

January/February 2017
Vol.24 No.5

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OK, back to work now. The holidays are over and it's time to think 2017 thoughts. What do you want to achieve?

If you're not sure, or you know where you want to be but don't know how to get there, pencil in visiting AUSPACK 2017. Held in Sydney from 7–10 March, this event, along with the co-located AIP National Technical Forums, will certainly get you up to pace on what is going on and what new technologies and equipment are on the horizon.

But what about staff?

Hmmmm. Is this going to be another year of a critical shortage of food technology graduates with 3–5 years of experience while new graduates can't get a job?

Isn't it time we either liaise with the universities to fix their curricula so that fresh grads have the skills we need or we bite the bullet and train up the graduates ourselves?

I well remember hiring graduates more than 30 years ago. I hated it. The graduates had inflated ideas of their importance and skills and I found them to be unbearable until someone else had employed them and knocked the rough edges off.

But in retrospect, how unfair was this to the graduates? They have little to no say in what they are taught. They genuinely don't realise that the skill sets they are coming complete with are not compatible with what is required in the workplace. They are just fresh, keen and eager to start in the industry.

Somehow it is up to the industry to harness this keenness and mould it into what is needed. While ever the job prospects (and remuneration) are poor for graduates, the calibre of candidates entering the courses will be below par and, as a consequence, the food industry will not reap the benefits that students can offer. If we want to attract the 'best and brightest' we need to ensure that they see a genuine career path — and let's face it, at the moment they don't.

Turning this around will not be fast or simple. In truth it will be a bit like the Pantene ad — "It won't happen overnight, but it will happen". But it will only happen if the food and beverage industry works to ensure that the content of courses on offer is what is needed and actively decides to employ the new graduates and pay them a decent wage. It really is the same old story: "pay peanuts, get monkeys".

So how about we make 2017 the year of fixing the food technologists employment conundrum?

Now, back to AUSPACK... when you visit the exhibition please swing by the What's New in Food Technology & Manufacturing stand, make sure your registration is up to date (yes, it is completely free) and tell me how you would like to fix the food and beverage industry.

Janette Woodhouse
Editor
jwoodhouse@wfmedia.com.au
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Nestlé research could cut sugar content of chocolate by 40%

Breakthrough research by Nestlé scientists has discovered a way to reduce the sugar content in chocolate by up to 40%, without impacting its taste.

Using natural ingredients, the researchers have found a way to structure sugar differently so that it dissolves faster. Even when much less is used in chocolate, the tongue perceives an almost identical sweetness to before.

The discovery will enable Nestlé to significantly decrease the total sugar in its confectionery products, while maintaining a natural taste.

"This truly groundbreaking research is inspired by nature and has the potential to reduce total sugar by up to 40% in our confectionery," Nestlé Chief Technology Officer Stefan Catsicas said.

Nestlé is patenting its findings and will begin to use the faster-dissolving sugar across a range of its confectionery products from 2018 onwards.



Global supply chain stability is wavering but Asia Pacific going okay

The CIPS Risk Index, produced for the Chartered Institute of Procurement & Supply (CIPS) by Dun & Bradstreet economists, tracks the impact of economic and political developments on the stability of global supply chains.

The latest index shows risk relating to global supply chains has reached its highest levels since 2013 due to a convergence of international issues including uncertainty around the post-Brexit relationship between the UK and the European Union as well as economic and political instability across the Middle East. The upward trend in supply chain risk can be partly attributed to a breakdown in political consensus over globalisation, with the World Trade Organisation reporting an average of 22 new trade restrictive measures introduced each month in its latest report.

Region-specific results show highest increases in risk:

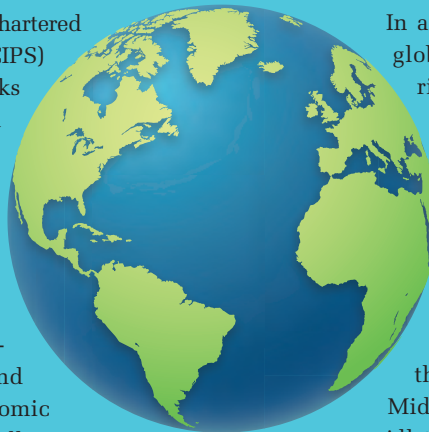
- Western Europe
- Eastern Europe
- Central Asia
- Middle East
- North and Sub-Saharan Africa

Improved risk:

- Asia Pacific

According to Bodhi Ganguli, lead economist, Dun & Bradstreet, the CIPS Risk Index reflected the general unease about the state of the global economy with its increase in operational risk.

"Political and economic uncertainties — such as the extent of the growth slowdown in China, emerging markets' financial vulnerabilities, the impact of terrorism on cross-border movements and the fallout from Brexit — continue to weigh on global business sentiment," Ganguli said.



In addition, growing disillusionment with globalisation is contributing to political risk. Elections over the next 12 months are expected to see gains for far-right parties across the globe. Incumbent governments are also demonstrating worrying responses to the growing issue of cross-border movements with the Australian government proposing radical changes to immigration policy in response to perceived terrorist threats stemming from violence in the Middle East.

All told, increased political and economic risk globally is beginning to affect the bottom line of businesses as they look to navigate an increasingly hostile global trade and supply market.

