cabling, power and other connections to the end-effector.

The shorter cable duct improves stability. It remains stable, with little vibration, even during robot operation, and cabling can easily be routed through the duct.

The T series can run off 100 to 240 VAC single-phase power and has 50% higher energy efficiency than earlier models.

**Motion Solutions Pty Ltd**

[www.motion-solutions.com.au](http://www.motion-solutions.com.au)



## Unbreakable reinforced stretch wraps

Omni has released the PerformX range of unbreakable reinforced stretch wrap. Claimed to be thinner, stronger and longer the stretch film features reinforcement strips which make it tear resistant. By eliminating all film breakages, wrapping downtime is reduced and warehouse efficiency increases.

Omni has also released VentX — a ventilated reinforced stretch film. The Omni VentX is suitable for wrapping products that are likely to get damaged by ripening gases, humidity, rust, mould or condensation, as well as products that need to chill or freeze quickly.



Omni claims its reinforced VentX and PerformX films will reduce stretch wrap usage by over 50%. Not only does halving film usage significantly reduce wrapping costs, it reduces environmental impact.

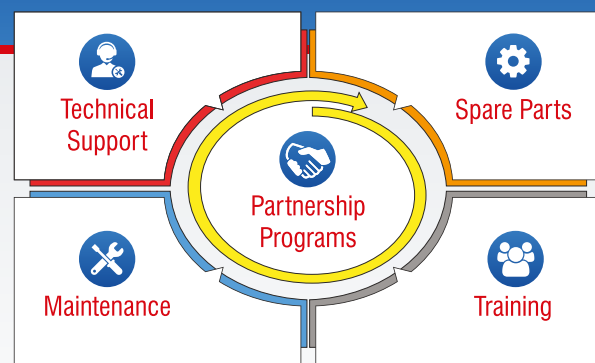
The load containment force of Omni's reinforced stretch film is claimed to be up to 60% more than conventional wrap

due to the reinforcements holding the pallet secure. Coupled with the Omni Pallet Wrapper's Power Pre-stretch technology, the yield of the Omni stretch film can increase to 300%.

**Omni Group**

[www.omnigroup.com.au](http://www.omnigroup.com.au)

## Materials Handling Solutions

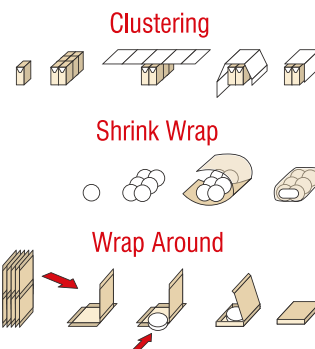


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# Coca-Cola Amatil

## chooses robotic picking solution

**As part of the automation and major expansion of its Auckland distribution centre, Coca-Cola Amatil will be installing Swisslog's fully automated robot-based order picking system, ACPaQ, later this year.**

**T**he ACPaQ technology is an evolution of Swisslog's advanced automation technology, which combines robotics solutions for palletising and depalletising with Swisslog's CycloneCarrier shuttle technology to create a fully automated process that facilitates high throughput and reliable picking of orders for logistics, distribution, food and beverage and retail applications.

Swisslog and the KUKA Group have combined their robotics and intralogistics expertise to create this fully automated solution that allows customised and scalable pallets to be created.

John Truscott, general manager – supply chain for Coca-Cola Amatil NZ, says the new system will enable the business to keep pace with increased demand along with rising expectations on the quality of customer deliveries.

"The whole picking system will be fully integrated using Swisslog SynQ software, which also controls automated delayering of single product pallets into individual cases," he said.

Amatil has been using a fully automated pallet storage system in both Auckland and Northmead since 2007 and the expansion into robotic picking allows the company to meet rising customer demand while reducing costs and improving quality, efficiency and predictability in its operations.

The heart of the new system will be three Swisslog RowPaQ robot cells, which can each handle up to four cases simultaneously and stack up to 1000 cases/h into multiproduct pallet loads ready for customer delivery.

"This is a far higher throughput than existing mixed-case robotic palletisers, which greatly improves operational efficiency," said Sean Ryan, head of sales and consulting, Swisslog. "These robots also have unique grippers designed for fast, gentle and accurate handling of almost any carton, shrink-wrapped or foiled package. The solution is completely scalable and additional RowPaQ cells can be added to the system to increase throughput as required."

The solution also includes Swisslog's multilevel shuttle storage system, CycloneCarrier, which quickly delivers sequenced cases to the robots, all linked with pallet and case conveyors.

The ACPaQ replaces a manual, voice-directed picking system but will link with the existing automated pallet store to create a seamless operation. It can be used in ambient-temperature and chilled warehouse zones and can handle almost all types of cartons, shrink-wrapped or foiled packages, and pallet types used in retail and beverage industries.

Swisslog Australia  
[www.swisslog.com.au](http://www.swisslog.com.au)





## Oil-free air compressor range

Atlas Copco has provided food and beverage manufacturers with an entry-level oil-free air compressor. The ZT Classic range air compressors are simple and easy to install making them suitable to replace existing oil-injected screw compressors for manufacturers wanting to convert to 100% oil-free technology.

The range has a high level of purity and is Class 0 certified, ensuring that there is zero risk of oil contamination. The total cost of ownership has been minimised, and the compressor provides reliability and performance for customers.

Users have the ability to monitor, control and maximise the efficiency of the compressor by using the Elektronikon operating system. This monitors the conditions of the compressor and regulates system pressure.

The variable speed drive (VSD) option provides greater energy savings by matching the output of the compressor to variations in plant demand and eliminating wasted energy.

The range is available from 55 to 160 kW, and includes a VSD option starting from 75 kW.

**Atlas Copco Compressors Australia**

[www.atlascopco.com.au](http://www.atlascopco.com.au)



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# Achieving integrated supply chain management

*Poul Lorentzen, General Manager, Consoveyo Singapore*

In the food and beverage (F&B) sector, the warehouse is an important component in efficient supply chains, and gaining control of inventory is a core issue facing many manufacturers.

**T**he top three challenges that the F&B sector faces regularly are food safety, product traceability and shorter response times, with food safety being the most important. Food safety is an industrial concern as there can be major repercussions if it is handled poorly.

## Food safety

Different types of food ingredients and finished food products have different storage and handling instructions that can be quite specific. In the warehouse factors such as first-in, first-out (FIFO), location, climate, humidity levels and storage temperatures must be addressed if manufacturers are to avoid ending up with product that is unfit for consumption.

## Product traceability

An integral function in the F&B industry, traceability requires information covering delivery and shipping activities and even expiration dates on ingredients and finished food products. Appropriate warehouse technologies such as an efficient warehouse management system (WMS) can help support product traceability and also accelerate responsiveness in times of product recall.

In the event of a product recall, the WMS needs to be able to provide the overall enterprise resource planning (ERP) system with all the necessary details to effect an efficient recall. This way unnecessary losses — like wastage of resources, time and energy — can be minimised.

## Shorter response times

Where response times are concerned, with retail stores managing smaller volumes of inventory, the pressure is on food manufacturers to store and manage more small-quantity deliveries in a shorter amount of time. This can be challenging for F&B companies without a flexible, robust WMS to handle the demand.

## Technologies for the F&B warehouse

With automated solutions such as WMS and order picking technologies, barcoding, radiofrequency identification (RFID), as well as automated storage and retrieval systems (ASRS), F&B companies can effectively mitigate the three challenges mentioned, and maintain high standards of quality control.

Automation is therefore a viable solution that increasingly adds value to the F&B industry.

By incorporating automation within F&B processes, manufacturers can derive benefits such as increasing business productivity, minimising human errors, safeguarding workplace safety and raising food safety and hygiene standards.

## Warehouse management systems

To maximise warehouse operation efficiency, savvy F&B manufacturers today employ various forms of the WMS. As a pillar of support within the logistics network, the WMS is increasingly finding its place of importance within food supply chains.



The essence of a WMS is based on its ability to connect stores and distribution centres with warehouses, as well as to coordinate shipping and ground transport. Information is collected across these multiple logistic points and then compiled into a centralised database that allows companies to track inventory movement.

Additionally, the visibility of the WMS enables companies to maintain inventory control and uncover areas for improvement, which are of great importance to F&B manufacturers.

#### **Order picking technologies**

Order picking technologies such as pick-to-light technology, voice technology, goods-to-person systems etc have been on the market for a while, but of late, they have been garnering more attention as demand for automated logistic solutions has grown. Although each technology is different, all of them integrate automation to achieve higher accuracy and productivity levels and facilitate in simplifying the warehousing process to bring about higher efficiency.

Just as warehouses can be customised, order picking technologies can also be tailored to individual business operations, providing a variety of options to enable businesses to fully optimise and leverage on their particular strengths.

However, companies should consider the volume of picking, profile of orders, capital investment budget and space


allowance its warehouse offers before deciding on an order picking technology.

