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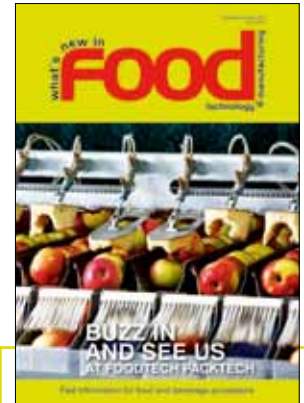
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Where does the buck stop?

Janette Woodhouse, Editor

Officials from the Food Safety Authority of Ireland have said that restaurants are liable even if customers order rare burgers.

The US FDA specifies for food safety reasons minced beef products must be cooked to heat all parts of the food to a minimum temperature of 63°C for three minutes, 66°C for one minute, 68°C for 15 seconds or 70°C. This is because pathogens on the surface of meat are easily transferred to the centre during mincing and mixing, and for the 'kill step' to be effective any pathogens must be exposed to sufficient heat.

But what if the customer demands a rare burger — is it the restaurant's responsibility to tell him he can't have it?

In Australia, the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry is throwing up similar conundrums. People are complaining that the banks lent them more than they could afford to repay. Is it the banks' responsibility to police those asking for loans and tell them they can't afford what they are asking for?

Surely the banks owe responsibility to their shareholders and they need to establish that any loans can be recouped, not whether or not the loan is sensible for the person requesting it.

The same is happening in the food industry. The food industry is now thought to be responsible for the 'obesity



epidemic'. Is it really the food industry's responsibility to control what people are eating?

I agree it is certainly the food industry's responsibility to label their products honestly and to make it very simple for consumers to know exactly what they are purchasing. But for the industry to be responsible for what people choose to eat is going a bit too far.

I am not a 'naysayer' — I do believe in climate change and I understand epidemiological ramifications of obesity, but I resent the implication that obesity is solely caused by the food industry wantonly targeting the consumer with junk food.

All research shows that obesity is greater in lower socio-economic areas. So rather than simply blame the food industry for this, work could be done to make the distribution of wealth more equitable. Welfare support could be increased, minimum wages increased, sport and exercise could be made more affordable for children and adults, fruit and vegetables could be subsidised...

Sooner or later we all have to take responsibility for ourselves. It is no good saying that the food industry made me eat those chocolates — it didn't, I made that choice (and possibly, I shouldn't have drunk that extra glass of red either).



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Workplace food is making us unhealthy

Birthday celebrations, charity fundraisers and leftover treats make the workplace a minefield for unhealthy food, contributing up to 1300 calories to a person's weekly food intake, according to new research.

A study conducted by the Centers for Disease Control and Prevention analysed the eating habits of 5222 workers across the US over seven days. Using data from the US Department of Agriculture Food Acquisition and Purchasing Survey (FoodAPS), the researchers focused on the food and beverages purchased from vending machines or cafeterias, and the free food in common areas.

They found that workplace food tended to be high in sodium, refined grains and empty calories, and low in whole grains and fruit. Nearly 25% of study participants obtained food from work at least once a week, which added up to 1300 average weekly calories. More than 70% of these were from free food, suggesting that employees are more likely to indulge simply because they can.

The researchers suggested employers should offer cafeteria and vending machine food that followed food service guidelines, and implement worksite wellness programs to help promote healthy food options.

Stephen Onufrak, epidemiologist in the Division of Nutrition, Physical Activity, and Obesity, said these programs "have the potential to reach millions of working Americans and have been shown to be effective at changing health behaviours among employees, reducing employee absenteeism and reducing healthcare costs".

The results were presented at the American Society for Nutrition annual meeting during Nutrition 2018.

Vegetarians and vegans call for more product choices

The number of people adopting more plant-based diets is increasing, but research has shown that vegetarians and vegans are unhappy with the choice of food products available to them.

Commissioned by Ingredient Communications, Surveygoo conducted an online survey of 1000 consumers (500 in the UK and US) and found that while there is still a relatively small number of vegetarians and vegans, many more people are planning to change their diets.

Of those surveyed, 4% reported they were vegetarian, 3% pescatarian and 4% said they were vegan, which rose to 6% in the US and 13% among 18- to 24-year-olds. However, 90% of vegetarians in the US and 33% in the UK said they were considering veganism, while more than four in 10 meat-eaters also said they intend to reduce or eliminate their meat consumption.

Despite more people choosing plant-based foods, the survey revealed that 46% of vegans and 23% of vegetarians said they were dissatisfied with food and beverage choices.

"Our research indicates the scale and pace of the shift towards vegetable-based diets. Whatever the reason for their choices — ethical, environmental or health related — many consumers expect the food industry to do more to keep up with them," said Richard Clarke, Founder and Managing Director of Ingredient Communications. "For manufacturers of both finished products and ingredients, it's clear that there are rewards for putting greater focus on the needs of vegans and vegetarians."

The level of dissatisfaction with product choices was higher in the US than the UK: for vegans, it was 50% and 36% respectively, and with vegetarians it was 31% and 15%.



According to Principal of Kaiviti Consulting Dr Mark JS Miller, this could be because American consumers have higher expectations of product availability, and the industry should be doing more to accommodate this rising demand.

"The merger of two related tracks are likely to be contributing to these trends," Miller said. "One is the trend of expected convenience, where I can get what I want when I want it, which has been fuelled by the Amazon phenomenon. The other trend is the desire for personalised health choices. Neither trend is likely to abate, and so this level of dissatisfaction amongst American vegans and vegetarians is likely to continue until the market is nimble enough to adjust to the demands."



Lapidge to lead Fight Food Waste CRC

Dr Steven Lapidge has been appointed the inaugural CEO of the Fight Food Waste Cooperative Research Centre (FFW CRC).

The Fight Food Waste CRC will be a 10-year, \$133 million CRC involving 60 participants from across Australia and overseas. It aims to improve the future profitability and sustainability of the Australian food industry through reducing food waste throughout the value chain, transforming unavoidable waste into innovative high-value products, and engaging with industry and consumers to deliver behavioural change.

The FFW CRC will align with the National Food Waste Strategy, whose aim is to reduce Australia's annual \$20 billion food waste bill by 50% by 2030.

27% mortality in world's largest ever listeriosis outbreak

Between 1 January 2017 and 24 April 2018, 1053 laboratory-confirmed listeriosis cases were reported to the National Institute for Communicable Diseases (NICD) in South Africa. This is by far the worst documented outbreak of the foodborne disease ever.

And the numbers most likely under-represent the severity of the outbreak as it was only made mandatory to report cases of listeriosis in SA in December 2017, well after the outbreak was confirmed and raging.

According to SA Health Minister Aaron Motsoaledi, investigations started in earnest after doctors from two hospitals alerted the National Institute of Communicable Diseases to unusually high numbers of babies with listeriosis in July 2017. Data analysis has since shown that the outbreak started in June 2017 and ultimately a strain of listeria known as sequence-type six, or ST6, was identified as the driver of the outbreak.

By the time the government identified a meat-processing factory owned by Tiger Brands, the continent's biggest packaged-food company, as the source of the outbreak, the

disease had been raging for 14 months and more than 900 people had already been reported as infected.

Such a huge outbreak, delay between confirming an outbreak is underway and identifying the source is unusual. World Health Organization scientist Peter Ben Embarek claims that outbreaks of *Listeria* typically produce only a handful of cases, because the source is usually identified very quickly.

SA's Health Ministry said the source was found after preschool children fell ill from eating polony products traced to processed meat producers.

"The meat processing industry was not cooperating for months ... they did not bring the samples as requested," the government's communications director, Popo Maja, said. "We had long suspected that *Listeria* can be found in these products.

"It is not that we are incompetent, or that we have inadequate resources."

The outcome of illness is known for 785 of those contaminated, with 212 people (27%) having died, including 91 babies under one month old. Most of the cases involved those with higher risks for a severe disease outcome, such as neonates, pregnant women, the elderly and the immunocompromised.



When is a salmon not a salmon?

Answer: if it's actually a trout. If you have bought Norwegian salmon in China recently it is quite likely that rather than the imported salmon you were expecting, you received farm-raised rainbow trout.

But don't worry, the China Fisheries Association is insisting that 'salmon' is a mere marketing term and several species of fish including the Atlantic salmon, Pacific salmon and rainbow trout can be called salmon.

The Norwegian Seafood Council has invested heavily in marketing salmon in China, and as popularity of the fish has risen local governments and entrepreneurs have seen a money-making opportunity and set up fish farming operations.

The fish substitution scandal came to light after a report by the state broadcaster which revealed that one-third of the salmon sold in China is actually rainbow trout farmed on the Tibetan plateau.

The Qinghai region produces 30% of China's overall salmon output and the 'fake' salmon were raised in the 383 km² Qinghai reservoir. Located at an altitude of 2600 m, this reservoir is home to the biggest salmon and rainbow trout farm operations in China.

With so much confusion in the marketplace, the furore over the Qinghai 'salmon' will potentially trigger wider demands for traceability and transparency in labelling from China's seafood consumers with the potential to move into other food categories.

Embracing and declaring full traceability will be a feat slowly achieved in China, and in the meantime, seafood and other produce purchasers in China should be sceptical about provenance and identity claims.

Certification schemes like the Aquaculture Stewardship Council and the Marine Stewardship Council, which are trying hard to get a foothold in China, will eventually help, and some Chinese seafood exporters have already secured international certification to bolster their credibility.

Reducing acrylamides in heat-processed foods

Acrylamide can form when starchy foods are cooked or processed and it has been detected in a range of foods including fried or roasted potato products, cereal-based products and coffee. FSANZ recommends that exposure to acrylamide in food should be limited as the chemical is known to cause cancer in animals.

Estimated dietary exposures of Australian consumers to acrylamide in food found that the levels were generally lower than, or comparable to, those reported in previous Australian and international studies. Even so, the results were in the range of those considered to be of possible concern to human health by the WHO Joint Expert Committee on Food Additives.

New farming and processing techniques are being investigated to produce lower levels of acrylamide, for example, lowering cooking temperatures, using enzymes that reduce acrylamide formation and obtaining raw materials with lower reducing sugar levels. However, reducing acrylamide in some foods, such as coffee, is difficult without changing its taste.

As of 11 April 2018, new European Union legislation set new benchmark levels for the amount of acrylamide in foods for various products. Commission Regulation (EU) 2017/2158 of 20 November 2017 establishes mitigation measures and benchmark levels for the reduction of the presence of acrylamide in food.



High-heat cooking can impart potentially carcinogenic acrylamides at levels that can exceed 1000 ppb. Now Frutarom Food Protection Solutions has released an all-natural, high-antioxidant solution for reducing acrylamides in heat-processed foods, decreasing oxidation and extending shelf life.

Frutarom conducted tests on fried potatoes and other snacks applying its all-natural INOLENS 4 and SyneROX HT tailor-made formulations. Both formulations significantly reduced acrylamide concentration in the food matrices. The level of acrylamide was decreased by 60% in the snacks, and more than 90% in the fried potatoes. The research team noted that such high reduction levels are readily attainable for food applications that have very high levels of acrylamide.

The two formulations also improved oxidative stability of snacks and fried potatoes, as indicated by hexanal levels. The performance of INOLENS 4 and SyneROX HT exceeded that of the synthetic antioxidant TBHQ, which is commonly used for frying oil stability improvement.

INOLENS and SyneROX are customised blends of rosemary oil and/or water-soluble extracts in powder and liquid forms and have no impact on flavour, texture or appearance.

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Biosecurity and the Australian prawn industry

The most comprehensive audit of prawn pathogens in aquaculture ever undertaken is being conducted by James Cook University (JCU) researchers in association with the Australian Prawn Farmers' Association (APFA).

The industry-led project will run over a two-year period, with the Cooperative Research Centre for Developing Northern Australia (CRCNA) contributing \$340,000 in funding. The total project value is \$759,831.

Tony Charles from the APFA said biosecurity is a leading focus of the APFA and broader industry.

"The research will allow industry to gain detailed knowledge of the pathogens that are currently affecting production and potentially identify previously unknown and emerging threats."

JCU's Professor Dean Jerry said the latest molecular tests and technologies will be used to detect and identify specific endemic or emerging pathogens from farms at Mossman in Far North Queensland, to Logan in the state's south east.

"Gathering data from different farms will, for the first time, provide an important industry benchmark of pathogens which can potentially impact prawn aquaculture," he said.

"The data will provide critical insights on threats to production and inform the tools required to help better manage potential pathogen threats."

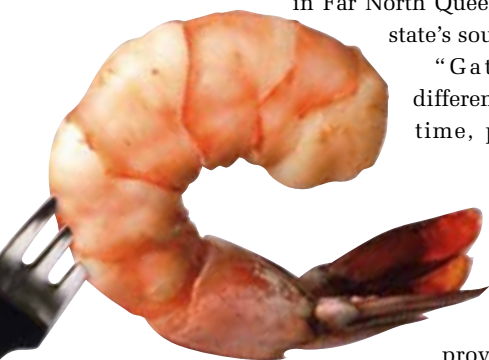
"It is possible new pathogens that have gone under the radar will also be found," he said.

Charles said the work will be crucial in strengthening the industry's resolve and help towards implementing proactive biosecurity measures.

It is expected the project will decrease production losses caused by pathogens from 20–30% to 10–20% annually and increase production by around \$16 million a year.

CRCNA Chief Executive Officer Jed Matz said the broad reach of the research is why the project had the support of the CRCNA.

"This project has the potential to provide long-term benefits for the Australian prawn aquaculture industry, by increasing biosecurity awareness and enhancing the capacity to monitor pathogens."



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School food policies may improve long-term health

Children consume more than one-third of their daily meals and snacks in school, and a new study suggests that school food policies should encourage children to make healthy choices.

Researchers from the Friedman School of Nutrition Science and Policy at Tufts University found that providing free fruits and vegetables — both within and outside the standard school meal — and limiting the availability of sugary drinks in schools could have positive short- and long-term health effects.

Using a comparative risk assessment model, the researchers estimated the impact that implementing national food policies in US elementary, middle and high schools could have on dietary intake and body mass index (BMI), and future cardiometabolic disease mortality.

They estimated that providing free fruits and vegetables would increase children's fruit consumption by 25% in high school children, followed by 22% in middle school and 17% in elementary school.

Limiting sugary drinks decreased consumption by 27% in elementary school, 19% in middle school and 15% in high school.

The researchers also looked at the potential impact such school food policies would have had, had they been implemented when current adults were children. They estimated that their fruit intake would have increased by 19% and vegetable intake by 2%, and they could have decreased their consumption of sugary drinks by 24%. With both implemented together, the researchers estimated that it would prevent more than 22,000 adult deaths per year due to heart disease, diabetes or stroke. Reduced consumption of sugary drinks was estimated to have the largest impact, preventing more than 14,000 adult deaths per year.

Senior author Dariush Mozaffarian, MD, DrPH, dean of the Friedman School, highlighted the importance of analysing the dietary and nutritional effects of existing policies.

"Identifying the benefits of school food policies helps to inform how to enhance these programs as well as the potential for harm if they were to be weakened or cut," he said. "Our findings suggest that eliminating sugary drinks and providing free fruits and vegetables in schools has small effects on obesity in childhood but real potential for meaningful long-term health benefits into adulthood."

The study, published in *PLOS ONE*, is part of the Food Policy Review and Intervention Cost-Effectiveness (Food-PRICE) research initiative.



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Which meals are equivalent to several days' worth of food?

Everyone treats themselves to the occasional meal that is laden with calories and is, overall, unhealthy. But if these meals exceed our daily calorie limit and are eaten more regularly, they could be to blame for rocketing obesity rates. The 2018 Xtreme Eating Awards 'awarded' the US restaurants serving the most unhealthy meals, particularly repeat winner The Cheesecake Factory.

"Long gone are the days when a big restaurant meal was an occasional splurge," said Center for Science in the Public Interest (CSPI) Senior Nutritionist Lindsay Moyer. "Americans are eating out more than ever before. So when restaurant chains are serving up 2000 calories or more on a single plate, it's easy to see why people continue to struggle with overweight, obesity and diet-related diseases."

Obesity is a worldwide problem. According to the Australian Institute of Health and Welfare, 63% of adults and 26% of children and adolescents were overweight or obese in 2014–15, and these numbers are increasing over time.

Issued annually by CSPI since 2007, the awards highlight the nutritional value of the worst restaurant meals in comparison to the recommended daily intake. Every day, people can eat

around 2000 calories, 2300 mg of sodium, 20 g of saturated fat and 50 g of added sugar.

The Cheesecake Factory was awarded two of the 2018 Xtreme Eating Awards. The first was the Worst Way to Start the Day for its Breakfast Burrito which was described as a "warm tortilla filled with scrambled eggs, bacon, chicken chorizo, cheese, crispy potatoes, avocado, peppers and onions, over spicy ranchero sauce" served with sour cream, salsa and black beans.

While that doesn't sound particularly unhealthy, it was found to contain more than a day's worth of calories (2730), two days' worth of sodium (4630 mg) and more than three days' worth of saturated fat (73 g). The awards said it was the nutritional equivalent of seven Sausage McMuffins from McDonald's.

Moyer suggested that consumer desire for more unusual food combinations is driving the development of fast food concoctions that are bursting with calories, sodium and fat, and this needs to change. The Cheesecake Factory's Chicken Parmesan Pizza Style received its second award for Worst Adapted Pizza. The 10" chicken parmesan pizza is topped



The Cheesecake Factory's Breakfast Burrito won the Worst Way to Start the Day at the CSPI 2018 Xtreme Eating Awards.

Image source: CSPI

“...this is the first year it has been mandatory for chains with 20 outlets or more to show calories on menus and menu boards.”

with pasta in Alfredo sauce and contains almost three days' worth of saturated fat.

Despite the fact that CSPI launched its menu labelling campaign in 2002, this is the first year it has been mandatory for chains with 20 outlets or more to show calories on menus and menu boards. Moyer said, “Perhaps now that calories are on the menu for all to see, America's chain restaurants will compete to create healthier dishes, rather than simply mashing up two or more junk foods.”

The Cheesecake Factory was not the only restaurant recognised for its unhealthy food offerings. Served with tubs of nacho ‘cheese’ and mustard for dipping, AMC's Bavarian Legend Soft Pretzel won the Worst Cinematic Snack award, boasting the highest sodium content of the entire awards at 7600 mg, the equivalent of more than three days' worth of sodium.

The Least Creative Mashup award went to Chili's Honey-Chipotle Crispers & Waffles, consisting of battered fried chicken on top of Belgian waffles, topped with bacon, jalapeños and ancho-chile ranch sauce, and served with fries and honey-chipotle sauce. As well as 2510 calories and 40 g of saturated fat, it also contained an estimated two days' worth (105 grams) of added sugars. The awards compared this to eating five Krispy Kreme glazed doughnuts, 30 McDonald's Chicken McNuggets and five packets of barbecue sauce.

Other 2018 Xtreme Eating Award winners include Yard House's Vampire Taco Combo for Worst Special Effects, BJ's Restaurant & Brewhouse Peanut Butter S'mores Pizookie for Worst Makeup and Uno Pizzeria & Grill's Deep Dish Buffalo Chicken Mac & Cheese for Worst Visceral Effects.

NEWS

Fonterra fights malnutrition in the elderly

People are living longer but malnourishment in the elderly is rife, which has prompted Fonterra to join the five-year international project ‘The Prevention of Malnutrition in Senior Subjects in the EU’ (PROMISS).

The project, which consists of 24 scientific and nutritional organisations, is investigating the role of diet and appetite in malnutrition and functional decline of people over 70 years. Combining existing and new data from intervention studies in older persons at risk, it will provide evidence to develop dietary and physical activity strategies to prevent malnutrition and enhance healthy ageing.

Poor nutrition is a global issue that puts the elderly at risk of health issues. A recent Massey University study led by Associate Professor Carol Wham found that almost 75% of older adults in New Zealand were at risk of malnourishment or already malnourished when they were admitted to hospital.

Fonterra Director NZMP Medical Nutrition Maarten van Beek said, “Older people need more protein to support good health, as malnourishment can cause muscle shrinking, as well as other health-related problems. The findings should offer valuable insights into the best ways to incorporate more protein into their diets.”

According to van Beek, Fonterra aims to use its technical knowledge to develop nutritional food products that can both help individuals improve their health and reduce the strain on healthcare systems.

NZMP — Fonterra's dairy ingredients brand — focuses on developing protein-fortified foods that are similar in taste and texture to ‘normal food’. As part of the project's food trials to assess taste, and mobility and muscle outcomes, participants will add NZMP dairy protein ingredients such as coconut protein water, a chocolate and vanilla pudding and rice pudding to their diets.



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Parasites and food contamination

A regular cause of traveller's diarrhoea for those visiting developing countries, *Cyclospora cayetanensis* is increasingly causing disease in the US.

Currently more than 212 people in the US have been infected with *Cyclospora* parasites after eating pre-packaged Del Monte Fresh Produce vegetable trays containing broccoli, cauliflower, carrots and dill dip.

Incidences of cyclosporiasis have been increasing in the US in the last few years and now the CDC and the US FDA have issued a health alert to doctors to consider a diagnosis of cyclosporiasis in patients who experience prolonged or remitting-relapsing diarrhoea. Since 1990, at least 11 food-borne outbreaks of cyclosporiasis, affecting approximately 3600 persons, have been documented in the United States and Canada. The outbreaks have been linked to various types of imported fresh produce, including raspberries, basil, snow peas, mescaline lettuce and coriander; no commercially frozen produce has been implicated to date.

Infections tend to be more prevalent in late spring and summer — a time frame that correlates with increased import of fruits and vegetables into the US from its more southern neighbours.

Cyclospora cayetanensis, the cause of cyclosporiasis, is a one-celled, microscopic parasite. Currently little is known about this organism, although cases of cyclosporiasis are being reported across the globe with increasing frequency.

The only hosts for *C. cayetanensis* are humans. The protozoan lives out its life cycle intracellularly within the host's epithelial cells and gastrointestinal tract.

Cyclospora infects the bowel and usually causes watery diarrhoea, with frequent, sometimes explosive, bowel movements. Other common symptoms include loss of appetite, weight loss, stomach cramps/pain, bloating, increased gas, nausea and fatigue. The time between becoming infected and becoming sick is usually about one week.

Most people who have healthy immune systems will recover without treatment. If not treated, the illness is usually self-limiting and resolves within 10–12 weeks. To date, the most effective drug for the treatment of the protozoan is a seven-day course of oral trimethoprim-sulfamethoxazole (TMP-SMX). No vaccine against this pathogen is available.

People get cyclosporiasis by consuming food or water contaminated with *C. cayetanensis* oocysts (the infective stage of the organism).



When freshly passed in stools, the oocyst is not infective (thus, direct faecal-oral transmission cannot occur; this differentiates *Cyclospora* from another important coccidian parasite, *Cryptosporidium*). In the environment, sporulation occurs after days or weeks at temperatures between 22 and 32°C, resulting in division of the sporont into two sporocysts, each containing two elongate sporozoites. Fresh produce and water can serve as vehicles for transmission and the sporulated oocysts are ingested (in contaminated food or water). The oocysts excyst in the gastrointestinal tract, freeing the sporozoites which invade the epithelial cells of the small intestine. Inside the cells they undergo asexual multiplication and sexual development to mature into oocysts, which will be shed in stools. The potential mechanisms of contamination of food and water are still under investigation.

Other foodborne parasites

The most common foodborne parasites are protozoa such as *Cryptosporidium* spp., *Giardia intestinalis*, *Cyclospora cayetanensis*, and *Toxoplasma gondii*; roundworms such as *Trichinella* spp. and *Anisakis* spp.; and tapeworms such as *Diphyllobothrium* spp. and *Taenia* spp.

Illness caused by foodborne parasites is much more common in developing countries, a wide variety of helminthic roundworms, tapeworms and flukes are transmitted in foods such as:

- Undercooked fish, crabs and molluscs.
- Undercooked meat; raw aquatic plants such as watercress.
- Raw vegetables that have been contaminated by human or animal faeces.

Some foods are contaminated by foodservice workers who practise poor hygiene or who work in unsanitary facilities. So wash your hands.

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Kitchen towels could cause food poisoning

Kitchens are a breeding ground for bacteria, but do you know where it's hiding? A recent study revealed that kitchen towels have the potential to cause food poisoning.

Pathogens are more likely to be found on towels that are used in larger families and for multiple purposes, according to research from the University of Mauritius.

“Our study demonstrates that the family composition and hygienic practices in the kitchen affected the microbial load of kitchen towels,” said the lead author and Senior Lecturer at the Department of Health Sciences, Dr Sush-eela Biranjia-Hurdoyal. “We also found that diet, type of use and moist kitchen towels could be very important in promoting the growth of potential pathogens responsible for food poisoning.”

Researchers examined 100 kitchen towels that had been used for one month, and cultured and identified the bacteria and the bacterial load. They found that 49% of the kitchen towels had bacterial growth, of which 36.7% grew coliforms (*E. coli*), 36.7% *Enterococcus* spp and 14.3% *S. aureus* (*Staphylococcus*).

The amount of bacteria increased with a larger family size that included extended family and children. This was also true of multipurpose towels (used for drying hands, holding hot utensils and wiping/cleaning surfaces) and damp towels.

Staphylococcus was more common on the towels from lower socioeconomic households and those with children, and there was a significantly higher prevalence of both *E. coli* and *Staphylococcus* in meat-eating families.

E. coli is commonly found in the intestines of humans and animals, and the researchers said its presence suggests possible faecal contamination and lack of hygiene.

“The data indicated that unhygienic practices while handling non-vegetarian food could be common in the kitchen,” said Biranjia-Hurdoyal. “Humid towels and multipurpose usage of kitchen towels should be discouraged. Bigger families with children and elderly members should be especially vigilant to hygiene in the kitchen.”

Kitchen towels are not the only culprit causing cross-contamination, as a study last year found that sponges can also harbour bacteria. Towels should be washed and replaced regularly, and only used for a single purpose to reduce the risk of food poisoning.

The study was presented at the annual meeting of the American Society for Microbiology.



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Emirates Flight Catering takes up vertical farming

A US\$40 million joint venture between Emirates Flight Catering and Crop One Holdings is claimed to become the world's largest vertical farm.

PREPARED FOOD

By December 2019, the first products from its newly announced vertical farm are expected to be delivered to Emirates Flight Catering's customers, including 105 airlines and 25 airport lounges.

