


November/December 2015
Vol.23 No.4

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

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knows who its father is

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Supply chains

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Australia's supply chains

unprepared for looming crisis

Australia's peak supply chain body warns that the country faces a looming skills crisis among supply chain professionals, leaving companies vulnerable to supply chain breakdown, fraud and human rights abuses.

A global survey of 645 supply chain professionals has revealed that almost half (48%) of Australian supply chain managers say their employer has failed to equip them with the new skills they need to fulfil the demands of their jobs and avert major crises.

This finding comes to light against a backdrop of significant and far-reaching changes within the global supply chain industry, as the required skill set moves beyond hard analytical skills to include a broader skills base and a need for a range of 'soft skills' such as relationship management, influencing and persuasion skills, as well as more sophisticated and technical expertise.

According to Mark Lamb, Chartered Institute of Procurement & Supply Australasia (CIPS) managing director, there has been a fundamental shift in the role and priorities of supply chain managers from a traditional cost-control role to one that increasingly prioritises managing risk and building fair and sustainable supply chains. He believes this change has come about due to the growing complexity of supply chains coupled with a heightened focus on supply chain risk.

There is also evidence of a motivation crisis among professionals, with 62% of Australian respondents believing their role is not adequately respected within their business — which hampers their capacity to improve supply chain management and develop their own skills.

CIPS warns that without trained and qualified supply chain professionals, Australia's businesses and consumers become exposed to fraud, unreliable partners and human rights abuses further down the chain. They believe that these factors pose serious moral questions about the basis for, and sustainability of, Australia's economy.

"Our findings show that in Australia, demand for skills is not being met and the ability of professionals to do their job has been undermined. Without proper skills and training, we risk human rights abuses and malpractice all along the supply chain. Professionals are doing the best they can with



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insufficient training, but as the threats to Australian supply chains continue to evolve, so skills must be continuously refreshed to keep up," said Lamb.

The survey reveals that across the globe, inadequately trained supply chain managers are failing to prevent malpractice, investigate the origin of raw materials or follow best practice. Globally, 80% of those who consider themselves as inadequately trained supply chain professionals admit that there could be undetected malpractice in their supply chain, with only 17% able to see the entire length of their supply chain.

In a telling statistic, supply chain managers who have been adequately trained are 53% more likely to be carrying out yearly supplier audits — an important way to prevent disruptions and spot fraud.

"You wouldn't trust an inadequately skilled surgeon using outdated equipment to operate, but that is often what is happening in the management of Australian supply chains. It is a looming crisis that requires immediate action," warns Lamb.

These findings are shared as the Q2 2015 CIPS Risk Index reveals that global supply chain risk has jumped to its highest level since late 2013. The rise has been driven by a tightening of credit in China, which has forced supply chain managers to look much more closely at the durability of their Asian supply chains. As a result, the Asia-Pacific region contributes more to global supply chain risk than any other region.

The survey also reveals that Australian supply chain managers see ethical considerations as the most important responsibility of the profession. Almost half (44%) say that treating human beings fairly at all levels of the supply chain is one of the top three aims of a supply chain professional, followed by helping to promote economic stability and fulfilling regulatory standards (both 38%). Supply chain managers are also decreasingly concerned with driving down supplier quotes at all costs. Only 6% in the survey were motivated by driving a hard bargain, with 56% motivated by the task of contributing to business growth.





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Food FOR thought

Challenge yields 200 ideas for better packaging

A challenge issued to the world's designers to create better and more sustainable consumer packaging has resulted in almost 200 design

proposals, covering everything from e-book covers to toilet paper packaging.

Swedish company Iggesund Paperboard, which instigated the project, has now selected three winners:

Jessica Bergdahl, Moa Ahlström, and Linnea Löfgren, students from Stockholm, were selected for their tri-function crisps packaging. As packaging, it protects its contents better than a traditional bag and it can also be unfolded and function as a serving bowl. The lid, which is used to close the packaging, can be used to serve dip in.

Maikel Roberts from Barcelona designed a packaging system for rolls of toilet or kitchen paper.

Bulgarian designer company Alpha Design was the third winner for its proposal for a holder and protective cover for e-book readers.



And we are all so surprised (not)! ADC finds Italians are dumping tomatoes

The Anti-Dumping Commission (ADC) has found that imported processed tomatoes from Italian companies Feger and La Doria have been illegally dumped in Australia.

In its Statement of Essential Facts, the ADC acknowledged the impact EU subsidies are having on Italian canned tomato prices.

Since 2010, the illegal dumping of tomato products has resulted in material damage to SPC including reduced margins and declining profitability. SPC has struggled to compete on price with these heavily subsidised dumped Italian tomatoes.

The commissioner is recommending preliminary dumping duties be imposed at margins of 7.5% and 5.1%. Feger and La Doria's exports represent approximately half of the imported Italian tomatoes in Australia. In SPC's previous case, the ADC found that 103 of 105 Italian tomato exporters were found to be dumping.

SPC Managing Director Reg Weine acknowledged the support for SPC. "This decision is critical, not just for SPC but for Australia's manufacturing industry and food processing sector," he said.

"The future of Australia's food processing sector, horticulture industry and the livelihood of Australian farmers is being undermined as more and more cheap imports flood the market and find their way onto supermarket shelves.

"We need a level playing field to succeed, and today's statement gives me confidence that SPC can continue to produce the quality clean, green Australian products that our consumers love and we are famous for," said Weine.

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Vibration Systems & Solutions now covers both sides of Australia

Having appointed Steve Johnson as its technical representative, Victoria, Western Australia-based Vibration Systems & Solutions now covers all of Australia.

Steve brings with him experience in vibration technology, with special emphasis on food processing and production.

He will cover the range of Netter and Martin/Cougar vibrators handled by VSS, in electric, pneumatic and hydraulic models, used both as flow aids and as drives for vibrating feeders and tables.

Steve can help with the correct selection of vibrator to give the optimum solution to flow problems from hoppers and chutes, which may be caused by moisture or natural oils in the product, or simply by 'hot days/cold nights', when raw materials become sticky because of condensation in the hopper.

Steve can be contacted on 0417 430 934 or sales@vibrationsystems.com.au.



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Coconut drinks recalled after undeclared dairy causes anaphylaxis

Following incidents of consumers suffering severe allergic reactions to undeclared dairy products in coconut milk drinks, Food Standards Australia New Zealand (FSANZ) has urged consumers with a dairy allergy to be aware of recent recalls.

Recalls have been issued for V-Fresh Coconut Milk Drink and Orthodox Coconut Milk Juice, and food enforcement agencies in the states and territories and the Commonwealth Department of Agriculture (the enforcement agency for imported food) are investigating similar products.

FSANZ says there have been two reported cases of anaphylactic reactions associated with the consumption of coconut milk drinks where dairy products were present but were not declared on the product label, as required under the Food Standards Code.

As a precautionary measure, the Department of Agriculture is inspecting all imports of the recalled products to ensure the labels now declare the presence of allergens, and is working to identify and inspect other imported coconut milk drinks. If milk products are not declared on the label, samples will be sent for testing to determine whether an undeclared allergen is present and further recalls may be possible.

The Department of Agriculture is working with the NSW Food Authority and other regulators to identify and contact businesses that import coconut milk drinks to make them aware of the recalls and request they check and confirm their allergen labelling is correct.

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Agriculture, food and beverage feature in top 500 private companies

Strong growth for agriculture industries and associated food processing industries — particularly meat processing — have underpinned some of the major company movements in 2015.

Revealing its annual Top 500 Private Companies List, IBISWorld attributed much of the growth in the food sector to free trade agreements and increasing global demand for Australian produce.

Sanger Australia rose from 80 to 63, due to an increase in demand for Australian beef in North America and Japan, while large sales growth in milk processing and ice-cream businesses saw Norco Co-op leap from 104 to 83.

Green's Foods entered the list for the first time, at position 285. The company's total revenue increased by 72.6% following the acquisition of Goodman's biscuit business in December 2013, which saw Green's emerge as the largest Australian-owned biscuit company.

Five of the top 20 positions were occupied by companies from the food and beverage and agricultural industries: grain cooperative Co-operative Bulk Handling in 2nd, Devondale Murray Goulburn in 5th, beef processor Teys Australia in 6th, Queensland Sugar at number 13 and PFD Food Services in 16th.

IBISWorld Founder and Director Phil Ruthven said, "In 2015, Australia's largest private enterprises generated revenue of \$296 billion and over 442,000 jobs."



Amendment to tests on poultry products under the Imported Food Inspection Scheme

Based on the Food Standards Australia New Zealand (FSANZ) advice, the Department of Agriculture is implementing changes which will apply to all import declarations lodged in the Integrated Cargo System from 29 September 2015.

Ready to eat cooked poultry pate and poultry livers (Reference: POL 09/2015). Supersedes Cooked poultry pate and poultry livers (Reference POL 05/2014).

The risk food 'Cooked chicken meat' will be described as 'Ready-to-eat cooked poultry pate and poultry livers'. The risk management of this food will continue to require imports be tested for *Listeria monocytogenes*. Testing for *Salmonella* will no longer apply to this food at the risk rate.

Ready to eat cooked chicken meat (Reference: HEN 09/2015). Supersedes Cooked chicken meat (Reference HEN 05/2014).



The risk food 'Cooked chicken meat' will be described as 'Ready-to-eat cooked chicken meat'. The information on the webpage clarifies that imports of chicken meat are restricted by biosecurity requirements and are only permitted entry from New Zealand. This food from New Zealand is not subject to inspection under the Imported Food Inspection Scheme.

Food

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New seafood threat emerges: waste

Overfishing, pollution and climate change are threatening global seafood resources. And now another threat has been identified that is closer to home — consumer waste.

According to research from the Johns Hopkins Center for a Livable Future (CLF), as much as 47% of the edible US seafood supply is lost each year, and consumers are the biggest culprit.

The findings, published in the November issue of *Global Environmental Change*, come as food waste in general has been in the spotlight and concerns have been raised about the sustainability of the world's seafood resources.

In the US and around the world, people are being advised to eat more seafood,

but overfishing, climate change, pollution, habitat destruction and the use of fish for other purposes besides human consumption threaten the global seafood supply.

The study analysed the food waste issue by focusing on the amount of seafood lost annually at each stage of the food supply chain and at the consumer level. The researchers estimated the US edible seafood supply at approximately 4.7 billion lb (2.1 billion kg) per year, of which 2.3 billion lb (1 billion kg) is wasted. 330 million lb (149.7 million kg) is lost in distribution and retail, 573 million lb (260 million kg) is lost when commercial fishers catch the wrong species of fish and then discard it (a concept called bycatch) and a staggering 1.3 billion lb (589.7 million kg) is lost at the consumer level.



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Diageo delivers with 'one touch' supply chain

Global alcohol manufacturer Diageo is the owner of brands such as Johnnie Walker, Crown Royal, J&B, Smirnoff, Baileys, Tanqueray and Guinness.

Sitting alongside the Huntingwood manufacturing site is Diageo's new distribution centre (DC), which has consolidated Diageo's two Sydney facilities into one.

The DC, which has recently been awarded the 2015 Smart Award for Excellence in Manufacturing Supply Chains, has the capacity to store 26,000 pallets of Diageo's products, more than doubling the facility's previous capacity of 10,000 pallets.

The DC's 'one touch' supply chain has delivered efficiencies that have enabled Diageo to bring distribution back in-house rather than having to outsource to third-party logistics providers.

The facility features a Dematic ColbyRACK custom-designed 31 m high-bay storage system. The six-aisle, double-deep, storage system is serviced by six Dematic RapidStore cranes, capable of handling around 110 pallet movements/hour. A key benefit of the system is its ability to immediately transfer stock from production straight into storage for order readiness.

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Flexible packaging dominates food market

While glass, metal and paper packaging are slowly falling out of fashion, innovative flexible packaging is becoming more popular.

Market research company Canadean estimates that 786,095 million units of flexible packaging will be consumed within global retail food markets in 2018, accounting for more than 53% of the food packaging market.

The report finds that the global demand for pouches in the food market will grow by 2489 million pack units between 2014 and 2017 — a 14.9% increase in the total food pouches market size. Metal, on the other hand, will record the slowest growth in the food packaging market.

Kirsty Nolan, analyst at Canadean, said that lightweight and durable pouches can be stored more easily in cupboards, are less likely to get damaged and are lighter to transport. She predicts that microwaveable pouches are on the verge of replacing tinned ready-meal products, as the outer plastic layers of microwaveable pouches are designed to cool quickly while keeping



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contents hot, allowing consumers to eat straight from the microwave.

Other advantages of flexible pouches include: cost reductions due to lightweight, thin plastic walls and no outer packaging; easy-to-open and resealable grooves or zips; waste minimisation through sustainable and biodegradable material; and improvements in shelf life of the product.



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Recycling program for yoghurt pouches

Milk processor Fonterra Brands New Zealand (FBNZ) has partnered with TerraCycle to launch a recycling program for yoghurt pouches — a packaging product that would previously have gone to landfill.

Fonterra Environmental Manager Nic Bishop explains that the program followed the release of FBNZ's kids' yoghurt, Anchor Uno, in a pouch format that was popular with children but did not allow consumers to recycle the packaging.

"That's why we have partnered with TerraCycle to provide a recycling solution for all yoghurt pouches," Bishop said. "This program also builds on the Anchor Recycling Movement, which is where we develop recycled-product ideas and community partnerships."

The Fonterra Pouch Brigade is a free recycling program that enables New Zealanders to collect their empty yoghurt pouches and send them to TerraCycle. The company will then upcycle the pouches into children's pencil cases or recycle them into new products, such as chairs and park benches.



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Pork CRC turning research into reality

Four key research projects that will benefit Australia's pork industry are nearing commercial reality. The projects, focused on improving pig nutrition, enhancing weaner performance, increasing reproduction and enriching the lives of group-housed sows, are at various stages of development and commercialisation with the Cooperative Research Centre for High Integrity Australian Pork (Pork CRC).

Pork CRC CEO Roger Campbell said close working relationships with Aunir, the University of Queensland, Elanco and Ridley had helped turn well-thought-out, cleverly researched ideas and concepts into commercially viable propositions.

Pork CRC research has developed AusScan Online — the world's first in-vivo energy values for cereal grains and reactive lysine values for 'heat damaged' canola and soybean meal using near infrared spectroscopy (NIRS). Pork CRC now has a business agreement with UK company Aunir to make AusScan NIRS calibrations available online. Dr Campbell said Pork CRC was working with Aunir, pork producers, laboratories and feed

mills to ensure Australia's pig industry had access to the latest calibrations.

In conjunction with BEC Animal Nutrition, Dr Eugeni Roura from the University of Queensland and Pork CRC have developed a performance enhancer premix for weaned pigs.

Pork CRC holds patents on improving reproduction via research it supported by Dr William Van Wettere, University of Adelaide, who showed that adding ractopamine to sow lactation diets minimised sow body protein loss.

"The commercial product, produced by Elanco and marketed as Paylean, supports improved subsequent reproduction. Executing the patents will allow Australian pork producers to access this potentially valuable technology," Dr Campbell said.

With the enrichment of gestating sows a major consideration for the industry, Ridley Mills and Pork CRC have begun commercial studies on the behaviour of sows at mixing.

"Early Pork CRC supported work at SunPork Farms North in Queensland by Tracey Muller showed that providing poured blocks reduced chase time and increased lying time in the first four days after mixing," Dr Campbell said.

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'Australian Made' applications are booming

Australian producers and manufacturers are rushing to brand products as genuinely Australian in an effort to demonstrate quality, safety and ethical values.

Australian Made Campaign Chief Executive Ian Harrison said the average number of businesses registering to use the 'Australian Made, Australian Grown' logo each month has almost doubled over the past year.

The not-for-profit Australian Made Campaign administers and promotes the iconic green-and-gold kangaroo, which for almost 30 years has been used by producers and manufacturers to promote their products as genuinely Australian.

"Our research shows country of origin is a key factor in product purchase decisions, particularly for food, and consumers are looking for goods made and grown in Australia, so it's no surprise that businesses are keen to capitalise on country-of-origin branding," Harrison said.

"The Australian Made, Australian Grown logo is the only registered country-of-origin certification trademark for all classes of Australian goods — as well as third-party accreditation it is a powerful selling tool."

Harrison said the sharp rise in use of the logo could be largely attributed to increasing awareness of the benefits of locally made and grown goods, and the impact buying locally has on the economy, community and environment.



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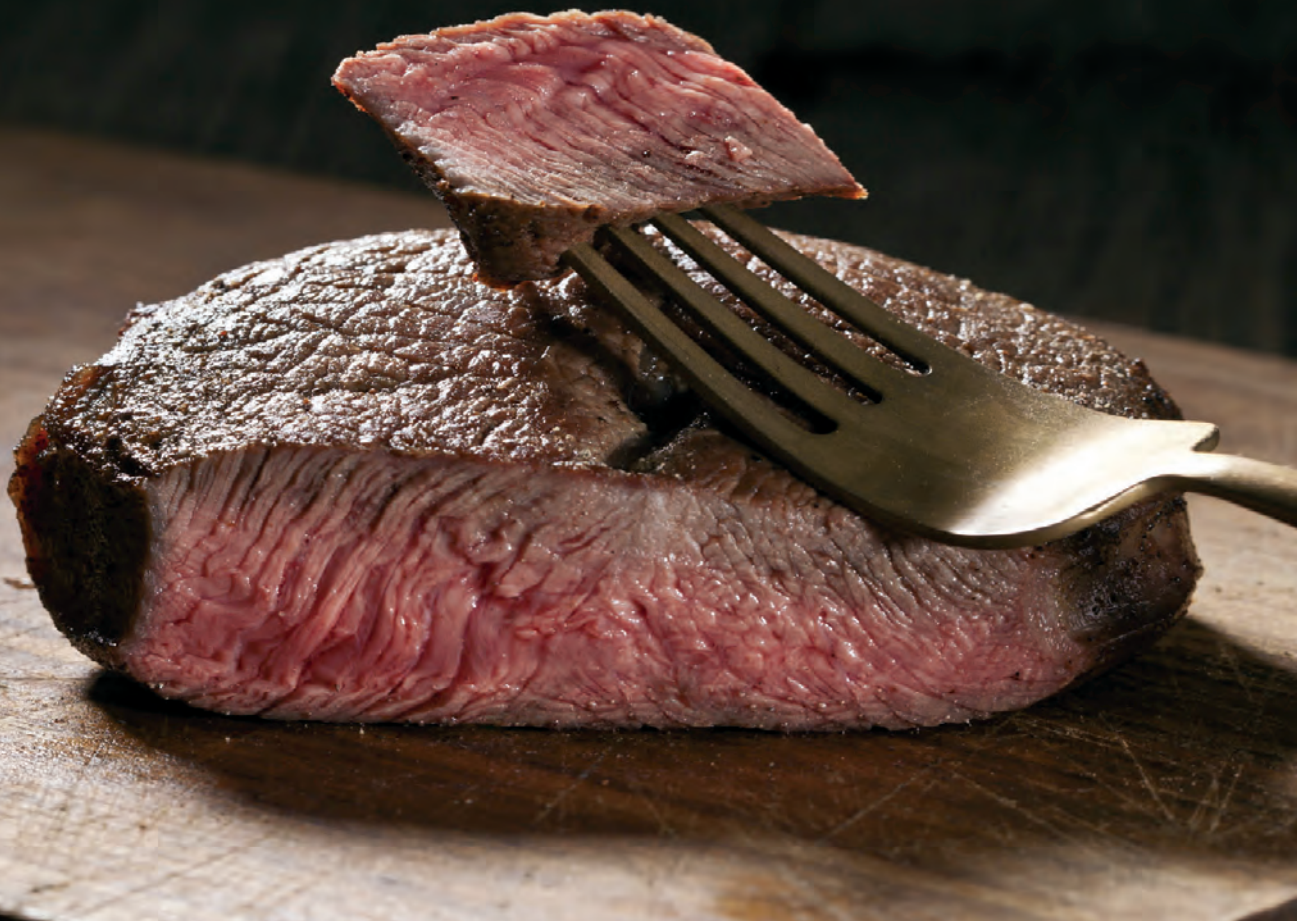
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From paddock to plate or farm to fridge

The benefits of transparency and traceability in the meat supply chain

MEAT, POULTRY, SEAFOOD

“Irish produced pigmeat has recently tested positive for the presence of dioxins. It is estimated that approximately 10% of pigmeat from the Republic of Ireland is affected by the current contamination with dioxins. However, as all Irish pigs are slaughtered and processed in a small number of processing plants, it has not been possible to distinguish between potentially contaminated and non-contaminated product. Therefore, as a precautionary measure all pork products originating from the Irish Republic have been recalled,”

Food Safety Authority of Ireland, December 2008.