#### **Automated storage and retrieval systems**

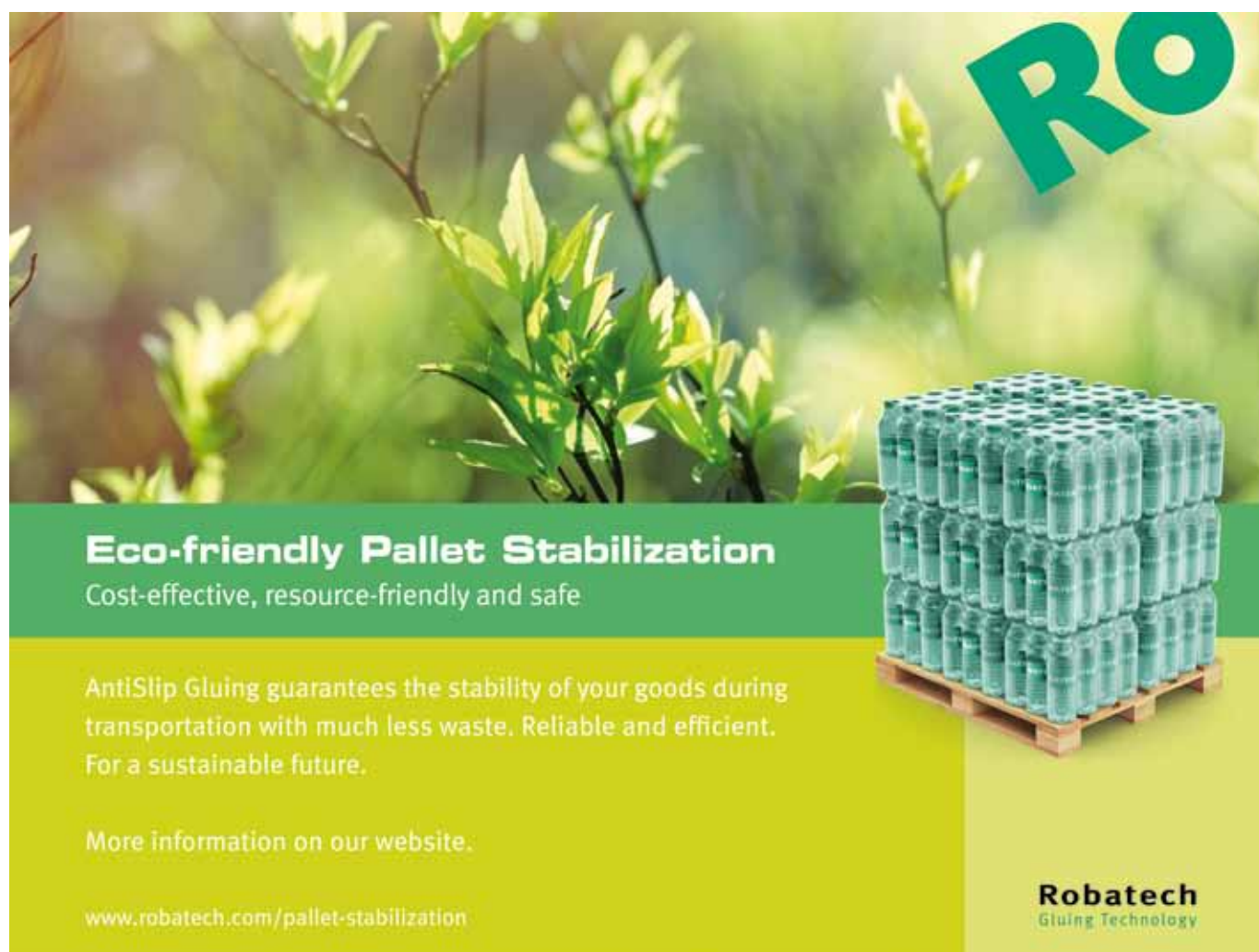
In a business arena fraught with stiff competition and ever-present threats to survival, the ASRS can potentially help F&B manufacturers cope with rising business pressures, increasing labour costs, intensified calls for safety and the need for tighter security. On top of more productive sorting and retrieving processes, the ASRS is particularly useful in minimising the warehouse footprint as it offers innovative storage solutions.

Utilising vertical space within a warehouse, the ASRS is capable of handling and processing a higher volume of orders in a given period of time and space.

#### **Meet market demands with optimised warehouses**

As the F&B industry continues to expand, warehousing solutions will continue to become more advanced to cater to increased market demand, and professional systems integrators like Consoveyo will continuously develop and provide innovative solutions for integral warehousing functions to meet these logistics and material handling needs. 

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# Overcoming challenges experienced with sleeved grate magnets

**In the past, stainless steel sleeves on the outside of magnet grates, drawers and cartridges were commonly used by the food industry. Today, while still utilised in some food processing operations, many industry professionals do not perceive them as being as sanitary or as effective as other grate magnet designs — despite their easy-cleaning operation.**

**A**n increased concern for food safety and sanitary systems means that sleeved grate magnets are somewhat a concern and can possibly have a negative effect on foreign metal fragment control. This highlights these concerns and provides alternative magnetic separation solutions — but first, it is important to understand how stainless steel sleeves work.

### What are magnet sleeves?

Magnet sleeves are thin stainless steel covers that are positioned over magnet bars for drawer and grate systems that are in contact with a product flow. Magnet sleeves are typical of old-style grate-in-housings or drawer magnet systems. The magnet is inserted into the stainless steel sleeves, meaning that collected metal contaminants are retained to the outside of the sleeve, not to the magnet rod itself.

In an attempt to create a more efficient and simple cleaning process, magnetic separator manufacturers introduced the sleeved grate magnet design — and in effect, it works. To clean a sleeved grate magnet, all plant operators must do is remove the sleeve and magnet assembly from the housing, then pull the magnet out from inside of the sleeves... and just like that, the collected metal fragments drop off!

Manufacturers and suppliers of the sleeve design would market benefits such as these:

- Rapid and effortless cleaning — with no wiping or brushing required.
- Minimal product loss.
- Protection of magnet bars from abrasive wear.
- These features would be very attractive to plant operators and seemingly provide an answer to troubles associated with cleaning magnets.

So why are magnet sleeves troublesome?

### Disadvantages associated with sleeved grate magnets

Regardless of these 'benefits', sleeved magnets inherently carry several problems. Some of the most prevalent consist of:

- Unhygienic design.
- High risk of recontamination.
- Loss of magnet retention.
- Prone to wear and damage.
- Jamming.

#### Unhygienic design

Magnet sleeves are a breeding ground for bugs and bacteria. Food product (or any type of contaminant for that matter) that is entrapped between the sleeve and the internal magnet can trigger mould and bacterial growth. This is a serious sanitary concern and the justification for sleeved magnet configurations being excluded from the HACCP International Food Safety Magnet Standard 0909MAGSEP 1-2010.

#### High risk of recontamination

There is a high risk that collected metal fragments may recontaminate the product if the magnet sleeve assembly is not fully removed from the product stream before cleaning is initiated. In addition, some poor designs of these systems allow for the magnets to be extracted from the sleeves while the assembly remains positioned in the flow of product.



“ With food safety being a top concern, the need for easy-cleaning magnets evolved into the need for easy-cleaning magnets that are sanitary, robust and hold minimal risk of recontaminating the product stream.

”

This presents a highly dangerous risk (and almost certain chance) of captured metal fragments being discharged back into the product.

#### Loss of magnet retention

As explained earlier, sleeves are positioned between the product flow and the magnet bars. Regardless of how thin the sleeves are, they still have a negative effect on the surface strength of the magnet, and therefore impact on the magnet's ability to retain weakly magnetic fragments.

#### Prone to wear and damage

This is a concern in all applications, but especially those of abrasive nature such as grains and seeds. Sleeves are required to be very thin to allow for adequate magnet strength. Due to the fragility of thin sleeves, the likelihood of damage and wear is high. If the outer sleeve becomes damaged or dented, the inner magnet can become jammed, which can cause consequent wear to the inner magnet and create cleaning difficulties... again, leading to hygiene concerns.

#### Jamming

As mentioned in the previous point, the inner magnet can become stuck inside the sleeves. This can cause great difficulty during the cleaning process and create OSHA risks if operators attempt to forcefully pry apart the jammed assembly. While in their time sleeved grate magnets were a revolution to ease cleaning of magnets, they are now considered outdated in most food applications due to food safety concerns, OSHA and other important considerations.

So what magnetic separator designs are an advancement on sleeved grate magnets, and why?

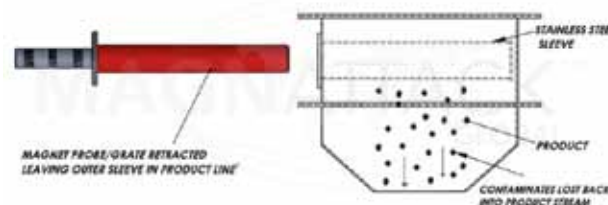
#### Overcoming problems associated with sleeved grate magnets

While the sleeves satisfied the industry's desire for an easier cleaning process, they created several questions and difficulties. Food processors would ask:

- How can we keep our magnets sanitary?
- How can we reduce the risk of recontamination?
- How can we prevent sleeves from jamming?

With food safety being a top concern, the need for easy-cleaning magnets evolved into the need for easy-cleaning magnets that are sanitary, robust and hold minimal risk of recontaminating the product stream.

One response to this need is the RE80 RAPIDCLEAN Easy-Clean Grate Magnet.



Why?