Claimed to become the world's largest vertical farming facility, when complete the facility will cover 130,000 square feet. Being built near Al Maktoum International Airport at Dubai World Central, at full production the facility will harvest 2700 kg of herbicide-free and pesticide-free leafy greens daily — a production output equivalent to 900 acres of farmland. The facility will use 99% less water than outdoor fields and the proximity of the farm to the point of consumption will mean that carbon emissions associated with transportation will be substantially reduced.

Construction is scheduled to start in November 2018 and will take approximately one year.

The US\$40 million project is a joint venture between Emirates Flight Catering (EKFC) and Crop One Holdings, a leading vertical farm operator.

"Today's announcement is an important milestone for the Emirates Group, for Dubai and for the UAE. This investment to build and operate the world's largest vertical farming facility aligns with the UAE's drive for more agricultural self-sufficiency, a vision which began with the late HH Sheikh Zayed bin Sultan Al Nahyan, the UAE's founding father. The introduction of groundbreaking technology at the facility also enhances Dubai's position as a global innovation hub," said His Highness Sheikh Ahmed bin Saeed Al Maktoum, Chairman and Chief Executive of Emirates Airline and Group.

"As one of the world's largest airline catering operations, Emirates Flight Catering constantly looks at innovation, and ways to improve our productivity, product and service quality. Introducing the latest technology to our operations, we secure our own supply chain of high-quality and locally sourced fresh vegetables, while significantly reducing our environmental footprint. We are pleased to partner with Crop One, the industry's leading grower, packer and distributor, and a successful company that shares our corporate values. Together we look forward to delivering a best-in-class product and excellent value to our customers and stakeholders," said Saeed Mohammed, Chief Executive Officer of Emirates Flight Catering.

"Our proven business model has demonstrated profitable commercial production longer than any other major vertical farmer," said Sonia Lo, Chief Executive Officer of Crop One Holdings. "We are farmers using the most sophisticated plant science and proven business efficiencies to provide market-leading consumer products every day. Our selection after a 10-month search by EKFC is a validation of our successful business model that uses patented technology and processes to optimise crop yields and facilitate hyper-growth."



From left to right: Saeed Mohammed, Chief Executive Officer of Emirates Flight Catering, and Sonia Lo, Chief Executive Officer of Crop One Holdings, after signing the joint venture agreement.

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Value through expertise





Psst: want some cheap zebra meat?

Zebra, elephant, bear, crocodile and whale meat were in the 43 tonnes of wild meat seized during May in INTERPOL's Operation Thunderstorm.

Australia and New Zealand were two of the 92 countries which participated in the international operation initiated by the INTERPOL Wildlife Crime Working Group.

The operation involved police, customs, border, environment, wildlife and forestry agencies and resulted in millions of dollars worth of seizures. Operation Thunderstorm was coordinated by INTERPOL and the World Customs Organization (WCO) in conjunction with the International Consortium on Combating Wildlife Crime (ICWC), which includes the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Secretariat, UNODC and the World Bank.

The month-long operation in May yielded 1974 seizures and the identification of some 1400 suspects, triggering arrests and investigations worldwide. Further arrests and prosecutions are foreseen as ongoing investigations unfold.

Total worldwide seizures included:

- 43 tonnes of wild meat (including bear, elephant, crocodile, whale and zebra)
- 18 tonnes of eel meat
- 1.3 tonnes of raw and processed elephant ivory
- 27,000 reptiles (including 869 alligators/crocodiles, 9590 turtles and 10,000 snakes)
- Almost 4000 birds, including pelicans, ostriches, parrots and owls

- Several tonnes of wood and timber
- 48 live primates
- 14 big cats (tiger, lion, leopard and jaguar)
- The carcasses of seven bears, including two polar bears

Canadian authorities intercepted a container arriving from Asia which held the 18 tonnes of eel meat. Thought to be poached from Europe originally, the juvenile glass eels had been reared in Asia before being dispatched to North American markets for consumption.

Investigative crime intelligence was gathered ahead of the operation to help target specific hotspots for action, including land and airport border points and wildlife parks.

One man, who was arrested in Israel and awaits deportation to Thailand, was targeted after he posted a hunting photograph on social media. Multiple wildlife items were seized at his home, including fox, jackal and mongoose bodies, and then follow-up inquiries revealed that the suspect was also engaged in people smuggling and illegal employment.

Thunderstorm isn't the only operation relevant to the food industry undertaken by INTERPOL. Operation OPSON is a Europol INTERPOL joint operation targeting fake and substandard food and beverages. The annual operation is supported by customs, police and national food regulatory bodies in addition to partners from the private sector. Since its first edition in 2011, the number of countries taking part

in OPSON has grown every year, reflecting the growing commitment to tackle this issue.

OPSON VII

Rotten meat, chemically coloured tuna and fake baby milk powder were just a small sampling of the products seized as part of the latest OPSON investigation.

From December 2017 to March 2018, OPSON VII resulted in the total seizure of more than 3620 tonnes and 9.7 million litres of either counterfeit or substandard food and beverages. More than 41 000 checks were carried out at shops, markets, airports, seaports and industrial estates. Some 749 people were arrested or detained, with investigations continuing in many countries.

Fraudulent practices in the tuna fish industry

Illicit practices in the tuna fish industry included species substitution and fraudulently selling tuna intended for canning as fresh. In this case, the tuna intended for canning was illegally treated with chemical substances that altered its colour to give the misleading impression of its freshness. In total, more than 51 tonnes of tuna were seized and more than 380 samples were taken.



Close cooperation between Europol and the EU Commission coordinating the EU Food Fraud Network led to the implementation of the tuna-specific project. A comprehensive approach involving all stakeholders allowed the phenomenon to be tackled in an innovative and more effective manner via the simultaneous use of administrative and criminal enforcement tools.

Rotten meat in Belgium

Belgium closed a major meat processing plant in the country, and supermarkets have taken meat products off their shelves in a scandal over rotten meat. The incriminated company saw its licence revoked by the federal government, after spot checks revealed a potential health risk in two products: minced beef and oxtail. Officials found traces of so-called meat waste — pieces of the carcass intended for animal feed which are prohibited for human consumption.

Fake baby milk powder in Spain

Four people were arrested and a factory that packaged counterfeit baby milk mostly destined for China dismantled in Spain. Eight tonnes of the forged product were seized. The powder, bought in bulk in Poland for €1/kg and delivered to Barcelona, was not harmful but it lacked the nutrients needed by infants. It was also made in an environment that did not comply with food health and safety standards.

Perishable goods smuggling in France

In a joint operation, The French Gendarmerie, Customs, Police and Ministry of Agriculture seized in its overseas territories over 9.5 tonnes of smuggled perishable goods and 60 litres of fuel and raw material intended for illegal gold mining.

NEWS

FDA decides not all milks are milk

The Food and Drug Administration (FDA) is reviewing labelling requirements for plant-based products that are used as substitutes for dairy products, such as soy and almond milk.

In a statement, FDA Commissioner Scott Gottlieb explained that the decision to modernise standards of identity for dairy products follows concerns that plant-based food labels are misleading and may be responsible for malnutrition and illness.

Gottlieb highlighted that a particular issue is the use of traditional dairy terms in the name of the product. For example, soy, almond and rice products are called 'milk'.

Plant-based dairy alternatives are not the food that has been known as milk since before the 1938 Federal Food, Drug, and Cosmetic Act (FD&C Act) was established. This terminology means these products may be perceived to have the same nutritional content as traditional milk, but they vary in relation to inherent protein or added vitamin content.

Speaking at Politico's Pro Summit on 17 July, Gottlieb said, "If you look at our standard of identity, there is a reference somewhere in the standard of identity to a lactating animal. An almond doesn't lactate, I will confess."

He emphasised particular cases which showed the potential negative health impact of dairy alternatives. In the first case study, a child got kwashiorkor, severe protein malnutrition, after being fed rice-based beverages, while the second case study referred to a toddler who was diagnosed with rickets, a disease caused by vitamin D deficiency, after parents used a soy-based alternative to cow's milk.

"We hope that the examination of this issue will demonstrate whether future cases of kwashiorkor or rickets may be prevented by changes to the labeling of these products, as well as by the education of physicians and parents about the nutritional content of these beverages," said Gottlieb.

The FDA will also look at how it has been enforcing the FD&C Act regarding food names and its own standard of identity for milk. Gottlieb said, "As a regulatory agency, it's not appropriate to unilaterally change our regulatory approach if we have a history of non-enforcement."

The agency plans to gather feedback from a wide range of stakeholders, and over the next year, it will issue guidance outlining the changes. While the dairy industry will likely welcome this news, plant-based dairy manufacturers may be concerned about future marketing challenges.



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Making it happen



Banana plant extract helps prevent ice-cream melting

In the oppressive heat of an Australian summer, what if we could have an ice-cream that didn't melt in seconds? Scientists may have found a way to make this a reality using tiny extracts from banana plants. And it might even be healthier than regular ice-cream.

At the 255th National Meeting & Exposition of the American Chemical Society (ACS), scientists discussed how tiny cellulose fibres extracted from banana plant waste could reduce melting time, increase shelf life and potentially even replace fats in ice-cream.

"Our findings suggest that cellulose nanofibres extracted from banana waste could help improve ice-cream in several ways," explained Robin Zuluaga Gallego, PhD. "In particular, the fibres could lead to the development of a thicker and more palatable dessert, which would take longer to melt."

According to Allied Market Research, the global ice-cream market is projected to reach \$97,301 million by 2023. The US Department of Agriculture also said that in 2016, American dairies produced more than 1.3 billion gallons of ice-cream. Since the popularity of this frozen food is expected to continue, researchers have been examining ways to improve the customer experience. This mainly consists of asking the question: how can we reduce the time it takes for ice-cream to become a creamy puddle?

Previously, scientists have attempted to prevent ice-cream from melting using wood pulp extracts, and in 2017, scientists in Japan used polyphenol compounds found in strawberries to create a melt-resistant ice-cream. Banana plants are wasted once the fruit has been harvested, so Zuluaga Gallego, Jorge Velásquez-Cock and colleagues at the Universidad Pontificia Bolivariana (Colombia) investigated the use of rachis, a fi-

brous extract from banana fruit stems, in slowing down the melting process.

Working alongside researchers at the University of Guelph, they extracted cellulose nanofibrils (CNFs) from ground-up banana rachis and mixed it into the ice-cream at different concentrations, ranging from zero up to three-tenths of a gram per 100 grams of the dessert. They then analysed the effects of CNFs with the help of tools such as a texturometer, which measures the hardness of ice-cream.

One common complaint about ice-cream is the texture, as an abundance of large ice crystals can reduce its creaminess. Not only did the researchers find that the addition of CNFs helped decrease melting times compared to traditional ice-cream, but they also discovered a number of other positive outcomes of using CNFs, including texture.

The ACS release stated: "CNFs could increase shelf life of ice-cream, or at least decrease its sensitivity to temperature changes that occur when moved to and from the freezer. In addition, CNFs increased the viscosity of low-fat ice-cream, which improved the creaminess and texture of the product."

According to Velásquez-Cock, this suggests that CNFs could help stabilise the fat structure in ice-creams, so it could potentially replace some of the fats and reduce the calories.

Further investigations into how fats such as coconut oil and milk fat might impact the behaviour of CNFs in other frozen desserts is intended to be conducted by the researchers.



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To GMO or not to GMO

Consumers are notoriously wary of genetically modified foods and are apparently becoming even more so. In 2016 a CHOICE poll showed that 84% of Australians were concerned about eating food with genetically modified (GM) ingredients. This is in spite of the fact that most of us probably consume foods containing GM products most days.

Imported soya, corn, sugar beet, cottonseed oil and potatoes as well as locally produced canola oil are likely to be genetically modified in some way and potentially found in:

- baked foods including bread, pastries, cakes and crackers;
- breakfast cereals;
- confectionery including chocolate;
- corn products including corn flour, starch and oil;
- fried foods such as fish and chips;
- margarine;
- mayonnaise and salad dressings;
- processed potato products;
- sauces and gravy mixes;
- smallgoods casings;
- snack foods including potato chips, corn chips;
- soy products including milk and tofu.

And most of these products will not be labelled as containing GM ingredients.

Companies are not breaking the law as FSANZ exempts for labelling according to include:

- GM oils, sugars and starches like corn syrup, cottonseed and canola oil. FSANZ reason being that these ingredients highly refined and unlikely to contain and GM protein;
- GM food additives or processing aids;
- meat, dairy and eggs from animals fed GM feedstock;
- food bought from cafes, restaurants, takeaway shops and vending machines;
- GM flavourings in a concentration of no more than 0.1%;
- unintentionally present GM ingredients of no more than 1%.

The FAO and WHO both assert that allergenic proteins are not allowed to be transferred into a GMO.

Interestingly, a recent study from the University of Vermont reveals that a simple disclosure can improve consumer attitudes toward GMO food. The study compared levels of consumer opposition to GMO foods in Vermont — the only US state to have implemented a mandatory labelling policy — with consumer attitudes in the rest of the US. The analysis showed opposition to GMO food fell by 19% in Vermont after the implementation of mandatory labels.

Traditionally, there has been significant resistance to GMO labelling on foods. It was believed that consumers would perceive the information as a warning sign that a product is unsafe or harmful to the environment and so not purchase the food. But this Vermont study is showing the opposite.

Consumers like to know what they are considering purchasing and are then quite capable of making informed decisions.

The researchers in the Vermont study suggest “labels give consumers a sense of control, which has been shown to be related to risk perception”. Indeed, some food manufacturers, including General Mills and Campbells, continue to voluntarily label GMO food products citing consumer demand for transparency.

However, transparency is not particularly evident in the US’s proposed national labelling regulations released by the US Department of Agriculture in May. In this a narrower definition of genetic engineering is being sought and alternatives to simple labelling disclosures proposed. The draft guidelines also propose changing the labelling terminology from GMO to ‘bioengineered’ or ‘BE’, a new descriptor for genetic engineering that is unfamiliar to most of the general public.

Maybe it’s time to give consumers some credit for intelligence and pursue a policy of honesty in labelling.

NEWS

Online calculator reveals cost savings of egg replacers

Bakery companies can now use a new online calculator by Arla Foods Ingredients to see how much they could save by using egg replacers in their recipes.

The egg production industry has been particularly volatile over the last few years, and this, combined with consumers transitioning to vegan lifestyles, has put pressure on cake manufacturers to control the cost and quality of their products.

Outbreaks of avian flu in Mexico, America and Asia between 2013 and 2016 and the scares in the US and Europe involving *Salmonella* and the pesticide Fipronil in 2017 and 2018 have resulted in big fluctuations in supply levels and prices of eggs. As a result, the industry is looking for a more stable and reliable alternative, such as Arla Foods Ingredients' Nutrilac whey protein egg replacers.

While eggs are seen as a staple ingredient in cake, Arla Foods Ingredients stated that its Nutrilac range can replace up to 50% of the eggs in a cake recipe. It said Nutrilac has substituted as many as 300 million eggs last year and predicts that the demand will increase throughout 2018.

According to the company, sensory evaluations have shown that the egg substitute has similar properties to eggs and also keeps cakes moist and fresh for longer during their shelf life, and creates a less fragile and more resilient crumb. There are also potential processing benefits, including increased stability and reduced waste.

Therefore, it offers bakers a stable supply and pricing of ingredients, giving them greater control over raw material costs. To demonstrate the potential cost savings that would result from substituting eggs with whey proteins, the company has developed an online calculator.

"The benefits of Nutrilac whey protein egg replacers mean that bakers don't need to put all their eggs in one basket. They can better protect themselves against the unpredictability of the global egg market and, in doing so, harness the application and quality gains that our proteins deliver," said Aparecido Silveira, Industry Marketing Manager for Bakery at Arla Foods Ingredients.



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Eating fish lowers death risks

Eating lots of fish can reduce the risk of dying in both men and women by 8–9%, depending on how it's cooked.

Researchers from Zhejiang University followed 240,729 men and 180,580 women from the NIH-AARP Diet and Health Study for 16 years, assessing their dietary intake via questionnaires. During this time, 54,230 men and 30,882 women died.

The team found that a higher intake of fish and long-chain omega-3 fatty acid was associated with lower total mortality. Men who ate the most fish had 9% lower total mortality, 10% lower cardiovascular disease mortality, 6% lower cancer mortality, 20% lower respiratory disease mortality and 37% lower chronic liver disease mortality. Women had 8% lower total mortality, 10% lower cardiovascular disease mortality and 38% lower Alzheimer's disease mortality.

Men and women with the highest intake of long-chain omega-3 fatty acid also had a 15% and 18% reduced risk of dying from cardiovascular disease, respectively.

But before you reach for the Friday night fish and chips, the researchers warned that fried fish did not show the same positive health effects. While it did not have an impact on men's lifespans, women who ate lots of fried fish had an increased risk of death from all causes.

The study concluded, "Our findings support current guidelines for fish consumption while advice on non-frying preparation methods is needed."

The study was published in the *Journal of Internal Medicine*.

New use for barley

Photoacoustic computed tomography (PACT) is an emerging alternative to X-rays, MRIs or ultrasounds. The systems can provide high-resolution imaging of optical absorption in deep tissue and can help diagnose swallowing disorders.

Patients drink or are injected with a contrast agent — often newly developed nanoparticles made of metals, polymers and other materials. A laser strikes the nanoparticles, generating pressure waves that can provide nuanced and real-time views inside the body.

One drawback to contrast-enhanced PACT is the often lengthy and expensive regulatory process for new contrast agents.

Researchers at the University at Buffalo bought more than 200 types of tea, chocolate, herbs and other foodstuffs in an attempt to find an edible contrast agent.

They found that a roasted version of barley, when struck by a common laser beam, can illuminate the throat and the gastrointestinal track. The real benefit is that as many human diets already include barley, it can be fast-tracked for medical use.

Researchers were able to detect individual particles of it through 3.5 cm of chicken breast tissue, as well as through human hands.

Roasted barley tea was detectable through 2.5 cm of chicken breast and provided visualisations inside the human throat when swallowing.

In addition to swallowing imaging, researchers say roasted barley could potentially be used to diagnose gastrointestinal tract disorders.

Natural sweetness enhancers

Sensient Technologies has been working on finding ways to make food and beverages with low sugar levels more appealing to consumers. The company's goal was to reduce sugar in products by up to 75% while still maintaining great taste. To achieve this, it has reformulated the SweetEase range to produce what it claims is its best performing sweetness enhancers to date.

SweetEase 3G is a range of natural flavours specifically designed to enhance the perception of sweetness, enabling users to reduce the sugar in a product without compromising on taste. The complete range can be labelled as natural flavour. Requirements such as organic suitable, natural, halal, liquid and powder can all be catered for.

The product range is locally manufactured in Australasia and developed to specifically meet the needs of Australian and New Zealand consumers while following the legislation of the Australia and New Zealand Food Code.

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Slippery way to cleaner food processing equipment

The sheer scale of modern food processing vessels makes them difficult enough to clean even before the added complications of small scratches and grooves which inevitably appear through use, make cleaning even harder.

These surface imperfections provide bacteria and biofilms perfect places to hide and then emerge and contaminate product made in the equipment.

But it looks as if a simple answer may be on hand. Researchers from the University of Toronto's Department of Materials Science & Engineering have come up with a new way to prevent bacteria from thriving inside food processing equipment. They have shown that a thin layer of cooking oil trapped on the stainless steel equipment surfaces can fill in microscopic scrapes, cracks and fissures and create a barrier to bacterial attachment.

Using this technique resulted in a thousand-fold reduction in bacterial levels inside the industrial machines tested.

This simple and cost-effective treatment is based on the Slippery Liquid-Infused Porous Surfaces (SLIPS) principle, initially developed at Harvard.

SLIPS technology which essentially traps lubricant layers into a surface microstructure and so creates slippery, non-wetting and non-adhesive properties, was bio-inspired by the lotus leaf. By locking in water and other fluids, SLIPS technology creates slick, exceptionally repellent and robust self-cleaning surfaces on metals, plastics, optics, textiles and ceramics. These slippery surfaces repel almost any fouling challenge a surface may face — whether from bacteria, ice, water, oil, dust, barnacles or other contaminants.

"Coating a stainless steel surface with an everyday cooking oil has proven remarkably effective in repelling bacteria," said Professor Ben Hatton (MSE), who collaborated on the project with AGRI-NEO, an Ontario seed processing company looking for a solution to a common problem in its industry. "The



Above: Food particles can accumulate on an untreated stainless steel surface, at left, increasing the risk of contamination in food production facilities. The oil-treated surface, at right, repels material.

oil fills in the cracks, creates a hydrophobic layer and acts as a barrier to contaminants on the surface."

Cooking oils such as olive, corn or canola also provide a safer option for cleaning food-processing equipment than the harsh chemicals and disinfectants that are typically used. The sheer size of the machines makes it harder for cleaning materials to do a thorough job, and leftover bacteria can build up resistance to the cleaning agents. Hatton's method of filling the scratches with oil prevents bacteria from settling and essentially cleans the surface without leaving chemical residues on the stainless steel surface.

"Contamination in food preparation equipment can impact individual health, cause costly product recalls and can still be present after chemical-based cleaning occurs," Hatton said. "The research showed that using a surface treatment and a cooking oil barrier provides greater coverage and results in 1000-fold fewer bacteria roaming around."

Hatton's U of T research group is continuing to test new combinations of oils, foods and biofilm types to increase the efficiency of the bacteria barriers. They will also explore options of using this method in developing countries to minimise bacterial infection and improve mortality rates.

Their work has been published in the journal *ACS Applied Materials & Interfaces*.

Professor Ben Hatton (MSE), Dr Dalal Asker and Dr Tarek Awad research cheaper, safer and more effective ways. This minimises the risk of cross-contamination, which can lead to foodborne disease. Their team have proposed a simple new solution: trapping a thin layer of cooking oil at the metal surface to fill in microscopic scrapes, cracks and fissures and create a barrier to bacterial attachment.

Image credit: Liz Do

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As the flexible screw rotates, it self-centres within the tube, providing clearance between the screw and the tube wall to eliminate or minimise grinding. The flexible screw is top-driven beyond the point at which the material exits the conveyor, preventing material contact with bearings or seals.

The conveyor transports bulk materials from sub-micron powders to large pellets, whilst the gentle rolling action of material prevents the separation of blends. The rugged inner screw is the only moving part contacting material, resulting in reduced maintenance. A broad range of screws with specialised geometries is available to handle free- and non-free-flowing materials, including products that pack, cake or smear in other types of conveyors.

The unit accommodates drums from 115 to 200 L weighing up to 340 kg and measuring 915 to 1220 mm in height. An optional pneumatically actuated vibrator on the discharge cone promotes complete evacuation of non-free-flowing materials.

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www.spray.com.au



Telescopic ladder range

The Telesteps telescopic ladder range is made from anodised aluminium with GRP fittings, which makes them strong, lightweight and durable. The range is certified according to the latest Australian Standard (AS/NZS1892.1:1996).

Handling loads up to 150 kg, the ladders are easy to pull out to the desired length and are quickly and safely secured with red locking catches under each rung that confirm the ladder is ready for use. The angled steps have wider treads for ergonomic use and good grip when climbing up or down, and there is a built-in rubber top support to add grip and reduce sideways movement.

There are three styles available in Australia. The Prime Line is the straight telescopic ladder that extends up to 3.9 m, yet is as short as 800 mm when collapsed. The Combi Line is an A-frame work ladder that reaches up to 3.1 m and collapses down to 780 mm. The Solid Line is a sturdy work platform with working heights up to 2.6 m.

Warequip
www.warequip.com.au

Obela spreads productivity

Food company Obela, known for its wholesome dips and spreads, improved productivity and reduced downtime using NORD Drivesystems' nsd tuPH product range.

With more than 10 varieties of hummus alone, Obela ensures hygiene is upheld in its plant by subjecting the geared motors on conveyors to caustic washdowns. However, this was causing paint chipping and flaking, and the company also noticed corrosion on shafts.

Smalte Conveying Solutions, a key partner in the supply of conveyor systems to Obela, turned to NORD DRIVESYSTEMS to help find a solution that meant minimal maintenance and zero contamination risks.

Rob Winterbottom, Sales Manager at Smalte Conveying Solutions, explained the reasoning behind choosing NORD DRIVESYSTEMS' nsd tuPH product range.

"The proposal was on brief and on budget. In researching these aluminium, IP-rated drives, we were impressed with its features and some of the case studies that we came across."

The anti-corrosion protection conforms to FDA standards, and Nord Sales Manager Vinod Pillai said



The nsd tuPH group.

the demand for the NORDtuPH is increasing, particularly in the food industry.

"This particular offering from NORD offers a sleek surface treatment to make our IP66- or 69K-rated aluminium drive robust and resilient. It can withstand harsh washdowns, meet stringent requirements and is proven to last."

He continued by highlighting the advantages of the finish of the nsd

tuPH range over the standard epoxy finish.

"Our product offers anti-corrosion protection that is permanently bonded to the surface of the geared motor and is tested to be approximately 1000 times harder than your standard paint finish. Its smooth, non-porous design navigates away from any air pockets on the gearbox, the traditional heat sink, as well as the cooling fan seen on a standard AC induction motor."

Winterbottom said the project successfully ensured a longer service life and helped Obela adhere to stringent hygiene standards.

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Dust control and spontaneously combusting tortilla chips

Dust explosions are a major risk in food plants with almost a quarter of all reported industrial dust explosions occurring in the food and beverage industry. Manufacturers ignore the safety factors in powder and bulk material transfer at their own risk.

In Texas, the Austin Fire Department was recently called twice in a week to a tortilla chip facility because of spontaneously combusting tortilla chips. The fires were confined to the exterior of the building and to multiple pallets of food waste. It seems that the company was trialling a new way to handle the waste from the chips. Obviously the company realised that the trial method wasn't particularly successful.

Hopefully they also realised how dangerous combustible dusts can be.

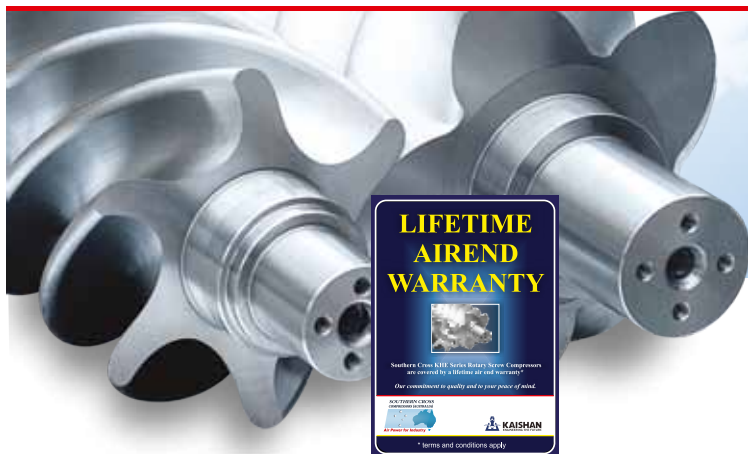
Grain dust causes more fire and explosion incidents than any other dust, but pistachios, oregano, powdered milk, fishmeal and pet food have been implicated in recent dust explosions.