In late 2008, the Irish pigmeat industry was dealt a severe blow. It had to recall all Irish pork products made over a three-month period after dioxins were found in slaughtered pigs that had been fed contaminated meal. Although less than 10% of pork products were potentially affected by the contamination, 100% of product had to be recalled. Had there been an effective farm-to-fork traceability protocol in place the contaminated product could have been reliably identified and recalled. This would have dramatically reduced the cost of the recall and the damage to the reputation of the Irish pigmeat industry.

In 2008, there was a legal requirement for food businesses to be able to trace one step forward and one step back — food businesses had to know who supplied them and where their product had gone. However, there was no legal requirement for ‘process traceability’ — food businesses were not required to have traceability systems that could trace raw materials through the factory and into finished product. So there was no legal requirement for pork factories to be able to identify exactly which pork carcass from a particular farm went into each batch of finished pork product. This oversight resulted in the need for the 100% recall.

Ultimately 30,000 tonnes of returned product were destroyed, as well as 170,000 pigs and 5700 cattle, with a cost to the Irish exchequer in excess of €20 million. This figure does not include the cost of the reputational damage to the Irish agriculture and food industries. The Irish Government also had to introduce

a €200 million compensation package for the Irish pork industry, which was funded by the Irish taxpayer. Thousands of workers lost their jobs and the European Union maintained that there would be no funding for the Irish pork industry in the wake of the crisis.

Since 2008, the food safety technology industry has grown rapidly and new ways to keep food safer at every part of the supply chain have been developed and implemented.

Reporting requirements mandate more detailed monitoring and record keeping for food producers, and implementing new technologies is a common — if not necessary — strategy to meet compliance.

One strategy is to employ the Internet of Things, which uses a combination of sensors, the internet and a network of devices, both mobile and desktop, to collect, organise and even analyse data at all stages of the supply chain. Sensors can perform a wide range of functions, such as tracking production conditions, shipping time, temperature and a host of other metrics relevant to the quality and safety of the food supply.

Some of the more recent sensor developments include:

Listeria detection — Dr Carmen Gomes, researcher with Texas A&M's Department of Biological and Agricultural Engineering, created a biosensor chip that will be able to detect even low *Listeria* levels in food samples in minutes. This means much faster detection than the current standard tests, which take several days to return results. It could also lead to faster and potentially smaller recalls if the contamination is discovered and dealt with early enough.

Species detection — Eurofin Scientific devised chip technology that determines 21 types of animal species in food using DNA targets. This type of technology could prevent fiascos like horsemeat used in beef and can help food manufacturers ensure labelling compliance while avoiding contamination of unwanted species.

Origin identification — DNATrek has created DNA 'barcodes' that can be applied to produce via a spray or wax without affecting odour and taste, or compromising food safety. The barcodes enable farmers to essentially tag their foods. This way, companies and regulators can identify and trace back products that cause disease outbreaks and recalls, which enables them to handle any issues more quickly.

DNA-based meat traceability solution — IdentiGEN was founded by researchers from Trinity College in Dublin, who developed the process that assesses a panel of genetic markers using high-throughput DNA analysis. The company's principal product, the DNA TraceBack traceability system, provides food retailers, processors and producers with the capability to identify and trace the source of meat products through the entire supply chain. This generates value-added assurance for consumers.

DNA meat tests

DNA can serve as a permanent, accurate and tamper-proof identifier. The 'building block of life' offers food processors a great way to track and trace a product. It offers a couple of huge advantages — not the least of which is its safety. As the



cells of almost all organisms contain DNA, its safety for human consumption cannot be questioned.

The Republic of Ireland was the first country in the world to introduce a nationwide pork DNA testing scheme. First it established an Irish boar database. In late 2014, 91 retail pork products were subjected to DNA tests and in February this year the Irish Farmers' Association (IFA) released the results. To its horror 29% of the samples tested were not assigned to the Irish boar database and so the so-called Irish pork had not been farmed in Ireland but at least it actually was pork.

Species identification through DNA testing made world headlines in 2013 when Irish food safety inspectors uncovered the Europe-wide horsemeat scandal. The scandal started when the Food Safety Authority of Ireland (FSAI) tested the DNA in 27 'beefburgers' only to find that 10 contained horsemeat and 23 contained pork.


Both the IFA and FSAI have used the Irish firm IdentiGEN to carry out DNA meat testing on their behalf. Since the horsemeat scandal, IdentiGEN has implemented DNA-based monitoring programs in a number of large food firms and individual meat processing companies.

While IdentiGEN's main product, called DNA TraceBack, undoubtedly plays a food safety role, it does much more than that. The system can be used with beef, pork, poultry, lamb, goat, fish and other protein-based foods. It allows users to trace individuals throughout the entire processing, packaging and sales process. Users can then compile information on any trait they care to track, from breed and production method to commercial traits, such as tenderness and flavour.

That's because DNA TraceBack uses an animal's own DNA to create what IdentiGEN calls an accurate, permanent and tamper-proof identification tool. Animals are raised just as they otherwise would have been and then trained workers collect samples from each at the point of harvest — a point at which all identity is typically lost when ear tags and other markers are separated from the carcass.

DNA tracing also provides a faster way to identify the source of contaminated meat in the event of a recall, speeding the process from weeks or months to just hours. For example, it can identify the multiple animals whose parts were used in ground beef, which may be made from 1000 different animals, in a 25 kg box.

The technology's ability to pinpoint particular animals could even reduce the amount of meat affected by recalls, which generally are tremendously costly for producers, suppliers and others.

Today's supermarket meat case is filled with promises. From organic, antibiotic-free and Halal to branded and breed-specific, there's a product for every market niche. While consumers appear willing to pay extra for these, they also want something in return — a guarantee that they're getting what's touted on the label. And modern tracking and tracing systems are enabling them to do just that. 



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Packing poultry

Wipasz, a leading Polish poultry processor, more than doubled its processed output to over 90,000 birds per day after completing a major automation project. The facility in Mlawka utilised the weighing and packing expertise of Ishida Europe, mainly in its fixed weight MAP (modified atmosphere) packs.

Ishida installed four packing lines, one each for wings and fillets and two for different leg cuts. The lines, which give Wipasz the flexibility to respond to market needs in terms of pack and product variations, combine accurate weighing technology and top-of-the-range tray sealing with a variety of pack inspection and testing systems, including X-ray, seal testing and vision inspection, to ensure the highest quality standards.

Each line begins with the feeding of pieces from the cut-up line to an Ishida multihead weigher, in most cases a screwfeeder model which gently but firmly propels the sticky fresh chicken into hoppers fitted with scraper gates. Accurate portions are then deposited onto one of the lanes of a weigh batcher and sent to operators for packing and styling in the trays. The outstanding weighing accuracy of the Ishida is crucial in reducing giveaway, helping to maximise the yield of the fixed-weight packs from a given bird input.

For quality presentation, the advanced Ishida traysealers offer good tray appearance while the vision system ensures correct branding and label placement.

Product quality is maintained through the use of X-ray systems combined with metal detection which exclude metal and other contaminants (including bones in fillets), while other traysealer features check that the correct modified atmosphere is used for each product. Ishida seal testers then ensure that the atmosphere is securely maintained by excluding any packs at risk of leaking.



All information printed onto the sealed packs and their labels is also inspected by the integrated seal testing/vision systems and checked against information from the line equipment and the company's factory and enterprise-wide data resources. This provides full data integrity including weight accuracy, shelf life and other figures.

This project marks the first phase of a major strategic investment by Wipasz aimed at transforming its operations to among the best and most modern in Europe. Phase Two (which is already underway) will deliver a capacity of 13,500 birds per hour and one of the most technological advanced poultry plants in the world.

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

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

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

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

Stainless steel construction and fully hose-able for easy & sanitary cleaning.

Single, double and multi-head versions available. Test kitchen facilities available with development assistance.

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Operator safety system when de-rinding or skinning

To address the high number of hand- and finger-related injuries that occur, CBS Foodtech includes operator training programs along with equipment such as the German-manufactured MAJA de-rinding machines.

The de-rinding machines, which are suitable for use in the industrial meat processing industry, offer increased yield and good engineering along with their focus on operator safety and comfort.

The MAJA-OPS (Operator Protection System) is an active system for avoiding injury when operating the open de-rinding/skinning machines and offers considerable risk minimisation benefits to the operator.

The operator protection system MAJA-OPS connects the machine user electrically with the machine.

The operator wears two electrically conductive gloves that serve as electrodes. As soon as the operator has to put on the gloves and connected to the machine, this is recognised by the electronic system and the machine is released.

In order to avoid any conductive connection when touching the machine, the operator wears a second insulating rubber glove over the conductive glove.

The operator also wears electrically insulated boots.

As soon as the insulating glove is damaged by the knife or a tooth of the transport roller, the electrical connection occurs from the operator to the machine. As a result of this contact, the rotating direction of the toothed roller is reversed and stopped. A short video demonstrating this in operation can be found on CBS Foodtech's YouTube Channel (search Maja OPS).

The Maja Operator Protection System is a suitable companion for the membrane skinning machine EVM 4006 Split, but is also compatible with the Maja EVM 4004, ESM4550 and ESM4800 machines.

CBS Foodtech

www.cbsfoodtech.com.au



Forming and Portioning with a difference

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

- Efficient and consistent food portioning.
- Easy adjustment of form thickness for product weight control.
- Models and drums to produce from 1200 to 24,000 forms per hour.
- Auto paper interleaving available to place paper under each form such as beef burgers.
- Auto-wire cleaning available to ensure smooth clean cut of form from the drum under high speed operation.
- Custom manufactured form drums to your design requirements - schnitzel, star, wedge, chevap, round, square, rectangle - almost anything.
- World standard safety features.
- Foot pedal operation option.
- A.Q.I.S. approved.
- Auto stacking / auto-traying / auto-indexing - all available.
- Matching 200mm batter, crumb and fry lines also available.



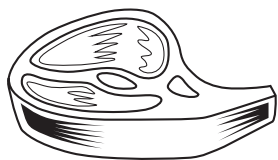
Benchtop models to suit small and cottage industry all the way through to medium and large scale production plants. Low entry-level pricing.



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Technology creates cattle feed from food waste

A Mexican company has patented technology to extract nutrients from the organic waste generated by hotels and restaurants and transform them into a main ingredient for cattle food.

Veterinarian and Biotectra founder Luis Jose Gaviño Cruz has developed a technology that kills viruses and bacteria from food waste, and processes it to obtain an ingredient that is added to animal food.

Gaviño Cruz said the process is patented as a microbiological activator, which is added to the mixture of waste and promotes the development of acidophilus bacteria and fungi. This promotes a healthy environment in the intestine of the animal and reinforces its immune system, leaving the pH at the correct level to destroy viruses and bacteria that harm animals.

When subjected to the microbiological process, the bacteria unfold the nutrients from the organic waste to make them more digestible for the animals. This process breaks the bonds and makes the structural sugars digestible, so when a pig or a cow consume the foods, they will obtain a greater amount of nutrients.

Biotectra set the goal of creating a rapid fermentation process which will create a finished product in 72 hours that can be consumed by animals. The development team also wanted to reduce the practice of feeding animals with grains or seeds that can be used for human consumption.

According to Gaviño Cruz, the firm has managed to reduce the production cost of livestock feed by 30–50%, depending on the type of waste and the animal to be fed.

The company uses products rich in protein — such as waste turkey or chicken sausage, dairy, fruit and pastries — usually waste from hotels and restaurants. When the food is intended for ruminants, they work with waste from fruits, vegetables, chicken or fish.

In its raw state, organic waste represents a health problem for municipalities, as well as for the animals that ingest it. “We help companies in the food branch to dispose of their waste safely and the government to have an alternative that allows them to eliminate it,” the founder of Biotectra concluded.



That's a lot of chicken to recall

Nearly 1000 tonnes of chicken product has been recalled in the US after an outbreak of *Salmonella* Enteritidis. Epidemiologic, laboratory and traceback information has indicated that raw, frozen, stuffed and breaded chicken entrees produced by Aspen Foods are the likely source of the infections.

A Minnesota Department of Health (MDH) and Department of Agriculture (MDA) investigation established that three illnesses in Minnesota occurred after people had eaten Antioch Farms brand cordon bleu stuffed chicken breast, which is produced by Aspen Foods.

On 15 July 2015, Aspen Foods recalled approximately 897,514 kg of frozen, raw, stuffed and breaded chicken products that may be contaminated with *Salmonella* Enteritidis. The recall included products sold under 19 different brand names, including Antioch Farms, that were shipped to retail stores and food service locations nationwide. The chicken products were produced between 15 April 2015 and 10 July 2015.

Consumption of food contaminated with *Salmonella* can cause salmonellosis, one of the most common bacterial foodborne illnesses. The most common symptoms of salmonellosis are diarrhoea, abdominal cramps and fever within 12 to 72 hours after exposure to the organism. The illness usually lasts 4 to 7 days. Most people recover without treatment. In some persons, however, the diarrhoea may be so severe that the patient needs to be hospitalised. Older adults, infants and persons with weakened immune systems are more likely to develop a severe illness.

How does *Listeria* grow on refrigerated smoked salmon?

One of the challenges associated with managing the pathogen *Listeria monocytogenes* is its ability to grow on food while it is refrigerated.

Now, researchers have found that *Listeria* grows on refrigerated smoked salmon by way of different metabolic pathways from those it uses when growing on laboratory media, even when the media was modified to have the same salt content and pH as the salmon.

To grow on the salmon, the bacterium upregulates genes that enable it to use two compounds from cell membranes — ethanolamine and propanediol — as energy sources. In an interesting parallel, *L. monocytogenes*, as well as *Salmonella*, is known to use those same genes to grow within a host — in the gastrointestinal tract, and on macrophages.

Principal researcher Teresa Bergholz, PhD said the research could lead to reduced incidences of food-borne illness and death.

"There may be ways we can use this information to control the pathogen both in foods as well as in infected people," said Bergholz, assistant professor in the Department of Veterinary and Microbiological Sciences at North Dakota State University, Fargo.

"Understanding how a foodborne pathogen adapts to environmental stresses it encounters on a specific food could allow food microbiologists to develop inhibitors of metabolic or stress response pathways that are necessary for the pathogen to grow or survive on that product.

"The information may also enable improved risk assessments, as virulence of a pathogen may be affected considerably by the stress responses and/or metabolic pathways used to survive on the food," said Bergholz.

Bergholz noted that ready-to-eat products typically have very low levels of contamination with *L. monocytogenes*, and that the bacterium must be able to grow on the product during refrigerated storage in order to reach an infectious dose.

The research has been published in *Applied and Environmental Microbiology*, a journal of the American Society for Microbiology.

CBS Foodtech appointed agent for Sesotec

CBS Foodtech has secured the agency to sell Sesotec's metal detection and X-ray equipment throughout Australia.

The company says that detection and inspection equipment is becoming a prerequisite for suppliers to major supermarkets. The agreement will increase its portfolio of offerings to food manufacturers, which currently includes equipment, ingredients, consumables and consulting services.

Finding diarrhetic shellfish poisoning faster

Mussels, oysters, scallops and clams might be ingredients for fine cuisine, but they can also be a recipe for diarrhetic shellfish poisoning (DSP) — a gastrointestinal illness caused by marine toxins. Now, a portable, inexpensive device has been developed that can quickly and easily screen freshly caught shellfish for these toxins.

DSP is caused by eating shellfish that have accumulated okadaic acid (OA) or related marine toxins. Algal blooms — commonly referred to as 'red tides' — can produce these substances, which shellfish can accumulate through filter feeding. Because cooking the shellfish does not destroy the toxins, several regulations are in place to prevent the sale and consumption of tainted shellfish. To comply with these regulations, the current practice is to send samples to labs that use expensive, technically intense and slow tests.



So researchers set out to develop an inexpensive, easy-to-use and portable device that maintained the rigorous testing standards of off-site labs but could quickly test shellfish on boats and at other remote locations. The device's development was led by researcher Waqass Jawaid, a scientists with diagnostics company Neogen Europe and Queen's University's Institute for Global Food Security.

The researchers adapted a test called a lateral flow immunoassay (LFIA), which is like a home pregnancy test strip. This LFIA combines simple test procedures with an antibody previously shown to specifically bind to three OA toxins. The small, portable device can accurately screen for the presence of these substances in less than 20 minutes on a boat, before it goes further into the supply chain. If the test is positive, then the shellfish would not be sold. If the LFIA readout is negative, then an additional, easy-to-use test could be conducted dockside for 'total toxins', which would include detection of a fourth type of OA.

The researchers have published their results in the *Journal of Agricultural and Food Chemistry* and also acknowledge funding from Innovate UK, Scottish Enterprise and Neogen Europe.

Meat Industry Strategic Plan 2020

Minister for Agriculture Barnaby Joyce has launched the Meat Industry Strategic Plan 2020, outlining the future strategic focus of the production, processing and live export sectors of Australia's beef, sheepmeat and goatmeat supply chain.

Minister Joyce said the plan would put the red meat sector in a strong position to take advantage of extremely favourable international conditions, with strong global demand, high prices and a low dollar.

"These favourable conditions create a springboard for the red meat industry to advance and build an even stronger future — but it is essential the industry takes the lead in understanding its dynamics and setting its own direction."

Minister Joyce said that Australia exported more than \$13 billion of red meat and offal to 123 countries in 2014–15, and this success had prompted the allocation of \$30.8 million to boost access to premium markets overseas and appoint five new agricultural counsellors in key markets.

The government has also promised \$2.97 billion to support farmers and rural communities to strengthen drought preparedness, risk management and future drought support.

To read the Meat Industry Strategic Plan 2020, [click here](#).



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- Microbial enumeration
- Allergen detection
- Antibiotic residue detection
- Sample collection and transport



Meat production and consumption continues to increase worldwide

The OECD and FAO expect the worldwide meat consumption to continue to increase over the coming years. The reason for this is the growing world population and the economic development in numerous countries. In concrete terms, the world meat production is expected to increase from 297 million tonnes in 2011 up to 350 million tonnes by the year 2021. With a growth rate of 2.2% per year, the increase in poultry meat is expected to rise more significantly than for beef (+1.8%) and pork (+1.4%). As such, the poultry share of the world meat production will increase up to 37%. Pork will also account for 37% of the market share. The 200 million tonne mark was exceeded for the first time in the mid-1990s. In the past 50 years, the global meat production has thus quadrupled.

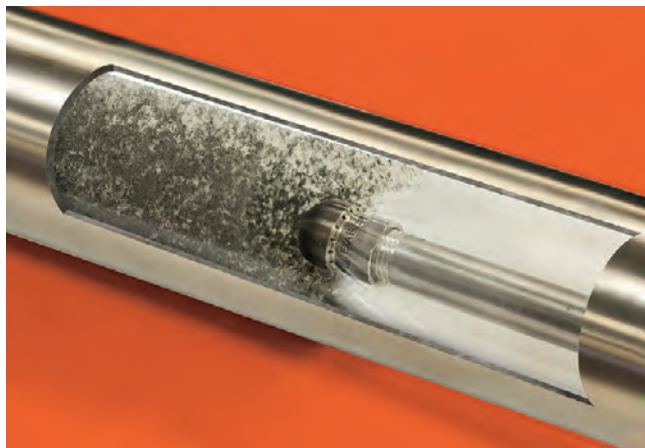
The meat production has also developed positively throughout Europe and according to estimates by the EU Commission is expected to grow further in 2015 and 2016. For the current year, the EU is expecting a meat production of 45.1 million tonnes of meat in total, 1.3% more than in 2014.

