

March/April 2017
Vol.24 No.6

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

Lunar beer



PP100/07395

Cold chain

Beverage trends

Confectionery technology



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read and download at
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Food FOR thought

Organics research centre to open in Northern Rivers

A collaboration between Southern Cross University and the NSW Department of Primary Industries will see a Centre for Organics Research created in NSW's Northern Rivers region. The Department will contribute \$2 million during a five-year funding period, to be matched by the university, which will also contribute staff and facilities.

"The DPI has a presence at

Wollongbar, Alstonville and Grafton

and a deep understanding of the value of agriculture to our region. The university has a world-leading reputation in plant genetics and related fields. There is growing global interest and huge potential in all aspects of organics, so this is a big opportunity for our region," said the Hon Thomas George, State Member for Lismore. Southern Cross University's vice chancellor, Professor Adam Shoemaker, said the interests of the centre would be broad.

"We expect to attract partners who will have their own research priorities and problems to solve. It is a contemporary field with great potential to innovate. "The Centre for Organics Research will build on Australia's reputation for food safety, security and export to key markets worldwide. It is also of great relevance to our region. It complements the work underway at our Lismore campus hosting the \$13.8 million federal government Farm Co-operatives and Collaboration Pilot program, which is providing Australian farmers with knowledge and skills to boost their returns at the farm gate."



What your choice of cheese says about you

Australians certainly enjoy their cheese, with data from Roy Morgan showing 76.3% of Australian grocery buyers (aged 14+) purchase at least one kind of cheese in an average month.

Block cheese is the most popular, with 55.1% of grocery buyers purchasing it in an average month, followed by sliced cheese (35.8%) and grated/shredded cheese (33.1%), soft cheese (18.4%), creamed cheese/cheese spread (10.5%), cottage/ricotta cheese (9.9%) and cheese snacks/portions (5.7%).

So what does your choice of cheese reveal about you?

Even block cheese, the most popular type, stands out in its own way, with New Zealand- and British-born Australians both 23% more likely than the population average to buy this form of cheese in an average four weeks. In contrast, Asian-born Australians are a sizeable 72% less likely to buy it.

The popularity of block cheese also peaks among the Roy Morgan Food Segment known as 'Trendsetters' — gourmet-loving foodies.

Sliced cheese is especially popular with consumers classed as 'Zappits', who aren't big on cooking so the ease and convenience of cheese slices no doubt suits them well.

Almost as likely to buy sliced cheese are those aged 35–49 years — many of them time-poor parents looking for quick, healthy snacks for their kids.

Sliced cheese is also popular among Australian adults with a Body Mass Index (BMI) classified as obese, who are 20% more likely than the average grocery buyer to buy it in any given four weeks — just as they are for grated/shredded cheese too. Those at the underweight end of the BMI spectrum favour soft and creamed cheese. Unsurprisingly, soft cheese is enjoyed by people who like to drink wine with their meals and entertain at home, while cottage/ricotta cheese has elevated popularity with European-born Australians, as well as those who like to eat healthily and are concerned about their weight.

"Cheese buyers are a diverse bunch, and in today's gradually shrinking cheese market, brands need to ensure that they are marketing their various cheese products to the right target audience. For example, a quick glimpse at the table above confirms that a grocery buyer who purchases soft cheese is focused on entirely different aspects of the culinary experience than someone who buys shredded cheese," said Norman Morris, industry communications director, Roy Morgan Research.

"The table above also hints at another key trend: cheese's popularity with older Aussies. Roy Morgan data reveals that the under-25 age group is almost 30% less likely than the average grocery buyer to purchase cheese of any kind, with 25- to 34-year-olds also below average," said Morris.

	BLOCK	SLICED	GRATED/SHREDDED	SOFT	CREAM/SPREADS	COTTAGE/RICOTTA
Buyers most likely to be aged...	50+	35-49	35-49	50+	50-64	50-64
Especially popular with Aussies born in...	NZ, UK/Republic of Ireland	North America	North America	Europe	NZ, UK/Republic of Ireland	Europe
Food Segment most likely to buy...	Trendsetter	Zappit	Trendsetter	Entertainer	Old-fashioned cook	Houseproud
Distinguishing attitudes of buyers	People often compliment me on my cooking	I don't have time to spend cooking	I tend to snack throughout the day	I like to drink wine with my meals	If I see a new type of food I'll try it	I'm constantly watching my weight
Other likely traits/attitudes	If I see a new type of food I'll try it	BMI = obese	BMI = obese	BMI = underweight	BMI = underweight	The food I eat is all, or almost all, vegetarian

Source: Roy Morgan Single Source (Australia), October 2015–September 2016, n=14,416.

Base: Australian grocery buyers 14+ (except BMI, which is grocery buyers 18+).



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One-click tool for food chemical toxicity information

The European Food Safety Authority (EFSA) has released OpenFoodTox, a database that provides instant information about the toxicity of chemicals found in the food and feed chain. While all of the information in the database is already publicly available, now it has been collated into one site and will be updated annually.

The database gives information on over 4000 chemical substances, related EU legislation, the EFSA output identifying their critical effects and the safe levels set by EFSA scientific panels, such as tolerable or acceptable daily intakes.

OpenFoodTox gives quick and easy access to the most important information and provides the summary toxicological information used by the EFSA in its risk assessments since 2002.

The chemicals covered in the database come from all the different areas in which the EFSA is responsible for chemical risk assessment: pesticides, food additives, flavourings and nutrient sources, feed additives and both natural and man-made contaminants. Not only does it contain information on the critical health effects for risk assessment for humans — such as liver or mammary toxicity — but also for farm animals, pets and species of ecological importance such as bees and fish.

The click-of-a-mouse tool is available for all scientists and decision-makers to search and access key toxicity information by substance.



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Hygiena to acquire DuPont's food safety diagnostics business

DuPont Nutrition & Health's global food safety diagnostics business has been acquired by microbiology and life science company Hygiena, which manufactures and sells a range of rapid hygiene monitoring systems, environmental collection systems and rapid dilution devices.

The business was formed by DuPont in 1992 as Qualicon, and Hygiena will retain the Qualicon name. The transaction is expected to close in the first quarter of 2017, pending regulatory approvals.

DuPont Diagnostics provides microbial detection and monitoring products that identify and characterise pathogens and other unwelcome organisms in food ingredients, finished products and production environments. Its BAX System has been adopted as the leading detection method by food manufacturers, food quality laboratories and governments around the world.

"The combined company's microbiology products will cover the full manufacturing process, from in-process environmental tests to finished product tests," said Steve Nason, chief executive officer of Hygiena.

Matthias Heinzel, president, DuPont Nutrition & Health, said the transaction was a strategic business decision that would allow DuPont Nutrition & Health to focus on growth opportunities more closely aligned with its core portfolio of specialty food ingredients.



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Making the most of the catch — including the head and guts

Nordic Wildfish, located on the island of Valderøya, west of Ålesund, Norway, has been working with the research company SINTEF to find ways to utilise the entire fish in its hauls of cod, pollock and haddock. Currently around 92% of marine whitefish by-product is discarded as waste, with only the fillets processed to become food.

In 2014, SINTEF reported that 340,000 tonnes of whitefish by-product are discarded into the sea annually. The research organisation believes that this by-product has major commercial potential if it can be processed to produce high-quality end products such as ingredients in animal feed and food for human consumption.

Instead of discarding the head, the guts and the rest of the fish, Nordic Wildfish is trialling an hydrolysis process that separates the bones, leaving a kind of 'soup' to which enzymes can be added and valuable oils and proteins extracted. The entire process takes place onboard the trawler, with many technologies having been developed and adapted for installation onboard the refurbished trawler.

The company has been nominated for the 2016 Innovation Prize awarded by the technical journal *Teknisk ukeblad* for this project.



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foodpro targets small manufacturers with food integrity zone

Australian food manufacturing event foodpro is partnering with Food Innovation Australia Ltd (FIAL) to announce a new initiative at foodpro: the Supply Chain Integrity Zone.

Focusing on solutions available for small manufacturers who produce pre-packaged goods for sale to the consumer, the Supply Chain Integrity Zone will include companies representing the various stages of the supply chain, allowing visitors to discuss end-to-end solutions with suppliers best suited for their business. The zone will also include a series of seminars covering the latest technology, capabilities and insights.

“The Supply Chain Integrity Zone is a really important and exciting addition to foodpro,” said Peter Petherick, foodpro event director. “foodpro has supported Australia’s manufacturing needs for 50 years, and it’s important we continue to respond to the industry as it changes. It’s become clear that there are an increasing number of smaller manufacturers whose needs, although similar to the bigger companies, must be met in more specific ways. The new zone serves a purpose for solutions, and importantly, for discussion and engagement. With a focus on improving traceability and supporting audit compliance, the benefit to the industry will be incredible.”

The zone will feature companies that offer solutions specifically for smaller manufacturers who produce less than 10,000 units a week, with a focus on areas including materials in, processing integrity, packaging integrity, shipping and receivables, and quality management solutions for traceability.



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ISO 9001 implementation in small enterprises

Small businesses have different needs and challenges compared to large organisations. However, just because they have ways of working often more limited resources does not mean they are keen on quality management.

Recognising this ISO, the International Organization for Standardization, has just released Guidance for SMEs using ISO 9001 for quality management. The publication includes a step-by-step guide to implementing a QMS, providing sector-specific examples for different types of small businesses, such as consultancies, manufacturers and distributors.

ISO’s essential guide for SMEs wishing to implement a quality management system (QMS) has just been updated, providing practical advice and concrete examples tailored specifically for small businesses.

ISO 9001:2015 for Small Enterprises – What to do? has just been updated to align with the newly revised version of one of ISO’s most popular standards, ISO 9001, Quality management systems – Requirements, updated in 2015.

The handbook was written by a group of experts from ISO/TC 176/SC 2, the technical subcommittee that developed ISO 9001:2015, and features useful information on everything from how to get started right through to guidance for those who choose to seek certification. It includes practical advice on the different ways of approaching a quality management system (QMS) as well as detailed guidance on each element of ISO 9001:2015.



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KION CEO sees further potential from Dematic acquisition

KION Group CEO Gordon Riske believes the acquisition of Dematic adds potential for further growth, with the creation of a company whose products and services encompass the entire supply chain.

“Our product portfolio is unique and ranges from forklift trucks to fully automated material handling solutions,” said Riske.

The new CEO of Dematic, John Baysore, highlighted the market potential offered by the megatrends of digitalisation, urbanisation and increasing convenience for consumers.



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Food FOR thought



Researchers develop oral *Salmonella* vaccine

Salmonella is responsible for one of the most common foodborne illnesses in the world. In the US alone, it is estimated that there are about 1.4 million cases, with 15,000 hospitalisations and 400 deaths, each year.

Researchers from The University of Texas Medical Branch have developed an oral vaccine against *Salmonella* poisoning. In earlier studies, the UTMB researchers developed potential vaccines from three genetically mutated versions of the bacteria, *Salmonella typhimurium*, that were shown to protect mice against a lethal dose of *Salmonella*. In these studies, the vaccines were given as an injection.

However, oral vaccination is the simplest and least invasive way to protect people against *Salmonella* infection. Taking the vaccine by mouth has the added advantage of using the same pathway that *Salmonella* uses to wreak havoc on the digestive system.

There is no vaccine currently available for *Salmonella* poisoning. Antibiotics are the first choice, but some strains are developing antibiotic resistance. Another dangerous aspect of *Salmonella* is that it can be used as a bioweapon — this happened in Oregon when a religious cult intentionally contaminated restaurant salad bars and sickened 1000 people.

People with compromised immune systems and children under the age of three are at increased risk of invasive non-typhoidal salmonellosis, which causes systemic infection. There are about 1 million cases globally per year, with a 25% fatality rate.

The study's findings have been published in *Frontiers in Cellular and Infection Microbiology*.



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Food industry behind increasing demand for industrial dryers



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Demand for industrial dryers in the food and pharmaceutical industry is expected to influence the overall growth of the industrial dryers market in the near future. In order to maintain a superior product quality and functional value, end-user industries such as food and pharmaceutical heavily depend on high-performance dryer systems. In addition, stiffer government guidelines for manufacturing processes coupled with increasing concerns over sustainable industrial expansion has compelled these industries to intensify production operations. A study conducted by Persistence Market Research (PMR) reveals that the demand for new industrial dryers will reach 3049 units globally by 2024.

In the recent past, demand for energy-efficient dryers has gained traction, as a result of which manufacturers have shifted their concentration towards developing cost-effective and low-energy-consuming dryers. Further, growing preference for superheated steam dryers that offer 70–80% energy recovery and have lower operating cost is a key trend governing the global market for industrial dryers.

On the basis of product type, spray dryers is expected to be the predominant segment of the market during the projected period, followed by continuous dryer type. The spray dryer segment is expected to account for a 26% share of the market over 2024.

Industrial dryers work on two basic principles, direct or indirect, amongst which dryers working of indirect principles are expected to witness a relatively higher demand during 2016–2024. Demand for dryers working on indirect principle is anticipated to remain strong in the near future.

Amongst various end-user industries chemical, food and pharmaceutical collectively is expected to account for the majority share of the market both in value and volume terms. In addition, demand for industrial dryers particularly from the chemical industry is expected to remain high throughout the forecast period.

Based on region prospect, the market in Asia-Pacific is projected to remain dominant over the next couple of years. The region is expected to witness a CAGR of over 3% during the forecast period. In North America, sales revenue for industrial dryers is expected to grow to US\$1045.6 million, expanding at a CAGR of 3.8%. Moreover, key players operating in the global market are implementing market strategies that involve acquisitions and mergers, expansion of facilities and launch of newer products, especially in APAC and North America in order to strengthen their presence in these two regions.



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Question time ...



Pre-printed cartons vs carton print & apply: which is better?

Inline carton printing and labelling can be a great alternative to pre-printed cartons. This quick Q&A gives an overview.

Q. We've always used pre-printed cartons...

A. Manufacturers have long relied on pre-printed cartons or shippers for packing and shipping product, but this limits the flexibility. Information can't be updated quickly, and there's risk of wasted inventory if cartons need to be updated at short notice. And if you discontinue a product or change information? Then the cartons, plus time and money in creating them, are scrapped.

Q. So what are the advantages of inline coding and labelling?

A. The main one is being able to use generic boxes rather than brand or product-specific packaging. This saves money tied up in inventory and physical storage. Direct coding or print-and-apply labelling with an LPA is a highly cost-effective solution, particularly if you produce a range of SKUs or will expand your range.

Q. Is inline coding high quality?

A. Today's inline carton coders and LPAs print high resolution, high quality information at high speeds on secondary packaging, including corrugated boxes, trays, SPRs etc.

Q. What can inline coding print?

A. Both variable and static information simultaneously: barcodes, graphics, large and small text, logos, 2D codes and linear 1D codes. You can reduce (or eliminate) pre-printed carton numbers, simply using one plain carton type in various sizes.

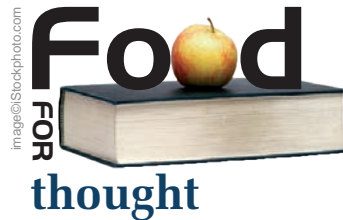
Q. Any other benefits?

A. There are many! Manufacturers will save space (in inventory and the printers' small production-line footprint). You gain flexibility (less forward planning than pre-printed cartons, reducing operations and planning complexity; output is based on product not packaging availability, maximising your plant's operational flexibility). Changeover time is reduced (great for smaller and contract manufacturers who change products/packaging multiple times daily). You can fully integrate inline coding and other technologies on a production line, managing them from a single centralised controller, improving line efficiency.

Q. Who do pre-printed cartons suit then?

A. They're a viable option for many manufacturers. Some choose both. Manufacturers can pre-print cartons with just branding, while all other information is coded or labelled on the production line.

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Monash deal to fast-track food exports to China

An agreement between Monash University and China's biggest food company will open the door for future opportunities in China for Australian food and beverage exporters.

The agreement with the Nutrition and Health Research Institute (NHRI) of China's state-owned COFCO Corporation is the first signed with an Australian organisation, and will see a strategic partnership established between COFCO NHRI and Monash University's new multimillion-dollar Food Innovation Centre.

Under the agreement, which is aimed at boosting exports to China, the Food Innovation Centre at Monash will have access to COFCO NHRI's technical resources, in-depth knowledge of Chinese consumers, regulatory expertise and market delivery platforms to fast-track supply opportunities for Australian exporters.

The Monash centre provides Australia's food industry, from start-ups and SMEs to large corporations, with technology and product development services including consumer-aided design and research capabilities in areas such as food chemistry, packaging design and food ethics. The centre enables businesses to rapidly export to target markets by acquiring a deeper understanding of middle-class consumers in Asia.



Monash University President and Vice-Chancellor Professor Margaret Gardner AO said the centre's development and the COFCO NHRI agreement reflected Monash's commitment to helping Australia achieve its food export ambitions.

"Our university will be establishing an elite food industry-focused PhD program and investing in large-scale infrastructure across campus, including a multimillion-dollar space for food product development, innovation incubation support for SMEs and industry-university collaboration within Monash's state-of-the-art \$80m Green Chemical Futures building," Professor Gardner said.

A key challenge for the Monash centre, Professor Gardner said, would be to support an export culture in Australian SMEs. Crucial to that was the centre's capacity to provide start-ups and SMEs with a 'one-stop shop' range of support services to guide them on how to develop export pathways into Asia.

One of the new technology services that Monash will provide for food industry clients is its \$1.8m immersive visualisation space, Cave 2. The facility will enable food companies to visualise their products on the market shelves in both Asia and Australia.

what's new in
Food
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Keeping it cold



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A new automated, robotic, temperature-controlled storage facility is gaining clients in the Southern Hemisphere.

McCain has joined Fonterra in committing to NewCold's new temperature-controlled storage facility at Truganina, 15 km outside Melbourne. The US\$100 million automated cold storage warehouse is due to open for business in autumn 2017. After establishing its Asia-Pacific headquarters in Melbourne's west, Dutch-based cold storage and logistics company NewCold is looking to expand its business in New Zealand, Singapore, Malaysia and Hong Kong, as well as other locations in Australia.

NewCold's Truganina facility will feature high-level automation, creating jobs in IT, engineering, software development and management. It is anticipated that the facility will create 127 full-time jobs.

The facility features a new-generation 'high bay' design whose height allows for more efficient use of space and for savings on floor slabs and footprint. The facility will also incorporate oxygen-reduction fire safety technology and state-of-the-art systems to significantly lower electricity consumption when compared with conventional cold storage warehouses.

For receipt, storage and subsequent retrieval of palletised products, the warehouse will use unmanned stacker cranes, conveyors and automated truck unloading systems, all together capable of handling more than 11,000 pallet movements per day, allowing users to efficiently move stock out of the warehouse to their customers more efficiently than ever before.

Users of the cold chain facility will also have access to continuous feedback on performance, service and efficiency, allowing for continuous improvement through its supply and delivery methods. The focus will be on recruiting local employees to staff the facility, with extensive skills and

technology training for employees to ensure they can manage the facility at maximum efficiency.

NewCold's temperature-controlled storage facility will feature two warehouses: a fully automated, 34 m-high cold storage warehouse with eight double-satellite stacker cranes and a fully automated, 34 m-high chilled storage warehouse with six double-satellite and four single-satellite stacker cranes.

NewCold awarded the contract to build the two high-bay cold storage facilities to Dematic.

The automated cold storage facilities will include Colby-Rack high-bay racking which is capable of housing 100,000 and 106,000 pallets. Various pallet weights and configurations will be deployed within each facility up to a maximum pallet weight of 1265 kg. The ColbyRack components, comprising more than 8500 tonnes of roll-formed Bluescope G450 grade steel, were locally manufactured at Dematic's factory in Belrose, Sydney.

Coldstorage warehouse

- Fully automated, 34 m-high cold storage warehouse
- Eight double-satellite stacker cranes
- Footprint of 176 x 100 m
- Total storage capacity: 102,816 Australian CHEP pallets
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- FEFO handling with a capacity of >10,000 pallets per day.
- >900 pallet shipment buffer zone, minimising waiting time for trucks before loading
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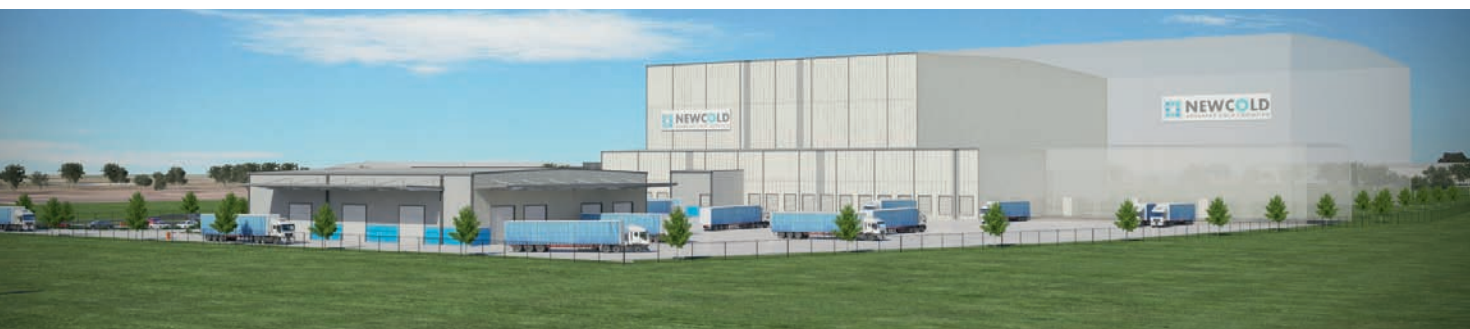
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- Footprint of 170 x 140 m
- Total storage capacity: 110,612 Australian CHEP pallets
- Storage area and loading docks at different chilled environments (+2°C, +8°C and +11°C)
- FEFO handling with a capacity of >10,000 pallets per day
- >1100 pallet shipment buffer zone, so there is minimal waiting time for trucks before loading
- 30 docks
- Container yard capable of storing 700 TEU
- Open 24 h

The big players are already signing up

The mix of efficiency, speed, sustainability and automation has enticed some big names to sign up to the facility already.