The five factors are required for a dust explosion to occur are:

- Presence of combustible dust.
- Dispersion of dust particles in the air.
- Confinement (eg, an enclosure or closed structure).
- Oxygen to sustain the fire.
- Ignition source (such as a hot surface, sparks from electrical or mechanical processes, open flames or electrostatic discharge (ESD)).

The risk of an explosion is minimised when one of the following measures is ensured:

- An explosible dust cloud is never allowed to form.
- The atmosphere is sufficiently depleted of oxidant (normally the oxygen in air) that it cannot support combustion.



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- All ignition sources capable of igniting the dust cloud are removed.
- People and facilities are protected against the consequences of an explosion by “protection measures” such as explosion containment, explosion suppression or explosion relief venting.
- Housekeeping activities must ensure that secondary fuel sources are not available.

Preventing combustible dust explosions

Dust control

- Implement a program for hazardous dust inspection, testing, housekeeping and control.
- Use certified filters and collection systems.
- Minimise the escape of dust from equipment and ventilation systems.
- Ensure surfaces are easy to clean and don't easily accumulate dust.
- Use cleaning methods that don't generate dust clouds if ignition sources are present.
- Use specialised vacuum cleaners approved for dust collection.
- Locate relief valves away from dust deposits.

Ignition control

- Use appropriate electrical equipment and wiring methods.
- Control static electricity.
- Control mechanical sparks and friction.
- Use separator devices to remove foreign materials capable of igniting combustibles from process materials.
- Separate heated surfaces and systems from dusts.
- Maintain all equipment adequately.

Explosible dust clouds easily form inside material handling or processing equipment when bins are being filled, powders are being transferred or dust is being collected in a dust collector.

Dust collectors are a leading equipment type implicated in dust explosions — pretty inevitable really as they combine four of the five factors necessary for an explosion. It was a dust that caused the 2017 explosion in the 3D Idapro Solutions plant where carrots and potatoes used in pet foods are processed. One person was injured.

Dust collectors are adjunct components to pneumatic conveying systems, removing atmospheric dust as a safeguard to the kind of secondary explosion that devastated the Imperial Sugar refinery in Georgia a decade ago, killing 14 workers and injuring scores.

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Chain lubrication system

By reducing oil consumption and conveyor downtime the Model 102000 AccuJet Electrostatic Spray System can improve chain lubrication. The electrostatic nozzles work by applying chain lube to key lubrication points, which saves oil and reduces chain breaks. The high transfer efficiency helps to prevent downtime and means systems can work uninterrupted for longer.

The low-flow injector pump delivers lubricant to up to four electrostatic spray nozzles at the same time. Pumps can also be individually adjusted to deliver precise volumes of lubrication and can be added to the system even after the initial installation.

Some of the added benefits of the AccuJet Electrostatic Lubrication System include potentially increasing chain life, reducing potential for product contamination as well as eliminating oil mist, which creates a safer work environment for operators.

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Oil-lubricated rotary screw compressors

Gardner Denver has launched a series of energy-efficient, oil-lubricated rotary screw compressors as part of the CompAir L-Series range.

The compressors — available in 30, 37 and 45 kW models — are offered in both fixed and regulated speeds. Each unit is capable of delivering consistent, high-quality and cost-effective compressed air, providing pressure ranges from 5 to 13 bar and volume flow between 1.33 to 8.67 m³/min.

'E' models feature a larger airend with optimised rotor tip speed. This can help operators achieve additional energy savings of up to 5%.

All compressors are powered by an IE4-IP55 motor and drive system with an improved filter design that reduces running and maintenance costs. This also improves airflow to reduce pressure drop, with low idle power consumption for further savings.

At 1.58 m², all units have a small footprint, making them suitable for installations where space is at a premium. The new design still matches up connection points with previous models, to ensure replacing existing models is a hassle-free process.

Models in the range also have low noise and vibration levels, meaning the unit can be situated closer to production environments without special foundations, further reducing installation costs.

The new models also feature the Delcos XL SE controller, a touch-screen control system that offers insightful monitoring capabilities. The system is fully integrated with iConn, Gardner Denver's cloud-based air management platform, enabling operators to easily manage, optimise and improve their compressed air services. The units can be monitored remotely too, so operators can ensure any potential issues are quickly resolved.

Gardner Denver Industries Pty Ltd

www.compair.com

8" rugged tablet PC with keypad

Winmate's M101BK is a multifunction, rugged, 8" tablet PC with a built-in QWERTY keypad. Designed for applications such as warehouse logistics, direct store delivery and law enforcement vehicles, it is suitable for those who require vehicle-mount computer capabilities with the portability of a tablet.

Users will be able to easily transition from forklift to hand use for inventory management. The QWERTY keypad alongside the 8" P-Cap multitouch display adds practicality for those that require frequent data input, while various wireless connectivity options allow for real-time updates on inventory and tasks.

The power input of the tablet PC in a vehicle dock makes it suited as a vehicle-mount computer through its various RAM mount solutions. The one-handed docking/undocking allows for the transition to tablet use quickly for data collection, such as barcode and RFID scanning or other on-the-move computing tasks. It is lightweight at 1.5 kg and has a 6 h standard battery operating time, which allows it to be used as a tablet for an extended period.

Its ruggedness allows for industrial usage in all sorts of conditions. IP65 certification and MIL-STD-810G compliance for shock, vibration and drop means that the device is protected against vehicle and hand use in all environments.

Other features include: Intel Celeron N2930 Bay Trail-M processor; a 5 MP auto-focus camera; built-in Wi-Fi, BT and GNSS; and an optional 1D/2D barcode reader or HF/UHF RFID reader.

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Conveyor cleaning system

Material carryback is one of the main causes of potential problems in belt conveyor systems. To prevent this, operators rely on precleaners for coarse materials and secondary cleaners for fine cleaning, and in many cases these cleaning systems can remove more than 90% of carryback.

Flexco's Y-Type flexible secondary cleaner can be equipped with various polyurethane or carbide blades, giving users a system that meets their particular requirements in an efficient way. Where large quantities of dry foodstuffs have to be conveyed, Flexco also offers its secondary cleaner with chemical-resistant polyurethane blades meeting food industry regulations.

Flexco offers this flexible solution for both normal and heavy usage, so it is available with a maximum belt speed of between 3 and 3.8 m/s. A spring tensioner maintains a constant blade pressure on the belt at all times, providing a high degree of fine cleaning. The pressure of the tensioner ensures that the 75 mm blade segments adapt to worn and damaged belts too.

The pole has a diameter of 60 mm for standard loads and 72 mm for heavy-duty loads. Depending on usage, the Y-Type is suitable for belt widths of 450–1200 mm (normal loads) and 900–1800 mm for heavy-duty loads. It can be used at temperatures from -35 to 82°C. Clearly visible wear marks indicate when the segments have to be replaced.

Flexco (Aust) Pty Ltd

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Bulk bag unloading and weighing system

Sterling Systems & Controls has announced its line of bulk bag unloading systems. These customised unloading systems can include bulk bag discharging, material weighing and batch dispensing, along with the controls required for automatic operation.

The comprehensive system for premixed food ingredients incorporates the mechanical structure which houses and supports the bag discharge, material weighing, dispensing (flexible screw conveyor) and control panel components.

Mechanical components are provided to unload the bulk bag, weigh the desired amount of material as set for a batch by the operator, and then dispense the batch of material into a container for production use. The company provides the VFD panel and equipment along with a system control panel. The system was custom-designed for efficient operation to meet the needs of the user's production system.

The system is easy for the operator to use. After hanging a full bulk bag in place within the upper part of the support structure, and routing the bag spout through the iris valve and into the bag clamp, users open the bag spout to start the flow of the material into the bulk bag unloader. They then turn on the main power to the VFD and control panels and disengage the emergency stop. With control set for auto, users can set the target weight, fast cut-off and slow cut-off set points, as well as the slow fill speed. Users press the start batch push-button to begin the automated process of bulk bag discharge, material weighing and dispensing.

Sterling Systems and Controls Inc

www.sterlingcontrols.com



Low-profile flexible screw conveyor

Flexicon's Low Profile Flexible Screw Conveyor with bin and castor-mounted frame can roll below mezzanines and other low-headroom areas, receive material from overhead equipment and discharge the material into process equipment and vessels throughout the plant.

Ready to plug in and run, the self-contained unit features a 'push-type' drive system positioned at the lower intake end of the conveyor, versus a standard 'pull-type' drive positioned at the upper discharge end of the conveyor, reducing overall height by approximately 610 mm.

At 0.25 m³, the bin accommodates the contents of approximately one-third of a bulk bag measuring 1 x 1 x 1 m, or several typical 25 kg bags, depending on bulk density.

A specialised BEV-CON screw within the straight conveyor tube is engineered to move a range of difficult-to-convey bulk materials that tend to cake, pack, smear or plug, as well as fragile products prone to breakage, with no separation of blends.

With the exception of the polymer tube, all material contact surfaces are of stainless steel finished to food, pharmaceutical, dairy or industrial standards for rapid washdown and/or corrosion resistance.

Flexicon Corporation (Aust) Pty Ltd

www.flexicon.com.au



Aluminium helical gear worm unit

NORD Drivesystems has redesigned its two-stage SK 02040.1 helical worm gear unit, replacing the previous cast iron product with an aluminium unit.

The one-piece die cast UNICASE housing ensures strength and rigidity, plus reduced weight. Aluminium is more corrosion-resistant than steel and can be further protected with additional measures such as the nsd tUpH surface treatment.

It has a power range from 0.12 to 1.1 kW and offers an output torque of up to 100 Nm. Its wide range of speed ratios (from 5.37:1 up to 330:1) enables optimum adaptation to the user's requirements.

It is available in a universal foot flange version and offers versatility with many equipment versions. Mounting options include flanges and torque arms.

All versions are available with solid or hollow shafts, and the motor can be mounted directly without the need for a coupling or adapter (IEC or NEMA). It can be quickly and simply configured for a wide range of applications.

NORD DRIVESYSTEMS (Aust) Pty Ltd

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End-to-end processing and packaging solutions

Heat and Control and Ishida have formed an alliance, known as HCI Snack Solutions, that provides snack customers with full 'end to end' processing and packaging solutions. The alliance specifically targets the EMEA region.

A single-source supplier like HCI Snack Solutions can add value through increased connectivity levels and digital data exchange along all stages of the processing and packaging production lines. Working with one supplier

is an easy process, as customers only need to speak to one team.

One example of product moving through key sections of the processing and packaging lines is potato chips moving from the SwitchBack conveyor and up into an incline conveyor, which can move the product vertically and reduce drop damage.

After reaching the top of the incline conveyor, the chips are transported down the line through Heat and Control's FastBack Revolution Proportional Gate. This eliminates product breakage during gate closure and provides a feed of product to weigher via the FastBack Left Right Center (LRC). The LRC is a double multihead weigher feed solution designed to provide a precise and consistent product stream to Ishida's back-to-back 218 twin weigher, which provides weighing accuracy to meet production requirements.

The product then moves from the weighers into the Inspira twin or single snack food bagmakers. For quality control, Ishida DACS checkweighers verify correct product weight or count, and eliminate underweights and product overweight giveaway. The snack product is then packed using the ACP-700 case packer, which can be integrated into any snacks production line.

Automation of the line was controlled using Heat and Control's New Horizon and Ishida's Senital controls and data solutions technology, which enabled operators to oversee the production line and provide real-time feedback to the operator.

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Food packaging and nutrient absorption



TESTING

Zinc oxide (ZnO) nanoparticles are present in the lining of some canned goods for their antimicrobial properties and to prevent staining of sulfur-producing foods. Now researchers from Binghamton University have found that these nanoparticles can change the way that intestines absorb nutrients or intestinal cell gene and protein expression.

In the study, canned corn, tuna, asparagus and chicken were studied using mass spectrometry to estimate how many particles might be transferred to the food. It was found that the quantities of the foods that would be eaten in a day contained 100 times the daily dietary allowance of zinc.

Gretchen Mahler, associate professor of bioengineering, then looked at the effect the particles had on the digestive tract.

"People have looked at the effects of nanoparticles on intestinal cells before, but they tend to work with really high doses and look for obvious toxicity, like cell death," said Mahler. "We are looking at cell function, which is a much more subtle effect, and looking at nanoparticle doses that are closer to what you might really be exposed to."

"They tend to settle onto the cells representing the gastrointestinal tract and cause remodelling or loss of the microvilli, which are tiny projections on the surface of the intestinal absorptive cells that help to increase the surface area available for absorption," said Mahler.

"This loss of surface area tends to result in a decrease in nutrient absorption. Some of the nanoparticles also cause pro-inflammatory signalling at high doses, and this can in-

crease the permeability of the intestinal model. An increase in intestinal permeability is not a good thing — it means that compounds that are not supposed to pass through into the bloodstream might be able to."

Although Mahler studied these effects in the lab, she said she is unsure what the long-term health implications might be.

"It is difficult to say what the long-term effects of nanoparticle ingestion are on human health, especially based on results from a cell culture model," said Mahler. "What I can say is that our model shows that the nanoparticles do have effects on our in vitro model, and that understanding how they affect gut function is an important area of study for consumer safety."

The researchers are looking at how an animal model (chickens) responds to nanoparticle ingestion.

"We have seen that our cell culture results are similar to results found in animals and that the gut microbial populations are affected. Future work will focus on these food additive-gut microbiome interactions," said Mahler.

The study, ZnO nanoparticles affect intestinal function in an in vitro model, was published in the journal *Food and Function*.

NEWS



Detect water vapour in packaging

Water vapour transmission can have a negative impact on food, pharmaceuticals and other products in packages. Now a new standard is providing a way to test for water vapour transmission through flexible barrier materials using electrolytic detection sensors.

The ASTM International standard (soon to be published as F3299) was developed by the committee on primary barrier packaging (F02).

Traditional methods relied on infrared sensors but this latest standard may support instruments that use alternate sensor technologies that are both more sensitive and less expensive.



©Africa Studio/Dollar Photo Club

New method detects coffee adulteration

Are you sure the coffee you're drinking is the one it says on the label? High-quality, expensive arabica coffee may be adulterated with cheaper robusta coffee for financial gain, which is why researchers from the Quadram Institute have developed a new technique to detect contamination.

The price difference between arabica coffee and robusta coffee is not only down to taste, but also because robusta plants are higher yielding and easier to grow. However, once they have been roasted and ground, it is difficult to distinguish between the two types.

Identifying undeclared blends relies on detecting the chemical 16-O-methylcafestol, or 16-OMC, which is found in robusta but not in arabica. But this method is expensive and can take up to three days, making large-scale surveillance impractical.

Instead, researchers from the Analytical Sciences Unit used a benchtop NMR spectrometer from Oxford Instruments to detect 16-OMC, which uses radio waves and strong magnets to get detailed information about the molecular composition of a sample. This method reduced the time taken to process samples to 30 min, and is sensitive enough to detect just 1% robusta in an arabica/robusta blend.

"This is an important milestone for detecting fraud in coffee, as 1% is the generally accepted cut-off between trace contamination, which might be accidental, and more deliberate adulteration for economic gain," said Dr Kate Kemsley from the Quadram Institute, who led the research.

The new sensitivity revealed that arabica does in fact

contain low levels of 16-OMC, so rather than testing for its presence, they devised software to assess whether the level was above a certain threshold.

After testing 60 retail samples of '100% arabica' coffees sourced worldwide, they found six of them were suggestive of adulteration with another coffee.

"It was immediately obvious using our test that there were several suspicious samples, producing results that were consistent with the presence of substantial amounts of robusta — far more than would be expected through unavoidable contamination," explained Dr Kemsley.

The researchers estimated there is a 5–20% prevalence of fraud for ground roast coffee products claiming to be 100% arabica.

Therefore, consumers may be paying premium prices for a product they are not receiving. Better surveillance techniques, such as the NMR detection method, will help reassure consumers about the authenticity of their products and ensure farmers receive a fair price for their produce.

Giles Chapman, Head of Intelligence at the Food Standard Agency's National Food Crime Unit, said: "We're always keen to understand how scientific advances expand the range of tools which can be used to validate the authenticity of food products sold to UK consumers. This piece of work has generated some interesting insights which we will be looking to explore further."

The research was funded by the Biotechnology and Biological Sciences Research Council and published in the journal *Food Chemistry*.

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Automatic pressure calibrator

The Fluke 729 automatic pressure calibrator simplifies the calibration of pressure instruments by automatically generating precise test pressures, improving calibration integrity by compensating for leaks and automatically documenting the pressure calibration process. Technicians input a target pressure and the calibrator pumps to the desired setpoint while the internal control stabilises the pressure at the requested value, delivering more accurate results and speeding the calibration process.

The 729 features automatic pressure generation and control for multiple tests to 300 psi (20 bar, 2 MPa). Users can fill in a test template and the 729 automatically pumps to and documents a multiple-point pressure calibration test. Easy calibration documentation can be generated using defined templates for transmitters and switches. Users input the starting and ending test pressures and number of test points and the calibrator documents the applied pressure, measured mA and percentage error for each test point. The bright colour graphical display flags out-of-tolerance test results in red.

HART communication enables mA output trim, trim to applied values and pressure zero trimming of HART pressure transmitters, eliminating the need for an additional HART calibrator. Technicians can also perform light configuration tasks such as changing a transmitter tag, measurement units and ranging. The Fluke 729 also provides measurement of mA signals on transmitter outputs and sourcing and simulation of mA signals for testing I/Ps and other mA loop devices. It includes a 24 VDC loop power supply for testing and powering transmitters in standalone tests disconnected from the control system.

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Michell Instruments' QMA401 low-maintenance trace moisture analyser has a new look and enhanced usability.

Maintaining the quartz-crystal oscillator-based analyser is simple, infrequent and inexpensive. No service is required for two years, at which point the desiccant dryer could need replacement — a process that can be carried out by the user in less than 10 min. It's straightforward to replace the internal moisture generator in the field with a freshly calibrated NPL or NIST traceable reference unit from the factory, which will last for three years of operation.

The hygrometer features an improved touch-screen interface and the menu system is intuitive for easy operation. The case of the QMA401 has been redesigned with a modern, easy-clean surface.

Using the new generation of quartz crystal microbalance (QCM) sensor, the precision hygrometer is designed to provide consistently accurate measurements of trace moisture. This is achieved through an automatic self-calibration system which adjusts the analyser against an internal moisture generator (traceable to NPL and NIST).

AMS Instrumentation & Calibration Pty Ltd

www.ams-ic.com.au



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Unravelling the complexities of conformity

Manufacturers and brand owners are under immense pressure to repeatedly produce conforming, high-quality, safe and well-presented packaged food to meet industry requirements.

Increasingly stringent legislation, innovations in packaged product design and evolving customer expectations mean the need for conformity has never been greater. Industry expert Mettler Toledo has published the free, comprehensive white paper 'Ensuring Conformity of Packaged Food', which unravels the complexities of conformity.

Daniela Verhaeg from the Product Inspection Division of Mettler Toledo explained, "Official recall figures show that non-conforming food products, due to unwanted contaminants or inaccurate labelling, are at an all-time high. Packaged food manufacturers clearly need a thorough understanding of conformity and what it entails: not only to avoid costly product recalls, but also to retain and grow their reputation for quality and consistency. Our aim with this white paper is to give all manufacturers and brand owners — irrespective of size or trading location — the knowledge needed to be game changers in a highly competitive packaged food environment."

Written to help packaged food manufacturers and brand owners consistently achieve conformity, the white paper explores:

- what conformity is — from regulatory compliance to product and package presentation needs
- what drives different food industry stakeholders to require conformity

- how to achieve conformity using advanced product inspection technologies
- the tangible business benefits that conformity can deliver.

Repeated conformity of packaged food delivers top- and bottom-line business benefits. Compliance with food safety regulations gives manufacturers access to trade in certain markets and helps to secure repeat business through honouring retailer supplier agreements and meeting consumer brand expectations. Manufacturers can streamline their quality assurance programs throughout their production processes, thus optimising operational efficiencies. In addition, they can protect profits by preventing unnecessary product giveaway and waste.

Consumer requirements for receipt of conforming packaged food are highly emotive; the product and package must meet their brand expectations and be presented in perfect condition, containing no defects throughout. Conformity of packaged food can therefore entail the prevention of all under- or overfill products, as well as removing those containing broken or missing components from the production line. The white paper details which type of advanced product inspection technology is best suited to achieve specific conformity objectives.

A free copy of the white paper can be downloaded from www.mt.com/pi-conformity.

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THz imaging scanners for food inspection

Terahertz (THz) imaging scanners by Terasense offer imaging sensors for the non-destructive analysis of the internal structure of objects, making them suitable for applications in food inspection, agricultural inspection and detecting the contents of packages.

Food manufacturers can use THz food scanners to check if a pick-and-place robotic arm has put all chocolate bars into a cardboard carton. They can see through cardboard or PE packaging as individual chocolate bars can be wrapped in any material, even metal-containing foil, which is impervious to THz rays.

The food scanner can gently and quickly prompt the conveyor-line operator and indicate if a seasoning sachet is missing in a noodle pack. Noodle containers are usually made of plastic or synthetic foam (polyfoam), which is transparent to THz waves.

THz imaging systems can detect insects and other foreign objects such as a common housefly through several polyethylene bags, even if total thickness of such PET coating exceeds 20 mm. It can also detect metal or plastic debris inside food packaging.

The imaging systems reveal carcinogenic mycotoxin fungus that contaminates peanuts, corn, hazelnuts and other grain crops and oil plants. For instance, with the aid of THz imagers, industrial customers can detect any sign of infections such as *Aspergillus flavus* and *Aspergillus parasiticus*, which exude the extremely dangerous carcinogen Aflatoxin B₁.

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Vented hood table top workstation

Hemco's 2400 Vented Hood Table Top Workstation is constructed of chemical-resistant, lightweight, advanced composites, and it can be easily moved as procedures or workflow change.

The workstation's dimensions are 24" wide x 15" deep x 24" high. The moulded, chemical-resistant work surface is recessed to contain spillage, and a 3" diameter outlet collar is provided for duct connection. The unit's base consists of a recessed work surface to contain spillage. Fumes are vented through the fume side and rear walls and out the top.

Typical uses include venting for hot plates, histology, microprocessors, microscope stations, student workstations, sample weighing stations and handling pharmaceuticals.

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The New Robot 500

Dynamic powerhouse
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Robot 500

AH 212

Flexible hanging machine for VEMAG sausage lines

The AH 212 hanging machine is a device for automatically hanging strings of sausages. The hung strings of sausages simply need to be removed with the smoke stick. The control unit is operated directly using modern VEMAG fillers – it's a child's game thanks to the intuitively operated graphical interface.

All the benefits at a glance:

- Flexible hook distances
- Formation of hook groups
- Optimum use of the smoke stick
- Fold-up trough
- All types of hanging possible
- Ergonomic fatigue-free working
- Short change over times
- Perfect integration into the VEMAG sausage line



CC215

Alginate Line Sausage – flexibly produced in alginate casings

The CC215 is an attachment to produce sausage in an alginate casing.

The sausages can either be discharged on a hanging unit or individually on a belt.

All the benefits at a glance:

- Low maintenance
- Flexible use
- Continuous production process
- Costs are reduced as time is no longer required for casing changes
- More efficient production processes
- High production speed
- Ideal hygiene characteristics
- Alginate is much more cost-effective than natural casing
- Endless sausage rope means less rework
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- Price stability, as alginate is not subject to any seasonal fluctuations
- "Pure" halal, poultry, vegetarian and kosher products are possible
- Consistent quality

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The ROBOT 500 is the economical solution for all filling tasks in industrial and artisan applications. A particularly high torque forms the basis for the ROBOT 500's universal, efficient usage options: Performance is not compromised even when processing cold, stiff mixes. Whether filling, portioning, grinding or forming; whether meat, fish, cheese or dough – all opportunities are available to you with the ROBOT 500. No other vacuum filler of the same size offers more power.

The vacuum filler offers robustness and reliability, even under the toughest working conditions. All components placed under high stress, such as the pumping system and transmission, are designed to have a long service life, a low level of wear and require little maintenance. The double screw system used both in the ROBOT 500 and in the HPE series industrial machines works with an extremely high level of weight accuracy, therefore helping to reduce the amount rejected and "given away" effectively.

All the benefits at a glance:

- Maximum torque
- Maximum power with compact dimensions
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- Cleanest product images
- Fastest product change
- Easy-to-operate graphical control
- The simplest program selection at the push of a button
- Reduced staff costs due to short training times
- Very gentle product transport
- Extremely simple cleaning



Size matters when selecting the right heat exchanger

8 tips for food producers choosing heat exchangers

Thermal processing is an essential part of food production. Whether cooking, pasteurising, sterilising, heating or cooling a range of products, it's a safe bet that most food producers will be using a heat exchanger to carry out their thermal processing requirements. Yet, with such a variety of applications possible, it's important that food processors select the right heat exchanger for their individual requirement.

When it comes to choosing the right heat exchanger for a particular situation, there is no substitute for professional advice, but you will have a better handle on the process if you have a basic understanding of the factors which need to be considered. These can be broadly divided into commercial considerations and technical considerations. Using the questions discussed below will provide you with a good starting point with which to begin a tender process or a basis on which to compare different proposals.

1. Is a heat exchanger the right technology?

It may seem an odd question for an article about heat exchangers, but the first question you should ask is whether you need one in the first place. There is no doubt that heat exchangers can be relatively complex and expensive. While they are eminently preferable in many situations, particularly where a cooling or heating source is already available or is required for more than one process, they may be overkill for

simple situations where a straightforward heating element or simpler refrigeration system is sufficient.

2. What type of heat exchanger do I need?

The simplest forms of heat exchangers are so-called plate heat exchangers, which consist of combinations of plates and gaskets through which the product and the heating or cooling medium move. They are relatively simple and cost-effective and can do a very good job with simple Newtonian fluids like milk and thin oils. However, for more viscous substances, non-Newtonian fluids and processes requiring high levels of heat transfer, tube-in-tube heat exchangers may be a better option.