On the meat and meat products export market, Russia's import ban is still having a significant effect on the German and European exporters. However, these losses were almost compensated for by exports to Asia.



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bulk, storage & logistics



Back blow air nozzle

EXAIR's Back Blow Air Nozzle blows debris and liquids from pipe or hose inside diameters, channels, bores, holes, internal threads and other internal part features. An array of holes provides a forceful 360° airflow to clear out coolant, chips and light oils from machining processes. The nozzle prevents blowing chips further into a part, tube or pipe and eliminates safety hazards created by blowing debris out the far end of a pipe or tube.

The nozzle is manufactured with a small profile which will fit inside openings as small as 22 mm and is effective on diameters up to 100 mm. It is constructed of type 316 stainless steel to provide durability and resistance to corrosion. 16 mm flats milled on the body enable simple installation and a secure fit. Extension pipes from 152 mm to 1.8 m are offered for longer tube and pipe clean-out.

Sound level is 80 dBA and meets OSHA noise requirement 29 CFR 1910.95(a), as well as being CE compliant.

Compressed Air Australia Pty Ltd

www.caasafety.com.au

Lightweight collaborative tabletop robot

Universal Robots has launched the UR3 robot, an affordable, 6-axis, collaborative tabletop robot that has a payload of 3 kg and weighs 11 kg. It has a reach of 500 mm and allows for 360° rotation on all wrist joints and infinite rotation on the end joint.



The robot is suitable for products that require speedy, precise and consistent movements between waypoints. From pick and place and assembly to polish, glue and screw applications, the robot enables manufacturers to maintain uniform product output. For example, the robot can pick up screws, mount and tighten them while applying the correct torque.

The robot can be deployed in confined workspaces where the construction of large safety guarding is not feasible, or in environments with toxic or hazardous materials. It has 15 advanced, adjustable safety settings, including a force-sensing feature that enables the robot to limit the force on impact if it encounters an obstruction. Its default is to sense a force of 150 N, but it can be programmed to cease all movements if it encounters a force as low as 50 N along its path of motion.

The robot features 0.1 mm repeatability and can follow the outline of a surface by 'feel' rather than through the programming of precise movements and coordinates, which otherwise would require more than 100 data points programmed into the application.

Auto Control Systems

www.autocontrols.com.au

Resonance conveyors for sardine processing

In March 2015, Vibration Systems & Solutions (VSS) was approached to design conveyors to transport 7 t/h of sardines for a pet food processing project.

Netter FlexiLink technology was used, in which the conveyor trough is mounted on blade springs, with special connections between the tray and base of the conveyor. The drive unit was by a Netter NTK pneumatic vibrator and uses the resonant frequency of the springs to move the tray. Much like pushing a car, where, once moving, little energy is required to keep it moving, so too with the FlexiLink system which needs little air to operate. This gives a smooth vibratory action, with no harsh jarring of the tray (and product) as with crank arm-type drives.

VSS supplied the links, blades and vibrator for two conveyors and the client made the trays in his own workshop.

Shortly after this order was completed, another processor requested a similar system, but this time to handle 15 t/h. VSS upscaled all the parts and created conveyors that can theoretically move 17 t/h of sardines, quietly and with minimal air use.

Vibration Systems & Solutions (Australia) Pty Ltd

www.vibrationsystems.com.au



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Successful trial for re-usable banana crates

CHEP Australia's trial of re-usable plastic crates for the banana industry has been hailed as a success by growers and other members of the supply chain.

Early estimates indicate cost savings of 10–15%, while a reduction in damage to the fruit was also observed when using the crates compared with cardboard cartons.

In early 2015, more than 200 crates were used to pack bananas at a trial site in northern NSW, with wholesaler PW Chew managing transport, ripening and distribution. A combination of Lady Finger and Cavendish bananas were used in the trial. Sizes trialled included 15 kg XL, 13 kg XL and 13 kg large.

PW Chew Operations Manager Mark Bradshaw says the ability to cross-stack crates and the greater crate integrity over cartons provide significant advantages for the banana industry.

"The greater stability that is available in cross-stacking has shown to be of great benefit to the integrity of the bananas. By the time they were ripened for retail, the initial trials indicated that there was less rub marking, bruising due to movement and neck damage in comparison to the same fruit packed in cartons from the same district," Bradshaw said.

"Cooling and ripening of the fruit was far more efficient too with the crates, as you are not cooling the cardboard as well as the fruit. As a result, airflow, temperature and humidity are more consistent around the ripening room, which means we save nearly a day in ripening."

CHEP Australia has been developing the re-usable plastic crate in collaboration with the Australian banana industry for the past three years. The current design features smooth walls and a waved base to minimise damage to bananas, improved ventilation and a footprint to suit Australian pallets, with six crates per layer.

The CHEP pooling system also allows for crates to be returned for washing — to a HACCP level, if required — giving a hygienic solution for the industry and less overall wastage in cardboard.

CHEP Australia Business Development Manager Nick Jones said, "The trial gave all parties involved an opportunity to learn from each other to find the best packing methodology, supply chain logistics and retail requirements."

"The structural integrity of a plastic crate means that the weight bearing of a stacked pallet is through the crate, not a carton, so it won't compress."



"Compression damage to fruit from cartons is a major problem for the industry. Very early on in the trial, it became evident that the use of a slitted liner would be beneficial. The combination of plastic crates and liner bags allow for gases to flow through the bag, giving a more consistent ripening colour."

"From a ripening perspective we found the crates delivered consistent half-colour ripening to levels between stage three and four, compared with cardboard. One retailer commented that if they could have consistent colour at stage 3.5, then they will be able to increase their rate of sales."

The next phase in the trials of the plastic crates will be to conduct studies in northern Queensland to assess the crate performance over longer distances to the major capital cities.

The next round of trials will commence in September 2015. CHEP invites growers or supply chain companies interested in participating to contact Nick Jones on 0426 955 754 or Business Development Manager Gordon Sinclair on 0419 256 431.

CHEP Australia
www.chep.com

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Vibration Systems & Solutions (Australia)

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7 fire safety recommendations for manufacturing facilities

As manufacturers undertake rationalisation programs and centralise procurement services, the conversation around fire protection for the manufacturing sector is changing.

As part of a centralised approach, the management of fire safety processes and systems is shifting. Category managers are overseeing the appointment and management of a fire protection provider, while plant managers are responsible for the day-to-day supervision of fire safety procedures on site,” said Bill Adamopoulos from fire protection specialist Wormald.

“Fire protection is a shared responsibility and it is vital that all those involved in fire safety at manufacturing plants understand and invest in adequate fire protection solutions,” said Adamopoulos.

A fire incident can result in significant staff injuries, fatalities and costly damage that may mean the end of a business. Machines that are custom built may take months or even years to rebuild, resulting in significant downtime and lost revenues.

Wormald has developed seven fire safety recommendations for manufacturing facilities:

- 1. Establish responsibility for fire safety.** Generally, under Workplace Health and Safety (WHS) legislation, officers must ensure that the business meets its WHS obligations and can be held personally liable for failing to do so. It is important that clear systems are established for the management of fire safety, including exercising due diligence to ensure appropriate policies, procedures, safety practices and resources are in place. If responsibility is shared, the parameters for each manager should be clearly communicated and defined.
- 2. Understand legislative and regulatory requirements.** Fire safety is heavily regulated and it is the responsibility of every manufacturer to comply with appropriate legislation and Australian Standards. The national building code, Australian Standards and the principal set of WHS regulations in each state and territory legislation governing the maintenance of fire protection systems are central to fire safety. Typically, these documents stipulate that the person in control of a workplace, business or undertaking is responsible for ensuring that fire and explosion risks are minimised, appropriate fire protection is available and regular maintenance is conducted.
- 3. Conduct a thorough risk assessment.** A detailed understanding of fire risks and hazards can help to minimise fire and explosion risks and identify a suitable fire protection solution. The most common fire risks in manufacturing are machinery, stock

or parts stored on-site or in warehouses and the manufacturing process (for example, the use of heat or hazardous gases).

- 4. Install an adequate fire protection solution.** A range of fire protection solutions is available for manufacturing sites, including basic fire extinguishers, water spray deluge systems, gas systems and foam systems. It is important to install a solution that meets the specific requirements of the site. When deciding on a solution, some key considerations include the materials being used, size of the site, number of staff and legislative, regulatory and any insurance requirements that apply to the manufacturer's particular circumstances.
- 5. Regularly audit, inspect and maintain fire protection equipment.** A high level of reliability is essential when it comes to fire protection. Fire protection systems and equipment should perform to the standard to which they were originally designed and installed. Regular testing can validate the functionality of the systems and equipment and help to uncover any faults or issues that may cause malfunction. Australian Standard AS1851 - 'Maintenance of fire protection systems and equipment' recommends that fire protection systems be regularly tested, serviced and maintained.
- 6. Regularly revisit training and emergency response processes.** A confident team that is able to respond appropriately in the event of a fire is an invaluable investment and can substantially reduce the impact of a crisis. Emergency evacuation procedures should be regularly reviewed, and everyone working in a manufacturing facility should be trained on how to respond appropriately to a fire incident and use fire protection equipment correctly. This includes briefing new employees and regularly conducting refresher training for existing staff.
- 7. Choose a fire protection provider carefully.** Time is the biggest challenge facing manufacturers when it comes to fire safety. It can be difficult to find time to focus on fire protection and, as a result, it can often be overlooked. Outsourcing fire protection to a reputable provider can help to ensure compliance requirements are met and changes in legislation are closely monitored. The Fire Protection Association of Australia's Providers of Choice are required to comply with strict codes of practice and insurance requirements.

Wormald (Tyco/Fire & Security)
www.wormald.com.au

Rotary screw compressors

Kaeser's 22 kW ASD 40 SFC and ASD 40 T SFC rotary screw compressors produce free air deliveries between 1.02 and 4.58 m³/min, utilising a range of energy-saving features.

The product's screw compressor block features Kaeser's Sigma Profile rotors, which are flow optimised for increased efficiency. They are powered by efficient IE3 drive motors that exceed Australian MEPS regulations for three-phase electric motors.

The 1:1 direct drive motor drives the compressor screw block directly without transmission loss via a maintenance-free coupling, providing good performance and minimising maintenance. Idling periods are minimised by the industrial PC-based Sigma Control 2 compressor controller, which provides efficient system control and monitoring.

Featuring variable speed control, the volumetric flow rate can be adjusted within the control range according to pressure. As a result, operating pressure is maintained to within ± 0.1 bar. This allows maximum pressure to be reduced, saving energy and money.

The drive is housed in its own control cabinet to shield it from the heat of the compressor. A separate fan keeps operating temperatures in the optimum range to ensure maximum performance and service life.

The ASD T model features an integrated refrigeration dryer, which provides high-efficiency performance due to its energy-saving control.

Kaeser Compressors Australia
www.kaeser.com



Oil-free compressors

BOGE's HST compressors produce Class 0 oil-free compressed air. The compressors are driven by a permanent magnet motor, with high energy density. The air-lubricated bearings in the drive shaft enable speeds of up to 120,000 rotations.

Cost savings of up to 30% compared to conventional oil-free screw compressors are achievable, according to the company.

The titanium impellers sit at the ends of the motor shafts, rotating at high speeds to set the intake air in motion. The kinetic energy is converted to pressure energy in conjunction with the diffuser and the spiral housing. Cooling of the air after each compression stage, and the integrated frequency inverters, allows the volume flow rate to be adjusted to the demand for compressed air.

The compressors require only half as much floor space as for oil-free screw compressors, while the weight is reduced by two-thirds. Depending on the size, the sound pressure level is between 63 and 60 dB(A). In idle mode, energy required is below 1.9% of the rated power.

HST compressors are suitable for use in sensitive production areas such as the chemical, pharmaceutical, and food and beverage industries, as well as in refineries, breweries or paint shops. An optional heat recovery system uses the heat expended by the compressor for service water heating or space heating.

The compressors are available in three power levels with a standard pressure of 7.5 bar: the HST 55 produces 7.97 m³ of compressed air per minute, the HST 110 has a performance of 17.97 m³/min and the HST 220 produces 36.57 m³/min.

Boge Compressors Ltd
www.boge.net.au

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Pallet system conveyor

Dorner's 2200 Precision Move Pallet Systems are designed to increase efficiency and reduce downtime in various assembly automation processes. The systems use a pin tracking system to guide pallets through 90 turns and a fast belt change capability without the need to remove the conveyor from the system. The conveyor platform is suitable for the assembly automation, manufacturing and packaging industries, for applications including automated assembly, manual assembly, product testing and inspection.

During operation, pallets move on twin dual strand timing-belt conveyors. This design provides added load capacity in a small platform (up to 113 kg accumulated), quick belt change without the need to remove the conveyor from the system, widths of 160, 240, 320, 400 and 480 mm, lengths up to 7500 mm, 20 or fewer days delivery time, cleanroom class 100 Certification on the conveyor.

Lifting Modules include lift and locate, lift and rotate and lift and transfer. Simple Powered Corner Modules include 90° corner and 90° corner and merge.

Roblan Pty Ltd

www.roblan.com.au

1-phase DIN-rail mount power supply

PULS CP10 is a compact 240 W, 1-phase DIN-rail mount power supply. The units, which are 39 mm wide, are available in 12, 24 and 48 V versions.

The power is available over a temperature range from -25 to +60°C. Additionally, there are power reserves of 20% included, which may be used continuously at temperatures up to +45°C. For short-term peak loads with a maximum length of 12 ms, the units can deliver three times the nominal output current.

The units are equipped with a wide-range input circuit from 100 and 240 VAC and have a 95.2% full-load efficiency and good partial-load efficiencies.



Other features include Active Power Factor correction, DC okay LED indication and a high lifetime expectancy. All models in the range have IECEx approval and there are also dedicated DC input versions that can take voltages between 88 and 360 VDC.

Control Logic Pty Ltd

www.control-logic.com.au

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Intelligent part-turn valve actuator

Rotork's IQT intelligent part-turn valve actuator has been upgraded with a range of data logging and communication capabilities.

Diagnostic graphics present the valve torque, usage profiles and service logs. Local position indication, valve and actuator status, asset management and diagnostic operating information is available to download and can be viewed directly on the actuator's LCD display.

The software can save predefined sets of instructions and settings to apply to multiple actuators requiring the same configuration.

Valve maintenance requirements can be identified and anticipated, eliminating unplanned interruptions to the process. Data includes valve torque profiles, operational start profiles, vibration and temperature trend logs and an event log. Specific asset management information includes running time, average torque and number of starts. Service or maintenance alarms are selectable from configurable menus including open and close torque levels, total starts and vibration levels.

The actuators are suitable for three-phase, single-phase or DC power supplies, with a torque output range of 50 to 2000 Nm available for isolating, regulating and modulating duties. The output speed can be non-intrusively adjusted over a 4:1 range without affecting the output torque. All valve interface bases conform to ISO5211 and are fitted with removable couplings.

Hazardous area actuators are approved to the latest IEC Ex standards. Network connectivity options include Foundation Fieldbus, Profibus, HART and DeviceNet open systems, as well as Rotork's Pakscan wired or wireless systems.

Rotork Australia

www.rotork.com



Battery-electric reach forklifts

Toyota Material Handling Australia has introduced a range of narrow-aisle, battery-electric reach forklift trucks that provide safe, reliable and comfortable operation for a range of applications.

The 8FBRE Series models have lifting capacities from 1.2 to 1.6 tonnes with a maximum lift height of 8.5 m.

Features include a high degree of control, fast and smooth operation via easy-to-use fingertip control levers, a pedal layout that mimics a car, and electronically controlled 180° or 360° steering.

The seat and steering console are fully adjustable by the operator, and the height of the cab floor can also be adjusted to three different positions if required. Operators can also customise the settings for maximum speed and acceleration, automatic braking and steering sensitivity.

The forklifts include safety features including PIN-code start-up, automatic parking brake, clear view mast and overhead guard, optional tilting forks, emergency cut-off and electronic speed control.

Regenerative braking technology transfers brake energy back into the battery to provide extended run times between charging.

Toyota Material Handling Australia Pty Ltd

www.toyotamaterialhandling.com.au

THANK YOU

We would like to thank all our customers and suppliers for all their support in 2015 and wish you the best for 2016. We wish you a nice summer break and we are looking forward bringing you the best possible solutions for compressed air, vacuum and service in 2016. Seasons Greetings from everyone at Atlas Copco Compressors

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Atlas Copco

RFID streamlines automated tomato harvesting

Australians eat 22 kg of processed tomatoes per head every year, due to its presence as an ingredient in tomato sauce, soup, stews, pasta sauce and more.

Founded in 1899, the Japanese tomato processor Kagome has more than 100 years' experience in the tomato growing and processing industry. Since 2010, Kagome Australia's factory in Echuca has been cultivating and processing tomatoes, providing high-quality tomato products to food companies in Australia and overseas.

Quality control covers Kagome's entire process, from tomato seed management and growing crops through to in-store displays. The minimised use of agrochemicals and the maximised use of natural pollination ensure that the tomatoes supplied are grown in a manner that is friendly to people, the crops themselves and the environment.



Today, cultivating and processing tomatoes is automated, and it can be a logistical challenge to get the tomatoes from the field to the factory in the most efficient way. RFID technology from SICK allows Kagome to ensure product traceability and leads to increasing efficiency in the production process.

Searching for an automated identification solution

On the Echuca fields, Kagome operates 12 harvesters loading tomatoes into more than 300 huge bins, each with a capacity of 14 tonnes. Once a bin is full with fresh tomatoes, it is unloaded at a bin pad, waiting for one of 12 trucks to pick it up and take it to the weighbridge close to the factory. One trip from the fields to the Kagome factory takes approximately 90 minutes and each truck can load three bins — that is an average of around 42 tonnes of tomatoes per truck.

Three years ago there were long truck queues at the weighbridge, forcing drivers to wait for 12 minutes until their tomatoes could be weighed. As part of Kagome's quality control process, three samples from each bin had to be processed in the

laboratory to ensure they were from a Kagome farm, and the drivers had to prepare paperwork to document the harvesting process as well as the quantity and quality of the yield.

This paper-based process increased the potential for human error, which could result in contaminated products and conceivably create widespread foodborne illness. To ensure traceability, it was time for Kagome Australia to implement a paperless automated identification solution at the weighbridge.

Guaranteeing traceability: what is the best solution for identifying tomatoes?

Food traceability is the process of tracking a product's history and sharing that data along the entire processing path — so-called 'farm to fork' or 'paddock to plate' programs. While traceability has always been important for the food and beverage industry, in recent years the need for real-time recalls has increased in Australia due to plant processing errors or recalls from Food Standards Australia New Zealand (FSANZ).

In an ideal world, there would be no need for product recalls; however, in the event of a recall, minimising the impact is a major focus of any food manufacturer's program of compensation.

An effective tracking and tracing program comprises a number of components, starting with accurate and fast identification. For years, the identification workhorse has been the ubiquitous bar code. As foodstuffs move through the production process, they are identified by a unique code — on containers when in process, on packaging for the finished product, on cartons and pallets during transport and on shelves when they finally hit retail stores. The Kagome specialists were looking for a real-time identification solution that can handle

mud and tomato juice as well as heat, wind and rain.

Streamlining harvesting processes with RFID

RFID (radio-frequency identification) technology is increasingly found in food tracing as technology improves and prices come down. Implementation is not uncommon in the case of large containers containing raw products and in the mixing of bulk materials. It offers companies a number of ways to streamline and manage their capacities, focusing particularly on the issues of traceability and process reliability.

Using wireless technology for identification purposes opens up a new dimension in automatic data recording. RFID tags offer more functionality than bar code technology, as they are read/write devices and no visual contact of the tag is required. Moreover, their robustness means they can even survive harsh ambient conditions such as high temperatures, mud or wetness.

SICK Australia presented the RFU63x read/write unit to Kagome in 2012. The device is an ultrahigh-frequency

(UHF) RFID solution for the tracking and tracing of re-usable containers that also offers the possibility of bulk detection. Furthermore, the RFU63x can be used as an intelligent stand-alone system. Integrated functions such as data processing and filtering ensure stable reading performance and short reading cycles.