- Swing-out or swing-away design means cleaning is performed wholly outside of the product area — collected fragments fall into a tray rather than back into the product stream. The RAPIDCLEAN Grate Magnet cannot be cleaned while in the product stream.
- The food product is in direct contact with the magnet bars — in addition to presenting higher magnet retention strength, this also eliminates the risk of bacterial contamination forming between the magnet and the sleeve.
- No internal ledges or supports — once again, a common hiding place for product build-up, bacteria and mould is removed.
- Single bar cleaning method — eliminates the risk of drawer jamming, and the consequence of magnets not being able to be cleaned properly.
- DURA-SLIK abrasion resistance — patented technology to shield against damage and wear caused by abrasive products. Self-cleaning MAG-RAM grate magnets are also favoured in the food industry as an alternative to conventional grate magnets. The automatic cleaning process removes the need for manual human operation.
- No risk of human ingress to the product stream (which may cause bacterial contamination).
- Elimination of OHS/WHs issues experienced with lifting heavy grates for cleaning.
- Unique DURA-SLIK abrasion reduction technology equalises abrasive wear on the surface of the magnet.
- Elimination of metal fragment issues caused by operator error during cleaning.
- No need for operator cleaning schedules as automatic cleaning can be performed before, during and after production runs.

With the development of grate magnet systems, such as the RAPIDCLEAN and MAG-RAM, the food industry can be assured of the highest level of metal contamination risk reduction without risking important sanitary and food safety considerations.

As with all MAGNATTACK equipment, the RAPIDCLEAN and MAG-RAM are certified by HACCP International and conform to current industry food safety standards.



Magnattack Global  
www.magnattackglobal.com



### Compact wheel-type scissor lifts

Toyota Material Handling Australia's Huski SV-E Skytower series consists of easy-to-use, compact, wheel-type scissor-lift work platforms, with a maximum working height of 9.68 m and maximum load capacity of 450 kg.

The scissor lifts have both indoor and outdoor ratings (except SVO8E1NL) for worksites, including building fit-out, maintenance tasks and painting.

Features include a sliding extension deck, AC drive motor to ensure long operation times, joy-stick type upper control steering switch and a lower control panel on the chassis.

They have the lowest floor height in the segment and a lower overall height than the previous model — for greater ease in climbing onto the platform.

The battery for these electrically powered platforms is maintenance free — it does not require refilling of the water.

**Toyota Material Handling Australia Pty Ltd**  
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### Sit down reach trucks

The RBF14-16-20CA series Mitsubishi sit down reach trucks are available from MLA Holdings. The trucks come in three models, each powered by a 48 V traction battery. The 1.4-, 1.6- and 2.0-tonne models all use AC motor technology for greater power efficiency and lift heights of up to 10 m.

Three important features are the control system, smooth operation and safety.

A more optimised operator experience is provided by the SICOS-AC control system that integrates the hydraulics, travelling and steering functions. Also integrated is a self-diagnostic function that constantly monitors for malfunctions. Any faults discovered are communicated via diagnostic codes, making it easy to identify the problem and rectify it.

AC motor technology delivers a smooth, powerful drive and low maintenance costs. A regeneration function charges power back to the battery through plugging, coasting and braking to ensure longer operating hours from one charge.

Integral side shift is a standard feature, while steer by wire 360° steering means there is no need for switch back.

The Operation Interlock System deactivates travelling when the operator is not seated. A Neutral Safety Feature prevents sudden movement should the accelerator or hydraulics be accidentally activated, while a sensitive lift speed control automatically slows lifting and steering when the truck is above a certain speed. Direction control, horn and emergency stop button are located ergonomically on the armrest console.

**MLA Holdings Pty Ltd**  
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# Bottled water company

quenches its thirst for high-pressure compressed air

PET blow moulding relies on an efficient supply of compressed air — here's how E'stel Water managed its air supply.



E'stel Water is a premium alkaline water that is sourced and bottled in Nelson, New Zealand. The artesian water comes from the snow-capped mountains of New Zealand and travels underground, 895 metres below the surface of the Waimea Plains, where it filters through various minerals. E'stel then extracts this high-alkaline water, before transporting it to a modern purpose-built bottling plant, where it is bottled, capped, labelled and packed ready for global distribution.

The uniquely shaped plastic bottles that this high-alkaline water is packaged in are manufactured on-site using a PET blow moulding machine. As demand for E'stel Water has steadily grown since the company was established just three years ago, so have the requirements for the bottling plant. This led to the recent investment into a much larger capacity PET blow moulding machine.

Responsible for manufacturing the water bottles, the PET blow moulding machine relies on an efficient supply of compressed air. At certain points within the process, compressed air needs to be pressurised up to 40 bar. This inflates the soft PET (polyethylene terephthalate) plastic into a mould cavity which takes the desired shape and size of the water bottles. With a standard industrial compressor reaching around a 10 bar pressure, a booster compressor is therefore additionally required at those points in the production process where this high-pressure compressed air is required, to boost the air pressure up to the desired level of 40 bar.

The new PET blow moulding machine at E'stel is able to blow a staggering 11,000 bottles per hour (BPH). As it is a much larger system than what the company had previously, a new compressed air system was therefore required to meet this increased demand for compressed air.



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“The new PET blow moulding machine at E'stel is able to blow a staggering 11,000 bottles per hour”



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Wayne Herring, co-founder and director of E'stel Water, called on existing and local compressed air specialist PSL Total Air to present a suitable solution. In order to meet both the low- and high-pressure compressed air demand of the new PET blow moulding machine, PSL recommended and subsequently installed a complete compressed air system that included a Kaeser CSD 105 rotary screw compressor and a Kaeser DN 22 series booster.

The DN 22 booster comes as a compact, plug-and-play turnkey package. These completely unique integrated booster systems are delivered and configured to provide a system that is ready for immediate use.

All DN series Kaeser boosters are equipped with premium efficiency IE3 class drive motors which comply with and exceed prevailing Australian GEMS regulations for three-phase electric motors. Along with the generously dimensioned axial fan, which also assures reliable temperature control, this contributes to the booster's cost-effective energy usage.

For all-round reliability, the DN series of boosters from Kaeser also come with an integrated Sigma Control 2 controller as standard, which delivers efficient control and monitoring of the compressor operation. This greatly simplifies the diagnostics process for precision service and maintenance work. They can also be connected to a monitoring system, such as the Sigma Air Manager 4.0 master controller, allowing full integration into an Industry 4.0 environment.

The DN series of boosters from Kaeser are available with initial working pressures of 3 to 13 bar with final working pressure 10 to 45 bar, motor power 22 to 45 kW and free air deliveries 2.9 to 19.6 m³/min.

“We already had two standard-pressure Kaeser Aircenter compressed air systems being used for various other pneumatic applications within the facility, so we knew these compressors were reliable — something that is very important to our operation,” said Herring. “When we started researching high-pressure compressed air solutions, a lot of products on the market seemed to be manufactured using quite dated technologies, and the replacement of parts would have worked out to be very expensive. With the Kaeser DN 22 booster we were presented with a cost-effective and state-of-the-art packaged solution.

“PSL was able to tailor a compressed air supply system to meet our exact needs, and it is already proving to deliver an energy-efficient and reliable supply of compressed air on demand. Their after-sales service has also been fantastic.”

Kaeser Compressors Australia  
www.kaeser.com.au





# processing





### Clog-resistant tank washing nozzles

The HydroClaw nozzle is a clog-resistant tank-washing alternative to a static spray ball that quickly cleans tanks, eliminates maintenance downtime associated with clogged spray balls and has no moving parts.

It is suitable for tanks up to 3 m in diameter often found in the food, wineries, brewing, beverage, chemical and personal care industries where cleaning with reduced cycle times and low water, energy and chemical consumption are important considerations.

The Bete HydroClaw nozzle has a clog-resistant design with no moving parts that allows passage of particles 7 mm in diameter, three times the free passage of a comparable spray ball. It is made from FDA compliant 316L stainless steel for use in food-grade and sanitary clean-in-place (CIP) applications. It reduces overall water consumption compared to a static spray ball with an optimal cleaning performance achieved at 30 psi (2 bar).

The HydroClaw is a self-draining and flushing nozzle that has a vigorous rinsing action and quickly flushes solids and contamination from vessels with a complete 360° omnidirectional coverage.

**Spray Nozzle Engineering**  
[www.sprayingsolutions.com.au](http://www.sprayingsolutions.com.au)

### Cylinder with lock unit

The MWB Series cylinder from SMC features a separate lock unit that has been designed with the operator in mind. Versatility and simplicity are key to this design with installation and maintenance time kept to a minimum.

MWB features a detachable lock unit that is easy to replace. The lock can be manually operated with a hexagon wrench and the unlock status can be maintained without the need for pressurising the unlock port.

It offers flexibility with operators able to use the cylinder with or without the locking function. Users have the option to order the lock unit separately, so it can be placed with other cylinders and components, such as actuators.

It is simple to install, use and maintain, making it a suitable component for those seeking a user-friendly safety solution.

The MWB has a holding force of up to 6080 N and a stopping accuracy of  $\pm 1$  mm. This is suitable for automation and manufacturing industries that require drop prevention or intermediate and emergency stops along the rod movement.