Starting in July 2017, NewCold will manage the storage and handling of McCain's frozen products as part of a 10-year agreement. McCain Foods ANZ Supply Chain Director Taso

Kourou stated that this facility upgrade would drastically improve logistics capabilities, meeting the needs of local and international customers demanding improved efficiency from production to distribution of frozen products. "The storage and handling of McCain's frozen products in the new automated facility will give us a more stable temperature regime and highly accurate stock control," said Kourou. McCain Food's regional president for Australia, New Zealand, South Africa, India & China, Louis Wolthers, said the McCain team is keen to see the outcomes of the new agreement take effect. "From a sustainability perspective, through the use of the warehouses' highly controlled in-and-outflows combined with efficient cooling equipment, energy usage per pallet stored is up to 50% lower compared to a conventional storage option."

Fonterra Australia has also signed a 10-year warehouse service agreement with NewCold and will consolidate its Australian distribution network and six warehouses under the one facility in Melbourne. 

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Flexicon's BULK-OUT Bulk Bag Weigh Batch Unloader with seismic bracing provides added structural integrity and operator safety for installations in regions prone to earthquakes.

The BFC model discharger frame is equipped with a cantilevered I-beam and electric hoist and trolley for the positioning of bulk bags without the use of a forklift. The bag-lifting frame is equipped with Z-CLIP bag strap holders that allow rapid insertion and removal of bag straps.

A manually operated iris valve atop a hopper intake chute allows the bag spout to be cinched and the drawstring untied before gradually opening the valve, avoiding uncontrolled bursts of material into the receiving vessel and associated dust.

Four-sided cross bracing strengthens the frame against deformation and reduces the possibility of a structural failure when subjected to the dynamic loading associated with a seismic event.

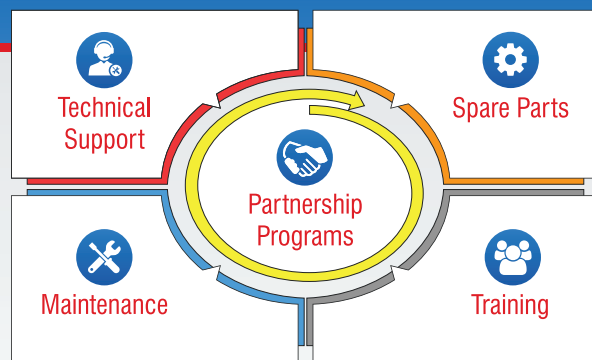
Mounted on load cells, the unloader is equipped for loss-of-weight batching into customer-supplied receiving vessels or downstream processes.

Also offered are BFF model unloaders for forklift loading of bags and BFH half-frame unloaders requiring a forklift or plant hoist to suspend the bag during discharge. All are available constructed of either carbon steel with durable industrial finishes or stainless steel finished to industrial or sanitary standards, with optional conveyors and weigh batching controls.

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Belt-fed digital sorter

The easy-to-use, VERYX belt-fed digital sorter features sustainable all-sided surface inspection, multi-sensor Pixel Fusion, high-resolution cameras and laser sensors. The sorter can detect and eject products with sub-millimetre size defects and foreign material (FM) while virtually eliminating false rejects.

The VERYX B175 features a 1750 mm wide inspection area suitable for mid- to high-capacity operations. Suitable for potato processors sorting wet or frozen strips and specialty potato products as well as food processors sorting vegetables, fruits or other products, the B175 can be configured to achieve two- or three-way sorting, as needed.

For food processors requiring all-sided surface inspection, Key can arrange the sensors to achieve full view of each object in the product stream with no blind spots. On belt-fed systems, the VERYX bottom cameras are positioned away from product splatter to ensure lower sensor windows are not obstructed by build-up over time.

The multi-sensor Pixel Fusion feature merges data streams from multiple cameras and lasers in relation to each image pixel. Fusing sensor data at pixel level maximises the contrast between 'good' and 'bad' (as defined by the user), which enables the sorter to recognise and remove more subtle product defects and previously difficult-to-detect FM.

Smart features such as auto-learning, self-adjustment algorithms, predictive system diagnostics, smart alarms, FMAAlert and Sort-to-Grade enable VERYX to operate virtually unattended during normal production. Operator qualification requirements are reduced, making it much faster and easier for a new operator to become a proficient user of the equipment.

Designed to minimise sanitation requirements and simplify maintenance, VERYX reduces downtime and the user's total cost of ownership.

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Electric bin tipper

Wyma's Electric Bin Tipper eliminates the risk of contaminants, with no risk of hydraulic oil leaking onto produce.

Available in stainless steel, the bin tipper's innovative design incorporates integrated inverter technology and position control, with fewer sensors and lower installation costs due to the reduced wiring complexity.

Based on a 3-min cycle, power consumption is on average 50% lower compared to hydraulic tippers, according to the company. The programmable velocity profile allows for increased control over the equipment.

A reduced number of wear parts also helps lower running costs, as fewer parts need to be replaced over the lifetime of the equipment.

Lid options include a fixed lid with a partial door; a soft-tip lid designed for gentle handling and controlled discharge of fresh produce; and a super tip which is suitable for tipping directly into a wet hopper.

Customisable to suit user requirements, the tipper can be manufactured to accommodate a wide variety of bin sizes and shapes, and one tipper can be designed to accommodate various bin sizes.

Wyma Engineering (NZ) Ltd

www.wymasolutions.com



Cordless pumps

Enerpac's XC-Series cordless pumps actuate hydraulic tools as quickly as a basic electric-powered pump and create up to 700 bar of pressure, making them up to five times faster than manual hydraulic pumps and up to two times faster than popular pneumatic-powered pumps, according to the company.

The pumps provide safety features including zero trip hazards through cordless design, overload protection circuitry from excessive amp draw or temperatures, and a trigger lock-off mechanism to protect against unintended operation during transport.

Engineered for use in hard-to-access areas, the pumps are constructed of lightweight materials, are equipped with a powerful, one-half horsepower motor and feature 28 V lithium-ion battery technology.

With a bladder reservoir, the pumps eliminate venting and offer leak-free operation in any orientation. The overall body, handle and trigger have been ergonomically engineered to maximise ease of use and portability.

The pumps deliver oil flow of 2.05 L/min at the low-pressure setting and 0.25 L/min when operating at full pressure, up to 700 bar. Battery run time can accommodate demanding application requirements.

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Wiley helps GMP secure its future with \$30m expansion

Gundagai Meat Processors (GMP) is a family-owned and -operated meat processing business. From an operation initially processing around 100 lambs per week, GMP has gone on to secure major supply contracts, including a 35-year supplier relationship with Coles, and processes more than 625,000 lambs annually, making it one of the largest employers in the region.

To prepare the company for the future, GMP has begun a \$30 million expansion project which will lead to a 40% increase in annual production capacity and create 76 new full-time jobs over the next five years.

GMP has worked collaboratively with food manufacturing specialist Wiley in the detailed master planning exercise to ensure the company met its project objectives: to increase production; to ensure compliance with ongoing customer requirements (for export and for key client Coles Supermarkets); and to replace ageing infrastructure at the facility.

The expansion aims to put GMP at the cutting edge of lamb processing, including utilisation of the latest technology while exceeding the increasing compliance demands of the industry.

The delivery stage of the expansion project will touch almost every area of the meat processing facility, including the lairage, slaughter floor, offal areas, chillers, loadout, administration and amenities. With tricky interfaces, thorough planning has been crucial to ensure there is no loss in production levels during the construction phase. This will be achieved by a staged process and out-of-hours works during delivery.

GMP CEO Will Barton said the company's investment would boost local spending by an estimated \$3 million during the construction phase alone and generate ongoing stimulus to the local economy, estimated to be in excess of \$150 million per year.

Wiley Managing Director Tom Wiley said the facility will incorporate new technology to futureproof the business, including full traceability of the lamb carcass, executed and



tracked with RFID tags. Provisions have also been made for future X-ray (DEXA) capacity, which will enable GMP to understand the supply chain even further with yield insights.

Wiley & Co Pty Ltd
www.wiley.com.au

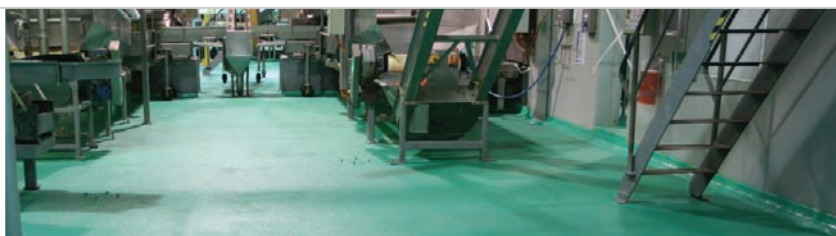
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Corrosion-resistant chain

Tsubaki's G8 Series Neptune corrosion-resistant chain is an RS roller chain that combines protection against corrosive environments and maximum chain strength. The company's solution is based on a two-layer protection scheme applied to high-quality carbon-steel chain components. A top-coat resin protects the chain from physical impact and forms the frontline defence against corrosive agents. Beneath this is a base coating which prevents oxidation from reaching the chain.

The coating system is applied prior to the chain assembly processes to ensure that each chain component is completely coated. The application process is at low temperature so it will not affect chain strength.

The result is a carbon-steel chain that can be used in wet environments and even underwater. It is available as roller chain and as single- and double-pitch conveyor chain. The conveyor chain is complemented by a range of attachments that have the same two-layer treatment.

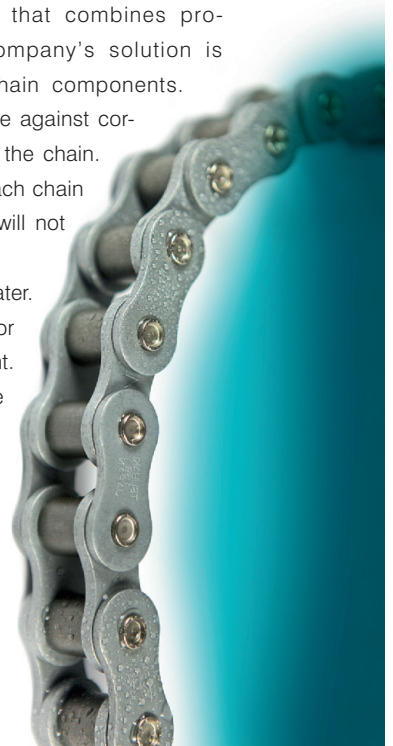
The chain has good resistance against alkaline chemicals such as sodium hypochlorite and sodium hydroxide, which are commonly used in the food industry to clean and disinfect.

The coating is RoHS compliant and environmentally safe compared to other industry standard coatings such as lead, cadmium, mercury or arsenic. It is therefore suitable for use in industries that are phasing out hexavalent chromium from their plants.

With an operating temperature range from -10 to 50°C, the Neptune chain is suitable for food and beverage uses including food conveyors, meat processing, washdown areas, high-humidity areas, food packing machines and spiral conveyors.

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Portable sanitary drum tipper

The Portable Sanitary Open-Chute Drum Tipper from Flexicon features stainless steel product contact surfaces finished to sanitary standards and a washdown motor, providing a means of discharging non-dusty bulk materials from drums without cross-contamination.

A single hydraulic cylinder rotates the drum to 60° beyond horizontal, discharging material onto the product chute and into a receiving vessel. The wide diameter and polished surface of the chute allows contents of the drum to discharge freely regardless of particle size.

The unit accommodates drums of all popular sizes weighing up to 340 kg and can discharge directly into process equipment or optional hoppers equipped with outlets for pneumatic conveying systems, flexible screw conveyors or tubular cable conveyors.

Mounted on castors with quick-action floor jacks for stable operation, the tipper can be rolled to various use points throughout the plant, eliminating the need for multiple units. Non-product contact surfaces are constructed of carbon steel with durable industrial coatings.

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testing



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Wine analysis guide

Thermo Fisher Scientific's Wine Analysis Applications Notebook contains applications essential to the winemaking process — from the analysis of colour and flavour to contaminants and adulterants.

The handbook provides answers for reducing analysis time without compromising resolution, retention or reproducibility. It guides users on how to satisfy wine regulations, authentication and labelling requirements; offers protocols for monitoring quality parameters during and after fermentation to determine flavour and stability; and includes links to peer-reviewed wine analysis articles.

Thermo Fisher Scientific

www.thermofisher.com.au



Sterile gloves

Prevention of cross-contamination in a production or a lab environment can have many benefits. When collecting an in-process sample for testing, the first thing users want to do is to make sure they are not passing contamination to the material they are sampling.

Secondly users want to make sure they have not contaminated the sample, which could end up returning false results. This is especially the case when using environmental swabs and sponges, and to prevent contamination of the sample, a sterile glove is required.

Now available are Nasco Sterile Gloves. These polyethylene gloves are economical and easy to use. They are packaged one pair to a sealed bag that is perforated for easy opening, and come in a box of 100 pairs. Nasco Sterile Gloves are available from AMSL Scientific.

Australasian Medical & Scientific Ltd

www.amsl.com.au

Oxygen permeation tester for the produce industry

MOCON has launched the OX-TRAN 2/12 oxygen permeation instrument that will provide produce marketers and their material suppliers with oxygen permeation data quickly and more easily to assist in meeting shelf-life goals.

At the core of the OX-TRAN 2/12 is simplified set-up. Typically, a significant number of labour hours are spent setting up tests or waiting for results, creating a bottleneck. The new instrument has been designed to produce results quickly, with minimal effort, to increase efficiency. A new user interface, coupled with increased automation, makes testing easier than before, with less skill required. The OX-TRAN 2/12 is suitable for brand owners as well as film manufacturers and converters that either use or sell flexible materials for produce applications.

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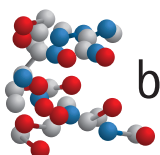
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Sensor can detect *E. coli* and other bacteria in 15–20 minutes

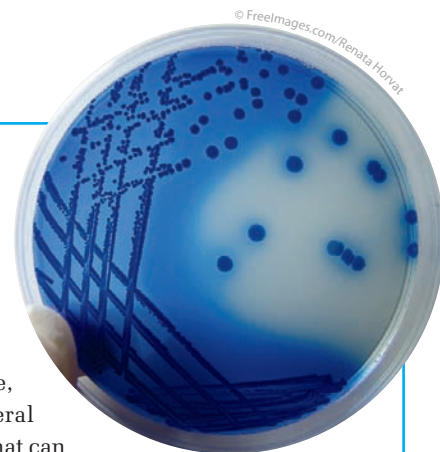
The speedy and cost-effective detection of *E. coli* would be a boon to food and beverage processors everywhere. Most current detection technologies rely on amplification of the bacteria within the sample, which takes anything from several hours to several days, but now researchers have developed a sensor that can deliver results in 15–20 minutes.

Researchers from the Photonics Research Center at the University of Quebec in Outaouais, Canada, under direction of Professor Wojtek J Bock and collaborators from the Indian Institute of Technology Kanpur, have bonded bacteriophages to the surface of an optical fibre. Here, the viruses collect *E. coli* bacteria from the sample under test and keep them attached. When a beam of light strikes the surface, the presence of *E. coli* shifts the wavelength, which indicates the level of bacterial contamination.

By changing the bacteriophage, the sensor can be modified to detect other strains of bacteria.

In most circumstances temperature changes also induce wavelength changes, but this problem was circumvented by the addition of an optical component that cancels out temperature-induced shifts in temperature ranges from ambient to 40°C. Security and Protection International is already collaborating with the researchers with a view to commercialising portable sensors with prices around a few thousand dollars.

The researchers describe the sensor in a paper in the journal *Optics Letters*, from The Optical Society.



Non-invasive temperature measurement

Measuring the average temperature of a chilled, frozen or warmed food product can present a real challenge for food manufacturers and retailers. Typically, temperature measurement of food products is carried out using an infrared or probe device, which is often invasive and effectively destroys the product.

Celsius Instruments' Midi provides a fast, non-destructive method of measuring frozen, chilled and heated products in an easy, repeatable manner.

The measurements are performed using microwave thermometry technology, which measures the equilibrium temperature rather than the surface or core temperature. This provides fast, consistent and accurate readings.

Inspection Systems Pty Ltd
www.inspectionssystem.com.au

Filtration units

Merck's EZ-Fit Filtration Units for microbial enumeration are stackable to save on laboratory space. Users can choose from a wide selection of membranes and have the flexibility to use the units with solid or liquid media.

The drain design provides a perfect contact with agar when transferring the membrane, and the base protective rim prevents cross-contamination. Filtration time is reduced on difficult-to-filter samples due to the base design and set-up time.

Merck Pty Ltd
www.merckmillipore.com

Making yeast synthesise starch

Starch is only produced by plants and algae, but now, researchers at ETH Zurich have produced starch in yeast — the first time this has been achieved in a non-plant organism.

A group led by Samuel Zeeman, Professor of Plant Biochemistry at ETH Zurich's Institute of Agricultural Sciences, has succeeded in implanting yeast with the machinery that plants use to create this stored form of glucose.

Researchers took the blueprints for seven different enzymes involved in starch synthesis from the genome of thale cress (*Arabidopsis thaliana*). They then implanted these into the yeast's genome, from which they also removed all enzymes involved in the synthesis of glycogen, the storage form of glucose in yeast, to prevent these enzymes from interfering with the synthesis of starch.

In total, the researchers generated over 200 strains of yeast, some of them with all seven enzymes and others with various reduced sets of them.

Strains containing all seven enzymes produced starch with only minimal differences from *Arabidopsis* starch. However, what was surprising were the products of strains in which one or more enzymes were missing: depending on the combination, some of these strains nevertheless produced some type of starch.

"Starch synthesis is not a linear process," explained Zeeman. "If an enzyme is missing, the ones that are left keep working



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anyway and just build a slightly different product." The researchers were able to show that, depending on the combination of the other enzymes, starch synthesis also works without debranching enzymes.

These enzymes remove excess branching in the sugar chains produced during starch synthesis and were previously proposed to be indispensable to starch formation.

"At present, the yeast system is purely a research tool," said the ETH professor. He explained that it allows starch synthesis to be simulated and influenced, as well as allowing more detailed

investigation of the individual roles of participating enzymes and of the formation of starch's complicated structure. "Doing these studies in yeast is far faster and simpler than in plants," emphasised Zeeman. Asked about future applications, he added: "Of course, it would be possible to try out novel starch modifications in the yeast system to attempt to improve starch properties for certain areas of application."

Starch is an important constituent of foodstuffs such as maize, rice or potatoes. It is of major interest for the manufacture of biodegradable materials and finds use in many unexpected places, such as in coating for paper. As such, starch is being constantly optimised for its various applications.

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Six beverage trends worth knowing

Mark Dingley*

Australians are the biggest drinkers of fruit juice on the planet and consume more soft drink than the Brits, yet this former nation of full-strength beer drinkers is turning to bottled water and 'different' beers — with a real liking for craft and flavoured beers. And in 2017, Australians can happily raise a glass of coconut water to toast the twofold win of volume and value rises for our wine exports in 2016.

The Australian beverage market has changed, with some clear winners and losers over the past couple of years. Here are six trends worth knowing in 2017, along with the 'business takeaway'.

1. Juicing the health market

Australia and New Zealand are the world's biggest fruit-juice drinkers, according to a study by Tufts University's Friedman School of Nutrition Science and Policy. Despite that, the past five years have been quite tough for the industry; strong competition within the sector from private labels, as well as from outside the sector from different beverages, has reined in growth, which is estimated to be just 2.3% from 2012–17. Consumers have also gravitated to cheaper alternatives. Then there's the sugar element. Even though fruit juice is seen as healthy, those with added sugars have seen centimetres in magazines devoted to the centimetres they add to waistlines.