In January 2013, Kagome installed six RFU63x units from SICK — each equipped with three antennas for double-stacked bins — at the weighbridge and discharge hill at the factory in Echuca. Resistant and stable RFID tags were attached to the tomato bins, accompanying them right from the start of the harvesting process.

The RFU63x entirely meets Kagome's requirements for paperless automated identification of tomatoes and thus helps to prevent the typical errors made during inbound and outbound goods processes, such as incorrect data or missing accounting entries.

RFID allows real-time identification of where the tomatoes come from. Due to paperless identification, no truck driver has to leave the truck at the weighbridge anymore, so driver safety is enhanced. The trucks are spending less time at the weighbridge and traffic jams in front of the weighbridge and the tomato drop hill have become a thing of the past.



As the truck time at the weighbridge has been reduced from 12 minutes to two minutes, the truck driver can manage one extra trip per 12-hour shift. With a fleet of 12 trucks and one truck loading an average of 42 tonnes of tomatoes, this means a productivity gain of 504 tonnes.

With reliable real-time data made available by intelligent identification technology from SICK, Kagome gained the ability to make better decisions, thereby increasing productivity and efficiency.

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INTERNATIONAL



ISO/IEC approves farm-to-fork traceability standard

Two supply chain visibility standards that enable farm-to-fork traceability have been approved as international standards by the International Organisation for Standardisation (ISO) and the International Electrotechnical Commission (IEC).

GS1's Electronic Product Code Information Services (EPCIS) is an open standard which allows businesses to capture and share information about the movement and status — the what, where, when and why — of products, logistics units and other assets in the supply chain. Its companion standard, the Core Business Vocabulary (CBV), defines a standardised vocabulary, ensuring that all trading partners exchanging supply chain visibility data have a common and consistent understanding of the business meaning of that information.

Mark Fuller, GS1 Australia's chief operating officer said the standards enable trading partners to share information about the physical movement and status of products as they travel throughout the supply chain, streamline the ability to track and trace products, and meet consumer and regulatory demands for accurate and detailed product information.

Initially published in 2007, EPCIS is deployed in sectors such as transport and logistics and fresh foods to expand visibility and improve efficiency in areas ranging from inventory management to consumer safety. The versatility of EPCIS has helped drive adoption of the standard, which allows for industry-specific enhancements and can be implemented with a number of different data carriers, including GS1 barcodes and EPC/RFID tags.

The ability to capture information about the transformation of meat, fish, produce and upstream ingredients makes EPCIS an enabler of farm-to-fork traceability. The standard can also be leveraged to reduce opportunities for undetected manipulation or counterfeiting of pharmaceutical products.

The new ISO/IEC international designation will enable government agencies and regulated sectors to reference the standard. It also reinforces the implementation of the standard in commercial software solutions and hence its deployment across multiple sectors.

Thailand hosts intelligent warehouse exhibition



VIPs from the Ministry of Industry Thailand and the Thai Chamber of Commerce, as well as representatives from the exhibitors, join Loscam Thailand staff in front of the company booth.

An event in Thailand brought together the Asia-Pacific's leading intralogistics industry players to demonstrate to the market the integrated and intelligent power of the latest technology, hardware and software for modern warehouse management.

Intelligent Warehouse Exhibition 2015 was the first exhibition of its kind in Thailand, tailored to the needs of warehouse users. A highlight of the exhibition was the live demonstration of how a modern intelligent warehouse operates.

At the exhibition, Loscam Pooling Solutions exhibited its wide range of pooling solutions and products, including ECR

wooden pallets, hygiene plastic pallets, pallet cages, plastic crates and intermediate bulk containers (IBCs).

Since its launch in 1995, Loscam's Thailand operation has been a driver of pallet pooling across South-East Asia. In April 2015, the company completed the construction of a new super depot in Wang Noi Ayutthaya.

Loscam conducted a pallet pooling seminar at the Intelligent Warehouse Exhibition discussing opportunities to create value in Thailand's supply chain management and logistics industry through pallet pooling.

Processing

DIN rail mount power supplies



The PULS PIANO series are compact, industrial-grade power supplies. The series consists of three models: the 5 A PIC120.241C and PIC120.242C and the 10 A PIC240.241C. All models take a 220 to 240 VAC input and have an adjustable 24 to 28 VDC output.

The PIC120.241C and PIC240.241C also have a DC-OK relay contact that can be used to monitor the output to help prevent long downtimes.

The mechanically robust housing is made of a high-grade, reinforced moulded material, which permits the units to be used in surrounding temperatures up to 70°C.

Other product features include full power up to 55°C without temperature derating, high MTBF and efficiencies as well as being very compact (width of 39 mm for the 5 A unit and 49 mm for the 10 A unit).

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

Entry-level mixers

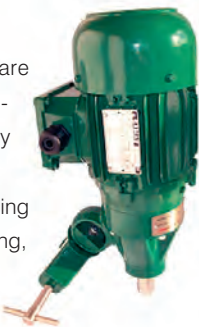
The SPX Lightnin brand H-Series mixers are general-purpose machines designed to withstand the mixing needs of standard day-to-day production.

The mixers are available in multiple mounting configurations, including clamp, flange and bung, so they can accommodate differing space limitations. Designed for capacities of up to 1850 L, the H-Series also is light enough (less than 11.5 kg) to be transported easily from one tank to another should an application require it.

Multiple impeller options are available including the A100, A310 and the folding prop style. Combining these options with the multiple mounting methods provides users with the flexibility to use the H-Series mixers in many different types of applications.

Overall, the H-Series product line is simple, robustly designed and easy to maintain, which makes it suitable for product testing and allows for 24/7 use in many applications.

SPX Flow Inc
www.spxflow.com.au



Large internal mix spray nozzles

EXAIR's 1/2 NPT Internal Mix Atomising Spray Nozzles atomise fluids in a range of spray patterns and liquid volumes for a variety of uses. They combine liquid and compressed air inside the air cap to produce an adjustable fine mist of atomised liquid.

The nozzles provide high-liquid flows at up to 1147 L/h and are available with multiple spray patterns, including narrow-angle round, wide-angle round and flat fan. They are suitable for coating, cooling, treating and painting a variety of products using compressed air and liquids with a viscosity of up to 300 cP.

Used with water, atomising nozzles are an efficient way to evenly cool hot items in an automated process. They are suitable for use with light oils, rust inhibitors, chemicals, paints and dyes.

The durable, corrosion-resistant, stainless steel nozzles are available with 1/4 and 1/2 NPT connections and in a variety of sizes and shapes. All models are adjustable and CE compliant.

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

Dairy processing handbook updated

Tetra Pak has released the latest edition of its *Dairy Processing Handbook*, an industry reference book providing guidance on the key operational steps of dairy processing.

Since its launch in the early 1980s, the publication has been used by academics and technical engineers in more than 100 countries. It has now been revised, based on the 2003 version, to include updated content on milk and whey powder, whey processing, concentrated yoghurt, as well as updates on commercial sterility regulations.

The 482-page handbook, which contains over 600 illustrations, can be ordered at www.dairyprocessinghandbook.com. A free digital version will be available from September 2015.

Tetra Pak Marketing Pty Ltd
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• NZ	Allied Lubricants Limited	0800 115 205

Lean manufacturing transforms Birch & Waite

The team at Birch & Waite is an Australian manufacturing success story, creating delicious food for the retail and food service markets for more than 30 years.

"We work hard to ensure that we're always offering the best possible products, but creating artisan products under the highest quality control procedures can come with an overhead," said David Charles, general manager of Birch & Waite.

To fuel growth into new market segments, senior management recognised the need to identify inefficiencies in their manufacturing processes. They engaged Corporate Partners to implement a lean manufacturing program throughout their business.

"We were thrilled to be able to introduce Birch & Waite to a variety of lean tools. These included 5S, Value Stream Mapping, Visual Workplace Management and Mini Business Teams," said Ray Edwards, managing director of Corporate Partners.

By working with Corporate Partners, Birch & Waite were able to transform their business. Productivity has increased

substantially, and peak demand is now being met without the need for an additional night shift, which significantly improves profitability. Another important part of the program was a company-wide focus on safety that has resulted in a reduction in lost time from injuries and a saving of \$265,000 in workers compensation premiums.

Birch & Waite found the team approach had a positive effect on morale.

"Employees are more engaged and empowered now, and as a result our absenteeism has also gone down," said Charles.

"The benefits to our business from implementing lean manufacturing through Corporate Partners have been significant. We have increased our production efficiency and, more importantly, this has been sustainable. We have been able to have a safer and more productive environment through our 5S training.

"Our company is now a much more agile and innovative organisation. This has been recognised with Birch & Waite being named in the BRW Magazine's top 50 most innovative companies for 2014. This is a very pleasing achievement by our business and testament to the engagement and dedication of all our staff.

"We have been very pleased to work with Corporate Partners on our business improvement program; the business is now well positioned for further expansion," said Charles.

Corporate Partners
www.corporatepartners.com.au



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Trans-Pacific trade deal to eliminate 98% of tariffs

After more than five years of negotiations, much of them shrouded in secrecy, a 12-country trade deal has been finalised.

The federal government says the Trans-Pacific Partnership Agreement (TPP) will deliver enormous benefits to Australia, including new opportunities in the rapidly growing Asia-Pacific region for businesses, farmers, manufacturers and service providers.

TPP countries, which collectively represent 40% of global GDP, will benefit from a more seamless trade and investment environment. The agreement will eliminate 98% of all tariffs across products ranging from beef, dairy, wine, sugar, rice, horticulture and seafood through to manufactured goods, resources and energy.

Australian investment in TPP countries has more than doubled in the last decade to reach \$868 billion in 2014 — a rise of 16% over the previous year — while investment in Australia from TPP countries more than doubled in the last decade to reach \$1.1 trillion in 2014 — a rise of 10% over the previous year.

TPP highlights

Agriculture

Beef: The TPP will reduce tariffs on Australian exports of beef to 9%; tariffs on beef into Mexico and Canada will be eliminated within 10 years; and the AUSFTA beef safeguard into the US will be eliminated.

Sugar: Australia has been granted: an effective doubling of access into the US, with an additional 65,000 tonnes from entry

into force and additional future quota allocations which, based on USDA long-term projections, could see Australian sugar exports to the US climb above 400,000 tonnes by 2019–20; further levy reduction for high-polarity sugar into Japan; an elimination of the tariff on refined sugar into Canada; the elimination of tariffs on raw sugar into Peru; and, for the first time, wholesale licencing arrangements for the supply of refined sugar to the food and beverage industries in Malaysia will be liberalised.

Rice: For the first time in over 20 years, Australia will be able to export more rice to Japan and an agreement has been reached on new administrative arrangements to facilitate trade. Rice tariffs into Mexico will be eliminated.

Dairy: With Japan, tariffs will be eliminated on a range of cheeses covering over \$100 million in existing Australian trade, and new preferential access will be given for a further estimated \$100 million of trade. There is also new quota access for Australia on butter and skim milk powder. Australian exports to Japan of mozzarella for processing use will be duty-free when blended with Japanese cheese. With the US, the agreement will enable access for 9000 more tonnes of cheese, as well as tariff elimination on milk powders and Swiss cheese. Australia will also gain new preferential access into Mexico and the highly protected Canadian market.

Cereals: Tariffs will be eliminated on wheat and barley exports into Mexico (within 10 years) and Canada (upon entry

into force). There will be reductions of the mark-ups applied to wheat and barley in Japan and the creation of new quota arrangements beyond JAEPA.

Wine: Tariffs will be eliminated into Mexico (between three and 10 years), Canada (upon entry into force), Peru (within six years) and, for the first time, Malaysia and Vietnam.

Seafood: Tariffs into Canada and Peru will be eliminated on entry into force, into Japan within 16 years and into Mexico within 15 years.

Australian freight and logistics providers also stand to benefit from enhanced commitments that support integrated logistics supply chains. Australian providers of transport and logistics services in Malaysia and Vietnam will gain strong trade and investment protections for the first time. The TPP will capture future liberalisation of investment regulations in aviation in Vietnam and freight trucking in Malaysia and Vietnam, key markets for Australian airlines and logistics providers.

Investment


The federal government says the TPP will create new investment opportunities and provide a more predictable and transparent regulatory environment for investment.

The TPP will promote further growth and diversification of Australian outward investment by liberalising investment regimes in key sectors such as mining and resources, telecommunications and financial services.

Under the TPP, Australia has retained the ability to screen investments in sensitive sectors to ensure they do not raise issues contrary to the national interest. All investments by foreign governments will continue to be examined and lower screening thresholds will apply to investment in agricultural land and agribusiness.

Worker and environmental protections

The TPP includes requirements for labour and environmental standards, including requiring TPP parties to combat wildlife trafficking and address illegal logging and illegal fishing, as well as reducing subsidies that cause the depletion of global fish stocks.

TPP negotiating parties are now finalising arrangements for the release of the TPP text, and it will be released well in advance of signature. Each country will then undertake its domestic treaty-making process. For Australia, this will involve tabling the treaty text in parliament along with a National Interest Analysis and a review by the Joint Standing Committee on Treaties to which all interested parties can make submissions. 

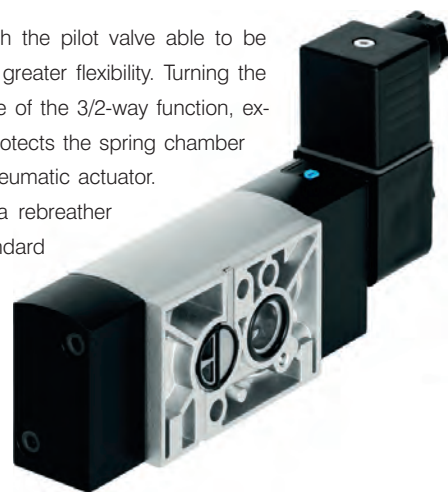
Valve

The Festo namur valve VSNC is used for distributed control systems, with the pilot valve able to be adapted for use with either a single-acting or a double-acting actuator for greater flexibility. Turning the seal around 180° converts a 5/2-way valve into a 3/2-way valve. In the case of the 3/2-way function, exhaust air is fed via the seal into the spring chamber of the actuator. This protects the spring chamber from contaminated ambient air and ensures a longer service life for the pneumatic actuator.

Available in a wide range of AC and DC coil voltages, the valve has a rebreather function to help prevent internal actuator corrosion. In addition to the standard coil range, an IEC-EX certified solenoid system provides protection against potentially explosive environments. The design of the valve means that any of the coils, even with different types of protection, can be mounted on a stainless steel armature tube, allowing versatile applications.

Festo Pty Ltd

www.festo.com.au



IP69K-rated right-angle gearheads

To meet increasing demand for hygienic stainless steel equipment within the Australian food industry, Motion Technologies has introduced Cone Drive's range of IP69K-rated right-angle gearheads. These gearboxes have gone through rigorous testing and certification in the US and are designed to survive caustic washdown environments.

The gearheads are available in various sizes with standard NEMA flange options as well as solid or hollow shaft options. Cone Drive has incorporated a double bearing system on the input shaft to eliminate leaks and ensure proper motor alignment for longer life. The smooth stainless steel design assures easy cleaning and bacteria-free surfaces.

Motion Technologies Pty Ltd

www.motiontech.com.au



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Foodmax Grease CAS S2 HS is a high-performance, food-grade grease, developed by complexing modified, overbased calcium sulfonates.

The technology is characterised by good mechanical stability, a high dropping point, high load-carrying performance, reduced wear and resistance to water, steam and corrosion.

The grease is said to demonstrate good mechanical stability compared to other thickeners, particularly in the presence of heat and water. It has a dropping point typically in excess of 300°C and is formulated for enhanced resistance to hot, cold and salt water.

Sulfonates are known and used for their rust-prevention properties, while the use of premium antioxidant and a high-viscosity PAO ensures good thermal and oxidation stability.

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How Burra Foods halved its wastewater treatment costs

Australian dairy ingredient processor Burra Foods recently installed a Hydroflux HyDAF Dissolved Air Flotation (DAF) unit for primary wastewater treatment and successfully halved its energy costs.

The HyDAF system was chosen over several others in the market as capable of increasing the plant's treatment efficiency and reducing operating costs.

According to Burra Foods' Wastewater Treatment Plant Supervisor Daniel Tsivolidis, they began to see results at the Korumburra site in the South Gippsland region of Victoria just one week after installation.

"Within a week we were already removing so many of the solids in primary treatment that our secondary treatment sequencing batch reactors did not need as much oxygen. We immediately saw a drop in electricity costs.

"With some more fine-tuning we saw even more improvements. We reduced our energy costs by almost half and the sequencing batch reactors can now process double the volume of water," he said.

Improving primary treatment also leads to improved secondary treatment performance, smoother processes and other benefits according to Hydroflux Industrial Director Mathew Pugh.

"We see this time and time again. Getting the wastewater treatment right at the front end can have an incredibly positive effect for the rest of the plant as well as significant cost savings. It's a worthwhile investment with a fast return as it reduces the cost of operation," Mathew said.

Burra Foods' HyDAF unit now removes 60 to 70% of contaminants in a continuous automated process and it has



shown savings through reduced energy and chemical demand, as well as a reduction in operational expenses in downstream treatment.

The DAF unit also enabled improved pH fine-tuning and there is less downtime now required for washing the microfiltration and reverse osmosis plants that form part of downstream processes.

The Burra Foods site can use up to a million litres of water a day and final treated water is discharged to the environment. Improved primary treatment reduces water variations going into the secondary and tertiary treatment further guaranteeing the high quality of this discharged water.

Hydroflux Pty Ltd
www.hydrofluxindustrial.com.au

Soft-centre double-ball lollipop depositor

Baker Perkins ServoForm depositors are now capable of producing soft-centred double-ball lollipops. This option creates opportunities for innovative lollipops with contrasting textures: centres such as chocolate, jam, jelly, fondant, gel or soft toffee can be surrounded by a hard candy outer.

The development of a double-ball version creates the opportunity to combine two lollipops into one. For example, a soft-centred ball can be joined to a standard hard-filled or another soft-filled ball.

Existing ServoForm depositing systems can be adapted to include the capability.

Baker Perkins UK
www.bakerperkins.com



High-capacity extrusion line for ice-cream industry

Tetra Pak has launched a high-capacity extrusion line for the large-scale production of ice-cream sticks and sandwiches.

The line has the highest capacity in the industry, according to the company, delivering up to 43,200 pieces/h against an industry average of 36,000 for this segment. The efficient freezer and precision cutting equipment provide a uniform product with high stability — due to temperature control at every stage — as well as identical thickness. Further along the process, the dip and transfer unit allows precise dipping and careful lay-off to the wrapper, minimising product waste.

The company says when the line is running at full capacity, a 60% increase in production is achieved without extra manpower and with only 44% more energy.

The line allows flexibility in switching between ice-cream sticks and sandwiches, as well as handling up to four flavours and 12 different coatings without changing equipment.

Tetra Pak Marketing Pty Ltd

www.tetrapak.com/au



www.burkert.com.au

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Sensing chocolate levels

Dr Detlef Zienert

Non-contact detection of levels of foodstuffs like melted chocolate or tomato sauce is not always simple. These media do not drain without leaving residue and deposits regularly lead to sensing errors, which make error-free measurement impossible.

Capacitive sensors can detect levels of liquids, powders and granular materials through nonmetallic container walls without the sensor coming into contact with the media. However, conventional capacitive sensors also have a number of disadvantages. The sensitivity of the sensor must be adjusted in a time-consuming process so that the signal is triggered not by the container itself, but by the container wall together with the medium.

Swiss chocolate manufacturer Gysi wanted to overcome this challenge.

Before chocolate can be processed into truffles or bars, for example, it has to undergo heat treatment — the tempering process. During this process, hot liquid chocolate at about 45°C is filled from a reservoir into an agitator, cooled to 28°C and then continually prepared by reheating and continuous agitation until only high-melting crystals are left in the liquid chocolate. Then, the prepared chocolate is continuously fed to the production area.

Gysi wanted to equip the agitators of various tempering machines for heat treatment of chocolate when retrofitting new sensors for level regulation. The previous level detection system, based on measuring the pressure difference, was getting up in years and repeatedly had to be checked and cleaned at regular intervals, which incurred considerable effort and downtime. Therefore, Gysi looked for a new solution.

