

July/August 2015
Vol.23 No.2

what's new in **Food** technology & manufacturing



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Are you prepared? We are!

What's New in Food Technology & Manufacturing is branching out and launching a new bimonthly magazine complete with website and weekly eNewsletter.

PREPARED FOOD will focus on the burgeoning ready meals/high-volume catering and bulk prepared meal component market.

According to a September 2014 Euromonitor report, the Australian ready meals market was worth \$1.4 billion in 2014 and is growing at 3% pa. This market is dominated by the chilled meals retailed through the major supermarket chains, but this is really only the tip of the volume meals market.

The numbers of meals distributed through health and aged care, airlines, remote location mining, schools, defence, prisons, home delivery, industry canteens... is truly staggering.

The companies and individuals preparing these meals are not simply working in domestic kitchens with a few large pots — although some started out that way. We are talking really big, professional operators.

And these businesses really want to know what is available to them to help them run their businesses more effectively and to create the best products they can as efficiently as possible.

Enter **PREPARED FOOD**

From ingredients, through preparation methods and equipment to plating, packaging and distribution, **PREPARED FOOD** will include all the latest products, methods, news and information.

If you are an Australian- or New Zealand-based decision-maker or buyer within an organisation or institution involved in planning, purchasing, preparing or delivering volume meals, this is the new information source for you. And it's free.

If you visit www.preparedfood.com.au or www.foodprocessing.com.au, you can register to receive the free magazine and/or eNewsletters.

Many readers of *What's New in Food Technology & Manufacturing* are actually making meal components wanted by the volume meals industry. If you are one these companies, please send me a press release about your product or service. Just like this magazine, **PREPARED FOOD** will be quite broad in what it includes provided it is relevant to the ready meals market.

So, regardless of whether you build commercial kitchens, produce hygiene swabs, service refrigerated vehicles or supply ingredients, cooking, processing, plating or packaging equipment and consumables, send me your press releases. And, if possible, include a high-resolution image.

There are also advertising opportunities for the magazine, website and eNewsletters available. If you are interested, please contact Steve Carberry (scarberry@westwick-farrow.com.au) or Kerrie Robinson (krobinson@westwick-farrow.com.au).

PREPARED FOOD will be launching at Fine Food Australia, which is being held from 20–23 September at Sydney Showground, Homebush. After that the magazine will be published every other month to *What's New in Food Technology & Manufacturing* and you are welcome to receive both titles.

Please don't be shy about sending any material suitable for inclusion in this new publication to me.

Janette Woodhouse
Chief editor

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Food

FOR
thought

Foodservice sales increased 5.4% in 2014

Consumer foodservice sales increased by more than 5.4% globally in 2014 with more than US\$2.7 trillion in sales, new data from Euromonitor International shows. Full-service restaurants accounted for the largest proportion of sales globally, followed by fast-food outlets and cafes/bars.

Latin America and the Middle East/Africa showed the greatest growth, with a compound annual growth rate (CAGR) of 10.7% and 9.3% respectively from 2009 to 2014. While the rest of the world is growing, sales have remained flat - or even declined - every year since 2009 in Western Europe.

China was the world's largest foodservice market in 2014, with sales of more than US\$560 billion. Euromonitor's data shows that emerging markets now account for 13 of the top 20 largest foodservice markets in value terms.

2014 was a difficult year for some large players. Both YUM! Brands and McDonald's faced sales issues in their flagship markets, creating openings for smaller local players.

Big slice of the action: Fonterra doubles mozzarella production at Clandeboyne site

How much mozzarella do you need to top 300 million pizzas a year? Rather a lot, one would imagine. Fonterra's new mozzarella plant at its Clandeboyne site is now up and running, doubling the company's production of the cheese to produce enough mozzarella for 300 million pizzas each year.

The company has seen growth in consumer and foodservice categories and the expansion of its mozzarella production will form a key part of that success in the future, according to Robert Spurway, Fonterra's managing director of global operations.

The site began 24-hour production on 14 May. Twenty-five new roles were created as part of the expansion.

"We're seeing the popularity of cheese really take off in Asia, so the timing of this upgrade couldn't be better. To meet orders from that market, we will be producing cheese 24 hours a day, making use of our new lines and taking winter milk from our farmers in Canterbury, Southland and Otago," said Clandeboyne Site Manager Steve McKnight.

As part of its wider strategy to build its foodservice business, Fonterra has not only increased its mozzarella production but also doubled cream cheese production at Te Rapa, commissioned the Waitoa UHT site and plans to expand slice-on-slice cheese capacity at Eltham.

New anti-dumping laws to "level the playing field"

The Australian Parliament has passed new anti-dumping reforms that it says will "level the playing field", enabling Australian manufacturers to compete with international businesses.

"The new measures complement earlier reforms to Australia's anti-dumping system that improve the support, assistance and information available to business," said Industry and Science Minister Ian Macfarlane.

"The new laws, paired with the new regulations the government has already introduced, will place a greater onus on overseas businesses to cooperate with anti-dumping investigations."

Changes to improve the Anti-Dumping Review Panel's powers will help reduce delaying tactics that can draw matters out, said Karen Andrews, Parliamentary Secretary for Industry and Science.

"The government won't stand idly by while some overseas companies flout the international trading system to injure Australian companies," Andrews said.

An expanded International Trade Remedies Advisory service is improving accessibility and understanding of the anti-dumping system for Australian small and medium-sized businesses. Part of AusIndustry, the new advisory service helps these businesses prepare applications for dumping and countervailing duties.



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Sensing food spoilage by smartphone

When food spoils, ethanol is released. Being able to detect the amount of ethanol in the headspace of a food package helps to determine whether the food has spoiled.

The VTT Technical Research Centre of Finland has developed a sensor that detects ethanol in food packaging headspace and is now searching for a partner in order to commercialise the sensor. VTT says the sensor has potential in other applications such as in alcometers.

Information about the product's freshness is transmitted via a sensor layer in an RFID tag to the retailer or consumer by means of a reader such as a smartphone. The data can be stored in real time in the cloud, enabling the comparison of food quality with its previous or later condition.

The sensor and RFID tag can be manufactured into a label or sticker and easily attached to a food package. This will make the price of the sensor low enough for use with food packages, VTT says.

The research centre anticipates that the sensor will enable control of food quality throughout the distribution chain, preventing waste caused by spoilage.

The sensor was developed in the European project SusFoFlex - Smart and sustainable food packaging utilizing flexible printed intelligence and materials technologies, EU 7th Framework Programme Agreement No 289829. The invention is currently in the process of being patented.

Wiley moves to larger premises as demand for food manufacturing facilities grows



Growing demand for food manufacturing facilities has led Wiley to relocate its NSW office from Sydney Olympic Park to larger premises in Rhodes. The new 350 m² Sydney office is four times the size of its previous location.

The company also relocated to larger premises in Melbourne earlier this year.

"We are strongly committed to NSW and are pleased to continue our expansion by signing a five-year lease on our new premises, which will be the base for our highly capable and diverse workforce," said Paul Maccheroni, Wiley business operations director - Sydney.

"One of the drawbacks in choosing our new location is its proximity to many food manufacturing companies, in addition to being centrally positioned among other multinational companies.

"This enables us to provide existing and new clients with even faster, more convenient and direct access to our full suite of services.

"We have also allocated a dedicated space featuring hot desks that our clients are welcome to use. This will be particularly convenient for those that don't have a home base in NSW."

Wiley's new Sydney office address is Suite 1.03, Level 1, Building C, Rhodes Corporate Park, 1 Homebush Bay Drive, Rhodes, NSW, 2138. The postal address is PO Box 3306, Rhodes, NSW, 2138.

Got (fresh) milk? Less than two in 10 consumers choose UHT milk

For most Australians, when it comes to milk, fresh is best. However, throughout Europe and Asia, UHT/long-life milk is widely consumed.

Seven out of 10 Australians (or 13.6 million people) drink fresh milk in an average seven days, while fewer than two in 10 (2.9 million people) drink UHT/long-life milk, according to data from Roy Morgan Research.

These figures have scarcely changed in the past five years, except for a negligible shift towards UHT/long-life milk - consumption rose from 14 to 15% between 2010 and 2014. Fresh milk drinkers declined from 72 to 70% over the same period and those who drink both types of milk increased from 8 to 9%.

So, who's drinking UHT milk? Consumers from older households are more likely to opt for the long-life option, while young parents are the least likely. Not surprisingly, young parents have the highest rate of fresh milk consumption (75%), while older households are below average in terms of fresh milk consumption (68%).

Of all Australian states and territories, South Australians are the keenest UHT/long-life milk drinkers, with 18% of consumers drinking UHT milk in an average seven days.



Food

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thought



Master of Food and Packaging Innovation launched

The food and packaging industries will receive a boost of specialist graduates in a few years: the University of Melbourne has launched a masters degree that aims to drive innovation in these sectors.

The Master of Food and Packaging Innovation combines food science, packaging and product design with business skills like project management and entrepreneurship.

“The Master of Food and Packaging Innovation is exciting because it helps us tackle a number of critical needs: for new answers in global demand for food; for industry-ready graduates across every sector; and for closer collaboration between universities and those on the front line of industry,” said Professor Glyn Davis, the vice-chancellor of the University of Melbourne.

“We are confident the new masters program will promote innovation and bring about even stronger engagement between the tertiary sector and the food and packaging industries.”

More information about the degree is available from www.fvas.unimelb.edu.au/study/courses/master-of-food-and-packaging-innovation/overview.



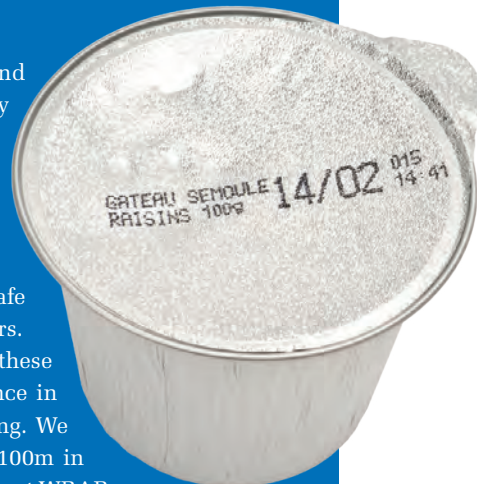
One extra day of shelf life equals 250,000 tonnes of food waste prevented

Increasing the shelf life of certain foods by just one extra day could prevent around 250,000 tonnes of food going to waste each year, according to British sustainability organisation WRAP.

The theory is outlined in a report: Reducing food waste by extending product life. In writing the report, WRAP assessed the amount of product life available to consumers on-shelf and reviewed how product life codes such as ‘use by’ and ‘best before’ dates are currently set by retailers, brands and food manufacturers.

From this assessment, WRAP has identified opportunities to make simple and safe changes throughout the supply chain that will pass on more product life to consumers.

“The findings in our report are a real opportunity for industry. By implementing these simple recommendations, food manufacturers and retailers can make a big difference in the battle against food waste, without even having to change products and packaging. We estimate that shoppers could save upwards of £500m and businesses could save £100m in waste prevention alone,” said Dr Richard Swannell, director of sustainable food systems at WRAP.



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The new cool: magnetocaloric material to change the way we chill

Physicists have discovered a breakthrough new material that could revolutionise the cooling industry, including food refrigeration and air conditioning. Louisiana State University (LSU) physicists have discovered a magnetocaloric material that could change how we create cool temperatures.

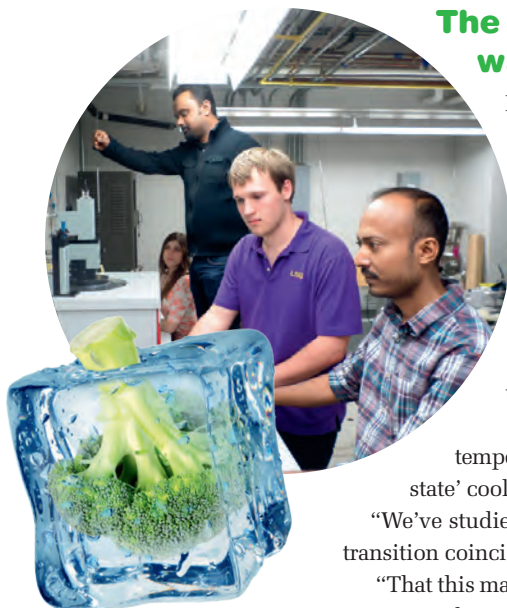
LSU Physics Professor Shane Stadler’s research focuses on the next generation of magnetic cooling technologies, which are reportedly simpler in design, quieter and more environmentally friendly than conventional compressed-gas systems.

Here’s how the material works: A magnetic field magnetically orders the material at ambient temperature, raising its temperature above ambient. The excess heat is removed through a thermal medium, such as water or air, bringing the material back to ambient temperature.

When the magnetic field is removed, the material becomes magnetically disordered and its temperature drops below ambient temperature, creating a cooling effect. According to Stadler, this ‘solid state’ cooling process is far more energy efficient than compressed gas systems currently on the market.

“We’ve studied these systems for a long time and were fortunate to discover a system in which a magnetic transition coincided in temperature with a structural transition,” Stadler said.

“That this magnetostructural transition occurs near room temperature is what makes it a strong candidate for magnetocaloric cooling devices of the future.”



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The latest innovations in automation, control and instrumentation in food and beverage manufacturing

Do you want your food or beverage plant to take advantage of the latest innovations in automation, control and instrumentation? Do you know what these innovations are?

You can find the answer to these questions by attending the ACI Connect conference and expo, which is being held at Sydney Olympic Park on 12-13 August 2015.

One feature of the conference program will be Engineers Australia's inaugural **Future Tech Forum**. Here, Engineers Australia technical experts will give presentations on emerging technology advances across the automation, control and instrumentation sector.


The **Future Tech Forum** will take place on day two of the event (13 August) and will feature sessions on Asset Management, Process Safety, Cyber Security, Big Data, M2M and Healthy Infrastructure. Engineers Australia Sydney General Manager Steve Finlay believes ACI Connect is an ideal platform for EA to present technical papers on the impact that technology is having on the engineering sector, with particular relevance to automation and control. "Engineers Australia is pleased to partner with ACI Connect at this important industry event and we trust that the Future Tech Forum will bring added value to all who attend the ACI Connect conference," Finlay commented.

Westwick-Farrow Media MD Geoff Hird (organiser of ACI Connect) added, "We are excited to have Engineers Australia

on the program as they are the pre-eminent end-user industry body and will bring credibility, experience and marketing impact to the second running of ACI Connect. With the recent dip in manufacturing and mining, it is also important at this time to focus on growth sectors like energy, infrastructure and water - all areas of opportunity for automation, control and instrumentation in NSW in the year ahead."

The initial program for the Future Tech Forum is now available at www.ACIconnect.com.au. The event also features keynotes on IoT, niche manufacturing and asset management from IBM, Siemens and Aurecon, plus the industrial networks-focused Future Networks Forum on day one, and two days of tech minilab workshops presented by IDC Technologies.

ACI Connect is not only supported and endorsed by Engineers Australia, other leading bodies are also backing the event, including the Institute of Instrumentation, Control & Automation (IICA), IChemE, Profibus Australia, FieldComm Group, ODVA and EtherCat Technology Group.

Limited sponsor and exhibitor opportunities are still available and early-bird conference discounts are now open. 

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Expect the unexpected

Why food safety depends on staying one step ahead

"I don't think most people are aware of the amount of work that goes into ensuring that the food they eat is safe," said John O'Brien, Head of the Food Safety and Integrity Research Programme at Nestlé's international research centre. "It's only when something goes wrong that they sit up and take notice."

Things went badly wrong in Japan in March 2011, when the country was hit by the devastating earthquake and tsunami that destabilised its nuclear power station in Fukushima.

"The earthquake happened on a Friday and by Monday it was clear there was a serious nuclear emergency," said O'Brien.

"Immediately, we ordered radiometric equipment and deployed new methods and tools in our manufacturing facilities near the affected area to monitor for radioactivity.

"Within two weeks we were able to operate what we call a 'positive release system', meaning our products were safe for consumption and could leave the factory."

Contingency planning

The ability to react quickly to unforeseen events is a vital part of ensuring food safety.

It's why Nestlé keeps gamma counters in strategic locations around the world.

"We don't use them all routinely," says John. "We have them ready in case of a crisis."

Radioactive contamination is an extreme example of the kind of accident that can happen in the food chain. The everyday dangers are much closer to home.

Basic rules

More often than not, foodborne illnesses arise from a failure to follow basic hygiene rules when preparing raw, unpackaged products.

"Let's say someone is preparing uncooked chicken in their kitchen," said John. "They handle it, they touch surfaces and they make other food without washing their hands.

"Then they get sick. Not from the chicken, but from the food they cross-contaminated.

"We have to educate people across the supply chain, including consumers, about the risks, and about how they can help themselves and others.

"As an industry, we have a responsibility to address the incidence of foodborne infection."

Vulnerable populations

The World Health Organization estimates that food and waterborne diarrhoeal diseases kill about 2 million people annually, mostly in developing countries.

In reality the figure could be much higher, as foodborne infections are largely under-reported.

Common foodborne pathogens include *Listeria*, *E.coli* and *Salmonella*. They take advantage of weak immune systems,

especially those of infants, the infirm, pregnant women and the elderly.

As the size of some of these more vulnerable populations continues to increase, the number of people at greatest risk of infection is expanding.

To cope with the consequences of these changing demographics, O'Brien said food companies must constantly improve their procedures.

"It's not enough to do the same as we did before. Safety is never static. Expectations are always changing, regulations are changing and our knowledge is changing."

Emerging risks

In 2013, Nestlé opened the most advanced laboratories of their kind in the industry to study foodborne pathogens.

The labs have a high level of 'bio-containment', with sealed areas restricted to trained personnel who must wear protective clothing and follow strict hygiene procedures.

"We built the labs because we recognise that there are emerging risks," O'Brien explained.

"Pathogenic *E.coli* were not really an issue in previous decades. They were probably always there, but we just didn't have the technology to identify them."

Although advances in science help food safety experts to combat harmful microorganisms, new methods or ways of working can pose their own challenges.

"As we've become more skilled at taking bacteria out, we've had to put more rigorous measures in place to prevent the possibility of anything getting back in," O'Brien continued.

"In the past, *E.coli* would have had to compete with other bacteria present in a food; today, food is decontaminated during processing, but if it's re-contaminated by a pathogen, that pathogen can grow unchecked."

Stringent controls

Nestlé uses highly sophisticated technology to rapidly test for a wide range of microorganisms and substances that are harmful to human health.

The company does more food testing than any other entity in the world, carrying out 100 million tests a year on its products, including 1.5 million for *Salmonella* alone.

But as O'Brien pointed out, Nestlé doesn't test a product to check that it's safe. It does so to verify that it is.

"We have so many stringent, in-built controls to guarantee safety, from raw material selection through to processing and packaging, that by the time we reach the test result, we're already extremely confident that the product is safe."

Over the years, the industry approach to food safety has moved from looking for defects in finished products to trying to identify their root cause as early as possible in the supply chain.

"We want to know if there's a problem, where it's coming from, if we understand it and how we can prevent it," said John.

Complex chain

Nestlé has an early warning system to help it pinpoint signals that may develop into issues.

"The earlier you identify a potential risk, the more chance you have of controlling it," said O'Brien.



I don't think most people are aware of the amount of work that goes into ensuring that the food they eat is safe.



But control is not always easy in the long, complex supply chains of international food trade.