Business takeaways: It's not all bad news: some product-pack-

aging innovation levered off ever-growing health consciousness has seen single-serve beverages grow in popularity. Put it down to Australians' busy lifestyles, where people want greater convenience and manufacturers meeting that need can potentially add (more than) centimetres to their profits. Nudie is one brand that has done well in targeting health-conscious consumers with 'no added sugar' and 'no concentrate' in their products.

2. Softly for soft drinks

In Australia, ABS data has shown that 16% more children are drinking sugar-sweetened beverages (or SSBs) than adults. A recent article in the medical journal *The Lancet* published data showing that Australians drink more SSBs per capita than the Brits, buying 0.88 SSBs a day, compared with 0.84/day in the UK. And Australians also love regular cola drinks, buying 447 million litres in the 12 months to October 2012 out of a total of 1.28 billion litres of SSBs. But growth in the sector has been limited, due partly to aggressive pricing and changing



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consumer trends, according to IBISWorld. Other factors include greater penetration of private label and value products, as well as all-round healthier beverages (see above) and packaged water (see below). Over in the USA, Euromonitor International tips Americans will have consumed more bottled water in 2016 than soft drink. (That's 102 litres of bottled water compared with 98 litres of soft drink.)

Business takeaways: Beverage businesses need to be quick to adapt to market changes and shifting consumer trends. Tastes change, and it's only by innovating and launching new products that businesses will be able to take a piece of the pie. But it needs to be right. Some may remember when Coca-Cola Life was launched in 2014: it was an attempt to win over increasingly health-conscious consumers, and at the time, Coca-Cola's local marketing director, Lisa Winn, said the product was for "balance seekers" — marketing speak for those who have concerns around sugar but don't like the different tastes of Diet Coke and Coke Zero. However, sales more than halved just in the first six months of 2016. Coke insists the 'green one' "was never intended to be more than a niche", but with those sales figures it could well be back to the drawing board.

3. Nothing watered down

It has its challenges, but the bottled water industry is growing: Roy Morgan Research revealed that in 2015, 5.3 million Australians (27.1%) drank bottled water every week, up from 4.9 million in 2014. So what are the challenges? Increasing competition from private label brands and the environmental concerns of consumers continue to torment the industry. However, despite the cluttered market, some companies are finding a way to differentiate themselves and raise the bar on innovation. Thankyou Group is one such company, which uses profits from sales of bottled water (and now other products too) to fund safe water projects in developing countries. Liquid water enhancers by Schweppes were a hit, too; the handy, pocket-sized flavours can be mixed into water 'on the go', appealing to consumers' desires for convenience and customisation.

Business takeaways: The bottled water market is more cluttered than some garages, yet there are still opportunities for businesses to set themselves apart — whether with new flavours, social enterprise or unique packaging (see Wet Fix's approach). It's also worth noting that Roy Morgan has found more Australian women (29.7%) than men (24.5%) drink bottled water, and younger Australians (25–34 years) are more likely to reach for bottled water. Add to that the fact that more Western Australians (30.2%) like bottled water, followed by NSW (29%), while Tasmanians are into it the least, falling below the state average (at 22.3%).

4. No whining in wine

After a decade of headaches, the wine industry has something to celebrate, with wine export value and volume both increasing. A 2016 Wine Australia publication showed that in the 12 months to the end of June 2015, the value of Australian wine exports increased 5% to \$1.89 billion, while volume increased 4% to 724 million litres. Wine Australia says this is the first time value has increased on a financial year basis since 2006–07, with volume the highest since 2010–11.

The wine sector has long been dependent on the Australian dollar. In the mid-1980s, an increase in exports took advantage of the historically low dollar, but this dropped again in the mid-2000s with an appreciated Australian dollar, among other factors such as drought, high water costs and the infamous GFC. While current exports give Australian winemakers something to toast, countries such as Spain, Argentina and Chile continue infiltrating the market with low-priced wine that can be tough to compete with.

Business takeaways: To thrive and grow, the wine sector must stop relying on currency value and educate markets on paying for quality. Producers must look at ways to sustainably grow their profits and, in addition to some investment in innovation, wine producers could look at how to market the unique selling point of their wine offerings. Organic wines are a good example of attracting the attention of some consumers, as are vegan wines.



5. Frothed around

Beer manufacturing has undergone a major upheaval. Consumption is on the downturn — we're at a 65-year low, according to Deloitte. Added to that, imported, premium and craft beers have overtaken the big mainstream brands in terms of market share. As with bottled water, beer manufacturers are looking to flavours and fusion products to differentiate their brands.

Despite their small market share (2.5–3% by volume, according to Deloitte), craft beers are 'flavour of the year', with 150 smaller breweries now in Australia. IBIS World sees a good future for them, too, forecasting sector revenues to grow 5% per annum over the next five years, compared with just 1.7% for the traditional beer market. Yet while they are flourishing locally, craft brewers are struggling to overcome entry barriers nationally, with big supply contracts being used to lock them out of pubs.

Business takeaways: People are looking for beer with a difference — whether that's something that tastes a little bit different or a beer with an authentic story. Beer and cider companies of all sizes can look at how to promote their unique brand essence, using marketing, packaging and labelling to build a strong connect with their market. Rebello Wines' award-winning Cheeky Rascal Methode Traditionelle Cider is a great example.

6. Going nuts

And then there's coconut water, which is now a mainstream category according to Innova Market Insights. That fact in itself shows how the market has grown since Nudie first introduced this exotic beverage in Australia several years ago to meet the growing demands of the health-conscious consumer. A quick check of any supermarket shelf today will show a burgeoning number of coconut water brands. And it's not just water — beverage manufacturers are looking to coconut in all its forms to boost product sales. According to Innova, coconut flavours and ingredients featured in over 4% of global soft drink launches in the 12 months ending June 2014 and more than 6% of global drink launches in 2014.

Business takeaway: Coconut is big business, with some products garnering celebrity endorsement. But this trend goes beyond coconut water: declining sales of carbonated drinks have opened huge market share in what's been dubbed 'better-for-you beverages'. Overall, consumers are shifting towards healthy choices, and PepsiCo is a great example of aligning product strategies with this. In October last year, it announced new targets to reduce sugar, salt and fat in its beverages and snacks by 2025; 66% of its beverages (by volume) are to have 100 calories or less per 354 millilitres from added sugars (a can this size of regular Pepsi-Cola — the 'namesake' beverage — currently has 150 cal). But it's more than that: PepsiCo also set out new 2025 environmental targets, including improving water use efficiency in manufacturing by 25%, halving food waste in its operations and cutting greenhouse gas emissions by 20% (by 2030). The non-negotiable for consumers in this category is 'no added nasties', which also extends to labelling,

such as 'clean labelling', which clearly highlights the natural ingredients. There's no doubt that the beverage industry is undergoing some major shifts and transformations, but with change comes new opportunities for companies of all sizes to innovate and tap into new markets

Labelling it

No matter what the beverage, it needs to be coded and labelled correctly. Here are the technologies best suited to beverage coding and labelling.

1. CIJ

Continuous inkjet printers (CIJ) are highly versatile and can code on a wide variety of packaging sizes, shapes and substrates in a wide range of ink colours and contrasts. They're typically easy to use and reliable, and have a low cost of ownership (partly because they have a robust printhead that's suited to harsher production environments).

Also called 'CIJ datecoders', they can code variable information such as date, best-before and use-by dates, batch numbers, promotional codes, serialisation codes, product ID codes, logos and other graphics, and both upper and lower case text.

2. Laser


Lasers are both cost-effective and very fast, creating permanent, high-quality marks. They are highly useful in the beverage industry, being able to code use-by and best-before dates as well as human-readable text on both the bottle (primary) and carton (secondary packaging). They can code onto glass, plastics (such as PET, polystyrene and polypropylene), cardboard and even metal. Having no consumables, lasers also have a low cost of ownership (on medium-volume production lines, investment payback can be less than three years).

Lasers are ideal when:

- the mark must be permanent, such as for anticounterfeiting, brand protection, etc
- product presentation is very important, eg, in the wine industry
- the cost of consumables could be very high.

3. Labelling

Depending upon the needs, there are several different types of labelling technologies that suit beverages:

- LPA (label printer applicators), or 'print and apply', print onto pressure-sensitive labels then automatically apply those labels to a product, carton or pallet.
- LA (label applicators) are automated labelling systems that apply preprinted, pressure-sensitive labels onto products.
- In-line labelling systems are an efficient way to apply front and back labels to products or wraparound labels. 

**Mark Dingley heads operations at Matthews Australasia and is also Chairman of the Australian Packaging and Processing Machinery Association (APPMa).*

Matthews Australasia Pty Ltd
www.matthews.com.au

Carbonated filling machines

Fogg Filler has released a range of carbonated filling machines that can be used for still or carbonated products; water, juice or soft drinks; and dairy, beer or wine products.

The range of Fogg Carbonated Fillers is an alternative for smaller producers or boutique brands looking for a cost-efficient filling machine while still maintaining the highest level of reliability for their production lines.

The combination of an analog probe for the filling tank level and modulating valve ensures gentle handling of the product and better control of undesired foaming.

There are a number of different options available in the Carbonated Filler Series that can be designed and customised to suit individual requirements while still meeting optimum production rates.

The double pre-evacuation filler features an automatic rotary system for longer shelf life and quality. This mechanically controlled pressure filler is suitable for carbonated and non-carbonated wines and beers. This machine offers a double vacuum for better results with carbonated products, extending the shelf life from days to months. This series also allows for a levelling option so users can fill non-carbonated liquids as well. The filler can be used to fill wine, beer and other liquor, juice and soft drinks/sodas.


The single pre-evacuation filler features an automatic rotary system with pre-evacuation, gassing and levelling to fill both carbonated and non-carbonated liquids. The filler is equipped with pre-evacuation and gassing for carbonated beverages with a levelling option allowing users to fill non-carbonated liquids on the same machine.


The Carbonated Filler-Mechanical features an automatic rotary system to fill both carbonated and non-carbonated liquids. This is an isobaric filler for both carbonated and non-carbonated products and is suitable for filling carbonated water and soft drinks, as well as still water and juice. It is capable of filling at speeds ranging from 17–400 bottles/min and features 2-tier guarding and optional HEPA air filtration. It will fill bottles ranging in size from 200 mL to 3 L.

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Lunar beer

Can beer be brewed
on the moon?



The new 'Space Race' is on. The Google Lunar XPRIZE is a \$30 million competition challenging privately funded teams to develop low-cost methods of robotic space exploration. Among the five finalist teams is TeamIndus, the only Indian team in the competition. Wanting one 'youth' experiment on board its spacecraft, TeamIndus invited under-25-year-olds to design and build an experiment that will help establish sustainable life on the moon.

With typical under-25-year-olds' priorities, a team of UC San Diego engineering students, self-titled 'Team Original Gravity', has proposed looking at the viability of brewing beer on the moon. Actually, they are not only interested in brewing beer — their experiment will test the viability of yeast on the moon (and brew a batch of beer).

Understanding how yeast behaves on the moon isn't just important for brewing beer in space. It's also important for the development of pharmaceuticals and yeast-containing foods, like bread.

"The idea started out with a few laughs amongst a group of friends," said Neeki Ashari, a fifth-year bioengineering student at UC San Diego and the team's PR & operations lead. "We all appreciate the craft of beer, and some of us own our own home-brewing kits. When we heard that there was an opportunity to design an experiment that would go up on India's moon lander, we thought we could combine our hobby with the competition by focusing on the viability of yeast in outer space."

The team designed a unique system to accomplish this task.

First, the experiment does not brew the wort — all of the prep work required before yeast is added will be done on Earth, rather than in the experimentation vessel. Then, rather than separating the fermentation and carbonation phases — as would normally occur during the process of making beer — the team plans to combine them. This has eliminated the need for releasing accumulated CO₂ and bypassed the associated

sanitation and safety issues. It also prevents the possibility of overpressurisation if anything in the system fails and makes the system easier to design.


The testing of fermentation and yeast viability will be done via pressure, rather than using density measurements as done on Earth. This is because density measurements use gravity.

"Converting the pressure build-up to fermentation progress is straightforward, as long as volume and original gravity — specific gravity before fermentation, hence our name — are known prior to the experiment," said Han Ling, a fifth-year bioengineering undergraduate and the team's brewing lead.

Whether or not Team Original Gravity is successful in its bid to win a place on the TeamIndus spacecraft will be revealed in March, when proposed experiments for the competition ranging from photosynthesis to electricity will be evaluated by an international jury.

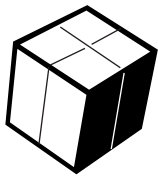
If UC San Diego's Team Original Gravity is selected, not only will they be the first to brew beer in outer space, the students believe they'll be the first to brew beer in a fermentation vessel the size of a soft drink can.

"Our canister is designed based on actual fermenters," said Srivaths Kaylan, a fourth-year nanoengineering major and mechanical lead for the team. "It contains three compartments — the top will be filled with the unfermented beer and the second will contain the yeast. When the rover lands on the moon with our experiment, a valve will open between the two compartments, allowing the two to mix. When the yeast has done its job, a second valve opens and the yeast sink to the bottom and separate from the now fermented beer."

Siddhesh Naik, TeamIndus ninja and mentor to Original Gravity, said, "The yeast study is among the coolest experiments to be performed on the lunar surface, and I am sure they are one of the top contenders to win the Lab2Moon competition. Original Gravity is one of the most hardworking teams and very dedicated to their project." 

packaging, labelling & coding





Patent infringement in the barcode scanning industry

Honeywell has filed a lawsuit against Code Corporation alleging widespread patent infringement related to Honeywell's barcode scanning technology. The patents involved in the lawsuit are for Honeywell innovations that make barcode readers easier to use and operate faster and more accurately.



© Monkey Business/Dollar Photo Club

The US lawsuit seeks to prevent Code from using Honeywell's patented technology in its barcode readers, including the CR2600, and to recover damages caused by the infringement. The specific Honeywell patents involved are:

- US Patent No. 6,039,258: Hand-held portable data collection terminal system
- US Patent No. 6,249,008: Code reader having replaceable optics assemblies supporting multiple illuminators
- US Patent No. 6,491,223: Autodiscriminating Optical Reader
- US Patent No. 6,538,413: Battery pack with capacity and pre-removal indicators
- US Patent No. 6,607,128: Optical assembly for bar code scanner
- US Patent No. 8,096,472: Image sensor assembly for optical reader

Bosch Packaging Technology announces leadership change

Bosch Packaging Technology has announced a change in its leadership, with Dr Stefan König to succeed Friedbert Klefenz as president on 1 January 2017.

Dr. König has worked at Bosch since 1997 and been a member of the executive management since 2011, overseeing Technology (comprising Engineering, Manufacturing and Quality), the Confectionery & Food and Liquid Food business units, as well as Assembly Systems and Special Machinery.

Uwe Harbauer will also join the executive management team on 1 January, in charge of sales.



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ICA to save 217 km of plastic foil by laser marking its organic avocados

Swedish supermarket chain ICA is going to eliminate millions of packaging units by having its organic fruits and vegetables laser marked, rather than packed in plastic foil or having stickers applied.

Nature & More, the 'trace and tell' trademark of international distributor of fresh organic and fair fruits and vegetables Eosta, is going to mark ICA-bound organic fruits and vegetables with Natural Branding.

Natural Branding is a natural, safe, contactless and eco-friendly manner of branding a piece of fruit or vegetable by creating an image on the peel. A high-definition, low-energy, CO₂ laser removes pigment from the outer layer of the skin of the product. The peel is heated very locally, causing the pigment in pinpoint locations to vaporise. This only affects the top cell layers.



This marking can be applied to practically all fruits and vegetables, especially avocado, sweet potato, ginger, mango, apples and coconut. Unfortunately, citrus fruits and pomegranates cannot be marked this way because in these fruits the peel restores itself and the pigment comes back automatically.

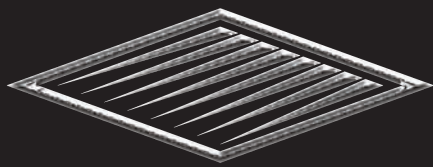
The first organic products that will be sold with Natural Branding by ICA are avocados and sweet potatoes. Just on avocados alone, this will eliminate at least 725,000 packaging units in the coming year.

Organic avocados in supermarkets are usually packed in plastic foil because they must be distinguished from conventional avocados that are sold in bulk. The supermarkets want to prevent organic avocados from being weighed and paid for as conventional, due to the price difference. The same goes for sweet potatoes, apples and many other organic products. Stickers can be an alternative, but the problem is that they come off and use paper, glue, ink, etc.

Nature & More expects to save a lot of plastic and energy with Natural Branding. In 2015, Eosta sold 725,380 packs of avocados to ICA. To pack them, 217 km of plastic foil were used, at a width of 30 cm. Measured in weight, this is 2042 kg of plastic. Measured in CO₂, it is equivalent to an average car driving 1.3 times around the world.

Laser labels were approved by the European Union in 2013. The technology, originally patented in 1997, has been in use in Australia and New Zealand since 2009.

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G. MONDINI



Depackaging waste to recycle more



Image: SUEZ's depackaging unit can even separate ground coffee from aluminium capsules.

SUEZ is leading the way in recovering waste materials and diverting them from landfill with the country's first depackaging unit.

The innovative depackaging unit, located at SUEZ's Camellia Resource Recovery and Treatment Facility, allows both food packaging and its contents to be recycled into valuable resources by separating the two components.

Once separated, the packaging is able to be recycled and the nutrient-rich organic material inside can be used in agricultural applications to enrich soil. The machine can handle most packaging types, as long as the material is soft and flexible, and is capable of processing up to 10 tonnes per hour. SUEZ's Camellia Facility also has a machine that is able to separate glass bottles from their contents.

The depackaging unit is used to separate and recover valuable resources from bulk quantities of consumer products that have expired or are unfit for sale or consumption — such as pasta meals, sauce bottles, powdered baby formula, coffee products, tea bags and pet food.

Previously, packaged food waste presented an environmental and financial challenge for manufacturers and retailers. With no way of efficiently separating its components, it was sent directly to landfill.

In line with SUEZ's goal to maximise resource recovery, the depackaging unit provides a solution to this challenge. Putting waste to good use is a key priority for SUEZ and the depackaging unit does exactly that. It also minimises the cost of landfill disposal or manually depackaging and separating the components. Nearly all bulk-packaged goods can achieve a 100% recycling rate with both the packaging and the organics being re-used.

The depackaging unit allows SUEZ's customers — including some of Australia's largest food manufacturers and retailers — to reduce their waste disposal costs while achieving their sustainability goals through better environmental outcomes.

SUEZ's investment in the technology was recognised in 2014 when it received top sustainability honours in the Australian Business Awards — a national program recognising organisations that demonstrate leadership and commitment to sustainable business practices. This award-winning innovation is just one example of how SUEZ is finding smart and reliable ways to solve waste problems, further cementing its position as a leader in resource recovery.

SUEZ
www.suez-environnement.com



Rotary vane vacuum pump for packing fresh meat and moist products

Busch Vacuum Pumps has released a series of rotary vane vacuum pumps which claim energy savings of 20% over previous systems. Designed specifically for packaging machines, the RD series is based on the proven technology of R 5 rotary vane vacuum pumps, which have been stalwarts for decades in food production and packaging.

Technical optimisation of individual components has allowed energy consumption to be reduced significantly without affecting reliability and robustness. At the same time, the pumping speed of individual models at high vacuum levels has also been increased, which means reduced cycle times

and lower energy consumption.

All components requiring maintenance are mounted on one side of the unit for easier access, thereby reducing downtime. The cooling air circulation has also been optimised. The cooling air outlet may be directed sideways or downward, depending on how the RD is built into the packaging machine. A gas ballast device fitted as standard equipment permits the extraction of humid air, making this vacuum pump suitable for the packaging of fresh meat and other moist products.

Busch Australia Pty Ltd
www.busch.com.au

Thermoplastic adhesives melter

Robatech's Concept Stream is a tankless solution for the melting and delivery of thermoplastic adhesives in granular form. Suitable for high or low adhesive consumption, the melter is energy efficient and safe.

At the heart of the solution is a small tank designed for high melting performance (8 kg/h). Melting performance and quantity can be matched to consumption using melt-on-demand technology. Due to the controlled adhesive flow, fewer burns occur in the system, residues in the tank are reduced and nozzle blockage is mostly prevented.

The short heat-up time of 16 min to 160°C and the standby function ensure fast system availability. Fill level supervision with run-empty protection stops the system, preventing losses due to poor application or missing glue. The system is energy optimised, with CoolTouch insulation on tank, pump and adhesive distributor providing more than 20% in energy savings compared to the standard product.

The basic version of the melter is filled manually and the filling area is separated from the hot area using the CoolTouch adapter. To increase operator safety, the melter can be configured or retrofitted for automatic filling with the RobaFeed granulate feeder. The automatic pressure release prevents the build-up of dangerous overpressure in the system and thus supports safe operation.

With a modular design comprising up to eight connections for heating hoses and application heads and a user-friendly operating panel, the melter supports fast system integration and a flexible gluing process.