First attempts with a built-in sensor from the machine manufacturer, however, did not look promising. “We couldn’t leave the application unattended,” says Ulrich Streit, who is responsible for the technology at Gysi. “The container kept overflowing. That



was caused by sensing errors right in the temperature range from 45 to 28°C, in which the tempering machine operated. All it took was a temperature change of a few degrees to change the permittivity of the medium in use enough that the sensor no longer switched correctly.

“Then we looked for an alternative and decided on a sensor with SMARTLevel technology from sensor specialist Balluff. We chose a sensor based on the polarity of the medium to be measured — the chocolate — and then checked it in a test installation in real-world operation. It worked right away. Now we have a solution that works without any errors whatsoever, even in long-term operation.”

Measuring principle with many advantages

SMARTLevel sensors of the M18 design operate according to the capacitive principle — but with strongly conductive media, they open up new application fields. They are capable of independently compensating for container walls and deposits, which enables error-free measurement without elaborate readjustments.



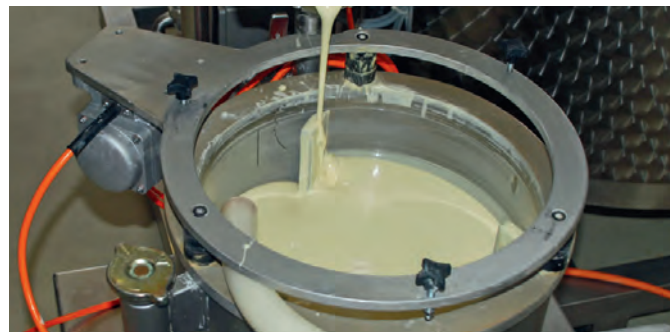
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At the same time, they are also compatible with all sensors used for level measurement of media having a dipole character. This applies to immersion applications and level detection through nonmetallic walls with a maximum thickness of 10 mm. As a result, even detection of chocolate through the 3 mm-thick membrane of the plastic sleeve into which the sensor is screwed is an easy task.

This is possible because SMARTLevel sensors operate at an oscillator frequency significantly higher than conventional capacitive sensors. In addition, the electronic processor unit gathers more information than is usually the case with capacitive level measurement. It evaluates not only the capacitance, but also the conductivity value of the medium. Since compact media have high, thin films of the same medium, but only low conductivity values, the new sensors have no trouble distinguishing between thin deposits and the real level. This means that sensing errors with media that do not drain without leaving residue, such as chocolate, are largely prevented.

Easy installation, fast adjustment

Gysi now has six machines retrofitted with the new sensors, and there are already plans to retrofit additional systems. The sensor is simply inserted into a sealed plastic sleeve and rotated into a separate metal container in the container wall such that it is flush with the wall. The SMARTLevel sensor is easy to adjust with a potentiometer, which has to be done only once after the installation. Furthermore, it operates without needing any maintenance whatsoever. Now cleaning procedures for just the



Before chocolate can be processed, it has to undergo heat treatment — the tempering process.




Old version with level measurement via a drilled hole in the container wall and load cell.



The SMARTLevel sensor in the container wall detects the level of the chocolate without errors, directly through the plastic sleeve in the container wall

sensor are entirely unnecessary; they are taken care of as part of the regular maintenance cycle.

The sensor in the container wall detects the level of the chocolate directly through the end face of the plastic sleeve in the container wall. If the chocolate falls below a certain fill level, the sensor triggers and after 30 seconds liquid chocolate is refilled until the optimum fill level is reached.

Unlike conventional capacitive sensors, these fill-level indicators do not have to be readjusted during operation or when changing the recipe. Thus the switch point between white and dark chocolate, for example, differs by only 3 mm. 

Balluff Pty Ltd
www.balluff.com.au

Financing first for biogas project

Gold Coast bio-energy company Quantum Power Limited has secured a project to generate up to 1 MW of renewable energy by converting the organic load in the wet waste stream from the Southern Meats sheep processing facility, located in Goulburn NSW, into biogas. The biogas will then be refined and used as a fuel for a renewable power station to be constructed on-site. Sufficient renewable energy will be produced to offset the power consumption of over 400 homes.



© iStockphoto.com/Jeremy Swinborne

A third-party financing structure has been established for the project, which will be owned by Rural Funds Renewables, a subsidiary of agricultural fund manager Rural Funds Management (RFM). Quantum Power will operate, maintain, manage and administer the power station on its completion under a long-term contract with Rural Funds Renewables. The benefits will therefore be shared between Southern Meats, Quantum Power and Rural Funds Renewables via long-term collaborative contractual agreements.

This is the first time such a financing structure has been deployed in the Australian food processing industry for a biogas project. While biogas is currently used at a number of Australian meat processing facilities as a fuel for boilers, this

is the first project where the biogas will be used to generate electricity that offsets grid-supplied electricity.

Quantum Power Business Development Manager Kunal Kumar said the biogas project will deliver environmental benefits and energy savings to Southern Meats by offsetting 40% of grid-supplied electricity for the abattoir.

"The engineered anaerobic digestion system and biogas-fuelled power station will take between six and nine months to construct. Once built, the digestion system will convert the organic load in the waste stream to biogas, comprising approximately 60% methane," Kumar said.

"The biogas would otherwise escape to the atmosphere, so instead this will be harvested and treated before being used as fuel for large electricity generators."

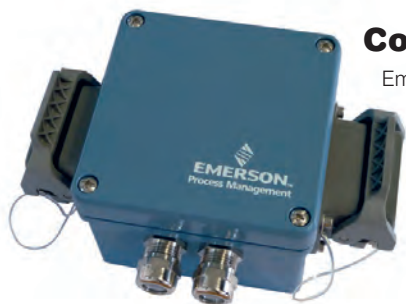
Quantum Power said its biogas solutions are suited to abattoirs, dairy producers, pig producers, layer and meat chicken producers, and other food processing industries.

"The engineered anaerobic digestion system will not only save Southern Meats a significant amount on their electricity bills over many years by replacing expensive peak power drawn from the grid, it is also remarkably better for the environment," Kumar said.

Kumar confirmed that recent announcements regarding a bipartisan approach to the Renewable Energy Target and the success of the federal government's first auction of Australian Carbon Credit Units under the Emission Reduction Fund were major catalysts for the decision to proceed with the project, demonstrating that a stable policy environment is critical for the success of the renewable energy industry in Australia.

Southern Meats CEO Coll MacRury said, "The project is great news for Southern Meats, the town of Goulburn and the red meat processing sector as a whole. This project will lead to improved environmental outcomes, a more competitive cost base and will also lead to more jobs for the local community, as Quantum Power will give preference to local firms for construction and ongoing operating contracts."

Quantum Power Limited
www.quantumpower.com.au



Condition monitoring system

Emerson Process Management has introduced the CSI 3000 Machinery Health Monitor, a compact protection system for a wide range of machinery such as pumps, compressors, centrifuges, blowers and generators. The system delivers protection data in situations where a standard rack-based system either will not fit or is not a cost-effective approach.

The system measures shaft vibration, bearing vibration, position and speed, and generates key signals. The monitor provides the user with alarm outputs for each channel and does not require additional signal converters for shaft vibration and displacement measurements.

Emerson Process Management
www.emersonprocess.com.au



Connector for the food and beverages industry

The Han F+B connector has been designed for the demanding and stringent hygiene standards in the food and beverages industry. Its easy-to-clean housing design is optimised for the requirements and conditions in splash zones (Zone 2).

The housing design features large radii and smooth surfaces in keeping with the principles of the EHEDG guidelines. As a result, dirt pockets and the potential bacterial load on the connector are eliminated.

The Han F+B connector is designed with IP69K protection for the permanent, durable protection of the electric connections, including in scenarios involving daily high-pressure or steam cleaning. The plastic material opted for is a PP plastic that is resistant to ECOLAB-certified cleaning agents and has also obtained FDA 21 approval.

As the first connector in the food environment, the connector can be configured with 25 different contact inserts. Inserts up to 40 A and configurations with up to 21 signal contacts create flexible interfaces for data, signals and power. Hybrid contact inserts further offer a combination suitable for drive solutions and Ethernet network connection.

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Diaphragm valve bodies

Bürkert Fluid Control Systems has introduced an innovative body type for diaphragm valves for hygienic applications. The bodies, manufactured with hydroforming technology, have a lightweight, sustainable and hygienic design which offers a high-performance alternative to forged and cast valve bodies.

The tube valve bodies are manufactured from 316L stainless steel, enabling hygienic tube-to-tube welding of virtually identical materials and a uniformly high quality of weld seam. Compared with cast bodies, neither cavities nor other defects occur in the manufacturing process, which means the risk of contamination is significantly minimised.

The tubes are as much as 75% lighter than forged housings, reducing the energy requirement and the heat-up or cooling phase duration of the plants during cleaning or sterilisation processes. This, in turn, lowers energy costs and reduces downtimes.

The housings enable optimised temperature control, easier process validation, shorter response times and reduced installation costs because supports are eliminated.

The manufacturing process is also designed to be more environmentally friendly, releasing just over 2000 g of CO₂ compared with almost 7000 g for a DN 25 cast valve body.

The tube valve bodies fulfil the globally established ASME-PBE standard regarding dimensions and tolerances, as well as the EHEDG requirements regarding hygienic design. They are available in welding connection sizes ½, ¾, 1, 1½ and 2" with the Bürkert diaphragm valve types 2031 and 3233.

Bürkert Fluid Control Systems

www.burkert.com.au



Brewing system for microbreweries

Krones Steinecker has developed the MicroCube brewhouse concept for brew sizes of five or 10 hectolitres. Although aimed at microbreweries, the system delivers both consistent high quality along with cost efficiency.

The MicroCube is a complete brewing system, with brewhouse and fermentation cellar plus water, heat and refrigeration supply. The individual modules are pre-assembled before delivery and can be installed and commissioned within a minimised time frame and with a minimised footprint.

Krones has also taken thought for the filling process, and by developing the Craftmate is premiering a can filler for the lower output range, while the space-saving Kosme Barifill can be relied on to fill the bottles. In addition, with the Proportional Flow Regulator filling valve component, which enables the flow velocity to be steplessly regulated, Krones has put all the preconditions in place for a more flexibilised filling operation.

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Initiative diverts food waste to nourish depleted soils

After decades of using super-phosphates and chicken manure to promote rapid growth of produce and grains, there is a dawning realisation that soils have become depleted, lacking structure and nutrients.

Yarra Valley Farms, a fruit and vegetable wholesaler, and Eco Guardians, which markets a food waste dehydration system, have launched an initiative they are calling enrich360. When food waste has been dehydrated, it becomes nutrient-rich, concentrated organic fertiliser. The enrich360 program delivers this fertiliser to the farms that grow the produce distributed by Yarra Valley Farms, not only to enhance fruit and vegetable quality but also to repair and reinvigorate the soil.

Soil scientists have likened the enrich360 fertiliser to blood and bone products for its high-nitrogen, slow-



© epitavi/Dollar Photo Club

release profile. Tests have shown that its addition to tired, overexploited soil not only promotes plant growth but also, just as importantly, rebuilds the longer-term nutrient levels of the soil in a way that super-phosphates cannot.

Food waste that is not included in a program like enrich360 is most likely to end up in landfill, where it rots in conditions that produce methane — a greenhouse gas that is 21 times more damaging than carbon dioxide. It also creates leachate, which pollutes water tables and waterways.

Yarra Valley Farms and Eco Guardians have been able to combine their widely differing core skills to establish an end-to-end sustainability solution.

Eco Guardians Pty Ltd
www.ecoguardians.com.au



Metal-seated ball valves

Emerson Process Management has introduced the Fisher Z500 metal-seated ball valves, which are engineered to withstand higher temperatures, pressures and more erosive conditions than a standard on/off ball valve.

A bidirectional sealing design offers a solution to process back pressure and shutoff requirements in both flow directions, safeguarding control valves and other equipment in the line.

Fisher Z500 valves are designed with an integral metal seat and self-energised metal body gasket to help eliminate leak paths and withstand extreme temperature changes. Live-loaded packing, side-mounted brackets and fixed centrelines help reduce side loads on the packing and decrease overall wear for a longer service life.

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Revealing the secret life of bread dough

From hipsters sipping lattes and consuming designer artisan rolls to huge industrial-scale enterprises supplying loaves to supermarkets, bread is a staple for almost everyone. However, in spite of its ubiquitousness, very little is known about the science behind proving and baking bread. A better understanding of this science would help bakers improve bread recipes intended for ovens both big and small.

While delving into the rheology of raw wheat dough — how it deforms and flows — a team of Belgian and Dutch researchers has discovered how gluten and starch affect dough behaviour, as well as the optimum amount of glucose oxidase enzyme to use to enhance bread-making.

Take, for example, the interplay between a dough's micro-structure and its rheology — the way in which it deforms and flows. A team of researchers from Belgium and the Netherlands described how gluten and starch affect the overall dough behaviour, as well as the optimal amount of glucose oxidase enzyme to use to enhance bread-making performance, at The Society of Rheology's 87th Annual Meeting.

"Wheat flour dough consists of a continuous gluten protein phase in which starch particles, lipids and gas cells are all dispersed," explained Mathieu Meerts, a PhD researcher within the Department of Chemical Engineering at KU Leuven, a university in Belgium.

Large disparities often exist in the bread-making performance of wheat flours, which usually gets blamed on the

gluten proteins. "When mixed with water, gluten proteins swell and interact to form a gluten network," said Meerts. "This network requires sufficient strength to retain the carbon dioxide gas produced by the yeast during fermentation, which leavens the dough. But the network needs to retain some flexibility because excessive network strength doesn't allow the gas bubbles to expand, which leads to small-volume breads."

So the team searched for ways to optimise the gluten network's properties to "contain long protein molecules for sufficient strength, but also shorter protein chains for flexibility", Meerts noted. Both the quantity and size distribution of the gluten proteins appear to be important.

Baking tests tend to be time consuming, so the food industry has developed alternative tests to quickly assess wheat quality. While generally successful, these tests don't yield fundamental insights into the material's structure or behaviour. Meerts and his colleagues took a different approach.

"In our lab, we closely simulate the deformations dough experiences during the bread-making process," Meerts said. "For example, during fermentation and oven rise, the dough

is subjected to large extensional deformations. These can also be simulated with empirical tests, but the extension of dough occurs over a long period of time and can't be captured in a fast stretching test."

At the outset of their work, the team wanted to learn how the gluten network affects dough behaviour. Is the gluten network the prevailing factor in determining the performance of any given wheat flour? And, if so, are there ways to improve wheat quality by changing the gluten network?

"Our experiments show that under large deformations — which occur predominantly at the end of the fermentation step and during baking — the gluten network does indeed determine the dough behaviour," Meerts said. "Stretching of pure gluten samples yields a response very similar to dough samples. It was also possible to see clear differences in the stretching behaviour of flours of different qualities."

Yet, at smaller deformations, the presence of starch particles also contributes to dough behaviour. "Starch particles constitute the majority of the dough structure, so are likely to dominate the dough behaviour and can mask differences in the gluten network," he added.

So two balls of dough with dramatically different gluten network characteristics might feel surprisingly similar if you kneaded one in each hand on the dough board — even though one would bake up into a beautiful loaf and the other would fall flat. Testing dough for its 'large deformation' characteristics, as the team pioneered, would clearly show the difference.

The team also delved into ways to improve the quality of gluten. The food industry uses the enzyme 'glucose oxidase' to catalyse the oxidation of glucose — sugar present in the flour — because its reaction leads to the formation of additional crosslinks within the gluten network.

"This improves the network strength, but lowers its extensibility," said Meerts. "Too much glucose oxidase results in a gluten network that's too strong to rise sufficiently during fermentation. We were able to find the optimal amount of glucose oxidase by exploring the strain-hardening effect of the gluten network."

Think of the strain-hardening effect by picturing the gluten network as an entangled mass of long chains — like spaghetti. "The entanglement points fix the position of the chains at specific locations, but in between the chains are able to move freely," explained Meerts.

When this structure is stretched, the chain segments located between entanglement points will need to be realigned. "Initially, this doesn't require much force," Meerts noted. "But as the system is stretched, more of the realigned chain segments become stretched, which requires more force. This increased resistance to further stretching is called 'strain-hardening', which only occurs when a material has already been stretched to some extent."

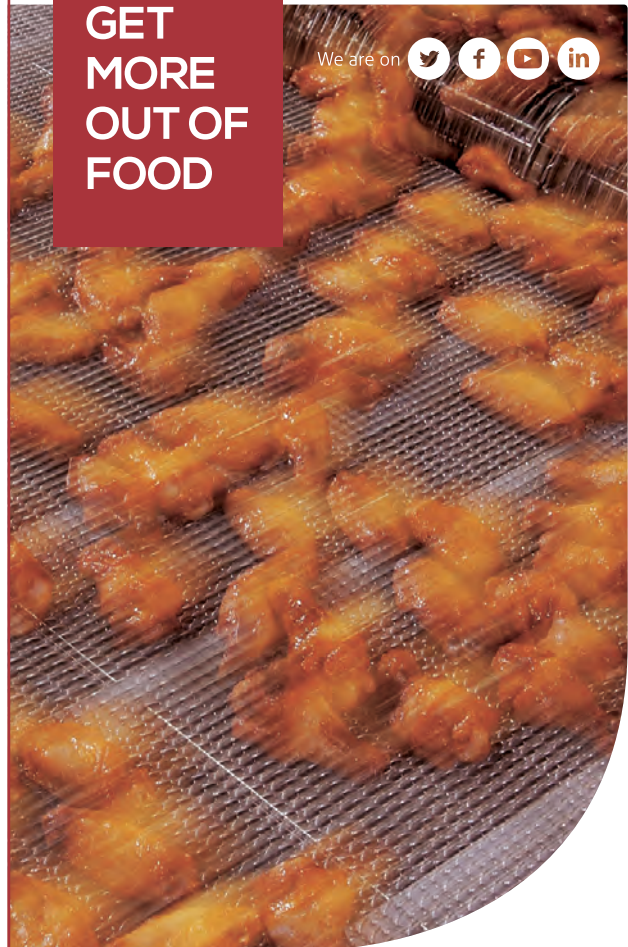
The degree of strain-hardening "shows an optimum for intermediate concentrations of glucose oxidase, and might be a reliable performance indicator", said Meerts. "If so, the food industry can use stretching tests to gain an idea of the degree of strain-hardening of any given flour system, which can be used to predict its bread-making performance."



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Portion scale

The National Weighing and Instruments Portion Scale is designed for food manufacturers who apply ingredients to mass-produced food. The scale controls and regulates the amount of ingredient applied to each serve.

The scale operation is quite simple: users place the bulk container with the ingredient on the scale and select the quantity and tolerance of ingredient to be dispensed. As the production line moves along, the operator extracts the ingredient from the bulk container.

Colour coding simplifies the task for the operator — yellow is light, green is okay and red indicates overfill. Once the right ingredient amount is taken from the bulk container, the display automatically resets itself for the next extraction of the portion or ingredient.

The scale has a database to set up different products, batches and users, and can provide totals of product used by users and batches. This enables the scale to be used in more than one location in a production plant. It also has a check-weighing function to ensure that the final packed goods comply with regulations.

National Weighing & Instrument

www.nationalweighing.com.au

Oil-free compressor

Atlas Copco's ZR 55 VSD oil-free rotary tooth compressor meets the need for pure oil-free compressed air while offering variable speed drive for improved energy efficiency. Developed for applications demanding the highest levels of purity, such as food production, the 55 kW compressor eliminates the risks of oil contamination as well as the resulting extra costs.

The compressor provides certified 100% pure, clean CLASS 0 air, which means zero risk of contamination, which can lead to damaged or unsafe products, losses from operational downtime and damage to company reputation.

The ZR 55 VSD compressor comes with integrated variable speed drive (VSD) to match the fluctuating air demand of production while using only the amount of energy needed.