Mark Lamb, general manager of CIPS Asia Pacific, said: "Supply chain managers are facing a new wave of impediments to the flow of goods across borders. With international trade deals under threat around the world, supply chain managers must be as aware of political risks as they are of natural disasters and economic hardship."

Asia Pacific has bucked the global trend with slight improvements in risk levels for domestic businesses. Australian suppliers in particular have benefited from rising coal and iron ore prices together with an increase in national defence spending. In the short term, Australian businesses are also showing improved payment performance. Of concern is a continued reliance on an unstable Chinese economy. A major issue likely to have deep effects on Asian trade is the recent bankruptcy of South Korea's Hanjin Shipping. Responsible for 3% of global shipping, it has left cargo as large as \$14bn unable to dock. The bankruptcy is likely to have wide-ranging impact on transpacific and Asia-Europe supply chains.

Stevia molecules unchanged by processing: research

A research study has supported stevia's claim to naturality, finding that all the plant's sweet molecules remain unchanged throughout the stages of processing.

The study found all nine of the steviol glycoside molecules required by the specifications set by the Joint Expert Committee on Food Additives (JECFA), a committee jointly administered by the Food and Agriculture Organization (FAO) of the United Nations and the World Health Organization (WHO), were present and unchanged in dried stevia leaf, through the commercial extraction and purification process and in the final stevia leaf extract product.

The research found that the stevia leaf extract end products were of 95% purity, which is required by JECFA. The study used analytical techniques such as high-performance liquid chromatography (HPLC) in combination with C18 and/or hydrophilic interaction liquid chromatography (HILIC) columns to separate, identify and quantify the individual steviol glycoside molecules.

"Finding the same nine steviol glycoside molecules unchanged in the stevia leaf, the water extract and in the final product confirms that the commercial extraction and purification process of high-purity stevia leaf extract does not alter the sweet steviol glycoside molecules in the leaf," said Dr Ursula Wölwer-Rieck, the scientist at the University of Bonn, Germany, who conducted the research.



© PRNewsFoto/The Global Stevia



Grattan Institute: why Australia should tax soft drink

A report by the Grattan Institute recommends the introduction of a tax on sugary drinks in Australia to help recoup some of the costs of obesity to the community.

Calling for a new excise tax of 40 cents per 100 g of sugar, on all non-alcoholic, water-based drinks that contain added sugar, the report estimates the tax would increase the price of a two-litre bottle of soft drink by about 80 cents, raise about \$500 million a year, and generate a fall of about 15% in the consumption of sugar-sweetened beverages.

The report calculates that obesity costs Australian taxpayers more than \$5.3 billion a year, as obese people require more medical treatment and hospital admissions, and are also more likely to be unemployed — and therefore paying less tax — compared to the rest of the population.

One in four Australian adults are now classified as obese, up from one in 10 in the early 1980s. Around 7% of Australian children are also obese.

The report stresses that a new tax is not a "silver bullet" solution to Australia's obesity epidemic, but claims the proposed tax would encourage healthier lifestyles.

"Obesity is one of the great public health challenges of modern Australia, and so this is a reform whose time has come," said Grattan Institute Health Program Director Stephen Duckett. "We target these drinks because most of them contain no nutritional benefit."

Countries that already have or are planning to introduce a tax on soft drinks include France, Belgium, Hungary, Finland, Chile, the UK, Ireland, South Africa and parts of the United States.

The report says the Australian Government could use the \$500 million a year raised by the new tax to reduce the budget deficit or boost healthcare funding, or the money could be spent on programs designed to treat obesity and promote healthy eating.

The colour of food packaging tells its own story

Do you want your product to look health-giving or decadent or economical? How do you convey this message to consumers when all they see is the packaging? The answer to this is through colour.

People make assumptions about products based purely on the aesthetics of the food packaging and after investigating this researchers from Kiel University have just published a paper in the *Journal of Retailing* — 'Light and pale colors in food packaging: when does this package cue signal superior healthiness or inferior taste?'

Consumers' reactions to pale packaging were investigated to see if the colour was associated with 'healthy choice' or 'poor taste'.

The same herbed cream cheese was packed in two different colours: light green and regular green. Over a series of experiments it was established that light-coloured packaging contained 'less tasty' food. The more health-conscious consumers, however, also connected pale packaging with more healthy contents.

A conundrum then results — to appeal to health-conscious consumers pale packaging is beneficial. However, pale packaging is assumed to be less tasty and as food is purchased without tasting first, a darker pack colour may generate more sales.

The authors concluded: "Thus, when selling healthy foods to less health-aware shoppers, pale packages can have a deterrent effect. Employing darker tones could be one way to compensate for a perceived taste decrease."



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Australian researchers close in on *Campylobacter*

A team from Griffith University has identified a unique sensory structure present on particularly virulent strains of *Campylobacter jejuni*.

The team from the university's Institute for Glycomics explained that the ability to cause disease depends on the ability of bacterial cells to move towards their target host cells. This movement is determined by specialised structures on the bacterial cells, called sensory receptors, that sense chemicals in their environment.

In the paper 'A direct-sensing galactose chemoreceptor recently evolved in invasive strains of *Campylobacter jejuni*', published in *Nature Communications*, the researchers describe the sensory structure that is able to bind

host-specific sugar.

Campylobacter bacteria are among the most common cause of foodborne enteritis and have surpassed other food bugs such as *Salmonella* and *Shigella* as causes of illness, hospitalisation and lost production in the workplace.