These come in different forms including those with corrugated tubes to increase product turbulence, which prevents fouling and improves operating efficiency. For high fouling and viscous fluids, scraped surface heat exchangers are available. Reciprocating and rotary versions are available, allowing different products to be handled carefully, so that key quality characteristics can be maintained or mixing increased, while providing maximum operating efficiency.

3. Will the system cope with my products?

There are several things to consider. Firstly, the heat exchanger must be capable of providing the right amount of heat transfer. Different materials will have different thermal properties which must be considered when designing a heat exchanger. Factors such as viscosity, solids content and texture will need

to be assessed alongside product flow rates to ensure that the product receives the correct treatment. For example, if the heat exchanger does not deliver sufficient heat it may result in an incomplete process, which could have severe implications for product safety.

At the same time, if the system does not handle certain products correctly it can change or damage their quality; for example, rough handling of viscous sauces can have a negative effect on their texture.

Finally, the heat exchanger set-up should be capable of handling the maximum amount of product required at any time. While there will be physical constraints on the size of individual heat exchanger elements, in most cases it is possible to combine multiple units into suitable arrays in order to increase treatment capacity.

4. What other benefits could the system deliver?

One benefit of some heat exchangers is their ability to recover heat from the end of the process and re-use it. In many cases this feature enables the system to be more efficient, reducing the amount of heat which needs to be supplied in the first place. However, in some situations — for example, where the heat source is plentiful — then the recaptured heat can be used for another process or for something else altogether, such as heating offices or buildings.

In such cases, these additional cost savings need to be offset against the capital and running costs of the heat exchanger.

5. What are the maintenance requirements?

These will vary according to the type of heat exchanger chosen, its design and the environment in which it is used. However, more important than the actual maintenance requirements is how easy maintenance is. For example, how complicated is it to access key components and what are the costs of routine spare parts such as seals and gaskets?

For double and triple tube heat exchangers, is it possible to remove individual tubes without dismantling the entire unit, and is it possible to service parts of the unit without shutting down the whole process? These factors will have a key impact on how much the heat exchanger costs to service, both financially and in regard to the time and resources required.

6. How much will the system cost?

For many people, cost will be one of the most important factors in making an investment decision. However, it is important to compare both the capital cost of different units and their anticipated operating costs and service life. For example, a 25% higher purchase price may easily be recouped by greater product efficiency and reduced serving costs over the same, or even longer, operating life. Only by considering all the associated costs will you be able to make an accurate investment decision.

7. How will the system be designed?

Does the company use the very latest scientific information on energy and heat transfer or is it relying on papers and data which may be half a century or more old? While it is imperative that the heat exchanger performs correctly in terms of thermal transfer, other considerations, such as ease of installation and maintenance, are also important.



HRS Unicus Series heat exchanger installed at a food processor.



The latest HRS heat exchanger technology (such as this R Series) reduces energy usage and costs.

8. What back-up and support is there?

Not only is it important to have back-up in the event of a problem, but does your supplier offer features such as extended maintenance and servicing? Would you be able to take advantage of any future upgrades, such as improvement in tube design? It may not be essential to deal with a company which is based locally, but you should investigate how well they deal with other clients in similar circumstances.

It is obviously impossible to cover every potential situation in an article such as this, but this article highlights some of the most common issues which apply to nearly every heat exchanger purchase or installation. Your individual circumstances will be unique and another key consideration when making your final decision should be how well your chosen supplier appreciates this.

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Food-safety training needn't be high-tech

Jeff Mulhollem

While current training for food safety and sanitation usually incorporates high-technology presentations, such as videos and slide shows, there is still a need for low-tech approaches.

For unique audiences, such as employees of small-scale dairies that produce artisan cheeses, old-school teaching strategies that do not require electricity may work best, according to Penn State researchers. Workers in this sector need to be better trained because of the inherent food-safety risks associated with producing specialty cheeses — mostly from raw milk.

"Investigating and proposing solutions to improve food safety in this sector is important, given that dairy farm and processing environments may be responsible for foodborne pathogens that can contaminate raw milk, cheese and other dairy products," said Catherine Cutter, professor of food science, College of Agricultural Sciences. "Little is known about the food-safety and sanitation knowledge, behaviour, attitude and skills of farmstead cheesemakers in the US."

Cutter, assistant director of food safety programs for Penn State Extension, noted that after performing a two-year assessment of farmstead cheesemakers in Pennsylvania, her research group developed alternative training materials such as customised, richly illustrated, colour flipcharts to train workers.

"These presentations can be given on a picnic table, in a barn or on a front porch," she said. "We saw a need to think outside the box for training this audience and developed a method to help them, building on previous work done by colleagues in our department. And while we were working with small-scale cheesemakers in Pennsylvania, what we came up with could be adapted for other similar audiences across the country."

Lead researcher Robson Machado, now a faculty member at the University of Maine, who was a doctoral student in food science at Penn State when he conducted the research, assessed the sanitation, personal hygiene and food-safety practices of 17 small-scale cheesemaking operations. He administered pre- and post-tests to workers that addressed food-safety knowledge, attitude and behaviour, as well as an evaluation of handwashing skills. He also tested environmental samples

from the processing plants to see what microorganisms were present and where they could be found.

Then, he gave workers the low-tech food-safety training and documented how they altered their behaviour later. Afterward, Machado measured to see if the newly trained cheesemakers' actions improved conditions at their plants. He discovered that they had.

The curriculum Machado and Cutter developed for the training contains strategies that consider specific characteristics of small and very small dairy farms. It includes two lessons designed to provide workers on dairy farms with the knowledge, skills and a comprehensive explanation of the food-safety rules that they need to follow at work.

The first lesson in the training describes the four steps for cleaning and sanitising and why they are needed, and the basics of cross-contamination and how it can be avoided.

The second lesson describes the importance of good personal hygiene practices and shows the correct procedure for hand-washing, the correct use of gloves and other personal habits.

"Not only did the training have an impact on the food handlers themselves, but we also assessed the environment to see if we could see a reduction in microbes," Machado said. "We saw an improvement in certain microbial populations, such as a reduction in *E. coli* and other indicators of hygiene."

One troubling aspect of the research that was published in *Food Protection Trends* was that participating small-scale cheesemakers did not seem to know they were not following sound food-safety principles before being trained, Cutter pointed out.

"What we found is that the processors think that they are doing a great job when the reality is they're not," she said. "The research that Robson did in this study indicated that sanitation and personal hygiene are problems."

In a sort of epilogue to this research, other food safety specialists in Penn State Extension are now developing flip chart-focused lessons to train Amish growers to comply with produce standards in the federal *Food Safety Modernization Act*.

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What happens between corn and flake?

Lauren Quinn

Raw materials like grains are often high in vitamins and health-promoting phenolic compounds but processing can rob the final product of these nutrients. In a set of recent studies, University of Illinois scientists discovered what happens to cancer-fighting phenolic acids in corn when it is processed into cornflakes.

The research team made cornflakes from 19 corn genotypes varying in phenolic content. They wanted to know if higher ferulic acid and p-coumaric acid content in the corn kernel translated to higher concentrations of these phenolics in the final product.

“What we found was not particularly good news, but it was interesting. Regardless of the concentration in the grain at the beginning, the dry-milling process removes the majority of phenolics,” said Carrie Butts-Wilmsmeyer, lead author of the two studies and research assistant professor in the Department of Crop Sciences at U of I.

The phenolic compounds in corn are primarily concentrated in the bran, or the outer covering of the corn kernel, which is removed in the first steps of the dry-milling process. The researchers wanted to determine if they could increase the remaining soluble phenolic content by heating the starchy leftovers during later processing stages. Although most of the phenolics in corn are bound to fibre, heat can release bound forms of the compounds and improve the antioxidant content of corn-based foods.

“We did see an increase in soluble phenolics, but it was so small, you could have gotten the same benefit from going to the refrigerator and eating a few blueberries,” Butts-Wilmsmeyer said.

Despite the less-than-ideal outcome, the studies represent important steps forward for food science researchers and the food processing industry. First, the lab-bench-size process developed and demonstrated by the researchers in *JoVE Video Journal* allows testing of small batches of experimental corn lines.

“Before this project, the only published study on cornflake processing used a sample size of 45 kilograms. We worked with ag engineers to get it down to 100 grams, literally a 450th of the size,” Butts-Wilmsmeyer said.

They found that the biggest changes in phenolic content were happening at three stages of the dry-milling process: whole kernel, flaking grit and toasted cornflake.

“Since we now have the process miniaturised and can control everything in the lab, we can also start figuring out how we can change the process to recover more of these compounds in the end product,” said Martin Bohn, co-author of the studies and associate professor in the Department of Crop Sciences at U of I.

Although the phenolics didn’t make it to the final product, they weren’t lost entirely.

“We have to focus on the bran and other ‘waste’ products,” Bohn said. “Is it possible to extract these compounds and fortify the food with them? This is what I think is important. Our study showed that at the beginning, there’s variability in corn hybrids for all these compounds but through processing, it’s all leveled off, it’s all gone. But they’re still in the co-products, and I think we could actually recover them and add them to the end product.”

Butts-Wilmsmeyer said fortifying processed foods with health-promoting, cancer-fighting phenolics could benefit people without easy access to fresh foods, such as those living in food deserts. “These itty-bitty compounds are tied to everything,” she said.

High-throughput, microscale protocol for the analysis of processing parameters and nutritional qualities in maize (*Zea mays* L.) is published in *JoVE Video Journal* [DOI: 10.3791/57809]. Authors include Carrie Butts-Wilmsmeyer, Nicole Yana, Gurshagan Kandhola, Kent Rausch, Rita Mumm, and Martin Bohn, all from the College of Agricultural, Consumer and Environmental Sciences at the University of Illinois.

Changes in phenolic acid content in maize during food produce processing is published in the *Journal of Agricultural and Food Chemistry* [DOI: 10.1021/acs.jafc.7b05242]. Authors include Carrie Butts-Wilmsmeyer, Rita Mumm, Kent Rausch, Gurshagan Kandhola, Nicole Yana, Mary Happ, Alexandra Ostezan, Matthew Wasmund, and Martin Bohn.

Both studies were supported by the Kellogg Company and Dow AgroSciences and through a USDA Hatch Grant.

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The VZXA consists of an angle seat valve body, a piston or diaphragm actuator and a visual position indicator. The robust, flow-optimised valve body is made of easy-to-clean stainless steel and available in nominal sizes DN15 to DN65, and connection variants include threaded, clamped or welded. Its high flow rate makes the VZXA suitable for highly viscous media: liquids, gases or vapours.

Stainless steel actuators are available in three sizes, with the control functions NC (normally closed), NO (normally open) and DA (double-acting). The standardised interface between modules simplifies installation, allowing actuators to be replaced without having to remove the entire valve. Separation of valve bodies and actuators also makes installation of valves in pipelines easier and faster. The spindle seal is in the form of a cartridge, meaning it can be replaced simply without need for special tools.

The VZXA is quick and easy to clean inside and out as it has virtually no dead spaces. Its modular construction means the actuator can be easily removed and sterilised in an autoclave, for instance. The compact, sturdy and corrosion-resistant stainless steel unit can also withstand harsh ambient conditions, aggressive cleaning foams or vapour. The encapsulated modules and patented seal system prevent leakage of the operating medium into the actuator, or the compressed air contaminating the medium.

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Sanitary magnetic grate system

Overcoming hygiene and cleaning issues associated with conventional grate magnet systems, RAPIDCLEAN contributes to food product security and foreign metal fragment control.

Foreign bodies, such as metal and work-hardened stainless steel, are a high risk in the food industry. If metal goes undetected and contaminates the end product the consequences can be huge, ranging from customer complaints and food product recall to brand name damage and financial loss.

The grate magnet was designed by MAGNATTACK technicians to overcome issues experienced by food processors while cleaning heavy and outdated magnet systems. The result was a hygienic grate magnet system that allowed for easy, effective cleaning and provided magnetic separation efficiency for enhanced product purity.

The RAPIDCLEAN system features a number of powerful RE80 +11,000 gauss magnet bars that capture and retain dangerous metal fragments from critical points in product streams.

Key features of the magnet include: hygienic ledge-free interiors prevent build-up and contamination of products; self-supporting design eliminates WHS/OHS risks involved in lifting and handling heavy grate magnets during cleaning operations; single bar cleaning method ensures no risk of drawer jamming and also allows for flow/tonnage versatility with adjustable bar centres; cleaning enforced well outside of the product stream avoids the risk of recontamination; optional DURA-SLIK abrasion-reduction technology to extend magnet strength life in abrasive applications.

The system is suited to ingredients such as flour, powder, rice, sugar, coffee and other similar dry products. It carries HACCP International certification and conforms to current industry standards such as the International Food Safety Std 0909MAG-SEP 1-2010. Selected models are USDA Dairy Accepted for sensitive dairy, infant formula and pharmaceutical applications.

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LISA UV is an online optical sensor with cutting-edge measurement technology, using no reagents for reliable measurement of CODEq in discharge water from food industry plants. The sensor also has the capacity to measure UVT (UV Transmissivity), SAC₂₅₄, TOCeq and BODEq.

While a comparatively low investment, the long-lasting and energy-efficient UV-LED technology is coupled with a robust design to give the sensor years of service. Like all TriOS sensors, LISA uses a unique hydrophobic nanocoating on the optical windows, which may be combined with compressed air flushing or even automated brush wiper, to achieve low maintenance and long operating times without manual cleaning.

With the latest technology for UVT measurement, LISA UV gives a reliable output to optimise the UV disinfection plants without need of any calibration.

The innovative TriOS G2 interface allows quick and easy integration of the sensor into existing process control systems or an external data logger. With an Ethernet interface (Wi-Fi or LAN) the LISA can easily be configured through any standard web browser on a PC, tablet or smartphone. The sensor can also be used without a local display or controller and connected directly into a PLC or SCADA system with analog (4–20 mA) or digital (Modbus) outputs.

For changing conditions, the optical path length can be modified to suit the application by replacing the lenses, giving the LISA a broad range of detection limits and versatility. Turbidity compensation is automatically carried out within the sensor via a second measuring channel to ensure high accuracy.

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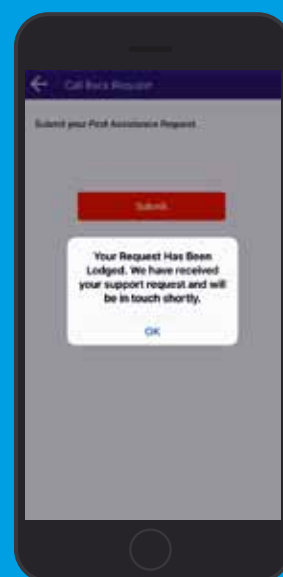
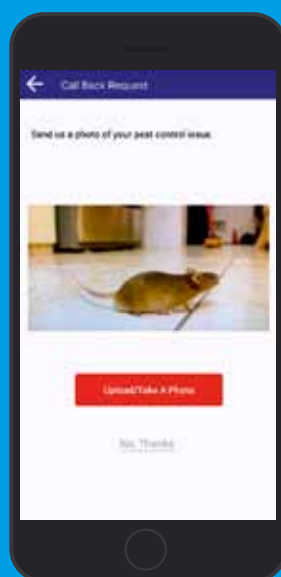
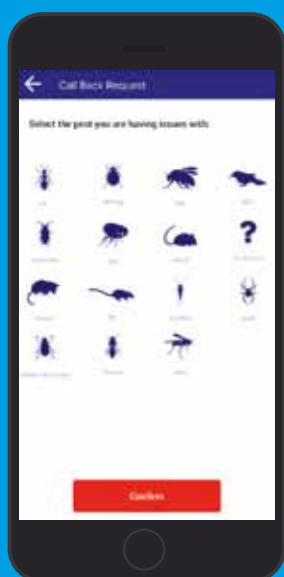
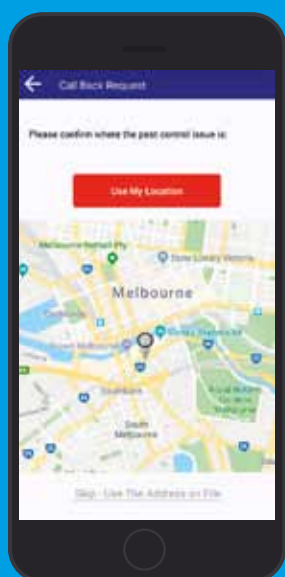
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Brewery bottles beers efficiently with line integration

At the beginning of the year, German brewery Rothaus installed sorting and filling lines at its High Black Forest site to maximise uptime and increase reliability, with the help of Gebo Cermex.

Germany is traditionally a beer-drinking country, and one regionally popular brew is the Rothaus Pils Tannenzäpfle, produced by Rothaus Brewery. Founded in 1791, it is the most well-known regional brewery in Germany's Black Forest. Today, the Badische Staatsbrauerei Rothaus AG (Baden State Brewery Rothaus) is recognised for the premium quality of its beer, and its popularity is expected to continue. The foundation of its success are its modern brewing facilities; for example, the bottling facility has some of the most advanced technologies available.

However, its ageing bottling line could no longer guarantee the high hygiene and quality standards of the company, and it was receiving returnable glass bottles from other producers that it could not process according to its top productivity control routines, which was impacting the high efficiency target of its new filling line. This was proving particularly difficult in the summer season, when the inflood of bottles increased and the number of operators at the brewery was reduced.

The Gebo Cermex team supplied the integration services for setting up a new sorting and a new bottling line. The company managed to fully integrate 30 different machines from more than a dozen different suppliers, creating a new line that can sort 3200 crates/h and bottles up to 76,800 bph. Gebo Cermex also provided the crown feeders and the conveying components, including pallets management within the brewery.

"Both for the sorting and bottling lines, we successfully answered the request from the customer to limit the number of operators to three per line, thanks to an 'arena' layout, giving quick and easy access to all the machines," said Louis Merienne, Sales Director Europe, Beverage Markets at Gebo Cermex.

Roger Jäger, Director of the filling department at Rothaus, noted, "The big challenge for us was actually the sorting line because this is not a standard line in the classic sense. Here, we are very satisfied: the concepts have very quickly shown that they are perfectly fine. With the new filling line, we can already see utilisation rates of more than 80%. Considering that the line has not yet been running for a full year, this is remarkable value. This is due to the fact that



we are currently supplying only sorted empty containers to the filling line, which of course brings enormous operating safety to the lines."

This has helped deliver reliability and efficiency regardless of the percentage of irregular returnable bottles. This means the crates can contain, on average, 40% and in peak times up to 80% of bottles from other producers without causing issues. In addition, the sorting line can run at 85% efficiency in 12 different modes to sort bottles and crates, fill used or new crates — with used or new bottles — and create stocks of empty crates. This contributes to a performance increase of the bottling lines, with the one installed most recently working at 90% efficiency.

Working together since 1991, Merienne further explained the successful partnership between the two companies.

"Our globally renowned capabilities in line engineering have been especially appreciated due to the fact that — as an engineering integrator — we are trusted and valued as an independent partner. This relationship of trust has been built through time and on the basis of concrete performances and facts. Thanks to our line engineering expertise, we were able to help Rothaus in setting up the business case and calculating their return on investment (ROI) of sorting the goods themselves. Our patented sorting system solution is controlled at the line level: the central automation program regulates the speed of the machines, for continuous and seamless running of the whole line, leading to maximum uptime for the customer."

Gebo Cermex at Tetra Pak Marketing Pty Ltd

www.gebocermex.com



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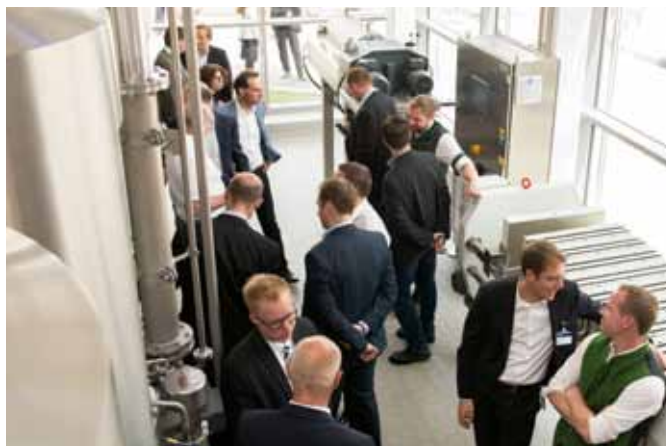
BESTECH
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Krones' new research brewery to conduct beverage trials

German packaging and bottling machine manufacturer Krones has inaugurated a brewery at its facility in Freising called the Steinecker Brew Center. Claimed to be the world's most sophisticated research brewery, it will offer Krones and its clients an option for collaborative brewing, conducting trials and testing new technologies.

The new brewing pilot plant, worth €2.6 million, features a five-hectolitre brewhouse comprising five different vessels.

"The system is small, that's true, but it offers maximum flexibility all the same: here we can combine different technologies and are able to demonstrate the large bandwidth of solutions offered by Krones," explained Dr Konrad Müller-Auffermann, who was responsible for the project. "We can, for example, reproduce an ultrawide range of internationally employed processes on the one hand while also familiarising



our own commissioning engineers and clients' staff with the technologies concerned on the other."

Syskron, Krones' subsidiary, has integrated its ReadyKit and Share2Act products into the Steinecker Brew Center to enable it to run practical trials to find out which process-engineering solutions are most efficiently suited to beverage production, and how digital interfacing can

assist the brewer. It will also help develop new products faster and test them under realistic conditions in the future.

Heiko Feuring, Head of the Steinecker Plant and the breweries business line, highlighted the swift progress of the project, which was turned into a hands-on reality within one year. He said, "We're delighted that we're now able to use our Brew Center."

Krones (Thailand) Co Ltd
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Image supplied by Krones.

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Flow meter for industrial air blowers and dryers

The ST50 Mass Flow Meter Series from Fluid Components International provides precision measurement of air to increase the efficiency of industrial air blowers and dryers used in raw materials production.

Using thermal dispersion mass flow sensing technology, the flow meters provide accurate and repeatable direct mass flow measurement at a lower cost. There is no need for the temperature sensors, flow computers or the other devices required with orifice plates, Venturis, Vortex shedding and other flow meters. The ST50's design also provides built-in temperature compensation for reliable measurement over a wide temperature range with almost no pressure drop.

Offering a wide flow range, the ST50 measures air, compressed air or nitrogen from 0.23 to 122 MPS in line sizes from 51 to 610 mm. Flow meter accuracy is up to +1% of reading, +0.5% of full scale, with repeatability of +0.5% of reading. The meter operates at temperatures from up to -18 to 121°C. Turndown ratio is up to 100:1.

The flow range of the ST50 can be field-configured in either standard mass flow or volumetric engineering units. It features dual analog outputs: two 4–20 mA outputs, which are field assignable to flow rate or temperature, and an RS232C I/O port. A 0–500 Hz pulse output for totalised flow is also available.

The ST50 meter's rugged stainless steel sensing element with Hastelloy-C tips is designed for endurance in heavy-duty plant, outdoor and field installation conditions. Its electronics are housed in an all-aluminum, epoxy-coated enclosure that is NEMA 4X (IP66) rated.

There are two process connections options available: 1/2" or 3/4" MNPT with a stainless steel or Teflon ferrule. It is available in three field-adjustable U-length probes: 25–152, 25–305 and 25–457 mm for pipe sizes 51 to 610 mm. Instrument powering options include both 18–36 VDC and 85–265 VAC.

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How to reduce sugar plant carbon emissions

Robert Glass, Global Food and Beverage Communications Manager, ABB

It's widely understood that improving the efficiency of equipment and processes will make a business more competitive and reduce operational costs. However, this is easier said than done, as identifying the areas that need improving can be challenging — especially in sugar plants, where many managers have grown accustomed to high energy usage and carbon emission levels.

There's a famous management mantra that goes "what gets measured gets managed". While the source of this quote is subject to debate, the sentiment behind it isn't: you can only effectively manage and improve things that you have sufficient data about. Without insight, you can't act or make an informed decision.

This has never been truer than in modern times, as food and beverage businesses increasingly realise the value and benefits of digitalisation. Likewise, few facilities are as primed to benefit from it as sugar production and processing plants, where navigating the energy-intensive processes to identify areas for improvement can be challenging without insight.

Sugar mills generally demand considerable amounts of electricity to run smoothly due to the intensive process of refining sugar. From ABB's experience in the sugar industry, using 45–50 GWh of electricity every year is nothing unusual for a typical sugar cane plant. But when you consider that this could power approximately 12,000 households across Europe, the scope of the problem becomes apparent.

It becomes even more concerning when you consider this alongside reports from the Tyndall Centre for Climate Change Research in the UK, which projected that 2017 would see carbon emissions reach a record high after years of stability. The official figures have yet to be confirmed, but an increase could form the basis of tighter emissions rules across UN countries given the importance of the 2015 Paris climate agreement.

With that in mind, energy efficiency for sugar plant managers is as much about establishing a competitive advantage as it is reducing expenses. In order to improve efficiency, managers must understand what is causing their plant to consume so much power.

Often, ABB's engineers will conduct a plant assessment and find that inefficient electrical equipment is the cause of the

excessive power consumption. This could mean modernising an electric motor or installing high efficiency drives could be the solution, but there is no one-size-fits-all approach to managing a sugar plant. So, how can you determine where your plant's specific inefficiencies lie?

As the management mantra suggests, monitoring and measuring operational data will give a strong indication of what is causing high energy usage. However, this has traditionally been a long-winded and time-consuming process of manually retrieving and compiling data before analysing it.

Fortunately, that's where the digitalisation of sugar plants helps managers take control of processes. By using equipment and sensors designed with connectivity in mind, sugar plant managers and engineers can automate the data collection process. But this data must then be collected into a central operational management system, such as the ABB Ability manufacturing operations management (MOM) system.

Using ABB's MOM system, sugar plant managers have an extensive overview of the performance of their plant's operations. The MOM system features an energy monitor app that allows managers to analyse not only current levels of energy usage and emissions, but to also compare it against historic data. Managers can use this to see, in near real time, changes in usage to determine if anything out of the ordinary has happened with any equipment, such as if it has an elevated electrical draw that may indicate maintenance is required.

ABB has also drawn from its extensive experience in the sugar industry to develop its sugar application library, which provides engineers with a comprehensive databank of all sugar production processes. Engineers can use this to control variables in processes across the factory, as well as benchmark energy costs.

With these systems offering greater transparency of energy usage throughout the plant, managers can act accordingly to reduce costs and emissions. In the age of digitalisation, monitoring operational data isn't just a precursor to better management, it's also a forerunner to better operational efficiency and lower operational expense.