Robatech Australia Pty Ltd
www.robatech.com.au

Scavenging device for pharmaceuticals

CSP Technologies has introduced Pharmapuck, an active scavenging solution that can be integrated directly into primary containers to protect oral solid dose (OSD) products from moisture and oxygen absorption.

Suitable for most typical OSD containers, the scavenging device can be integrated into bottle tops or dropped into containers to counteract the introduction of volatile organic compounds in packaging headspace — an occurrence that can lead to unpleasant odours or reduced efficacy or shelf life.

The device's moulded-in desiccant eliminates the risk of breakage or spillage associated with sachets and canisters, and adds design flexibility and branding options such as custom colouring, and laser or ink printing to enhance customer awareness and safety. The devices are available in ultralow particulate formats for high-sensitivity drug applications.

CSP Technologies

www.csptechnologies.com



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 **KRONES**

People in packaging: Roya Khalil

Roya Khalil explains why she believes the CPP designation is so important to the packaging industry.

Roya Khalil, PhD, MAIP, CPP, Research and Projects Manager, Bega Cheese, has just attained her Certified Packaging Professional (CPP) Designation and discusses this and answers a few questions about her career and packaging education in the Q&A with the Australian Institute of Packaging (AIP).

AIP: How long have you been in the industry? What are your areas of expertise?

Roya: I have more than 10 years of industrial and FMCG experience in packaging development and application roles. In 2005, I started my career with Plantic Technologies, manufacturer of biodegradable and bioresourced packaging materials. In various technical and R&D roles at Plantic, I worked on a number of projects developing and commercialising biopolymers for injection moulding resins, thermoforming sheets and multilayer blown films.

I am one of the inventors in the patent for Plantic eco Plastic thermoformable sheet which was commercialised by Coles supermarket for packaging their fresh red meat category.

From 2012 to 2014, at SPC Ardmona, in a packaging capacity I was privileged to work with an extensive range of packaging materials and formats. The assortment extended from primary packages such as plastic tubs, plastic and glass jars, metal cans, plastic pouches and secondary and tertiary packaging such as sleeves, cartons and shelf-ready trays, in varied product applications of packaged fruits, beans and spaghettis, tomatoes, jams and preserves, soups and sauces.

Since 2014, with Bega Cheese, whilst the role is not packaging only focused, there has been a great experience to learning about the application of various packaging formats, materials and machinery in the dairy industry. By qualification, I am a chemical engineer with a PhD in plastics engineering. I would refrain from calling myself an expert, but the major-

ity of familiarity has been in development and application of plastics and bioplastics.

AIP: What made you apply for the Certified Packaging Professional Designation?

Roya: Initially, I wanted to complete the Certified Packaging Professional Designation examination as a personal challenge and to gauge my knowledge of packaging. But as I started preparing for the examination and upon completion, I have developed a high level of appreciation for the designation.

AIP: How important is attaining the CPP designation to you as an individual?

Roya: I have been part of the packaging industry for a decade and have been very involved in the industry via AIP, trade shows and conferences. CPP designation felt a good fit to get professional recognition of the expertise and competency level amongst peers and international packaging fraternity. To me the CPP designation has been a good professional investment, as well as self-assurance of my competency level.

AIP: How important is the CPP designation for the greater recognition of packaging professionals?

Roya: According to Smithers Pira the total global value of the packaging market is set to rise at a CAGR of 3.8% from \$806.3 billion in 2016 to \$1,162.1 billion in 2026. This is a strong indication of the prominence of the packaging industry at a global scale today and in future. This would not have been possible without the contributions of packaging professionals around the world. Their role is of even greater importance in facilitating the future growth.

Whilst packaging, in some form, has been in existence for centuries, its ever evolving role has become an essential component of our modern lifestyle. The packaging industry has witnessed a rapid growth in its usage in the second half



“ ... the responsibilities of packaging professionals ... require a complex skill set of material science and processing, structural engineering, graphic design and much more. ”

The lack of specialisation prerequisite has created a void in identification and recognition of packaging roles in a number of organisations and the contributions are often overlooked or consumed in alternative disciplines or roles, such as brand managers or food/product development technologists. Therefore, I appreciate the CCP designation, a step forward in recognition of and rewarding the specialised skill set and expertise of packaging professionals in the industry and within the wider professional community. I envisage that the credibility of the certification will assist in an individual's professional confidence and career development and progression.

Attaining the CPP designation is an excellent investment in your professional development and the credential defines the packaging professional and allows organisations to seek out and hire the right professional based on verified knowledge, skills and industry contributions. Using the CPP program to assess and evaluate one's professional competency validates you as internationally proficient as a packaging professional; a cut above your peers. 🐮

The Certified Packaging Professional (CPP) designation is a registered trademark of the Institute of Packaging Professionals (IoPP) and is now internationally recognised by both IoPP and AIP. To find out more about the CPP designation, visit <http://aipack.com.au/education/certified-packaging-professional-cpp/>.

Australian Institute of Packaging
www.aipack.com.au



Dr Roya Khalil

of the twentieth century in industrialised and developed countries and, more recently, in developing countries.

The growth can be attributed to a number of drivers, depending on various geographical regions. However, a common theme is the sophistication of packaging design and application of material science and development that had evolved packaging's functionality beyond the basic containment and transportation of the products. Modern packaging contributes significantly to the shelf life extension of the products, better shelf presence, assisting in branding of the product. Contemporary packaging is also required to meet the sustainability and product stewardship responsibilities too with alternative applications post primary use and different disposal routes, focusing on the 4Rs of reduce, reuse, recycle and recover.

With the extension of the role of packaging, advancement of the technology and the global growth in demand and supply, the responsibilities of packaging professionals have also evolved and require a complex skill set of material science and processing, structural engineering, graphic design and much more.

However, it is discouraging to note how the art of packaging is not yet fully recognised as a field of science and engineering to be valued with a professional entitlement at a bachelor level at the least, by the majority of the leading universities globally. Packaging related units are thoughts as part of numerous disciplines such as food science, materials engineering, graphic and industrial design. Specialised certificate or attendance level trainings are provided by only a few professional institutes. Hence the majority of packaging professionals in Australia have come either from food sciences, chemistry or chemical engineering backgrounds and basically learned on the role.



Packaging technology for fish and seafood

Multivac's MultiFreshT is a process for packing delicate food products such as fish and seafood on thermoforming packaging machines and tray sealers. The upper web is tightly draped around the product and is sealed to the entire surface of the lower web. This means that even food products with sharp or hard parts, such as bones or shells, are enclosed securely and fixed in place in the pack cavity.

The automatic T 300 H tray sealer is a high-output model for skin packing a range of products in small to medium-sized batches. The tray sealer is designed for a broad spectrum of tray shapes and applications due to its die construction, which enables die changes to be carried out in a short period of time. Electric drive systems for the tray transport, lifting unit and film trim winder provide energy-efficient operation.

The R 105 MF thermoforming packaging machine produces vacuum skin packs for small to medium-sized batches and is equipped with integrated upper web chain guidance, which ensures that the upper web is firmly guided right into the sealing station.

The Baseline P 605 double chamber machine packs products in film pouches. It offers a chamber volume of 600 x 745 x 200 mm and a pump output of up to 300 m³/h. The double-seam sever sealing ensures that a clean-looking and visually attractive pack is produced. The machine control, which is operated intuitively, ensures that the evacuation, gas flushing and sealing processes can be reproduced consistently.

Multivac Australia Pty Ltd
www.multivac.com.au



Shelf ready packaging for dairy

A result of the increased domestic and international demand for Australian dairy products has been the switch by processors to the Shelf Ready Packaging (SRP) format, with product designs tailored to meet the major supermarkets' supplier guidelines.

The SRP carton design functions as a shipping case for the efficient packing of dairy products for transport and as a shelf ready display case. It allows for quick replenishment at store level, saving time and labour costs, while making the product easily accessible to the shopper, resulting in increased sales.

Tavil's automatic case packing line technology features instantaneous format change, high-speed pick-and-place anthropomorphic robot capabilities. Its automatic palletising solutions provide food processors the versatility of rapidly switching to different carton and pallet mosaics, and also provide complete line, multiformat, modular solutions to meet growing demand.

Select Equip
www.selectequip.com.au



Compact industrial label printers

Honeywell has released new models of its MP Series durable compact industrial label printers. The printers are among the smallest industrial label printers on the market, featuring all-metal casing for improved durability. They can be used in almost any orientation and can be mounted on walls, manufacturing lines or fork trucks, making them suitable for industrial work environments where space is an issue.

The printers are available in two models: MP Compact and MP Nova. The MP Nova is a high-speed, high-capacity tabletop industrial printer and is available in 4" and 6" sizes. It offers both direct thermal and thermal transfer printing capability, providing options to businesses that operate in environments with dust and debris.

The MP Compact printer is a small, all-metal rugged label printer and weighs less than 3.6 kg. A purpose-built, forklift-mountable label printer, it can be connected to a mobile cart or fork truck to improve worker productivity, reduce errors and enable faster workflows in manufacturing, cross-docking and distribution centres. The printer features easy media loading, large media capacity, built-in command language and a broad range of connectivity — including serial, USB, ethernet and optional wireless 802.11 A/B/G/N connectivity for mobile applications such as fork truck and mobile carts. Its versatile mobile design provides direct current connectivity into forklift batteries along with power spike and vibration detection to avoid damage.

insignia Pty Ltd
www.insignia.com.au



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Colour contrast sensor for high-speed packaging systems

The Leuze KRT18B colour contrast sensor is available in six models, offering a solution for every type of application in packaging processes, contrast marks, detection on film, bag and blister packaging or labels.

With its integrated three-colour technology (red, green, blue), automatic sensitivity readjustment and integrated dual-channel IO-Link interface, the colour contrast sensor is equipped to meet the requirements for rapid packaging processes in foil-bag packaging machines, label detection in filling systems and even detection of glossy and faded marks.

The colour contrast sensor is easy to set up by use of an alignment aid and a bar graph indicator (on the rear of the sensor) to indicate signal strength.

The compact, robust metal housing is designed for temperature stability and is suitable for use in areas with stringent hygienic requirements with IP67 and IP69K degrees of protection. The product has various mounting options and accessories.

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KHS and Schubert collaborate on packaging solution for Swiss brewery

Swiss brewery Schützengarten is growing, and increased demand for its products translates to greater demands on its packaging system.

The brewer's entire packaging and palletising section is being modernised, which includes combined palletising and depalletising with automatic changeovers between returnable and non-returnable packaging, and a fully automatic glass bulk depalletiser.

At the same time, the line is also to receive a fully automated crate magazine to buffer plastic crates. This additional automated process step increases line availability as surplus crates no longer have to be removed by hand during format changeovers.

KHS has collaborated with packaging manufacturer Gerhard Schubert to supply a compact, multifunctional packaging block.

Higher capacity in minimum space

The line capacity for non-returnables has been practically doubled, while taking up a minimum amount of space. In order to achieve this, the companies blocked the KHS Innopack PPZ packer with a Schubert erecting and a Schubert closing module. Both companies thus combined their respective expertise to create one innovative system.

The new system means that in the future the brewery's wraparound cartons and plastic crates will be processed on one single machine block, with the space-saving system only requiring one operator. The block has also been designed so that no additional pack conveyors are needed. Maintenance has therefore been reduced, as has energy consumption.

Thanks to its modular design, the packaging block is extremely flexible regarding the range of products which can be processed. Retrofit expansions for additional types of packaging, such as cluster packs or baskets, are possible with minimal effort.



It is possible to convert the format on the Schubert modules for cartons, while simultaneously producing plastic crates on the KHS packer. Thanks to the precision engineering and resulting high level of reproducibility, Schützengarten does not need to make manual adjustments to the system during format changeover, thus cutting down on conversion times.

Planning for success

As the new packaging block had to be installed on the first floor with a low ceiling, in the planning phase KHS made a virtual model of the production shop with the exact measurements using 3D scanning. This enabled the commissioning stage to meet the tight deadline required for the brewery to recommence production.

KHS Pacific Pty Ltd
www.khs.com

Laser coders

Linx Printing Technologies from the UK has launched a fast scribing laser with a powerful processor that allows printing of large amounts of complex, variable codes onto high-speed lines.

The multiple laser beam delivery allows for coding in any orientation, while the Linx CSL10 and Linx CSL30 expand the coding field to 600 mm, a space that would require two lasers to effect.

The key features of the laser system have been retained, while improving the ease of integration and installation into the production line. Coding lasers provide permanent marks, negating counterfeiting and providing secure traceability. The laser coders are distributed in Australia by Raymax Applications Pty Ltd.

Raymax Applications Pty Ltd
www.raymax.com.au

Packaging terminology glossary

The second edition of the *Illustrated Glossary of Packaging Terminology*, a comprehensive guide to packaging terminology by Walter Soroka CPP, is now available from the AIP bookstore.

More than 4500 definitions covering the scope of packaging terms and more than 250 illustrations make it easy for readers to understand all packaging concepts.

This book will help readers communicate effectively with other packaging professionals as it brings together all the disparate terms of packaging into one concise, focused edition.

Australian Institute of Packaging
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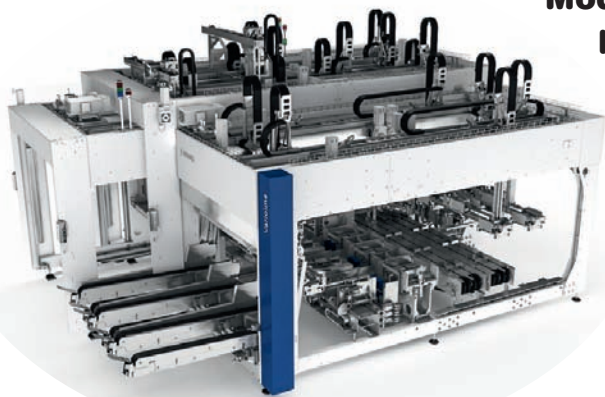
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Modular beverage packaging system



The Krones Varioline packaging system for the brewing and beverage industries offers flexibility in end-of-the-line packaging. A single machine replaces up to six conventional individual machines linked by conveyors and can handle packaging processes involving up to three stages, saving space, maintenance and personnel.

The kit consists of three modules — cartoning, feed and basic — which can be combined to form a customised packaging system. The three units feature an identical basic construction to ensure future flexibility.

The machine can handle up to 52,000 containers/h and can be block-synchronised with other machines, like a Variopac Pro shrink wrapper, so the packs can also be wrapped in film.

The system places loose containers in multipacks — such as over top open, open carrier, top carrier and wraparound cartons — and inserts multipacks in packages such as wraparound cartons with and without partitions, folding cartons with and without partitions, and plastic crates.

Krones (Thailand) Co Ltd
www.krones.co.th



Aseptic carton from renewable materials

Tetra Pak has launched the Tetra Brik Aseptic 1000 Edge with Bio-based LightCap 30, which has received the highest class of Vinçotte certification for its use of renewable materials.

The package is manufactured using a bio-based plastic film and cap, made from polymers derived from sugar cane. Combined with the paperboard, this lifts the share of materials from renewable sources in the package to above 80%, the threshold for four-star certification from Vinçotte.

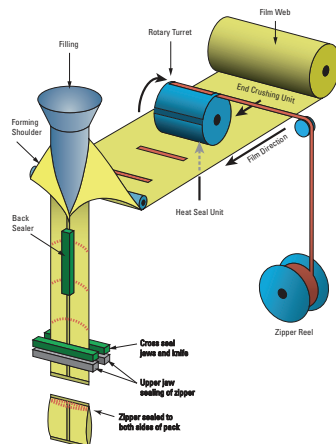
The package has a carbon footprint up to 17% lower than a standard package, according to an independent lifecycle analysis conducted by IVL Swedish Environmental Research Institute.

Switching to the new version, which is available globally, requires no additional capital equipment investment.

Tetra Pak Marketing Pty Ltd
www.tetrapak.com/au

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The clock is ticking...

Marco Kaiser, Industry Manager Consumer Goods, SICK AG, Waldkirch, Germany



Serialisation and protection against tampering of pharmaceutical products

Fake medicinal products are a global problem: medications with high sales levels and those that command a high price are particularly vulnerable to forgery. Experts estimate that more than one in 10 preparations worldwide are forged; for medications available online the level is believed to be over 50%. A buyer wishing to keep their online purchases anonymous can even expect up to 95% of all the products to be fakes, according to research studies based on all products available online.* The consequences of taking fake medicines can range from the absence of any therapeutic effect to fatalities.

In the fight against the forgery of preparations, imitations and tampering of packaging, the European Union has defined a catalogue of measures in directive 2011/62/EU — typically known as the Falsified Medicines Directive (FMD) — which is intended to prevent fakes entering the legal supply chain of medicines. In 2015, the EU Commission published a number of fundamental technical details concerning the design of safety features. This delegated act was published in February 2016 in the *Official Journal of the European Union* and is therefore legally binding.

All members of the pharmaceutical logistics process chain — pharmaceutical and commissioned contract manufacturers, contract packagers, wholesalers and pharmacies — are obliged to implement the EU directive within the next three years. In concrete terms, this means two things: every item of pharmaceutical packaging must have an individual serialised code that makes it globally unique; at the same time, every item of packaging must be protected against undetected, premature opening or tampering with the help of appropriate tamper-evidence systems. This is specified in further detail in standard EN 16679:2015-03 'Packaging – Tamper verification features for medicinal product packaging', which supports the application of directive 2011/62/EU.

There is a range of sealing options suitable for preventing packs from being opened and re-closed without leaving evidence, thereby guaranteeing maximum protection against tampering. These include fibre-tear labels, which are irreversibly damaged on opening, or foil 'VOID' stickers that reveal previously invisible text or patterns once they are detached. As a tamper-evident safety feature, transparent, self-adhesive sealing labels with perforations across the opening flaps of folding cartons have the advantage that they neither affect the pack design nor cover up required wording or markings.

With directive 2011/62/EU and standard 16679:2015-03, the starting pistol has been fired for the race against product piracy and forgery of medications; nevertheless, not many have heard it yet. Industry insiders report that even global manufacturers are far from hitting the home straight in all aspects of serialisation and tamper evidence, not to mention small and medium-sized market participants, some of whom are still in the starting blocks. This can partly be explained by the large number of directives, the complexity of the requirements they contain and the lack of contact people who can troubleshoot integrated complete safety systems, as well as provide the knowledge required for their practical implementation.



Intelligent sensor solutions in the fight against fake medications and manipulated packaging


In order to serialise individual items of packaging, they are labelled individually with a data matrix code. Before the packaging is filled, for example with tablets that use blister packs as their primary packaging, the coding is captured during the packaging flow with the aid of image-based code readers — to check its legibility by a machine on the one hand and to verify the coded contents on the other. To identify additional barcodes, suitable CLV laser scanners can be used.

Folding cartons are usually manufactured from pre-cut and pre-punched blank formats. If these are labelled with fluorescent marks, the authenticity of the packaging can also be checked using luminescence sensors. This can take the form of either a random check before the blank enters the input magazine of the packaging machine or a continuous and 100% check where the sensor scans each blank individually as it is removed from the magazine. The printed pattern, colour and condition of the carrier material do not influence the safety and availability of the packaging authentication.

Following serialisation in line with the Falsified Medicines Directive 2011/62/EU, each item of secondary packaging must be sealed once it has been filled in a way that is so tamper-proof that if it is opened or tampered with, it is detected at the latest by the dispensing pharmacist, and the medication can be removed from the supply chain without causing damage. Numerous manufacturers satisfy the requirement for a tamper-evident safety feature with self-adhesive sealing labels with perforations.

These are applied to the opening flaps of folding cartons by machine at high process speeds. Using a sensor, the presence of these safety labels, as well as possible errors in dispensing or attaching them, can be identified immediately. The sensor distinguishes with maximum reliability between clear reflection from the plastic surface of the label and the diffuse reflections from the rougher surface of the packaging material. Once correctly filled and sealed, medication with secondary packaging is then sent on to the tertiary packaging stage. For this aggregation, the packaging must be completely filled and each box identified and assigned to secondary packaging so that it can be traced later on if necessary. An image-based code reader can detect both complete filling 'at a glance' as well as identify the data matrix codes of all boxes simultaneously.

Impenetrable solutions to serialisation and protection against tampering

EU Falsified Medicines Directive 2011/62/EU, delegated acts, EN 16679:2015-03 to support implementation — in the fight against the forgery of medicine and tampering of packaging, the details concerning the design of the safety features and relevant devices with which these can be checked are clearly defined. Sensor and safety systems can be highly future-oriented, representing a secure investment for parties involved in the pharmaceutical and packaging-logistics process chain. 

*Source: <http://de.wikipedia.org/wiki/Medikamentenfälschung>

SICK Pty Ltd
www.sick.com.au

Resealable packaging for produce

Tadbik's Fresh Lid is resealable packaging designed to keep product fresh and ready to use. The structure has two laminated layers with a printed design applied to the container base, which enables a re-closable use. Available in various shapes and sizes, the packaging is suitable for vegetables, nuts, sweets and all ready-to-eat fruits and bulk products.