The compressor offers advanced control and monitoring to enable maximum efficiency. The integrated Atlas Copco Elektronikon controls the main drive motor and regulates system pressure within a predefined and narrow pressure band. The controller can be adapted to meet specific needs for maximum flexibility and maximum availability to compressed air.

Atlas Copco Compressors Australia

www.atlascopco.com.au



Peristaltic pump systems for dairy product processing

Masterflex peristaltic pumps are suitable for the processing of dairy products such as ice-cream, butter and yoghurt. The pumps are non-contaminating as fluid media only comes into contact with tubing. They are also USP, FDA, EP, 3A, NSF compliant.

The pumps are able to pump viscous materials and are self-priming; operating without valves. They enable easy cleanup, complying with IP55 for washdown, and deliver up to 8 L/min (2.1 gpm) with I/P73 Norprene food tubing. The Easy-Load pump head facilitates quick tubing changes between samples and the user can vary occlusion to handle purees, syrups and other viscous fluids in the mixture. The variable speed drive includes handles for portability.

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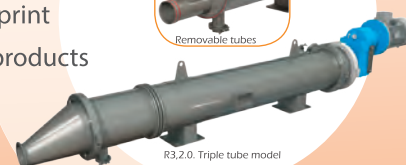
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The detectable resin inhibits bacterial growth and accumulation of contaminants via its antimicrobial properties, while providing a strong retention system. Autoclavable at 134°C, Total MDX Brushware ensures hygiene and safety regimes are optimal and contamination is avoided.

Detectaclean Pty Ltd

www.detectaclean.com.au

Multicomponent online gauge

The NDC MM710e multicomponent online gauge for the food industry has been developed to give accurate, simultaneous, real-time measurements of moisture, fat or oil and protein in a variety of food applications.

The gauge makes a complete measurement every 7.5 ms, achieving good measurement resolution on moving conveyors or in processes with rapid short-term changes, and enabling output to be used in closed loop process control.

The device, which is available from Inspection Systems, is able to measure during changes to the process or ambient conditions, including ambient lighting, relative humidity, product temperature or product height fluctuation.

The system is fully Ethernet-enabled with a range of peripheral devices providing critical process information to operators. Digital connectivity to the process is available in all common formats including: EtherNet IP, Modbus TCP, Profinet, DeviceNet and Profibus.

Inspection Systems Pty Ltd

www.inspectionssystem.com.au

High-speed micro weigher

The Ishida Micro multihead weigher from Heat and Control is claimed to accurately weigh 0.5 to 50 g portions at up to 120/min.

Although it takes just 25% of the space of a standard multihead weigher, Micro features many of the same high-performance technologies as Ishida's CCW-RV weighers.

The product dispersion table utilises a highly sensitive weighing sensor to assure precise automatic feeding of tea, herbs, spices, tablets, capsules, dried vegetables and other lightweight products.

The weigher's 14 weigh heads feature Ishida designed and built load cells that measure weights in 0.01 g increments to deliver target package weights as low as half a gram. Stepper motor drives operate product hoppers efficiently at high speeds. For easy cleaning, all product contact parts can be removed without using tools.

A 12.1" colour LCD touch screen with a 3D interactive menu and simple icons make it easy to set up and operate the Micro weigher. Production data can be transferred via a USB memory stick, Ethernet or SCADA connection.

Heat and Control Pty Ltd

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What are food-grade lubricants?

Sam Hall, Industrial Technical Service Manager, Bel-Ray Company

How can a lubricant become a food additive? Whether through leaks, excessive lubrication or messy application during maintenance, food-grade lubricants can inadvertently become indirect food additives. In today's fast-paced production environment, lubrication safety audits, selecting and implementing premium-quality food-grade lubricants and proper lubrication programs are all proactive steps towards a safe, efficient and hygienic processing facility, all while increasing profitability.



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A lubrication safety audit should be performed every three years, ensuring proper equipment lubrication, improved performance and the opportunity for lubricant consolidation, thus lowering the cost of inventory and the misapplication of lubricant. A plant survey should be conducted when changing lubricant vendors and every time new machinery is added to the production line. A survey also exposes handling and storage procedures, various environmental concerns (all of which can lead to lubricant contamination) and process equipment contamination, potentially averting disaster for food and beverage manufacturers.

Understanding the rules

An oil or grease qualifies as an NSF H1 food-grade lubricant when, in the event of a contamination, it is present in no more than 10 mg/kg of the foodstuff in question and does not cause any physiological hazard or affect the food's odour and taste in any way.

Food-grade lubricants have been in service since the early 1960s. Prior to 30 September 1998, approval and compliance

of food-grade lubricants was the responsibility of the USDA. The following are category code definitions of H1, H2, 3H, H3 and HT1 lubricants provided by NSF International, the standard which has replaced the now-defunct USDA H1 rules, procedures and systems for lubricants.

H1 — lubricants with incidental food contact (so-called food-grade lubricants)

Preparations permitted for use as lubricants and antirust agents (or as release agents on gaskets or seals of tank closures), where there is possibility of incidental food contact, must be formulated in compliance with CFR, Title 21, Section 178.3570 and other sections referenced therein. The amount used should be the minimum required to accomplish the required technical effect on the equipment so treated. When a product is used as an antirust film, it should be removed by washing or wiping before putting the equipment back into service.

H2 — lubricants with no food contact

These products are used on equipment and machine parts in locations where there is no possibility of the lubricant or lubricated part contacting edible products. There is not a specific list of substances that may be used as lubricants where there is no possibility of food contact. Most substances generally used for the purpose in industry would be acceptable. Substances that are categorically unacceptable for such use are listed among the substances in Part 5.1 of NSF guidelines. There may be other substances that are not acceptable because of unfavourable toxicology or other considerations. Therefore, each preparation will be evaluated on its own merit.

3H — release agents

These products are used on grills, loaf pans, cutters, boning benches, chopping boards or other hard surfaces in contact with meat and poultry food products to prevent food from adhering during processing. Products containing edible oils — such as corn oil, cottonseed oil and soybean oil — mineral oil complying with 21 CFR, Section 172.878 and other GRAS substances may be acceptable upon review by NSF. In addition, defoaming agents complying with 21 CFR, Section 173.340 (a)(1) and (a)(2) may be acceptable.

H3 — soluble oils

These products are used to prevent rust on hooks, trolleys and similar equipment. Treated equipment which contacts edible products should be cleaned by washing or wiping before putting the equipment back into service. Products may be composed of any of the following:

- Edible oils (corn oil, cottonseed oil, soybean oil) complying with 21 CFR, Section 172.860;
- Mineral oil complying with 21 CFR, Section 172.878;
- GRAS substances complying with 21 CFR, Parts 182 (multipurpose only) or 184.

HT1 — heat transfer fluids with incidental contact

These products are used as heat transfer fluids in primary and secondary heating and cooling systems in food processing facilities. Preparations permitted for use as heat transfer fluids, where there is possibility of incidental food contact, must be formulated in compliance with CFR, Title 21, Section 178.3570 and other sections referenced therein; ingredients may

also comply with CFR, Title 21, Part 172. The amount used should be the minimum required to accomplish the required technical effect on the equipment so treated.

When recommending and/or using food-grade lubricants they should comply with NSF International H1, the standard that replaced USDA systems for lubricants where incidental contact with food is likely. For a complete list of food-grade lubricants registered with NSF in all classification categories, see the NSF website.

Food-grade lubricants should comply with the technical qualifications published in the Federal Register, FDA 21CFR, 178.3570, as well as with FDA standards for raw materials used in food-grade products (such as lubricants) within the United States, including imports and exports. Food-grade H1 products are manufactured from components that have been evaluated and approved by the US FDA and declared safe for use in food processing preparations. The maximum concentration of a lubricant allowed in food is 10 ppm (parts per million). Most premium-quality H1 lubricants are Kosher and Pareve approved as well as Halal certified.

NSF H1/food-grade lubricants play a key role in Hazard Analysis Critical Control Point (HACCP) programs. In the United States, the FDA and USDA demand beverage and other food processors develop HACCP programs. However, if these processors use 100% NSF H1 food-grade lubricants then they are not required to have a HACCP plan with their lubrication program, since NSF H1 lubricants are not considered potential chemical hazards.

Myths and misconceptions

Many products for the food industry are referred to as food-grade, but it is important to know that only NSF H1 registered lubricants are truly 'food-grade'. There are misleading marketing claims that white lithium grease is food-grade. However, lithium-thickened grease is not accepted as food-grade H1 and does not comply with NSF category code H1. When discussing food-grade lubricants, refer to the H1 category code. There has

always been the misconception that food-grade lubricants do not perform as well. This may have been true in the past, but today there are food-grade lubricants that perform as well as non-food-grade lubricants and, in many instances, offer better performance than conventional lubricants.

All lubricants, including food-grade lubricants, need to provide proper lubrication for metal-to-metal surface separation. Antiwear performance, extreme-pressure/high-load-carrying properties, oxidation stability, rust and corrosion inhibitors, good seal compatibility and the ability to perform in temperature-extreme environments are paramount. They must withstand a broad range of contamination sources, such as process water, steam, high-pressure water cleaning/sanitation and acidic conditions. Other contaminants food-grade lubricants must withstand include chemicals, sugar and substances that are present in the manufacturing process.

Acceptable H1-approved lubricant base stocks can be either mineral or synthetic. Mineral oils used are either technical white mineral or USP-type white mineral oils. Synthetic lubricant base stocks are usually polyalphaolefins (PAO) or polyalkylene (PAG). These base stocks are primarily used in lubricants designed for temperature extremes. Dimethylpolysiloxane (silicones) with a viscosity greater than 300 centistokes is also permitted.

Acceptable H1-approved grease-thickening agents are aluminium stearate, aluminium complex, organo clay, polyurea and calcium sulfonate complex.



Sam Hall is the Industrial Technical Service Manager for Bel-Ray Company. He has 40 years of experience in lubricant production management, plant maintenance, lubricant sales management and industrial technical service. He has conducted numerous lubricant sales training seminars, plant lubrication surveys and audits, has been a guest speaker at the NORIA Lubrication Excellence Conference and is a member of STLE.

Bel-Ray Company Inc
www.belray.com



Single-use gloves for high-risk environments

Ansell Microflex 93-856 high-visibility, single-use gloves are suitable for workers in high-risk, heavy-duty environments where there is a danger of contamination from hazardous substances, pathogens and other harmful materials.

The company says the gloves resist a variety of industrial chemicals for longer periods than other nitrile disposable gloves, while an extended cuff offers an increased level of protection in the wrist and forearm areas. Powder-free and not made with natural rubber latex, these gloves help protect from Type I skin allergies, skin irritation and dryness caused by latex.

With a 'second skin' feel and high tactile sensitivity, the textured fingers enable the wearer to maintain a strong grip, while the bright orange colour allows hands to be visible in low light situations and at greater distances.

Ansell Healthcare
www.ansell.com.au



Wine solutions

Spray Nozzle Engineering has a long history of providing solutions to the wine and beer processing industries in Australia and New Zealand — from stainless steel washdown and tank cleaning systems to wine racking equipment.

Strahman washdown guns are certified with the Smart Approved WaterMark. The washdown solutions are powerful and water-saving. The company's stainless steel hose reels and food-grade hose can be added for a complete washdown solution.

Spray Nozzle Engineering's CIP solutions for the wine industry combine Gamajet Alfa Laval tank cleaners with its own innovative, engineered products.

Gamajet tank cleaning machines, such as the GentleJet, are powerful yet gentle on toast flavour, making them suitable for larger vessel and tank sizes. For smaller sizes, Spray Nozzle Engineering has designed and patented the M Series tank cleaning heads. Originally designed as a replacement for spray balls, they are fast, efficient and effective.

The Rack-it-Teer is a precision stainless steel spear wine racking solution, with a locating finger and 'positive-seal' system that allows filling, decanting and oxygen purging without wasting gas. Rack-It-Teer adapts to all barrel sizes, making it very versatile.

In addition to supplying equipment to the wine industry, Spray Nozzle Engineering also repairs and services tank cleaning equipment in its service centres in Melbourne and Hamilton. This allows for fast local service that minimises downtime and costs, with loan heads available to approved customers.

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Smart software optimises production of whey and milk powder



Image credit: Neste Jacobs

The APC solution from Neste Jacobs is integrated into the plant's process control system.

Finland's biggest dairy company, Valio, recently boosted the production of its Lapinlahti whey powder plant by over 10% by implementing the NAPCON Controller solution (Advanced Process Control) from Neste Jacobs. The results were so convincing that Valio is now optimising a milk powder plant in Seinäjoki, Finland, in a similar way.

Since whey and milk powder production is about drying fluids, the process is very energy consuming. NAPCON balances the need of energy within the desired product specifications so that the energy consumption is minimised.

"Valio ships over 60 million kg of milk and whey powders annually," said Antero Ylitalo, production manager of Valio Powder Production. "That means we are talking big money when the productivity boosts by more than 10% without higher energy consumption or costly hardware investments."

NAPCON can also predict the moisture content and in real time adjust the water balance, even adapting to changes in outdoor humidity. Moisture content is a critical factor — especially at the final stages of the production line, where

a spray dryer removes the last part of the water while still keeping the valuable properties of the milk or whey.

"Too large water content makes the powder sticky and disturbs the process," Vesa Strand, production manager of the Seinäjoki plant, explained. "On the other hand, if the powder is too dry it generates dust and uses excess energy. With NAPCON, we can allow an increase in the average moisture content in the process and still keep the moisture content of the final powder product very close to its target value under all circumstances."

The NAPCON solution in Valio's two production plants consists of two tools: a NAPCON Indicator that calculates the material and energy balance information; and a NAPCON Controller that controls the process using multivariable model-predictive control (MMPC).

In addition to the MMPC solution, Valio also utilises an OPCUA (Open Process Control Unified Architecture) connection between NAPCON and Valio's process control system.

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Baking inventory stock controls into everyday operations

Gareth Berry*, CEO, Unleashed Software

How small to medium-sized businesses can benefit by implementing stock control

When starting a new food business, most entrepreneurs can answer the what, where and why questions. But many come unstuck on the how.

Small to medium-sized businesses (SMBs), especially start-ups, don't have the cashflow to afford the kind of inventory management platforms that multinational corporations use. These enterprise resource planning (ERP) systems track everything: from inbound and outbound deliveries to the time and place of their batch production. But without any specialised software at all, SMBs cut corners — whether it's by relying on accounting software to manage inventory or using simple spreadsheets to do the tallying manually.


These simple means of counting may work decently at the inception of a SMB. However, to maximise profit in an expanding operation, an inventory management software suite designed specifically for SMBs is an invaluable asset — particularly when it comes to cost calculations and batch tracking.

The trans-Tasman food industry is booming. Among the household brands is a dynamic legion of small food manufacturers vying for a place in a tough market. In the battle for market share, these smaller organisations have one thing on their minds: food quality. With all the attention on taste and presentation, SMBs can be deterred from the reality of costs, especially those beyond the manpower and ingredients needed to manufacture food. Components like packaging, labelling and storage can create just as much strain on the bottom line. These are often overlooked by accounting software, and manually populating spreadsheets is unproductive and error-prone.

With inventory management software, each of these elements is identified and factored into calculations. By eliminating guesswork and the potential of user input error, food manufacturers can accurately balance expenditures and introduce visibility into the business.

Complementary to predictive costing is batch tracking — the ability to track every ingredient and component involved in the creation and distribution of food items. Batch tracking provides insight into where ingredients originated, when they were collected or harvested, and when they were shipped to your facility. Too much of one component can mean wasted product and floor space. Too little signals lost sales opportunities. Both of these are detrimental to the bottom line and can potentially sink a small food manufacturer. Leveraging the powerful batch-tracking capabilities of inventory management software alleviates these issues, allowing SMBs to stock precisely the amount of food required now while accounting for seasonal sales trends to prepare for peaks and troughs in demand.

Take Te Horo Foods, for example. The New Zealand-based family business provides more than 10,000 jars of jam each week to an ever-growing market of customers. Te Horo initially used accounting software to manage its stock. However, Chris Barber, general manager at Te Horo, dreamt of increasing the company's export market by as much as 50% in five years. With goals that bold, Te Horo needed a system that was able to handle such a large sales growth. Using inventory management software made specifically for SMBs, Te Horo expanded its operation by securing significant wins, such as providing more than 200 kg of jam to a client in China for Chinese New Year festivities.

This type of specialised software can provide for SMBs the kind of functionality that large corporations receive from enterprise resource planning systems — for a fraction of the price. Added onto an existing accounting platform, inventory management software can put the counting, tracking and managing to the backburner, keeping your product the centre of attention. 

*Gareth Berry is the Chief Executive Officer at Unleashed Software.

Unleashed Software
www.unleashedsoftware.com



Single-use gloves

Microflex single-use gloves from Ansell offer economical, disposable hand protection that is comfortable for workers to wear.

The gloves have high tensile strength and flexibility to allow workers' hands to move freely and comfortably. They give the wearer a firm and consistent grip due to their fully textured design and a non-foaming formula applied to the glove surface.

The range includes the black Microflex 93-852 glove, which has been designed to hide stains and provides a contrasting backdrop for identifying lighter coloured materials. The nitrile formulation contains no natural rubber latex proteins and is powder-free to help protect wearers from skin allergies, irritation and dryness.

The ambidextrous gloves are suitable for use in the automotive industry, emergency medical services and laboratory work, in tasks ranging from analytical testing and biotechnologies through to light assembly tasks, maintenance, mechanical repairs, and paint and spray shops.

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17" projected capacitive touch stainless steel panel PC

Interworld Electronics has released the Apex APC-3795P projected capacitive touch stainless steel panel PC. The PC is housed in a fanless, fully sealed, stainless steel, IP65 and IP69K certified enclosure with waterproof I/O connectors.



The APC-3795P is supplied with an internal 17" 1024 x 768 resolution LCD that features 350 nits luminance and 1000:1 contrast ratio. A projected capacitive touch screen makes the APC-3795P suitable for operator panel and HMI control applications.

The panel PC includes a built-in motherboard with an Intel i3-4010U 1.7 GHz or Intel i5-4310U 2.0 GHz processor that supports up to 4 GB of DDR3L 1333/1600 MHz memory. An internal 2.5" SATA2 hard drive bay and an internal SD card slot are provided for system and data storage. Rear waterproof M12 I/O connectors provide access to two COM ports, one USB 2.0 port, one USB 3.0 port, one Gigabit Ethernet port and DC power. The APC-3795P can operate from an 11~32 VDC power source.

VESA 75x75 rear mounting holes allow the panel PC to be securely wall- or arm-mounted.

IP69K certification makes the PC suitable for laboratory, food processing and industrial high-pressure hosedown environments. For applications requiring a smaller or larger display, the APC-3595P features a 15" LCD while the APC-3995P provides a 19" LCD.

Interworld Electronics and Computer Industries

www.ieci.com.au

Food-grade lubricants

Bel-Ray No-Tox Lubricants are free of bovine spongiform encephalopathy (BSE), transmissible spongiform encephalopathies (TSE) including feline spongiform encephalopathy (FSE) from animal-derived materials and contain neither nut products nor materials derived from genetically modified organisms (GMOs).

The lubricants are biostatic and so do not provide an environment in which bacteria, yeasts and mould can grow. Each Bel-Ray No-Tox product in the range is formulated with EPA-registered and FDA-approved antimicrobial agents. These antimicrobial agents effectively prevent the growth of bacteria and control microbial proliferation in all Bel-Ray No-Tox products, thus making it difficult for microorganisms to attack.

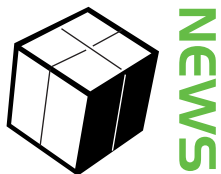
Bel-Ray No-Tox Food Grade Seamer Oil 150 is particularly suited to the beverage industry (specifically beer) with regard to the performance of the antimicrobial agent. Other performance benefits include very good equipment wear protection and oxidation protection all while maintaining film strength in extreme conditions. High emulsibility characteristics provide rust protection for components exposed to water, juices, soft drinks and beer. This reduces maintenance and periods of downtime. Bel-Ray's Food Grade NSF H1 Beverage Plant Lubrication Guide is available on the company's website.