The *Campylobacter* infection is usually passed to humans from food animals, particularly poultry, through consumption of undercooked meats, unpasteurised milk and contaminated water.

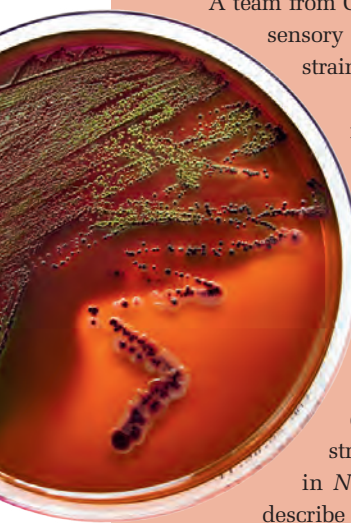
The researchers used chicken models to look at mutant displays with disabled Tlp11 chemosensory receptors and determined that disabling just this one sensor reduces the ability of *Campylobacter* to colonise chickens.

"This is a very important finding, as sensory structures are very specific to each bacteria and offer high target specificity for design of new antimicrobial compounds," said research leader Professor Victoria Korolik.

"Essentially, it should be possible to design an antimicrobial drug to target a specific pathogen that will not affect normal flora.

"Targeting sensory apparatus of microbes also reduces risk of development of antimicrobial resistance, since the bacterial cell will not be killed but, rather, have its ability to reach host cells and cause disease disabled."

Professor Korolik further explained that developing an understanding of how bacterial sensors bind to chemicals has enormous potential for the future. Ultimately, scientists could engineer bacteria with a set of sensors that will selectively direct cancer-killing bacteria towards cancer cells. They could also direct bacteria that degrade chemicals in environmental contamination, such as oil spills, to contaminated areas.



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Australian research targets next-generation food crops

Research led by the Australian National University (ANU) is helping to develop food crops which offer bigger yield potential and improved drought tolerance.

The research will help explain why crops such as sorghum and millet produce a greater yield and are better at resisting drought and other extreme conditions compared to wheat and rice by studying the role of a key enzyme in the process.

One of the lead researchers, Dr Hugo Alonso-Cantabrana, said sorghum, sugarcane, millet and maize use a form of photosynthesis called C4 that makes them more efficient at transforming carbon dioxide, light and water into sugars.

"They do this by taking up carbon dioxide from the air and concentrating it in specialised cells deep in the leaf," said Dr Alonso-Cantabrana from the Research School of Biology and the ARC Centre of Excellence for Translational Photosynthesis at ANU.

Co-researcher Hannah Osborn, an ANU PhD student, said wheat and rice, known as C3 plants, used the oldest form of photosynthesis, while plants using C4 photosynthesis had an advantage in conditions with high temperatures and low rainfall.

"C4 plants can capture carbon dioxide from the air while losing less water from their leaves, but little is known about what determines the efficiency of this process," said Osborn, from the ARC Centre of Excellence for Translational Photosynthesis and the Research School of Biology at ANU.

To investigate the process, the team studied the role of carbonic anhydrase (CA), the first enzyme that carbon dioxide encounters in the leaf of the model C4 plant *Setaria viridis*, which is also known as green millet.

"This enzyme is vital for C4 photosynthesis, as it helps carbon dioxide from the air to dissolve quickly into the liquid of the cell," Osborn said.

"This is the first time that we have been able to transform this model C4 plant to have less of the CA enzyme and look at the effects on photosynthesis and water loss. We think that under adverse conditions such as drought or high temperatures, having a lot of this enzyme could be advantageous for the plant."

The research has been published in the *Journal of Experimental Botany*.

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Ministerial Forum discusses THC in food, labelling review

The Australian and New Zealand Ministerial Forum on Food Regulation has met in Brisbane to discuss issues such as the legalisation of hemp as food and labelling reform. Comprised of Ministers from Australia and New Zealand and the Australian Local Government Association, the forum is responsible for maintaining a strong food regulation system based on scientific evidence.

The Ministers identified synthetic foods as an emerging area of interest and asked Food Standards Australia New Zealand (FSANZ) to prepare a report on potential safety, nutritional and labelling issues. Regarding allergen labelling, it was agreed that further work should be undertaken by FSANZ through the Allergen Collaboration to promote the uptake of voluntary labelling initiatives.

A research project is underway to evaluate the impact of the consumption of low-THC hemp as a food in regards to police roadside drug tests.

Horticulture Code of Conduct needs “significant” changes: ACCC

A report by the Australian Competition and Consumer Commission (ACCC) has highlighted the Horticulture Code of Conduct as an area of particular concern in the horticulture and viticulture industries.

The report documented the findings from a series of workshops held around regional Australia, which examined competition and fair trading issues facing growers and the broader industries.

ACCC Commissioner Mick Keogh said that despite the diversity of markets in horticulture and viticulture, there were a number of common concerns raised by stakeholders, including:

- the ineffectiveness of the current Horticulture Code of Conduct;
- concerns about late and non-payment of growers by wholesalers;
- a fear of raising complaints due to concerns about retribution;
- uncertainty in contracting practices across both industries;

“It is clear that the Horticulture Code is not achieving its aims and we believe that significant changes to the code are required,” ACCC Deputy Chair Michael Schaper said.