The lidding can be applied on standard automated packaging lines and eliminates the need for additional self-adhesive labels and secondary trace labels by printing directly onto the film itself. The plastic is fully recyclable and creates a clean visible 'window' to view product. The lid is lightweight and easy to open and close multiple times while keeping the product fresh for longer. An easily identifiable tamper feature is also available. For fresh produce, primary producers currently packing in a clam shell-type container are able to move to a base tray only with the reseal film, saving on packaging cost and using fewer materials. The film can be either traditionally hole punched or laser perforated to manage respiration rates of different produce types.

Result Group

www.resultgroup.com.au



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Multilane metal detector

Metal can find its way into food products in many ways, most commonly through the equipment used in the manufacturing environment. Tiny pieces can shred off cutting blades or grinders, or faulty packaging machinery can discharge a small shard of metal.

Food metal detectors act as critical control points to mitigate the risk of potentially harmful metal contaminants.

The Fortress Multi-Lane Food Metal Detector comprises four separate lanes which travel through a single search head, enabling operators to inspect and independently auto reject packs across multiple lines without the need for individual detector heads or conveyor systems.

The metal detector randomly separates product into four lanes and is capable of detecting fragments as small as 0.3 mm ferrous, 0.4 mm non-ferrous and 0.5 mm stainless steel. All four heads are controlled from one control panel, enabling streamlined access and intuitive operation.

Instead of installing four single food metal detectors, the conveyor belt only requires minimal widening to accommodate the single search head.

The stainless steel housings and robust construction enable optimum performance even in harsh conditions, including hot or freezing environments.

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Reducing Smartwater's footprint with PET recycling

Coca-Cola European Partners (CCEP) produced more than 50 million bottles of Smartwater in 2015. The PET liners used (carrying the self-adhesive labels before dispensing) generated more than 40 tons of waste in that year, costing around \$10,600 in disposal/handling costs.

To further improve Smartwater production in line with its corporate focus on recycling, sustainability and creating a circular economy, CCEP engaged label and packaging producer Avery Dennison, who collaborated with partners Viridor and PET UK to help reduce waste, costs and the carbon footprint of Smartwater production in the United Kingdom.

Under the new recycling scheme, PET UK shreds and extrudes the waste PET liner and then produces a material suitable for making new items such as PET staple fibre, strapping or thermoformable sheets. There will also be



significant savings in CO₂ emissions — around 180–200 tons in 2016.

“We have close relationships both with PET UK and with CCEP’s waste management company Viridor, and together we have been able to establish a strategy that saves on waste and emissions while at the same time giving CCEP concrete business benefits and cost reductions,” said Xander van der Vlies, sustainability director for Avery Dennison Materials Group Europe.

Van der Vlies noted that creating awareness on PET recycling will continue, “Since we launched this initiative with PET UK in 2014, we have signed up many wine, spirits, beer and beverage brands. Avery Dennison has set an ambitious sustainability goal for 2025 of eliminating 70% of liner waste from the industry value chain.”

Avery Dennison Materials
www.fasson.com.au

VFFS system with integrated labeller and inserter

tna has launched a VFFS packaging system with a fully integrated labeller and inserter. Available as part of tna's robag packaging system, the Unique Solutions labelling and inserting technology enables the high-speed application of promotional labels and/or insertion of value-added two-dimensional items, such as coupons, and three-dimensional items like toys or dry or liquid-filled sachets into primary packaging.

Directly mounted onto the packaging system, the inserter and labeller do not require any additional floor space and can be configured and controlled via the control screen. Depending on the size of the label/insert, speeds of over 450 labels and 500 inserts/min are possible. The fully integrated turnkey packaging solution incorporates a bagger, a scale, a metal detector, inserters, labellers, barcode readers, date coders and automatic film splicing technology.

tna solutions Pty Ltd
www.tnasolutions.com

Can fillers

The Fogg Filler Can Fill Series features an automatic rotary system to fill aluminium cans with carbonated and non-carbonated products such as beer or soft drinks. The combination of the bottom feeding of the filling tank controlled by the progressive feeding valve allows for better control of foaming properties and maximises the efficiency of the CIP tanks. The filling valve with the lowering bell to seal the can is self-adapting to the upper profile of the container and seals applying the actual filling pressure.

The Canfill 6 features six filling valves and one seaming head with the capacity to fill at 25 cans/min depending on can size. The Canfill 9 features nine filling valves and a twin seaming head with the capacity to fill at 50 cans/min depending on can size.

Heat and Control Pty Ltd
www.heatandcontrol.com



High-speed fibre laser

Domino has launched the F720i high-speed fibre laser. Designed to deliver clear, legible and durable codes on aluminium cans, and with a high IP rating, the fibre laser can withstand the harsh production environments and high-speed coding demands of the beverage canning sector.

The system maintains continuous output in harsh, humid and temperature-challenging production environments of up to 45°C.

The machine applies standard codes at a rate of 90,000 cans/h and can deliver complex codes and promotional data of more than 60 characters at a rate of 42,000 cans/h. The system can maintain these coding speeds on the concave surfaces of the can bases.

The 3D power concentration of the machine generates a highly focused beam which is distributed in short, intense pulses, resulting in an increase of the marking speed.

Domino (Australia) Pty Ltd
www.domino-printing.com

Chamber machine

Multivac's C 200 chamber machine is a space-saving tabletop unit for fast packing of small to medium-sized quantities of salads, nuts and dried fruit in film pouches.

Robust, precise and efficient, the machine is suitable for a wide spectrum of products, film pouches and pouch sizes. An optional lid lock enables delicate products such as salads to be packed at ambient pressure.

Constructed of stainless steel, there are no recesses, corners or edges in which residual contamination could be deposited, which means that cleaning water can drain away freely.

Multivac Australia Pty Ltd
www.multivac.com.au

PET bottle base

The Sidel StarLite Nitro base is designed for production lines for still beverages utilising nitrogen dosing.

The non-petaloid base utilises a shape that increases base resistance and stability, increasing PET bottle rigidity by enhancing resistance to the internal pressure created by nitrogen dosing, even in harsh conditions, while lowering package weight and energy consumption.

The formed PET bottle can better withstand the internal pressure caused by the addition of nitrogen. This is of particular benefit in production at high altitude with distribution at sea level or in applications subject to very high temperatures. The base decreases the amount of raw material needed to create the finished PET bottles. The resulting bottles require less energy within the blowing process, are lighter in weight and can cost less to produce.

The base works with regular, ultraclean and aseptic filling and is available for bottles ranging in size from 0.2 to 2 L. The potential for lightweighting of the base offers cost savings and introduction of the base can mean a reduction in the need for air pressure. For a 0.5 or 1 L bottle, only 18 to 20 bars of air pressure are needed for blowing, compared to the 25 bars needed for traditional bases. This leads to additional energy savings.

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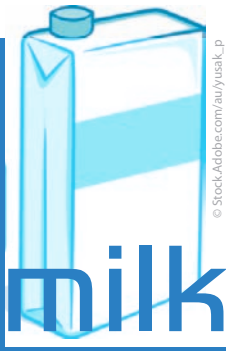
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How X-ray helps build better milk cartons

Morten Andersen



Modern society requires innumerable packaging solutions and they must be cheap, but when we take a carton of milk or juice from the fridge few of us stop to consider that we are holding a state-of-the-art sandwich material in our hands. In addition to the actual cardboard, the packaging consists of thin layers of polymers and aluminium foil, ensuring watertight and odour-sealing properties.

A typical packaging comprises five to seven layers of material and each state-of-the-art package takes less than one tenth of a second to manufacture — a single machine in the Tetra Pak production hall can spit out 40,000 milk cartons per hour. This extremely fast production process poses a challenge to developers.

Christel Andersson, development engineer at Tetra Pak's materials development office, explains, "This is only possible thanks to the stringent control of materials and understanding the changes they undergo during processing. X-ray technology is a natural tool for us. We constantly try to reduce material consumption in the individual packaging both for financial reasons and to reduce our environmental footprint and the consumption of resources."

The key to achieving the best possible result quickly and with the least material resources is to be found in the right combination of materials, design, processing and pretreatment. It requires in-depth, highly detailed knowledge.

"Polymer layers have the same thickness as human hair, so we need extremely high resolution to get the results we want," said Eskil Andreasson, technology specialist at Tetra Pak Packaging Solutions.

The company uses electron microscopy — SEM (scanning electron microscopy) — for these detailed studies.

"While we will continue to use SEM, the one drawback of the technology is that we need to cut samples of the material. This means that there will always be a small margin of doubt as to whether the cutting sample has changed structure and other characteristics. Conversely, the advantage of X-ray radiation is that you can see the characteristics of the material from the outside. Also, you don't change the sample, enabling you to subsequently perform measurements on the same sample."

Tetra Pak has three X-ray equipment units. The company has also recently partnered with DTU and several other Danish research institutions and enterprises* in the LINX project — Linking Industry to Neutrons and X-rays.

"We're pleased with our own X-ray measurements, but they are limited to taking snapshots. Reality isn't static, but dynamic," explained Andreasson. "In order to 'film' the changes in the structure in the high resolution we need, you have to have greater X-ray sources. We need DTU to help us make this transition."

An added bonus of LINX is the cooperation with the Danish companies involved in the project. "Even though a company

such as Velux operates with significantly larger dimensions when manufacturing its windows, some of the basic issues regarding composite material processing remain the same," said Andreasson. "You wouldn't think that Tetra Pak and Novo Nordisk share common challenges, but in fact Novo Nordisk uses much of the same simulation technology as we do. In this way, the LINX project also acts as a 'hub' for experience exchange. There's a lot of new X-ray tomography hardware and software currently available. In fact, I think it's an advantage that the companies are so different. We aren't competitors, which makes it safe to share knowledge."

"X-ray tomography is relevant to all our development work — packaging design, pretreatment, processing and the choice of closing mechanisms. We have only seen the tip of the iceberg in terms of what this the technology has to offer."


Among its research partners, DTU Compute and DTU Physics are of particular interest to Tetra Pak.

"One thing is setting up the experiments so you get your results, but it's also important to limit yourself so you don't end up processing all too large volumes of data. This is where DTU can really help us," said Andreasson.

"DTU researchers are also skilled at imaging," added Andersson. "As an experienced user you can get something out of the raw data, but it's a basic human need to see with your own eyes what is happening in the material."

"The vision is that one day we will reach the point where we no longer only verify the effects of innovative material solutions, but actually turn things upside down so that we use visualisations on the basis of X-ray tomography to design the materials at the molecular level," said Andersson. "This is an area undergoing rapid development — so-called molecular dynamics."

Initially, Tetra Pak has chosen to limit its involvement in material studies to the LINX project, but clearly it will make sense to include other areas later, concluded Eskil Andreasson.

*In addition to DTU, the University of Copenhagen and Aarhus University are also participating in the project. The participating regions are the Capital Region of Denmark and the Central Denmark Region. The companies are: Biomodics, CO-RO, CPH Inventures, Exruptive, Frichs Ecotech, Grundfos, LM Wind Power, Novo Nordisk, Novozymes, Rockwool, TEGnology, Tetra Pak (Sweden), Velux, Xnovo Technology, and Aalborg Portland. 

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Industrial-scale insect farming

Insects at Bühler R&D lab. © Ralph Richter Photodesign Germany

Alternative, sustainably generated protein sources are going to be needed to ensure there will be enough food to support global population growth. It has been estimated that more than 250 million tonnes of additional protein a year — an increase of 50% compared to today's level — will be needed annually by 2050, and insects could be the ideal source.

Recognising this, Bühler has joined forces with leading insect production company Protix to form Bühler Insect Technology Solutions. This joint venture will develop scalable, industrial solutions for the rearing and processing of insects to provide protein primarily for animal feed and food.

Based in China, the joint venture has already begun operations. "By combining the knowledge and experience of our two companies, we can provide industrial insect processing solutions to address the alternative protein market," explained Ian Roberts, CTO of Bühler.

"Together, we can develop both sustainable and cost-effective solutions for large-scale insect producers and processors that cover the whole value chain," added Kees Aarts, CEO of Protix.

Why insects?

One of the most promising sources to generate protein sustainably and with a low footprint is insects: fly larvae or mealworms, for instance, are easy to breed and can be fed with organic waste. They are remarkably efficient at converting feed into protein and require little space to cultivate.

Founded in the Netherlands in 2009, Protix developed proprietary equipment and solutions gaining extensive operational expertise not only in the breeding and rearing cycle, but also in separating and extracting proteins and lipids from insects. With a pilot plant, Protix can process 1600 tonnes of insect larvae per year to produce high-quality, insect-based ingredients. "Protix is the most advanced insect company that has dem-

onstrated industrial-scale production in a way that is scalable and multipliable. They have proven how to create a market in insect protein," explained Roberts. Now they are ready to take the company to the next level and need a partner who understands the requirements of large, industrial processors. This is where Bühler steps in: one of the key process steps for extracting protein from insects is milling an area where Bühler is a recognised technology leader.

Scalable, industrial processing solutions

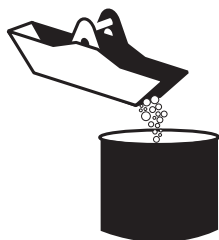
The goal of Bühler Insect Technologies is to develop industrial-scale solutions for feedstock processing, larvae rearing and larvae processing, and to produce high-quality insect ingredients — covering the whole value chain from rearing to separation and extraction of proteins and lipids.

Initially, the focus will be on larvae of the Black Soldier Fly, nicknamed the 'Queen of waste transformation' for its impressive ability to transform organic waste products into high-quality protein. Subsequently, there will be a diversification to other insects, such as mealworms.

The insect proteins will be used primarily for the production of sustainable animal feed, for example in aquaculture, which is the fastest growing agricultural segment in the world. The market for insect processing solutions has huge potential: by 2050, insects could account for 15% of global protein production.



Bühler AG Australia NZ
www.buhlergroup.com



Beating BPA confusion

New data confirm EFSA's previous conclusion that bisphenol A (BPA) might affect the immune system in animals, but the evidence is too limited to draw any conclusions for human health.

Following a request from the Dutch Ministry of Health, Welfare and Sport, EFSA's experts reviewed two studies by Ménard et al. (unpublished at the time of EFSA's last comprehensive evaluation of BPA) and concluded that there were key limitations in the way they were designed and carried out. Furthermore, the data from the studies were too variable to use for setting a new tolerable daily intake (TDI) for BPA.

As stated in 2015, EFSA will review its temporary TDI of 4 µg/kg body weight/day after evaluating the scientific evidence on BPA toxicity published since 2012.

Prof Vittorio Silano, chair of EFSA's expert Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids (CEF), said: "EFSA's new review will start in 2017 and additional immunological studies such as those by Ménard et al. would be useful contributions if the limitations we identified are addressed."

Dr Fleur van Broekhuizen — lead author of a report by the Dutch National Institute for Public Health and the Environment (RIVM) that prompted EFSA's appraisal of the new evidence — said: "RIVM welcomes EFSA's confirmation of our assessment that BPA might affect the immune system. We look forward to the outcome of EFSA's next review of scientific evidence on BPA."

Studies by Menard et al. (2014)

The two studies by Menard et al. suggested food intolerance and reduced resistance ("impaired immune response") to parasitic infection in rats exposed to 5 µg of BPA per kg bw/day. The doses were administered perinatally (ie, before and just after birth).



EFSA set up a working group of international experts to assess the studies and the authors kindly provided the original data to EFSA for the review. The CEF panel concluded that the limitations in the design and conduct of these studies — particularly the use of a single dose for the majority of the tests — prevent meaningful assessment of their relevance for human health. Moreover, for the only effect tested at three BPA doses, when plotted on a graph, the data results are so scattered and variable that they do not allow identification of a reference point for the immunotoxicity of BPA and, therefore, cannot be used to set a TDI.

The main technical limitations of the studies included:

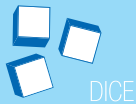
- Only one type of immune response was tested with three BPA doses — evaluating dose-response relationships is not possible below three doses.
- No positive control to account for differences between immune-deficient animals and the tested animals.
- No control for litter effect to account for possible differences between animals from different litters.
- Insufficient study reporting, for example, no information on animal body weight, BPA source, mode of oral administration, number of dams (mothers)/pups.
- Lack of statistical evaluation of the non-monotonic dose response.
- No mention of power analyses — a statistical tool to calculate the minimum effective sample size.
- A statement on the developmental immunotoxicity of bisphenol A (BPA): answer to the question from the Dutch Ministry of Health, Welfare and Sport.

What's next?

In December 2014, EFSA reduced the TDI for BPA from 50 to 4 µg/kg bw/day. The TDI was made temporary and EFSA committed to re-evaluate BPA again when a two-year study by the US National Toxicology Program is expected to become available in 2017.

Work is underway at EFSA on a "scientific protocol" to define upfront how to search, review and integrate all the new scientific evidence not included in EFSA's previous assessment. EFSA will consult publicly on this preparatory work in 2017 so stakeholders can have their say before the re-evaluation begins.





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New lolly manufacturing technology

Chewy lolly turns into chewing gum

Wacker Chemie has launched a completely new confectionery manufacturing technology that turns a chewy lolly into chewing gum after a short time. The confectionery is made in a boiling process so water-based, fat-containing and natural ingredients, such as fruit juice, cocoa and coffee, can be added to the lollies.

The chewing of gum-like substances appears to always have been a basic human need. Archaeologists found the oldest specimen to date of a precursor to chewing gum when they excavated a 9000-year-old settlement in southern Sweden. The ancient Greeks were also fond of similar substances. Some 2000 years ago, they chewed on the resin of the mastic tree, which is still harvested on the Greek island of Chios. Nowadays, chewing gum is generally based on synthetically produced solid resins that serve as carriers for sugar, sweeteners and flavourings.

For over 60 years now, Wacker Chemie has been a leading supplier of food-grade polyvinyl acetate solid resins, which the confectionery industry uses to make gum base. Together with finely ground sugar and concentrated flavourings, the gum base is kneaded into chewing gum at around 60°C. This gives the mixture a tough and tacky consistency, which is why it must be processed by powerful specialty machines. The choice of ingredients is limited. Water-based additives are not suitable, because they would dissolve the sugar out of the gum mixture. The disadvantage of fat-based ingredients is that they make the gum base extremely soft. This would cause the chewing gum to simply disintegrate in the mouth while being chewed instead of forming a homogeneous mass.

According to the Euromonitor market database, roughly 1000 kilotons of chewing gum were sold worldwide in 2015 alone. The same period saw sales of gumdrops, jelly and chewy candy that were more than double that quantity. This also includes soft candy, as flexible sugar bars are known in the industry, which is available in every flavour variation — from all kinds of fruit to milk and even soft chocolate centres.

These are based on a melted sugar solution, which is boiled with glucose syrup at ca. 100 to 130°C.

Chewy candy thus has decisive advantages over chewing gum: it is produced in a continuous boiling process. Water- and fat-based ingredients such as milk, cream, honey, cocoa, nuts, vitamins and other flavourings, as well as colourings, can easily be added to the boiled sugar mixture. Since sugar dissolves in water, it is also very easy to clean the equipment. However, it also has a weak point: due to its sugar base, the calorie content is high.

Chewing gum, on the other hand, provides a long-lasting chewing experience without giving you a guilty conscience — the calorie intake is considerably lower. In addition, the chewing of gum stimulates the formation of saliva, which increases the pH value in the mouth, neutralising the acids that attack tooth enamel. Alkaline saliva can also re-mineralise teeth. To prevent tooth decay, only sugar-free gum should be chewed, of course.

Wacker's new CANDY2GUM technology combines the best of both worlds: the texture of chewing gum with the boiling options of chewy candy. "This opens up entirely new possibilities for integrating ingredients. This technology can be used to formulate unprecedented confectionery," said Martin Seizl, business development manager at Wacker Biosolutions. Plus, CANDY2GUM makes for an entirely new mouthfeel — starting as a chewy candy and then turning into chewing gum after a short time in the mouth.

The secret of CANDY2GUM lies in its basic ingredient, Wacker's pre-formulated CAPIVA C03 mixture. It is insoluble in water and melts fully, which means it can be blended uni-



formly. CAPIVA C03 is suitable for blending with both sugary and sugar-free candy mixtures, which opens up numerous opportunities for novel confectionery products.

Since CAPIVA C03 melts fully, manufacturers can use conventional candy boiling processes. “We are thus producing the first raw material worldwide that makes it possible to boil chewing gum-like candy and shape it as required instead of kneading it elaborately,” explained Thomas Wimmer, head of the chewing gum lab run by Wacker Biosolutions.