Bel-Ray Company Inc

www.belray.com

packaging & labelling

Packaging



Compostable packaging selected for eco-friendly kids' snacks

South African company KiddieKix has chosen Innovia Films' NatureFlex compostable packaging for its all-natural children's health products.

Founder Alison McDowell said the company wanted to create an entirely eco-sustainable product, including the packaging. She believes the use of NatureFlex flexible packaging film strengthens KiddieKix's product philosophy because it matches the company's core messages.

The NatureFlex films are independently certified to meet the American ASTM D6400 and European EN13432 standards for compostable packaging. They begin life as wood sourced from certified plantations operating good forestry principles, and offer a range of features for packing and converting such as high seal strength and integrity, good gas, aroma, UV light and mineral oil barrier, grease and chemical resistance, dead fold and anti-static properties, enhanced printing and conversion.



Innovation award for Chris' Dips



© FreeImages.com/Daniel West

A partnership to create innovative packaging for a gourmet dip range has been awarded the CHR Hansen Award for most innovative product (judge's choice) at the 2015 DIAA Australian Dairy Product Competition.

Packaging supplier Jet Technologies collaborated with Chris' Dips to package Chris' Heritage Dips in a terracotta pot (a traditional Greek method for serving yoghurt) with an alucap lid, which was then sealed with an Ilpra FS2500. The installation of the Ilpra FS2500 was done by Dean Gleeson from Jet Technologies' Flexible Packaging team, along with an Italian engineer from Ilpra.

Registrations open for AIP women's mentoring program

Registrations are now open for the 2015 Ignite Packaging mentoring program for women working in the food, beverage, manufacturing and packaging industries. The industry program has been developed by the Australian Institute of Packaging (AIP) in collaboration with Emberin.

'My Mentor Courageous Woman' is a mentoring program designed to support women to reach their true potential in the workplace; whether they are starting their career or are in need of a kickstart. The program is delivered in a number of formats, including CD, DVD, workbook and peer mentoring groups.

The program has been specifically designed for the packaging industry — and the AIP has organised for some industry leaders to be available to share their lessons, advice and stories.

This is how it works:

1. Sign up for the program.
2. Receive your copy of My Mentor Courageous Woman.
3. Program launch (webinar).
4. Fortnightly webinars — where you can participate and share your story.
5. Connection with an industry 'peer group'.
6. LinkedIn Group for all participants to connect and network with each other.





The Krones BEVkeg has been awarded the German Packaging Prize for 2015.

Krones BEVkeg wins packaging prize

Krones has been awarded the German Packaging Prize in the beverage sales package category for its innovative BEVkeg.

The BEVkeg is an all-inclusive solution in the market for non-returnable PET beverage kegs. Depending on the output class involved, the BEVkeg can be supplied in two different variants: either as a preform, or as a container that is rolled up following the blow-moulding process and correspondingly compressed.

Thanks to the option for container compression, transportation to the filling company is optimised. Due to the low internal volume, the amount of CO₂ flushing before the filling process is reduced.

The machinery and systems technology required for filling, labelling and palletising the BEVkegs is supplied by Krones, while the brewery or restaurateur sources the BEVmate tapping technology from Micro Matic, a company specialising in tapping systems.

The German Packaging Prize is an international competition open to all sectors and materials. The German Packaging Institute awards the annual prize in recognition of innovative and creative packaging ideas.



First PET bottle made entirely from plants

The Coca-Cola Company has unveiled the world's first PET plastic bottle made entirely from plant materials.

Launched at the World Expo - Milan, PlantBottle packaging uses technology that converts natural sugars found in plants into the ingredients for making PET plastic bottles. The packaging looks, functions and recycles like traditional PET but has a lighter footprint on the planet and its scarce resources.

PlantBottle packaging can be used for a variety of packaging sizes and is suitable for water, sparkling, juice and tea beverage brands. The company uses sugarcane and waste from the sugarcane manufacturing process to create the fully recyclable packaging.

Biodegradable fruit and veggie bags mandatory in France

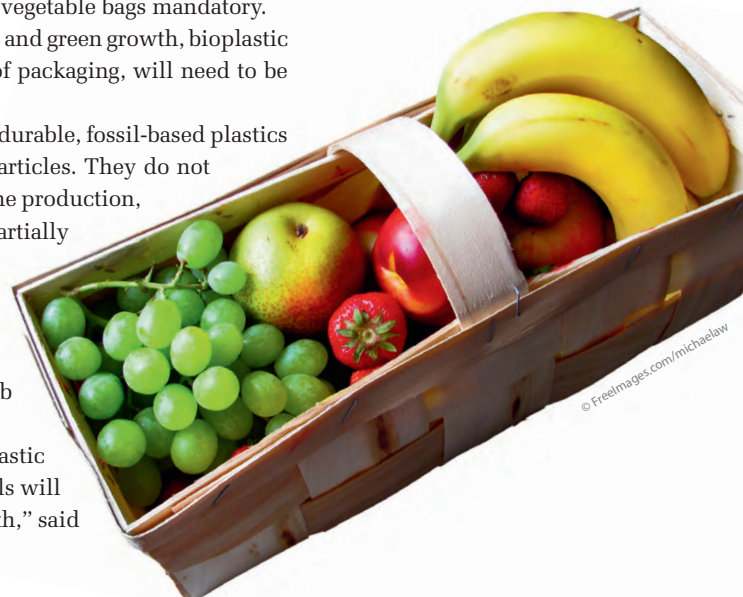
France has introduced a law to make bio-based, biodegradable fruit and vegetable bags mandatory.

Introduced as part of a wide-ranging set of reforms on energy transition and green growth, bioplastic lightweight bags for fruits and vegetables, as well as some other types of packaging, will need to be bio-based and compostable in home composting from 1 January 2017.

The French law has also banned oxo-fragmentable plastics, which are durable, fossil-based plastics with artificial additives, that cause the plastic to fragment into micro-particles. They do not meet the European norms for compostability and the new law prohibits the production, distribution, sale, provision and utilisation of packaging or bags made partially or completely from oxo-fragmentable plastics.

The move was welcomed by bioplastics industry bodies. "These provisions represent an important step for the French bioplastics industry, which has invested more than 40 million euros in the last 15 years," said Christophe Doukhi-de Boissoudy, president of French association Club Bio-plastiques.

"France has taken a step forward to the responsible consumption of plastic materials and to treating waste as a valuable resource. Bioplastic materials will contribute their share to its environmentally responsible economic growth," said François de Bie, chairman of the board of European Bioplastics.



Bosch's flexible biscuit packaging system passes United Biscuits field test

Bosch Packaging Technology has launched its Two-in-One biscuit packaging system after a successful field test with United Biscuits.

According to the company, it is the first system of its kind capable of pack-style changeovers from slug to pile packs in less than 3 min.

The system's product handling, horizontal flow wrapping and secondary packaging equipment is designed for gentle and versatile wrapping and case packing of delicate biscuit products. The field test at United Biscuits in Manchester, UK, handled the primary and secondary packaging of the manufacturer's McVitie's Jaffa Cakes brand in different formats and sizes.

"During the field test, we were able to take 100% of the McVitie's Jaffa Cake output through a single machine," said Simon Breckenfield, strategic capability controller at United Biscuits.

"It has allowed us to take our productivity and flexibility to the next level."

At United Biscuits, the line packaged McVitie's Jaffa Cakes in both slug and pile configurations with different cake counts for limited edition flavours. The Two-in-One biscuit packaging system achieves high-speed, fully reproducible changeovers by using the same feeding components for both pile and slug packs, increasing productivity and uptime. The system can handle pile packages with a maximum height of 50 mm, regardless of the number of biscuits.



"We developed the Two-in-One biscuit packaging system as our response to a growing retailer and consumer demand for flexible packaging formats, like smaller on-the-go and larger family packages," said Daniel Bossel, product manager at Bosch Packaging Technology.

A gentle handling philosophy across the line ensures minimised damage hazards and product contact, while three-dimensional product inspection technology detects broken biscuits and sorts them out. The hygienic design prevents the build-up of crumbs and allows for easy cleaning, facilitating continuous production.

As part of Bosch's Seamless Systems portfolio, the speeds of all line components are balanced to eliminate bottlenecks and optimise production flow, from distribution to secondary packaging.

"After changing from pile to slug packs, all an operator needs to do is press a button and the machine goes straight away," said Breckenfield.

The biscuit system is designed for a wide range of case packaging formats for regular (RSC) or half slotted (HSC) cases with retail-ready functionality. The case erecting, robotic loading and optional case closing units are integrated in the case packer, resulting in a reduced footprint.

Nupac Industries Pty Ltd
www.nupac.com.au



Leak detection for pre-packed food

Heat and Control has available Ishida Europe's AirScan leak detector, designed to help manufacturers minimise spoilage in pre-packed retail products.

AirScan is designed for use with a wide variety of foods, including fresh, cooked and cured meat, poultry, seafood, fruit, salads, vegetables, cheese and ready meals. It uses advanced laser technology to identify leaks of CO₂ from holes as small as 0.5 mm in sealed modified atmosphere packaging (MAP) packs at speeds of up to 180 packs/min. It has been designed to be easily integrated into existing production lines.

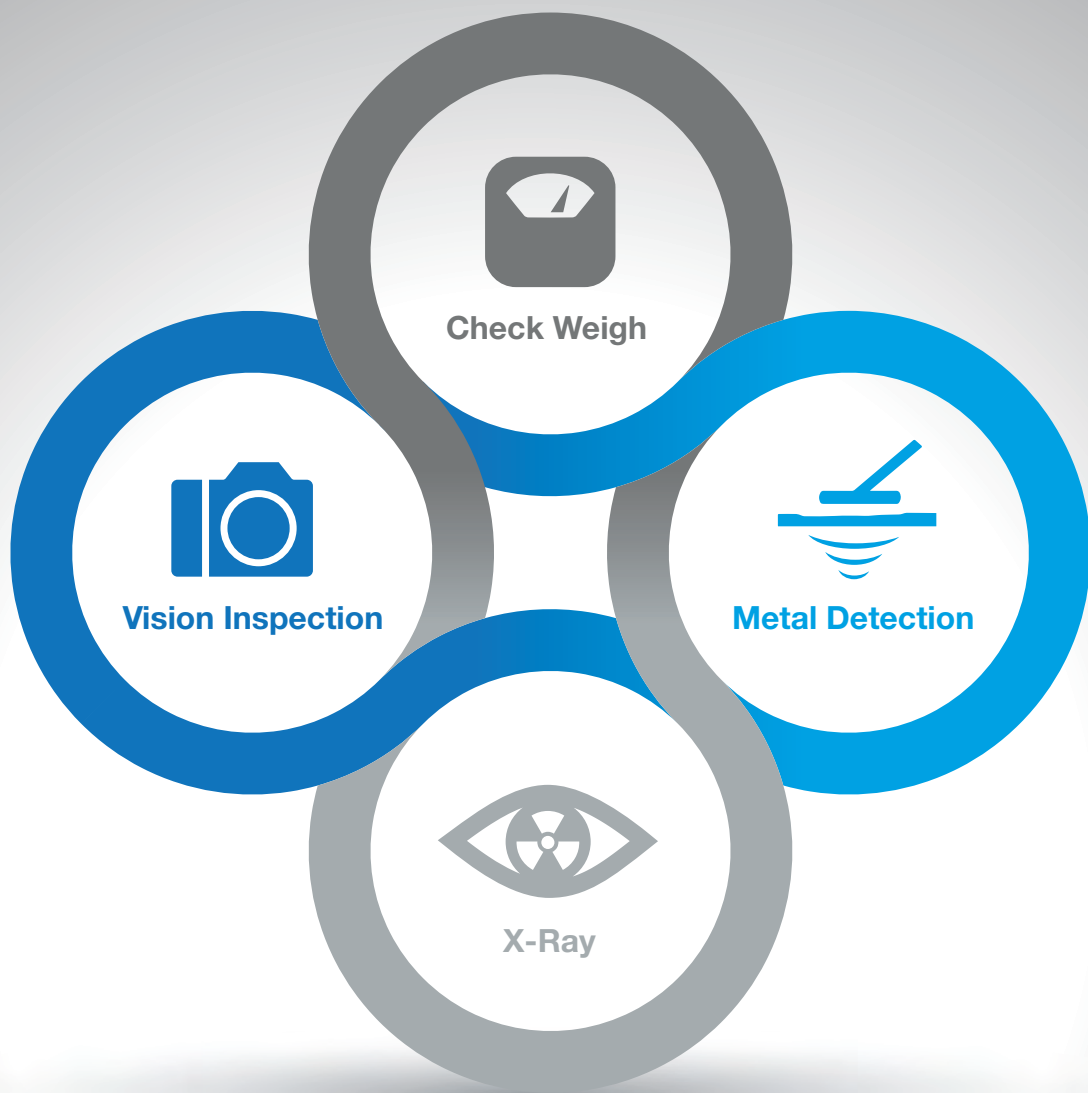
According to Ishida, packaging leaks have been associated with almost 500,000 tonnes of food wasted in production each year. Compromised packaging can lead to bacterial spoilage, reduced shelf life and a rise in complaints and returns. This can result in increased cost of production, loss of brand image and reputa-

tion, and the heightened risk of retailer fines.

The leak detector offers fast, reliable and non-destructive identification of leaks of CO₂ and has been designed to be highly effective in fast-moving production environments. By maintaining the optimum gas fill for each pack, the leak detector provides consistent product quality and allows production problems to be identified and rectified quickly.

Heat and Control Pty Ltd
www.heatandcontrol.com



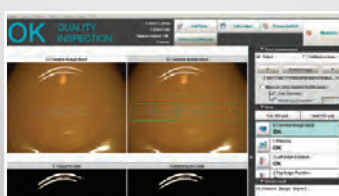


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What are the risks posed by trace heavy metals in plastics?

The trace amounts of toxic substances used to make plastics don't contaminate the food or beverage products they contain at a significant level and pose no immediate threat to consumers, according to recent Iowa State University research.

That's good news for anyone who buys any number of processed foods and beverages. But the bad news is that those plastic products may cause health concerns decades after they've been used and thrown in the bin.

The findings highlight the need to use properly sourced plastics and increase recycling efforts to reduce the overall environmental impact, said Keith Vorst, an associate professor of food science and human nutrition at Iowa State University.

Vorst said toxic materials such as heavy metals leach out of the plastic as the products decay over several years, creating what Vorst calls "end-of-life" problems. If the plastics make their way to a landfill or a body of water, for instance, the heavy metals they contain may pollute drinking water or have other environmental repercussions, he said.

"We found that these metals are in the packaging, but they're not getting into the food or beverage products," Vorst said. "But we did turn up end-of-life issues. As the plastic breaks down, the heavy metals can be released."

His lab conducted experiments on a range of plastics, exposing them to heat, microwaves and various pH and acidic levels. The results, published recently in the peer-reviewed *Journal of Plastic Film and Sheeting*, showed that the products contained in the plastics are safe for human consumption.


He pointed to heavy metals such as lead, mercury, chromium, cadmium and antimony as the most common concerns.

Those metals can cause numerous health problems, such as neurological and renal damage, in humans exposed to high enough levels. The metals make their way into the plastic products when they're used as catalysts during production or when recycled plastic is exposed to the metals during the reclamation process.

Polymer and Food Protection Consortium

Vorst leads the Polymer and Food Protection Consortium at Iowa State, a group that aims to strengthen food safety and improve the function of polymeric materials like plastics. Vorst has helped to develop a sophisticated sensor array that helps manufacturers track potentially harmful materials in plastic polymers in real time, and several major manufacturers have adopted or are currently evaluating the new technology.

His lab has looked at ways to use recycled plastic containers to filter out light in an effort to keep produce looking fresh on grocery store shelves. He's also studying the gases released by microwave popcorn, though he said it's too soon to make any conclusions from the experiments so far.

"Manufacturers want to know about innovations that might make their products safer and their processes more efficient," Vorst said. "We try to provide the research that will improve these products for the industry as well as the consumer." 



Tray sealer

G. Mondini's Trave350 tray sealer is an economical choice, suitable for small food manufacturers.

The Mondini platform technology provides packaging flexibility for manufacturers, with a quick, 5-minute tool change time that allows multiple packaging formats on the one machine without compromising on the packaging and security of the final product. With a capacity of up to 50 trays/min, the system can be manually or automatically loaded.

The machine's high sealing force combined with the consistent sealing parameters provides the same seal characteristics tray after tray at high speeds. The sealing tool construction is made entirely of anodised aluminium; all of the parts are machined from a single piece to obtain the best accuracy in sealing pressure distribution.

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Upgrade to upscale

Five ways product ID and inspection equipment can cost you

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Product quality and the ability to deliver orders on time are the fundamentals to sustaining customer relationships.

Over a five-year period from 2008 to 2013, there was a net decline of 143,384 Australian manufacturing jobs¹ as a direct result of the global financial crisis and the high Australian dollar. Optimum efficiency is now a shared goal for all organisations, with the direct impact of improving profitability and availability of funds to invest in new products, new plants and new markets — the key to sustainable local manufacturing.

The industry — though on a slight upturn — is still highly competitive and costs such as materials and energy are rising, forcing manufacturers to sharpen up or potentially go offshore. Price increases cannot be passed on to suppliers or customers easily; instead, a further cost-cutting attack must be waged by improving procurement practices, increasing operational efficiency and eliminating waste.

The upgrade of obsolete or older technologies used for coding and labelling, and also through inspection equipment, is one way this can be done. There can be opportunities to significantly reduce total cost of ownership (TCO), and looking at this end-of-packaging-line equipment is critical because 'no code means no product'.

Many manufacturers operate under the premise of 'if it ain't broke, don't fix it', but in this article we give five reasons



why upgrading yesterday's product ID and inspection equipment is absolutely necessary for controlling costs and discuss what you should consider when looking for a new supplier.

Why just OK isn't good enough

Coding errors, machine breakdown and inspection issues can all lead to expensive downtime. In food and beverage manufacturing plants, stopped production can cost tens of thousands of dollars — so eliminating any instance where this may occur is critical to an operation's bottom line.

Unreliable coders and labellers can result in missing codes and labels on batches, which in industries like food and beverage manufacturing is a huge compliance issue. Product information such as the retail barcode, alcohol percentage and manufacturer information must be properly readable and displayed on every label. Without adherence to strict label laws, manufacturers risk heavy fines and trust between supplier and manufacturer can be lost.

Product quality and the ability to deliver orders on time are fundamental to sustaining customer (retailer) relationships. This should be reason enough to ensure your product ID and inspection equipment is up to scratch. But if you need more justification, here are another top five reasons to upgrade.



Reliability issues

There is no place in competitive manufacturing for equipment that breaks down often, doesn't perform its job or requires more than a normal amount of maintenance.

On the production line, the barcode has an important function — to communicate critical information through the supply chain to ensure smooth flow of product from manufacturer to consumer. Unreadable codes or incorrect labels, as a result of faulty printing, coding and labelling, leads to excessive waste and errors in communication.

Inspection solutions can check product for quality criteria like weight, dimensions, appearance and contaminants — as well as barcodes — and reject product with faulty, unreadable or missing barcodes to avoid product track and trace issues.

Escalating operational cost

The cost of downtime doesn't only impact production output. The cost of repair, maintenance, spare parts and staff idle time contributes significantly to operational costs. Money that could have been better spent on machine upgrades is instead ploughed into the ongoing revival of inefficient equipment that is more than likely using up more energy than it needs to.

The more money you can pull from inefficient operations, the more money you have to focus on remaining competitive.

Vendor support

Despite the smart and advanced technologies available to manufacturers, there is still a reported 65 billion dollars' worth of

last-generation, obsolete automation technologies in use on the factory floor.²

There are a number of issues tied to this. Firstly, old and obsolete technologies are generally more difficult to service and in some cases will require a specialised technician or engineer to come out to your plant and fix the component. Secondly, as the workforce ages and workers trained to deal with yesterday's equipment retire, demand for specialists will increase labour hire costs significantly. In a comprehensive report, surveying over 60 manufacturing companies, nearly 80% indicated that finding qualified technical personnel to maintain older site equipment is a major problem³, and cited it as one of the reasons they planned to upgrade plant equipment in the near future.