"If someone is committing food fraud by adulterating a product, it might not make the product unsafe, but it compromises its integrity, and that's unacceptable.

"We've helped to develop genetic screening techniques for meat and fish that tackle 20 or more species at a time, so we can be sure a product is what it's supposed to be."

Meeting expectations

As recent cases of food fraud in Europe have shown, food safety issues are not only about actual risk, but also the perception of risk.

"Consumers rightly expect that the product they buy is safe to eat and contains what it says on the label," said O'Brien.

"But they also expect fewer preservatives on that label. It's a challenge and we must rise to it."

As well as developing improved processes, he thinks industry needs to do a better job of explaining the advantages of its existing ones.

"We are seeing some consumer resistance to new food technologies that are perfectly safe, and to other, more established techniques, which have had public health benefits.

"Take pasteurisation, which can be used to kill dangerous pathogens in milk.

"Before the widespread introduction of pasteurisation, milk was a common source of bacteria that caused deadly bovine tuberculosis and other foodborne illnesses.

"Some people believe food processing itself is a bad thing, but we're all alive today because of it. This is the reality."



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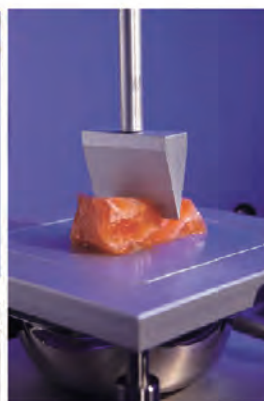
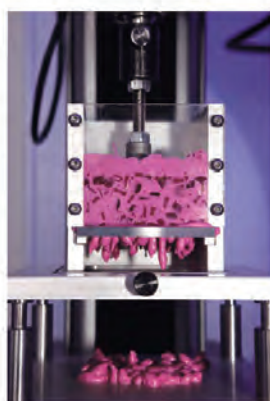
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compression, shear,
extrusion, puncture,
hardness forces



Bench-mounted analyser

Michell Instruments' XGA301 bench-mounted analyser can be configured to use either zirconia oxide or electrochemical cells to measure oxygen and/or infrared technology to measure other gases such as carbon dioxide, methane and carbon monoxide. Optional moisture measurements are also available with Michell's Easidew Ceramic Impedance sensors for moisture content (ppm) or dewpoint temperature. For further flexibility, any two of these measurement cells can be combined in one unit.

The analyser is suitable for applications where both oxygen and moisture measurements are required. The different types of sensing cell available mean a wide variety of applications can be addressed by instrument, including laboratory testing, leaks in glove boxes, testing the purity of inert gases and other research experiments. The unit is also suitable for use in industry for applications such as reflow oven monitoring, nitrogen generation and food production.

The analyser has options including an internal sample pump and flame arrestor, and has an intuitive menu structure.

AMS Instrumentation & Calibration Pty Ltd

www.ams-ic.com.au



Miniaturised photoelectric sensors

Balluff has developed miniaturised MICROmote photoelectric sensors with a separate electronic processor unit. The sensors provide a large amount of optical performance in a tiny amount of space due to the miniaturised LEDs, photodiodes and phototransistors.

The sensors are suitable in small installation spaces and on moving machine parts and robot grippers, where low weight is necessary.

The sensors integrated into the metal housing are operated with a separate amplifier, which can be positioned outside of the action area. Flexible electrical cables provide secure transmission of the sensor signals between the sensor head and the amplifier. In this way, the sensors are also a technical alternative to fibre optics. The amplifier features ergonomic indicators and operating elements.

The photoelectric sensor heads have dimensions of just a few mm and are suitable for a range of applications, including position detection of small parts, identification and counting of objects or detecting the filling levels of foaming liquids.

The range includes diffuse sensors, through-beam sensors, high-vacuum sensors, fork sensors and precision hose sensors.

Balluff Pty Ltd

www.balluff.com.au

Ultrasonic flowmeter for superheated steam

Krohne OPTISONIC 8300 is a dedicated ultrasonic flowmeter for the measurement of superheated steam. The 2-beam flowmeter has a measuring accuracy of 1%, high repeatability and a large dynamic measuring range. Typical applications include boiler and plant efficiency monitoring in power plants, energy balancing or intercompany steam billing.

The flowmeter features a full-bore flow sensor without moving parts or obstructions, and a robust construction with no cables or sensitive parts exposed. It can uphold its measuring accuracy without maintenance or subsequent calibration for up to 20 years.

With nominal sizes ranging from DN 100 to 1000, the flowmeter is particularly suited to high flow rates. Pressure rating up to 200 bar and temperature rating up to 540°C are available. With temperature and pressure sensors connected to the device, the integrated flow computer can calculate steam mass flow.

Krohne Australia

www.krohne.com



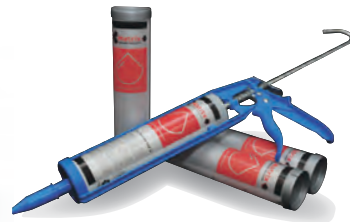


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At Work Software has released its four latest software products - Audits At Work, Chem At Work, Risk At Work and Training At Work - plus an updated version of its OHS At Work software.

Audits At Work enables facilities to manage, undertake and report on all types of internal and external audits (whether operational, chemical, financial, etc) and ensure that follow-up actions are completed.

Chem At Work allows the user to maintain a chemical register, assess risk levels, keep safety data sheets (SDS) up to date and give all staff access to the SDSs relevant to them.

Risk At Work enables facilities to manage, analyse and report on all types of risk (whether WHS, environment, chemical, financial, operational, reputational, etc).

Training At Work enables facilities to manage and report on the training of personnel, the certifications and licences they hold and the competencies they have achieved. It provides reminders for training events and for required certification/competency renewals.

OHS At Work enables facilities to manage, analyse and report on workplace audits and inspections; all types of risks and hazards; chemicals; incidents and any corresponding workers compensation claims; corrective actions; rehabilitation; health and medical details; training, certification and competency.

All the features of Audits At Work, Chem At Work, Risk At Work and Training At Work are also in OHS At Work.

At Work Software Pty Ltd

www.atworksoftware.com



Lubrication systems

LubePro series pumps offer a robust solution where high output and fast lubrication cycles and flow rates are needed to optimally lubricate equipment while it's working.

By automatically providing the optimal amount of lubrication at the right time, LubePro pumps can extend equipment life, improve productivity and employee safety, and reduce downtime, repair costs and operating costs.

Both the LubePro Vertical and Horizontal pumps feature high-strength, shatter-resistant reservoirs and integrated self-venting pumps that automatically and reliably relieve pressure on the return stroke with no pressure switch or wiring required.

The Horizontal pump cycles and vents lubricate injectors in as little as 10 s, applying 36 mL of grease per stroke and 49 mL of oil per stroke. The Vertical pump also cycles in 10 s and applies 25 mL of oil.

Running on pneumatic power, the units can be easily installed into existing air lines.

Graco Australia Pty Ltd

www.graco.com



Hose reel safety booklet

A common misconception in industry is that a standard spring rewind reel is safe as it solves the problem of tripping hazards. However, tripping on a hose is not the only hose hazard in the workplace. Uncontrolled rewind speed is a cause of damage to employees and equipment, and is an inherent disadvantage in standard spring reels, regardless of the quality of the spring.

Reel Tech, a hose and cable reel company with over 20 years' experience in reel innovations and improvements, has designed the Safe-R-Reel to address this industry problem with a solution engineered and manufactured in Australia. If an operator releases the hose, Safe-R-Reel prevents damage to employees and equipment, by producing a controlled and safer rewind speed.

Many conventional reel springs are housed internal to the reel drum body, making servicing impossible without completely dismantling the reel. The Safe-R-Reel's spring system is enclosed externally and easy to service.

Safe-R-Reel is easy to fit to new or existing spring rewind reels. Optioned in full stainless steel, the reel is a robust, hygienic, safe upgrade for all dairy, food and beverage production and processing plants.

Reel Tech has identified 10 hose reel hazards, including rewind speed, to include in your safety risk assessment, and has released its booklet, "10 facts of hose reel safety". Request your copy of the booklet for more information on rewind speed and other hazards such as plastic reels shattering in food production.

Spray Nozzle Engineering

www.sprayingsolutions.com.au



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Eductor mixing nozzle

Inherently clog resistant, the Bete TurboMix eductor nozzle, available from Spray Nozzle Engineering, provides an effective, economical solution for circulating liquids in closed or open tanks.

TurboMix nozzles are suitable for: clearing sludge; preventing sediment; creating movement in liquid; agitation for particle suspension; general mixing; breaking up a grease layer; creating movement in fire protection water storage tanks. The nozzles can be used to inject and mix chlorine, water additives, chemicals, acids, paint, coatings, platings, phosphate, dyes, pulp, fertilisers and slurries.

Many applications require that immiscible liquids be kept mixed or solids kept suspended to prevent bacteria growth and stratification by temperature. The nozzles can be used to agitate a combined fluid, if the mixture has many solids that are lighter or heavier than the liquid, has liquids of two different densities or has mixtures of oil- and water-based compounds. In large water towers, thermal stratification of the water can lead to poor water quality and inaccurate sampling. Several TurboMix nozzles can mitigate thermal stratification by keeping the water moving at all times.

The induction effect through the nozzle achieves greater mixing efficiency using smaller pumping capacity than mechanical mixing methods, with discharge plumes combining motive and entrained liquid. Only a pump and submerged TurboMix nozzle is required to reduce system complexity, capital cost and energy use. As there are no moving parts, the nozzles are durable and virtually maintenance-free.

Standard materials for the TurboMix eductor nozzles are brass, 316 stainless steel, carbon steel and glass-filled polypropylene (plastic), with many material options available from Bete's in-house foundry.

Spray Nozzle Engineering

www.sprayingsolutions.com.au



On-site containerised food waste to energy

The Flexibuster is a self-contained anaerobic digester, designed to process food and organic waste on-site, saving on waste disposal costs and producing energy.

Manufactured by UK-based company SEab Energy, and available in Australia from In2itive Sustainability, the system's modular design means it can be configured to suit food producers, the retail supply chain and hospital-ity installations with process waste of between 200 and 1000 t/pa.

The system converts waste into biogas, which is used to generate electricity and heat. It is designed to continuously produce between 8 and 55 kW of electricity, via a combined heat and power unit (CHP) or a gas turbine, which can be used on-site or sold back to the grid, providing enough energy to power up to the equivalent of ~40 average homes and reducing CO₂e emissions by up to 1000 tonnes.

Designed as a turnkey solution to food industry waste, the anaerobic digester provides the user with automated operation and remote management capabilities.

In2itive Sustainability

www.in2itive.net.au

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What a sound idea:

large-scale acoustic separation of milk fat

Australian researchers have demonstrated milk fat separation using ultrasonics as the separation technique on a large scale for the first time.

Using ultrasonic standing waves, a technique once limited to small-scale settings, Swinburne University of Technology and CSIRO scientists have jointly demonstrated cream separation from natural whole milk at litre scales for the first time. This fast and non-destructive separation technique has potential industrial dairy applications.

The researchers reported the key design and effective operating parameters for milk fat separation in batch and continuous systems at the 169th Meeting of the Acoustical Society of America (ASA).

The project, co-funded by the Geoffrey-Gardiner Dairy Foundation and the Australian Research Council, has established a proven ultrasound technique to separate fat globules from milk with high volume throughputs up to 30 L/h, opening doors for processing dairy and biomedical particulates on an industrial scale.

“We have successfully established operating conditions and design limitations for the separation of fat from natural whole milk in an ultrasonic litre-scale system,” said Thomas Leong, an ultrasound engineer and a postdoctoral researcher from the Faculty of Science, Engineering and Technology at the Swinburne University of Technology. “By tuning system parameters according to acoustic fundamentals, the technique can be used to specifically select milk fat globules of different sizes in the collected fractions, achieving fractionation outcomes desired for a particular dairy product.”

The ultrasonic separation technique

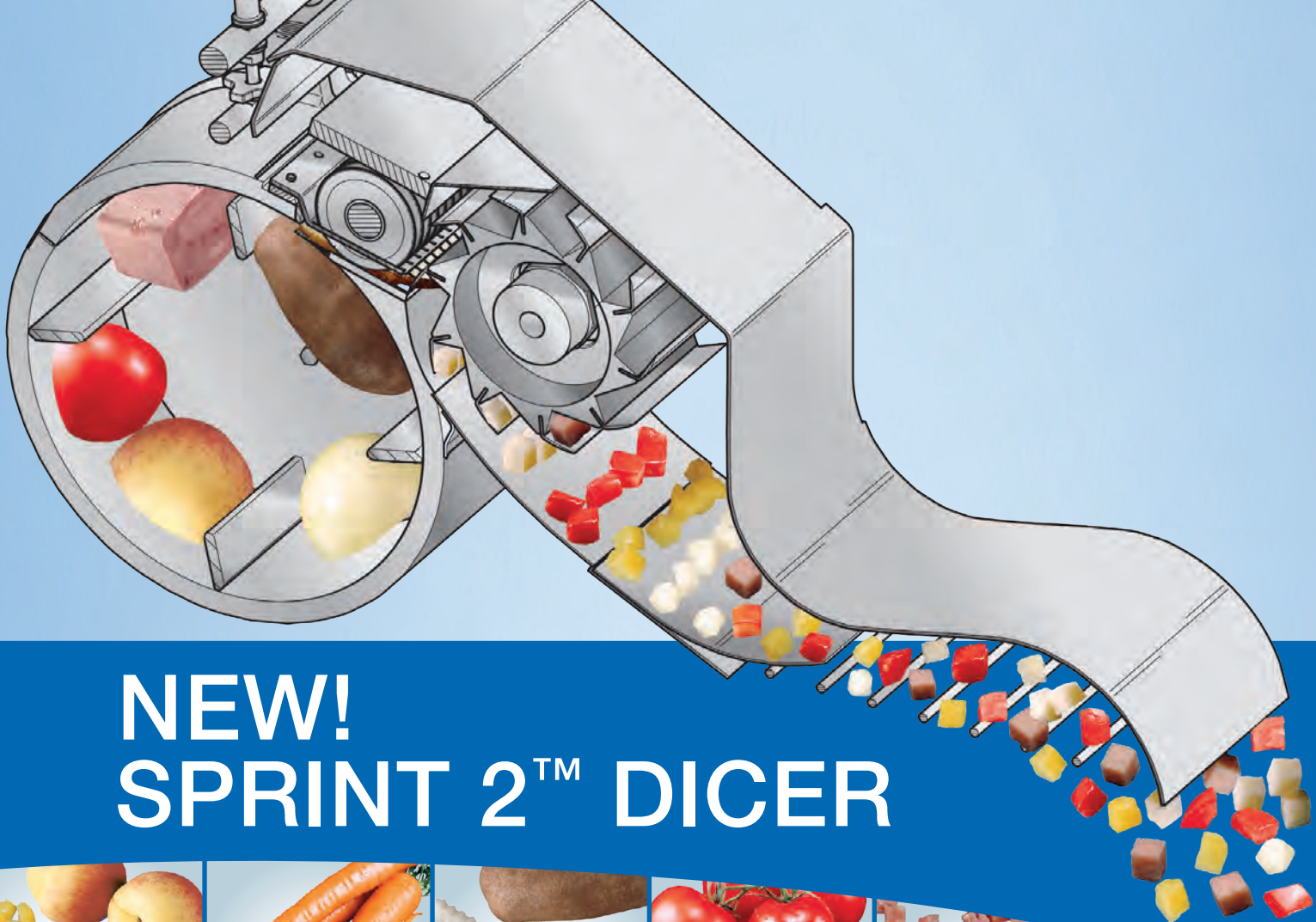
According to Leong, when a sound wave is reflected on itself, the reflected wave can superimpose over the original waves to form an acoustic standing wave. Such waves are characterised by regions of minimum local pressure, where destructive interference occurs at pressure nodes, and regions of high local pressure, where constructive superimposition occurs at pressure antinodes.

When an acoustic standing wave field is sustained in a liquid containing particles, the wave will interact with particles and produce what is known as the primary acoustic radiation force. This force acts on the particles, causing them to move towards either the node or antinode of the standing wave, depending on their density. Positioned thus, the individual particles will then rapidly aggregate into larger entities at the nodes or antinodes.

To date, ultrasonic separation has been mostly applied to small-scale settings, such as microfluidic devices for biomedical applications. Few demonstrations are on volume scale relevant to industrial application, due to the attenuation of acoustic radiation forces over large distances.

Acoustic separation of milk fat globules at litre scales

To remedy this, Leong and his colleagues have designed a system consisting of two fully submersible plate transducers placed on either end of a length-tunable, rectangular reaction vessel that can hold up to two litres of milk.



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The SPRINT 2 Dicer produces a wide variety of dices, granulations, slices, and strips of vegetables, fruits, bakery products, meats, and seafood. The cutting principle is based on the DiversaCut Sprint technology turned at an adjusted angle. The SPRINT 2 also offers an optional stainless steel 3 HP (2.2 kW) motor with VFD (variable frequency drive) that offers more power than the DiversaCut Sprint or the standard Model G-A.



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This fast and non-destructive separation technique has potential industrial dairy applications.

For single-plate operation, one of the plates produces one- or two-megahertz ultrasound waves, while the other plate acts as a reflector. For dual-plate operation, both plates were switched on simultaneously, providing greater power to the system and increasing the acoustic radiation forces sustained.

To establish the optimal operation conditions, the researchers tested various design parameters such as power input level, process time, transducer-reflector distance and single or dual transducer set-ups etc.

They found that ultrasound separation makes the top streams of the milk contain a greater concentration of large fat globules (cream) and the bottom streams more small fat globules (skimmed milk), compared to conventional methods.

“These streams can be further fractionated to obtain smaller and larger sized fat globules, which can be used to produce novel dairy products with enhanced properties,” Leong said, as dairy studies suggested that cheeses made from milk with a higher portion of small fat globules have superior taste and texture, while milk or cream with more large fat globules can lead to tastier butter.

Leong said the ultrasonic separation process only takes about 10 to 20 minutes on a litre scale - much faster than traditional methods of natural fat sedimentation and buoyancy processing, commonly used today for the manufacture of Parmesan cheeses in Northern Italy, which can take more than six hours.

The researchers’ next step is to work with small cheese-makers to demonstrate the efficacy of the technique in cheese production.



Foreign matter capturing system

In the manufacturing environment, forklift tyres, trolleys and

boots can transport contaminants into the factory, introducing dirt and potential pathogens. To counter this potential hazard, FMCG Industry Solutions has released Profilgate, a foreign matter capturing system that actively captures metal, glass, sand, soil and dust fragments from tyres and boots every time they travel over it.

Suitable areas for use include entrances into and out of warehouses, production areas, processing areas, maintenance departments and other high-risk areas, to reduce the risk of product contamination and potential recalls.

The brush system is activated by the weight of a forklift as it travels across the metal grid and removes contaminants from the tyres, trapping them in a stainless steel capture tray. The brushes have been developed with the optimal hardness, angle and height to actively capture metal, glass and soil from staff safety shoes, trolley wheels and forklift tyres. It requires no power, little maintenance and is certified for weights of up to 10 tonnes.

Once installed, the system requires foreign matter collected in the tray to be removed once a month. A wet version is also available that cleans and sanitises tyres and shoes.