ABB Australia Pty Ltd
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Acrylamide: can we have our chip and eat it too?

Ever since Swedish scientists discovered acrylamide in food in the early 2000s, there has been growing concerns over the potential negative impact it could have on people's health, and some regulatory bodies have been looking at ways to restrict acrylamide levels in consumer products.



Acrylamide is a chemical that forms during the cooking process when sugars and amino acids are released from food. Starchy vegetables, such as potatoes, have the highest levels, and certain cooking methods, such as frying and barbecuing, produce higher levels than boiling or steaming.

The World Health Organisation and the International Agency for Research on Cancer has labelled acrylamide as “probably carcinogenic to humans”; the US Environmental Protection Agency has categorised it as an “extremely hazardous substance”, and the European Food Safety Authority noted that acrylamide was a “public health concern as it potentially increases the risk of developing cancer in consumers of all ages”.

While these groups have given clear warnings to regulatory bodies and pushed for stricter, maximum levels to be enforced, some say that not enough is being done to curb the occurrence of acrylamide in consumer products. Is this trend about to shift?

In 2016, Denmark lowered indicative levels for acrylamide, and it seems that the European Commission (EC) is only steps away from setting stricter regulations. In 2007, the EC adopted a ‘Recommendation on the Monitoring of Acrylamide

Levels in Food’, in 2011, they adopted a ‘Recommendation on Investigations into the Levels of Acrylamide in Food’ and in 2017 EU representatives voted in favour of the EC’s draft regulation on acrylamide.

So what does this mean for food producers? The acrylamide topic is continuing to gain traction, and it may only be a matter of time before stricter legislation is realised.

Potato chip producers are one group at the greatest risk of being hit by this legislation, with these products producing some of the highest acrylamide levels. European manufacturers especially cannot be complacent and let changing legislation creep up on them without being duly prepared.

This now begs the question: Is there a way to reduce acrylamide in potato chips without compromising on taste and quality? The answer is yes. The upside is that these products can be marketed as a ‘premium’ product to appeal to an ever-increasing health-conscious market segment.

There are a number of ways to reduce acrylamide levels in food, such as varying cooking temperatures; storing raw product in different ways; harvesting at different times of the year; ingredient additions; or changing growing conditions altogether. But these methods can affect long-term costs and have negative effects on the taste of your products.



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For potato product manufacturers, there is an alternative method which can reduce acrylamide levels by over 50%. This method is known as electroporation. Electroporation is a technique in which electrical fields are sent through a cell in order to perforate the out membrane with microscopic holes. In the case of a potato, this process allows sugars and amino acids to be released from the potato prior to cooking, which in turn lessens the occurrence of acrylamide.

Heat and Control, in partnership with ScandiNova — a world leader in the development and production of Pulsed Power Systems — have developed a potato processing machine which does just that. The machine, known as E-FLO, can fit into any potato processing line and requires low-voltage, minimal maintenance and has a patented transformer design.

Peeled and washed potatoes are supplied in measured quantities by upstream equipment and delivered to the E-FLO infeed chute. The rotating E-FLO wheel transports the potatoes through the processing area as a compact packed bed through a water bath. Processing has to take place in a water bath for the electrical pulses to influence the product as desired. After a short exposure to the electric field pulses, to perforate the cell walls, the potatoes are lifted and discharged from the water bath by the continuing rotation of the wheel into the discharge chute.



The potato then continues down the production line where greater amounts of sugars and amino acids can be removed during the slicing and washing stages. The result: potato chips with a reduction in acrylamide of over 50%, in some test cases.

But apart from reducing acrylamide and creating a healthier product, there are a number of other advantages to running your potatoes through a gauntlet of electrical fields:

A crunchier chip — a crispier bit

A notable benefit to pulsing your potatoes with electricity is that your chip is crunchier. The E-FLO increases the amount of starch in the outer layers of the potato, which helps to give the chip that all-important bite. It also reduces the need or length of time needed to blanch your potatoes before cooking.

Less wear and tear

Slicing thousands of potatoes daily can quickly result in dull slicer blades. The E-FLO, however, softens the tissue of the potato, allowing the blades to slice between the cells of the potato rather than through them. This lessens the pressure and friction on your tools, which means less downtime and longer equipment life. Slicing between the cells of the potato also produces a smoother chip surface. A smoother surface means the chip absorbs less oil, which, in the long run, can significantly reduce your oil expenditure.

Product potential

The E-FLO has the potential to work on a range of products, such as differing root vegetables, making them easier to process. Because the E-FLO softens the tissue of the raw product, different cutting technology can be used to create new shapes more easily.

While there hasn't been a direct link between acrylamide and cancer in humans, the evidence provides researchers with a 'more than likely' scenario. It may just be a matter of time before tougher restrictions are put in place for food manufacturers. Either way, introducing a machine which reduces acrylamide levels while producing a crunchier and crunchier chip into your production line makes sense. And giving consumers the choice of a healthier, 'premium' product may just increase your customer base.

With the E-FLO, we can all have our chip and eat it too.

Heat and Control Pty Ltd

www.heatandcontrol.com

Processing seafood in an environmentally friendly way

India Ocean Tuna, an international seafood exporter, has introduced a new wastewater treatment to its Seychelles manufacturing plant to reduce its environmental impact.

Located in the Indian Ocean, the plant has installed a Global Water & Energy (GWE) aerobic and anaerobic digestion plant to process wastewater and potentially provide biogas.

Thai Union invested about US\$9 million into the construction of the new wastewater treatment as part of its commitment towards the 115-island archipelago of the western Indian Ocean.

“With world seafood production now topping 170 million tons — both from fisheries and aquaculture — there is obviously great scope globally for GWE technologies such as those adopted by Indian Ocean Tuna to deliver a more sustainable environmental outcome. This plant sets global benchmarks for environmental outcomes and commercial sustainability,” said GWE.

The new plant will help remove over 95% of organic contaminants from the wastewater using treatment processes including GWE’s ANAMIX anaerobic waste digester to achieve outstanding discharge qualities and convert a mixture of wastewater and sludge into biogas. This can be turned into methane and later used for energy production or fuel for electric power generators, or to replace fossil fuels in steam boilers and heaters on the production site, therefore minimising the company’s environmental impact.



Image credit: GWE.

Extracting biogas (primarily methane) from the organic waste removed will allow the fish processing plant to save more than 2000 kg/d of fuel oil worth about US\$1000/d.

Application of an anaerobic digester such as ANAMIX and mechanical dewatering with a screw press also helps lower disposal costs and lower landfill requirements for solid waste.

Michael Bambridge, Managing Director of CST Wastewater Solutions, which represents GWE in Australasia, said, “Biogas-producing green energy plants such as this can help pay for themselves. So there is a strong business profitability case to support companies wishing to act in an environmentally responsible manner.”

CST Wastewater Solutions

www.cstwastewater.com

Machine vision systems

Advantech’s AIIS product series aimed at vision inspection applications is suitable for food and beverage industry needs. Powered by a 6th Gen Intel Core i/Celeron SoC processor with rich I/O and flexible extendibility, the AIIS series enhances operations by providing machine vision performance, state-of-the-art computing and flexible expandability. The AIIS series products also support PoE/USB 3.0 camera interfaces equipped with a dedicated controller for maximising the image acquisition bandwidth and preventing frame losses.



Categorised into two design architectures — ruggedised (AIIS-5410P and AIIS-1200P/U) and high performance (AIIS-3400P/U and AIIS-3410P/U) — AIIS machine vision systems are suitable for various machine automation operations, including automated optical inspection (AOI), vision guidance robotics (VGR) and alignment inspection applications. Additionally, Advantech’s machine vision systems have undergone tests for compatibility with its Tier 1 camera partners, Basler and Point Grey, to ensure convenient integration and implementation.

To satisfy demands for ruggedised machine vision systems, the palm-sized AIIS-1200P/U and fanless AIIS-5410P models feature durable architecture, protection from dust, as well as a compact space-saving design. Additionally, the wide operating temperature (-20~60°C) and input power (9~36 VDC) range of AIIS-5410P and AIIS-1200P/U make them suitable for operation in harsh industrial environments.

The AIIS-3400P/U and AIIS-3410P/U models are equipped with a 6th Gen Intel Core i processor and 4-channel GigE PoE/USB 3.0 camera interface for high-performance machine vision systems. In addition to delivering high computing power, AIIS-3410P/U can be integrated with advanced expansion modules (such as iDoor) for installing extra add-on cards to support diverse applications.

Advantech Australia Pty Ltd

www.advantech.net.au

Electronic pest monitoring device

Adams Pest Control has technology that allows rapid response to pests via a free mobile app.

The system works by mitigating the risk through data collection via 24/7 monitoring sensors. This gives users peace of mind with protection between scheduled services. The process is tailored to fit users' circumstances/buildings.

The exact time of a possible infestation, capture or source of rodent activity is often unknown. The sensors track and control with continual monitoring giving a Rapid Pest Response. There are tailored monitoring device systems available.

Sensors can track activity along eaves, pipes and suspended ceilings. Below ground level the company offers waterproof devices with NFC-enabled sensors and the signal can penetrate concrete and solid earth.

Adams Pest Control

www.adamspest.com.au



Food safety system for baked goods

The AutoJet Food Safety Spray System from Spraying Systems Co applies mould inhibitor with comprehensive coverage and minimal waste. Through agitation the system can ensure that suspensions are mixed thoroughly.

The system is suitable for bakeries and cheese manufacturers who need unattended operation with simple adjustments that promote quick product changeovers. It also features auto-refill options, so the system can continue running without interruption to ensure production can continue for longer.

This safety system utilises the AutoJet spray controller's in-built software in combination with Precision Spray Control (PSC) which provides comprehensive spraying of mould inhibitor. The system's Hydraulic PulaJet automatic spray nozzles provide accurate delivery without misting and plugging.

**Spraying Systems Co
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www.spray.com.au



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Date coder stands

Alternative Engineering's Date Coder Stands are custom manufactured to be used anywhere there is a print head, sensor or reader being used on a conveyor system.

The date coder stands are used in conjunction with a print head to code or label boxes travelling on a conveyor belt. The digital indicators allow for quick set-up so users can easily switch between box sizes for ease of operation.

They are manufactured to be rigid and robust, made out of 100% food grade material making them suitable for operation in the food and beverage industries. The date coder stands are water and weather resistant, and have no internal slots or grooves.

They can be designed to take a range of print heads, sensors or readers, and mountings for display units are designed for the ergonomic use of the display.

Digital indicators allow for quick and consistent set-up for accurate repeatability.

Alternative Engineering

www.alternativeengineering.com.au



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Automatic band saw

The Astech SRA1 Automatic Band Saw is suitable for cutting frozen and tempered bone-in or boneless products including poultry, lamb, pork, beef, fish and cheeses.

The compact and robust machine offers a high production yield, cutting precision and high levels of safety during use. Hygiene is not compromised with the entire machine, its mounting hardware and the safety fence being constructed from stainless steel and food-grade plastics. Safety is enhanced with the entire machine being fully fenced.

Operational versatility, including portioning, is achieved with integrated programs offering a large range of options for every cutting configuration. Different products can be cut by simply changing the grippers.

The computer-controlled servo motors provide a constant cutting speed, designed to ensure high-quality cuts and reduced product smear.

The saw enables efficient automation of a typically manual and highly skilled task. A single operator can operate two machines simultaneously.

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Modular tunnel pasteuriser

The KHS Innopas SX modular tunnel pasteuriser for cans, glass and PET bottles provides microbiological safety and flexibility.

The dynamic pasteurisation unit or PU control system reacts variably to changes in conditions, and extended functions in the dynamic PU control system result in greater flexibility and yield savings in energy and media. Much of this is attributable to the optional speed regulation function. The individual zone temperatures are automatically raised or lowered depending on the conveyor speed.

With dynamic PU control the process temperatures are regulated within the hot zones of the tunnel pasteuriser to enable product safety and flavour stability. With a program for PU control the user can independently adapt the pasteurisation unit setpoint for a specific container type and the full functionality of the PU control unit is maintained.

The tunnel pasteuriser is clearly structured and offers optimum access which simplifies the maintenance and cleaning of the system. Parts of the process engineering, such as the heat exchangers and media supply, have been relocated on the machine as modules to improve servicing and machine safety.

Spare part management has also been optimised. The number of components the user is required to keep in stock has been reduced and functions can be simply retrofitted as an option.

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Factory upgrade safeguards long-term gelatine production

Innovative approach to project execution breathes new life into gelatine manufacturing plant.

To help safeguard future production of a large-scaled gelatine manufacturing plant, an innovative risk management approach was undertaken to identify and subsequently replace legacy equipment. The ultimate goal was to identify and replace legacy equipment with minimal interruption to production.

Gelatine is a multitasking ingredient for countless applications. It is a key ingredient in gummy candies, marshmallows, yoghurts, desserts and much more. Food applications are perhaps the best known examples, but they're not the only ones with pharmaceuticals, emergency medicine and photographic films also utilising gelatine products.

Derived from the collagen found in the bones, connective tissue and skin of pigs, cattle and other animals, gelatine manufacturers must adhere to stringent national and international food processing requirements. These regulations include, but are not limited to, cleanliness of the plant and equipment; and adhere to allowable percentages of additives, flavourings and colourings.

Safeguarding gelatine production

The existing legacy distributed control system (DCS) was over 15 years old and although it was still in operation, if it were to malfunction or break down there was limited ability to have it operational in a timely manner, which presented a production risk too great to ignore.

A vendor selection process was undertaken by the manufacturer to assess new technologies that could provide an effective solution for the plant's requirements. Through this process it was identified that the Rockwell Automation PlantPAx system was the most appropriate choice for this application.

The PlantPAx process automation system is built on a standard-based architecture using Integrated Architecture components. This system helps operators make faster, informed decisions and respond quickly to changing demands. It utilises a common automation platform for seamless integration to increase efficiencies and productivity.

The PlantPAx system connects process, discrete, power, information and safety control into one plant-wide infrastructure, leveraging EtherNet/IP as its backbone. As a result, real-time information is readily available throughout the enterprise.

According to Sean Doherty, account manager – Food & Beverage at Rockwell Automation, "In addition to the technology capabilities provided by the PlantPAx solution, a key focus for this project was to design a solution to meet the requirements of the plant, while minimising any production loss and operational risks associated with the changeover to the new system."

Innovative project execution

In the first stage of this project, the Rockwell Automation Global Solutions team was engaged to conduct a Front End Engineering and Design (FEED) specification. As part of this process, technical specifications, scope definition and risk assessments were evaluated to reduce overall project risks and execution time.

"We conducted a thorough site audit at the plant and documented the existing system and current processes. As part of this, we also consulted with the manufacturer to understand the key requirements of the system and the end-user specifications," explained Doherty.

To address concerns around risk mitigation, an additional level of testing was introduced for the system with detailed Factory Acceptance Testing (FAT) being conducted at the Rockwell Automation facility. The plant operators were actively involved in the review process and hands-on training, and testing of the system was conducted to make sure it was functioning to meet all expectations.

The testing was conducted over a two-week period to help mitigate any hardware risks and validate that it was fully tested and the entire system was working as intended.

Smart commissioning

When replacing a legacy DCS system, if the field wiring is replaced simultaneously a significant risk is introduced. In this particular manufacturing plant there were approximately

Right: The PlantPax system connects process, discrete, power, information and safety control into one plant-wide infrastructure

Far right: Within a turnaround time of approximately four days, there was a very smooth transition to the new system and the factory was manufacturing A-grade quality gelatine



1500 IO or approximately 4000 wires in the system, which needed upgrading.

"To have someone disconnect 4000 wires and manually reconnect them, the odds are that some of them are not going to be connected correctly, some of them may be back to front or loose. This would then add over a week to the commissioning team because you would have to go and test every single field connection," explained Doherty.

"To avoid this, we developed an IO adaptor card that would allow us to remove the old DCS and module and replace it with our proprietary designed module so we could signal through our system without having to change the IO wiring. This reduced the changeover time significantly," he said.

Straight to A-grade quality

This project highlights the importance of careful planning and risk mitigation to deliver a successful outcome. From the initial stage of working together to document existing functionality to testing and commissioning, the new system was integrated seamlessly and three days ahead of schedule.

Within a turnaround time of approximately four days, there was a very smooth transition to the new system and the factory was manufacturing A-grade quality gelatine.

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Dewpoint transmitter for harsh applications

Michell Instruments has introduced a new version of its 2-wire Easidew dewpoint transmitter, with a simultaneous analog and digital Modbus RTU output and a rugged 5-pin M12 electrical connection. Designed for dewpoint measurements in harsh industrial applications, the moisture transmitter is easy to maintain with live diagnostics.

It is versatile, and for the compressed dryer operator it means that just one stocked product can be used across all class 1 to class 6 industrial dryer applications. All Easidew variants have a dewpoint measurement range of up to -110 to $+20^{\circ}\text{Cdp}$.

A range of process and electrical connections and the 4–20 mA output means that the product can be installed quickly and economically, and safely replace dewpoint sensors of other makes. As well as the M12 5-pin electrical connector, a mini DIN 43650 form C is also available. The process connections available are 5/8" UNF, 3/4" UNF and G 1/3" BSP, which makes it easy to adapt to local industry standards around the world. The PC-based configuration and diagnostic tool makes it easy for maintenance engineers to monitor the performance of installed transmitters on-site.

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

Small external mix spray nozzles

Exair's 1/8 NPT Small External Mix Spray Nozzles atomise fluids at up to 94.6 L/h. The nozzles are suitable where a high volume of liquid is needed and can be used on liquids with a viscosity up to 800 cP.

The nozzles are available in a narrow-angle flat fan pattern and are suitable when a thick liquid needs heavy application over a narrow band. They combine liquid and compressed air to create a coating of liquid that can be easily adjusted to meet the needs of the user's application.

With the external mix atomising nozzles, the user can coat, cool, treat and paint a variety of products. Used with water or coolant, atomising nozzles are an efficient way to evenly cool hot items in automated processes. Since they are external mix, airflow and liquid flow can be controlled independently, which provides a precise liquid flow.

The stainless steel construction of the atomising nozzles adds to their durability and corrosion resistance. They are also available in 1/4 and 1/2 NPT in a variety of flow patterns and liquid rates to meet the user's needs. Internal mix and siphon-fed atomising nozzles are offered too, as well as no-drip versions. All models are adjustable and CE compliant.

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Protocol converters, IoT gateways and edge controllers



BoX2 is a series of protocol converters, IoT gateways and edge controllers that combine clever connectivity in different ways. It helps access data, bridges the gap between the worlds of industrial automation and IT, and makes information from a deep industrial level easily accessible in a structured, cloud-based data environment.

The series facilitates data exchange and transfers data securely to the cloud for remote access and analysis. It allows users to create mobile solutions and add local control on the edge of the cloud to perform corrective measures on a machine. It is configured with smart ready-made functions to: share data between PLCs of different makes; create IoT solutions to store and access data in the cloud; present data on mobile devices via HTML5 screens and dashboards; and integrate local CODESYS control.

BoX2 is easily configured in WARP Engineering Studio where users interconnect machines and IT systems in the cloud. It offers smart functions such as local database storage, alarm servers, data exchange, reporting and C# scripting which are configured via iX software.

The series is available in base, pro and extreme versions and can operate in tough environments including electrical noise, large temperature spans and vibration. It communicates with all the different types of controllers holding the data needed.

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Brewing sake using artificial intelligence



Asahi Shuzo, Fujitsu and Fujitsu Laboratories are conducting a joint field trial to brew DASSAI sake, a rice wine brewed and marketed by Asahi Shuzo, using a Fujitsu Laboratories-developed predictive artificial intelligence model.

The companies want to use AI to support brewing operations, enabling them to consistently produce a stable supply of high-quality DASSAI sake. In the field trial they would like to improve both the validity and the accuracy of the predictive AI model, while evaluating how practical AI can be in sake brewing.

The AI system combines a mathematical model defining the process of sake brewing with machine learning that uses data obtained in the brewing of DASSAI. The predictive AI model technology will provide data to support an optimised sake brewing process.

Brewing sake isn't always straightforward

As Japan's society is ageing, labour shortages are expected in sake brewing facilities, and there are concerns about maintaining a stable supply and the high quality of DASSAI. To address this issue, Asahi Shuzo has been working to record and systematise its experience in sake brewing. The company promotes a vision of "brewing sake for sipping and enjoying, not sake for drinking or for the sole purpose of sales".

With the goal of ensuring stable procurement of Yamada Nishiki, a variety of rice ideally suited to brewing sake, from April 2014 Asahi Shuzo deployed Fujitsu's food and agriculture cloud, 'Akisai,' to farms where it had contracted to grow rice in an initiative to systematise and share agricultural techniques for optimal sake rice cultivation.

Fujitsu and Asahi Shuzo have now launched a joint field trial to systematise the experience and know-how of each employee with regard to brewing high-quality sake by applying Fujitsu's AI technology, Fujitsu Human Centric AI Zinrai, to sake brewing.



Asahi Shuzo's sake brewing facility.

Trial details

From April to June 2018, the trial will review and evaluate the applicability of the predictive AI model, which is developed with data accumulated by Asahi Shuzo, such as temperature and the proportion by weight of different ingredients, by calculating predicted values throughout the brewing process. In addition, the companies aim to improve the accuracy of the predictive AI model by incorporating actual data obtained on-site during brewing, and the activities of employees based on their experience and intuition.

This field trial will be conducted as part of Asahi Shuzo's DASSAI sake brewing process. The elements that make up sake and other data will be measured by Asahi Shuzo, and based on this data, the predictive AI model developed by Fujitsu Laboratories will be used to provide information supporting an optimal sake brewing process.

By conducting this field trial for two cycles, the companies will improve the accuracy of the predictive AI model and evaluate its effectiveness, as well as the practicality of AI in sake brewing.

The predictive AI model is a technology capable of computing information to support optimised processes in sake brewing, by combining a mathematical model defining the procedure of sake brewing with machine learning using measured values for the components found in sake, based on Asahi Shuzo's past brewing data and knowledge including the biological process of fermentation. Using the supporting information computed by the predictive AI model, Asahi Shuzo can optimally control the devices used in the sake brewing process. By incorporating the data gained from this field trial and the feedback from Asahi Shuzo, the companies will improve prediction accuracy and the sophistication of the supporting information, enabling the system to assist with even more optimised sake brewing.

Updated flow meter verification

Emerson has launched the latest version of its Smart Meter Verification software for Coriolis and magnetic flow meters, providing flow meter verification on demand.

Updated tools in the Smart Meter Verification software allow users to fine-tune and adjust their engineering processes to ensure absolute measurement confidence and top performance in the chemicals, food and beverage, life sciences, oil and gas, and other process industries. In addition to onboard diagnostics, Smart Meter Verification also accelerates implementation of companies' IIoT strategies with its remote diagnostics, digital intelligence and multiple data points, providing users with a complete process overview and greater operational certainty.

Rather than time-consuming calibrations and laboratory testing, leading to production interruptions, shutdowns and safety concerns, Smart Meter Verification provides in situ calibration verification on demand without any impact on process or meter outputs. The system also provides operators with crucial information on other flow issues across the plant.

Key features include algorithms that detect coating, corrosion and erosion in the meter; process diagnostic capabilities that include a 'flow range' diagnostic, which alerts the engineer when flow rates are not within the specified range of the meter; instrument diagnostics that can identify if entrained gas is in the process; and immediate alerts to process upsets that may affect measurement performance.

The system also provides clear and transparent verification audit trails, and advanced visual analysis and reporting software that meets third-party regulatory agency compliance requirements in lieu of meter calibration, inspection or removal.

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Boosting poultry production by automating incubators

Using a method that dates to the early Egyptians, poultry producers have been using incubators to hatch eggs for more than a century. Now new control systems are set to improve yields 3–5% while energy costs are slashed by 30%.

A modern incubator is a device that aims not just to simulate but to exceed the results from natural avian incubation. They create the perfect environment and conditions for an egg to incubate because it is able to allow all factors both internal and external to the incubator to be monitored and work together to achieve high quality and hatchability.

Now engineering company Automated Control Solutions (ACS) has taken this process a giant leap further with the development of a groundbreaking new control system.

“Our company has been doing research and development into incubator control systems for the poultry industry for many years,” said ACS founder and CEO Adam Francica.

“We have been trialling our latest system at the plant of a leading poultry producer on the outskirts of Sydney.

“The results have not only shown an increase in number and quality of hatchings, but also a huge increase in efficiency.

“After using the new technology, the producer has seen an increase of 3–5% in hatch results and a reduction in energy costs of more than 30%, which easily provides a quick return on investment.”

Better hatch results

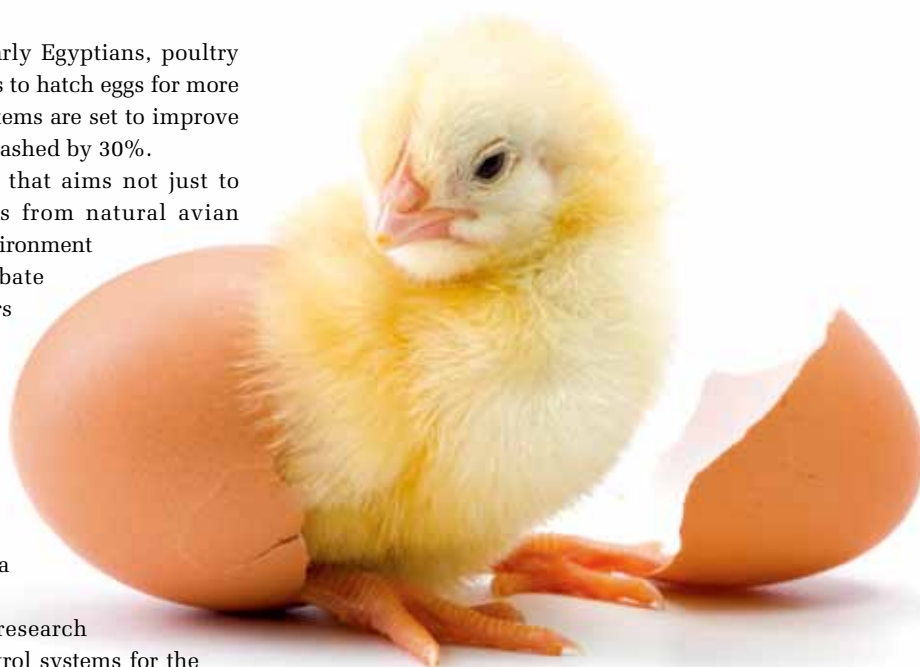
Francica has been working closely with a leading poultry producer for several years.