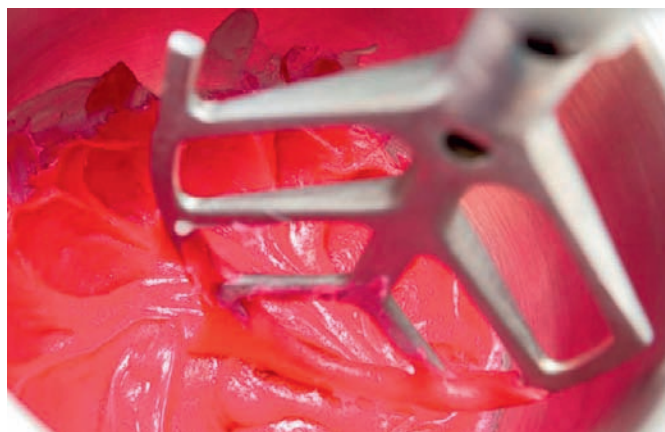
From lab to large-scale production

A chewing gum was successfully boiled for the first time in December 2013 at a Wacker food-technology laboratory in Burghausen. “We wanted to find out whether what we did in a cooking pot would also work on an industrial scale,” said Wimmer. That’s why the team got in contact with the confectionery machinery maker Chocotech in Wernigerode, Germany, in early 2014. “We were excited about the CANDY2GUM technology from the start, because it can be used to make a completely new type of candy. We wanted to find out whether the technology would work with conventional equipment,” said Volker Günnel, a qualified engineer and area sales manager at Chocotech.

Chocotech equips well-known German and international confectionery manufacturers with machinery for producing hard and soft candy, fruit-flavoured jelly candy, caramel and whipped sugar mixtures. In industrial-scale production, candy manufacturers normally use continuous cookers that produce confectionery in a non-stop chain process. While the ingredients are weighed into the first pot in batches in accordance with the recipe, finished candy comes out at the end of the process in a continuous loop.



Lab test: The secret behind this confectionery innovation is the production process — CANDY2GUM products are simply boiled. The premix is ideal for use in both sugary and sugar-free candy mixtures and thus opens up numerous opportunities for novel confectionery products. (Photo: Wacker Chemie AG)



With Wacker’s innovative CANDY2GUM technology, a multitude of water-based, fat-containing and natural ingredients are available that, until now, were unheard of for chewing gum — ranging from fruit juice, coffee and milk to caramel, chocolate, coconut and plant extracts. (Photo: Wacker Chemie AG)

Chocotech tests showed that the CANDY2GUM technology can be used in a continuous boiling process, but some adjustments were required. For two years, Wacker food technicians refined the pre-formulated CAPIVA C03 mixture so that it could be used in industrial production. In addition, Chocotech engineers worked on adapting conventional production machinery and processes for the new technology. The engineers equipped a machine that usually produces hard candy with an additional melting container for CAPIVA C03, including pump and flow meter.

“The ready-to-use premix is melted in separate containers and only mixed with the sugar mixture and flavourings in one of the final production steps to minimise cleaning,” explained Günnel. At the end, the cooled mixture runs through a cut-and-wrap machine that cuts the candy into bite-sized pieces and packages them.

Little investment, great effect

“Hard-candy production facilities are perfectly equipped for handling the CANDY2GUM technology. Traditional hard-candy manufacturers can considerably expand their product portfolio with little investments,” said Günnel. His customers can thus gain a great amount of flexibility.

Wacker started to present the new CANDY2GUM technology to various customers and partners in 2015. A market study that was commissioned by Wacker and involved 4000 participants worldwide shows that CANDY2GUM is also received well by end consumers. Regardless of where they were from, those surveyed found the integration of natural ingredients such as real fruit juice and vitamins particularly interesting.

In the USA, consumers are especially looking forward to chewing gum-like candy with real caramel. In China, the



Because the production process of CANDY2GUM is similar to making chewy candy, standard sugar-confectionery cookers can be used. (Photo: Chocotech GmbH)



© Stock.Adbec.com/au/David Perinas


underlying idea got an impressive 70% approval rating, particularly because real milk or coconut milk could be added to the confectionery.

It is also remarkable that all age groups in China rate CANDY2GUM as highly promising. Seizl believes that this is due to growing health awareness: "CANDY2GUM offers an opportunity of adding fresh, natural flavouring ingredients such as milk or fruit juice to chewing gum. This is very popular with Chinese people of all ages." A study by the German Federal Ministry of Food and Agriculture on the topic of "potential of German confectionery in China" shows that, when it comes to the consumption of sugar confectionery, the Chinese place particular importance not only on taste, but also on product innovations. In other words, Chinese consumers have a fondness for new, unusual food.

With retail sales of over US\$15 billion, China is the second-biggest confectionery market in the world after the USA. The chewing-gum market, in particular, has been registering above-

average growth for years. The focus is primarily on sugar-free products. Health is a key sales argument here. Natural ingredients obtained from fruit or plants are very popular with consumers, too.

"Nowadays, one in three people will give a critical glance over the list of ingredients before putting confectionery in their shopping cart," explained Seizl. CANDY2GUM can furthermore be used to produce functional candy with health-promoting ingredients. The technology makes alternative product forms for active ingredients such as vitamin C possible.

"The new CANDY2GUM technology expands the multifaceted Wacker portfolio for the chewing gum and confectionery industry," summarised Seizl. The first CANDY2GUM products are expected to be launched on the market during 2017, offering consumers worldwide an entirely new chewing experience. 

Wacker Chemie AG
www.wacker.com

Rheon Encrusting machines

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Rheon products abound in meat & poultry, snack & health, bakery products such as cookies & bread dough's, cheese, seafood, confectionary, pet food & even ice cream treats.

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Short or long log extrusion- eg: croquettes & hot dogs.
Round deposits up to 300grams- eg: bread pockets, filled meat & poultry meals, filled doughnuts.

Ease of operation with a simple control panel from which machine operation is controlled at the press of a button. The panel also has 99 memories for calling up your products running specifications.

Low pressure feeding to handle materials gently & avoid fragile particulate breakdown in the casing and/or filling - baked beans or vegetables into meat or potato casing, strawberries & cherries travel through the machine with minimal damage.

Options allow solid centres or a second filling, open topped products, mosaic & shaped extrusions.

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No drip spray nozzle

Exair's 1/4" No Drip Internal Mix Deflected Flat Fan Atomizing Spray Nozzle atomises fluid and sprays at a right angle to the nozzle orientation. This allows spray to be placed precisely where it is needed when the mounting and work areas are limited. The nozzle works in the same way as the company's standard atomising nozzles, but with the added feature of positively stopping liquid flow when compressed air is shut off.



When spraying any type of liquid, post-spray liquid flow can cause problems. Unwanted drips can ruin product function on sealing or mating surfaces. Drips can also impact the appearance of painted or coated finishes. In addition, excess liquid flow wastes resources such as coatings, chemicals or water. The no drip nozzles are suitable for situations where no post-spray drip is permissible.

The nozzles are available in five patterns: narrow-angle round pattern, wide-angle round pattern, flat fan pattern, deflected flat fan pattern and 360° hollow circular pattern. They are suitable for pressure-fed applications that don't require independent air and liquid control. Internal mix, external mix, no drip external mix, siphon fed and no drip siphon fed are also available in 1/4" or 1/2".

Applications include painting, coating, rinsing, cooling, quenching, wetting (moistening), humidification and dust control. The compact atomising nozzles are fully adjustable to minimise air and liquid consumption and have interchangeable liquid and air caps. All nozzles are CE compliant and conflict mineral free.

Compressed Air Australia Pty Ltd

www.caasafety.com.au

Software bundle

The Wonderware Office Bundle, from Schneider Electric Software, streamlines the ability to access and interpret operations data, bringing 'big data' benefits to more users. The solution's easy installation and native connectivity to plant floor and business applications enable management to easily create key performance indicators by visualising and analysing data in near real time from a wide array of devices and sources.

Wonderware Office Bundle helps plant managers and executives make better informed business decisions using easy, on-demand access to historian data and analytics. It consists of Wonderware Historian, Wonderware Historian Client, Wonderware InTouch Access Anywhere and Wonderware SmartGlance.

The foundation of the system is Wonderware Historian. A high-capacity process data historian, it can collect information from any industrial data source to scale — from small to enterprise-wide applications. Tight integration with Microsoft Office enables management to use familiar tools to gain deeper insights into operations to identify operations or process improvement opportunities.

Wonderware SmartGlance provides a simple app for fast access to KPI reports on plant conditions from any mobile device. Instead of waiting for batch reports or only receiving daily reports, managers using the bundle can access timely information when they need it.

Schneider Electric

www.schneider-electric.com.au

Forming and Portioning

with a difference

The Formatic range of machines will form and portion products including meats, chicken, fish, cheese and cookie dough's into a variety of shapes. If you are looking for a forming machine which is easy to operate and clean, involves minimal pressure and mixing of your product, and has low maintenance, then look no further -

Most models under \$20K including forming drum

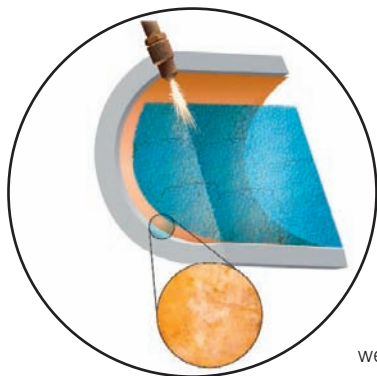
Benchtop models to suit small and cottage industry all the way through to medium and large scale production plants. Low entry-level pricing.

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Permanent solution to fat, oil and grease build-up

Ecocatalyst uses bio-organic catalyst (BOC) technology to break down fats, oils and greases (FOGs) blocking pipes, sewers, wet wells and pump stations into fatty acid components.

Build-up of FOGs and filamentous bacteria causes almost 70% of blocked drains, pipes and sewers with significant infrastructure damage following this. Emulsifiers may temporarily break FOGs down, but this simply transfers the problem downstream — and even into the wider environment.

Ecocatalyst is designed to eliminate the FOGs that clog pipes, drains, collection and septic systems. Regular use of this formulation will keep sewers, grease traps, drains, garbage disposals, wet wells, pump stations and septic systems free-flowing and odourless.

Use of the liquid, non-toxic Ecocatalyst system results in the rapid solubilisation of fogs and elimination of hazardous gases and noxious odours. Grease cap levels can be cut by up to 60% in four days, dissolved oxygen increases and there is no membrane fouling.

EcoCatalysts

www.ecocatalysts.com.au



Magnetless linear position sensors

Bestech Australia offers the SS-7 Series Linear Position Sensors used to measure the ram position of hydraulic and pneumatic cylinders in industrial, mobile or subsea applications. This model features a no-magnet design, significantly reducing installation and cost of ownership without sacrificing accuracy specifications.

The sensors come in four versions: ME (embedded version), MR (port mount version), MHP (port mount 25 mm hex housing) and SS-7 (subsea port mount), and fit into a gun-drilled cylinder similar to how a magnetostrictive sensor would be installed but without the counterbore necessary for the magnet.

The sensors operate to a depth of 3600 m and have a measurement range from 25 to 600 mm. Available in IEC IP67 aluminum or stainless steel housing, with DC voltage or current analog output, the sensors are contactless and operate at temperatures to 85°C, with an option of 105°C. The sensors feature SenSet field-adjustable scaling.

Bestech Australia Pty Ltd

www.bestech.com.au

Temperature controller

OVEN Industries has available the 5R9-350 field configurable temperature controller.

The open board temperature controller is designed with a proportional integral control algorithm to provide precise control to thermoelectric (Peltier effect) modules.

The controller can be set up for heat or cool and can run ramp and soak profile. Pulse width modulation controls the power level in the thermoelectric module at a base frequency of 2.5 kHz; output stage is high resolution. Accessories available are digital display, keypad, sensors and cable.

Oven Industries

www.ovenind.com

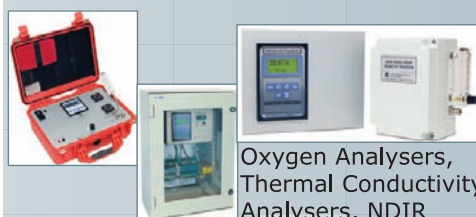


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www.ams-ic.com.au
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Extrusion technology

Baker Perkins' twin-screw extrusion technology can create savings in the production of core ingredients for the food industry. It is suitable for a range of products, including breadcrumb, croutons, gluten-free bread products, modified and pregelatinised flours, rusk for sausage fillings and ice-cream inclusions.

Compared with traditional processes, extrusion can create savings in space, equipment, energy and labour. The process is hygienic, energy efficient and flexible, enabling quick and easy switching between different recipes.

Compared with the traditional process of making breadcrumb by mixing, forming and baking bread before discarding the crusts and grinding, the same product can be made with no waste using only a twin-screw extruder and dryer.



Similarly for croutons, a bread-like texture can be developed in the extruder and the pieces cut to size at the die or a post-extrusion cutter.

Extrusion is also suitable for gluten-free bread products as it can handle the various alternative flours and starches used to make the dough. Screw profiles can be adjusted to achieve the desired characteristics and it overcomes the problems caused by stickiness of the dough.

When used for modified and pregelatinised flours used in products such as instant soups, ready meals, bakery premixes and infant nutrition, the wide range of conditions that can be created in an extruder enables characteristics such as rapid and/or cold water thickening, increased protein or fibre content, improved dispersibility and enhanced texture to be developed.

Baker Perkins Inc

www.bakerperkins.com



See the light.

Pilz has recently released its new range of PSEN Light Curtains which include its second generation Cat 3 & Cat 4 compliant Light Curtains. This means Pilz now has a comprehensive range of light curtains and accessories that can support a large variety of applications in any plant or factory.

Benefits of PSENOpt II at a glance;

- ▶ Come with a huge variety of functionality & programmability
- ▶ Large selection of lengths and widths, including a slim line version
- ▶ Highly robust for protection against shock, collision and vibration
- ▶ User-friendly diagnostics via LEDs to reduce downtimes
- ▶ Rapid and simple assembly, installation and commissioning

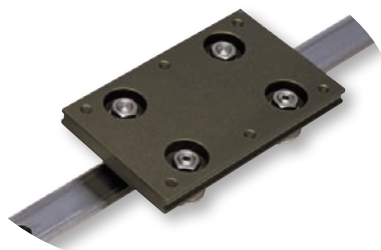


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Slide system



HepcoMotion's SL2 stainless-steel-based slide system includes a range of stainless steel slides and bearings, together with specially treated aluminium components.

Suitable for applications requiring high precision under cleanroom conditions with no lubrication, or corrosion resistance in washdown and harsh environments, the system offers long service life with virtually zero maintenance, according to the company.

The linear range consists of stainless steel bearing assemblies, flat slides and spacer slides produced from AISI 400 series stainless steel. A complementary range of lightweight aluminium carriage plates and flange clamps are also available with special surface treatment providing corrosion resistance. The treatment process for the aluminium is approved by the US Department of Agriculture for use in food processing machinery.

The V-shaped slide surface provides the system with smooth-running and low-friction characteristics which allow it to be operated dry, without lubrication, for sensitive applications.

In most circumstances, the system can also be equipped with cap seals that prevent the ingress of dirt, provide positive lubrication and extend service life. Grease used can be temperature-resistant, food-compatible or suited to a nuclear engineering application specification.

There are seven sizes of flat-slide sections and four sizes of spacer-slide sections in the range. All slides are available in lengths up to 4 m, except for the smallest size. There are three lengths of carriage plates available for each slide, with the option of either double-row or twin-bearing assemblies.

TEA Transmissions Pty Ltd

www.tea.net.au



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HD industrial monitor withstands high-pressure hose down cleaning

The ViTAM-121 is a fully sealed 21.5" IP66/IP69K stainless steel full HD industrial monitor. To comply with IP66/IP69K standards the ViTAM-121 uses waterproof sealed connectors for all I/O connections. The result is a process control display that can withstand high-pressure hose down cleaning.

The ViTAM-121 supports 1920 x 1080 full HD resolution with a default brightness of 300 nits with an optional sunlight-readable 1000 nits display brightness also available. The standard I/O connections provided include: VGA and HDMI video, USB2.0 for touch screen control and 9~36 VDC power. Optional HDMI audio out can be installed allowing a waterproof speaker to be attached. Flat panel LCD touch screen options include resistive touch, projected capacitive touch or a no touch glass front bezel.

Housed in a Grade 304 or optional Grade 316 stainless steel enclosure, the ViTAM-121 will not corrode and is easy to clean. To assist the cleaning of the display the ViTAM-121 includes a touch on/off button that allows the touch screen to be temporarily disabled during the cleaning process. This allows the display to be hygienically wiped down without having to shut down any process control applications.

The ViTAM-121 will operate in temperatures from 0 to 50°C. VESA 100 mm mounting holes allow the ViTAM-121 series display to be arm or wall mounted and optional ergonomic Yoke Mounting is also available.

Interworld Electronics and Computer Industries

www.ieci.com.au

Wirecut machine for soft dough

Baker Perkins has introduced a servo-driven version of its TruClean wire-cut machine, which forms cookies and bars from soft dough.

The servo-driven wire-cut mechanism is said to bring improved automation and flexibility to production. The two-axis servo system provides variability to the cutting and return paths, optimising cutting performance, including at high speeds or on difficult dough. Tailored profiles can be created for each individual product.

Ease of operation, cleaning and maintenance have also been improved. Setting up is all done from the HMI, and once a profile has been developed and tested, it can be saved as a recipe for one-touch set-up.

Baker Perkins Inc

www.bakerperkins.com



Semiautomated cake icing machine

Unifiller Systems' Deco-iSpot is a semiautomated machine that base-ices cakes and decorates cupcakes directly from a bowl or pail.

With speeds of up to 120 deposits/min, the machine can save time and prevent injury or strain for the operator. It accurately portions buttercream and its bubble extractor ensures smoother icing deposit.

Two standard follower plate designs work with specific buttercream pails. Using the machine, entry-level operators can decorate cupcakes easily with a swirl design using the optional cupcake twist rosette head. The machine can also be used as a depositor to deposit batters, fillings and other smooth flowable products. The simple, sanitary, all stainless steel machine design means quick product changeover and minimal clean-up.

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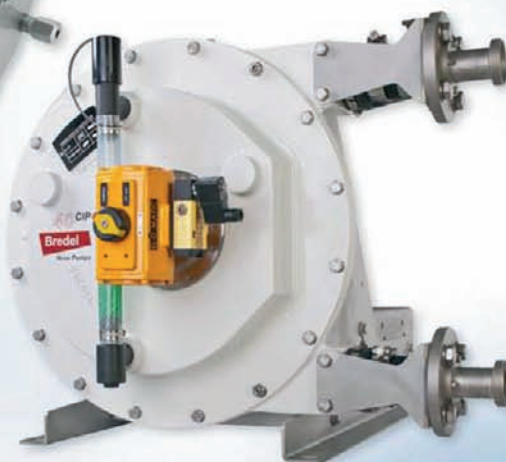
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Air nozzle options

WindJet YBLW air nozzles for blower systems are suitable for use in blow-off, drying and cleaning applications. The air nozzles are designed to convert low-pressure air into high-velocity and a high-impact air stream. Should the air nozzles accidentally be placed against a flat surface, the recessed orifices allow for the air to escape.

The air nozzles can be attached to a spray header which is suitable for spraying wide areas. Adjustable stay-in-place hoses allow for the spray header to spray an uneven surface or complex-shaped target.

The air atomising Blower Mist spray nozzles are able to provide a fine mist spray and are suitable for humidification, misting and cooling applications. The possibility of clogging is reduced due to the large size of the spray nozzle orifice.

The air atomising spray nozzles are constructed from stainless steel and the bodies are made from nickel-plated brass. The assembly of the nozzles includes a VeeJet flat spray nozzle. Different spray distances and spray coverages can be achieved by replacing the spray nozzle.

Spray Nozzle Engineering Pty Ltd

www.spraynozzle.com.au



Cloud data management platform

Rubrik's Cloud Data Management platform provides data protection, search, analytics, archival and copy data management for hybrid cloud enterprises. The platform can reduce management overhead, increase data accessibility and accelerate development and testing of enterprise applications.

Rubrik, Inc

www.rubrik.com

Refrigeration vacuum pumps

Dynavac's VP range of 2-stage vacuum pumps is suitable for the commercial refrigeration industry. Built on the VRD pump platform, the pumps incorporate the features of the VRD pump and include an onboard vacuum gauge, multiported inlet manifold and trolley.

The vacuum pumps feature high capacity for large refrigeration installation, including chillers, and provide reduced downtime and improved vacuum performance. They are robust and easy to use and the trolley is designed for improved safety.

Dynapumps

www.dynapumps.com.au



How to reduce gasketed plate heat exchanger downtime



Getting the best plate heat exchanger performance requires preventive maintenance, especially for hygienic applications within the food, dairy, beverage and pharmaceutical industries.

Each process system, however, is different with different parameters that affect the heat transfer and sealing efficiencies of the plates and gaskets.

The material properties and construction of gaskets should be specifically selected to provide optimal sealing performance for the intended application. But over time, all gaskets will wear due to natural ageing as well as the temperature, pressure and stress of normal operating conditions.

Knowing exactly when to replace gaskets is almost impossible since the timing varies, depending on the application, but you can be assured that without preventive maintenance, you risk unplanned downtime that can be costly.