“The code needs to have greater coverage, through the inclusion of pre-2006 agreements, and penalties and infringement notices should be available for breaches of the code to encourage widespread compliance.”

NZ invests in research to move up from minimally processed exports

New Zealand’s High-Value Nutrition Science Challenge aims to enable transformational change in the country’s food and beverage industry and position the sector as an international centre of excellence for high-value food-for-health products.

One ultimate goal is to significantly increase export revenues from the food and beverage sector by 2025.

While NZ has a fast-growing food and beverage export industry and enjoys an enviable international reputation for excellence in primary production, quality and safety, most of the country’s exports are largely unprocessed or minimally processed. The evolving regulatory environment for approval of validated food-health claims is providing an opportunity for NZ to add to the strong provenance of New Zealand origin foods.

The High-Value Nutrition Challenge will invest in novel science at the cutting edge of knowledge and work alongside industry to ensure New Zealand’s capability in validated health foods is sustainable and relevant in the long term.

High-Value Nutrition is a vital part of the drive to enable New Zealand industry to capture the food-for-health export opportunity.

NZ’s Science and Innovation Minister, Steven Joyce, has recently awarded Distinguished Professor Harjinder Singh, head of the Massey Institute of Food Science and Technology and co-director of Riddet Institute, \$1.5 million of funding from the High-Value Nutrition National Science Challenge.

The Massey-led Science of Food platform will receive the funding to address the technological challenge of creating food products that provide enhanced health benefits by delivering natural health-enhancing compounds (bioactives) to the body.

The team will ensure these bioactives are protected in their active form during the journey from raw ingredients to finished food products, and delivered to the body through targeted release during digestion.

Up to \$1.5 million has also been allocated to consumer insights research at Plant and Food Research, with a focus on the health and wellness needs of Asian consumers.



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Dust explosions

— how to avoid a known risk in the food industry

Jérôme Taveau, Scientific Advisor, Fike Corporation

Many food and beverage processors deal with dust on a daily basis and so it is imperative that they are cognisant of the devastating consequences that can result from dust explosions and can also select the most appropriate explosion protection solution for their application.

Food and beverage manufacturing plants are sanitary, hygienic environments and yet they are still prone to dusty conditions. Fine, dry products and materials such as sweeteners, starches and flour pose a distinct fire and explosion hazard. Special attention must be paid to areas in or outside facilities where dusts are produced, processed, stored or transported and can be lofted into the atmosphere. Otherwise, all that is needed is an ignition source with sufficient energy to cause a nightmarish event.

Explosion hazard mitigation and management begins with understanding the explosion properties of the material. When that information is not available, explosibility testing is needed. Once the material is characterised, explosion prevention and protection measures can be taken based on the intended application. Prevention is the first

line of defence, whereas protection deals with the effects of explosions that do occur.

Four explosion protection techniques are used in the food processing industry:

- venting,
- flameless venting,
- suppression, and
- isolation.

They can be used separately or in combination depending on the application. It is important to understand the advantages and limitations of each technique in order to make the most effective explosion protection decisions.

Venting: pressure release

The most popular explosion protection technique by far is venting. This method is extensively described in engineering



“ Its purpose is threefold: to relieve pressure, quench the flame and retain the dust. ”

literature and standards such as National Fire Protection Association (NFPA) 68: Standard on Explosion Protection by Deflagration Venting¹ and European Norm (EN) 14491: Dust Explosion Venting Protective Systems². The sanitary explosion vents used in food and beverage processing must accommodate partial vacuum conditions and a wide range of temperatures.

Venting protects a vessel from bursting by enabling pressure developed during an explosion inside the vessel to be safely released into the environment (Figure 1). A rupture diaphragm is placed on the vessel and designed to open at a static burst pressure (P_{STAT}) well below the pressure at which the vessel would be destroyed or damaged.

Key performances of a suitable vent include reliable P_{STAT} fast opening and an absence of fragmentation.

Venting allows control of the pressure developed inside an enclosure, but it does not mitigate the hazards of the flame exiting from the vent (Figure 2). Because of these secondary dust explosion hazards, conventional venting is not recommended for enclosures located indoors³.

For indoor enclosures, vent ducts can be added to redirect the flame and pressure outside the building. This may, however, be difficult to apply effectively because adding a vent duct can increase the reduced explosion pressure inside the vented enclosure (PRED). An alternative approach is flameless venting.

Flameless venting: pressure release, flame arrest and dust retention

The flameless venting technique was designed specifically to protect against dust explosions. Its purpose is threefold:



Dust explosion venting at Fike Remote Testing Facility showing venting with flame release.

to relieve pressure, quench the flame and retain the dust. In the early stage of an explosion, a vent panel opens and the dust (burnt and unburnt) is captured in the flame arrestor unit, which is composed of layers of stainless steel mesh. The flame-quenching unit may be cylindrical, rectangular or square (Figure 3).

Flameless venting offers a compact alternative to vent ducting with much greater venting efficiency. It also minimises the blast, thermal radiation and noise outside the protected equipment and can, therefore, be used outdoors when secondary effects associated with conventional venting are a concern.

However, flameless venting does not fit all applications; a suppression system may be more suitable when there is limited space to install vents or when the processed material is toxic.

Suppression: energy absorption

Explosion suppression is an active technique with key advantages over conventional venting: there is no release of pressure, flame or potentially toxic material into the environment because the explosion is dynamically contained within the enclosure. It also reduces the damage to the equipment and mitigates the potential fire hazards that can arise from an explosion.