FMCG Industry Solutions Pty Ltd
www.fmcgis.com.au

Protocol conversion software

Control Logic has available Red Lion’s Crimson 3.0 software that provides communication support for more than 300 industrial protocols. Protocol conversion is a key element needed to make the concept of the Connected Factory a reality, empowering plant managers to adapt existing equipment including drives, PLCs and HMIs to drive efficiency while reducing total cost of ownership in industrial environments.

The software enables communications between hundreds of disparate devices and protocols in both a cost-effective and time-effective manner, and also assists with quicker project deployment, better asset utilisation and a greater number of devices actively communicating.

With just a few clicks, the software converts protocols for disparate industrial devices, allowing them to share work-in-process, machine status and other information. Supporting the simultaneous conversion of multiple protocols, the use of Crimson-enabled products allows companies to easily integrate almost any PLC, PC or SCADA system for data collection, monitoring and control of factory floor equipment from different manufacturers.

Control Logic Pty Ltd
www.control-logic.com.au

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Versatile sensors multitask in German brewery

The Warsteiner Group is one of the leading private brewers in Germany, a family-run business that includes 120 companies worldwide. At the heart of the group is Warsteiner Brauerei Haus Cramer, founded in 1753 in Warstein, western Germany. Here, up to 4000 pallets are moved and 200 trucks dispatched every day.

When selecting sensors for the various inspection tasks within the busy facility, Warsteiner was attracted by the versatility of the BVS-E vision sensors from Balluff. The brewery now uses the sensors after the filling process during a 100% inspection for the presence of labels on kegs, the proper text on bottle labels as well as the quality of six-pack cluster packages.

Checking markings at a high pace

On the bottling lines for 0.5 L bottles, the vision sensor is used to inspect each bottle with the 'edge counting' tool, to ensure the best-before date is present.

As many as 55,000 bottles pass through the system every hour, leaving a processing time of 25 ms per inspection at 16 bottles/s.

If an error occurs, such as the marking is missing on the label, the sensor outputs a signal. When the faulty bottle reaches a pusher, it is separated from the other bottles and ejected.

The sensor and light are integrated in a sealed V2A installation housing with AR-coated glass pane, which facilitates simple cleaning of the system with a large amount of water and detergents.

Presence monitoring using DataMatrix code

The sensor is also used in the labelling systems for 30 and 50 L re-usable stainless steel kegs. It checks for the presence of labels which provide information about the beer type, filling date, best-by date, batch number and lot size. The sensor reads a 2D-Matrix code which is printed on the label, facilitating a fast detection process during the filling of 1000 kegs/h.

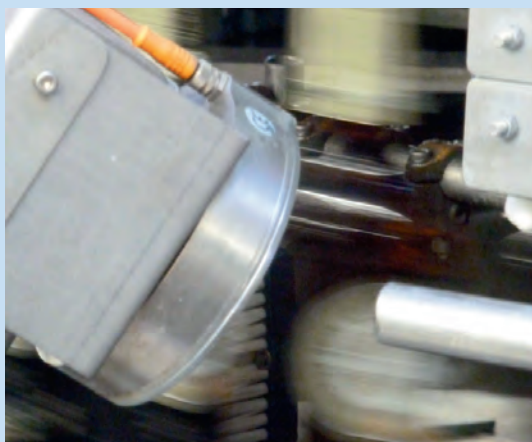
On the labelling line, as soon as a sensor reports the presence of a keg, a label is printed and affixed to the protective cap on the keg. Kegs that do not have a label are immediately rejected.

Packaging inspections made easy

After filling, groups of six bottles are clustered together to form a six-pack. The cardboard packaging consists of a carton, which is automatically pushed over the bottles from above, and three cardboard tabs, which are interlocked below the bottles to form a secure package. Warsteiner uses a Balluff vision sensor here to inspect the tight fit of all

interlocks on the bottom of the package. If even one of the interlocks is defective, the six-pack is rejected. The sensor is triggered by the edges of the six-packs as soon as they are detected by fibre-optic cables.

Balluff Pty Ltd
www.balluff.com.au



Heat exchangers

Alfa Laval FrontLine gasketed plate heat exchangers are suitable for heating and cooling in hygienic applications. Optimised gasketed plate heat exchangers enable reliable production, easy cleaning and energy-efficient operation.

A herringbone plate pattern with optimised pressing depths and plate material provides gentle, uniform heat transfer of sensitive hygienic products, including products with viscosities up to 5000 cPs, with small particles and limited fibre lengths or products that require pressure of up to 21 bar.

The distribution area ensures a uniform flow over the entire plate surface with no stagnant flow zones and less risk of fouling build-up. With increased cleaning-in-place efficiency and less fouling, the plates are easy to clean and provide longer times between cleaning cycles, ensuring more production output.

The exchangers are easy to disassemble to inspect, clean and service or to modify plate configuration. The integral glue-free gasket system is made with FDA-compliant materials which can operate at high pressures.

Alfa Laval Pty Ltd
www.alfalaval.com.au





Meat sorting machine

TOMRA Sorting Foods' Nimbus meat sorting machine is suitable for sorting various meats including bacon bits, beef jerky and individually quick frozen (IQF) meat, which is often used in salads and other dishes or as food toppings by consumers.

The sorter has been specifically designed for the meat industry as a sanitary version that is easy to clean, ensuring there are no hidden parts which meat could stick to. The sorter has an open frame design, including a special mount for optics, to prevent bacteria growth.

The machine uses a feed shaker, over which the product is spread uniformly, so a single layer progresses onto the free-fall chute. It then falls towards the inspection zone and is spread out by gravitation where it is then scanned by lasers. It detects and rejects foreign material, including bones, plastics, wood, aluminium, paper, metal pieces and burned pieces.

The Smart Sort module helps the operator to set parameters by analysing the incoming meat products. It automatically provides a program set-up that can subsequently be adjusted by the operator.

Heat and Control Pty Ltd

www.heatandcontrol.com



Eccentric Disc Pumps for enhanced product recovery

Mouvex Eccentric Disc Pumps enhance product recovery capabilities in hygienic pharmaceutical, food and beverage, and personal care/cosmetic processing operations.

The pumps, particularly the SLC, SLS and Micro C models, are suitable for optimising product-recovery applications because of their ability to pump air, which creates a vacuum effect on the pump's suction side and a compressor effect on the discharge side. This results in a plug effect that pushes a complete product 'plug' out of the piping. This enables the pumps to recover product from transfer lines at rates of more than 90% on the suction side of the pump and from 60 to 80% or more on the discharge side.

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Temperature and dewpoint meter for compressed air systems

The testo 635-2-HPD is a portable humidity meter fitted with a high-pressure dewpoint probe. It is available to rent from TechRentals.

The fitted probe has a range of -60 to +50°C t_{pd} and 0 to 100% RH. It is suitable for taking measurements in compressed air systems.

The illuminated display shows relative, absolute and degree of humidity, as well as enthalpy, temperature and dewpoint values for difference, min, max and mean.

Other features include: intuitive and practical interface; protection class IP54; storage for 10,000 measurement values; PC software for archiving and documentation of data.

TechRentals

www.techrentals.com.au

Industrial steam cleaning machines

The Jetvac and Jetsteam Force industrial steam cleaning machines can steam at temperatures of up to 190°C, allowing for a complete de-grease and sanitisation of food manufacturing equipment and surfaces.

Both models, which are available from Duplex, have stainless steel boilers with interchangeable heating elements which allow for high temperatures to be reached.

The steam cleaners are said to use significantly less water than traditional cleaning methods, allowing operators to use up to 15 L/h via a continuous direct water connection.

Duplex Cleaning Machines Pty Ltd

www.duplexcleaning.com.au

Continuous weighing conveyor

Heat and Control's WeighBack is a clean alternative to weigh belts. The horizontal-motion continuous weighing conveyor is designed for weigh-convey applications such as product delivery, seasoning applicators and inline weighing.

The product utilises multiple load cells to precisely weigh dry and frozen foods at up to 12 m/min. Load cells eliminate errors due to variations in product density. Calibration is performed with standard scale weights. A lift-off weigh pan provides access to the load cell assembly without removing the main conveyor pan.

Features include: gentle conveying; manual and auto-tare functions; no moving parts in the weighing system; displays of instant weight, product throughput and cumulative data for each hour or shift; construction for IP65 dust resistance and wet washdown.

Its FastBack drive requires no preventive maintenance and can be re-used with different pans when line layouts change.

Heat and Control Pty Ltd

www.heatandcontrol.com



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Natural antimicrobials reduce contamination levels on fresh produce

Nearly half of all foodborne illnesses are allegedly caused by contaminated fresh produce so any system that can prevent or control bacterial contamination on fresh produce will help improve food safety.

The current strategy remains industrial washing of the product in water containing chlorine. However, due to sanitiser ineffectiveness, there is an urgent need to identify alternative antimicrobials, particularly those of natural origin, for the produce industry.

A team of researchers at Wayne State University have been exploring natural, safe and alternative antimicrobials to reduce bacterial contamination. Plant essential oils such as those from thyme, oregano and clove are known to have a strong antimicrobial effect, but currently their use in food protection is limited due to their low solubility in water. The team, led by Yifan Zhang, PhD, assistant professor of nutrition and food science in the College of Liberal Arts and Sciences, explored ways to formulate oil nanoemulsions to increase the solubility and stability of essential oils and, consequently, enhance their antimicrobial activity.

"Much of the research on the antimicrobial efficacy of essential oils has been conducted using products made by mixing immiscible oils in water or phosphate buffered saline," said Zhang. "However, because of the hydrophobic nature of essential oils, organic compounds from produce may interfere with reducing the sanitising effect or duration of the effectiveness of these essential oils. Our team set out to find a new approach to inhibit these bacteria with the use of oregano oil, one of the most effective plant essential oils with antimicrobial effect."

Zhang and (then-PhD student) Kanika Bhargava, currently assistant professor of human environmental sciences at the University of Central Oklahoma, approached Sandro da Rocha, PhD, associate professor of chemical engineering and materials science in the College of Engineering at Wayne State, to explore options.

"In our research, we discovered that oregano oil was able to inhibit common foodborne bacteria, such as *E. coli* O157, *Salmonella* and *Listeria*, in artificially contaminated fresh lettuce," said Zhang.


"We wanted to explore the possibility of a nanodelivery system for the oil, which is an area of expertise of Dr da Rocha."

The team initially considered the use of solid polymeric nanoparticles for the delivery of the oil, but da Rocha suggested the use of nanoemulsions.

"My team felt the use of nanoemulsions would improve the rate of release compared to other nanoformulations and the ability of the food-grade surfactant to wet the surface of the produce," said da Rocha. "We were able to reduce *L. monocytogenes*, *S. Typhimurium* and *E. coli* O157 on fresh lettuce. Former PhD student Denise S Conti, now at the generics division of the FDA, helped design the nano-carriers and characterise them."

The team added that while there is still work to be done, their study suggests promise for the use of essential oil nanoemulsions as a natural alternative to chemicals for safety controls in produce.

"Our future research aims to investigate the antimicrobial effects of essential oil nanoemulsions in various combinations, as well as formulate the best proportions of each ingredient at the lowest possible necessary levels needed for food application, which ultimately will aid in maintaining the taste of the produce."

The study, 'Application of an oregano oil nanoemulsion to the control of foodborne bacteria on fresh lettuce', appears in the May 2015 issue of *Food Microbiology*. 



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Hidrostal pump lowers carrot cleaning costs

Produce World, the largest grower and supplier of fresh vegetables in the UK, and one of the largest in Europe, provides a wide range of conventional and organic vegetables to the major supermarket chains.

Produce World's Yaxley site deals exclusively in organic vegetables, including carrots. On arrival at the plant the carrots are off-loaded from a lorry and pre-washed using recycled wash water.

The carrots from the field, when mixed with the water, leave a very abrasive media consisting of flint, stones, sand, soil, weed and the occasional carrot!

The challenging nature of the application had previously led Produce World to choose a pump with a forgiving impeller design which can handle solids and fibrous material, but which had a greater power absorption and energy usage than other designs. The washing process was conducted on an enclosed web, open belt conveyor method.

Produce World has now switched to an open catchment design with a sloping bench arrangement to the sump area and a Hidrostal immersible pump. The boom wash system aids the movement and flushing of newly arrived field carrots off the lorry at the very start of the process into the sump. The

wash water is pumped to a rotary screened drum where most of the solids are filtered out before re-entering the boom wash system once more. This process occurs each time a lorry arrives with fresh field carrots.



In the Hidrostal Screw Centrifugal impeller, the single spiral vane impeller is axially extended creating a large free passage for solids but at the same time maintaining an optimum hydraulic design leading to high efficiencies, low shear pumping and low velocity at the pump inlet.

The Hidrostal pump has retained the desired solids handling capabilities and

has provided longevity in its operation. The pump has also ensured a reduction in maintenance costs, downtime and operational spend associated with the cleaning and maintenance of the previous open belt conveyor method.

In addition, the Hidrostal immersible pump with its 5.5 kW, 4-pole, 3-phase motor has resulted in a reduction in power consumption by 50%, compared to the previous end suction-style pump that required an 11 kW motor.

Hidrostal Ltd
www.hidrostal.co.uk



Stainless steel terminal box

The Eldon SSTB terminal box range, available from NHP, provides protection for componentry in 316 pre-grained, dairy-grade stainless steel.

The SSTB range has no pre-drilled holes and, with corner-formed edges, there are no potential points for bacteria growth. This makes the terminal boxes suitable for food and beverage, pharmaceutical, mining and water industries.

Other features of the terminal box range include: fully welded construction; 240s pre-grained dairy finish ensuring no surface pitting corrosion; IP66 and IK10 protection ratings; accessories compatible between mild steel and stainless steel ranges.

NHP Electrical Engineering Products Pty Ltd
www.nhp.com.au

Vertical anaerobic wastewater treatment

The Hydrothane high-rate anaerobic process takes organic content within wastewater and generates green energy. It is a vertical design, suitable for a limited space.

The ECSB process can typically take 1 kg of chemical oxygen demand and generate up to 0.35 m³ of methane, which can be used as an alternative fuel for boilers or, with sufficient quantities, can be converted into electricity.

The tall vertical reactors can treat flows of up to 1 megalitre per day, within a diameter of a few metres.

All odours are controlled, removing the need for odour control systems. There are no complex internals or rotating equipment requiring maintenance inside the reactor, and the overpressurised design prevents air from getting in, which prevents corrosion.

Hydroflux Pty Ltd
www.hydrofluxindustrial.com.au



Halal and Kosher certified bearing grease

Schaeffler has introduced a rolling bearing grease that is certified for use in both Halal and Kosher food processing environments.

The FAG Arcanol FOOD2 rolling bearing grease is registered to category H1 with the NSF (National Sanitation Foundation). Typical applications for the grease include filling plants, packaging and sealing machines, meat and fish processing machines, freezing systems and other plant and equipment in the food and beverage industries.

The grease maintains its flow properties in cold environments and is suitable for temperatures down to -30°C. Reduced friction is another benefit of the grease, which improves the initial run-in behaviour of the rolling bearings and reduces their power consumption. In FE8 wear protection tests (to DIN 51819), tapered rolling bearings and angular contact ball bearings that were lubricated with the grease achieved significantly better results than the previous version of the lubricant.

Schaeffler Australia Pty Ltd
www.schaeffler.com.au

Energy-efficient powder mixing

The Alfa Laval Hybrid Powder Mixer can mix and pump wet and dry ingredients into a homogenous blend using only a single motor drive, including efficient mixing in the associated production vessel, when used in combination with the Alfa Laval Rotary Jet Mixer.

The powder mixer combines pump and powder-dissolving technologies in a single unit. It is capable of drawing powder into the unit while simultaneously pumping the resulting process liquid at pressures up to 4 bar, with no need for a separate discharge pump. It pre-blends the powder and liquid before the mixture enters the high-shear stage, which contributes to faster and more effective dissolution.

The mixer creates high dynamic shear in several different steps, which require less energy to ensure complete dissolution of the powder. The mixer can also be used as part of a cleaning-in-place (CIP) system.

As the unit uses only one electric motor for powder mixing, pumping and CIP, it offers users reductions in installation costs, lower power consumption (up to 50% energy savings), simplified maintenance due to fewer components and a reduction in processing time from the fast and homogenous powder mixing at high dry matter concentration.

Alfa Laval Pty Ltd
www.alfalaval.com.au



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Electronic logbooks

Emerson Process Management's Logbooks enables operators to electronically document activity records to streamline shift changes, drive operator action and accelerate decision-making. A consistent approach to operator logs supports safety improvement efforts as well as audits and corrective action processes.

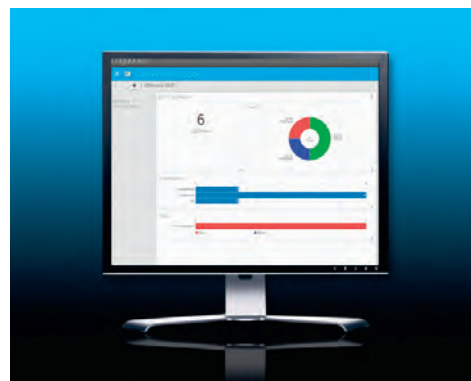
Shift handover can be a risky time for a plant; poor communication can quickly result in process upsets. Logbooks delivers a shift change dashboard that includes a shift summary and detailed information on assigned tasks. Operators can identify priorities for the new shift and access documentation of events from the previous shift, ensuring quality, safety and throughput are protected. The consolidated graphical view makes it easy to provide complete, accurate information to customers and auditors.

Automating task management ensures work is not overlooked or incomplete. With the ability to schedule tasks now, later or on a recurring basis, management can be confident that critical tasks are prioritised and important - but non-urgent - tasks like training, reviews and routine maintenance are completed and documented. Tasks are visible on the shift dashboard, so operators can easily determine criticality and plan work.

By moving to electronic logbooks, operators can establish an online knowledge base to speed up problem-solving and decision-making. Not only can operators search on text within the log entry, but they can also search on category, date/time span, related equipment and a number of other attributes.

Emerson Process Management

www.emersonprocess.com.au



Process controller with touchscreen

Watlow has released the F4T with INTUITION temperature process controller. The controller features a 4.3", capacitive colour

touch panel with high resolution and a graphical user interface. It provides intuitive navigation and screen personalisation allowing channels, alarms, inputs and outputs to be programmed with user-defined specifications.

The controller is scalable and offers a range of field-removable input/output modules, allowing the unit to be configured into multiple applications while integrating with the required hardware.

The device combines temperature PID, over/undertemperature limit, power switching, math, logic, timers and counters into one integrated system, thereby lowering ownership costs, reducing design complexity and saving wiring time and panel space.

The COMPOSER software, which connects with the controller via Ethernet, speeds up and simplifies commissioning and archives and documents controller set-up.

Other features include agency certifications such as UL, FM, CE, RoHS, W.E.E.E. and NEMA 4X/IP65 and other communications options including Ethernet Modbus TCP and SCPI and EIA 232/485 Modbus RTU.

Watlow Australia Pty Ltd

www.watlow.com

Energy resource advisor software upgraded with performance analytics function

Schneider Electric has launched Performance Analytics, a suite of functionality within its StruxureWare Resource Advisor software platform, which enables users to monitor energy and carbon markets, manage key sustainability metrics and report results to stakeholders on more than 400 types of resource streams, including utility and facility data, weather data, and water and energy usage.

The software allows users to collect, visualise and analyse near-real-time interval data from a variety of sources, in context of this enterprise-wide view of their data. It allows for data collection and integration from multiple sources, simplifying visualisation and analysis of interval data, while reducing the cost of data acquisition. Data can be obtained straight from the utility, if available, or from a variety of meter, submeter or BMS data. This enables customers to choose the most cost-effective way to develop a complete picture of their consumption, whether at the site level or across their enterprise.