The main goal is to increase the productivity of poultry producers by increasing their efficiency and producing large numbers of uniform, robust day-old chicks.

ACS developed the first prototype of the new control system three years ago and has been continuously developing and improving with its latest system in trial for the past six months.

“The producer is extremely happy with the results,” said Francica.

The success of the system can be largely attributed to the reliability and accuracy of its components.



Omron, a global leader in automation, specialising in control systems supplied the control hardware — PLC, HMI (touchscreen) and various control components, helped to implement the new system and is providing ongoing support.

ACS aims to expand the control system into the poultry industry both nationally and then globally as companies overseas have already expressed interest.

How the ACS system is different

“There is one key point of difference — customisation as the system provides more control and flexibility,” said Francica.

“Our system can be custom designed to individual applications and our unique knowledge gained from research and consultation with industry leaders has enabled the development of a control system that is versatile and more flexible than competitor systems. We can locally support our control system due to in-house design and development, and this gives us a great advantage over current overseas suppliers.”

The control system uses the latest in valve technology, which enables optimum temperature control and efficiency, while the PLC incorporates custom algorithms with an easy-to-use touchscreen for operators.

“With the new system we have been able to control the environment far more efficiently.”

Francica hopes to soon unveil the new system to the world.

Automated Control Systems

www.acscontrol.com.au

Omron Electronics Pty Ltd

www.omron.com.au



3.5" single board computer

Backplane Systems Technology has released iBASE Technology's IB818 3.5" SBC, powered by Intel's Apollo Lake Atom, Celeron and Pentium processors.

It can be powered by the Intel Atom QC x7-E3950, Pentium QC N4200 or Celeron DC N3350 processors, providing improvement in both CPU and graphical performance when compared with previous generations. The IB818 equipped with the Intel Atom x7-E3950 supports extended temperature of -40 to +85°C, making it suitable for indoor and outdoor installations.

The board is suitable for both industrial and commercial applications including IoT, factory automation, self-service kiosks and POS systems. It accommodates up to 8 GB of SO-DIMM memory and has a variety of I/O including two GbE LAN ports, four USB 3.0, two USB 2.0, four COM and two SATA III. Flexible expansion is available with two Mini PCI-E slots (full and half size).

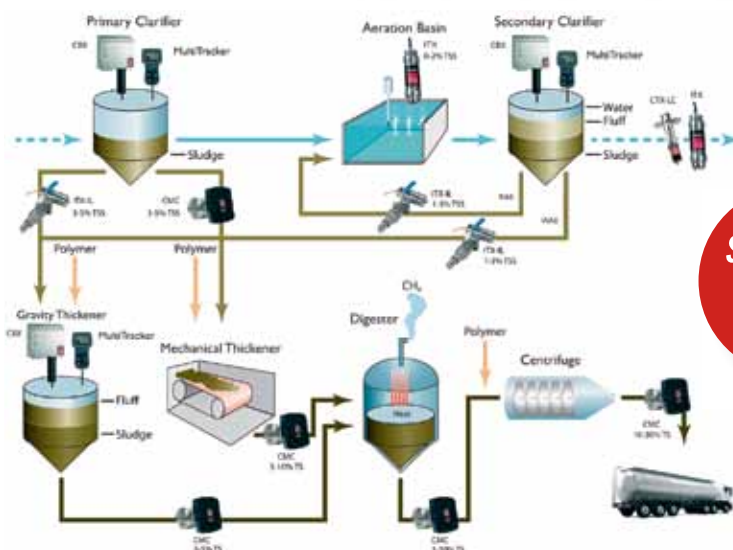
The SBC supports a 12~24 VDC wide-range power input and comes integrated with the Intel Gen9 graphics engine equipped with 18 execution units for high throughput and acceleration. Three simultaneous displays via HDMI 1.4b and dual LVDS display interfaces deliver graphics performance and 4K resolution output. Measuring 102 by 147 mm, the SBC optionally comes with a heat sink and cable kit.

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Cleaning and sanitising system

The Klarion Cleaning and Sanitising System is the latest ready-to-use, cost-effective cleaning solution from Spraying Systems.

The system uses electro-chemical activation (ECA) technology to produce a powerful cleaner and sanitiser using just high-purity salt, water and electricity. The compact system is installed in the facility and produces solutions on-demand in ready-to-use concentrations, eliminating the need to store excess amounts of cleaning liquid.

The system, suitable for use in bakeries, hatcheries, dairies, as well as food and beverages processing facilities, is cost-effective and improves the health and safety of workers as it is fragrance-free, non-irritating and does not use harmful toxics.

The Klarion sanitiser is as effective as twice the concentration of bleach — 200 ppm of sanitiser does the work of 400 ppm of bleach, according to the company. The system is also better for the environment than traditional cleaning chemicals, as it is drain and disposal safe.

The maintenance of the system is simple — just a quick daily check of cleaner and sanitiser pH levels and the salt level in the brine tank. What's more, there is no capital expenditure; simply pay based on the volume produced and used.

Spraying Systems Co Pty Ltd

www.spray.com.au



Stainless steel air jets

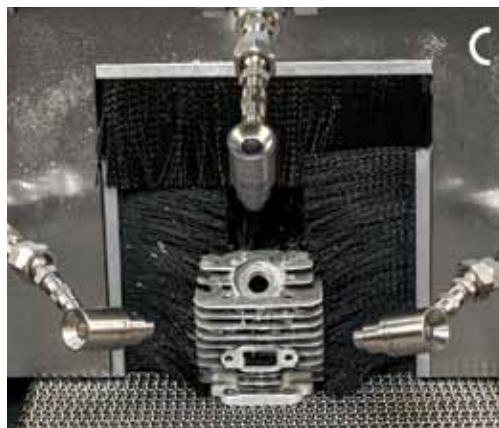
EXAIR's 303SS air jets provide efficient blowoff and cleaning within corrosive, high-temperature or washdown environments. The 1/8" stainless steel air jets replace open tubes and pipe nipples on parts cleaning, drying and cooling operations. Temperature rated up to 204°C, they will produce up to 567 g of force on the target.

Available in two styles, the high-velocity air jet provides maximum force with a confined and directed airstream. The adjustable air jet style allows users to easily control the air on the target with its micrometre air gap indicator. The air jets utilise the Coanda effect to pull in the surrounding ambient air and increase the total volume of air impacting the target area. Both the outlet and inlet can be ducted for remote positioning.

Air jets require a small amount of compressed air, which can be less than half that of open air lines in the plant. Typical noise level reductions are 8 to 10 dBA. They meet OSHA static pressure requirements and CE safety standards.

Compressed Air Australia Pty Ltd

www.caasafety.com.au



— X-Ray — — Metal Detectors — — Check Weighers —



For more information contact:

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www.techik.net

SCARA robots with predictive maintenance

Omron Corporation has announced the i4 line of SCARA robots, which save space during installation and allow easy configuration into existing production lines. The i4 is fast, repeatable, easy to operate and flexible for multiple configurations and applications.

The line features good communication through EtherCAT, enabling synchronisation between other automation devices. This facilitates advanced assembly, inserting and mounting processes that require high accuracy and demanding throughput, as well as ensured quality control with vision integration.

It visualises working data and supervises its status with built-in signals for preventive maintenance, allowing users to mitigate unplanned downtime. The SCARA line can meet the demands of mass customisation, allowing manufacturers to produce high mixes of products at low volume to offer a wide array of goods.

The compact controller (ICS) is fully integrated into a stylised base, minimising footprint and wiring with no flyover cable and making the i4 easy to install. The series will run on interactive software that will make it easy for users to program and use the robots.

The first three models — the i4-650, i4-750 and i4-850 — will have an arm reach of 650, 750 and 850 mm, respectively. The payload can hold up to 15 kg. Users also have a choice of two different Z-axis strokes (210 and 410 mm) for each robot.

Special models will include the IP65, Clean Room ISO 4 (Class 10), ESD and models that use H1 grease.

Omron Electronics Pty Ltd
www.omron.com.au



Wastewater chemical supply and plant servicing business

Wastewater treatment company Aerofloat Australia has launched a wastewater chemical supply and plant servicing business, in response to market demands for a simple way to maintain wastewater treatment systems. The services will be available to existing customers, as well as non-customers who have a wastewater treatment plant requiring chemicals or ongoing maintenance.

The chemical supply business supplies water treatment chemicals such as acid, caustic, coagulants and polymers. Expert engineers handpick the most suitable chemicals for use in wastewater systems to ensure optimal running results. Having the correct chemistry in wastewater treatment systems is imperative to the quality of effluent achieved and therefore affects the performance of the overall wastewater system.

The servicing business offers weekly, monthly and ad hoc wastewater system servicing contracts for businesses that don't have the capacity to provide regular maintenance themselves, stating that wastewater treatment plants that are regularly serviced have minimal downtime and maximum efficiency. The service technicians can diagnose and prevent potential problems, replace worn parts, carry out system cleaning, and use remote login to identify problems and provide advice.

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

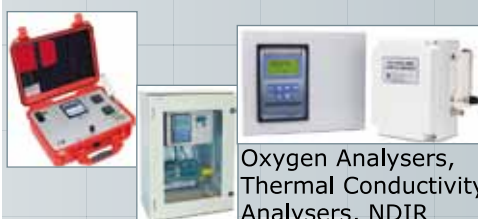


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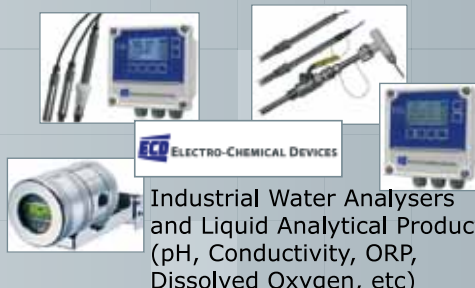


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Extracting foreign metal fragments from liquid lines

Hygienic and efficient metal fragment control in liquid processes without the limitations of liquid trap magnet systems.

Finger-style inline liquid trap magnets (also referred to as finger pot magnets) are a conventional way of extracting foreign metal fragments from liquid lines such as chocolate, soup, beverages and similar ingredients. They consist of a number of magnetic fingers/cartridges/tubes which are welded to a lid. The magnetic fingers are projected down into the flow and retain metal fragments as the liquid flows in, around and out of the pot magnet housing.

However, they have a number of inherent problems that can have a negative effect on separation efficiency and metal fragment control. Users reported difficulty in handling bulk liquid magnet systems, found the time taken to clean multiple finger bars excessive and had issues with magnet fingers becoming bent or breaking off.

Recognising these problems Magnattack decided to develop a modernised magnetic separation solution for use in liquids.

The solution

It developed the RE80 Liquid Pressure Pipeline System (PPS) which features +11,000 Gauss magnet elements, designed to intercept the flow of liquid product lines. The RE80 probes successfully extract and retain foreign magnetic fragments such as work-hardened stainless steel and stone particles, fine wear fragments and rust.

The Liquid PPS Magnets offer hygienic and efficient magnetic separation and have proven to be a major success in efficiently removing foreign metal bodies from liquid lines in hundreds of applications over many years.

The PPS Systems have been proven effective in a wide variety of applications, some of which include syrups, chocolate, soup, sauce, beverages, viscous pet food slurries, ice-cream manufacturing, cheese processing, pie manufacturing, brine, fruit juice and food paste.

With the development of advanced magnetic separation systems, such as the RE80 Liquid Pressure Pipeline Magnet, the food industry can be assured of the highest level of metal contamination risk reduction without risking important sanitary and food safety considerations.

The systems are certified by HACCP International and conform to current industry food safety standards such as International Food Safety Standard 0909MAGSEP 1-2010.



Liquid Pressure Pipeline System v liquid trap magnets

Cleaning efficiency

Liquid trap magnets present cleaning difficulties due to numerous 1" bars (typically 5–7 fingers). This has often resulted in contaminants being missed at cleaning intervals and has also made it difficult for operators to detect cracks or fatigue in the magnet fingers.

In comparison, Liquid PPSs feature only two, larger probes, therefore reducing cleaning and downtime. Each probe can be removed individually, ensuring it is able to be fully inspected and cleaned before being returned to the product flow. This system can also be CIP cleaned prior to cleaning of magnets.

WHS/OHS

Liquid trap magnets are often heavy and the entire pot lid must be removed for cleaning. This can potentially result in operator WHS risks. To overcome this, Liquid PPS probes are lightweight and operators need only to remove one probe at a time — therefore reducing the risk of injury caused by handling and lifting heavy equipment.

Leaks and blockages

Liquid trap magnet lids are necessarily large to incorporate multiple bars, so more force over a larger area incurs more lbs per sq inch pressure, which makes them harder to seal than BSM or tri-clamp connections. Most housings are cast stainless steel, which is magnetic. This hinders the entry and exit of the magnets, making it difficult to align for a good seal.

The Liquid PPS offers efficient magnetic separation without leaks, blockage or distortion. The PPS range also offers tear drop probe magnets, that assist in flowability and also minimise bulk density breakdown. BSM or Triclover seals are used to securely seal probes to the housing, therefore reducing the risk of leakage.

Dead-zones

The 'dead-zone' in liquid trap magnets is often unhygienic and risks magnetic contamination returning to the product flow.

In contrast, the sanitary construction of the Liquid PPS System and high-intensity magnet elements installed at right angles eliminate dead-zone and increase magnetic separation efficiency with over 80% coverage of product stream.

Damage

Most liquid trap magnet designs consist of 1" diameter magnet bars welded to the lid. Often, fatigue and accidental dropping of the magnet results in magnet fingers becoming dented, bent or broken.

RE80 Liquid PPS Systems are constructed using solid structural fixing, larger diameter bars and structural welding



techniques to avoid fatigue and breakage. In addition, the PPS comes with 3 years' warranty on the magnet structural integrity.

Cost-effectiveness

In the case of one magnet finger becoming damaged, the entire pot lid and all fingers on a liquid trap system must be replaced. This can be a costly exercise.

In contrast, the Liquid PPS system is much more cost effective to repair as, in the unlikely event of damage, only one probe would need to be repaired or replaced.

Specialised focus

Magnattack Global technicians concentrate solely on the food, beverage and pharmaceutical industries ensuring that the company is able to provide a current, relevant and knowledgeable source in regards to foreign metal fragment control.

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www.magnattackglobal.com

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Revitalising a premium organic milk

Mengniu's Milk Deluxe brand was the first premium milk in China, launching in 2005. The company has just collaborated with Tetra Pak to upgrade its premium product. The first step was to understand who their consumers were and what they like, and then to look at market opportunities.

It turned out that millennials were increasingly buying small portions and drinking on the go. The octagonally shaped Tetra Prisma Aseptic Edge 250 mL package, which fits comfortably in the hand and has a large resealable opening, meets the needs of these consumers admirably. The packaging can also have a metallic effect to give it extra shelf presence.

The revitalised organic milk was immediately popular when it hit the market in June 2018. It was the first white milk in the world to use Tetra Prisma Aseptic 250 Edge with DreamCap.

Tetra Pak's collaboration wasn't limited to the packaging but involved in all aspects of product development, introducing micro filtration to boost the protein content and direct heating technologies to improve the product taste.

Mengniu expects monthly sales to reach about \$20 million by August, and intends to add another three production lines soon.

Tetra Pak Marketing Pty Ltd

www.tetrapak.com/au



Alternative Engineering's Date Coder Stand can be used anywhere there is a print head, sensor, or reader being used on a conveyor system.

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Multiscan metal detector

The Thermo Scientific Sentinel 5000 Multiscan Metal Detector

utilises multiscan technology to overcome the limitation of fixed single or dual frequency metal detectors that can miss metal contaminants hidden in product signals.

Multiscan technology scans a combination of up to five user-selectable frequencies making it a universal solution for multiple applications. This enables users to identify contaminants that are up to 70% smaller in volume than previous technologies and provides a high probability of finding ferrous, non-ferrous and stainless steel metal contaminants. It is like having five metal detectors in one.

In today's fast-paced, right-sized world, everyone is busy balancing never-ending demands. With this in mind, the Sentinel 5000 software has been designed with user-friendly software to allow field set-up and balance in minutes to get processors and manufacturers detecting metals faster, across mixed production lines providing time saving.

The Sentinel 5000 is suitable for challenging products and applications such as dairy, meat, poultry, bread and other products or packaging with high signal distortion during production and final fill.

Thermo Fisher Scientific
www.thermofisher.com.au



Mixproof valve series

SPX FLOW has launched a range of mixproof hygienic valves, the D4 Series, from APV and Waukesha Cherry-Burrell process technologies. Used to separate dissimilar products, the series is designed to offer production flexibility, productivity and reduced product and personnel risk across the food and beverage, dairy, personal care and brewing process industries.

The valves are balanced for dependable operation against pressure spikes and flow in any direction. They have automated processing with the option of a control unit with integrated seat lift detection and no external sensors. Maintenance is optimised as no compressed air or lifting tools are required for removal and service. They help reduce inventory costs as the same seal kit is used across multiple valve sizes.

The complete range includes the primary D4 model, which meets the basic needs for product separation and seat lift (SL) or non-seat lift (NSL) cleanability, and the DA4 ultrahygienic model for critical applications requiring enhanced cleanability of all product contact surfaces.

The series offers customers dependable processing, cleanability and minimised CIP fluid losses.

SPX Flow Inc
www.spxflow.com/au



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Achieving your sustainability goals does not mean sacrificing profits

Kevin Piccione

While it makes perfect sense to embrace sustainability and have it engrained into your business culture, the subject of sustainability is often met with concerns surrounding lost profits. But is there any truth to this concern?

Nearly 90% of business leaders believe that sustainability is essential to remaining competitive and despite the clear link between sustainability and profit, only 2% of companies either achieve or exceed their sustainability goals.

At this year's World Economic Forum in Switzerland, it was identified that the most sustainable companies are not just doing good for society, they're also thriving financially. In fact, since 2005, the most sustainable businesses have outperformed their peers by nearly a third.

But with a mere 2% achieving their targets, what is it they're doing that fuels their success?

Sustainable businesses succeed because sustainability is a non-negotiable business priority that aligns with their company goals. An unwavering commitment to company goals means it's unlikely that sustainability initiatives come undone.

Conversely, failing to align sustainability and business objectives is a common reason sustainability programs fall off

the radar and companies miss their sustainability targets. In fact, only 25% of business leaders indicate that their companies have developed a clear business case for sustainability.

Sustainability in action, every day

Sealed Air was an early adopter of business-driven sustainability plans and, today more than ever, sustainability underpins all we do, while driving cost-competitiveness, performance and service to our customers and markets.

Committed to sustainability and its vision to "create a better way for life", Sealed Air is actively engaged in conducting sustainability audits to help food processors and retailers achieve their sustainability goals.

With the right approach, sustainability doesn't mean lost profits — it often unveils profit opportunities that weren't previously visible. For example, operational efficiency is a key sustainability metric that can be impacted through packaging materials and packaging systems. For instance,

finding opportunities that enable processors to increase throughput in less time and reduce energy and resource usage and minimising plastic consumption can make a difference.

For some, a crucial business sustainability goal is to build a less wasteful food supply chain. The shelf life of food and food safety are fundamental areas where we can move the needle on food waste and food accessibility.

By 2050, it is said that we will need to increase our global food production by 70% to meet the needs of the world's expected 9 billion population. We know this is likely to mean exhausting our natural resources at a rate faster than the rate at which they can be replenished. Clearly this is not sustainable. Solving waste in the food supply chain is an area of huge opportunity to deliver sustainable value for all stakeholders, consumers included.

Collaboration across the industry, with local authorities and the government is required to drive change with magnitude. While processors can optimise the freshness of their harvests, packaging solutions such as Sealed Air's Cryovac Darfresh vacuum skin packaging are examples of key enablers for a more sustainable food supply chain. Fresh protein processors including Harvey Beef and Don KRC (Australia) have extended the shelf life of beef to 35 days and pork to 28 days, a significant step change when compared to other packaging technologies.

So, how is this sustainable? When the shelf life is extended, the product can travel safely, be distributed farther and wider geographically. For retailers, this can mean reduced retail shrink (profit loss). For consumers, shelf life extension means more time to consume the product and potentially reduce food waste in the home (rotate that food!).

Another great example of extending shelf life was with avocado processor Fresh Technologies (New Zealand). Best-in-class processing technologies, coupled with the use of Cryovac Freshness Plus packaging, enabled a shelf life extension of avocado product from 30 days to 90 days, yielding a reduction in food waste by 7.2 tonne per annum, in addition to all the sustainability gains mentioned in the previous example.

Beyond designing for shelf life, efficient material design can yield sustainable benefits for warehousing and freight. Cryovac Darfresh skin packaging provides processors a shorter tray and pack height versus conventional MAP trays. This means less space is needed for warehousing and freight space. Less truck movements to distribute product, less trucks on the roads means less fuel. Sustainability really is targeting opportunities where we can find ways to do more with less. It's not just about pollution, landfill and litter reduction.

Opportunities to make a sustainable difference are everywhere and they should not be an obligation. Not only is this the right thing to do, but it's the economically expedient thing to do. Sustainable practices can save money and boost profits.

Source: UN Food and Agriculture Organisation (FAO)

Sealed Air

www.sealedair.com

Current monitoring relay

The compact MR-EI1W1P single-phase current monitoring relay from Relpol is suitable for monitoring the load of motors and other critical equipment.

Users can detect signs of wear and faults early by eliminating the threat of system failures before they happen. The product features adjustable thresholds and hysteresis, including timing adjustment of tripping delay, one changeover contact output and an operating temperature range of -25 to 55°C.

Featuring a modular design, the relay is 17.5 mm wide and can be direct mounted on a 35 mm rail for quick and easy installation. It is suitable for automation and motor control industries.

Control Logic Pty Ltd

www.controllogic.com.au



Food-grade stainless steel panel PCs

The FABS Series of food-grade stainless steel panel computers are powered by the Intel Celeron N2930 processor with 4 GB of DDR3L onboard memory.

The Series has been optimised to meet the hygienic design requirements of DIN EN 1672-2 and DIN 42115, Part 2.

Hygienic features include: SUS 304/316 grade stainless steel, IP66/IP69K water- and dust-proofing and food-grade silicone sealant materials.

The panel computers provide extensive I/O interfaces including: 2 x COM, 2 x GbE LAN ports, 2 x USB3.0 ports and support for internal expansion modules and cards. Communication and network options include 3G/4G, Wi-Fi/BT, GPS and RFID.

The FABS Series supports 9~36 VDC power input and an operating temperature range of 0~50°C.

It is available with screen sizes ranging from 7"~21.5", and is supplied with 7H anti-scratch highly durable PCT touch screen.

Interworld Electronics and Computer Industries

www.ieci.com.au



Increase creativity with low-cost, non-stick moulds

Non-stick moulds for bakers are currently made by deep drawing. Here a metal blank is radially drawn into a forming die by the mechanical action of a punch. Once made the mould must be transferred to another site to receive its non-stick coating.

This method of production is only cost efficient if significant numbers of the moulds are made.

However, this may all change enabling small and medium-sized baking businesses to cost-effectively commission their own extravagant moulds.

A University of Cordoba Belmez Polytechnic School research group has developed a system that manufactures non-stick food moulds at a low cost at a machining centre. Their method makes moulds from metal sheets covered with non-stick coating. Though this process is slower, it is more affordable and easy to use.

A rounded tip punch is used to gradually shape a metal sheet covered in Teflon and a PVC sheet. The PVC sheet protects the non-stick coating so it is not damaged during shaping. The path of the punch is directed by a computer that determines the precise movements it makes.

The moulds are totally functional with the necessary shape and properties suited to demoulding and proper cleaning.

Food industry companies will be able to use this technique to manufacture small batches of non-stick moulds in a cheaper and faster way.

The Manufacturing Department at the university had the support of the University of Cordoba's Internal Research Plan and collaborated with Tecnimacor, a company specialising in the application of non-stick coatings.

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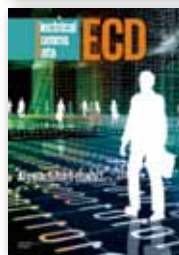
to industry and business professionals



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foodtech packtech

Flexible fresh meat line

Vemag's flexible fresh meat line provides maximum flexibility in production, and instead of four lines previously required, there is now only one, which has reduced the cost as well as reducing space requirements to a minimum.

The fresh meat line consists of three sections. The vacuum filler with separation grinder as well as the loading system are fixed in position. Attachments have the same length and are interchangeable. They are suitable to produce burgers, Adana Köfte (Turkish ground lamb meatballs) minced meat, cevapcici, fresh grilling sausages, meatballs and many other specialties. The loading system switches to the stored packaging type fully automatically depending on the specialty being produced. On request, the burgers can be stacked, overlapped or arranged next to one another in the trays.

The interchangeable attachments include: the Forming Machine FM250 — the products from it are characterised by their high-quality texture and bite; the Minced Meat Portioner MMP223 for producing minced meat from beef, pork or poultry; the Automatic Meatball Loader AML273 produces round or elongated-shaped convenience products fully automatically and loads these into trays; the Flexible Sausage Line FSL210 offers flexible and accurate length portioning, linking and separating of sausages in natural and collagen casings.

Features of the meat line include: flexible use; more efficient production processes; suitable hygiene characteristics; may be used for all product groups; one filler for all applications; minimal space requirement; short set-up times; maximum utilisation of production time; minimal capital outlay; and short response times during production.

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Vemag Australia Pty Ltd

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Foodtech Packtech 2018

Make sure you attend New Zealand's foremost food and packaging technology exhibition — Foodtech Packtech. New materials, processes, equipment and technology from the world's top suppliers will all be on display in Auckland this September.

Held every two years, Foodtech Packtech (FTPT) is a must-attend event for food and beverage processors. Here visitors will come face to face with the experts and discover the freshest ideas, latest technologies and the newest developments entering the food manufacturing and packaging industries.

Leading industry suppliers from all over New Zealand and the globe will be exhibiting their latest equipment, technologies and services at this free-to-attend event.

Bringing industry professionals and decision-makers together, FTPT will provide a forum for education, discussion and the sharing of knowledge and expertise.

Co-locating with FTPT is the Materials Handling & Logistics Expo (MHL). Entry to both exhibitions is free and visitors can make their time investment even more profitable by covering both events in a single trip.

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.

The natural alignment of MHL with FTPT provides visitors unprecedented face-to-face access to over 240 exhibitors and leading experts.