**SMC Australia | New Zealand**  
[www.smcanz.com](http://www.smcanz.com)



### Integrated data management tool

The tna intelli-sys <sup>IPS</sup> 3 is a fully integrated, high-performance data collection and reporting tool to provide manufacturers with insights into all their production processes. With the new software, food manufacturers will be able to use a single, standardised platform to collate, visualise and evaluate live and historical information from every part of the production chain and across multiple locations.

By integrating data from every process and at every site in a single-plant management system, the software increases visibility, reduces administrative tasks, optimises processes and improves traceability, resulting in a smarter and more transparent manufacturing process.

Compatible with both PLC and PC-based technology, the integrated Production System (IPS) easily integrates with all existing tna and third-party equipment. It is scalable, transparent and cost-effective software that provides users with visibility over every step of the production line, either locally or remotely through a simple, user-friendly web-capable interface.

The system's real-time data acquisition capabilities mean faults are detected more quickly than humanly possible, ensuring downtime and waste are kept to a minimum, while food safety and product quality are maintained. The collation of detailed historical data, such as batch scheduling, tracking and tracing, can be used for both internal communication purposes and as an external tool to prove regulatory compliance.

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## Food coating system



AccuCoat Pan Spraying Systems can assist those in the food industry to help apply uniform coating, no matter the product or the production line set-up. It is suitable for candy, confectionery or chocolate for an even, consistent coat throughout every batch.

The standalone unit comes with a variety of features including closed-loop temperature control and automated control of spray timing to ensure desired flow rate. It is also suitable as a mobile solution for businesses dealing with smaller batches and R&D labels.

Some of the benefits of this system include an estimated 50% reduction in coating waste, batch times being halved as well as maintaining consistent coating uniformity. The system includes an AutoJet spray controller, double-jacketed pressure tank and a flexible jacketed hose.

**Spraying Systems Co Pty Ltd**  
[www.spray.com.au](http://www.spray.com.au)

## Widescreen IP65 panel PC

The Advantech SPC-1881WP is an 18.5" widescreen, multitouch stationary panel PC with an Intel Core i3-4010U 1.70 GHz processor, specifically designed to provide easier operation and to boost productivity in areas that require frequent jet washing.

A slender, elegant aluminium housing not only emphasises modernity but also offers all-around IP65 protection, displaying high mechanical stability and reliability. M12 connectors and the integrated VESA connector allow the device to withstand high water pressure from cleaning and offer a high level of water-proofing in humid environments.

In areas such as food and beverage, and chemical manufacturing where frequent cleaning is a necessity, the SPC is suitable as the device and its connectors are protected against dust and water. This enables them to survive the rigours of jet washing and scrubbing while they are hung on either pedestals or pendants.

It features a wide screen with a ratio of 16:9, providing 40% more screen area than 4:3 displays. With the addition of multitouch capabilities, it provides even greater control and viewing of SCADA information.

All of this is made possible with the inclusion of an Intel Core i3-4010U 1.70 GHz processor with independent graphical processing unit, which provides support for Windows 10 and DirectX11 so it can handle more complex and detailed graphics.

**Advantech Australia Pty Ltd**  
[www.advantech.net.au](http://www.advantech.net.au)



## Digital pressure peak gauge

Bestech Australia has introduced LEO 1 — the microprocessor-controlled digital pressure peak gauge from Keller. The device is able to detect pressure peak under short durations (~0.2 ms) and is suitable for measuring burst pressure of PET bottles in the food and beverage industry.

The LEO 1 offers a user-friendly interface with access to the entire range of functions. The digital display automatically updates twice every second, showing the measured value and the maximum or minimum value attained. The user can also choose from a choice of five different measurement units and neutralise the stored extreme value at the start of recording. It is available with an IP 65 housing and an optional protective cover for outdoor operations.

The device has dual operational modes; normal or continuous. Under normal operation, the device switches off automatically after 15 minutes of inactivity to extend battery life when continuous operation is not required. Under continuous operation, it is capable of operating 1400 h continuously in manometer mode and up to 180 h in peak value mode. In addition, LEO 1 has a unique zero tare feature, which allows the user to set to zero at any given pressure. This gives the actual value as pressure deviation from the zero tare, which is a useful feature in practice.

Key features include: operating temperature 0 to 50°C, measurement speed 5 kHz, pressure range -1 to 3 bar up to 0 to 1000 bar and ATEX approved for use in hazardous environments.

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## Meat processing plant reduces its environmental impact

Pennsylvania-based meat processing and packaging company Nicholas Meat plans to reduce its environmental impact by installing Global Water & Energy's (GW&E) industrial wastewater treatment system and waste-to-energy technology.

GW&E's MEMBROX aerobic membrane bioreactor technology and RAPTOR system will enable Nicholas Meats to upgrade its management of liquid and solid wastes generated in its facility, and improve its environmental footprint.

"You don't need to be a big company to benefit from this technology. Paunch and manure are rich in biogas and are often just left for composting or land disposal in Australia and New Zealand, when that biogas could be a source of ongoing profits instead," said Michael Bambridge, Managing Director, CST Wastewater Solutions.

"Utilising the residuals from production as a resource, rather than treating them as wastes, will generate significant value for the Nicholas Meat plant as well as the surrounding



The MEMBROX wastewater treatment plant aims to reduce the company's impact on the local community by eliminating odours from the existing storage of wastewater, and reducing truck traffic at the facility. According to GW&E, it will generate an effluent of sufficient quality for stream discharge, as well as for a variety of potential re-use functions, such as irrigation, and multiple forms of recycled water use within the actual factory footprint. This will reduce its impact on the local aquifer.

RAPTOR (Rapid Transformation of Organic Residues) is a pretreatment-enhanced form of anaerobic digestion, and this part of the plant is designed to turn organic substances into green energy in the form of biogas. This is used to replace fossil fuels at food and beverage plants globally, including dairy, brewery and municipal waste-to energy plants.

community, and will help to transform Nicholas Meat into a truly 'green' company and reduce their dependence on fossil fuels," he continued.

RAPTOR technology — developed by Global Water Engineering, the parent company of GW&E — was recognised by the Institute of Chemical Engineers (IChemE), winning the global green energy award in 2014.

GW&E Vice President Ian Page described it as "world-class" and stated, "The standards of environmental protection — and reduction of environmental footprint specified by Nicholas Meat — are a credit to the company as an efficient, sustainable and overall good corporate citizen."

The facilities are scheduled to be completed this year.

*Global Water & Energy*  
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# Corny but true

**Corn-based snack foods like tortilla chips are a global multibillion-dollar industry, and demand for these products has seen a recent surge in popularity in Australia.**

**M**exican restaurants like Guzman Gomez and Taco Bell are expanding their operations as consumers are becoming more health conscious and looking to reduce their consumption of sugary-based snacks and often they are replacing these with savoury snacks.

## **What is the difference between a tortilla chip and a corn chip?**

The process for manufacturing corn and tortilla chips is similar, but simmering and soaking times will vary considerably. Another difference is that tortilla chips are baked in the oven and then fried, while corn chips only go through the frying process.

How are corn-based snack products made?

Today, there are simple manually operated lines, semiautomatic or fully automated systems available for corn-based snack products. Corn preparation can be quite complex if you do not have the correct equipment, and the processes and equipment needed depend on which of the large variety of corn-based products you want to make.

## **Corn cooking preparation**

The first step is to produce a dough, or masa. When cooking the corn, it is important to hydrate the corn kernels and loosen the pericarp (external skin) and to increase the moisture content of the corn by adding water. Calcium hydroxide, or 'food grade lime' as it can sometimes be referred to, must also be added to the corn to improve the flavour, as well as weakening and removing the outer layer of the corn pericarp so the chip is crispier. The addition of lime also controls the microbial activity, improving shelf life.

Processing systems including masa production systems and corn washers enable food manufacturers to duplicate the masa recipe every time. Extruders and sheeters are used to accurately form and transfer masa without altering the texture and flavour of the product.

## **Corn ovens and frying**

When toasting tortilla chips, a belt moves chips through the oven and exposes both sides of the chip to the oven burners. The oven burners crust both sides of the chip and toast the bottom side of the chip using burners located under the top belt.

This seals the chip and prevents the chips sticking to the belt after the first transfer point. The quantity of toast marks varies depending on what the market desires.

In the frying process, moisture is removed from the chip and replaced with oil to develop the texture, flavour and appearance of the chip. Cooking systems, such as fryers and ovens, should evenly distribute heat and give precise control of cook time and temperature.

Frying systems should provide precise control of oil flow, temperature and cook time for corn chips, tortilla chips and tostadas. A specialised range of frying systems for taco shells and tostadas is also available.


## **Seasoning and conveying**

Conveying corn-based snack foods is a delicate process, as the product can break and the all-important seasoning can fall off if lower quality conveyor belts are used.

## **Help is available**

Corn snack foods are an ever-changing industry, as consumers are exposed to new products and flavours. Heat and Control has long provided the equipment and means for snack food producers to keep up with demand of this burgeoning market by providing complete system equipment lines, from masa production to forming, toasting, conditioning, frying, seasoning and inspection for tortilla and corn chips, taco shells, tostadas, corn tortillas, extruded corn snacks and fried corn kernels.

The company's complete Corn Product Systems are designed by engineers with years of experience in snack food products, and the company is a single source supplier of all the equipment needed to process, season, weigh, inspect and package the highest quality tortilla chips, corn chips and other corn snacks.