Schneider Electric

www.schneider-electric.com

Combination sounder and flashing light



Pfannenberger has released the Patrol range of combination sounders and flashing lights. The sounder carries a sound level range from 100 to 120 dB with light intensity from 5 to 15 joules. It can be used up to 170 m away and holds up to 64 different tones that can be custom selected. The sounders are suitable for signalling solu-

tions including machine pre-start and fire evacuation alarms.

The range is suitable for harsh environmental conditions and features an IP66 protection rating against water and dust, as well as the IK08 rating for protection against impact such as hailstorms. Its operational temperature range is -40 to 55°C.

Control Logic Pty Ltd

www.control-logic.com.au



Slimline coded safety switch

Pilz has launched a slimline version of the PSENcode safety switch - suitable for assembly on gates, covers or flaps.

The coded safety switches are used to monitor the position of guards and also for general position monitoring. In comparison with the compact design, the slimline model has a low-profile housing (13 mm) at the same width.

Incorporating RFID transponder technology, the PSENcode switches combine maximum manipulation protection with a small space requirement. The slimline switch also enables installation on gates, covers or flaps in up to four actuation and approach directions and two different operating distances each. Its versatility offers design engineers a high degree of freedom when designing the machine to Cat 4 or PL e. So it is also possible to implement applications that were previously only realised using magnetic safety switches.

The slimline safety switches also come with a range of options such as a variety of operating ranges, a magnetic latching system that has a residual holding force and ensures the doors close exactly as positioned every time, as well as a variety of indication and diagnostic functions.

Pilz Australia Industrial Automation LP

www.pilz.com.au



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www.vega.com/vegapuls69

Looking Forward **VEGA**



Spherical roller bearings for heavy loads

Schaeffler's FAG X-life Spherical Roller Bearings offer enhanced load capacity and service life optimisation for major industrial machinery. The high-performance bearings offer up to

70% longer service life with the same loads, delivering benefits of greater efficiency and operational reliability.

The spherical roller bearings are used in applications where heavy loads have to be accommodated or where shaft deflections or misalignments of bearing seats must be compensated for.

They are suitable for harsh environmental conditions, such as gearboxes, paper machines, construction machinery and vibrating machinery.

Other features of the roller bearings include high static safety and less strain on lubricant due to less friction and lower bearing temperatures.

Schaeffler Australia Pty Ltd

www.schaeffler.com.au

Linear actuators for agricultural usage

Duff-Norton linear actuators feature load capacities ranging from 12 kg to 22 tonnes, gear or belt driven, acme screw and ball screw systems with various AC and DC input voltages.

The actuators are suitable for a variety of commercial and industrial applications, where they are used for opening and closing, tilting and pivoting, lifting and lowering, and positioning.

Applications include gates, dampers, oven and processing tank doors, antennas and agricultural equipment. Custom designs are also available for special applications. Linear actuators are now being used in place of pneumatics and hydraulics when high maintenance and environmental problems (leaking hydraulic oil) are a concern, especially to crops and livestock.

Motion Technologies Pty Ltd

www.motiontech.com.au



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Adhesives and lubricants to improve food production efficiency

Tetra Pak has launched a range of hot-melt adhesives and lubricants for use with its own filling machines.

The adhesives, developed in partnership with the adhesive producer Henkel, offer improved bonding, lower adhesive consumption and reduced maintenance costs for cap, straw and secondary packaging applications, according to the company.

The synthetic H1 Food Grade lubricants have been found during testing to last up to three times longer and have wear rates reduced by 67%, compared with conventional mineral oils. The lubricants are suitable for food manufacturing equipment and are certified by NSF International.

Tetra Pak Marketing Pty Ltd

www.tetrapak.com/au



Vision sensor for product inspections

Omron's FQ2 Vision Sensor is suitable for product inspections in a wide variety of industry sectors, including food and beverage, packaging and pharmaceutical applications.

The sensor is suitable for inspecting caps on plastic bottles to determine whether the cap is damaged, missing or is not inserted properly. It can check for the level of liquid - whether too high or low - for beverages such as fruit juice or soft drinks, and can check for scratches on metal surfaces or whether there has been any damage to labels.

The sensors are IP67 water resistant, meaning they can be used in wet environments; and as all cables from the camera are flexible, the sensor can be used safely on moving parts.

The main benefits of the sensors are reduced labour costs and increased accuracy (claimed to be between 99-99.9%).

Other features include: low maintenance requirements; good image quality and clarity based on 16.7 million colours; power LEDs; high dynamic range (HDR); polarisation and halation filters enabling stable inspections on surfaces that cannot be achieved by conventional vision sensors; fast and easy real-time parameter adjustment.

Omron Electronics Pty Ltd

www.omron.com.au

Sausage peeler

Marel Townsend Further Processing has launched the 2800 Sausage Peeler, which has a capacity of 225 m/min.

The sausage peeler accurately removes the inedible cellulose casing from cooked and chilled sausages without damaging the sausage itself. The high-capacity peeler can handle a wide variety of products, including very small sausages.

Key improvements in the latest model include the use of more durable materials; improved access for easy cleaning and maintenance; and a reduction in steam-related discomfort for operators.

Marel

www.marel.com



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DDO Spray is a 3-H approved dough divider oil, which provides good release of dough in bowls, choppers and dividers in bakery processes.

Multi Spray is an adhesive white food-grade lubricant suitable for lubrication of chains, conveyors, slides, joints, mould slides and small bearings.

DWF is a food-grade, multipurpose, penetrating lubricant with good water displacing properties, suitable for use on light loaded chains, bearings and slides in food and clean environments.

Assembly Paste is a white, non-toxic, grease-like compound with a high solids lubricant content, designed for use as an assembly lubricant.

CAS S2 SH is a food-grade, high-temp grease, which provides good mechanical stability, a high dropping point, high load carrying performance, reduced wear and resistance to water, steam and corrosion.

Grease Clear is a food-grade translucent grease which is suitable for the lubrication of a wide range of applications, including plain and rolling element bearing.

Hales Tooling Components & Industrial Supplies

www.hales.com.au

Level sensor for hygienic applications



The LR2750 level sensor from ifm efector, developed for demanding applications in the food industry, features a hygienic design and resists aggressive cleaning processes.

Various, often reflective, foams cause no irritations to the sensor, which is also equipped with an Aseptoflex Vario thread for a multitude of process adapters.

Due to the use of sealing materials such as PEEK and EPDM, as well as a high-grade stainless steel housing, the level sensor is suitable for internal and external cleaning. It has the protection rating IP69K, an enhanced pressure resistance up to 40 bar and is also rated for high medium temperatures up to 150°C, making the device resistant to operating conditions such as steam cleaning.

An optional tank adjustment ensures flexibility of the sensor. The probes can be shortened or replaced to suit different tanks. The device is suitable for smaller storage tanks, expansion tanks, separators or for filling.

ifm efector pty ltd

www.ifmefector.com

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Would you like a heart attack with that meal?

This could surely only happen in America - single restaurant-chain meals that carry enough kilojoules and sodium for several days. Every year the nutritionists at the Center for Science in the Public Interest compile the annual Xtreme Eating Awards.

The eating awards go to restaurant meals that exhibit a total disregard for public health, the obesity epidemic and the coming diabetes tsunami. Now most restaurant meals contain around 1000 calories - so these meals are not even in the race to win an Xtreme Eating Award.

This year the nutritionists found a single restaurant meal that's the nutritional equivalent of one person being served (and eating) an eight-piece bucket of KFC Original Recipe fried chicken, four sides of mashed potatoes with gravy, four pieces of corn on the cob and eight packets of buttery spread.

Red Lobster's 'Create Your Own Combination' delivers 2710 calories and four days' worth of sodium (6530 milligrams), if you choose the Parrot Isle Jumbo Coconut Shrimp, Walt's Favorite Shrimp and Shrimp Linguine Alfredo to go with the Caesar salad, French fries and one Cheddar Bay Biscuit. But wait, there's more!

Wash down that combo with the Lobsterita - the chain's trademarked 890-calorie, 24-ounce margarita - and the meal reaches 3600 calories, enough calories for today and most of tomorrow. It's the highest-calorie meal among the 2015 Xtreme Eating "dishonorees", as CSPI calls them.

"This nutritional shipwreck from Red Lobster exemplifies the kind of gargantuan restaurant meal that promotes obesity, diabetes and other diet-related diseases," said CSPI registered

dietitian Paige Einstein. "If this meal were unusual, that would be one thing, but America's chain restaurants are serving up 2000-calorie breakfasts, 2000-calorie lunches, 2000-calorie dinners and 2000-calorie desserts left and right. Abnormal is the new normal."

The full list of 'winners<0x2019>' was published in the June issue of CSPI's flagship publication, *Nutrition Action Healthletter*. Some of them include:

- IHOP's Chorizo Fiesta Omelette. On its own, the omelette, "loaded with spicy chorizo sausage, roasted peppers, onions and pepper jack cheese, then topped with a citrus chili sauce and sour cream and served with a fresh grilled serrano pepper", has 1300 calories. But it comes with three buttermilk pancakes (or hash browns, toast or fruit). With pancakes and four tablespoons of syrup, this breakfast has a day's worth of calories (1990) and two days' worth of saturated fat (42 grams).
- Dickey's Barbecue Pit's 3 Meat Plate. CSPI chose Polish sausage, pork ribs, and beef brisket and sides of fried Onion Tangles and mac and cheese, plus the free roll, pickles, onions and a 32-ounce (the only size offered) sweet tea. This chain invites diners to consume as much free soft-serve ice-cream as they want. With just one half-cup of ice-cream in a cone, this 2500-calorie meal has 49 grams of saturated fat, 4700 mg of sodium (two and

a half to three days' worth of each), plus 29 teaspoons of sugar. CSPI says it's like eating three Big Macs with five Vanilla Cones.

- Louisiana Chicken Pasta from The Cheesecake Factory is "parmesan crusted chicken served over pasta with mushrooms, peppers, and onions in a spicy New Orleans sauce". At 1½ pounds, this plate from the Xtreme Eating mainstay has 2370 calories (more than a day's worth), 80 grams of saturated fat (a four-day supply) and 2370 mg of sodium.
- A large Pineapple Upside Down Master Blast from Sonic is a 32-ounce cup filled with vanilla ice-cream, pineapple and "salted caramel and pie crust pieces" and topped with several inches of whipped cream. It has 2020 calories, 61 grams of saturated fat (three days' worth), 4½ grams of trans fat (over two days' worth) and about 29 teaspoons of added sugar. It has the calories of roughly four Dairy Queen Banana Splits.
- Steak 'n Shake's 7x7 Steakburger 'n Fries is only available from midnight to 6 am on the chain's "Up All Night" menu. The burger's seven beef patties and seven slices of cheese, plus a side of fries, totals 1570 calories and more than two days' worth of saturated fat. With a 960-calorie Chocolate Fudge Brownie Milkshake, the grand total comes to 2530 calories, 68 grams of saturated fat, more than 5000



mg of sodium and 26 teaspoons of added sugar. It's like sitting down to four 9-ounce Outback Steakhouse sirloin steaks, each topped with two half-cup scoops of Breyers Chocolate Ice Cream.

"It's not enough to have one or two patties on a burger, or one or two slices of cheese; now we're seeing seven patties and seven slices of cheese on a burger," said a CSPI nutritionist. "With our burgers getting bigger and bigger, it's no surprise that many of our waistlines are, too."

Rules finalised by the Food and Drug Administration requiring calories to be listed on chain-restaurant menus are scheduled to take effect in December. Until then, CSPI suggests avoiding extreme entrées by ordering from 'light' menus, where available.



Wireless vibration transmitter software upgrade

Emerson Process Management has introduced spectral resolution options for the CSI 9420 Wireless Vibration Transmitter that reduce bandwidth requirements and improve power module life. Data log and configuration capabilities have been added to streamline user interaction with multiple transmitters on a single gateway.

The enhancements are delivered via the release of AMS Suite: Machinery Health Manager version 5.61, Emerson's asset management software.

AMS Machinery Manager offers 'spectrum on alert' to efficiently acquire diagnostic information. Analytical data is acquired only when there is a condition alert on the machine. Users can adjust the amount of resolution captured, further reducing the bandwidth used and power required to operate the transmitter.

A data log capability delivers the operational history of each transmitter, allowing users to identify performance issues in the field.

The software integrates data from route-based, online and wireless vibration solutions, as well as third-party oil and infrared analysis data, to provide a complete picture of machinery health.

Emerson Process Management

www.emersonprocess.com.au

Maintenance request iOS app

MEX Maintenance Software has introduced the MEX Ops iOS app for maintenance requests. Used in conjunction with the MEX Maintenance Software, all submitted requests are instantly added to MEX for approval and conversion into a work order.

The app has an easy-to-use interface and allows users to attach a picture of the issue along with the request. Users enter new requests with a description of the job, take a photo and attach it to the request and add contact details. Throughout the request review stage, users can review the progress of their requests and communicate directly with MEX administrators through the app's chat function.

The app is available from the iTunes store.

MEX Pty Ltd

www.mex.com.au

Temperature controller for resistive heaters

The 5R1-001 RoHS compliant temperature controller from Oven Industries is a universal AC input proportional temperature controller for resistive heaters. The unit is designed with 1500 VAC isolation from the electronic circuitry, which virtually eliminates interference from noise or errant signals.

The software is PC programmable and requires no programming experience. Once the controller is set up, the computer may be disconnected and the controller becomes a stand-alone unit or the computer can remain connected for data acquisition. The temperature can be set through the optional display or remote potentiometer. The load circuit delivers a maximum load current of 15 A.

Other features include: RS232 communication port; set-up via operator interface or serial link GUI; non-volatile memory; set temp range determined by thermistor type; open circuit protection.

Oven Industries
www.ovenind.com

Colour enhancing spiral oven

Heat and Control has improved product browning in a spiral oven with its CEO Colour Enhancing Oven. Available in single- and twin-drum models, CEO combines controlled browning of both sides of products with uniform high-volume cooking.

The oven cooks product uniformly, wherever it is located on the conveyor belt. Hot, moisture-controlled air is evenly distributed in a 360° pattern to ensure equal and uniform heating across all tiers. Steam, dry heat or combinations of both are controlled independently to provide optimal cooking conditions for different products.

The PLC control, with easily accessible process parameters for multiple products, provides repeatable browning and cooking with fast changeovers.

Heat and Control Pty Ltd
www.heatandcontrol.com



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Nut company meets demand for quality with digital sorter

When Morada Nut Company was selecting equipment for its new state-of-the-art walnut shelling plant, it searched for a digital sorter that would help it produce the highest quality product on a consistent basis.

“We wanted to identify the tool that would serve us best in getting our product into high-end markets like Japan, Korea and Germany. We wanted to achieve the highest specifications for FM, defects and colour,” said Scott Brown, production manager at Morada.

Morada chose Key Technology’s Taurys laser sorter, which is designed to remove foreign material (FM) and defects from the product and colour sort for grading.

Taurys is a high-performance, chute-fed laser sorter. It can be configured with a wide range of detection wavelengths to sort on the colour and/or structural properties of a wide variety of nuts as well as dried fruit, frozen fruits and vegetables, fresh-cut produce, confections, coffee and snack foods.

Featuring a 1200 mm inspection zone, Taurys sorts up to 4.5 metric tons of walnuts per hour.

Morada typically runs a standard double pass through Taurys. The first pass removes shells and other FM as well as defects such as shrivelled kernels. The second pass is fine tuned to colour sort for grading purposes.

“Taurys has the flexibility to perform both types of sorts with performance at the top of the industry,” said Brown.



“It’s amazing in its ability to remove shells and other FM and colour sort. It’s a very impressive sorter.”

Taurys’s settings can be stored and retrieved for fast changeovers. The icon-based graphical user interface (GUI) is easy to learn and use, which reduces training and simplifies operations.

“It’s very effective at eliminating even the smallest membrane without producing too many false rejects. Part of that success is a result of the sorter’s ease of use. It’s easy to get Taurys to perform the way we need it to,” said Brown.

Key Technology Australia Pty Ltd
www.keywww.com



End of line mixing

Dinnissen Process Technology’s Pandora End of Line Mixing is suitable for applications in the chemical, pharmaceutical, feed and food sectors. The system can mix a maximum of 10 (micro) components and has a capacity of 50 kg up to 100 tons/h.

The process works according to the principle of continuous mixing, whereby raw materials are continually added and removed from a compact mixer. Several gravimetric feeders measure the supply of ingredients to a Pegasus mixer, which can consist of micro-ingredients (0.01-2% per batch weight) and/or extremely high percentages (30-220% per batch weight).

The paddle mixer gently suspends raw materials during the mixing process in order to obtain a very homogeneous result quickly. The mixer can gently mix fragile products in 6 to 8 s and sticky and difficult-to-mix powders and liquids within 30 to 50 s. The mixing system has a throughput capacity of 50 kg up to 100 tons/h.

The compact design of the mixing system makes it possible to mix ingredients quickly, maximise production capacity and minimise energy consumption. The quick response time of the gravimetric feeders in combination with the batch start-up ability minimises start-up and switchover times for the production process.

The mixer is easy and quick to clean, which makes it suitable for situations that require frequent switches between recipes.

Lynchborough - GPM
www.lynchborough.com.au



Safety fuses for pneumatic systems

Protect-Air HoseGuard safety fuses offer protection to pneumatic systems in the event of a broken compressed air hose or pipe.

If the volume of air exceeds a set value (which is factory set to allow normal air consumption when using air tools), an internal piston instantly shuts off the main flow, while an integral bleed hole allows some air to flow through. This enables the line pressure to automatically reset the safety fuse once the main break is repaired.

The safety fuses are manufactured in aluminium and can be ordered in 316L stainless steel. They are suitable for all applications where compressed air is used, including manufacturing facilities, the chemical and pharmaceutical industries and clean rooms.

The system meets OSHA and MSHA requirements, is CE compliant and complies with EN ISO 4414-11.2010-§5.4.5.11.1: Failure of hose assemblies and plastic piping.

Compressed Air Australia Pty Ltd

www.caasafety.com.au

Rotary inductive sensors

Turck has released an updated QR24 rotary inductive sensor to expand programmability for industrial applications and improve rotary position feedback for the mobile equipment market. The sensor features a low operating voltage of 8-30 VDC with 0.5-4.5 V output.

The technology is immune to vibrations and interference, ensuring accuracy and longevity to avoid replacement downtime, and comes in an IP68/IP69K rated housing to protect against moisture and dust in demanding environments.

All the sensors use resistance inductive capacitance (RLC) measuring technology to process and communicate position. Each sensor is manufactured with printed emitter and receiver coil systems fully potted within the housing. When the emitter coils are activated with a high-frequency AC field, they produce an inductive RLC circuit with the positioning element. The position of that element is processed based on the induced signal to the receiver coils in the sensors.

For mobile equipment and industrial applications, the wear-free technology is suitable to apply directly to the shaft of a motor to provide accuracy for position feedback. The rotary inductive sensors provide high resolution and 16-bit noiseless operation. The double resonator system offers increased distance capability and high-end signal processing with a multicore microprocessor for enhanced speed.