Suppression systems typically are more expensive than vents but offer key advantages. An explosion suppression system typically consists of a pressure sensor, a control panel and high rate discharge (HRD) suppressor(s) with appropriate dispersion nozzles. The ignition of a dust cloud within an enclosure produces a fireball which emits pressure waves. These are quickly detected by the sensor, which sends a signal to the control panel to initiate the discharge of the suppressant. Nitrogen and the suppressant agent are rapidly released into the vessel, extinguishing the fireball by reducing the temperature of the combustible material below a level necessary to sustain combustion.

Isolation: propagation prevention

Process equipment is very often connected to other parts of a facility by pipes or conveying systems. Any dust explosion that originates in an interconnected enclosure, even vented or suppressed, can propagate and reach other process equipment, causing extensive damage. Because the flame



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Fike Flap Valve ValvEx passive explosion isolation system.



float valves and flap valves (Figure 4). With flap valves, the pressure generated by the explosion will push a gate and close the pipe, thus preventing propagation of the flame to the protected parts of the process. Passive systems tend to be simpler and require less maintenance than active isolation systems.

Active systems, on the other hand, require tripping by a sensor for activation. That trigger will either close a mechanical valve ahead of the flame front or inject an extinguishing agent into the pipe to stop further flame propagation. Active systems include chemical barriers, gate valves and pinch valves.

Isolation device placement is essential to its success. If the device is placed far from the ignition, the deflagration can generate high pressures in the pipes and damage the isolation device. If it is placed near the ignition, then it may not be entirely closed before the flame arrives.

Steps for explosion protection selection

Choosing the appropriate explosion protection method for food and beverage processes involves answering basic application questions. They are outlined here and also illustrated in more detail in the selection flow chart below (Figure 5).

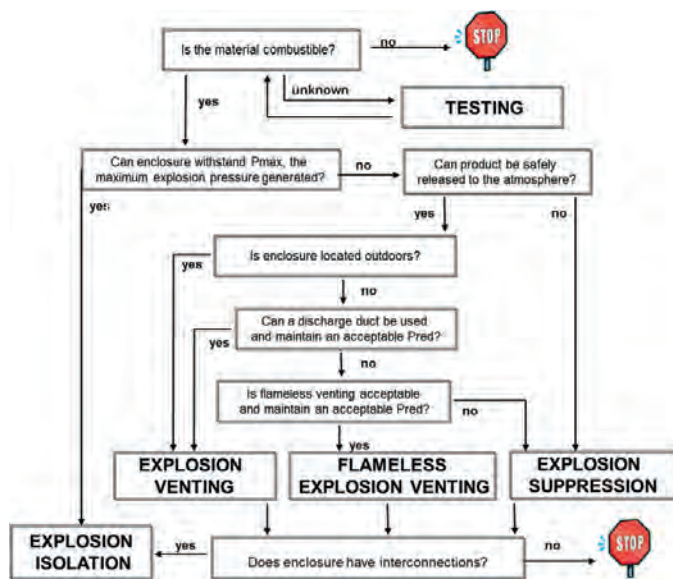
1. Use explosion venting when ... the enclosure is outdoors.
2. Use flameless venting when ... the enclosure is indoors and vent ducting is impractical.
3. Use explosion suppression when ... the material is toxic, the enclosure is indoors and flameless venting is impractical, or when fire damage can be a concern.
4. Use explosion isolation (passive or active) when ... the enclosure has interconnections.

Lean on explosion protection experts

Dust explosion protection is crucial to avoid what could otherwise become a catastrophic incident, costing lives, property, environmental integrity and reputational damage. Fortunately, food and beverage manufacturers have four effective methods available to address the different applications. To ensure the right decisions are made, consider working closely with an explosion protection manufacturer who can provide recommendations and suitable equipment to meet the business needs.



Fike Corporation
www.fike.com



Explosion protection selection chart. (Fike Corporation)

front will accelerate and stronger pressure effects will be produced, the resulting explosion in the secondary vessel can be much more violent than the initial event.

Explosion isolation protects against this hazard. Isolation can prevent flame propagation to a secondary enclosure, prevent pressure piling and flame jet ignition in the secondary enclosure and prevent deflagration to detonation transition in pipes (high length to diameter ratio).

Isolation can be either passive or active. Passive systems are activated by the explosion itself and include diverters,



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Hygienic LED signal tower

WERMA's CleanSIGN LED signal tower is suitable for use in food and hygiene areas. The tower's compact construction means there are no uneven surfaces, grooves or joints where dirt could collect and potentially cause contamination.