For example, the FastBack Horizontal motion conveyor can reduce product breakage by up to 60% while the gentle slow-forward, fast-back motion prevents product damage and seasoning coating loss. The Heat and Control seasoning applicators, such as the FastBack Revolution Seasoning Systems, uniformly apply seasonings with less breakage and waste. 

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## Motor feedback technology

SICK's HIPERFACE DSL is a digital protocol for feedback systems in servo drive technology. The digital interface meets the requirements for the condition-oriented maintenance of machines in the Industry 4.0 environment.

Only one interface is required on the speed controller for all applications, as one type of signal cable is sufficient for the speed controller and the feedback system.

The fully digital interface only requires one additional cable and one additional connector on both the motor and drive. Less space is required for energy chains, and cable carriers can be made smaller as a result. Less room is also needed in the control cabinet for cables and cable glands.

It complies with the RS485 standard and enables data transfer between drive and motor in servo drive systems via two wires which are directly integrated into the motor cable of up to 100 m in length. Electric drives featuring motor feedback systems and an integrated HIPERFACE DSL interface have a distinctive outward appearance with just one male device connector.

Hybrid cables that combine both servo and encoder elements are becoming popular, as both the power and data is transmitted via a shared cable. This is also the case for signals coming from other sensors that are integrated into the digital motor feedback protocol. Special processes and the application of pulse transformers ensure that the encoder signal is decoupled from the faults in the motor power cable.

It supports the functionality of the electronic type label for automatic drive configuration. Motor specifications, serial numbers, part numbers and other data are stored here and used to adjust the drive to the motor parameters automatically and when servicing is required.

**SICK Pty Ltd**

[www.sick.com.au](http://www.sick.com.au)

## Rugged handheld tablet

Panasonic has announced the Toughpad FZ-F1 fully rugged handheld tablet, powered by Windows 10 IoT Mobile Enterprise.

The thin and lightweight 4.7" tablet is intended to support those who are exposed to tough and high-risk work environments, due to its fully ruggedised design. The product has 3-in-1 capabilities, combining a mobile barcode reader, phone and tablet into one device.

The ergonomically designed, angled rear barcode reader allows the user to scan items without bending at the elbow or wrist while also being able to clearly read the screen. The device also features a quad-core Qualcomm Snapdragon processor, which gives companies the ability to develop in an open environment.

The product has a daylight-readable display and is built to withstand a 1.8 m drop on concrete. It even works with a wet screen or with gloves on. It is fully sealed against dust and is submersible in 100 cm of water for 30 min, meeting IP65 and IP68 certification requirements. It can withstand temperatures from below -100 to above +500°C.

The product is a full multicarrier Band 28 4G LTE phone with dual SIM card support and up to 630 h standby time. It comes with 100 dB speakers with noise suppression and triple noise-cancelling microphones. It can operate beyond a typical 8 h work shift on its field-replaceable battery, and with an optional extended life battery it can go well beyond two full work shifts.

The device is suitable for the transportation and logistics, manufacturing and retail industries, with possible applications including inventory management, shipping and receiving, delivery routing and parcel tracking, and retail store queue busting.

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### Ultrasonic sensor

The DOSIC ultrasonic sensor from SICK operates according to the concept of time-of-flight difference and provides an alternative to Coriolis mass flowmeters. The sensor can detect a wide range of challenging liquids and matter for beverage and food production, irrespective of their properties.

The absence of moving parts in the sensor eliminates potential contamination risks in the demanding hygienic environments of the food industry. Also, the sensor has a straight, seal-free and self-emptying measuring tube made of high-quality stainless steel (316L with  $Ra \leq 0.8$ ). The stainless steel housing also provides the necessary ruggedness and resistance. The sensor therefore has EHEDG certification and demonstrates FDA compliance, since there is no contact between the sensor and the flowing matter, and the flow volume is determined in a non-contact manner.

Aggressive cleaning agents in CIP and SIP operations are not a problem either. The sensor can easily withstand temperatures up to 143°C in SIP processes for up to 1 h. The rugged design ensures a long service life and reduces the need for maintenance.

The DOSIC is available in two sizes (DN15 and DN25) and can be used in the most confined spaces.

Two configurable digital inputs and outputs, and up to two analog outputs and an IO-Link interface, ensure that the system monitors and implements effectively.

It is not necessary to set specific parameters before the measuring process. If the medium is changed, the sensor automatically adjusts its parameters accordingly.

**SICK Pty Ltd**

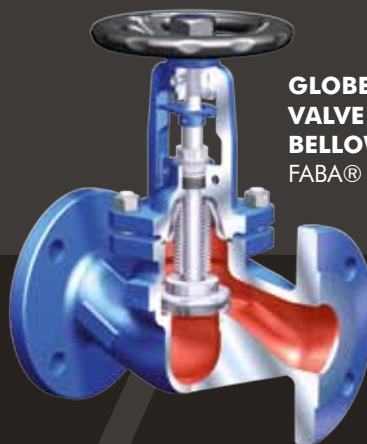
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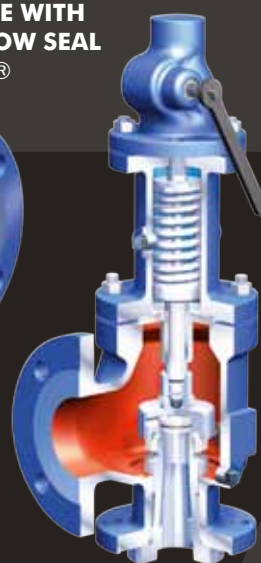
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# Sanitation

## is not simply an added cost

**With the potential for a single foodborne outbreak to result millions of dollars in lost revenue, fines, lawsuits, legal fees, insurance premium increases, inspection costs and staff retraining, all food businesses need to include sanitation procedures as an essential, not as an 'added cost'.**

**T**he cost to a food business of a single foodborne outbreak is much higher than the cost of implementing preventive measures. This is just as true for restaurants and foodservice providers as food and beverage processors.

In a recent study\* researchers from the Johns Hopkins Bloomberg School of Public Health used computer simulations to look at the consequences of a single foodborne illness outbreak on fast food, fast casual, casual and fine dining restaurants.

The simulation estimated costs of 15 foodborne pathogens including *Listeria*, norovirus, hepatitis A, *E. coli* and *Salmonella*, that caused outbreaks in restaurants from 2010–2015 as reported by the CDC. The model ran several different scenarios to determine the impact level ranging from smaller outbreaks that may incur few costs (no lawsuits and legal fees or fines) to larger outbreaks that incur a high number of lawsuits and legal fees.

They found that there are large, reverberating consequences regardless of the size of the facility and outbreak.

According to the model:

- A fast food restaurant could incur anywhere from \$4000 for a single outbreak in which five people get sick (when there is no loss in revenue and no lawsuits, legal fees or fines are incurred) to \$1.9 million for a single outbreak in which 250 people get sick (when restaurants lose revenue and incur lawsuits, legal fees and fines).
- A single outbreak of *Listeria* in fast food and casual-style restaurants could cost upwards of \$2.5 million in meals lost per illness, lawsuits, legal fees, fines and higher insurance premiums for a 250-person outbreak. When looking at the same circumstances for fine dining restaurants, \$2.6 million in costs were incurred. The subsequent costs of outbreaks can be major setbacks for restaurants and are sometime irreversible.

"Many restaurants may not realise how much even just a single foodborne illness outbreak can cost them and affect their

bottom line," said Bruce Y Lee, MD, MBA, executive director of the Global Obesity Prevention Center at the Bloomberg School. "Paying for and implementing proper infection control measures should be viewed as an investment to avoid these costs, which can top a million dollars. Knowing these costs can help restaurants know how much to invest in such safety measures."


### **Food and beverage processors are definitely not immune**

A study from the Food Marketing Institute and Grocery Manufacturers Association estimates the average food product recall will have direct costs of \$10 million while indirect costs could reach into the hundreds of millions. Automating sanitation procedures can reduce risks for manufacturers.

### **Benefits of automating sanitation procedures**

- Reduction of water usage. Water savings of 30–50% are achievable through improved rinse cycle efficiency and automated water pressure control.
- Reduction in energy costs. Less water usage means less energy is required to heat that water. Add to this the benefits of multistage pumps for full alternation, motors that allow pumps to ramp up and down as needed and flow switches that send pumps into hibernate mode.
- Reduction in chemical and sanitiser usage. Automated sanitation solutions will use cleaning chemicals more efficiently. Automation ensures chemicals are dispensed precisely where they are needed at the correct concentration, without any overspray.
- Reduction in waste management costs. Less water usage means less water going to waste and so less water treatment and fewer chemicals are needed.
- Reduction in labour expenses. Automation should be used to eliminate menial tasks and so the need for people to perform such repetitive menial tasks.
- Consistency. An automated system does the job in the same way every time — it doesn't cut corners because it wants to get home early, it doesn't suffer from Mondayitis, it doesn't 'forget' to do the tricky bits. It doesn't even have holiday entitlements.
- A safer workplace. Tasks, places, chemicals and equipment that present hazards to workers can be automated, making the environment safer for workers.

Yes — implementing automation systems will cost money and if you are going to do it properly you will need to involve experts to ensure the system covers what you want and achieves the appropriate standard of hygiene every time. But anecdotally the story is that facilities which invest in sanitation automation see a return within a year to 18 months. After that the cost savings from automating just continue to accrue.