Turck Australia Pty Ltd

www.turck.com.au



Oxygen Analysers, Thermal Conductivity Analysers, NDIR Analysers, Multigas Analysers, OEM Analysers

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Optical sorter handles berries with care

A family-owned business with over 40 years' experience, UK soft fruit grower S&A Produce grows, packs, imports and exports quality soft fruit and asparagus, supplying retail customers across the UK and mainland Europe.

In the last five years, blueberries have grown phenomenally in popularity and now account for 30% of the company's business. To meet this demand, S&A sources the product from all areas of the world, according to the seasons, in order to ensure year-round supply to its customers.

Initially the blueberries were imported pre-packed and then quality inspected and labelled before being distributed. However, this was a slow process, and with demand increasing, S&A sought a solution that would enable it to import the blueberries in bulk and handle the packing itself. Making this change means each container from abroad now contains around 20 tonnes of blueberries as opposed to just three tonnes pre-packed.

"Product quality is vital in the competitive soft fruits market so to have a machine whose sole focus is on quality was hugely important to us when we took on the packing operation for the blueberries," explained Jan-Willem Naerebout, S&A's group operations director.

The company selected the TOMRA Primus-D optical belt sorter to conduct quality monitoring prior to packaging. The sorter uses colour cameras to spot discoloured product and advanced laser technology to detect soft berries.

At S&A's packing operation in Marden, near Hereford, the blueberries are packed and sealed into trays. Prior to this, berries are passed under the cameras and lasers on an O-ring belt and those that are rejected are air blasted onto a cross conveyor above the line. This system ensures gentle handling of the product throughout the operation so that the packed berries maintain

their firmness. The Primus-D can handle up to 3.6 tonnes of blueberries per hour, enabling it to feed two tray sealing lines.

"We carefully assessed the different technologies available and what particularly attracted us to the TOMRA solution was that, unlike other systems which used the bounce of the berries to detect which were soft, the TOMRA laser technique means there is no need to touch the product and this further ensures its quality when it reaches the pack. To us, this is a 'best in class' solution," said Jan-Willem.

While S&A initially projected a payback on investment on the new line of three years, the company said that larger throughput volumes mean this is now likely to be under two years. Just as important, said Jan-Willem, is the added value that the line enables it to offer its customers. "We are now far

more flexible and can be more responsive to customer requests; for example, additional volume or changes to pack sizes," he explains. "Clearly being able to maintain quality is critical to this and is where the TOMRA Primus-D provides peace of mind."

Heat and Control Pty Ltd
www.heatandcontrol.com



Antistatic flexible ducting for food and drug manufacturers

Eximo speed LOCK has launched FoodFlex AS, a flexible, antistatic polyether-polyurethane ducting solution with a stainless steel wire spiral, which is designed to be used in a variety of food manufacturing applications where dust and other food product generated abrasives have the potential to generate static electricity.

The ducting is translucent, has a temperature resistance of -40 to +100°C and is designed to be used for the suction and discharge of abrasive and granular materials.

The material is resistant to chemical hydrolysis and a wide range of food-specific microbes, is lightweight, non-toxic and food safe according to US FDA-regulation 21 CFR 177.2600. It is permanently antistatic ($R \leq 109 \text{ ohm}$) and conforms to TRBS 2153 to provide good abrasion resistance and good all-round flexibility.

The ducting is available in a range of lengths and diameters.

Eximo

www.eximo.com.au

packaging

'Kitchen to shelf pack' system

Esko Australia has available a complete system for filling, thermal processing, product handling and packaging.

The WALDNER Dosomat filler uses precision techniques for tub filling of liquids and solids. Suitable for dairy, fruit or pet food, the filler is able to denest, fill, seal and barcode every tub in one machine. An ELAU servo drive provides high-speed movements with no spillage, while data feedback from the checkweigher ensures no underweight filling.

Mespics robotic automation picks and places rigid or flexibles for end-packing or retort trays ready for thermal processing.

Batch retorting in a Steriflow achieves an efficient thermal process by using cascading water to shower the can, pouch or pack, transferring heat from superheated water into the product. As this is done under pressure, the water remains liquid with minimal evaporation. The result is product pasteurisation or shelf-stable application.

Through real-time logging, the retort can record every step of the process and control temperatures, pressures and cooling, resulting in a product that is cooked safely and quickly while maintaining quality and flavours. Energy savings are available through water/condensate recuperation. The retort provides an in-built QA system that monitors every aspect of the process and generates FDA/AQIS approved reports.

The Mespics/Imball all-in-one packer is able to form, pack and close the carton in one machine, using a small footprint. The carbon fibre arm construction enables a smaller, less powerful motor to be used for the picking actions.

Esko Australia Pty Ltd

www.eskoaustralia.com



Rotary band sealers

The ERC range of bench-top rotary band sealers comprises four standard models: horizontal style with/without hotprint coder and vertical style with/without hotprint coder.

All models are right to left operation as standard and operate from a standard 10 A power point.

Horizontal models are fitted with a wider 300 mm variable speed conveyor to allow for longer bag lengths to be sealed, while the vertical models are fitted with 150 mm-wide conveyors suitable for use with stand-up pouches, etc.

Rotary band sealers are suitable for a range of film types including PE, PVC, HDPE, cellophane, BOPP, foil laminated and kraft laminated. The 10-12 mm sealing width in conjunction with an adjustable compression wheel provides consistent high-quality seals.

Heavy-duty and freestanding models are also available.

ERC Packaging

www.ercpackaging.com.au



Label printer applicator

Matthews Australasia has launched the Autolabel label printer applicator (LPA) to the Australian market. The LPA is designed for use on automated production lines, automatically printing dynamic information on a label then applying it to a product, carton/tray or pallet. This makes it a primary, secondary and tertiary labelling solution, depending on where it is being used.

The product is suitable for manufacturers looking for ease of use and uptime. The welded printer frame is machined as one piece, eliminating mechanical adjustments. Being permanently fixed, with high tolerances, no adjustments can change over time.

The applicator is easy to use, making it simple to change consumables such as labels. Tools are not required to change the printhead.

Matthews Intelligent Identification Pty Ltd

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Efficient production of portion packs

Multivac has designed a packaging procedure for producing portion packs, using die technology and automation to deliver a significant saving in packaging material consumption.

The company utilises particularly wide and long dies in the thermoforming packaging procedure. These bigger footprint dies can result in pack outputs of approximately 960 portion packs/min at just 15 cycles/min.

With the ability to run larger output footprints, delivering a greater output per cycle, portion packing lines may be run at slower speeds. The flexibility of cycle speeds can introduce the opportunity for more effective management of upstream and downstream processes such as filling, cutting, quality control, pack handling and secondary packaging in boxes.

In order to cut the larger number of packs cleanly out of the film, two cutting tools are positioned one after the other. These cut the portion packs out of the film in two stages, similar to the pattern of a chess board. With the two-stage cutting system, the partitions between the packs can be designed to be narrower than with conventional die processes. With this reduction in the widths of the partitions, manufacturers can save a significant amount of packaging material.

The two-stage cutting procedure has a positive effect on the handling of the portion packs after cutting. Since only half the number of packs are handled, the removal from each cutting tool and the transfer of the packs to downstream processes, such as secondary packaging in boxes or quality inspection, can be performed in a highly controlled manner.

Multivac Australia Pty Ltd

www.multivac.com.au

Nylon liners for food processing and catering

Sirane's Sira-ServT range includes nylon-based materials for lining vats, saucepans, pots and chafing dishes; materials for hot-fill; hot shortening bags for disposing of cooking oil; and liners for rotisseries and hot food counters.

Sized to fit standard Gastronorm sizes, they reduce cleaning time, wear and tear, and hot water usage, and cut down the amount of fats and grease entering drains.

Nylon is used in the products because it is tough, durable, has high heat resistance and it can also be used in hot-fill situations. Nylon also resists leaching and contamination, making it suitable for use in processes such as roasting spices and breadcrumbs.

Nylon hot shortening bags can be filled with hot cooking oil and used for disposal. Hot-fill liners can be used in industrial food processing to line large vats and can be removed while the product is hot. Catering liners can help reduce food wastage by preventing food from drying out and sticking to the bottom of the pan.

The rotisserie liner is an absorbent liner consisting of a highly absorbent material covered with heat-reflective elevated-temperature-resistant film. The liners soak away excess fat dripping from the meat while it is cooking, to increase product attractiveness.

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Graphic terminals

Rockwell Automation has launched the Allen Bradley PanelView 800 family of graphic terminals, a space-saving range which reduces boot-up time and increases installation flexibility.

The terminals, available in 4", 7" and 10" display sizes, feature an 800 MHz CPU processor, up to 256 MB of flash and dynamic memory to reduce boot-up time, making it two times faster than the previous PanelView Component terminal. The terminals also offer improved touch-screen responsiveness and can be configured in portrait and standard landscape mode for greater installation flexibility.

These graphic terminals are suitable for meeting control and visualisation requirements in a range of simple, stand-alone applications, such as pump stations, packaging machines, labellers and stretch-wrap machines.

The terminals are designed for use with the Allen Bradley Micro800 and MicroLogix control systems. The high-resolution screens with LED backlights can display up to 65,536 colours. Built-in Ethernet and serial communications ports (RS232, RS422 and RS485) support easier controller connectivity, while USB and microSD ports make file transfers easier. The terminals are also certified for Class 1, Division 2 hazardous locations.

Rockwell Automation Australia

www.rockwellautomation.com.au



Capping chuck for packaging industry

The GMD Innovation Capping Chuck provides an alternative to traditional fixed diameter and friction type chucks in the packaging industry.

The chuck self-adjusts to closure manufacture variations and self-centres the closure to the bottle neck. It grips securely and does not slip or jam on the closure and reduces scrap levels/wastage. The chuck fits multiple closure types and is suitable for child-resistant closures and many hinged closures. It minimises unsightly and dangerous knurl damage.

GMD Innovation

www.gmd.com.au

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Extra-wide, durable inkjet colour label printer

QuickLabel Systems has introduced the Kiara! 200D - an extra-wide label printer which is capable of making durable labels in large sizes for gallon jugs, shipping drums, pallets, cartons and cases, printed in full CMYK colour.

Due to its pigment ink formulation, labels printed by the device are suitable for use in environments involving chemical solvents, water, UV light and scuffing. Users can print GHS labels with the required black and red GHS pictograms, alongside CMYK company logos in any colour, with product pictures and colour codes. Printed on matte polypropylene and paper label stocks, the labels do not require lamination.

The printer produces full-bleed labels in 1200 dpi resolution and is suitable for food labels, medical device labels, picture code labels and any other kind of colour label that requires durability. The printer can also add batch codes, lot codes, variable text and barcodes. Labels are large enough to identify products from a distance, in sizes from 10.16 to 20.32 cm wide and up to more than 43.18 cm in length, and can be printed at speeds up to 14.98 cm/s.

Metromatics Pty Ltd

www.metromatics.com.au



Dual energy X-ray inspection system

The Ishida IX-G2 dual energy X-ray inspection system for food products can distinguish contaminants from the product, even in difficult applications.

The inspection system is suitable for testing foods where the density of the product and the potential contamination is similar. For example, the bone and meat of a chicken have almost the same density, making it difficult to detect bones in chicken portions or pieces. Other examples include products such as frozen chicken nuggets or sausages which can overlap in a pack or bag, so that a possible contaminant may be obscured by product pieces.

The dual energy system can also detect missing pieces or product deformation and perform weight estimation.

Heat and Control Pty Ltd

www.heatandcontrol.com

Diagnostic audits for shocks and pressure on packaging lines

Gebo Cermex has developed two diagnostics of risk situations on packaging lines: 'shocks' audits to measure the shocks and the impacts on the packaging line and 'pressure' audits to detect the abnormal pressure zones and the line regulation problems.

The audits are suitable for glass and PET bottles, cans, glass jars and alcoholic and non-alcoholic beverages.

The audits will measure the shocks and/or pressures to which the containers are subjected, quantify the consequences of the damage, compare the results with reference values; locate the causes; establish diagnostics of the solutions; and propose a corrective action plan.

Recommendations for correction might include adjusting the control system for regulating the line, improving the automated control or the mechanics of the interface and transfer zones, adjusting or changing the machine infeeds or re-engineering a portion of the line.

The audits study all of the conveying and accumulation phases and also what occurs inside the items of equipment, such as fillers, cappers, case packers, bundlers, wrappers or palletisers/depalletisers.

The process uses sensors combined with a software program to record the data gathered. The shock sensor comprises accelerometers to calculate deceleration on three axes, which are inserted in a hard plastic (acetal) container of the same shape as the packaging handled by the line. The pressure sensor is a cylinder incorporating 500 pressure measurement points distributed over the outside of the container.

Gebo Cermex at Tetra Pak Marketing Pty Ltd

www.gebocermex.com

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Leak detection with electronic control

Witt-Gasetechnik has released the Leak-Master Easy Plus with electronic control, which digitally logs all QC/QA measurements.

The device finds even the smallest holes in rigid or flexible packaging quickly and precisely, testing both inert gas and vacuum packaging simply and without the use of trace gas.

The test product is placed in a chamber filled with water. When the lid is closed, the air space above the water level is evacuated, the package inflating under water. If air bubbles emerge, there is a leak. The test method is straightforward and cost effective and has the additional advantage of making the weak point of the packaging visible.

The device records, saves and communicates (via Ethernet and SD card) its test program and results, enabling QC/QA managers to check leak test results at any time.

Operation is via a coloured touchscreen. Products, users and customised test programs can be configured rapidly and easily. When a test is commenced, the preset vacuum is automatically generated and maintained over the defined time period.

Special test programs are also possible using the electronics, such as height simulation to determine at what height above sea level the material will yield.

Niche Gas Products

www.nichegas.com.au



4-channel electrostatic voltmeter

Trek Model PD06078 electrostatic voltmeter (ESVM) is a 4-channel voltage measuring instrument that is suitable for monitoring critical operations associated with semiconductor, LCD, electronic assembly and other processes where static charge accumulation poses a threat to production yields or product quality.

The device contains four electrostatic voltmeters in a single enclosure. Each channel features a measurement range of 0 to ± 10 kV and accuracy better than 5% reading plus $\pm 0.2\%$ of full scale over the probe to surface separation distance of 15 to 30 mm.

Each channel utilises a DC stable electrostatic field chopper probe which can be remotely located and easily positioned within process equipment to provide highly accurate, non-contacting, spacing-independent voltage measurements in either ionised or non-ionised environments.

Two types of probes are available with the device: a side viewing-type probe and a 45° orientation-type probe. One digital panel meter display (DPM) provides monitoring of individual channels through a switchable rotary switch. A holding fixture is used to position the probe's sensing aperture relative to the measured surface. The instrument's design improves noise and drift performance, both in the presence of contaminating particulates and under conditions of high humidity and wide temperature ranges. A voltage output monitor and a 4-20 mA current loop output can provide additional signal interfacing to facility monitoring equipment.

Scientific Devices Australia

www.scientific-devices.com.au





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Durable ink jet colour label printer

The QuickLabel Kiara! D prints durable labels that can get dirty, wet and scuffed, and be exposed to sunlight and chemicals, while maintaining legibility and colour fastness.

Labels printed by the printer comply with GHS hazard warning labelling regulations, one of the most stringent physical label standards in the world. The printer is suitable for bottle, carton, case and pack labels that require printed product pictures, logos, colour codes, barcodes and other variable data elements.

Starting from blank stock, the label printer prints full-colour product labels direct from digital sources such as enterprise systems, barcode labelling software or graphic design software. It is compatible with matte polypropylene and paper label materials and doesn't require lamination to make durable labels.

Metromatics Pty Ltd

www.metromatics.com.au

Vision system for checking product quality and reading codes

Festo's SBSI vision sensor is a simple, entry-level vision system that features easy-to-use, intuitive operation.

The vision sensors are available in two models: the SBSI-B code reader for 1D/2D codes and the SBSI-Q object sensors for simple quality inspection tasks.

The system features an integrated lens and lighting and, depending on the model, is available in different focal lengths and lighting colours. Its spectrum makes it suitable for the automotive industry, electronics manufacturing and packaging in the food and beverage or pharmaceutical industry.

The vision system features simple operation, with only 3-4 steps to a solution and fast parameterisation. It includes powerful, fast, high-performance software tools, 360° position tracking and robust code reader tools.

Festo Pty Ltd

www.festo.com.au



Dual ovenable CPET containers

Faerch Plast's range of dual ovenable CPET (crystalline polyethylene terephthalate) containers for frozen and chilled convenience meals offer

a temperature tolerance from -40°C to 220°C, for freezer-to-oven or microwave convenience. The trays are available in a variety of styles and designs, including dual-colour packs for enhanced shelf appeal and product differentiation; and 'frost' trays for impact resistance and shatter resistance at low temperatures.

The dual-colour CPET trays feature one colour on the outside surface and another on the inside. The packs are targeted at high-end convenience food products and are suitable for oven-to-table ready meals. According to the company, CPET does not impact food flavour or aroma.

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Banking on biscuits

Rising demand opens up new opportunities for food manufacturers

Daniel Bossel and Michael Haas

BAKERY, CEREALS, GRAINS



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You might call it a global demand for small treats: the market demand for biscuits and savoury crackers is on the rise, creating opportunities for food manufacturers to develop and strengthen their brands.

According to Global Industry Analysts, the global bakery market is projected to reach US\$410 billion in annual revenue by 2015, with the biggest growth for crackers and plain biscuits. From a packaging standpoint, the growth in this market is boosting the demand for fully automated systems that increase efficiency and enable more hygienic processing. In addition, flexible equipment and tailored solutions, backed by expert support, will help manufacturers leverage the market opportunity in baked goods and meet ever-changing and diverse consumer needs.

Nowhere is the growing demand for biscuits more evident than in Asia, where savoury crackers are expected to be the biggest growth item in the baked goods market, followed by plain biscuits. Value-added products like cookies and sandwich biscuits are also gaining in popularity among Asian consumers.

Some at-a-glance figures provide perspective on the market opportunity in Asia. According to Euromonitor International, the projected compound annual growth rate (CAGR) of the biscuit market from 2012 to 2017 is 2.9% globally. However, growth in China is projected at 22.5%, and in India it will skyrocket to 34.7%. Clearly, there is a strong demand for baked goods as these markets continue to develop.

Key mission: automation and flexibility

A high degree of reliable and flexible packaging automation will be important for manufacturers to meet the growing demand for biscuits. Equipment needs to be designed for high-quality output to meet current and future requirements; at the same time, it needs to be easy to use and service. In addition, high overall equipment effectiveness continues to be an important factor in purchasing decisions.

For a commodity like biscuits, efficient automated technologies with high-capacity process lines can compensate for low profit margins. In manufacturing facilities, where space is also a premium, high-speed automated lines enable greater productivity within an overall reduced footprint. With no two manufacturers having the same needs, it's crucial to work with a supplier capable of providing a packaging system custom-made to meet specific needs.

Labour costs in some markets have nearly doubled in the past five years and, as a general trend, salaries are rising as emerging markets become more mature. Training is another cost driver, as it is difficult to find skilled personnel. As a rule, automated packaging lines need fewer operators compared to semi-automated lines. It reduces the cost of labour and allows manufacturers to redirect workers to other important tasks as skills become more refined.

New automated lines also come with an advanced human machine interface (HMI) that is easy and intuitive to use, reducing the time required for training.



As manufacturers often need to process different products on the same line, packaging systems flexibility is key to handling different pack styles and configurations for biscuits. Currently, 75% of biscuits are packed in flexible packages. Typically, pile packaging is used for formats less than 50 g, and both pile and slug formats are used for packages between 51 and 100 g. For packages over 100 g, the vast majority are packaged into slugs.