Things to consider:

- Temperature and pressure: Higher operating temperatures and pressure cause more wear and tear on the gaskets.
- Compression: Gaskets are subjected to local stress from the moment you first clip them on to and tighten the plates.
- Store spare gaskets in a sealed bag, in a dry, cold and dark place, and away from ozone-producing equipment such as machines or light armatures.



Alfa Laval
www.alfalaval.com.au

www.burkert.com.au

Open, Closed & In-between.

With the 3-Position Actuator ELEMENT Bürkert completes its portfolio for process valves. The 3-position actuator is based on the standard ELEMENT actuator and uses integrated air routing for a very compact design. While remaining as compact as previous designs, the middle position can be adjusted easily, even during operation. An optical position indicator provides visual confirmation when the actuator is in the middle position. This valve is well suited to filling, mixing & batching applications where accuracy is paramount, as well as being an optimal CIP solution, reducing the risk of contamination in a plant.

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Resistive touch monitor

Backplane Systems Technology has released faytech's resistive touch series monitors for demanding applications.

Available in sizes from 7" to 21.5", features of the series includes lockable standard connectors, a cable-channelling back cover, an LED backlight, resistive touch screens, extra robust components, a wide-range power supply (8–36 VDC) multiple video inputs and extended temperature range.

The sunlight-readable (1000 nits) rugged monitors are dust- and water-resistant to the IP65 protection rating and sealed in an aluminium enclosure. An all-in-one cable system is provided with HDMI or VGA picture connection, USB for touch and 8–36 VDC power connection. The operating temperature is -25 to +75°C.

High-performance LCD panels with LED backlighting, long life, specialty films and enhanced polarisers allow a clear picture even under direct sunlight. Buttons are available on the front to change brightness levels, while a resistive touch screen is fitted to the monitors. Mounting is VESA 75.

Individual customisations are available for the cable connections, colour, logos, housings and fixing points.

Backplane Systems Technology Pty Ltd
www.backplane.com.au

Energy-efficient heat exchanger

The Komax Klean-Wall Heat Exchanger is energy efficient, providing a 300% increase in efficiency over conventional shell and tube heat exchangers, according to the company.

The heat exchanger helps to eliminate wall build-up, which means fewer breakdowns. It rarely requires cleaning due to the elimination of corners that can trap solids or fibrous materials.

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Pump

Watson-Marlow Fluid Technology Group has launched the MasoSine Certa pump, offering clean pumping for food and beverage industry applications.

The pump is easy to clean and includes EHEDG (Type EL Class I) and 3A certification. All contact parts are FDA and EC1935 compliant.

The pump delivers high suction capability to handle viscous products. The sinusoidal rotor carries fluid through the pump to reduce shear while cutting power consumption by up to 50% with high-viscosity fluids, according to the company.

The fully CIP capable pump provides flow rates up to 99,000 L/h.

Watson-Marlow Fluid Technology Group
www.wmftg.com.au



Double seal valve

SPX Flow's APV DELTA SD4 Double Seal Valves are designed for safe media separation applications. Their hygienic characteristics and long seal life make them suitable for use in the food, beverage, pharmaceutical and chemical industries. The valves are designed for shut-off, changeover or tank bottom valve applications with other configurations available on request.

Safe media separation is provided by the valve's design that contains two seat seals. The hygienic characteristics of the valves are primarily due to their ball-shaped housing, crevice-free sealing and leakage discharge valves which enable drainage as well as cleaning of the neutral cavity.

To maximise operating life and maintain process integrity, the valves need to be routinely maintained. The company has released a video providing a step-by-step guide for the upkeep and maintenance of the valves.

The video provides users with an in-depth walk-through of standard maintenance procedures, including a step-by-step guide on how to disassemble and assemble the valves; replace the seat seal; and preserve the seal from leakage.

SPX Flow Inc
www.spxflow.com/au

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Knowing the unknowable: how to prevent disaster

Gordon McKeown*

We live in an era of dramatic, improbable events that adversely affect the economy, the environment, the fate of household name companies and people's welfare and health. Or at least they seem improbable until they hurl themselves violently upon us from the shadows of our agreeable ignorance. Strangely, with hindsight they often appear inevitable.

Bloated, failed banks that blight the economic landscape, exploding oil rigs that kill crews and devastate ecosystems, and aviation and rail crashes that kill hundreds of passengers. How did food companies slide into the ethical morass of horsemeat in the lasagne? Did VW's board of directors really want proscribed levels of nitrogen oxide in the exhaust emissions? Hardly. As these calamities pile up on our news desks, one begins to realise that situational awareness must involve a greater effort than many are capable of and often that battle is simply lost.


So what are we doing about corporate carelessness? Are those businesses that have the potential to wreak devastation on their staff, the public, the economy, the environment and themselves doing anything to change their habits and reduce the likelihood of future calamities? Is there a category of organisations that works harder than others to anticipate and avoid the painful impact of unpredictable situations and events? It seems that there might be. Some, not all but some, organisations are implementing a management style known variously as operational risk, enterprise risk or governance, risk and compliance.

According to research analyst Gartner the critical capabilities for risk management are the ability to assess and document risks (preferably in a risk register — a big list of undesirable events, their potential causes and consequences and plans to mitigate them); incident reporting tools that let staff easily raise the alarm at the earliest sign that something is wrong; real-time monitoring of lead indicators (ie, danger signs), which can be anything from a gearbox vibration level to the fact that an important meeting was skipped; response automation tools that execute pre-planned activities when a risk threshold is breached (eg, software that escalates the gearbox vibration level to the attention of the CEO, grounds the vehicle affected and issues instructions to the maintenance and repair team); and, lastly, the ability to quantify, analyse and report on risk so that the board and senior management has visibility of their risk exposure today. (Are all the lights green? If not, why not?)

In other words, the subcategory of organisations that take risk seriously make great efforts to model and simulate the what-ifs, they provide staff with easy tools for raising alarms and expressing concerns, they monitor continuously for early

warning signs and they are geared up to automatically respond to trouble. If that sounds like a whole different culture from the one you inhabit in your work, it might well be.

David Hornsby, the CEO of Nottingham-based governance, risk and compliance software specialist Ideagen, provides technology to help organisations behave with greater social and financial responsibility and his customers include the likes of KLM, the UK Rail Safety and Standards Board, Heineken and the NHS. “We talk about operational maturity,” he said. “Our job is to provide the software tools and the expertise to help our customers become more mature — and I would define that as having a technologically enabled culture of accountability and a more organised approach to ethical behaviour overall. Our customers are the companies trying hardest to accomplish this. In order to behave diligently and ethically, managers and staff need better tools to combat the natural obfuscation of complexity and the pell-mell speed of modern work. Just because you’re not aware of a problem does not mean that it isn’t your responsibility. That’s a different mindset. We work with those who want to protect the public and their own people as well as their finances and reputations from the threat of unforeseen, improbable yet catastrophic events. The payoff is that doing so makes them more efficient: safety and efficiency are two sides of the same coin. Anyone who’s ever tripped over in an untidy workshop knows that.”

How then do we prevent recurrence of child protection failures in local government, NHS disasters like Mid Staffordshire, and unaccountability and negligence on the part of organisations that can unwittingly inflict harm? Risk management software and systems may be part of the answer, but certainly the concept of maturity is fundamental: behaving like a grown-up and being responsible for your actions, or lack of action. Leaders must make the effort to ensure that they have visibility of emerging risks: it’s no longer acceptable to be told about a problem after the fact and respond with public, pious regret. Leaders must provide simple reporting tools for staff to raise concerns early on the slippery slope, and they need to be proactive in assessing and modelling risks. Perhaps being proactive about risk means never feeling comfortable again. But then surely that degree of bother is preferable to causing harm and ending up on the front pages or worse? Maybe we all need to grow up a bit and get used to it. 

**Gordon McKeown is a software marketing professional with 20 years’ experience in the industry. As Product Evangelist at Ideagen, Gordon’s job is to understand the needs of Ideagen’s customers and markets, helping to drive the company’s product and corporate brands and highlight trends emerging from industry.*

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Rotary vane pumps

Dynavac WOVP Series Oil Sealed Rotary Vane Vacuum Pumps

are suitable for industrial applications at coarse and fine vacuum. The pumps have a compact design that is reliable and durable and are simple to install, maintain and operate.

They are air cooled, so no water is required, and feature a direct drive that doesn't require belts. The range provides quiet operation and incorporates an integral exhaust filter, with air discharge that is 99.9% oil-free.

Dynapumps

www.dynapumps.com.au

Hygienic diaphragm valves

The Alfa Laval Unique DV-ST UltraPure diaphragm valve meets the requirements of most sterile and ultrahygienic processes. These compact, lightweight valves are modular in design, which enables a wide range of purpose-built configurations.

Parts of the DV-ST range are the T- and Tank-outlet valves. They are available either as machined from block or forged and welded. Using these T-Valve configurations made from forged bodies enables users to cut material and operating costs. The reduction in weight (up to 62% vs conventional block solutions) also reduces stress on the piping. Furthermore, it reduces sterilisation time, while cutting energy costs and system downtime.

The Alfa Laval Unique Diaphragm Valve Premium UltraPure (DV-P) provides more precise flow regulation and gives double the flow rate of conventional diaphragm valve designs at a given pressure drop.

The Alfa Laval DV-P minimises total cost of ownership for diaphragm valves. It cuts energy costs because of double flow rate or lower pressure drop, enabling the use of smaller feed pumps, which require less electricity to operate. Installation costs are also lower than conventional diaphragm valves due to the use of smaller pumps, valves and piping. Further savings are achieved thanks to the extended lifetime of the diaphragm, which results in longer service intervals.

Alfa Laval Pty Ltd

www.alfalaval.com.au

Compact, stainless steel scale

All models of the Astro compact scale feature a large, durable, grade 304 stainless steel pan that accommodates ingredients, powders or a weighing container. Solid, one-piece construction and a sealed keypad reduce the chance of damage from foreign materials entering the scale. The stainless steel housing can be cleaned quickly, preventing the accumulation of particles or spills.

The scales are available in three models: ASC 2001 has a capacity of 2000 g and readability of 0.1 g; ASC 4001 has a capacity of 4000 g and readability of 0.5 g; ASC 8000 has a capacity of 8000 g and readability of 1 g.

The scales are suitable for weighing recipe ingredients for small or large batches. For dietary control in healthcare facilities, individual food servings can be weighed to ensure they conform to size requirements. In foodservice and catering settings, portion measurement can help manage costs and optimise profit margins.

The scale can be operated with two AAA batteries or the included AC adapter.

Adam Equipment (SE ASIA) Pty Ltd

www.adamequipment.com.au

AC drives

Rockwell Automation has introduced a suite of drive solutions to help users reduce energy costs and increase machine uptime for assets running in high-demand applications. The drives provide harmonic mitigation, regeneration and common bus system configurations.

The TotalFORCE drive technology delivers motor control through precise, adaptive control of velocity, torque and position for electric motors.

All drives are compliant to the IEEE 519 specification and include comprehensive diagnostic and maintenance features, plus simplified start-up and installation.

The PowerFlex 755TL drive uses active, front-end technology and an internal harmonic filter to reduce harmonic distortion. The drive is available from 160 to 1250 kW.

Delivering power from 130 to 2300 kW, the PowerFlex 755TR drive includes both regenerative and harmonic mitigation solutions. The drive helps reduce energy consumption and costs by delivering energy back to the incoming supply, resulting in a more energy-efficient solution. The PowerFlex 755TM drive system allows users to build the system that fits their needs for regeneration and coordination of multiple motors in common bus configurations. To optimise their system requirements and meet power consumption needs, users can select from a series of predesigned modules with a power range from 130 to 2300 kW.

The drive solutions have predictive diagnostics to estimate and provide notification of the remaining life span of drive components, such as fans, relay contacts, power semiconductors and capacitors. Users can actively monitor parameters, such as temperature and run time, of the drive and motor to allow for preventive action if necessary.

Rockwell Automation Australia

www.rockwellautomation.com.au





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Chocolate moulding production line

Sandvik SGL has launched the SGL MCC 1500 high-capacity production line. The multilayer chocolate chips/drops moulding line offers up to three times the capacity of other systems of the same length. This is achieved by 'stacking' three depositors one above the other, with each feeding a separate cooling/solidification line within one overall unit.

Combining three production lines in one delivers a forming capacity of between 4–6 tons per hour, depending on chip size. It also allows the production of different recipes or product shapes/sizes at the same time.

Sandvik Australia Pty Ltd
www.sandvik.com

HMI with CODESYS 3

Turck's TX500 HMI PLCs are suitable for use in small to medium-size machines whose processes have to be controlled, displayed and operated locally. Each HMI is equipped with a Profinet master and EtherNet/IP scanner, as well as a Modbus TCP and Modbus RTU master. The HMIs can also be run as field devices for both Modbus protocols.

CODESYS 3 allows the lean and simple programming of the PLC and visualisation functions. The processor technology of the units provides smooth handling of computing-intensive processes such as moving image visualisations. The high-resolution TFT display with 64,000 colours enables attractive and high-performance display of graphics and animations. The front panel is protected to IP66.

Two RJ45 Ethernet ports, a serial interface for RS232 or RS485 and two USB ports are provided on the terminal side. An additional SD card slot makes it possible to expand the 128 MB internal data memory. The series is available in three variants with different display sizes and resolutions: two 16:9 displays with 7" or 13" (TX507 and TX513) diagonals and one 10" device in 4:3 format (TX510). The two smaller displays offer 800 x 400 pixels, while the large TX513 comes with 1280 x 800 pixels.

Turck Australia Pty Ltd
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All-around IP69K touch panel computer

To satisfy the stringent cleanliness requirements of industries such as food and beverage manufacturing and pharmaceuticals, Advantech has announced the release of a fully sealed IP69K rated stainless steel multi-touch panel PC.

The 21.5" widescreen IPPC-5211WS touch-panel computer is the latest model to use the Intel Celeron J1900 Quad Core 2.0 GHz Processor. Featuring iDoor Technology, a truly flat screen and multiple lockable IO ports, the PC is able to operate in a wide range of temperatures.

The stainless steel corrosion-proof chassis and SGS certified IP69K waterproofing allow the product to be cleaned using water, harsh detergents and acidic/alkaline disinfectants with temperatures of up to 80°C and pressure of up to 30 Bar. These qualities ensure that the IPPC-5211WS satisfies the sanitation requirements of food manufacturing, clinical areas and chemical or pharmaceutical laboratories.

The PC uses regular connectors and a special clip for the USB port and is waterproofed when using the optional flange adaptor, with Rittal Specification connector, which seals the IO ports from water ingress and allows the PC to be attached to foot and arm systems for added flexibility.

With an Intel HD Graphics processor, and a ratio of 16:9, the models are suitable for displaying more graphics on the screen. The flat and seamless design of the PC provides easier maintenance and avoids mis-touches, even when wearing gloves.

4 GB DDR3L SDRAM is included, and the devices can be used with a variety of Microsoft Windows operating systems and Advantech software applications such as WebAccess, Panel Express and SUSIAccess.

Advantech Australia Pty Ltd
www.advantech.net.au

Algal oil

Polaris has developed a European algal oil that is pure, natural, sustainable and vegetarian, and is also highly stable.

Omegavie DHA algae Qualitysilver 5 is produced from sustainable sources of microalgae, making it suitable for vegetarians and vegans. Algal oils rich in DHA Omega-3 are highly sensitive to oxidation, but the Polaris oil has been treated with the Qualitysilver process, making it ultrastable. This technology, specially designed for algal DHA, guards against oxidation and combats the degradation of polyunsaturated fatty acids. The oil is derived from microalgae cultivated in a controlled environment and is extracted using a natural enzymatic process with no solvents. It is then subjected to a purification process that eliminates potential traces of residual contaminants to the extent that they are undetectable. The oil is non-GMO and free from allergens and toxins. The oil is suitable for use in the dietary supplement and food markets. Applications for food include dairy products such as milk and butter, as well as bread and cereals.

Polaris

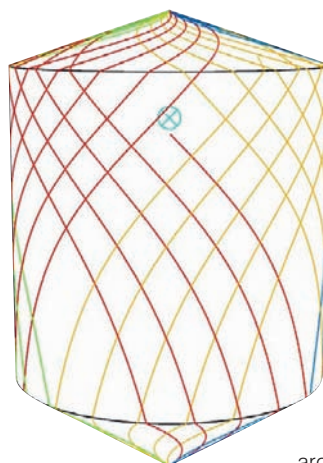
www.polaris.fr/english/

EtherCAT-based closed loop stepper drive

Motion Technologies has available an EtherCAT-based closed loop stepper drive manufactured by MOONS' Industries. The drive can operate as a standard EtherCAT slave using CANopen over EtherCAT (CoE).

Designed to work with various MOONS' step servo motors, the drives can have the stepper motor operate in torque, position and velocity mode. The drive is equipped with dual ethernet ports, (STO) safe torque off and differential encoder output. The drive configuration can be ordered with a 'Q' type programmer, allowing users to store programs with SCL commands.

Motion Technologies Pty Ltd
www.motiontech.com.au



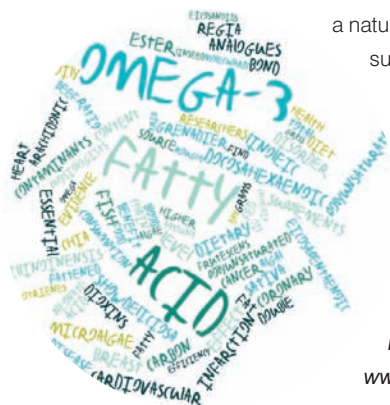
Rotary jet head cleaning

When the water jet coming from a rotary jet head cleaning device hits the tank wall, it generates a force of impact (N). After impact, the jet spreads out and creates a cleaning footprint with high wall shear stress force (Pa). As the cleaning machine is rotating in a 3D motion, the footprint is 'moving' around inside the tank in a predefined pattern and cleans the entire tank surface with high wall shear stress. The further away from the impact point, the less wall shear stress (mechanical action) is achieved.

The design of the Alfa Laval Rotary Jet Head means the first — out of eight — cleaning cycles is hitting the tank wall at an evenly dense cleaning pattern throughout the entire tank surface. The distance between the footprint tracks is relatively wide, but if the product is easy to clean off — such as milk or syrup — it only requires little wall shear stress to be removed. This means the pre-rinse cleaning of the tank is done using only one cleaning cycle, saving time, water and energy.

One cleaning cycle typically takes 1–3 min, and because the product is effectively removed from the tank wall, the jet will offset the second cleaning cycle, thereby minimising the distances between the jets. More cleaning cycles are needed for products that are harder to clean.

Alfa Laval Pty Ltd
www.alfalaval.com.au



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Continuous potato chip fryer

Florigo (from tna) has launched the conti-pro PC 3 fryer, a continuous potato chip fryer that features opti-flow technology which optimises the oil flow through the kettle, ensuring that each potato slice is evenly fried, limiting the formation of acrylamides and reducing the amount of rejects by up to 10%.

The technology is based on an oil inlet section that changes the fluid dynamics within the kettle to increase oil flow speed and produce a more streamlined laminar flow over the full width and length of the fryer pan.

The fryer technology minimises the occurrence of turbulence by removing 99% of cyclone dead spots, maintaining a nominal flow speed throughout the fryer, preventing debris from settling and ensuring that potato slices don't absorb or carry any excess oil.

Other features include a product transport system with spring steel sealing, a touchscreen operating system and an insulated hood with condensation collecting pan that can be automatically lifted. The fryer comes with a durable frying kettle with rounded corners and sloped bottom, and it is fitted with an internal CIP system with hidden pipes in the hood to aid cleaning and maintenance. The fryer can also be equipped with a double heat exchanger that enables the injection of cooler oil towards the end of the frying process and an integrated defatting belt to prevent potato slices from absorbing or carrying excess oil.

tna solutions Pty Ltd
www.tnasolutions.com

Digital sorting guidebook

Key Technology has published *The Definitive Guide to Digital Sorting for Food Processors*. The 76-page technical report offers an in-depth look at every relevant aspect of digital sorting systems, including sensors and lighting, software intelligence, mechanical configurations, performance expectations and more. It covers a range of available technologies, from the basic to the most sophisticated, and describes distinctive capabilities and functionalities.

The guide explains each element of the digital sorting system and how the elements interact as a whole, as well as discussing the variables that impact the performance of the system. It highlights the need to consider the product characteristics and production objectives of each application in selecting and maintaining a sorting system that maximises product quality, increases yields and reduces operational costs.

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Looking Forward

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Alternative to evaporation for food and beverage processors

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With applications in beverages such as fruit juices, dairy products, proteins, water treatment and any application where water is removed, forward osmosis (FO) has lots of potential in the food and beverage industry.

US company Porifera and CSIRO are collaborating to develop FO technology for food applications.

What is forward osmosis?

FO mimics water transport by plants, where fresh water is drawn by osmotic pressure into the plant through its roots in the soil.