Australian companies are heading to FTPT too

The Australian Packaging and Processing Machinery Association (APPMA) will be exhibiting at Foodtech Packtech too. The APPMA represents Australia's leading packaging and processing machinery and allied components companies and

members include manufacturers, distributors and importers of packaging and processing machinery who are suppliers to industries such as food, beverage, dairy, meat, poultry, seafood, confectionery, bakery, snacks and fresh produce.

Seminar program

The overall event seminars, organised in partnership with NZIFST, will bring together leading experts and professionals to share their knowledge, skills and ideas that are critical to the sustainability and growth of the vibrant F&B industry.

Register now for free entry to FTPT and MHL

Entry to the exhibition is FREE to 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.

When: 18–20 September 2018

What time: Tuesday 9 am–6 pm, Wednesday 9 am–6 pm, Thursday 9 am–5 pm

Where: ASB Showgrounds, Auckland, New Zealand

Registration:

www.foodtechpacktech.co.nz/visitor-information/register/

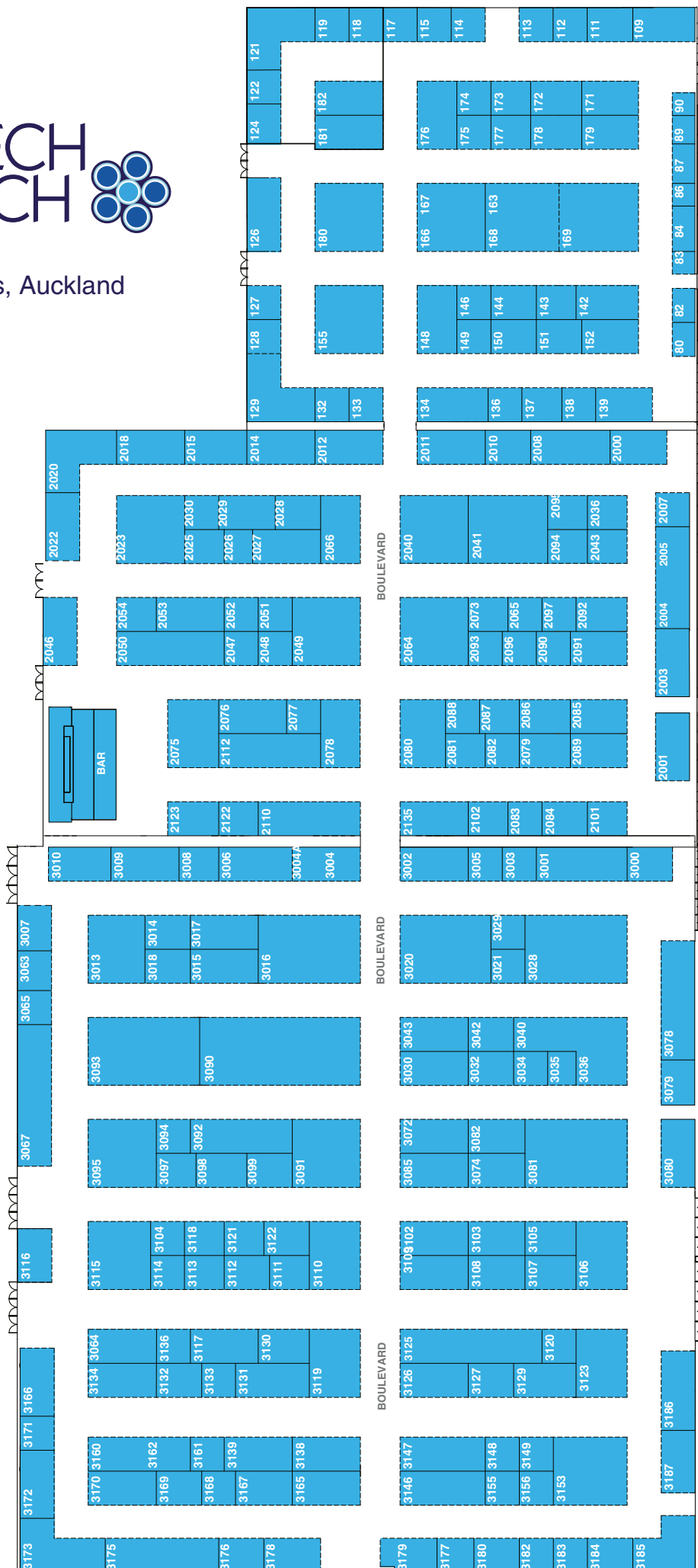
Cost: Free

Foodtech Packtech and the Materials Handling and Logistics Expo Exhibitors

Exhibitor name	Stand number				
A & D Weighing	3001-A	Caliber Design	2084	HCD Flow Technology Ltd	3134
Aarque Group Limited	127	Callaghan Innovation	2041	Heat & Control Ltd	2064
Accolade Packaging Ltd	3119	CAS Enterprises	3065	HMA Instrumentation — HMA Group	3114
aDeo Fresh Solutions	89	Cesur	3176	HRS Heat Exchangers	3138
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Advance Conveyors	87	Codemark Limited	3175	Hurricane Products Ltd	3010
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Aerzen New Zealand	3003	Contour Sales & Packaging Systems	3156	IFM Electronic	3030
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Altex Coatings Ltd	2043	D & L Packaging Ltd	3133	Inspection Systems (NZ) Ltd	2110
Amseal Closure Systems Ltd	2051	Dexion NZ Ltd	155	Integrated Packaging Ltd	2049
Anthony Preston Ltd	80	Dexion NZ Ltd	3090	Interfood Read Group Ltd	3115
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Apex Environmental	2007	Donald Napier Limited (DNL)	3092	Intralox NZ Ltd	3093
Apex Labelling & Packaging Ltd	2077	Dotmar Engineering Plastics Ltd	3116	IPCO	2048
Apollo Projects Ltd	3121	Drying Solutions Ltd	2018	ITW Zip-Pak Australia	3105
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Argus NZ Ltd	2020	Dyno NZ	3106	JMP Engineering Ltd	2028
ASG Holdings (NZ) Ltd	182	Dyson Appliances Ltd	2083	John Brooks Ltd	3097
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Beijing Xinmei International Exhibitions Co Ltd	2087	Flexco (Aust) Pty. Ltd	3032	Minipack Quickshrink Ltd	3020
Beijing Xinmei International Exhibitions Co Ltd	3118	Flight Plastic Ltd	3007	Mitech Ltd	180
Beijing Xinmei International Exhibitions Co Ltd	3136	Food Inc.	2041	MM Kembla NZ Limited	3132
Beijing Xinmei International Exhibitions Co Ltd	3149	Food Innovation Network	2073	Mulcahy Engineering Ltd	3166
Bell Technology Ltd	3063	Food Machinery Imports and Servicing	2030	Multivac NZ Ltd	3016
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18-20 Sept 2018
ASB Showgrounds, Auckland



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PVC barrier protection

Ulti PVC Impactables are flexible, returning to their original shape after impact instead of becoming permanently deformed, and shearing off creating harmful airborne particles.

They absorb and distribute the force of impacts, reducing the risk of floor damage and break-ups.

The impactables are coloured to the core and resistant to scratches, eliminating the need for any repainting and maintenance. They are non-absorbent, making them easy to clean and resistant to pathogens, chemicals and dust from floors, maintaining their colour and remaining hygienic for food safety.

Since they are modular, simple and utilise common parts, they are easy to install.

The impactables are corrosion resistant, retaining their integrity in unfavourable conditions, remaining resilient without oxidising and creating a food safety risk.

ULTI Group

www.ultigroup.co.nz

High barrier shrink bags for meat and cheese

StarVac System's EVOH high barrier shrink bags are suitable for meat and cheese products. They have good sealing properties, shine and product presentation, and mechanical properties.

The high barrier bags can be supplied in many different sizes and shapes to suit all packaging requirements, and can also be used for meat products containing bones.

All bags are extruded and produced in Germany. To ensure high quality control, the bags are manufactured according to DIN EN ISO 9001:2008 and BRC/IoP Global Standard Version 5 Grade AA, ISO 50001.

The EVOH barrier properties enable the bags to be easily used in all common vacuum packaging machines with good sealing results.

The bags are suitable for usage in local supply of vacuum-packed products as well as for the export market as they meet overseas regulations for food packaging.

Starvac Systems Pty Ltd

www.starvac-systems.com



Continuous band sealers

The Australian Pouch Company is offering small to medium food processing and packing companies the Emplex range of continuous band sealers.

The MPS 6100 and 6500 continuous band sealers deliver fast, precise, strong seals on bags and stand-up pouches. Both models offer true plug-and-play capability which is designed for reliable and easy-to-use performance for a variety of applications.

They are low-maintenance machines with easy access to the seal section and modular components for simple expandability as production needs increase.

The continuous band sealers come standard with an industrial PC 145 mm colour touchscreen interface that simplifies setting, monitoring and tracking crucial controls like heat, seal pressure and speed.

They are intuitive to use and take up as much space as needed.

With Emplex's band tensioner, sealing bands can be adjusted for finite precision.

AUSPOUCH

www.auspouch.com.au



Filling machines for aseptic packages

Ecolean has launched EL6 and EL3+ filling machines for aseptic portion- and family-sized packages. Compared to previous versions, the filling machines have higher capacities and a reduced impact on the environment while maintaining the same footprint.

The EL6 features six fillers to increase capacity to fill up to 18,000 portion-sized packages per hour. For use with Ecolean Air Aseptic 125, 200, 250 and 350 mL and Air Aseptic Clear 200 and 250 mL packages, it is claimed to use up to 30% less air, water and energy during both production and cleaning.

To complete the filling line, optional equipment include a CIP unit, a straw applicator, a package buffer unit and a package conditioning unit as well as easy configuration to secondary packaging solutions.

The EL3+ is replacing the EL3 machine and has a 25% increase in capacity to fill up to 7500 family-sized packages per hour. For use with Ecolean Air Aseptic 500, 750 and 1000 mL packages, it uses less air and energy during production and up to 50% less water during the cleaning cycle, according to the company.

An updated control system with moveable HMI screen together with a simplified outfeed, placing packages directly on a downstream conveyor, enable the capacity increase and improved machine performance. Other options include a CIP unit, an integrated packer and a SnapQuickT applicator.

Ecolean AB

www.ecolean.com

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Microwavable bag

With hectic lifestyles, today's consumers prefer products that are easy to bring home, easy to handle and easy to prepare. Schur Star Systems is providing the market with a practical microwavable bag. After microwaving the product, the consumer easily opens the bag by the incorporated laser score and it is ready to serve.

Agri-food producer Patatas Hijolusa used the microwavable bag to bring BabyPat on the market in a practical stand-up bag with a lean, stylish design ensuring high exposure at POS. During the packing process, a thermal transfer printer adds the expiry date to the bag, as well as product traceability details, ensuring that this information will reach the consumer in good condition.

The Schur Star packaging machine allows for a smooth packing process and for a quick and easy changeover between different bag constructions and sizes within a 5 to 10 min period, without the need for size change parts. A changeover between manual, semiautomatic and fully automatic filling can be carried out just as quickly. The packing machine is easily incorporated into an existing production line and combined with additional process equipment eg, for gas flushing or hot fill.

Applications comprise practically any type of product: from fresh produce over frozen food and liquids to confectionery, from toys over hygiene products and technical items to fertilisers. All are packed in bag constructions that offer convenience in every step of the cycle.

Schur Star Systems
www.shur.com

X-ray inspection system

Techik X-ray inspection systems can detect a full range of contaminants, including metallic and non-metallic contaminants such as glass, ceramic, stone, bone, hard rubber and hard plastic. It covers nearly all food industries like metallic and non-metallic packaged food, canned products and big sized packaged products, and the inspection result is not affected by temperature, humidity or salt content.

The TXR series meet numerous international standards, such as CE, ISO9001, ISO14001 management systems and OHSAS18001.

The series is designed to offer a low total cost of ownership. It uses an X-ray source and detector design to eliminate blind spots, and can be used for harsh environments with IP54 or IP66 washdown optional. There are multiple size apertures for optimum price/performance and it offers integrated rejecters and networking software. It has a unique icon-driven interface with multilingual help and auto-calibrate functions.

Conveyor/reject systems designed to users' specifications are available and are designed to be fast, simple and accurate to set up.

DMH Automation
www.dmhautomation.com.au



Vacuum filler

The ROBOT 500 is economical and suitable for all filling tasks in industrial and artisan applications.

A high torque forms the basis for the vacuum filler's universal, efficient usage options, and performance is not compromised when processing cold, stiff mixes. Users can fill, portion, grind or form meat, fish, cheese or dough. It offers high power with compact dimensions.

The vacuum filler is designed to be robust and reliable under tough working conditions. All components placed under high stress, such as the pumping system and transmission, are designed to have a long service life, a low level of wear and require little maintenance. The double screw system used both in the ROBOT 500 and in the HPE series industrial machines works with a high level of weight accuracy, helping to reduce the amount rejected and 'given away' effectively.

Other features include: hydraulic drive; space-saving; modular system for individual adjustment; CAN bus technology; optimum vacuum monitoring; high portioning capacity; minimal rework; clean product images; fast product change; easy-to-operate graphical control; gentle product transport; and simple cleaning.

Vemag Australia Pty Ltd
www.vemag.com.au





Colour label printer

Primera's LX910 colour label printer has high-resolution inkjet technology to print full-colour labels for products, boxes and packaging. Each printer ships with built-in pizza-style cutter, BarTender UltraLite Edition software, starter roll of high-gloss labels, 1 x dye-based CMY ink cartridge and USB 2.0 cable and power cord.

Users can print with dye or pigment ink in the same printer by changing out a single ink cartridge. Dye ink has vivid colours for making eye-catching prime labels for products. Pigment ink is durable for more industrial applications and has more UV and water resistance. It eliminates the need to change expensive printheads as a printhead is included in every ink cartridge, and users can choose the ink type that best fits the task without buying two separate printers.

Short run custom labels and personalised labels are printed fast and efficiently, helping users increase the production of their products. Several LX910 printers can be operated from one PC as production volumes grow. Labels can include full-colour photos, illustrations, graphics, text and barcodes.

The colour label printer produces professional-quality labels for short-run, specialty products. It is suitable for industries such as gourmet foods, wine and water bottles, personal care and cosmetics, and natural or organic products.

It can print labels up to 4800 dpi and 209.6 mm wide at speeds up to 4.5"/s.

Label Power Pty Ltd

www.labelpower.com.au



Variable speed driven oil-free air compressor

The ZR90-160 VSD+ is Atlas Copco's variable speed driven oil-free air compressor.

At the heart of the ZRVSD+ concept, there are two permanent magnet motors driving each compression element stage independently of each other. The motors are completely enclosed and are water-cooled to reduce ventilation requirements while ensuring optimum cooling. Each motor is controlled by the NEOS inverter, which improves the relative speed of each compression stage for the capacity at maximum speed while providing a wide range of turndown even when running at the minimum speed.

The ZRVSD+ offers a 15% improvement over the company's current range. The FF version adds an integrated absorption dryer to provide high-quality compressed air at a low cost, as the dryer uses waste energy to dry the air. The MDG dryer builds on the MD rotary drum dryers with pressure dewpoint (PDP) of -40°C.

The rotary screw compressor is suitable for industries where it is critical they receive high-quality oil-free air. Certified Class 0 100% oil-free air avoids the risk of contamination to the end product.

With flow capacities ranging from 283 to 452 L/s FAD all with a minimum capacity of just 90 L/s, from five models in the range 90 to 160 kW, there are machines suitable for different requirements.

The VSD+ utilises variable speed drive technology that contributes to energy savings and the protection of the environment.

Atlas Copco Compressors Australia

www.atlascopco.com.au



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California Gold Almonds see product purity increase

Almost 80% of the world's almonds are produced in California, and they are the state's top agricultural export. California Gold Almonds (CGA) must meet rigid food safety guidelines as it exports almost half of its total volume to a European customer base.

In order to do this, the company uses state-of-the-art operational procedures and equipment to harvest this popular crop. Helping CGA increase efficiency and maintain product purity are a series of Eriez electromagnetic feeders, metal separators and Rare Earth (RE) plate and tube magnets, which are installed at both of the company's El Roya and Tenaya processing plants in Modesto, California.

"Eriez helps us stay in compliance with the USDA and FDA, and it is a key for our BRC certification," said General Manager Mick Tobin. "The equipment gives us a cut above in the almond industry and a competitive advantage from a technological standpoint. It allows us to build more efficient processing lines, while reducing human touches of the almonds."

At CGA's 7800 m² El Roya plant, two Model FF metal separators and several Rare Earth (RE) plate and tube magnets help detect and remove contamination from almonds destined for export. The Eriez equipment is installed on a main processing line conveying more than 9000 kg/h of almonds and



a secondary line conveying 6800 kg/h.

Meanwhile, at the 3250 m² Tenaya facility designed for confectionery-grade almond processing at the retail level, incoming raw almonds fall freely through a series of Eriez Model FF metal separators, which detect magnetic and non-magnetic metal contamination, even when embedded in the product.

Metal contaminants are then rejected through the 'Quick Flap' reject unit. Next, the 66C and 46C Hi-Vi electromagnetic feeders convey the precise amount of raw almonds — approximately 5500 kg/h — that pass through an optical sorting line and into the packaging process. The feeders feature a totally enclosed patented magnetic drive and can feed practically any bulk material from micron size to bulky chunks.

"We have the Eriez feeders and metal separators in strategic locations to help us monitor contamination and maintain accurate feed rates," said Tobin. "I've been in the food processing business for more than 20 years and I've had a chance to see many different operations. I've been able to take my experience and Eriez technology to help maintain a highly efficient processing operation here at CGA."

Eriez Magnetics Pty Ltd
www.eriez.com.au

Electric forklift trucks

Mitsubishi's FB-TCB series 3-wheel electric forklift trucks are suitable for the logistics and warehousing industry, providing clean and robust power with nearly maintenance-free operation.

With its compact design and manoeuvrability, the FB13-20TCB series is suitable for confined working areas such as narrow warehouse aisles and containers. It is equipped with a 48 V battery, efficient AC Power traction and hydraulic motors and regenerative systems.

All forklift trucks in the series are installed with the AC Power control system which integrates travel, hydraulic and electric power steering functions.

These trucks are suitable for indoor applications where noise, pollutants or particulate contamination are undesirable. They also come with a higher IPX4 rating, which means the forklift and its systems are protected against water spray from all directions and angles, making them safe to operate in rain.

A forklift's most important component is its operator. The series features electric power steering, visibility, ergonomic controls, and comfortable seat and leg room for operator comfort; and its integrated speed control on slopes improves safety. On an upslope, if the accelerator or brake pedal is released, the truck will only roll backwards at a speed of less than 1 km/h, providing peace of mind for the operator.

The electric 3-wheeler comes with a standard digital load indicator. Operators can quickly tell the weight of the load to prevent overloading and ensure a safe working experience. When overloaded, the truck will warn the operator through the display and by a warning buzzer.

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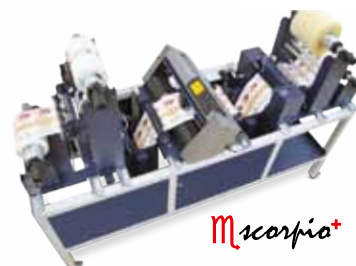
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Is nutrition labelling working?

Before we can assess whether or not nutrition labelling is effective we have to ascertain what we want from the labelling.

At a basic level nutrition labels are intended to guide the consumer in selecting food that promotes public health. The information provided should be truthful, not mislead the consumer and be consistent with dietary recommendations.

How do we measure if this is happening? Is it enough that the information on all food labels is accurate and understood by consumers? Well no. Surely to say nutrition labelling is effective we should see improvements in public health.

Questions that need addressing

- Do consumers make long-term healthier food choices as a result of having used nutrition information on food packaging?
- To what extent do nutrition labelling schemes have to be standardised to help consumers cultivate healthy eating habits?
- Is nutrition labelling beyond packaged foods useful?
- How can new technologies best be used to encourage healthy food choices?

Overview of the global state of play for nutrition labelling

The European Food Information Council (EUFIC), in collaboration with Landmark Europe and input from several nutrition organisations across the world, has just released the 2018 edition of the 'Global Update on Nutrition Labeling'. This report provides a comprehensive overview of the state of play on nutrition labelling today.

The report looks into:

- What are the major nutrition labelling initiatives adopted or in the pipeline to date?
- How do they work and what do the various stakeholders say?
- Where is the debate heading?
- What does the research show?

The key takeaways from the 2018 edition are the following:

- A global proliferation of nutrition labelling initiatives, both public and private, is underway. Labels using stars and positive logos are popular in the Asia-Pacific region, South American countries are opting for health warnings, positive logos are favoured in Asia, Africa and North and Eastern Europe, while traffic lights are gaining ground in western Europe.
- Policy decisions should be based on science: the key question is how appropriate and meaningful nutrition information can be provided on the food label so that motivated consumers can act on their desire to improve their diets.
- The EU's adoption of a harmonised format for FOP labels and national-level schemes in the UK and France have made it clear that government backing is needed to support a scheme's credibility, while at the same time raising the question of how such schemes might impact international trade.
- Nutrition labelling policy should take into account consumer use, interpretation and understanding of different nutrition labelling schemes, but ultimately it is the impact on purchasing decisions and overall diets that matters.
- Nutrition labelling debates are often informed more by value judgements of what consumers like than research on what is effective in influencing consumer choices. Some studies show that judgement of nutritional quality labels, GDA-based labels and health logos have a sizeable impact on consumers' preference and intention to purchase a product. This data is backed by consumer studies in Europe and Australia which confirm that different labelling systems can be equally effective in helping consumers identify healthier options, although other studies show no short-term effect on purchasing decisions.

The full report is available on the EUFIC website.

Colour digital overprinting system

The TrojanLabel T3-OP is a 4-colour overprinter that prints directly onto materials which have an absorbent or ink receptive surface. Materials the T3-OP can print on include cardboard, postcards, boxes, paper bags, wooden planks or thicker objects like blister envelopes or folded boxes ready for shipment.

The T3-OP was designed for label converters and food and beverage manufacturers to allow them to provide new products or services or to customise materials for seasonal and promotional events and private labelling.

The Trojan T3-OP has a fast print speed of up to 300 mm/s. With a print width of up to 223 mm and length from 15 to 1500 mm, the T3-OP provides print resolution of up to 1600 dpi. It automatically adjusts for variances in timing and spacing when fed manually and requires no adjustments when switching between substrates. Designed for high production, it allows users to generate large runs in a short period of time.

Metromatics Pty Ltd

www.metromatics.com.au



Low-temperature hot melt adhesive

H.B. Fuller Company has launched a low-temperature hot melt adhesive,

Advantra LT 9135. Packaging production lines adopting the product can expect to use 15% less adhesive than other low temperature solutions, according to the company. Coupled with a safe, energy-efficient 130°C tank operating temperature, a manufacturer running 30 packing lines could achieve annual savings.

Ivory in colour, the product achieves strong bonding quickly, even with minimal compression. Its rapid setting time makes it suitable for fast moving e-commerce and on-demand product packaging lines, including frozen, chilled and ambient food products. Creating a bond with heat resistance up to 60°C, it is suitable for a range of applications.

Start-up times to begin running packaging lines using the adhesive are minimal. Adjusting hose and nozzle temperatures allows the optimum quantity of melted adhesive to be applied, minimising waste. Heat stability also ensures clean running on the machine.

Packaged in 13 kg bags, the adhesive ensures injury-free lifting and carrying.

HB Fuller Company

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Bottling beverages at 36,000 bph with new PET line

A growing focus on healthier beverage choices and the increased demand for convenient 'on-the-go' products has seen the global bottled water market experience a stable annual volume growth of 6% during the last five years, reaching 214 billion litres in 2015.

Premium beverage manufacturer USHydrations is utilising this expanding market by acquiring a complete PET line from Sidel, equipped with a Matrix Combi, for its headquarters in Pittston, Pennsylvania. The facility has easy access to several major interstates and many large distribution centres, reaching over 100 million consumers in the area.

USHydrations leverages natural springs from the pristine mountains of Pennsylvania to produce over a million bottles a day, but aims to significantly increase this in the future. Sidel's complete line solution and data management system will help the company measure the performance of the line and identify causes of downtime, which will help maintain or increase the uptime. It offers full flexibility and an optimal and ergonomic line design with a reduced footprint adapted to USHydrations' needs.

Prashant Shitut, USHydrations' President and CEO, explained what motivated him to choose Sidel for the company's most recent complete PET line: "What attracted us to the Sidel Group was their reputation, innovative technology and flexible solutions, combined with the strong service support in North America.



"More and more, beverage brands are looking for extensive packaging options. They require solutions able to handle single- and multipack configurations for greater versatility. Sidel's complete line will clearly allow us to tackle this opportunity in a very efficient way."

Installation of the line began in April 2018 and it will be able to bottle soft drinks and water, both still and carbonated, at a speed of 36,000 bottles per hour (bph).

"The last few years have been fantastic for the company, from a financial and operational perspective. In 2019, the plan is to produce around two million bottles a day and Sidel will help us accomplish this mission," Shitut concluded.

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Vacuum skin packaging

SKINFRESH packs made on MECAPACK thermoformers and tray sealers are suitable for premium products in the meat, poultry, fish, seafood, ready meals and dairy sectors.

The packs envelop the product like an outer skin with the top film forming around the whole product and gently but firmly holding it in place on the tray. The film is sealed over the whole tray area, not just on the sealing edges. When the tray is vacuum packed, the film sits tightly against the product.

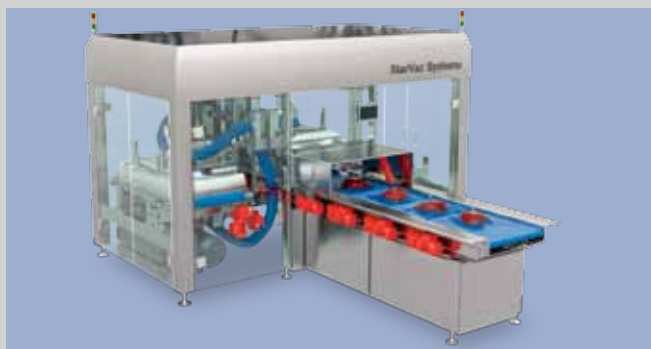
It offers: better presentation of the product; products can be presented vertically on shelves; longer shelf life; products retain moisture and no liquid is in the packs, removing the need for soaker pads; maturation in packs or red meats; easy-peel corner opening tabs can be included in the pack design; and microwave reheating is possible without holes or valves in the pack.