With such growth predicted for emerging markets, consumer tastes are also becoming more versatile. Therefore, incorporating automated packaging technology designed for maximum flexibility enables manufacturers to make quick and easy adjustments to respond rapidly to consumer demands.

Flexible equipment lets manufacturers rapidly modify production to suit various levels of product protection and product characteristics, such as from pile to slug packs, with little downtime. For instance, packages can be produced airtight, gas-proof or including corrugated cardboard around the biscuits to prevent mechanical shocks.

In addition, there is a range of sealing technologies to accommodate various film qualities. To help improve production and enhance brands, biscuit manufacturers and brand managers should take expertise and consultation into consideration when purchasing equipment to make sure that the most efficient and appropriate system is purchased.

Demand is rising for single-serve packs

One example of shifting consumer demands is the trend towards single-serve packaging. Along with emerging market consumers' preference for smaller packaging, there is a rising demand for single-serve biscuit pile packs. For many consumers, single-serve options convey product freshness since it is meant to be eaten all at once. Additionally, the pack price is more affordable than for bigger packs. Single-serve packaging also adds convenience for busy consumers, such as urban professionals or individuals seeking portion control or a snack that can be eaten on the go. As a

...the global bakery market is projected to reach US\$410 billion in annual revenue by 2015

result, single-serve packs are becoming a preferred format for secondary packaging displays at point of purchase in urban BRIC areas.

Focus on hygiene

Globally, concerns about food safety are rising, creating new regulations and tightening the ones already in existence. Indeed, these regulations are also affecting emerging markets and food manufacturers need to adopt certain hygienic practices. New automated lines have been designed with hygiene in mind. For example, steel frames are used and streamlined designs prevent trapping product crumbs in holes and crevices. Automation is also inherently more hygienic than semi-automatic operations because fewer workers come into contact with food, thus reducing the potential for contamination.

Greening for the future

Food manufacturers are also exploring new 'green' options to reduce scrap and CO₂ emissions. This includes biodegradable films and reducing the weight of packaging by using thinner foils and fewer materials. Not only are these options environmentally friendlier, they help decrease overall costs without sacrificing quality.

Some packaging equipment manufacturers are also developing a new generation of multilayer 'functional' films that incorporate up to seven layers, compared to the current standard of three layers. Despite the additional layers, these films are actually thinner due to new extrusion technology. This new multilayer film technology can improve barrier properties that help protect products from ultraviolet deterioration, humidity and flavour degradation.

As food manufacturers attempt to meet the increasing demand in emerging markets and beyond for biscuits of all types, incorporating automated packaging technologies will be crucial for success. Above all, manufacturers need packaging suppliers able to act as consultants to help manufacturers find the best solution for their requirements.



Daniel Bossel, Product Manager Primary Packaging and Michael Haas, Product Manager Secondary Packaging both work for Bosch Packaging Technology. Bosch Packaging Systems AG (formerly known as Sigpack Systems) is a leading single-source provider of complete solutions for the packaging industry. The company's solutions range from semi-automatically fed wrapping machines for the chocolate and biscuit industries to fully integrated, automated high-performance systems particularly suited for biscuit, bar and confectionery, pharmaceutical and powder packaging. Bosch Packaging Systems AG offers complete solutions, including product control; buffering; feeding; portioning; primary packaging in pillow packs, fold wrap, bags or sachets; secondary packaging in displays and shipping units; multipacks; and automatic palletising.

Bosch Packaging Technology
www.boschpackaging.com

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Cream whipping machine

Bakon Top Cream whipping machines are suitable for the aerating and stirring of cream, mousse, bavaois and Swiss cream.

During the stirring process, air is cooled down to 2°C and is blown in from below through a system of filters. This protects the structure of the whipped cream and produces homogeneous air distribution, making the whipped cream more stable and giving a longer standing time.

According to the company, the machine increases the volume of the whipped cream by 40-50% compared to standard whipping methods.

The machine has two stirring speeds and digitally adjustable temperature controls. All parts which come in contact with the cream can be disassembled and cleaned in the dishwasher, while the machine has a cleaning mode to enable automatic disinfection.

The kettle is placed under a hood, which protects the product from ambient temperature changes during and for a few hours after whipping.

The whipped cream can be inspected during rotation via the transparent Lexan lid; stirring stops automatically when the lid is opened during rotating.

The machine is movable, seamless and made of stainless steel.

Bakon bv Food Equipment

www.bakon.com

Magnetic gripper for baking tins

Goudsmit Magnetics has developed a magnetic gripper for high-temperature applications, such as in the bakery industry. Utilising magnetism and compressed air, the grippers can be used for positioning and placing baking tins on infeed conveyors as well as for destacking lids from a magazine.

The gripper continues to function even when exposed to high ambient and product temperatures of 120°C. The gripper always remains in its last position - even when air pressure is lost - regardless of whether it is on or off. The low weight, small installation dimensions and high switching speed make the gripper suitable for use in existing gripper units or robot systems.

The magnetic gripper's square housing is constructed of high-grade aluminium and is also nickel plated. The contact surface is AISI 316 stainless steel.

Switching requires compressed air, which is controlled with a 5/2 or 5/3 valve. The baking tin cannot fall, even if the air supply is cut off. The magnetic gripper requires minimal maintenance compared with common vacuum systems and has a tested service life of more than one million cycles. The gripper is available in two types: 70 mm, with magnetic breakaway force of 360 N and safe carrying capacity with safety factor 3 of 120 N; 100 mm, with magnetic breakaway force of 1300 N and safe carrying capacity with safety factor 3 of 435 N.

Goudsmit Magnetics

www.goudsmit-magnetics.nl/EN



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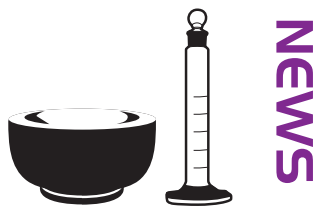
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Testing



TESTING

FSANZ invites submissions on maximum residue limits

Food Standards Australia New Zealand (FSANZ) has called for submissions on a proposal to introduce maximum residue limits (MRLs) for residues of agricultural and veterinary chemicals that may occur in food.

FSANZ Chief Executive Officer Steve McCutcheon said that the purpose of this proposal is to consider incorporating MRLs for the chemicals coumatetralyl and warfarin.

"This will align the code with temporary MRLs that have been set by the Australian Pesticides and Veterinary Medicines Authority (APVMA)," McCutcheon said.

"FSANZ's dietary exposure assessment indicates that the limits set out in this proposal do not present any public health and safety concerns."



'Lab-to-let' program arrives in Australia

A new concept in laboratory management is offering flexible, high-end lab spaces for rental in the heart of Sydney.

'Lab-to-let' is a partnership between G3lab and Wotso WorkSpace, which will give start-ups and research projects access to state-of-the-art lab fit-out with low entry costs, fixed overheads and flexibility to suit changing needs.

The facility offers conventional lab owners a range of overhead-management options, including fixed cost contracts, energy monitoring and reporting, and externally managed facilities. The building also houses shared office areas, break-out zones and a cafe for a collaborative environment in which science thrives.

Max Englisch, Asia-Pacific manager for WALDNER, which is supplying the lab fit-out, said, "Many in the research sector now agree that the 'real magic' often happens when scientists interact with each other - our fit-out systems, applied to the Australian Lab-to-let model, will make for rewarding science spaces where teamwork thrives."

The model is based on similar facilities in Europe, the US and UK. For more information, visit http://g3lab.com/lab_space_to_let.html.

New method improves long-term storage of kiwifruit

A simple and non-contaminant technology method may be the answer to improving the quality of kiwifruit during long-term storage.

Kiwifruit became a popular food choice for consumers following its introduction to the world market from New Zealand in the 1950s, but one of the challenges for growers is its susceptibility to severe disorders during storage.

A new study from Iran recommends heat and calcium treatments to extend storage life and improve quality in kiwifruit.

"A combination of heat treatment followed by calcium (Ca) dip for controlling postharvest pests and/or diseases has had satisfactory results in maintaining or improving the texture of several products," said authors Shirin Shahkoomahally and Asghar Ramezani from Shiraz University, who published the study in the March 2015 issue of *HortScience*.

"However, there was no research on postharvest application of Ca and hot water on qualitative parameters of kiwifruit during cold storage. This research evaluated the effect of hot water combined with Ca solution treatments to maintain qualitative characteristics of kiwifruit during cold storage."

The researchers from the university's Department of Horticultural Science treated mature, unripe kiwifruit (Hayward) with hot water for 5, 10 and 15 minutes at 47°C then dipped them in a 2% w/v CaCl_2 solution and stored the kiwifruit at 0°C for up to 120 days. During storage, fruit were sampled at 0, 30, 60, 90 and 120 days for postharvest quality evaluation.

"Our analyses showed that fruit firmness decreased during cold storage, and the rate of decrease was significantly higher in control fruits compared with those treated with hot water and calcium treatments," the authors said.

The complete study and abstract are available on the ASHS HortScience electronic journal website: <http://hortsci.ashspublications.org/content/50/3/412.abstract>.





Sponge sampling without a glove

Screening for pathogens such as *Listeria* or *Salmonella* often requires sampling large surface areas. While most microbiological sampling is done with a traditional swab, the only way to really look at large areas is with a sponge swab.

The Hygiene Sponge from TSC comes with a reversible bag, which eliminates the need for using sterile gloves and reduces the cost of the test.

The user simply needs to grip the sponge and pull the bag back over itself, take the sample, and then flip the bag back the right way, reseal it and the sample is ready for immediate testing or transport back to the lab.

Increasing the convenience of taking a sponge swab is a major step forward to reducing contamination of samples and increasing compliance with a testing program.

The Hygiene Sponge is ready to use, premoistened with neutralising buffer, designed to counter the effects of residual amounts of sanitiser that may be left behind on surfaces, which can affect recovery of organisms.

Australasian Medical & Scientific Ltd
www.amsl.com.au

Particle size and count analyser

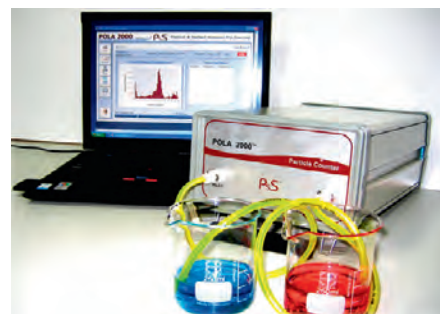
The POLA 2000 is a portable particle size and count analyser, manufactured by Particle & Surface Sciences (PsS).

Applications for this system are: aqueous fluids, used oils, powders and biological products for research and industrial organisations. The instrument comes in two configurations: particle size analyser and particle count analyser.

The particle size analyser features a size range of 0.5 to 350 μm and up to 1000 user-selectable size channels over the size range. Results can be displayed by both population and volume in either graphical or tabular formats. The analyser is calibrated with NIST traceable latex standards.

The particle count analyser is calibrated to required standards: ISO11171, Reporting (ISO4406) or SAE AS4059 Standard for Hydraulic Fluids. It operates a constant pump speed regardless of viscosity and resolution can be selected by the user.

Particle & Surface Sciences Pty Ltd
www.pss.us.net



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Non-contact measurement for vacuum integrity of cans, jars and bottles

Micro-Epsilon Eddy Current sensors from Bestech Australia provide fully automatic, non-

contacting vacuum testing for cans, jars and bottles.

After preserving jars are filled and closed they are vacuum-tested in fully automatic operation to sort out any defective containers. During transport of the jars an eddy-current sensor scans the lid shape that is generated by the vacuum in a non-contacting way. The subsequent electronic unit calculates lid bending, which directly depends on the internal pressure, with high accuracy. After comparing this value with a specified permissible value range a decision is made about the quality of the internal pressure and thus about the tightness of the preserves container.

The sensor system is waterproof with a 3 m cable and light barrier to detect cans without a lid or tilted cans. It incorporates a counter to calculate total throughput and the number of ejected glasses. The system is not affected by environmental influences such as moisture, pungent vapours, wet and sticky food and temperature fluctuations.

Bestech Australia Pty Ltd

www.bestech.com.au

Packaging validation system

Trimatt Systems has developed a simple-to-use validation system to ensure users are packing their goods into the correct packing containers. The Trimatt ValidForm has been developed to help maintain 100% product integrity.

Using the company's scanning techniques and software management, the system will ensure production is error-free. A real-time logging function is available to provide a post-production manifest for later scrutiny or submission to end users.

Food, pharma, beverage, dairy and many other sectors can benefit from the real-time production integrity system.

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Microbial tests

Arrow Scientific Compact Dry microbial tests are simple to prepare and interpret with a broad range of applications. The tests feature a streamlined workflow with easy colony enumeration.

The tests are available for coliform, *E. coli*/coliform, aerobic counts, plus yeast and mould. Each test has been validated through the AOAC Research Institute.

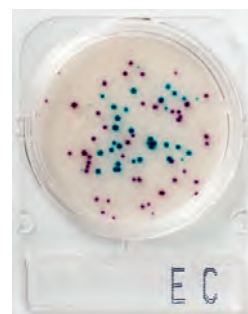
Each test plate can be stored at room temperature, so there is no need for storage refrigerators, and the design allows test films to be stacked as they are inoculated, freeing up bench space and eliminating wait time between inoculation and incubation. Unlike other tests, Compact Dry doesn't require a 'spreader' and there is no gelling or set-up time, making them easy to handle. As the tests come stuck in lots of four plates, they can be used for dilution work.

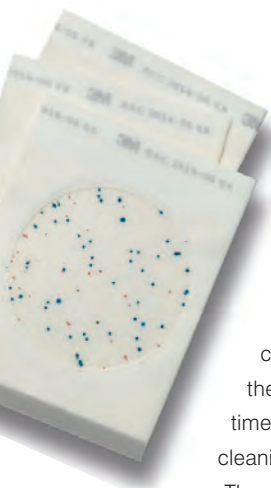
The microbial tests detect and quantify microbiological organisms in environmental samples, process materials and finished products. The protocol is straightforward with minimal training required for microbiology teams. Samples are inoculated onto sample-ready plates, incubated and then any colonies are counted giving an accurate result with minimal work.

They provide an effective test for the enumeration of yeasts and moulds, and the 3D structure of moulds helps identify them.

Arrow Scientific

www.arrowscientific.com.au





Rapid aerobic count plates

Bacteria are present in a variety of food matrices and elevated levels can serve as an indicator of poor quality. Obtaining accurate aerobic bacteria counts from raw materials, finished product and the production environment is critical to making time-sensitive decisions that impact process control, cleaning decisions, product quality and safety.

The 3M Petrifilm Rapid Aerobic Count Plates return results in 24 hours, allowing for a fast, accurate and easy way to expedite critical business and product release decisions.

Proven as reliable as the Standard Methods Agar, 3M Petrifilm Rapid Aerobic Count Plates help agar users avoid retesting and delayed results due to interpretation issues caused by spreader colonies.

The plates are a sample-ready, culture media system, containing nutrients, a cold water-soluble gelling agent and a dual-sensing indicator technology that facilitates colony enumeration in 24 hours for most food matrices.

The plate has received certification (#121403) from the AOAC International Performance Tested Methods program.

3M Food Safety

www.3m.com



Alcohol and extract meter for beer

Alex 500 from Anton Paar is an alcohol and extract meter for beer that removes the need for external laboratories. The lab-grade analyser determines the beer's alcohol and extract content, kilojoules, degree of fermentation and other parameters, enabling craft brewers to monitor their entire production from wort to bottle.

The meter uses absorption measurement via NIR spectroscopy and density measurement based on the oscillating U-tube technology. The instrument, which is compact and easy to operate, can be used in two modes. In fermentation monitor mode, it directly displays a fermentation curve, assigned to a tank via sample ID. In the final production stages, it can be switched to its standard mode, to determine a beer's alcohol content, original or real extract content and other beer parameters.

The meter is claimed to measure alcohol with an accuracy of 0.2% v/v and determine density with an accuracy of 0.001 g/cm³.

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New detection method for food poisoning toxin

The *Bacillus cereus* bacteria is quite a versatile little pathogen, and not a pleasant one. It's responsible for food poisoning illnesses that cause nausea and vomiting in human beings, with the outcomes ranging from mild illness through to - in extreme cases - death.


Across Europe, the number of food poisoning cases caused by the *Bacillus* species is on the rise and the consumption of ready meals increases the risk of foodborne infections. The types of foods most likely to harbour *B. cereus* are starchy staples like rice, pasta and potatoes.

"A poor temperature management often plays a role," explained Prof. Thomas Hofmann, Chair of Food Chemistry and Molecular Sensory Science at Technische Universität München (TUM). "The bacteria multiply, for example, in food that has been pre-cooked and then not heated up enough or else not adequately cooled down beforehand."

In addition, *B. cereus* can produce spores that can survive high heat - and which are still capable of producing viable bacteria at lower temperatures. These then often form bacterial toxins, which are in turn heat stable - like cereulides, the toxins responsible for emetic illnesses which cause nausea and vomiting.

The good news is that researchers from TUM and the University of Veterinary Medicine in Vienna have now developed a method for detecting the cereulide toxin. In the process, they identified 18 further variants to add to the cereulide already known to scientists.

"Prior to this project, there was no satisfactory method of detecting the cereulide toxin in food," said Hofmann. "With our mass spectrometry-based process, we have created an important starting point for the reliable detection of the toxic bacteria."

This will make it easier to assess the risk inherent in contaminated products - and the role played by the individual cereulide variants. The new detection method is currently being jointly evaluated at European level together with the US Food & Drug Administration (FDA), and preparations are being made for its deployment. 

what's new in
Food
technology & manufacturing

bulk handling

Cermex automates palletisation for dairy co-op

The Laïta dairy cooperative in north-west France prides itself on creating mutually beneficial relations with the 4000 dairy farms from which it collects its milk, as well as ensuring the wellbeing of its 2400 staff.

At its Créhen plant, the cooperative produces the Madame Loïk range of whipped cheese. For this range, tubs are hot filled and then cooled by going through a cold room. Historically, the tubs were transferred from the filler to the cooling unit by hand.

Laïta needed to increase production to cope with growth in demand. However, accelerating the manual transfer of tubs onto the racks was discarded as a solution as the task was identified as being repetitive and unergonomic.

Automation was the best solution, but offered challenges, including:

- frequent recipe and format changeovers (at least 20 times per day) needed to be possible without increasing line downtime;
- the product accumulation capacity needed to be at least maintained, so as not to affect the upstream of the line, in particular by stopping the filler;
- the overall organisation of production had to be complied with.

During the project, the logic of automating a second line became apparent for Laïta. This new approach would reduce the arduousness of the manual work on both lines, and it was more cost effective to invest in one unit with two product infeeds to manage both of the high-speed lines in the factory.

After filling and sealing, a Cermex Pal-Vite 410 two-station robotic unit now palletises the cheese tubs layer by layer. It manages the infeed of products on two lanes, coming from the filling machine of each line. The maximum speed is 15,000 tubs per hour and the robot can handle up to four different heights of tub, with the possibility of handling two different heights simultaneously.

The unit ensures individual and contactless product handling up to gripping in four stages:

1. The products are spaced out by an infeed system with upper and lower belts.



2. A system of retractable fingers stops each tub to keep them spaced out.
3. The row of products on the layer preparation table is transferred positively by a servo-driven pusher.
4. The step-by-step advancement of the layer preparation table is controlled by a servomotor.