\*'Estimated Cost to a Restaurant of a Foodborne Illness Outbreak', written by Sarah M Bartsch, Lindsey Asti, Sindiso Nyathi, Marie L Spiker and Bruce Y Lee, has been published in *Public Health Reports*. 



## Measuring vaporised hydrogen peroxide

Vaisala has patented a novel method and device for measuring vaporised hydrogen peroxide. The patent protects Vaisala's in-house dual gas sensor structure and the method for measuring vaporised hydrogen peroxide.

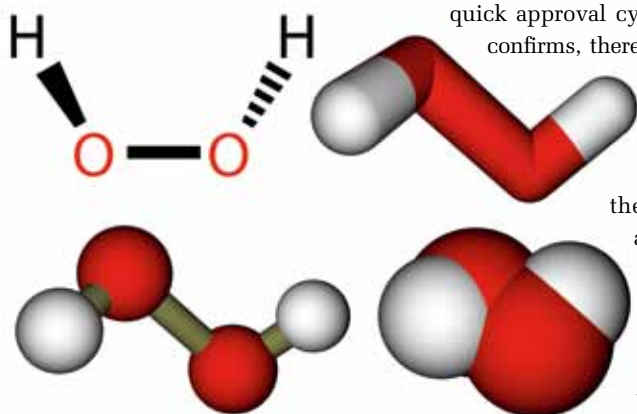
Vaporised hydrogen peroxide is often used in bio-decontamination processes, especially in pharmaceutical, healthcare and life science industries, as  $H_2O_2$  vapour destroys even the most resistant microorganisms.  $H_2O_2$  vapour is used as a decontamination agent in the pharmaceutical industry to guarantee production and end-product quality.

"Vaisala is always looking for opportunities to measure new parameters. We are very proud and happy that with this new innovation we are able to support our customers to measure vaporised hydrogen peroxide, which has traditionally been considered a difficult parameter to measure," said Jukka Leppänen, a senior scientist at Vaisala Industrial Measurements and the inventor of the new method.

"Innovating something like this is not quick nor easy. It has been a long process but, as the relevantly quick approval cycle from the United States Patent and Trademark Office confirms, there was a true need for this revolutionary innovation. Keen

customer interest proves also the clear need for reliable, stable and accurate measurement of the  $H_2O_2$  vapour in the market," Leppänen continued.

Vaisala released HPP272, the first probe based on the patented  $H_2O_2$  measurement technology, in 2017. In addition to  $H_2O_2$ , the Vaisala HPP272 probe measures temperature, relative humidity and relative saturation. The probe uses the PEROXCAP sensor, which is based on thin film capacitive sensor technology and was specifically developed by Vaisala for measuring vapourised hydrogen peroxide.



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## Vacuum pump

The GHSVSD+ vacuum pump comes with suction capacities from 350 up to 5400 m<sup>3</sup>/h. The variable speed capabilities allow for energy savings of up to 50%. This machine ensures that users maintain low lifestyle costs while still maintaining high performance for a wide range of applications.

The GHSVSD+ vacuum pumps have the ability to replace as many as 40 existing smaller vacuum pumps, by moving the pumps from the point of use to a central location. As well as the low energy costs, this also means a reduction in maintenance time and cost. With high capabilities, they are suitable for food and beverage production.

The Elektronikon monitoring system and SMARTLINK are optional features to monitor the user's vacuum pumps, and are integrated with the plant management system.

To keep oil quality in optimal condition the temperature is controlled by an electronic thermostatic valve (QMV). This technology reduces water condensation in the oil while maintaining energy efficiency.

The GHSVSD+ delivers a potential reduction in servicing costs when going from many small pumps to one larger central pump.

**Atlas Copco Compressors Australia**

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## Micro/minor ingredient batching systems with safety features

Sterling Systems & Controls' Micro/Minor Ingredient Batching Systems can be provided with custom features that increase personnel health and safety and productivity.

Ingredient batching systems are multibin modular batching systems. As batches are made, the ingredients are emptied from the bins and eventually the bins need to be refilled. Manually refilling the ingredient bins and moving the bags can be time consuming and take its toll on the operator physically.

The company has introduced its bag lift and pallet scissor lift features that eliminate the physical stress on the operator when filling ingredient bins from 50+ lb bags stored on pallets. These new optional features will increase overall productivity as the filling is quicker, as well as safer.

**Sterling Systems and Controls Inc**

[www.sterlingcontrols.com](http://www.sterlingcontrols.com)



## Bacterial spoilage detection tool

While high alcohol/hops in craft beer can deter spoilage organisms, other carefully crafted beverages, with sometimes unconventional ingredients can be susceptible to a broad scope of microbes that produce damaging lactic acids. A major challenge for detecting beverage spoilers with traditional microbial testing is the lack of immediate, accurate and actionable results throughout the production process. These limitations make it difficult to address spoilage organisms in real time and can result in facility contamination, production inefficiencies and holds, or place finished product at risk.

brewLAP, powered by Veriflow, is a molecular platform with accuracy and ease of use for rapid detection of microbes that can produce lactic acid and impact quality. The Veriflow platform utilises DNA Signature Capturing Technology to detect and quantify *Pediococcus* and *Lactobacillus* species, with results in less than 3 h of sample collection.

The platform can be deployed on-site at any size brewery, with minimal equipment and training required.

brewLAP is available in Australia from AMSL Scientific.

**Australasian Medical & Scientific Ltd**

[www.amsl.com.au](http://www.amsl.com.au)







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## Sort it out: blueberry processor uses sorter to remove FM

Quebec Wild Blueberries invested in a VERYX digital sorter from Key Technology in 2016 in order to aid the production process of its individually quick frozen berries. The new sorter, which replaced their existing laser sorter, removes more defects and foreign material (FM) from the berries and improves production efficiencies.

Pascal Hudon, director of operations at Quebec Wild Blueberries, praised the new technology for its increased accuracy.

“We improved our product quality and reduced false rejects. We also doubled our throughput with the same number of workers, which decreased our production costs,” he said. “Compared to our previous sorter, VERYX has increased our defect removal rate by about 3000%. It’s simply incredible.”

Tailored to suit their individual needs, Quebec Wild Blueberries chose the high-volume chute-fed VERYX C140, which was programmed to sort blueberries coming out of the freezer and remove twigs, bits of wood, stones, moss and other FM as well as any foreign berries. This particular model can sort up to nine metric tonnes of frozen berries per hour and features a 1400 mm-wide inspection area.

It is equipped with front- and rear-mounted laser sensors, which prevents any blind spots during inspection. The lasers work alongside colour cameras and the multisensor Pixel Fusion to detect the colour, shape and size of the product as well as its structural properties in order to determine whether there is any FM.

VERYX’s next-generation cameras and laser sensors offer twice the resolution of previous sorters, which increases accuracy and enables the detection of smaller FM and product defects.

“In addition to the power of Pixel Fusion, one of the first things that attracted us to VERYX was the precision of the ejection system. Other sorters space their air valves 10 mm apart, but Key designs VERYX with variable valve spacing that’s tailored to the application. For blueberries, Key recommended valves every 5 mm. With double the air nozzles, this sorter is more accurate in removing defects and FM and



not ejecting good product with it. We’ve improved our defect removal rate at the same time we’ve virtually eliminated false rejects,” explained Hudon.

With detection and removal accuracy forming the most crucial aspects of their processing, Quebec Wild Blueberries also used Key’s Iso-Flo infeed shaker to separate and singulate product prior to VERYX. The Chycane chute features a concave shape that stabilises the product as it enters the inspection and ejection zones.

Hudson suggested Quebec Wild Blueberries rely on the data provided by the sorter, which is connected remotely to Key and the company’s plant-wide network, in order to produce reports and understand and control its production.

Using the VERYX sorter, one of the largest blueberry processors in the world is able to deliver high-quality blueberries with reduced risk of FM. Hudon explained that the sorter is easier to use than other sorters, allowing workers of various levels to easily understand and use the technology.

“Our clients’ quality requirements evolve as their customers get more and more demanding. We stay ahead by leveraging the most advanced technology,” noted Hudon. “Thanks to VERYX, we’re packaging the highest quality blueberries on the market.”

*Key Technology Australia Pty Ltd*  
[www.key.net](http://www.key.net)

## Multi fruit juicer

JBT Corporation has launched the next generation of the Fresh’n Squeeze Multi Fruit Juicer that delivers a faster, more attractive and easy-to-operate version of the classic system. It offers a 65% increase in juice output over the existing model, as well as a more open design.

Capable of handling up to 33 pieces of fruit/min, the latest version of the juicer can produce 208 L/h of fresh juice, up from the 125 L/h delivered by the previous model. The juicer has moved from a one-case to a two-case hopper and features viewing windows showing the juicing process and increased visibility of stored citrus.

Eliminating all the casing and making it stainless steel makes cleaning easier.

**JBT FoodTech**  
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## PCR testing system

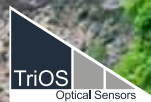
Hygiena's BAX System uses the polymerase chain reaction (PCR) to detect unwanted bacteria in raw ingredients, finished products and environmental samples. It is used by food companies, service labs and government regulators.