In FO water molecules migrate by diffusion, without energy input, into a more concentrated 'draw solution'. Energy for the process is supplied by osmotic pressure difference of the two solutions.

The dynamics of FO are opposite of reverse osmosis, which requires energy to overcome the osmotic pressure difference.

FO costs significantly less to implement and operate than its main competitor technology, evaporation.

Preliminary estimates show that the capital costs of FO can be less than 70% and operating costs less than 60% of those for evaporation. As a result, FO can be installed on-farm, not just in-factory, thus also reducing transportation costs.

As the technology is based on osmotic pressure, it doesn't use heat so concentrates are of higher functionality and quality. Aroma compounds and nutritional attributes, for example,

are retained more than in evaporation, which does use heat.

- FO membranes remove salts, xenobiotics, bacteria, small organics and other contaminants.
- FO membranes are low fouling: foulants do not compact on surfaces like UF and RO (no cake layer).
- FO requires lower energy for certain processes.
- FO can recover useful products from brine or waste streams while also purifying water for re-use.

First commercial unit in Australia

The potential of the technology is being explored at CSIRO's food innovation centre in Werribee, which has the first commercial unit in Australia.

CSIRO and Porifera aim to fast-track the development of specific FO applications that meet the needs of the food industry and provide opportunities for current and new processes and products.

A range of potential product application opportunities, from on-farm applications for dairy farms, increasing efficiency in in-factory manufacturing of existing products to improving ingredient functionality for yoghurts, cheeses, flavours, heat-sensitive bioactives and more, is being investigated.

15" IP66/IP69K stainless steel panel PC

The VITAM-815 15" stainless steel HMI panel PC is a fully sealed IP66/IP69K all-in-one computer. To comply with IP66/IP69K standards the PC uses M12 sealed connectors for all I/O connections. The result is a panel PC that can withstand high-pressure hose down cleaning.

The PC is based on the Intel Celeron N2930 1.8 GHz Processor with 4 GB of DDR3L 1600 MHz memory to provide a high-performance industrial control solution. Standard I/O connections provided include USB2.0, LAN, RS232/422/485 and 9~36 VDC power. Two optional I/O connections can also be installed. An internal 2.5" HDD/SSD drive bay and SD slot are provided for storage. A Mini-PCIe slot is provided for Wi-Fi/BT cards and an RFID front panel module is also available. The 15" 1024x768 flat panel LCD screen touch panel options include resistive touch, projected capacitive touch or a no-touch glass front bezel.

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

Standard 420 nits and optional sunlight-readable 1000 nits display brightness is available. The PC supports wide-range operating temperatures from -20 to 60°C. VESA 75 mm mounting holes allow the displays to be arm- or wall-mounted. Optional ergonomic yoke mounting is also available.

Interworld Electronics and Computer Industries

www.ieci.com.au



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Secure remote access system

Belden has partnered with Secomea to develop the Hirschmann Secure Remote Access Solution, a combined hardware and software system to provide remote network access, programming and diagnostics.

The system helps companies leverage the increased connection of devices brought on by the Industrial Internet of Things, allowing users to remotely access their sites in order to troubleshoot and fix problems.

Secomea's GateManager cloud service enables users to connect their operator stations to their remote devices. LinkManager software running on PCs or mobile devices connects operator stations to the cloud. SiteManager software running on PCs or the Hirschmann GECKO connects the remote devices to the cloud.

The system provides a protected cloud system that can be set up with minimal assistance. Permanent IP addresses are not required, and there is no need to reconfigure firewalls. This enables secure access for remote programming and diagnostics without disrupting existing systems.

The system is suitable for the food and beverage, machine building and automotive industries, which often need remote access to plants and machinery around the world. Remote access reduces the need for travel and allows staff to work more efficiently by handling multiple systems simultaneously.

Belden Australia Pty Ltd

www.belden.com

Utility vortex flow meter

Emerson Automation Solutions' Rosemount 8600 Utility Vortex Flow Meter is designed for utility applications. Its application-specific design reduces installation costs, provides good flow measurement and extends vortex technology into a wider range of applications.

The flow meter delivers the benefits of vortex technology by minimising potential leak points and eliminating impulse lines. With no moving parts to repair or maintain, maintenance and downtime are reduced.

For saturated steam applications, a multivariable measurement option provides temperature-compensated mass flow output directly from the meter. Unlike traditional multivariable vortex designs, the flow meter uses an isolated temperature sensor which can be verified or replaced without breaking the process seal. Operator safety is enhanced by limiting personnel exposure to process conditions and throughput is maximised by eliminating the need to shut down the process to maintain the temperature sensor.

Emerson Automation Solutions

www.emersonprocess.com.au



Scalable MES

A manufacturing execution system (MES) allows companies to connect, manage, validate and optimise production to help achieve smart manufacturing. However, a traditional MES can be cost-prohibitive for many manufacturers.

Scalable FactoryTalk Production-Centre MES applications from Rockwell Automation address specific manufacturing challenges, like quality, machine performance, track/trace and genealogy. Solutions can start at the machine or work-area level with a single application and with minimal infrastructure requirements, and scale to an integrated MES solution as ROI is realised.

The FactoryTalk Production application addresses the challenges associated with enforcing processes in manufacturing. This application integrates with ERP, and tracks the order and recipe parameters necessary for production. The application supports end-to-end production management within a facility, offering a vital platform for continuous improvement.

The expanded FactoryTalk Quality application allows manufacturers to model and enforce their plant's in-process quality regimens at a scalable rate. The application supports a facility's efforts to deliver a timely, quality product and react quickly to quality issues. Manufacturers can use the application on a project basis and scale up when value is proven.

The FactoryTalk Performance application provides visibility into the operations performance, to allow for lean and continuous improvement, preventive manufacturing, improved asset utilisation and operational intelligence.

Each MES application is implemented on thin clients for reduced IT infrastructure cost. Users can add on each application to their current framework.

Rockwell Automation Australia

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Central vacuum systems

Dynapumps' Dynavac Central Vacuum Systems are manufactured and tested in Australia.

Multiple Pump configurations are available as stacked modules to allow for easy expansion as requirements increase. The receiver complies with AS 1210 and can be mounted in a horizontal or in a vertical position.

Dual bacterial filters can be fitted or supplied for remote installation. A second check valve, with vacuum pressure test cock, backs up the internal check valve to prevent reverse rotation. A gas ballast valve is fitted as standard to remove contaminants.

The AS 3000 electrical control panel features reliable digital vacuum transducers. The liquid-filled gauge has an isolating valve for easy replacement, while the receiver isolation valve allows for servicing of the vessel without interrupting vacuum supply. A low level oil switch indicates when oil is low, and the removable spin-off oil filter enables quick servicing. A pressure gauge indicates when filters need replacement.

Dynapumps supplies 3D drawings to ensure easy visualisation and accurate dimensioning for the installation of the finished system. Service and repairs are also available on-site or in the company workshop. The systems are designed, constructed and tested to comply with AS 2896-2011 Medical Gas System – Installation and Testing of Non Flammable Medical Gas Pipeline Systems.

Dynapumps

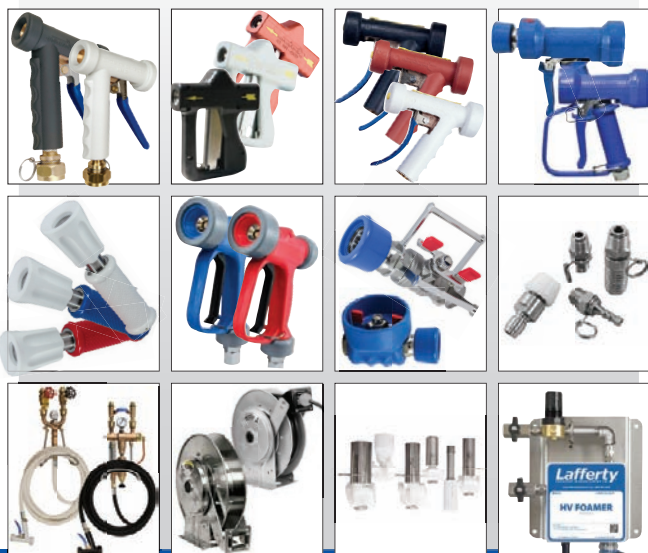
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Twin screw extruder

Coperion has completely revised its ZSK Mv PLUS twin screw extruder so it meets the highest standards of hygiene and represents an improvement in both product safety and production safety.

The core feature of the redesign is the twin screw extruder's open-base frame. It is made of stainless steel and has only smooth surfaces. Its easy accessibility reduces the effort needed for cleaning the system, so product safety and production safety are both improved. The downtime required for cleaning the machine is reduced to a minimum.

The centric pelletiser ZGF is also made of stainless steel. This includes both the pelletiser unit itself and the drive. There is no need for the cooling fins of a conventional air-cooled motor, which also reduces the cleaning effort.

Plant operators will benefit from the CSPro control system. It is based on the latest Siemens PLC S7-1500 components and, due to the integrated OPC UA interface and web interface, provides for direct access to all the plant's relevant data. The control system also complies with all Industry 4.0 standards.

Featuring durable components, the twin screw extruder is suitable for a range of users, from cereal producers to manufacturers of textured meat analogues.

The performance data of the twin screw extruder is based on a Do/Di value of 1.8 (outer to inner screw diameter). Its specific torque is 11.3 Nm/cm³ and the maximum screw speed is 1800 rpm.

Comtec IPE

www.comtecipe.com



Hygienic plastic energy chain

Igus has released a plastic energy chain designed according to hygienic design guidelines. With an open design, the chain is easy to clean, and the use of round corners and no threaded connections means that dead spaces and germ formation are avoided.

The energy chain features a blue material, which is typical for the food industry, and is FDA compliant. It is also highly resistant to aggressive cleaning agents and chemicals.

The chain can be used wherever hygiene requirements are very high and cables and hoses have to be guided safely and securely. They are suitable for packaging, as well as for food and beverage filling machines.

Treotham Automation Pty Ltd

www.treotham.com.au

Automated strapping machine

Mosca's EVOLUTION SoniXs MS-6 fully automated strapping machines come with the sealing unit positioned on the side of the machine body for easy and efficient strapping of heavy products or items transported close to the ground.

In combination with corresponding feeding mechanisms, the unit is available in Base and Pro versions to accommodate both entry-level and high-end requirements. Heat-welding technology is optional and features include a range of different frames, an optional frame with flaps in various sizes, ergonomic strap threading, advanced network functionality and an optional, automatic double-strap dispenser.

The Pro model also meets the requirements of Industry 4.0. It is fully network-compatible and enables diagnoses to be run via online remote maintenance from anywhere.

The strapping editor enables a variety of settings from package to package and allows operators to save different recipes as machine settings. Data including strap patterns, transport speed, package handling and strap tension can be stored in the machine as recipes. These factors can be manually or automatically assigned to the appropriate package, for example via network signal, making product handling more efficient.

Mosca Australia

www.mosca-australia.com



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



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Vegetarian L-cysteine

Wacker has available vegetarian- and vegan-grade L-cysteine by fermentation. It improves the handling properties of dough, such as kneadability, kneading time and manageability for industrial production.

The L-cysteine is plant-derived, kosher, halal and TSE/BSE-safe.

Wacker Chemicals

www.wacker.com

Sensors for beverage processors

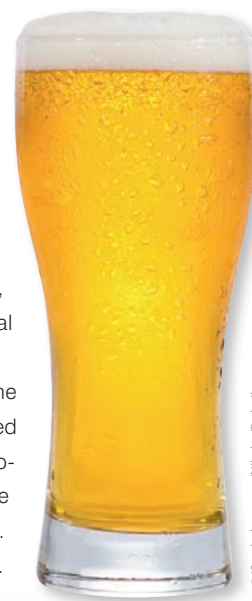
Hamilton offers a complete set of user-friendly sensors that are easy to integrate into existing beverage industry process control systems. In-line measurement and control of analytical parameters such as pH, dissolved oxygen (DO) and conductivity allow users to monitor and control the multistep processes involved in beverage production.

The EasyFerm Bio pH probes are suitable for fermentation processes, while the Polilyte Plus pH probes are designed for harsh chemical environments like wastewater treatment.

The VisiFerm is designed to measure in high-DO ranges in the brewing process, like during wort aeration. The VisiTrace is designed to measure DO in the low-ppb ranges in brewing applications, notably after filtration and before filling. The Conducell is suitable for measuring a broad range of conductivities with high linearity. A typical application is water preparation and monitoring of CIP stations.

Bio-Strategy Limited

www.bio-strategy.com



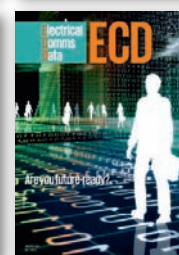
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Integrated reefer containers

Maersk Container Industry's Star Cool Integrated reefers are equipped with the latest technology to protect perishable cargo during long-distance transportation and keep energy consumption at a minimum.

Technology available in the containers includes Automatic Ventilation (AV+) and Controlled Atmosphere (CA) systems. Energy efficiency is enhanced with MCI's StarConomy software, which reduces energy costs without compromising produce quality.

Maersk Container Industry

www.mcicontainers.com

Screening liquid milk for adulterants

The B&W Tek i-Raman Plus portable Raman spectrometer can be used for screening liquid milk for reagent-less screening of milk for adulterants at the point of collection.

The 2008 adulteration of milk powder and infant formula with melamine that sickened more than 300,000 people and resulted in the deaths of three infants prompted several Fourier transform-Raman and Raman spectroscopic studies to detect melamine and other N-rich compounds such as dicyandiamide (DCD), urea and ammonium sulfate in milk powder.

The portable Raman mini-spectrometer used in this study was a B&W Tek i-Raman Plus portable Raman spectrometer with a spectral resolution of 4 cm^{-1} , a 785 nm solid state excitation laser (300 mW) and a focusing fibre-optic probe.



Raman spectroscopy provides a wealth of information as a molecular vibrational analytical tool because of the rich complexity inherent in its signals. It provides a unique fingerprint of a molecule that is sensitive to both its molecular structure and composition and thus enables identification of different polymorphs and phases of the same compound in different environments. Two particular advantages of Raman over the complementary technique of infrared spectroscopy are very low water signal and generally discrete bands, which improve the sensitivity for analysis of aqueous solutions (eg, biological fluids and milk) compared with infrared techniques.

SciTech Pty Ltd

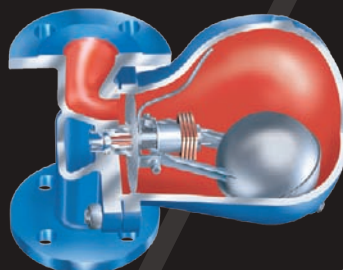
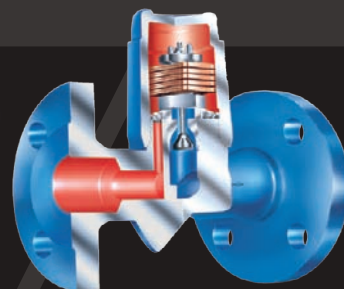
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HIGH PERFORMANCE STEAM TRAPS



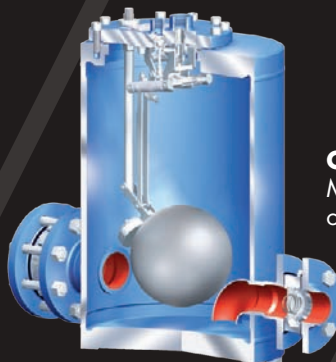
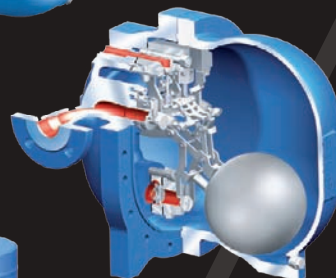
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M – Thermostatic
TD – Thermodynamic



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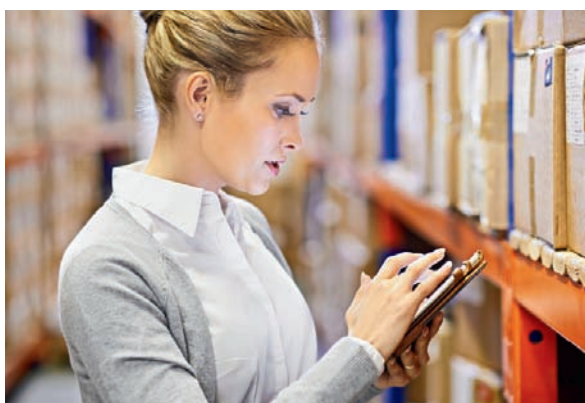
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Wine producer quenches thirst for growth



14 Degrees, the distributor arm of Rathbone Wine Group, has completed a successful implementation of Manhattan's warehouse and distribution management solution, Manhattan SCALE. The deployment is part of a business transformation project designed to deliver an enhanced service experience for 14 Degrees's customers and to drive continued business growth.

Within just a few months of the solution's deployment at its Port Melbourne distribution centre in Victoria, 14 Degrees has reported accelerated goods flows, improved on-shelf availability for customers' products, a 99.9% inventory accuracy level and a 25% gain in productivity.

Darren Rathbone, director at 14 Degrees, said, "Because of the consumable nature of the products we're distributing, it's very important to our winery customers that the location and integrity of their stock is known at all times. Our old system was unable to give us an accurate picture of enterprise inventory at any moment in time. With Manhattan we now have end-to-end visibility of all stock in real time, which means order fulfilment for our customers is faster and more accurate and we can ensure the highest quality of product at every point in the supply chain journey."

14 Degrees now has a more flexible and streamlined distribution capability for serving wineries including Yering Station, Mount Langi Ghiran and Xanadu. The versatility of the Manhattan solution has enabled 14 Degrees to expand its service capabilities beyond wine to other products requiring temperature-controlled storage and transport.

Rathbone continued, "It was very important to us that the warehouse management solution we deployed was flexible, could handle our high-volume throughput and had the required functionality to seamlessly direct inventory moves within our complex, high-density racking environment. Manhattan spent a lot of time learning about the intricacies of our business and configuring the system to match our precise requirements and those of our customers. The Manhattan team delivered the project on time and ensured everything went smoothly during and post implementation."

Manhattan SCALE solves supply chain execution challenges for organisations in a whole range of industry sectors, whilst its scalability ensures companies can comfortably handle peak demand periods as well as grow their businesses over time. With 14 Degrees looking at new distribution markets, including pharmaceuticals, the solution's agility and capacity to support companies operating in multiple industries were central to 14 Degrees's decision to deploy Manhattan SCALE. SCALE offers a user-friendly interface, is easy for staff to learn, can be deployed quickly and boasts a high degree of configurability to meet the needs of diverse businesses.

Manhattan Associates Pty Ltd
www.manh.com.au

UHT technology

DS Triple provides a range of UHT technology that aims to provide improved plant performance, reduced operational costs and leaner plant design. The range of technology available includes UHT plants for direct (infusion and injection) and indirect (plate and tubular) heat treatment of dairy products and beverages, as well as pasteurisers for dairy products and beverages and aseptic units for food production. The company also provides engineering services for UHT optimisation and equipment upgrade.

DS Triple

www.dstriple.com

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Not just peanuts — the largest food safety-related fine in history

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After admitting that it shipped contaminated Peter Pan and private label peanut butter during a 2006–2007 nationwide outbreak of salmonellosis, ConAgra Grocery Products has agreed to pay a criminal fine of \$8 million and the forfeiture of \$3.2 million of assets.

According to the US Department of Justice this fine is the largest in history for a food safety case.

In 2007, an ongoing outbreak of salmonellosis cases across the US was traced to Peter Pan and private label peanut butter produced at ConAgra Grocery Products' Sylvester, Georgia, plant. Although no deaths were related to the salmonellosis outbreak, the Centers for Disease Control and Prevention (CDC) identified more than 700 incidents of disease linked to the outbreak with illness onset dates beginning in August 2006. The CDC also estimated that thousands of other cases went unreported.

The US Food and Drug Administration and the CDC first announced in February 2007 that an ongoing outbreak of salmonellosis cases in the United States could be traced to Peter Pan and private label peanut butter produced at the company's plant. The company voluntarily terminated production at the plant on 14 February 2007 and recalled all peanut butter manufactured there since January 2004.

It has since transpired that the company was aware of *Salmonella* in samples of finished peanut butter as early as October 2004. In attempting to locate the cause of the contamination, company employees identified several potential contributing factors:

- An old peanut roaster that was not uniformly heating raw peanuts.
- A storm-damaged sugar silo.
- A leaky roof that allowed moisture into the plant.
- Airflow that could allow potential contaminants to move around the plant.

While some attempts at rectification of these problems were undertaken, all of these conditions were not corrected until after the 2006/7 salmonellosis outbreak.

This background forced ConAgra into a plea agreement with the federal court. In pleading guilty to violating the federal Food, Drug and Cosmetic Act, the company admitted that it introduced Peter Pan and private label peanut butter contaminated with *Salmonella* into interstate commerce during the salmonellosis outbreak and so accepted the largest food safety-related fine in history.



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