The gripping tooling equipped with 96 suction cups enables a whole layer to be palletised in one go. Compared with the previous manual solution, the product accumulation capacity was tripled.

Gilles Meurou, head of Laïta's fresh product division, said: "We have managed to increase output very significantly as well as eliminate two zones where tasks were particularly repetitive and potential sources of musculoskeletal disorders. We are really satisfied with this solution that is entirely in tune with our values focused on performance while protecting employees."

Benefits for production and for maintenance:

- Upgradability: For example, square tubs could be handled in the future.
- User-friendly control panel.
- Assistance with locating faults and with restarts, which is much appreciated by operators.
- Simple and easy to maintain: The robot tilts and orients its tooling vertically for cleaning and easily replacing suction cups.
- Integration into the line: Signals are exchanged with the upstream equipment so as to avoid product accumulation if the line is stopped.
- Possibility for Cermex to intervene remotely.

Benefits for product image:

- Structural integrity of the tubs is maintained by pressureless handling, preserving the shape of the cardboard tubs, which are the historic brand image of Laïta.
- The soft cheese is kept level as the tubs advance smoothly throughout the process, improving the visual appearance of the contents after cooling.

Gebo Cermex at Tetra Pak Marketing Pty Ltd
www.gebocermex.com



Vibration monitoring technology

FAG SmartCheck vibration monitoring technology comprises a compact, modular online measuring system for continuous monitoring of machinery and process parameters on a decentralised basis. It can be used on assemblies where such monitoring was previously too cost prohibitive.

The technology is suitable for early detection of rolling bearing damage, imbalances and misalignments among other faults on: electric and geared motors; vacuum and fluid pumps; ventilators and fans; gearboxes and compressors; spindles and machine tools; separators and decanters.

The system is ready for immediate use as it is supplied with a set of key data that facilitates general, reliable machinery monitoring. In addition, predefined configuration templates are available for monitoring of items such as fans, pumps and bearings. These can be matched to individual requirements, due to the integrated bearing database of FAG and INA standard bearings.

In addition to the standard parameters of vibration and temperature, it is possible to record other operating parameters such as speed, pressure and flow rate. All parameters can be correlated with each other and included in the alarm configuration.

The data is recorded and analysed centrally by the system. The current machine condition can be displayed directly on the device or transferred to any control facility as required.

Schaeffler Australia Pty Ltd
www.schaeffler.com.au

Re-usable bulk insulated container

Sonoco ThermoSafe has launched a re-usable bulk insulated container featuring a 1200 x 800 mm footprint and 440 L of storage capacity for storing and distributing dry ice and perishable goods globally.

The container uses improved technologies in foam adhesion and sidewall construction design, yielding an improvement in prolonging dry ice sublimation. The lid seal and gasket design minimises moisture infiltration.

The footprint of the container allows for better cube utilisation of trucks in a variety of global regions.

This container is the latest addition to ThermoSafe's re-usable bulk insulated container product line, which ranges from 113 to 2095 L of storage capacity.

Sonoco ThermoSafe
www.thermosafe.com

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Sanitary tubular cable conveyor

Flexicon's FLEXI-DISC sanitary tubular cable conveyor for fragile bulk foods and non-foods allows rapid washdown of the system between production runs.

The sanitary conveyor moves bulk material using high-strength, one-piece polymer discs affixed to polymer-coated 304 or 316 stainless steel cable that slide within smooth stainless steel tubing, moving fragile products gently, quietly and dust-free.

The discs evacuate the conveyor tubing of material at the conclusion of a conveying cycle. Any material clinging to the cable and disc assembly can be removed during operation by a brush box or a residual return chute equipped with a disc ramp that dislodges material and returns it to the product stream.

All material outlets, inlets and tubing are fabricated of 304 or 316 stainless steel with quick-disconnect covers and continuous welds ground smooth and flush with contiguous polished walls. Wet or dry cleaning accessories can be attached to the conveyor cable to allow sanitising of the system, minimising downtime between changeovers, or optional clean-in-place systems provide automated sanitising of the system.

Clear inspection tubing can be located in any straight run, allowing visual monitoring of fill percentage and cleanliness during washdown.

The conveyor is suitable for friable bulk food and nutraceutical products, as well as contamination-sensitive chemical products. Modular system components can be combined in unlimited configurations to move materials horizontally, vertically or at any angle, through small holes in walls or ceilings.

Flexicon Corporation (Australia) Pty Limited

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Product distribution gate for smaller capacities

Mount one or two Revolution Mid-Gate product distribution gates at any position on a FastBack conveyor pan. This provides proportional product distribution to multiple seasoning application, weighing and packaging stations, without interrupting the product supply to downstream locations. Suitable for small- to medium-capacity distribution of snacks, crackers and other products, Revolution Mid-Gates fit even tight installations with minimal space between weighers.

The cylindrical design eliminates pinch-points to reduce product breakage and operator injury. Its leak-proof design reduces the risk of cross-contamination. Controlled by the weigher/bagmaker it supplies product to, the gate ensures consistent delivery of product for all throughputs and maximum machine run-times for high efficiency.

Heat and Control Pty Ltd

www.heatandcontrol.com

Planetary roller screws

Planetary roller screws are available from Motion Technologies in sizes ranging from 8 to 25 mm diameter, 1 to 10 mm lead and 1.9 to 36 kN load ratings. The device consists of a screw and nut with several planetary rollers parallel to the axis between the screw and nut.

The rollers have many points of contact with the screw and roller nut, providing two to three times the stiffness of similarly sized ball screws without significantly increasing friction or decreasing efficiency. The contact geometry also improves shock resistance and increases static and dynamic thrust-load capacities by a factor of 3 to 5 over comparable ball screws. The expected service life for a given load is increased by up to 15 times.

The rollers in the screw are always in contact and do not circulate in and out of the nut. The multitude of contact points of the planetary rollers can carry large loads and provide high resolution (small axial movement). The screws produce high rotational speeds up to 6500 rpm.

The screws are suitable for high-precision, high-speed, heavy-load, long-life and heavy-use applications.

Motion Technologies Pty Ltd
www.motiontech.com.au



Bin and bag tipper

The Wyma Bin and Bag Tipper gently tips fresh produce stored in bags, bins or boxes that are too heavy for manual unloading.

The ability to quickly change between bin and bag operations minimises machine loading and

operational requirements. Another feature is the ability to secure the bags from the front, without having to reach out at the back of the bin tipper to place the retaining hooks on the back loops.

A steel woven fence can be provided around the bin and bag tipping area, with entry into the loading zone controlled via a sensor. Any movement detected within that sensor area triggers the tipper to stop. The remote-control panel, positioned outside the fence, includes a reset button for a manual stop and start.

The tipper eliminates the need for separate tippers and in-feed points, reducing capital investment and footprint.

Wyma Engineering (NZ) Ltd
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Barcode scanners with dual port

Sick has released the CLV615 Dual Port barcode scanner, featuring an integrated switch that makes it easy to install the sensor in a Profinet IO network.

The CLV615 Dual Port is an addition to Sick's portfolio of flexible fieldbus identification sensors, complementing the Profinet onboard single port for barcode scanners, image-based code readers and RFID devices. This means that either the existing solution with the external CDF600-2 fieldbus module or the dual-port variant can be used to integrate the scanner in a ring topology.

The compact laser scanner is suitable for identifying totes within picking and conveyor systems and, with a scanning frequency of up to 1000 scans/s and a reading field of between 25 and 330 mm, it is optimised for intralogistics.

There are a number of different configuration methods. As well as typical configuration direct in the control environment (via a GSDML file), the scanner can also be configured using the SOPAS ET user interface. If the barcode scanners are installed in a ring topology, the redundant set-up means that the system will continue running, even if there is an isolated fault in the cable or a field device. This is due to the fact that the CLV615 Dual Port supports the media-redundant protocol, thereby ensuring continued data communication with every device in the network after a short switching time.

SICK Pty Ltd

www.sick.com.au

V conveyors for cylindrical products

Cylindrical products are often difficult to transport or accumulate and store on conveyor systems due to the shape of the product. Sensitive cylindrical products can also be damaged or caught up on the conveyor.

Adept Conveyor Technologies has developed a means to convey such product using two smaller conveyors set in a V configuration.

The solution is adaptable to a wide range of product diameters, lengths and weights, and can minimise surface damage due to transport and storage. This system is also cost effective compared to other complex solutions. V conveyors can be powered or non-powered and are available as either roller or belt conveyors, and in a variety of materials and surface finishes. Lifting devices for loading, unloading and rotating products, along with storage skids and trolleys, are also available.

Powered V conveyors can be configured as simple transport conveyor modules or as accumulation and storage conveyor modules with minimal change required.

The features of the powered conveyor modules are: 24 VDC power; robust gearbox design to operate with high efficiency; a wide range of speed and power using low energy; IP54 rating.

Adept Conveyor Technologies

www.adeptconveyor.com.au



Energy-efficiency module for compressed air systems

The Festo energy-efficiency module MS6-E2M is an intelligent service unit system to automatically monitor and regulate operating parameters for compressed air usage.

By actively intervening in the air supply, particularly during stand-by operation, the consumption of compressed air can be reduced. At the same time, the automatic monitoring of operating parameters such as flow and pressure ensures a reliable production process. The module is suitable for new, energy-efficient machines and, with the connection of sensors to a PLC, it can also be used as a retrofit on older installations.

During downtime, the compressed air supply to the machine is shut off, thus preventing any air escaping through leakages on the machine. When the module is in shut-off mode, it checks the installation for leaks. If it detects a pressure drop equal to a value predefined by the user, it signals this to the plant control system. It automatically detects leaks in a piping system, enabling maintenance to be carried out.

The module also features active condition monitoring, which gives plant operators access to energy- and process-related data at all times.

Measured values for flow rate, air consumption and pressure can be called up at any time. It is possible, for example, to determine whether a plant is consuming more air now than a year ago, how much compressed air is needed for a production batch, whether the pressure is correctly adjusted or how high the pressure and flow rate were at the time of a machine breakdown.

Festo Pty Ltd

www.festo.com.au



General-purpose variable speed drives

ABB's general-purpose ACS580 variable speed drives offer plug-in simplicity, protection options for harsh environments and connectivity with smartphone apps for advanced services.

The general-purpose drive portfolio also includes a power range with drive modules for cabinet installations, complementing the wall-mounted drives offering for IP21 and IP55 protection classes.

The drive module range supplies 250 to 500 kW of power in a 380 to 480 V range. The drive modules feature a robust IP00 enclosure with coated circuit boards.

The drive range is ready to control a variety of pumps, compressors, fans, conveyors, mixers and other variable and basic constant-torque applications. It features an advanced pedestal system and ramp for quick and easy installation, and takes very little time for set-up and commissioning.

The drive module provides reduced harmonics with built-in choke and has integrated EMC class C3 filter and common mode filter. Drive modules are small and compact, offering significant power density. Other built-in features include Modbus RTU fieldbus interface and dual-channel safe torque off with SIL 3 PL e. The drives feature advanced diagnostics, allowing operators to intuitively analyse and resolve any issues.

The ACS580 has features that improve energy efficiency and reduce operating wear without the need for additional external programmable logic controllers.

The drives support connectivity to mobile applications with built-in features, opening opportunities for data management, analysis, services and support.

ABB Australia Pty Ltd

www.abbaustralia.com.au



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Kaeser delivers compressed air to eucalyptus oil manufacturer

An independent Australian owned and operated pharmaceutical company, FGB Natural Products (FGB) specialises in manufacturing natural, over-the-counter pharmaceuticals, nutritional supplements, household products, personal care products and medical devices that can be found in pharmacies and supermarkets throughout Australia.

Also a producer and manufacturer of eucalyptus oil and eucalyptus oil-based products, FGB manufactures well-known and loved brands including Bosisto's 'Parrot' brand Eucalyptus Oil and the Euky Bear range from its facility in Oakley South, Victoria.

Compressed air is used to power a number of functions across the facility, from the automatic capping to the high-speed labeller and shrink-wrapping machines. Larry Michaud, the maintenance officer at FGB, recently called on Kaeser Compressors to replace the company's ageing compressed air system. Requiring reliable, high-quality and dry compressed air, FGB chose to install a Kaeser CSD 105 rotary screw compressor along with a 1000 L air receiver and DC108E desiccant dryer.

At the heart of every CSD rotary screw compressor lies a low-speed Sigma Profile screw compressor block equipped with flow optimised rotors. Developed by Kaeser, the Sigma Profile achieves power savings of up to 15% compared with conventional screw compressor block rotor profiles for an energy-efficient solution. In addition, all Kaeser rotary screw compressor blocks are powered by IE3-rated drive motors

that comply with, and exceed, prevailing Australian MEPS regulations for three-phase electric motors.

The internal component layout in the CSD series rotary screw compressors ensures efficiency and also allows direct access to all service and maintenance points from the front of the unit.

Producing exceptionally dry compressed air is paramount for FGB in the manufacturing process, where any moisture contamination to the compressed air supply could cause product spoilage. As a result, FGB chose to install a Kaeser DC108E heatless desiccant dryer with Eco Control. The dryer has a high adsorption capacity and its regeneration capability provides sustained low-pressure dewpoint performance with minimal pressure and energy loss. For maximum energy savings, the DC E models are equipped with 'Eco Control', an

intelligent control system that features a purge air savings mode.

The equipment has been installed and operating for over 12 months. "We are very happy with the performance of the Kaeser equipment, which has proven to be very reliable in operation. We are also impressed with the long service life of the equipment, which has created cost savings for us," said Michaud.

Kaeser Compressors Australia
www.kaeser.com



Conveyor belt

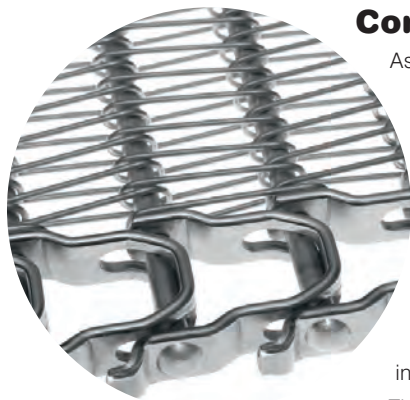
Ashworth's Omni-Pro conveyor belt features zero-tension, 360° buttonless welds. The welds are produced with an automated process that precisely positions each rod and then completely melts and fuses the rod and link together, creating consistently strong and smooth welds.

By eliminating traditional bridge welding, the belts are capable of withstanding high loads. The welds are free from surface imperfections and crevices, which improves cleaning characteristics by eliminating bacteria entrapments.

The belt design also includes a protrusion leg that prevents welds from contacting spiral cage bars and permits the belt to run more smoothly with less cage-bar wear. Each link is manufactured with a coining process to prevent break-in wear and reduce belt elongation, increasing belt life.

The stainless steel belts are available in 19, 25.4, 30.5 and 38.1 mm pitch options, with turn ratios ranging from 1.6 to 2.8 and belt widths from 305 to 1524 mm. The belts can withstand spiral/turn-curve tensions up to 136 kg for 100,000 cycles.

Ashworth Bros Inc.
www.ashworth.com





Pick-up device for vacuum conveying

Dinnissen Process Technology has developed a pneumatic pick-up device for providing a constant inflow of powders, particles and granulates in vacuum conveying systems.

The device plays an important

role in slow-flow conveying systems - which can be used to pneumatically transport fragile, sticky and soft products - to ensure the product can be transported through the system at the proper loading factor and speed.

The pick-up is fitted with an automatically regulated air supply for the inflow of products. This ensures that an optimum amount of transport air or gas is used for each product. Via the automatic valve, the precise capacity for one or more inflow products can be chosen on the basis of transport pressure. This means the proper ratio between transport speed and loading factor can always be realised, even for products with very different characteristics. This makes it possible to transport products without the use of mechanical dosage devices, sluices or screw transporters.

Lynchborough - GPM

www.lynchborough.com.au

Conveyor/process belting for fruit and vegetable processing, agriculture

The AMtex range of conveyor/process belting, available from Rydell Industrial (Belting), is suitable for use in vegetable and fruit processing and agricultural industries. It is constructed of high-performance textile carcasses, for low stretch and improved tracking, and has high quality synthetic covers for high abrasion and oil resistance.

The sealed PU underside construction ensures good hygiene and long service life, while the high adhesion levels give consistent belt performance. The belts are available with homogenous cleats, guide ropes and sidewalls, and meet full FDA standards.

Rydell Industrial (Belting) Co

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Lion cheese keeps its cool

with new refrigeration system

A new refrigeration system has proved a vital consideration for Lion as the food and beverage manufacturer has expanded The Heritage cheese factory in Burnie to help supply growing international demand for dairy products.

After decades of organic growth, the latest upgrade of Lion's north-west Tasmanian factory required a fresh approach to support the company's aim to double production at the site.

The new plant, designed by leading engineering consultant pitt&sherry, replaces an ageing system that included some components more than 40 years old.

According to pitt&sherry's senior engineer on the project, John Wylie, "The system had finally outgrown itself" as Lion prepared for the future.

Refrigeration is an important factor in both production processing and cheesemaking. It is required for milk pre-cooling, milk storage and pasteurisation during production processing, and for soft ripened cheese coagulation and pressed cheese brine bath cooling, coolrooms, maturing rooms and climate control during cheesemaking.

The existing refrigeration plant at Burnie comprised three reciprocating compressors, including two Sabroes and a 40-year-old Vilter, as well as two ageing water-cooled evaporative condensers.

The secondary cooling mediums included liquid ammonia for the cool store, pressed cheese maturing, waxing tunnel, drying

tunnel and transit coolroom, and two chilled water systems.

"The total rated refrigeration capacity available was less than 25% of the predicted refrigeration load of the new facility," Wylie noted.

Packaged solution

The initial specification for the new refrigeration system was for a traditional central plant layout, comprising an engine room, evaporative condensers, flooded receiver, compressors, high- and low-temperature accumulators and chilled water storage tank.

However, this option was abandoned in favour of a packaged chiller system after the tender process delivered alternatives.

Despite an energy-efficiency penalty being associated with the packaged chiller system, several advantages were identified following analysis and comparison of both options.

"The packaged system's advantages were deemed to outweigh the energy-efficiency penalty and a decision to proceed with the packaged refrigeration solution was made," Wylie recalled.

Packaged advantages

The advantages of a packaged chiller solution included a lower requirement for ammonia charge, noise emissions are



© beatrice piève/Dollar Photo Club



Lion's new refrigeration plant.

contained within each unit, lower capital cost, smaller footprint than a central engine room, engine room building not necessarily required and ease of future upgrades.

In contrast, the lack of room for installation, a requirement for extensive building modifications, and disruption to the existing engine room's operation drove the decision away from the packaged option.

The trade-off was a slight energy penalty associated with several factors, including higher cooling waters from the ammonia condenser and increased fan airflow, both to the cooling tower.

"In addition, improved part load performance for the central plant option was part of the penalty as the heat exchangers were to run off a single accumulator fed by multiple compressors," said Wylie.

Another consideration was the coefficient of performance (COP) of the refrigeration plant, traditionally determined purely in terms of compressor efficiency.

Despite compressor COPs not varying between each option, a comprehensive assessment of condenser/cooling tower fans, cooling water pumps and primary/secondary chilled water pumps was undertaken.

Efficiency drive

The next step involved ensuring an energy-efficient outcome without compromising redundancy in the event of compressor failure.

In terms of part load performance, Wylie explained that an oversized compressor would suffer an energy penalty at low loads as co-efficient of performance varies with refrigeration demand and drops off considerably at very low loads.