Limited spare parts availability

Most of the issues relating to outdated technologies are based on the ability to locate reliable parts and, as we mentioned above, timely support from the vendor.⁴

Equipment is supported by the manufacturer for a set number of years, so the older it gets — and as newer technology options become standard — the harder it is to source spare parts. In some cases the original manufacturer may no longer be in business so you are reliant on another supplier to support your legacy products.

Though a good spare parts management plan can help predict when parts may need replacing so you can order well in advance, older equipment is less stable and can break down more regularly.

New technology

Most maintenance personnel in manufacturing environments will agree that despite the issues of obsolescence, this alone cannot justify executing a large capital upgrade project. Manufacturers should take into account not only the solutions potential to reduce downtime and risk, but also the positive economic impact on the business.

For example, the use of advanced ERP solutions such as cloud-based systems can offer enhanced functionalities and performance to speed up production and lower costs. Automating this process is estimated to be 600 times more efficient than conventional approaches in consumption of system resources.⁵

Where product ID equipment is concerned, new technology can not only improve quality of print, but also code on various sizes, shapes and substrates at higher speeds.

What you should consider when upgrading

Is there a better solution?

Any upgrade that simply swaps a system for one with like-for-like functionalities has failed to capitalise on an opportunity to add value to the business.

Look at your current application requirements and requirements for the future. This might be influenced by retailer expectations for increased product traceability, or compliance with government regulations, or most importantly by process improvement



initiatives. Then ask yourself, is there a supplier that can offer a better way of coding/marketing/labelling in line with these needs? Consider automation of the coding and labelling process and integration with inspection for process improvement.

Total cost of ownership

Finance and senior management are especially interested in this analysis. They want to know how long it will take to pay for the equipment through savings achieved by the new technology and also the estimated costs of running and maintaining the equipment for its proposed lifecycle. This helps to evaluate equipment with a 'low sticker price' but potentially high running and maintenance costs against a solution with a higher capital cost but lower lifecycle costs. There have been many cases where manufacturers have bought cheaper equipment from overseas and have found it very hard to find support locally in Australia.

To establish fixed total cost of ownership and eliminate the risk of obsolescence, consider the option of leasing or renting equipment with fixed monthly payments and the option to upgrade every set number of years.

Quality of support


Technology will always need to be maintained and repaired. How well you manage this comes down to the support of your supplier. If a problem can't be fixed internally, can the supplier provide phone support? If the problem needs a technician, how soon can the supplier send someone out to you, or supply you with spare parts? Does the supplier offer operator and maintenance training to help your equipment run seamlessly? Remember, every minute of downtime equals lost revenue.

Is it futureproof?

When upgrading any equipment, you may consider waiting for the next inevitable new technology, but that is not always necessary. Many new systems are built to handle not just today's

demands, but also tomorrow's. So when buying, ensure that systems are equipped to grow with your business should you wish to expand and introduce new product lines in the future.

The bottom line

Today's production, operations and maintenance managers have a whole range of coding and labelling technologies to choose from — all of which have their place in satisfying Product ID requirements for a myriad of packaging types. When choosing the best supplier, the question is how reliable the equipment is, what its lifecycle costs are, and how quickly support is available and how good is the support when needed. 

Matthews Intelligent Identification Pty Ltd
www.mathews.com.au

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tna delivers flexibility and productivity for Italian snack company

Italian snack manufacturer Pata specialises in the production of potato chips, popcorn and extruded snacks.

Pata needed a flexible packaging system that could handle different products and bag sizes for a wide variety of snacks, for their own brand and also for third parties. At the same time, the company was looking to optimise production by increasing bagging speeds and reducing waste.

Choosing packaging, weighing, seasoning and distribution systems — all from integrated packaging and processing solutions provider tna — has enabled Pata to reduce waste, simplify cleaning operations and improve overall production efficiencies.

The tna robag TX 3ci vertical form, fill and seal (VFFS) packaging system was able to offer Pata both production flexibility and improved performance in a compact, easy-to-clean system. The robag series is capable of delivering up to 160 bags/min on potato chips and can handle a wide variety of bag sizes and formats.



Its rotary single jaws ensure seal integrity, preventing bursts and reducing waste.

The system was integrated with a tna intelli-weigh 0314S omega multihead high-speed scale. Capable of up to 200 weighs/min, the scale offers high accuracy, further improving performance by reducing product losses. In addition, the integration of a stainless steel metal detector ensured standards of hygiene and safety were maintained.

The tna intelli-flav OMS 5 features a responsive variable mass seasoning system with a dynamic vibratory weigher, which enables an accurate, proportional amount of seasoning to be evenly applied to the product. With a simple, modular design, tna's seasoning systems are fully enclosed for increased levels of hygiene and ease of cleaning, while their 90° pivoting drums

improve accessibility for hard-to-reach areas.

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Leak/seal tester for pet food and large packages

The SealTick TSE 6089L is developed on demand to fulfil users' leak testing requirements for pet food and pet care products in large-size packages. Available from Bestech Australia, the model can run tests on packages weighing up to 22 kg. In use around the world for testing a wide range of food products, the tester's operation is fast, simple and safe.

A quantitative result is written into the internal log. Logs can be retrieved by connecting via USB, or optional ethernet, for quality traceability. Different products can be selected on the controller and tested using a product-specific test procedure. The key benefit of using SealTick leak testers is that they do not stress or inflate the tested package; it is a dry and non-destructive solution to cope with a wide range of shapes and sizes of finished goods.

Users require minimum training to operate the tester. The instrument is switched on only to be connected to air and power, and it is ready to test when the lid is opened. Simply place a package inside and close the lid to initiate the test; within as little as 20 s, the test is finished and a pass or fail indicator will be lit up.

The stainless steel construction makes the product suitable for use in a food production environment, with passed testing products able to go back onto the packing line.

Bestech Australia Pty Ltd
www.bestech.com.au



Inductive proximity sensor

SICK's inductive IMB proximity sensor is reliable in harsh working conditions. Its precise, extended sensing ranges, utilising SICK ASIC technology, ensure reliable, stable processes. Its wide-range specification limits allow the IMB to be used in applications where specialist devices were once the only solution.

The visual adjustment indicator and self-locking nuts save time during commissioning and help cut down on errors. Communication via IO-Link is also possible, creating more flexibility and adding more functions for automation applications. An extensive standard product portfolio is available, so even special devices can be put into action quickly and easily.

The IMB product family includes types M08 to M30, covering a variety of applications. The sensor is protected against water, immune to temperature changes, shock and vibration resistant, corrosion resistant and mechanically rugged.

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Automatic twin-walled box erector handles 850 boxes/h

A fully automated case erecting and sealing line that can form and seal up to 850 twin-walled boxed potatoes per hour has been installed by Endoline in the United Kingdom. This has enabled the potato company to not only fulfil its need for improved pack presentation but increased input by 35% per hour.

The filled cartons each weighed 15 kg, so durable boxes are required to sustain this weight; however, manually forming, filling and sealing these boxes was a time-consuming task. Twin-walled boxes were required, which can be difficult to form on an automatic case erecting system as there is a high risk of failure due to the heavy board that needs to be opened and folded.

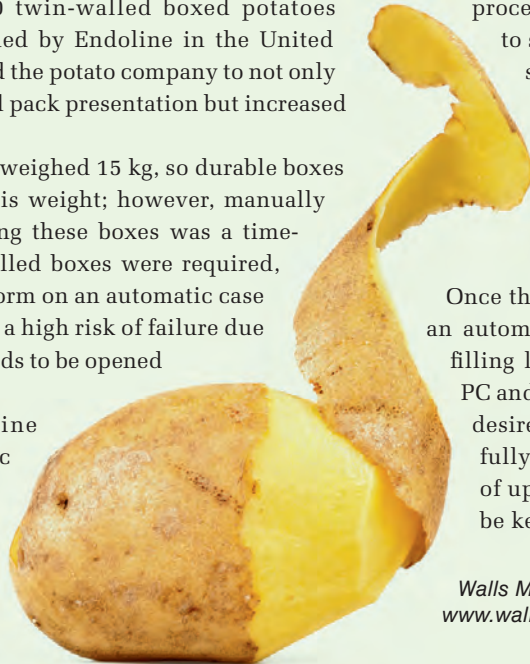
Consequently, Endoline installed its fully automatic 221 case erector, which has an integrated dual opposing vacuum technology. Two vacuum systems are used that

clamp to each side of the case during the forming processing, applying the same amount of pressure to simultaneously open it from both sides. This system allows for consistent, positive opening of the case.

The machine also includes pneumatic rockets that open the outer case flaps before the inner case flaps, which overcomes issues with folding the case flaps that more conventional case erectors regularly have.

Once the boxes are formed, they are transported via an automated conveyor system feeding six separate filling lines. The filling process is controlled via a PC and software to accurately fill the product to the desired weight before running through Endoline's fully automatic 607 case sealer. Capable of speeds of up to 30 same-sized cases/min, the system can be kept running 24/7 if required.

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Bad karma is causing million-dollar oil palm crop failures



Oil palm fruit and seeds are the source of nearly half of the worldwide supply of edible vegetable oil and provide one of the most promising sources of biofuel. However, over the last three decades hundreds of thousands of fledgling oil palm plants at elite corporate plantations in Malaysia and elsewhere in Southeast Asia have failed. These failures have cost untold millions in spoilage and have had adverse implications for the tropical environment. According to an international team of genetic sleuths, the cause is bad karma.

In the 1980s, a much ballyhooed new method of generating plantations brimming with clones of the highest-yielding specimens of the oil palm plant met with unanticipated disaster. Corporate investors were astonished to observe that the finest hybrids, cloned in culture dishes, often grew into barren adults bearing desiccated, worthless fruits. These plants displayed a mutant form that scientists called ‘mantled’.

It takes oil palms about six years to grow to maturity. Thus, the fate of promising nurslings is not clear until long after an investment of land and time has been made. When they’re growing well, the trees are valuable.

Given the immense and still growing world demand for palm oil, it has been in industry’s interest to increase yield. Helping in this effort have been plant geneticists. Cold Spring Harbor Laboratory (CSHL) Professor Robert A Martienssen, FRS, is one plant geneticist who has taken a keen interest in the challenge of boosting yield.

“Our work in this area has been driven in part by environmental concerns,” Martienssen said. “As we devise ways to

reliably boost yields, we thereby lessen the economic motivation to spread oil palm holdings into sensitive rainforest areas that are important to preserve.” In past work, Martienssen has been instrumental in identifying a gene called SHELL that controls fruit yield.

The solution to the mystery of the ‘mantled’ oil palm and a demonstration of a way of preventing it has been published online in *Nature*. It comes down to a question of karma, according to Martienssen, along with Meilina Ong Abdullah, lead author of the paper, and her colleagues at the Malaysian Palm Oil Board (MPOB), the entity empowered to oversee that nation’s world-leading oil palm industry, and researchers at Orion Genomics, a private US firm that spun out of CSHL (co-founded by Martienssen).

Mantled plants have their origins in tissue grafted from prize oil palm hybrids, grown in culture dishes. Tissue samples are derived from what gourmets would call the “heart of palm” — the growing tip of the palm plant, bearing its stem cells. In this way, the best yielders can be cloned — something that can’t be done when growing the next generation from seeds.

Martienssen suspected that the field in which he specialised would provide a path to understanding what went wrong in some of those culture dishes, leading to mantled oil palms. His expertise is epigenetics — an array of molecular mechanisms whose actions modify the expression of genes without altering the sequence of the DNA ‘letters’ that ‘spell out’ the genes.

One very common epigenetic mechanism is called methylation. The addition or removal of methyl groups (CH_3) from the DNA double helix within a given gene and areas near it can result in that gene’s expression being enhanced, reduced or even prevented altogether. Using a microarray revealing methylation across the genome of several commercially important cloned varieties of oil palm, Martienssen and colleagues were able to spot a single genomic location where the absence of a methyl ‘tag’ corresponded with a version of a gene previously linked to mantled plants.



Advances made over the last two years in oil palm genetics have the effect of significantly raising yields, providing an incentive for growers to plant ‘smarter’ rather than more extensively to obtain a given quantity of product. Here, a line in the forest, in Borneo, shows where the rainforest (left side) gives way to oil palm plantings (right).

Credit: Martienssen Lab, CSHL



Imagine planting prized hybrid nurslings in year one, only to discover when the plants mature 6 years later that their fruits are worthless. That’s the ‘mantled’ dilemma facing oil palm growers. Scientists have discovered the genetic secret behind the transformation of oil palm plants bearing normal fruit (far left column) to plants bearing desiccated, worthless ‘mantled’ fruit (far right column). A simple genetic test will enable growers to cull mutated plants at the beginning of the process, while they are still in culture dishes. Credit: Martienssen Lab, CSHL

The gene in question is the oil palm equivalent of a gene called DEFICIENS in the snapdragon plant, where it was first described. The team renamed the gene MANTLED in oil palm. The gene helps determine the fate of sexual organs, and when mutated can cause male organs to develop instead as female organs. Within MANTLED in oil palm is lodged a retrotransposon. It is one of myriad genomic invaders that lay (mostly) dormant within genes in all forms of life. This particular invader, or one very similar to it, was first spotted in rice plants, and had been named karma.

Martienssen and colleagues discovered that in mantled plants, a methyl mark present in healthy plants was missing at a location in the karma retrotransposon called a splice site. Karma sits within an intron in MANTLED. When the splice site is unmethylated, the gene does not use the normal exon to splice the intron, but instead uses karma. The RNA message copied from the gene encodes a mutant protein that gives rise to plants with worthless fruit. The team playfully dubbed this faulty gene message ‘bad karma’. In trees that develop normally and yield healthy fruits, the methyl mark is always present at the karma splice site, giving rise to a version of the correct gene message, which the team naturally calls ‘good karma’.

The team is not sure why ‘bad karma’ happens when oil palm tissue is cloned in culture. Martienssen suspects it has something to do with the temporary separation of plant tissue from its place of origin, the stem-cell containing meristem. Meristems also contain small RNAs that help guide methyl marks and other epigenetic signals to appropriate positions along the double helix.

A simple epigenetic test, analogous to inexpensive tests currently in use during pregnancy to detect a panel of human diseases in fetuses, will readily identify bad karma and thus enable growers to cull damaged clones at the plantlet stage. This will save vast sums of money, and importantly, says Martienssen, will be a boon to yield since it will promote the propagation of healthy high-value hybrid clones and thus reduce the economic pressure on growers large and small to devote additional land to generate more fruit.



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Particles Plus has launched its Air Quality Monitors — particle counters that measure particle mass concentrations and total particle mass while monitoring and recording essential environmental conditions such as temperature, relative humidity, and carbon dioxide (CO₂) or total volatile organic compounds (TVOC).

The monitors employ power management features that allow the instrument to be placed into remote environments. The sleep mode function allows the instrument to sample air and then shut down all processes for a user-defined set time. After the programmed sleep time, the unit wakes up and takes the next sample, repeating this process. Depending on the amount of time between samples and settings and the sample time, the unit can run from one to two months on a single charge.

The small and lightweight range includes the stand-alone model 7301-IAQ that can be placed on a surface to monitor an environment for temporary testing, while the model 5301-IAQ is designed for fixed wall-mounted installation.

The Particles Plus range is available from Particle & Surface Sciences.

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Non-contact colour measurement of foods

The HunterLab D25 NC colour measurement system has been specifically designed to measure the colour of large, irregularly shaped products such as snack foods, biscuits, lollies, chocolates, cereals, beans, seeds and nuts. It easily manages granules and powders of all sizes, as well as opaque liquids and pastes. The product provides accurate colour measurement with ease of use.

By integrating a non-contact sensor and a rotating sample dish in one stand-alone instrument, the product enables rapid sampling (five flashes per second, 25 times per cycle); full cycle averaging for a large measured sample area of 129 cm² per cycle; and easy sample preparation.

The easy-to-read colour display provides a simple built-in user interface. The unit features stand-alone operation; a compact design; low power consumption; long-life LED illumination; USB connectivity; and internal storage of up to 250 different set-ups and 2000 sample measurements.

The intelligent integrated height sensor enables accurate product height measurement, consistent colour measurement independent of height variation and measurement of the sample only and not the dish.

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Same-day Alicyclobacillus test for fruit juice and concentrates

Alicyclobacillus (ACB) species are bacteria which are resistant to low pH and pasteurisation. They produce off-flavour and aroma compounds that spoil juice products.

Current methods for ACB testing are laborious and require over seven days to yield definitive results. These limitations make it impossible to address these spoilage organisms in real time and can result in facility contamination, product holds or recall of tainted products.

Invisible Sentinel, a molecular solutions company, has partnered with Refresco Gerber, a bottler of juice and soft drinks, to produce and validate a method for rapid detection of ACB.

The test, Veriflow ACB, uses novel PCR technology to provide a simple method which yields qualitative and quantitative results in less than 3 h. The test requires a minimal amount of equipment and hands-on time, meaning the test can be easily used on site.

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Online process analyser

The Metrohm ICON Process Analyser performs photometric absorption measurements in the visible light range.

With differential absorbance colorimetry (DAC), the analyser compensates for the colour and turbidity of the sample by measuring both before and after the addition of a colour reagent.

The following components can be measured using the DAC technique: aluminium, ammonia, chlorine, chromium, copper, cyanide, hydrazine, iron, manganese, nickel, nitrate, nitrite, phenol, phosphate, silica and zinc.

The photometer module comprises a heated cuvette with 2.4 cm light path and a long-life LED source. Various parameters can be managed by the software besides analysis results — low reagent level alarms, calibration errors and loss of sample are a few examples of alarms that can be logged into the database or sent to a control room for further review the operator.

Multiple user levels are offered in the software which are suitable for any operator.

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Making washed greens safer

Cross-contamination in commercial processing facilities that prepare spinach and other leafy greens for the market can make people sick. But researchers are reporting a new, easy-to-implement method that could eliminate or reduce such incidences.

Greens are washed by commercial processes before they head to the grocery store. But these methods, which can include water and bleach rinses or irradiation, are not completely effective, said Nichola Kinsinger, PhD.

She says scientists have estimated that 99% of food-borne illnesses from leafy greens can be traced back to disinfection issues. As a result, they have searched for and developed a different approach to attacking the bacteria, most notably *E. coli*, which is the cause of many outbreaks.

"Despite current disinfection rinsing, bacteria are surviving on the leaf and causing cross-contamination, resulting in the numerous outbreaks we hear about in the media," Kinsinger said. She is a postdoc in the lab of Sharon Walker, PhD, at the University of California, Riverside. "Pathogens can come from irrigation waters or from water used during processing, and they can adhere to spinach leaves. If these bacteria are not all killed in the disinfection process, they can continue to live, grow, spread and contaminate other surfaces within the facility and other leaves."


Using a parallel-plate flow chamber system that Walker developed, the researchers tested the real-time attachment and detachment of bacteria to the outer layer of spinach leaves. At low bleach concentrations, the bacteria fell off the leaves, but remained alive. At the higher concentrations used commercially, however, all of the bacteria were killed. "This result was perplexing," Walker said. "Our experiments were telling us that commercial bleach rinses should be much more effective than they are. But then we studied the leaf itself in more detail."

A spinach leaf is not perfectly smooth, she noted. So, the team modelled how the bleach would move across the surface of a spinach leaf, taking its bumps and grooves into account. Surprisingly, the model revealed that the concentrations of bleach on leaves may not be consistent.

"We found that because of the topology of the spinach leaf, nearly 15% of the surface may 'see' a bleach concentration that is 1000 times less than that of the rinse solution," Kinsinger said. In some cases, that translated to a 90% bacterial survival in their tests — and a high risk for cross-contamination.

To reduce that risk, the researchers are optimising an inexpensive titanium dioxide (TiO_2) photocatalyst that companies could add to the rinse water or use to coat equipment surfaces that come into contact with the leaves as they are processed. When TiO_2 absorbs light, it produces a strong oxidant that kills bacteria.

The scientists now plan to conduct more studies on the photocatalyst, and they will look at a broader range of foods, engineered surfaces and pathogens.

The researchers acknowledge funding from the USDA National Institute for Food and Agriculture under the Agriculture and Food Research Initiative. 



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