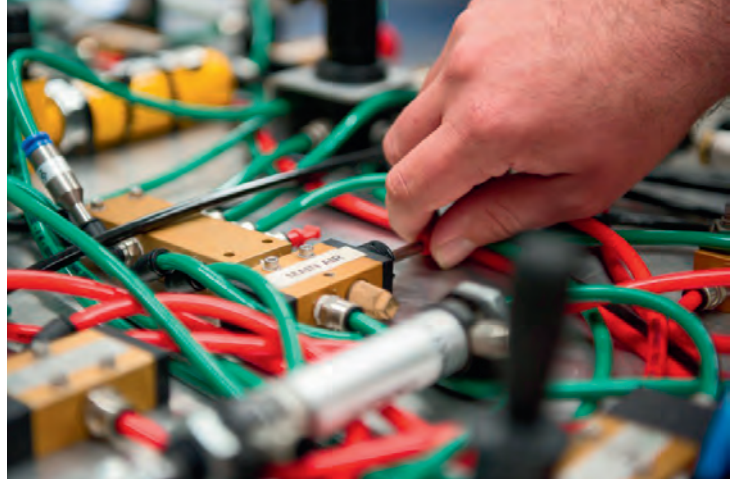
The 30° chamfer of the upper housing and bracket ensures the rapid drainage of liquids, quick cleaning and easy inspection. The tower's cleaning-friendly design reduces cleaning times and reduces energy and cleaning agent consumption.

The polyamide housing is approved by the FDA and is consequently food safe and resistant to cleaning and disinfectant agents. The tower's connection element and mounting bracket are all of one piece, avoiding joints where dirt could collect.

The 'Pine Tree Clip' quick-action fixture enables quick and simple mounting, and attachment and connection of the tower is carried out from the rear, which means the housing is completely closed and drill holes are avoided.

The LED technology has a life duration of up to 50,000 h. The addition of an integrated high-volume buzzer ensures the signalling of all people outside the visible range.

Balluff Pty Ltd
www.balluff.com.au



On-site hydraulics and pneumatics training

Downtime can be reduced and productivity increased when staff have the skills to address hydraulic and pneumatic breakdown and troubleshooting issues.

APT Specialist Hydraulics and Training, a registered training organisation, will travel anywhere with its mobile practical workshop to deliver training ranging from Familiarisation, Statement of Attainment, Certificate IV to Diploma.

All course content and delivery methods can be customised to suit requirements. Documentation can be customised to suit any requirement including audits, maintenance/technical manuals, SWPs, FMEA, FMECA, risk assessments along with modelling and simulation.

APT Hydraulics
www.apthydraulics.com.au

Air knives

WindJet air knives from Spraying Systems are suitable for processors that require drying of vacuum bags before meat is deposited. The air knives are also suitable for drying the outside of packages before labelling.

The air knives allow for the vacuum bags to retain their shape while eliminating spotting and blotching concerns. Drying the outside of the packages ensures that product labels adhere properly.

WindJet air knives use blower air and feature a design that directs the airflow out of the knife in a straight stream. This results in a high-volume, constant and even stream of air along the entire length of the knife. The design provides a visual guide for positioning the air stream, pointing out the direction of the flow. This allows for easy positioning of the knife to ensure maximum target coverage. The design also improves air entrainment, which ensures the integrity of the air stream.

Using blower air allows for decreased operating noise, savings on energy usage and improved performance. The air knives are easy to set up and feature leak-proof end cap gaskets, corrosion-resistant finish, increased wear life and are available in 316 stainless steel.

The air knives come in a variety of lengths, ranging from 6" to 36", and custom lengths are offered. WindJet air knives are also available in a compressed air option.

For more information: http://www.spray.com.au/literature_pdfs/C20D_WindJet_Air_Products.pdf.

Spraying Systems Co Pty Ltd
www.spray.com.au



Flue gas emission analyser

The rbr ecom-J2KN analyser utilises electrochemical sensors to measure exhaust emissions, most commonly O₂, CO, NO, NO₂ and SO₂ gases and has an available NDIR bench for measuring CO₂, high CO and CH₄.

The robust filtering system, along with the Peltier gas cooler and 9 V high flow pump, ensures a clean sample and high flow rate, which is necessary for accuracy and repeatability. The sensors are monitored, which compensates for temperature changes in harsh testing environments, and the CO sensor has a dedicated fresh air pump that is activated if a maximum concentration limit is exceeded — usually 4000 ppm.

Applications include emission testing on stationary engines, generators, compressors, boilers, burners, turbines, heating equipment, pumps, diesel engines, mining equipment (to control DPM), construction equipment, laboratory combustion equipment, alternative fuels research and others. The analyser is also used for fuel efficiency testing, combustion tuning, maintenance checks and emissions compliance reporting. The types of fuel burnt that can be tested include natural gas, oil, diesel, coal, wood, biomass, butane, propane, biodiesel and other alternative fuels. Gasoline emissions may be tested, but this requires the NDIR bench (for CO).

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EtherCAT in an abattoir?



An OEM specialising in wastewater processing equipment was presented with a challenge: to provide a solution for the treatment of wastewater in a large Victorian abattoir.

The objective of the project was to provide a system with an increased capacity in volume of effluent processed per day by improving the receiving, storing and processing efficiency of the wastewater to accommodate for the plant's current production schedule and take into consideration future demands due to increased productivity.

The OEM teamed up with SMC to install an electro-pneumatic system which significantly enhanced the functional and operational features of the equipment.

Major challenges

Accommodating the current effluent requirements and allowing for about 35% more capacity for future expansion presented quite a challenge. Safety and hygiene requirements, as well as the refining of the process that deals with extracting the suspended solids more efficiently, was another obstacle that the technical team had to overcome, as well as the measuring and dosing process of the required chemicals. All of these elements had to be incorporated into one throughput. Ultimately, water with the right pH balance had to be returned into the system and this had to be done all in one cycle of the process.

SMC delivered a plug-and-play EtherCAT solution, which was designed, manufactured and delivered in an integrated control panel solution.