The automated, user-friendly system is easy to operate, utilising real-time or traditional PCR assays, tableted reagents and optimised media to minimise hands-on time and free technicians for other tasks. The company claims the system is the leading PCR instrument in ISO-17025 labs worldwide.

While other methods rely on physical or biochemical properties of their targets, PCR amplifies and detects a target organism's DNA. A target's DNA is highly stable and unaffected by environmental stresses that can affect other detection methods. During PCR, carefully designed primers target specific genetic sequences possessed only by target organisms, eliminating expensive false-positive results. The system combines this technology with simple methods to provide clear 'yes' or 'no' results and easy-to-read amplification profiles, with no need for subjective or expert interpretation.

Features of the system include: next day result for all pathogens and high capacity load, up to 96 samples per batch; clear and reproducible results, independent of operator technique and approved workflows by AOAC, AFNOR, DAF; automated cycling, detection and analysis without the need for expert skills; simplified sample prep with only three pipette steps required; pre-packaged PCR reagent tablets provide consistency, stability and long shelf life; flexibility with wide range of assays: *Salmonella*, *Listeria*, *E. coli* O157:H7, STEC, *Cronobacter*, *Campylobacter*, *Vibrio*. The company's LIMS compatible system allows for easy storage, retrieval and printing; and assistance to answer questions and keep users' operation running smoothly.

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## MOVE THE LAB INTO YOUR PROCESS

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**LISA UV**  
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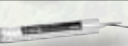
**NICO**  
 Nitrate



**RAMSES**  
 Hyperspectral Radiance and Irradiance Sensors for the UV, VIS or UV/VIS range



**OPUS**



UV spectral analyser for nitrate, nitrite, COD<sub>Mn</sub>, etc.

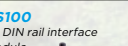
**TriBox3**  
 Measurement and control system



**TriBox-Mini**  
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**HS100**  
 G2 DIN rail interface module



### Parameters

- Nitrate
- Nitrite
- CDOM
- COD<sub>Mn</sub>
- BOD<sub>5</sub>
- TOC<sub>org</sub>
- DOC

- HS
- Chloramine
- Bacteria (Tryptophan)
- Radiance/Irradiance
- Ammonium
- SAC254
- Colour

- Oil-in-water
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- Cyanobacteria
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## Automatic self-cleaning magnetic separator

The RE80 MAG-RAM Separator is an automatic self-cleaning grate magnet that provides foreign metal fragment control and helps reduce risks to final product security in food processing lines.

Foreign metal fragments such as tramp metal, work hardened stainless steel and stone, and fine dust-like metal shavings can have devastating effects if they contaminate the final product. Food recalls, brand reputation damage, consumer health risks and financial loss are common consequences of metal contamination.

The MAG-RAM has developed over the years to become an essential safeguard against metal contamination. It is suitable for a variety of dry food applications, including dairy, coffee, grain, flour, meat rendering, pet food, cereals, powder and other similar ingredients.

The automatic cleaning operation of the magnet Rams has a number of advantages for food processing companies. It can eliminate risks of injury involved in handling or lifting manual-clean grate magnets; eliminate the potential for human ingress and bacterial contamination during manual cleaning; save time as it can be cleaned before, during or after production runs, meaning no production downtime and no operator cleaning schedules; continuous extraction means that dangerous metal contaminants are safely removed from the product flow and easily collected for analysis; the design allows for maximum product stream coverage and optimum separation efficiency; and it features HACCP Internationally certified RE80 +11,000 gauss magnetics.

The magnet is commonly installed in bulk intake areas, prior to metal detectors, prior to critical equipment, during the mid-process and at bulk out-loading locations.

**Magnattack Global**

[www.magnattackglobal.com](http://www.magnattackglobal.com)

## 15" stainless steel panel PC

The ViTAM-915A 15" stainless steel HMI panel PC is a fully sealed IP66/IP69K all-in-one computer. To comply with IP66/IP69K standards it uses M12 sealed connectors for all I/O connections. The result is a panel PC that can withstand high-pressure hosedown cleaning.

The PC is based on Sixth Generation Intel Core i3-6100U 2.3 GHz or i5-6300U 2.4 GHz processors with up to 16 GB of DDR4 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. An internal 2.5" HDD/SSD drive bay and SD slot are provided for storage. A Mini-PCle slot is provided for Wi-Fi/BT cards and an RFID front panel module is also available. The 15" 1024x768 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 PC will not corrode and is easy to clean. To assist the cleaning of the display, the product 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 420 nits and optional sunlight-readable 1000 nits display brightness is available. The PC supports wide-range operating temperatures from -20 to 60°C.

VESA 75 mm mounting holes allow the PCs to be arm or wall mounted. Optional ergonomic yoke mounting is also available.

**Interworld Electronics and Computer Industries**

[www.ieci.com.au](http://www.ieci.com.au)

## Food-grade sanitising mat

Amco's HACCPER food-grade sanitising mat is made from synthetic PVC so it will not stain or dirty the flooring.

The flexible PVC loop inside the dam edge allows the user's footwear to sink to the bottom of the mat and immerse the bottom of the shoe. The inner loop-style PVC acts as a baffle through the mat and eliminates swish and splash.

The low sloping bevel allows for easy access on and off the mat and the internal walls allow for trolleys to roll through without jolting. A 200 mm diameter trolley castor wheel will complete two full revolutions inside the mat.

It is suitable for infection control, biological hazard protection, sterile safety zones, operating theatres, food manufacturing facilities and customs to decontaminate soiled shoes.

The mat needs a sanitising fluid poured into the reservoir for the needed purpose, and it holds 9 L of sanitising fluid.

**Amco**

[www.amco.net.au](http://www.amco.net.au)







## Magnetic safety switch PSENmag - Now in Stainless Steel

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The non-contact magnetic safety switches PSENmag are now also available with a stainless steel housing. They offer a high level of safety and maximum robustness for safety gate and position monitoring – even under extreme conditions. PSENmag stainless steel sensors are not only suitable in areas with heavy soiling and strict cleaning requirements, but also in potentially explosive areas. In addition to being highly heat and cold-proof, they are also characterised by their vibration and impact resistance. The high B10D value ensures a long service life. You can enjoy user-friendly diagnostics thanks to the additional signal contacts and integrated LEDs.

Use the PSENmag stainless steel sensors in combination with PNOZmulti or PNOZsigma and achieve a safe and economical complete solution.

### Your benefits at a glance

- ▶ Stainless steel housing ensures high level of safety and maximum robustness for extreme conditions
- ▶ Heat and cold-resistant for temperature ranges from -25 to 80 °C, connector version even up to 120 °C
- ▶ Can be used in areas with heavy soiling and strict cleaning regulations IP67/IP69k
- ▶ High level of safety, even in potentially explosive areas
- ▶ Vibration and impact-resistant
- ▶ Long service life thanks to high B10D value
- ▶ Compact design for space-saving installation
- ▶ User-friendly diagnostics using LEDs on the cable version



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# Baking biscuits better

Arnott's has upgraded its Adelaide manufacturing plant to make its biscuit production more flexible and productive.

**M**illions of Australians have grown up with Arnott's over the past 152 years. For them, Arnott's is more than a food company — it's a piece of Australia's history and a national icon. Arnott's portfolio of brands includes household names like Tim Tam, Shapes, Iced VoVo, SAO, Vita-Weat, Salada and Tiny Teddy.

As one of the largest food companies in the Asia-Pacific region, Arnott's currently employs around 2200 people in Australia plus several thousand people across the Asia-Pacific region, in countries such as New Zealand, Indonesia, Malaysia, Singapore and Japan. In the last century more than 50,000 have worked for the manufacturer.

In its manufacturing plant in Adelaide, Arnott's produces approximately 10,000 tonnes of biscuits annually. To meet increasing local and global consumer demand, Arnott's recently embarked on Project FLEX — a control and HMI system upgrade to deliver increased flexibility and agility for biscuit production.

## Agility and flexibility

When embarking on Project FLEX, Arnott's had no hesitation in calling on its longstanding automation and control provider SAGE Automation. According to Stuart Mitchell, Senior Systems Engineer at SAGE, "We have been working with Arnott's in Adelaide for the past 20 years so we are very familiar with the plant. It is a Rockwell Automation site through and through, so we naturally called on them to help with the upgrade."

With expansion into international markets and a subsequent demand to increase production, it was important for Arnott's to have the ability to run any biscuit on any line while maintaining product consistency.

The first stage of the project involved updating the legacy oven conveyor's PLC hardware to improve the way that operators could load new production orders, including a feature that allows different recipes to be



stored, selected and produced on the same line. It also involved the installation of two new cooling systems for conveyors including reprogramming of the control system and HMI.

The control system upgrade required the migration of legacy SLC controllers to Allen-Bradley ControlLogix to help reduce maintenance costs and allow for increased flexibility on production lines. While justifying the risk and expense of control system upgrades may initially seem like a challenge, investing in modern technologies that leverage the Industrial Internet of Things helps manufacturers realise the benefits of smart manufacturing.

As Jonathan Footman, Solutions Architect, Rockwell Automation, explained, “The more connectivity you have across the plant floor helps implement the technology to enable smart manufacturing and progress in the journey towards a connected enterprise.”