"This required optimisation of a number of compressors," Wylie said. "To assist in the decision-making process, an hourly analysis of HVAC loads over a full year was carried out utilising typical meteorological data year (TMY) weather data. This was also added to a timing chart developed for process chilled water loads."

From this analysis, the number of hours per year at particular demand could be evaluated, and the compressor selection optimised.

Design energy demand

To meet design demand of 2.6 MW, three options were considered, with the final decision on a design incorporating four 700 kW compressors, as well as two 1750 kW cooling towers for heat rejection.

The analysis found that three compressors would service all loads up to the 95th percentile load, while four compressors were needed to service loads above this level. It was predicted that 50 hours per year would be above the 95th percentile.

"If a compressor was lost due to breakdown or maintenance there would be a negligible impact on operations of the plant," Wylie said.

Part load performance for this option was good, as compressors would progressively shut down to meet lowered demand, and the demand loads matched optimal COPs of each compressor.

The analysis showed that for 1500 hours per year, the refrigeration load would be around 100 kW - suited to one 700 kW compressor, and for 2000 hours per year the load would be around 1000 kW - suited to two 700 kW compressors.

In addition to the compressors, other energy-efficiency measures adopted included use of variable frequency drives (VFDs) on the secondary chilled water pumps and the cooling tower fans.



Pitt & Sherry
www.pittsh.com.au

Industrial compact scales

The Mettler-Toledo ICS4 and ICS6 are industrial compact scales. They are manufactured in aluminium diecast or in full stainless steel with ingress protection up to IP69K for high-pressure and high-temperature washdown.

The family includes scales with capacities from 0.6 to 600 kg and they are suitable for many industrial applications, from simple weighing and counting to more complex applications, such as totalising, checkweighing or classifying.

The firmware provides an intuitive graphical user interface, with prompts to lead operators step by step through a procedure. User-management profiles allow language, rights and key configuration settings.

Scale respective data interfaces connect up to four weighing platforms and integrate with existing IT or process-control systems. A USB-Host interface allows the simultaneous connection of multiple USB devices, such as printers, barcode readers and keyboards to maximise flexibility for individual workplaces. The 'alibi-on-the-fly' functionality stores weighing data on a USB stick in real time to avoid time-consuming downloads of weighing data at shift's end. Paired with the WLAN option, the scales are suitable for mobile applications. Optional rechargeable Lithium-ion batteries provide a mobile operation time of up to 29 h.

The devices are available as ready-to-use compact scales in many different capacities and sizes, or as weighing terminals in different application levels. All data can be managed on the scale or centrally with the upgraded PC software DatabICS allowing for management of users, article database and weighing data.

Mettler-Toledo Ltd
www.mt.com



Plunge wash system for leaf vegetables

ConTech has released a plunge system for the removal of debris from leaf vegetables.

The system replaces spray bars and manual hosing, which can create a production bottleneck. The product is packed into plastic returnable crates, operators feed the filled crates onto an infeed conveyor and these are automatically fed through the system and discharged once clean.

The crates infeed to the plunging system at a rate of up to 18 crates/min. The plunge system lowers and submerges the crated product into the water tank and on raising the product is subjected to a suction effect, which removes the debris from the product. This process is suitable for produce such as open leaf lettuce, eg, cos, and also silverbeet.

For iceberg lettuce and similar vegetables, the plunge system is bypassed and the crates enter a spray washing system that will rinse the stem of the upturned crated vegetable.

The operators can select between 1 to 6 plunges dependent on the product being washed or, if a product needs additional plunging due to the weather conditions on picking, the number of plunges will reduce the throughput rate.

According to the company, the introduction of the plunge washer can increase production by as much as 300%, with the product also being supplied cleaner and better presented compared with other wash systems.

The plunge system is an all stainless steel construction and can accommodate two crate sizes with differential side heights.

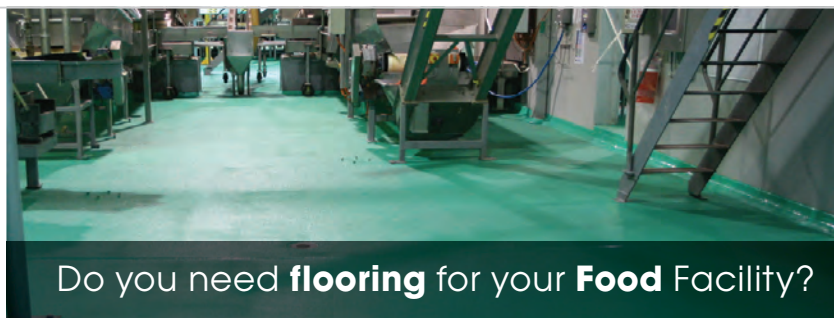
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AC drive

The Allen-Bradley PowerFlex 527 AC drive from Rockwell Automation is designed to work exclusively with a Logix-based programmable automation controller (PAC). The drive uses the Rockwell Software Studio 5000 Logix Designer to help simplify machine development and operation.

The drive complements machines using Allen-Bradley CompactLogix, ControlLogix or GuardLogix PACs and Allen-Bradley Kinetix servo drives. It uses embedded instructions shared with Kinetix servo drives, providing the same user experience for configuration, programming and control of both types of drives, helping save engineering time.

The drive also offers a solution for machine applications - such as pumps, fans and in-feed and out-feed conveyors - that need simple speed control for induction motors. The servo drive handles the more precise motor control operations involving speed, torque and position control.

Once programmed, drive configuration files can be transferred to a new machine without line-by-line copying.

The drive uses a standard EtherNet/IP infrastructure and features built-in, dual-port EtherNet/IP functionality. It is available in five frame sizes with power ratings from 0.4 to 22 kW (0.5 to 30 Hp) and global voltage ratings of 100 to 600 V.

Rockwell Automation Australia

www.rockwellautomation.com.au

Mobile-centric asset, maintenance and job scheduling cloud platform

Loc.8 for Windows 8 is a mobile-centric asset, maintenance and job scheduling cloud platform for the industrial, aviation, defence, facilities and resources industries.

Available through the Windows app store, the platform is part of a range of new editions aimed at asset owners, services providers and subcontractors, specifically supporting mobile workforces.

It provides an asset and maintenance platform designed to let asset owners, service providers and field technicians collaborate in real time to reduce costs and improve productivity.

Loc8.com Pty Ltd

www.loc8.com



Low-profile stainless steel platform scale

The R4 LPW is a low-profile platform scale designed to weigh any type of travelling load. The height of 35 mm for the 800 x 800 and 1000 x 800 mm models, and 45 mm for the 1250 x 1000 and 1500 x 1500 mm models, offers easy passage of any travelling equipment.

The scale's design, corresponding to the EHEDG norm, is based on an entirely stainless steel (AISI 304) structure and load cells of 0.8 µm roughness, meeting all hygiene and cleanliness requirements.

In all models except the 1500 x 1500, the platform can be lifted by one person using two pneumatic jacks to clean thoroughly with a high-pressure water jet.

The scale is compliant with the definition of a classical platform scale according to the WELMEC 2.4 guide.

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Wrap? Shrink? Stretch?

Comparing pallet packaging systems

For companies in the food, chemical or building material industries, the efficient packaging of their palletised goods is a deciding competitive factor. Factors to be considered include transport security, anti-theft protection, display characteristics of the packaged goods and weatherproofing for outside storage. Further key factors are process efficiency and cost reduction, as well as the system output.

There are three different palletising packaging techniques on the market: shrink hooding, stretch wrapping and stretch hooding.

Efficient packaging with shrink film

For shrink hooding, the film is produced as a tube using blow head extruders with tubular dies, which are then further processed or slit open to become a flat film. Hot air heats the film during the shrinking process up to the softening point. The film is shrunk to fit perfectly around the palletised goods, which, after cooling down, creates the necessary stability to secure the load. The heat required for the shrinking process is produced by the packaging system either electrically or with gas. The pallet can be packaged with its base open for

the skids of the forklift, allowing high-bay storage, or the film can be drawn over the pallet base. The shrinking method is particularly suitable for products that are sensitive to elastic packaging stacking, such as glass. The goods are reliably protected against environmental impacts; however, the shrinking process causes the film to become milky, which makes it difficult to see the goods or imprinted barcodes. Polyethylene (PE) bags might weld to the packaging film and the heat effect can be a fire hazard.

Or opt for wrapping instead?

The stretch-wrapping technique is one of the most popular solutions with many companies, due to the low initial investment costs for the machines. This technique, however,



requires a lot of material, which requires frequent changes of the film roll.

The film's elasticity solidifies the palletised goods during packaging; however, the technique provides little vertical tension force to the load, which is needed to provide stability. This technique is not suitable for materials with sharp edges, and additional plastic film is required to protect goods against environmental impacts and humidity. The film overlay prevents an optimal display of the products and barcodes on the film cannot be read easily. The film attracts dirt particles due to its adhesion properties and the products collect dust during longer storage periods. The film does not offer any protection against theft as goods can be removed from the pallet without ripping the film. Projecting film remnants can disturb the sensor system of the conveying technology or the rack feeders, causing error messages. Due to the many setting parameters, the quantity of the film required for the packaging cannot be calculated exactly.

High transport security with stretch hoods

The stretch hood technology is a combination of the film hood and stretch-wrapping techniques.



Like shrink hooding, the stretch film adapts to any product that is stacked on the pallet. And similar to wrapping, the film is very elastic and therefore solidifies the material via contracting forces, giving high load stability. The film is not glued to the product during the process, and it is possible to pack the pallet either for high-bay storage systems or with understretch. The smooth film surface ensures high visibility of the packaged goods and therefore provides a good display of the packed goods, with barcode labelling quickly recognisable.

The used film is recyclable, less film and energy are required and, as stretch hooding does not use heat, the fire hazard is reduced. It allows for a clean and dry outdoor storage, protecting goods against environmental impacts, humidity, insects and UV rays.


Weighing the costs

Engineers from BEUMER Group compared shrink hooding to stretch hooding on a palletised test stack 1630 mm in height. The shrink-hooding system processed 35 to 70 pallets/hour, with film strength between 120 and 180 micrometres. Using the stretch-hooding method, throughput was nearly doubled with 100 to 120 pallets/hour, with film strength between 70 and 140 micrometres. Less material was required due to the elasticity of the film.

Based on the 2014 market price for shrink film of €1.70/kg, the packaging costs for a film hood were approx. €1.02, equating to approx. €306,000 for 300,000 pallets/year.

The film used for stretch hooding was slightly more expensive at €1.90/kg in 2014. As less film is required, the cost to form a film hood was €0.57. This equates to a cost difference of approx. €159,000 for 300,000 pallets, a cost saving of 52%.

Tailored solutions

Each product has its own handling characteristics, which require careful analysis by the user, to determine the pallet packaging requirements. Calculating the economic efficiency of different packaging techniques should take into account the individual energy consumption, as well as the maintenance, investment and system costs. 



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Energy storage system for large power users

Powerstar Virtue is an energy storage system suitable for large energy users. It harnesses the excess voltage supplied from the grid, stores the excess and deploys it at times when the cost of power is at peak tariff.

According to the company, because most buildings receive power from the grid at 247 V and most electrical equipment is designed to work most efficiently at 220-230 V, the result is 'wasted' energy which the system can store and deploy.

The technology allows users to become a virtual power station, reliably forecasting how much power will be available at all times and enabling decisions to be made on when stored energy should be used.

The system can be integrated with on-site renewable energy generation such as solar and wind to combine the energy saved from the system with that generated from the renewable energy source.

The system can also eliminate the need for inverters on renewable installations, which can reduce the cost and therefore improve the return on investment.

Sites will also benefit from reduced harmonics, voltage phase balancing, improved power factor and reduced maintenance costs of electrical equipment.

EMSc Australia Pty Ltd
www.powerstar.com.au



Threaded line vac turns pipe into a conveyor

EXAIR's aluminium 3/8" NPT and 1/2" NPT Threaded Line Vac air-operated conveyors convert ordinary pipe into a powerful conveying system for parts, scrap, trim and other bulk materials. Their small size makes them suitable for fitting in the cramped spaces and tight confines of many production lines. The systems are designed to attach to

plumbing pipe couplers, making it possible to build a complete system using ordinary pipe and fittings. The small conveyors are suitable to move small parts and a small quantity of material or gases, and transport scrap or product out of small spaces.

The conveyors eject a small amount of compressed air to produce a vacuum on one end with high output flows on the other. Response is instantaneous. Regulating the compressed air pressure provides control of the conveying rate. Applications include scrap trim removal, material conveying, part transfer, fibre tensioning, filling operations and sampling.

Larger sizes up to 2" NPT in aluminium and stainless steel, and smooth-end models for hoses up to 5" are available.

Compressed Air Australia Pty Ltd
www.caasafety.com.au

Robotic keg handling system

Gebo Cermex's robotic key handling system, for depalletising and palletising kegs, is a 6-axis poly-articulated robot. Designed for various keg sizes, including 20 L, 30 L Slim, 30 L Large, 50 L and 58 L, it incorporates a vision system to detect randomly placed kegs on a pallet, keg orientation, cap presence and optional cap removal.

The system provides secured grip of kegs in any condition, dry, wet or frozen or partially dented, and can handle empty and full kegs up to 90 kg. The robotic system operates at 98.5% efficiency at speeds of 6 kegs/min for depalletising and 10 kegs/min when palletising. A simple drop-in piece adapts the gripper to different keg formats and the system includes power fail-safe grip and positive grip and release detection and a user-friendly human machine interface.

Gebo Cermex at Tetra Pak Marketing Pty Ltd
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Spectacular green energy orb to deliver sustainable profits to beef processor



A spectacular orb-shaped green energy storage facility being installed at one of Australia's largest beef processing plants is an example of how industry can profit from environmental initiatives.

The 6000 m³ capacity storage tank collects biogas produced by the Global Water Engineering (GWE) COHRAL (Covered High Rate Anaerobic Lagoon) being installed by CST Wastewater Solutions at Oakey Beef Exports on Queensland's Darling Downs.

To be commissioned next year, the plant will extract green energy biogas (methane) from its wastewater streams to replace millions of dollars' worth of natural gas currently consumed at the abattoir.

The 26 m-high storage tank - one of the world's largest of its type - features resilient flexible double membrane storage so that gas produced by the COHRAL plant can be safely stored separately from the gas generator. Use of the separate tank for gas storage provides security against leakage, with gas securely contained in the tank instead of being more loosely contained under lagoon covers.

GWE's anaerobic waste water technology has been used worldwide at more than 300 installations of totally enclosed tanks, or reactors. However, this is the first time it has been applied to a covered lagoon, an application where it has significant further potential in countries with strong agribusiness sectors.

The plant is expected to repay its cost of construction inside five years through gas purchase savings - then continue to deliver benefits and profitability, according to Oakey Beef Exports General Manager Pat Gleeson.

In addition to lowering the plant's dependence on increasingly expensive supplies of natural gas, the anaerobic digestion plant will simultaneously reduce the plant's carbon footprint and produce wastewater far cleaner than typical waste lagoons.

COHRAL - which is applicable to both livestock and cropping operations - uses concentrated anaerobic bacteria to digest 70% of the organic matter (COD, or chemical oxygen demand) in Oakey Beef Exports' wastewater to produce effluent of far higher quality than typical open lagoons.

"In addition to the obvious waste-to-energy benefits, the process also helps curb odours that emanate from open lagoons in processing plants," says CST Wastewater Solutions Managing Director Michael Bambridge. "This is becoming a much bigger issue in Australasia and other countries worldwide as urban encroachment means agribusiness and expanding communities are located much closer to each other than previously," he said.

CST Wastewater Solutions
www.cstwastewater.com



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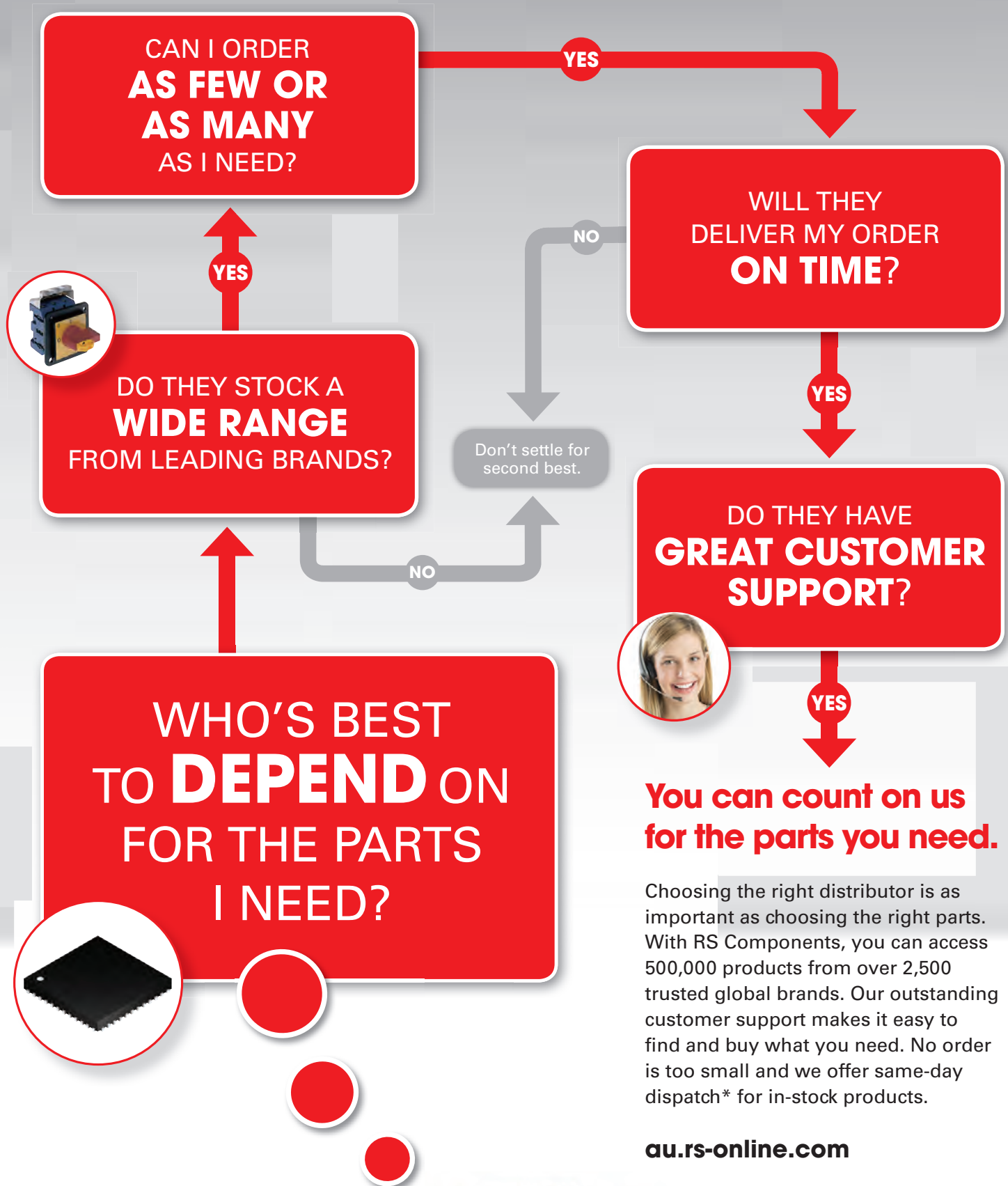
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