The SMC installation highlights that seemingly complex technology, previously only reserved for high-tech environments, can be implemented in most applications.

"This system sets a new benchmark within the Australian process industry by challenging the perceptions that a leading-edge networking system EtherCAT is only suitable for very high-speed, complex and demanding applications within the industrial automation sector and successfully demonstrates the benefits of its application over the traditional system

design," commented Jozef Ceh, business development manager for electronic platforms at SMC Pneumatics Australia New Zealand.

Fieldbus technology

EtherCAT is Industrial Ethernet technology which is not only fast but also synchronises with nanosecond accuracy. This offers benefits for applications in which the target system is controlled or measured via the bus system. The rapid reaction times work to reduce the wait times during the transitions between process steps, which significantly improves application efficiency. The EtherCAT system architecture also typically reduces the load on the CPU by 25–30 % in comparison to other bus systems (given the same cycle time). When optimally applied, EtherCAT's performance therefore leads to improved accuracy, greater throughput and lowered costs.

The final result

The system was set up to return higher quality water back into the environment, and to reduce the impact on the environment, while exceeding the minimum specifications of the water authorities. The recycling of water back into the plant for repeat usage also reduced the water consumption and running costs of the plant.

The result was a rendering process plant with the capacity to receive 1 ML, with up to 1.5 ML of effluent, on a daily basis.

"This project successfully demonstrates the value in challenging the traditional approach to solving problems and looking outside of the comfort zones of historically specified legacy systems that were significant in their time but may impose limitations when encountered by demands of the modern plants. It went outside of status quo and broke the barrier to look at progressive technologies," concluded Ceh.

EtherCAT technology from SMC will be on show during AUSPACK 2017, to be held in Sydney from 7–10 March.

SMC Australia/New Zealand
www.smcworld.com

Liquid ring vacuum pumps

Dynavac manufactures complete engineered vacuum systems comprising single or two stage units with vacuum vessels, piping valves and instrumentation. The systems are designed to be simple and robust. A single rotor is sealed by the steady flow of water through the pumping chamber.

The systems are suitable for 'wet' and 'dirty' applications and can be designed to handle almost any gas and vapour. They are tolerant of particle throughput, are self-flushing and provide low-maintenance, oil-free operation with low vibration and silent running.

Suitable for heavy-duty applications, they can continuously separate and tolerate accidental carryover of dust and liquid.

Oil recirculation systems can operate for 10,000 h without any oil replacement.

Dynapumps

www.dynapumps.com.au



Stainless steel enclosures

The Kraus & Naimer 6S Series of stainless steel enclosures provide protection for vital switchgear with the same footprint as plastic versions.

Suitable for food and beverage industries, the enclosures can withstand aggressive environments such as marine, sewerage treatment plants, mining, material handling and conveyor systems.

The enclosures are Australian manufactured, constructed from 1.6 mm 316 stainless steel and are rated to IP66. The enclosures have bottom threaded entries and four screw cover fixings with or without external mounting feet.

Many standard sizes are available or custom designs can also be produced.

Kraus & Naimer Pty Ltd

www.krausnaimer.com.au

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Mint oil production: combining art and science

Dr Leo Cahill, owner of Australian Mint Oils & Flavours, says making mint oil is both an art and a science. Quality mint oil undergoes a second distillation or rectification, which requires the application of heat. However, too much heat damages the flavour and can leave burnt notes which detract from the quality of the product.

To overcome this, manufacturers can use 'low temperature' distillation. By employing a deep vacuum system, the distillation temperature is greatly reduced. At normal atmospheric pressure, water will evaporate as steam at 100°C; at the vacuum level employed by Australian Mint Oils, water would evaporate off at under 2–4°C. Australian Mint Oils distils at a maximum of around 50°C, which gives a high-grade quality and taste.

To achieve this quality, it is important to have a vacuum system that can control and maintain the right level of deep vacuum pressure throughout the extraction process. The vacuum pump needs to:

- pump down to the required vacuum pressure, in order to reach the desired evaporation point at each of the various stages throughout the distillation; and
- maintain the desired vacuum pressure so that the desired evaporation point is maintained.

Each system is unique, requiring specific engineering and systems design. The vacuum pump selection is also critical in terms of pump time and reliability.

Australian Mint Oils & Flavours selected a three-stage vacuum system from Swam Vacuum Systems. The SWVAS series system is a skid-mounted vacuum pump with a two-stage booster to speed up the pump downtime. The dry screw vacuum pump provides and maintains the deep vacuum pressures required.



The installation has been in production for just over 12 months and to date there has been no downtime or loss of product.

SWAM Pneumatics
www.swamatics.com



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Multifunction domestic blast chiller

Coldline Living has launched the LIFE multifunction domestic blast chiller. Functions include blast chilling, blast freezing, storage, proving, bottle chilling and defrosting, as well as programs for making chocolate and yoghurt.

The blast chilling function quickly cools raw or freshly cooked food to $+3^{\circ}\text{C}$, stopping bacterial growth and increas-

ing fridge life by 70%, while maintaining quality intact, according to the company.

The controlled fan speed feature allows cooling to be 'fine-tuned', increasing or reducing fan speed based on the type of product. The device also adjusts power constantly so that energy is not wasted unnecessarily. The compressor stops during stages when no additional cooling power is needed.