### Keeping the plant running

To keep the plant running, Arnott's leveraged the inherent flexibility of the Rockwell Automation Integrated Architecture system to undergo a staged migration to the new controllers.

The ControlLogix control system offers modular architectures and a range of I/O and network options. Tight integration between the programming software, controller and I/O modules reduces development time and costs at commissioning and during normal operation. To help reduce engineering time, SAGE used existing SLC I/O in the first stage and subsequently added some Ethernet Point I/O and Flex I/O on DeviceNet. The RSLogix Project Migrator tool was used to install the ControlLogix controllers with ease.

“While the majority of the plant uses Ethernet, there is still some equipment communicating through DeviceNet and DH+ so by using ControlLogix, any potential integration issues were overcome because the controller is compatible with all three networks. This flexibility allowed the upgrade to be performed in a staged manner as opposed to having to perform the whole upgrade in one go,” explained Footman.

Reducing production loss during an upgrade is often filled with challenges, but in this case, thanks to careful planning and a phased approach to the migration, the upgrade was completed with no production loss.

### Driving flexible biscuit production

Delivering a wide range of motor control, Arnott's installed seven new PowerFlex 525 drives as part of the upgrade. SAGE was responsible for the drive integration using existing code to both new and existing Ethernet and DeviceNet networks. Moving to the newer platform increased the operational efficiency and centralised the plant's control system.

In addition, Arnott's leveraged the intelligence of the PowerFlex variable speed drives on ethernet to help operators access real-time information in the plant. “Prior to the drive upgrade, the operators would have to run feedback using analog set points, which was very time consuming, but now with the PowerFlex drives on ethernet, all the diagnostics can be accessed in real time. The drives also have a small footprint, reducing the required panel size,” explained Mitchell.

The HMI design and functionality was updated according to Arnott's specifications to improve the way operators could load new production orders, including a feature that allows different recipes to be stored, selected and produced on the same line.

SAGE designed, programmed and installed the HMI solution allowing for a large number of recipes to be created and stored for each oven. The recipe management page enables each oven to store recipes with pre-programmed conveyor paths, line speed


set points and variables. The new HMI system utilises PanelView terminals and reduces the number of pages from approximately 70 to only 20, simplifying events with each conveyor having its own pop-up with manual controls and speed settings.

With this new system, Arnott's is able to achieve greater flexibility on each line with a reduced margin for human error. According to Andre Spoor, Engineering Manager, Arnott's Biscuits, “SAGE upgraded our PLC and HMI with no loss in production and no downtime. It's a great result for us considering it was such a big upgrade.”

### Centralised production

By undertaking a staged approach to the control system migration, the multiple manufacturing control solutions were delivered with no unplanned interruption to production. The system was centralised with all cooling systems being monitored and controlled from a centralised ControlLogix controller.

“The change has ensured that the site improves its ability to be flexible. It has simplified the selection and set-up process and therefore reduced operator error and provided control systems for the site's conveyors and cooling systems that are well supported within industry,” explained Spoor.

Thanks to the upgrade, Arnott's is well positioned to meet the growing demand for increased flexibility and agility in their manufacturing operations. By increasing connectivity across the plant floor, they are realising the benefits of smart manufacturing and are now able to build on this foundation, step by step, to work towards a connected enterprise. 



*The upgrade provided the flexibility for Arnott's to run any biscuit on any line.*



*Allen-Bradley PowerFlex drives on ethernet provide the capability for diagnostics to be accessed in real time.*



## Hybrid safety I/O module

Turck has announced the addition of the CIP hybrid safety I/O module to its range of fieldbus technology products.

The hybrid safety concept combines both safety I/O and general-purpose I/O in a single, rugged, on-machine, remote I/O device. The CIP Safety (TBIP) module expands the existing hybrid safety range, which already includes an option for PROFIsafe over Profinet.

Both IP67 hybrid modules can be adapted to the actual signal requirements of an installation through the use of configurable I/O points and by leveraging the flexibility of IO-Link. On the safety side, the hybrid modules offer two safety inputs for connecting safety sensors, such as light curtains or emergency stop buttons. Two additional safety channels can be used as either inputs or outputs. The general-purpose (non-safety-related) side includes four configurable discrete I/Os capable of switching up to 2 A when used as outputs. Two IO-Link master ports are also available, which offer an additional 32 points of configurable discrete I/O when used with Turck IO-Link hubs.

The devices can be used as remote safety I/O or even operated as a stand-alone safety controller for local safe I/O, which allows the implementation of safety functions without the need for a safety PLC while still providing safety diagnostics and general-purpose I/O data to a higher level non-safety PLC.

The IP65/IP67/IP69K degrees of protection allow use in demanding environments. Decentralised plants and modular machine concepts can be implemented without the need for additional control cabinets.

**Turck Australia Pty Ltd**

[www.turck.com.au](http://www.turck.com.au)



## Rotary lobe pump

The TopLobe Plus (TLP) Series is a versatile, hygienic rotary lobe pump with low shear and gentle product handling for both high- and low-viscosity products. The pump provides good performance with low-noise, robust, consistent, smooth displacement of product using sizeable fluid cavities that can accommodate large solids in the product flow. It is optimised for energy-efficient operation and offers flushed double mechanical seals optionally to allow dry running.

It has a rotor-shaft attachment that ensures proper rotor positioning and backlash-free connection, and provide users with easy access and straightforward servicing. The gear case design ensures no cross-contamination of lubricating oils into the product zone and preloaded tapered roller bearings require no shimming. It has CIP capability and free-draining pump housing. Other features include a compact shaft sealing with short overhang and helical gears for smooth power transmission.

Versatile and easy to install, the pump is suitable for horizontal or vertical mounting, capable of bidirectional flow and has a four-way mounting gear case. The pump is easy to disassemble/reassemble and straightforward to service and maintain. A timing reference mark on the rotor and shaft provides a reference point during assembly, while a non-uniform screw pattern prevents misalignment. Tapers on the fixing screws and rotor precisely locate the rotor during assembly and prevent screws from loosening during operation.

The pump's hygienic performance and efficiency makes it suitable for wide range of applications, including syrups and sauces, liquid soap and shampoo, pharmaceutical emulsions and slurries, cosmetic creams and lotions, paints, paper pulps, dyes, and chemical fibres.

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## Temperature control system

Air Products' Freshline LIN-IS system, which uses liquid nitrogen to deliver rapid, precise temperature control to a blender or mixer/grinder, enables food manufacturers to optimise processing speed and product quality. The tailor-made temperature control system is suitable for chilling ground meat prior to forming hamburger patties, marinated chicken prior to forming nuggets and many other products that require heat removal during the mixing, blending or grinding process.

The system injects ultracold liquid nitrogen during grinding, blending or forming, removing the amount of heat required to bring a food product within a half degree of the desired temperature. The system can remove heat generated by friction and mechanical energy in mixing equipment, as well as provide additional cooling required to reduce the temperature of products prior to forming or other further processing steps.

Available in either a bottom or top injection unit, the LIN-IS system can be retrofitted to new or existing mixers, blenders or any type of stainless steel vessel. The nozzle size, arrangement and configuration are custom-engineered to meet each food manufacturer's processing equipment and temperature requirement. The system is easy to operate, clean and maintain, and complies with the latest hygienic design standards.

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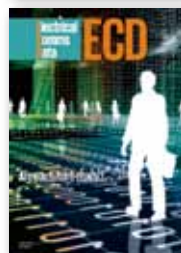
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## Best Before, food waste reduction and bottom lines

In the UK, Tesco's has announced that it is removing 'Best Before' dates on nearly 70 selected fruit and vegetable lines including apples, potatoes, tomatoes, onions, lemons and other citrus fruit, to "help cut down on food waste".

The claim being that this is being done to help prevent perfectly edible food from being thrown away — a laudable aim.

The concept of Best Before is confusing to many consumers. The National Federation of Women's Institutes (NFWI) recently looked into causes of food waste and found that less than half of respondents understood the meaning of Best Before dates. 'Use by' they did understand but many basically considered Best Before and Use by to be synonymous and discarded food once the Best Before date was reached.

Explaining their motivation in removing the dates, Tesco's Head of Food Waste, Mark Little, said, "We know some customers may be confused by the difference between Best Before and Use by dates on food and this can lead to perfectly edible items being thrown away before they need to be discarded.

"We have made this change to fruit and vegetable packaging as they are among the most wasted foods.

"Many customers have told us that they assess their fruit and vegetables by the look of the product rather than the Best Before date code on the packaging."

David Moon, Head of Business Collaboration at WRAP, added,

"Through the Courtauld Commitment 2025, WRAP is working with the food and drink sector to review all the evidence on date labelling for fresh produce and agree best practice.

This change by Tesco provides a good opportunity to learn about the customer response, and we anticipate Tesco will share their findings. With all fresh produce, appropriate storage including use of the refrigerator is essential in giving the customer more time to use their food, so clarity of storage advice on pack and in-store will be vital."

Reducing food waste, particularly fresh produce waste, is essential. This move by Tesco will help but I imagine their motivation is not solely about waste minimisation — the removal will allow them to keep produce on sale for longer as well. The fact that this move is also advantageous to Tesco's bottom line is not mentioned in any of their press releases, but perhaps it should be as it may encourage other companies to look at ways to reduce waste and to realise that this needn't be disadvantageous.



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