It can be used on standard thermoformers and tray sealers which can also work with standard sealing and MAP operation, there is no need for a specialised machine, and there is a quick-change format on all machines between sealing processes with MECAPACK ERGONOMICS kits.

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Printhead for labels

The Xaar 1003 printhead includes the XaarGuard, which provides nozzle plate protection and helps the printhead achieve long maintenance-free production runs.

Xaar's tuned actuator manufacturing ensures full scalability with a simple and quick set-up. This streamlines printhead replacement and achieves consistent print quality across long print bars with multiple printheads, at different greyscale levels.

The product combines the company's TF technology with hybrid side shooter architecture, so that ink is recirculated directly past the back of the nozzle during drop ejection at high flow rates. This ensures continuous operation in harsh industrial environments.

Xaar

www.xaar.com/en/

Digital print-on-demand colour label printer

The VIP Color VP750 is the next generation of digital print-on-demand colour label and tag printer with enhanced water resistance printing technology, and includes an automatic cutter.

The printer is powered by Memjet thermal inkjet technology and is capable of printing at a speed of 18 m/min or 304 mm/sec. This means users can print 100 full colour water resistant labels 100x150 mm in less than one minute.

The VP750 prints vibrant colour graphics and crisp text and barcodes up to 1600x1600 dpi in resolution. It will print on a large number of media types, from paper to synthetic labels and tags with matt or gloss finishes.

It prints the exact batch quantity and real-time requirements, providing flexibility and convenience. Ruggedly designed, yet intuitive for in-house label production and private labelling needs, the VP750 brings fast, affordable colour printing.

The large LCD display makes it operator friendly, and users can print and present one label at a time with the cut and present feature.

The VP750 is now available in Australia from Label Power. For more information: <https://www.labelpower.com.au/>

Label Power Pty Ltd

www.labelpower.com.au



Matthews' expansion drives company relocation

Following sustained growth, product identification and inspection company Matthews Australasia has announced it is relocating to new premises at 10 Lakeview Drive in Scoresby, Victoria.

Located in Caribbean Gardens Business Park, the building is 4000 m² in size and has on-site parking for over 80 vehicles. This spacious 12,000 m² site offers the company the opportunity to further expand in the future.

The facility includes open plan offices, a warehouse and a distribution centre featuring building materials and finishes that enhance natural light.

Mark Dingley, CEO of Matthews Australasia, said it will provide a range of benefits, including supporting efficiency for all departments and reducing transit times for supplier and customer freight.

"The decision to expand our head office in Melbourne reflects our ongoing success over many years as well as our confidence in the future," Dingley said. "This is an exciting time for Matthews and marks a huge milestone for the company, our employees and customers, who will all benefit from the opportunities this expansion presents. Our new offices are an open, collaborative space, allowing for a better work environment for current and future staff and the opportunity for further business diversification and expansion."



Image credit: Matthews Australasia.



Rotary filler and sealer

Jet Technologies' Ilpra Fill Seal R12/4 Tronic offers a fast and efficient way of getting dairy, dips, desserts, soups, condiment sauces and yoghurt products ready for market.

The R12 is a high-speed rotary filler and sealer with up to 12 stations, which offers food manufacturers the flexibility to use each station for different purposes. The machine is designed to precisely fill denestable cups.

The filler, with the speed of 9000 cups/h, allows food manufacturers to create their product their own way with a modular design. It is customisable to the user's requirements, such as dosing location(s) in the filler and type of doser, filling volumes and speeds.

The machine is designed for practical and easy operation with a touch-screen panel. Its sturdy structure and servo-driven components provide a filling accuracy of $\pm 1\%$, combined with high fill speeds.

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Packing scampi at double the speed

In the UK, frozen seafood manufacturer Whitby Seafoods has been able to double its packaging speed by installing a new packaging and distribution line.

Based in Whitby, a traditional fishing port in North Yorkshire, UK, Whitby Seafoods is a leading producer of frozen seafood products. The growing family company specialises in locally sourced langoustines — or scampi — that are breaded and sold in bite-size portions. A recent rebrand has meant that the company updated its packaging design to appeal to an even wider audience. New pack sizes range from between 200 and 300 g in a standard pillow bag format. Whitby Seafoods therefore required a flexible packaging and distribution system that would allow it to expand its product portfolio and allow efficient product changes and integration with existing elements of the production line.

Faster packaging speeds

Whitby Seafoods was looking to increase capacity with a third packaging line. It chose to install the tna robag FX 3ci — a vertical, form, fill and seal (VFFS) packaging solution that would allow consistent high quality at a fast speed for a range of bag sizes.

Simon Hill, Regional Sales Manager at tna, said: “Packaging line speed is crucial to maintaining food safety with frozen foods like seafood. While the two existing production lines operate at 70 bags/min (bpm), the new line works comfortably at 140 bpm, effectively doubling product throughput. This now helps Whitby Seafoods to ensure products are processed as quickly as possible.

With growing consumer demand for new and exciting products, Whitby Seafoods needed a flexible packaging system

that would allow it to enhance production capacity. The new tna installation exceeded the frozen seafood manufacturer’s initial objectives in terms of packaging speeds, which are integral to the company as it grows in the future.

tna’s robag FX 3ci was chosen thanks to its ability to deliver a high-quality finish to Whitby Seafoods’ packaging. With a rotary jaw design that uses advanced sealing technology for improved seal integrity at high speeds, the new system helps to deliver a consistently appealing end product. The compact design, including a shorter bagging system height and small footprint, was suitable for the low ceiling in the Whitby Seafoods factory. With the ability to walk around upstairs, operators have better visibility of the line and therefore stricter quality assurance standards. The new equipment also has a user-friendly interface, making it simple and easy to operate. This will help Whitby Seafoods to save significant time regarding ongoing operation and training in the long term.

Helping to realise further performance benefits, the packaging system was fitted with the tna intelli-weigh omega 314 multihead weigher. With capabilities for a 2200 kg/h in-feed to the packaging system, it was imperative any upstream equipment could keep up with the fast speed of the bagger. The integration of the tna intelli-weigh omega 314 allowed for high-speed weighing with superior precision.

A race against time

Due to the frozen nature of the Whitby Seafoods product range, it is crucial to maintain a continuous production process and



tna intelli-weigh scale

keep the product moving throughout the line to avoid thawing. Lengthy stoppage times for a film or product changeover can therefore compromise food quality and safety, as well as increase wastage. Quick changeovers save valuable time and ultimately help to maintain high food safety standards. The tna robag FX 3ci and its simplified film system for easy film threading and high accuracy control has improved efficiencies at Whitby Foods by reducing film waste and cutting changeover procedures from two minutes to 30 seconds.

Key to improving efficiencies was achieving the smooth transfer of products from one part of the production line to the next. Whitby Seafoods was keen to improve product storage methods between different systems to minimise production downtime. Previously, the company was faced with the time-consuming and costly process of transporting product from the production line to a freezer facility to prevent the product from thawing while on the production line.

Installing the tna roflo VM 3 vibratory motion distribution system with integrated controls was found to be the perfect solution. Feeding into the tna robag FX 3ci, the distribution system has helped to increase product throughput, by providing an additional online storage facility. This is achieved by allowing product to accumulate on the conveyor for up to 12 minutes, without the need for additional storage space. Previously, dwell time was as low as two to three minutes. The result is an increased 'buffering' time, which allows for short, unplanned production outages.

Constructed from food-grade stainless steel, the tna roflo VM 3 is also suitable for use in frozen food environments. Able to withstand the harsh cleaning agents and frequent high-pressure washdowns required when working with frozen food products, the conveyor can be easily cleaned to reduce product residue build-up and optimise hygiene levels. Similarly, the tna robag FX 3ci was customised with stainless steel parts and a parabolic throat metal detector to ensure the highest possible safety standards.

Total project management from a single source

Working with just one supplier can make installation processes much simpler. tna implemented the additional packaging line within a short time frame of five months, providing Whitby Seafoods with the high-performance solutions they were looking for, while also delivering full integration with existing equipment.



tna robag FX 3ci VFFS system at Whitby



tna roflo conveyor

A key consideration for the installation was that operations between the new and existing lines would be seamless. To achieve full integration, tna trialled how the new installation would work in the factory as part of the wider production process. As part of this process, the team carried out extensive 3D modelling, to ensure the system was tailored to exact requirements. This also helped to ensure the system was up and running as quickly and efficiently as possible.

Hill also commented, "There are numerous benefits of having a single source supplier. Not only does it save Whitby Seafoods time by simplifying the implementation process, but ongoing customer service becomes much easier as there is one point of contact for everything, such as spare parts, after-market support and warranty services. We have provided Whitby Seafoods with optimum line efficiency that goes above and beyond their key requirements."

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NEWS

Expand CoOL to foodservice says SIA

Sunday, 1 July made Country of Origin Labelling mandatory for all food sold in retail stores across Australia. But Seafood Industry Australia (SIA) is asking "What about foodservice?"

"The changes to Country of Origin Labelling in retail are excellent as they provide consumers with clear information on where their food comes from, which will allow them to make informed purchasing decisions; but retail is only half of the story," Seafood Industry Australia CEO Jane Lovell said.

"The new laws don't apply to food sold in places like restaurants, cafes, pubs, clubs and fish and chip shops. We want to see these labelling laws extended to foodservice."

At the supermarket and when you buy fresh fish, by law, all seafood has to be labelled with its country of origin. But, when you go out to dine, there is no obligation to label where the seafood you are about to order and eat comes from.

"Twenty years ago almost all the seafood Australians ate was Australian seafood. Most assume it still is. But, people are flabbergasted when they find out 70% of seafood eaten in Australia is imported."

Lovell said they aren't vilifying imported seafood, but believe consumers should be provided with the same information in foodservice that they have in retail.

"Two Senate inquiries have called for this loophole to be closed. More than 86,000 consumers signed petitions asking for



©stockadobe.com/au/Kristina

Country of Origin Labelling to become compulsory for seafood sold in the foodservice industry. Yet nothing has changed," Lovell said.

"The Northern Territory successfully introduced Country of Origin Labelling for cooked and pre-prepared seafood in the foodservice industry in 2008. We want the rest of the country to follow suit.

"What we'd like to see is Australian seafood identified on menus, simple as that. At a minimum we'd like to see something like Australian Barramundi, but businesses can be as specific as they want. For imported seafood a simple 'i' to denote it's imported with a clear explanation of what it means printed somewhere on the menu.

"Country of Origin Labelling is already working in some restaurants and cafes in Australia with minimal cost or disruption. The argument that the introduction of Country of Origin Labelling in foodservice would be a huge cost imposition doesn't wash. SIA welcomes the opportunity to work with the foodservice industry — there are practical low-cost options out there.

EMPLEX

Bag & Pouch Sealing Systems

EMPLEX ABS automatic bagging system.

Plexpack's new stainless steel ABS12-10 fully automated bagging system, otherwise known as "InstaPack," automatically presents, opens, fills and hermetically seals bags on nearly any printed and no-printed material. InstaPack is easily paired with automatic fillers and scales to create an ideal packaging solution for coffee, powdered products, medical devices and fresh food. It creates visually appealing filled and sealed bags at rates up to 15 per minute for products weighing up to 6.8kg with finished size up to 200mm wide and 500mm tall.

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Clever boxing:

Oji opts for energy efficiency in Yatala

For Oji Fibre Solutions, energy efficiency was top of mind in building its new green star-rated corrugated cardboard packaging manufacturing facility.

Oji Fibre Solutions is part of the pulp and paper division of Oji Holdings Corporation — the world's fifth-largest pulp and paper company.

As part of the company's expansion of its packaging business in Australasia, Oji recently invested in the development of a new 5.8 hectare site in Yatala, Queensland. Complementing the company's existing manufacturing plants in Melbourne and Sydney, the Yatala site houses a newly constructed 2.4-hectare manufacturing facility. From here Oji manufactures and supplies innovative corrugated cardboard packaging solutions to its customers throughout Queensland, northern New South Wales and the Northern Territory.

As part of Oji's commitment to delivering innovative and environmentally sustainable products, the facility operates to a green-star rating system. From daylight sensors and a lighting control system to a rainwater harvesting system, Oji implemented a number of initiatives that would assist them in reducing emissions and increasing energy efficiency throughout the operation. Energy efficiency was therefore a key criteria for Oji Engineering Manager Peter Henley when selecting the compressed air system for the new facility. From material handling to the conveyor systems, pre-feeders and corrugator, compressed air would be a key utility required throughout the manufacturing process.

After considering a number of vendor packages, Oji chose to invest in a Kaeser compressed air system, consisting of a Kaeser CSD 85 series fixed speed rotary screw compressor, and a CSD 125 SFC Sigma frequency controlled rotary screw compressor, in addition to a comprehensive compressed air treatment package.

A frequency controlled rotary screw compressor was selected as part of the compressed air package in order to meet the fluctuating demands for compressed air of the new manufacturing facility in the most efficient way possible. As the lead compressor, the CSD 125 SFC is responsible for sup-



plying the site's initial requirements for compressed air.

The inclusion of the Sigma Control 2 compressor controller also enables compressor performance to be precisely matched to actual air demand.

In any compressed air installation where a frequency controlled compressor is installed, this will be the compressor that operates longer than any other unit within the system. With frequency con-

trol, the operating pressure can be consistently maintained with ± 0.1 bar. In turn, the consequent ability to reduce maximum system pressure also reduces energy costs. With the CSD 125 SFC, Oji technicians can view the relationship between pressure consistency and speed directly on the Sigma Control 2 display.

Due to the ability to provide a soft rise in motor starting current from zero to full load without current spikes when using frequency control, there is no effective limit to the number of possible motor starts within a given time period because overheating is prevented. The continuously variable acceleration and deceleration significantly reduces component stress.

The additional fixed speed Kaeser CSD 85 series rotary screw compressor at Oji was installed to act as the lag compressor. This means that it only starts up and produces compressed air when the demand exceeds that which the CSD 125 can produce alone. This therefore ensures that the fixed speed unit is not operating in a loaded state for extended periods of time. The result of this configuration for Oji is optimum energy efficiency, reducing power costs, by only producing the precise amount of compressed air required at any one time.

"We have been using Kaeser compressors for some time now on our other sites," said Henley. "They have proven to suit our application and be reliable and efficient in meeting our compressed air requirements. We have also found that they are well suited to operating in the Australian climate."

Kaeser Compressors Australia
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German food company uses plant-based carton for organic milk

German food and drinks manufacturer Arla Foods has highlighted its commitment to sustainability by choosing the first aseptic carton pack to be 100% linked to plant-based renewable material.

SIG's SIGNATURE PACK supports its ambitions to offer customers sustainable food packaging solutions, and allows Arla Foods to address the increasing demand for environmentally friendly products and packaging. It now offers its one-litre 1.5% and 3.8% organic milk, Arla BIO Weidemilch, in the sustainable carton.

Responding to consumer demand

The company's organic milk cartons carry a clear message to consumers: buying this pack promotes the use of renewable raw materials to protect fossil resources while making a positive impact in reducing the CO₂ level compared with a standard carton pack.

Elise Bijkerk, Marketing Director at Arla Foods Germany, said: "The SIGNATURE PACK from SIG is a great match for our Arla BIO Weidemilch. Consumers that choose for our pure Arla BIO Weidemilch also have an increasingly strong interest in sustainable packaging. With the value-added pack from SIG, we can demonstrate our commitment to transparency and our holistic approach to sustainability across the value chain. We are happy to be the first company to use SIGNATURE PACK and to be able to offer consumers in Germany this solution."

Promoting environmental sustainability

SIGNATURE PACK cartons are made from 77% paper board from wood and 23% plant-based polymers through mass balancing, a process that means an equivalent amount of bio-based feedstock went into the manufacturing of the polymers. The mass balancing is certified through internationally recognised third parties.

The packs are aluminium-free and their carbon footprint is 72% lower than a standard SIG carton pack of the same format,



Arla BIO
SIGNATURE
PACK.

based on a life cycle assessment (CB-100732 of 02.03.2018) carried out by independent experts using the ISO 14040 international standard.

These credentials are displayed on Arla's organic milk packs, together with the FSC label which shows consumers that the wood-based content comes from well-managed forests and other controlled sources in accordance with FSC requirements.

The polymers that make up the rest of the SIGNATURE PACK cartons, including the barrier and the spout, are linked to 100% plant-based material using recognised and audited certification schemes to ensure traceability and accountability.

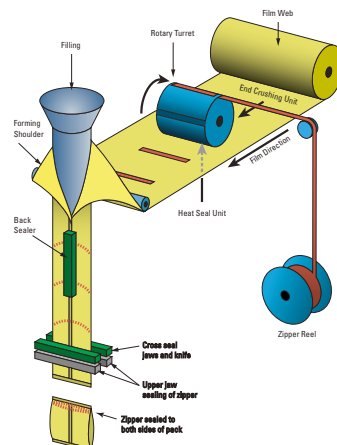
Martin Herrenbrueck, President and General Manager Europe at SIG, commented: "With Arla, we have found a partner who shares our vision of creating a more sustainable future by doing more for the environment and reducing the consumption of fossil resources. By choosing the SIGNATURE PACK, Arla is getting the benefits of a global innovation that better cares for the environment and caters for consumer needs."

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NEWS

Just Eat trials seaweed-based compostable ketchup sachets

Online global marketplace Just Eat has begun a six-week trial of Ooho! seaweed-based sauce sachets as part of its efforts to reduce the amount of plastic waste in the UK, especially from takeaways.

Made from an alginate-based material, the sachets — filled with ketchup of garlic and herb sauce — can be thrown into the home compost or normal bin and will decompose within six weeks.

Just Eat is working with sustainable packaging start-up Skipping Rocks Lab to trial the seaweed-based sachets with restaurant partner The Fat Pizza in Southend.

The trial will assess the feasibility of rolling out the sachets more broadly across its network of 29,000 restaurant partners in the UK.

Graham Corfield, UK Managing Director of Just Eat, said: “The Ooho Sauce Sachets trial, and the results from it, will form an important part of our ongoing work to develop innovative and credible alternatives to traditional single-use plastic packaging currently in use across the takeaway sector.”

This follows a number of packaging measures Just Eat announced in March in an attempt to reduce the impact of plastic packaging on the environment, including the 11 billion plastic condiment sachets sold globally. The company committed to stop selling single-use plastics in its shop in March, and trialled a pre-ticked box on its app and website so customers opted out of receiving unnecessary plastics in takeaways.



Image credit: Just Eat.



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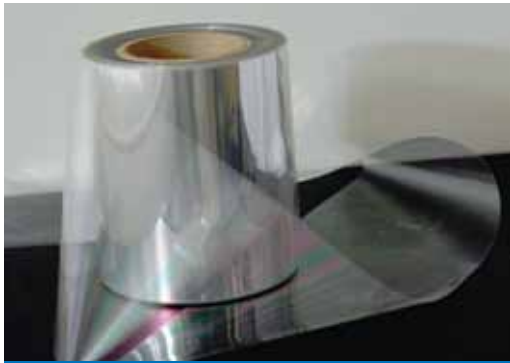
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Nanocellulose-coated PET film. Purdue University researchers created a new manufacturing process using cellulose nanocrystals as advanced barrier coatings for food packaging.

Low-cost, sustainable option for food packaging

The growth in advanced barrier coatings, which is at around 45% annually. Purdue University researchers have developed a large-scale manufacturing process using cellulose nanocrystals (CNCs) as advanced barrier coatings for food packaging.

CNCs are an alternative renewable raw material derived from abundant resources such as wood and plants. They have properties including nontoxicity, biodegradability, high specific strength, high thermal conductivity and optical transparency, all of which make them excellent components for advanced food packaging.

"The challenge for the food packaging industry is to create a recyclable and sustainable barrier material that is low-cost," said Jeffrey Youngblood, a professor in Purdue's School of Materials Engineering. "Our innovation using CNC coatings is transparent, nontoxic and sustainable."

The Purdue manufacturing technique is scalable since it is a roll-to-roll manufacturing process using waterborne polymer systems. CNCs are highly crystalline and easily dispersed in water, so manufacturers can control the structure to eliminate free volume and end up with only the properties that are needed for the barrier material.

"Our unique process uses the power of natural nanotechnology and allows a much higher density and packing coating that reduces diffusion pathways and drastically improves oxygen, carbon dioxide and water vapour permeability," Youngblood said. "In essence, we get properties similar to common packaging such as ethylene-vinyl alcohol polymer, but with more sustainable results."

The Purdue Office of Technology Commercialization helped secure a patent for the technology. It is available for licensing.

Bosch wants to get out of packaging

Bosch is looking for a buyer for the food and pharmaceuticals units of the packaging machinery business (PA), part of its Packaging Technology division.

Bosch's packaging machinery business is involved in specialised areas of the packaging industry. In this competitive environment the players are small and medium-sized enterprises that have a structural advantage enabling them to respond more flexibly to market requirements compared to the much larger Bosch.

Bosch's special-purpose machinery manufacturer Robert Bosch Manufacturing Solutions GmbH is a separate entity, and it will remain part of the Bosch Group.

"A reorganised packaging technology business will be able to adapt more flexibly to the diverse requirements of this typically SME market, while Bosch will be free to focus its attention entirely on the group's impending profound transformation," said Dr Stefan Hartung, the Bosch board of management member responsible for the Energy and Building Technology and Industrial Technology business sectors.

PA currently employs some 6100 associates in its global packaging technology operations. Its aim is for all its associates and locations to be retained by the eventual buyer. Associates and employee representatives have been informed of the decision and will be kept continuously up to date about the course of the divestment process.



Amcor is buying Bemis

Rumour has it that Amcor is finalising an AU\$7 billion buyout of US plastics packaging company Bemis. Amcor has gone into a trading halt as it prepares to make a major acquisition announcement.

Bemis provides food, healthcare and consumer goods packaging including foil lids for yoghurt pots, flexible plastic pouches for sauces and soups, and printed plastic wrappers for cheese. With a global workforce of around 16,000 people, about 70% of Bemis's sales revenue comes from the US.

Amcor has 35,000 employees worldwide and the \$17.7 billion company's shares have risen 230% over the last 10 years. In 2013 the company split off its Australasian packaging and distribution operations into a separate ASX-listed company called Orora to focus on global expansion.

Credit: Allison Carter.



Crabs and trees help replace plastic packaging

Material from crab shells and tree fibres could replace the flexible plastic packaging used to keep food fresh, according to researchers at Georgia Institute of Technology.

Consumers are increasingly conscious about the environment, and the food industry is under pressure to use more environmentally friendly packaging. Researchers have developed a sustainable packaging wrap by spraying multiple, alternating layers of chitin nanofibres — found in shellfish, insects and fungi — and cellulose nanocrystals, a common natural biopolymer found in wood pulp.

The film was created by suspending cellulose and chitin nanofibres in water, spraying them onto a surface in alternating layers and waiting for them to dry. This produced a flexible, strong, transparent and compostable material similar to plastic packaging film.

The researchers said they did not set out to create food packaging, but were looking into chitin for another reason when they considered its potential.

“We had been looking at cellulose nanocrystals for several years and exploring ways to improve those for use in lightweight composites as well as food packaging, because of the huge market opportunity for renewable and compostable packaging, and how important food packaging overall is going to be as the population continues to grow,” said J Carson Meredith, a professor in Georgia Tech’s School of Chemical and Biomolecular Engineering. “We recognised that because the chitin nanofibres are positively

charged, and the cellulose nanocrystals are negatively charged, they might work well as alternating layers in coatings because they would form a nice interface between them.”

Meredith said they compared the film to PET, or polyethylene terephthalate, which is commonly used in transparent packaging such as soft drink bottles. “Our material showed up to a 67% reduction in oxygen permeability over some forms of PET, which means it could in theory keep foods fresher longer.”

In order to preserve food, packaging must prevent oxygen from passing through. In this sense, the film actually improved on conventional plastic packaging due to its crystalline structure.

“It’s difficult for a gas molecule to penetrate a solid crystal, because it has to disrupt the crystal structure,” Meredith explained. “Something like PET on the other hand has a significant amount of amorphous or non-crystalline content, so there are more paths easier for a small gas molecule to find its way through.”

There is plenty of cellulose and chitin-rich by-products left over from the shellfish food industry, meaning the new films could be a viable alternative to petroleum-based materials in the future. However, the next steps would be to develop a manufacturing process that maximises economy of scale and conducting more research to improve the material’s ability to block water vapour.

The research was published in the journal *ACS Sustainable Chemistry and Engineering*.



Want decent staff? Try before you buy

Everybody bemoans the dearth of qualified professionals entering the food industry. Why not do something about it? The educational institutions cannot work in isolation from the food industry yet be expected to produce graduates with the training, skills and education the industry wants.

There is an easy way to be involved and it will also give you an opportunity to test run potential staff and snaffle them up if they suit your needs.

Internships

The Master of Food and Packaging Innovation (MFPI) postgraduate degree, which develops well-rounded professionals in new product development, food packaging processes and design, is a joint initiative between the University of Melbourne and the Australian Institute of Packaging. Students study food science, food safety, packaging materials and processes, packaging design, consumer behaviour, product innovation, entrepreneurship, business management and marketing.

As part of the two-year degree students are required to undertake 120–200 hours of work in industry as part of their internship. These hours can be taken over weeks or months, depending on the needs of the company.

What's in it for you?

- **Find future employees:** Students from the MFPI have the knowledge, skills, drive and enthusiasm to be highly successful employees, and potentially future leaders, in the food and food packaging industries. Taking an MFPI intern will give you the opportunity to assess potential employees.
- **Increase productivity:** This internship provides a great opportunity to receive some extra help with research or projects that you are having difficulty finding the time or resources to complete. In addition, the interns bring with them a fresh pair of eyes that can inspire new ideas and help to problem solve. It is also worth noting that many of our interns have worked in a diverse range of fields prior to undertaking the course and bring with them a range of skills obtained through previous employment.
- **Support the industry:** Hosting an intern supports industry development and the future leaders of the food and food packaging sectors.

Interns available

The program has two students who are available for internships right now. If you are interested in taking an intern immediately, in the future or you would like more information, please email info@aipack.com.au.



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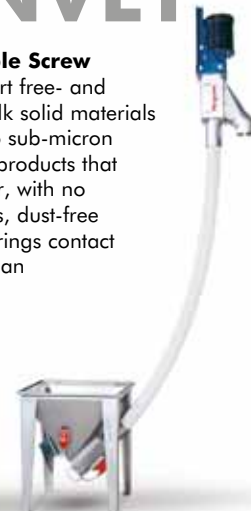
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