The use of R290 gas delivers 30% higher cooling efficiency than traditional gases, as well as a low environmental impact with a GWP of 3.8.

The core temperature probe tells the user the temperature in the middle of the product, optimising work cycles and reducing energy consumption.

Euroquip Food Service Equipment

www.euroquip.com.au



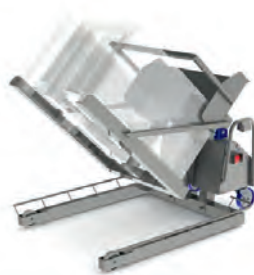
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at FoodPro
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See the VIDEO @

www.backsaver.com.au

Milk processor saves time, chemicals and water by cleaning with Gamajet

A milk company based in Pennsylvania, US, utilises vertical spray dryers to produce large quantities of milk powder. With sizes of up to 6.7 m in diameter and up to 18 m high, the facility's spray dryers can produce a total upwards of 4000 kg of milk powder/h.

During the manufacturing process, fluid milk is evaporated to 50% solids and then injected under high pressure into the 200°C environment inside the spray dryer where it flash dries. The dry milk then drops to the bottom of the unit and is discharged into bulk containers.

Vibrators help remove any powder which may adhere to the sides of the cone. However, over time, the milk builds up on the inside of the dryer and must be removed during routine cleaning. In order to maintain high production efficiencies and product quality, close attention is paid to maintaining the cleanliness of the spray dryer interiors.

Until recently, the company utilised traditional spray balls and high-pressure water injection to clean the dryers. The routine cleaning cycle usually consisted of two 45 min wash cycles utilising a 2% sodium hydroxide caustic solution and a 1% nitric acid wash, interspersed with 20–30 min rinses. A thorough cleaning of the entire unit often required up to 16 separate insertions of the spray ball by cleaning personnel into various openings throughout the dryer. This was a very time-consuming and labour-intensive operation to ensure that all the areas were cleaned. Water usage throughout the process was approximately 950 L/min.

With a standard cleaning process to measure against, the company's manager of engineering and maintenance had the opportunity to install and utilise two rotary impingement cleaning machines manufactured by Gamajet Cleaning Systems, Inc.



© freemages.com/profile/Ale Palva



The Gamajet 4 and Gamajet E-Z8 fluid-driven tank cleaners utilise the cleaning solution for power and provide 360° cleaning with low flow rates and high speed.

The Gamajet 4, because of its greater cleaning power, was inserted inside the large upper chamber and dome of the spray dryer, while the Gamajet 8 was positioned in the smaller-sized bustle and cone located at the bottom of the unit. During the new cleaning cycle, each Gamajet unit is inserted only once resulting in immediate savings in time and manpower.

Results

With the new units, wash times have been reduced to a 15–30 min cycle and often only one wash is necessary. Because of the Gamajet's high-powered cleaning force, water usage is now estimated to be about 380 L/min. "We estimate that by using the two Gamajet units, we save about two and a half hours in time and around 28,000 L of rinse water per clean up," the manager said. "And, we also save on the amount of chemicals we use."

Spray Nozzle Engineering
www.sprayingolutions.com.au

Stainless steel pipe supports

Swift Metal Services' Anchorage wall-mounted vertical pipe shoes are robust pipe supports which are used to secure conduits and pipelines in the vertical plane.



Pipe shoes are designed to take the pipe and elevate it some distance from the pipe support. Generally used to support heavy or oversize pipelines, these are now available in 304 and 316 stainless steel construction.

Pipe supports and pipe shoes can be produced for special pipe sizes, including HDPE and FRP pipe sizes. Pipe shoes can be made with varying offset heights to suit requirements and specifications.

SWIFT Metal Services Pty Ltd
www.swiftmetal.com.au



Tube magnet circuit

The Eriez Xtreme RE7 Tube Circuit has advanced rare earth permanent magnet technology resulting in a product that is 13 to 40% stronger than other magnets in head-to-head pull tests.

Eriez commissioned The Pennsylvania State University (Penn State) to test the ability of commercial tube magnets to remove dangerous ferrous metal and weakly magnetic contaminants from process flows. According to conclusions noted by Penn State, the pull force of the Xtreme RE7 Tube Circuit was substantially stronger than any of the other samples. The magnet was also among the best performers in terms of magnetic flux density.

The magnet circuit is available in all Eriez Tubes, Grates and Liquid Line Traps used in food, plastics, pharmaceutical, mining, foundry, chemical and other applications. The increased power of the magnet improves product purity and plant productivity by providing greater holding force and improved separation efficiency.

Eriez will be attending AUSPACK in Sydney from 7–10 March 2017 at Stand 601.

Eriez Magnetics Pty Ltd

www.en-au.eriez.com

Dry-running claw vacuum pump

Dry-type pumps have become the preferred option in a diverse range of high and medium vacuum applications. Due to their frictionless design and lubricant-free pumping chamber, dry pumps provide higher energy efficiency with minimal maintenance expense. Gases being pumped are discharged free of contamination. Degradation of vacuum pump lubricant is eliminated along with routine service expense. Energy savings of >30% can be achieved with dry technology.

The Dynavac VCX Series Dry Running Claw Vacuum Pump has a simple, modular design and low maintenance requirements. Air cooled and direct driven, it offers high efficiency and continuous duty. Relief valves are included.



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For further information contact CRC Industries (Aust) P/L 1800 224 227 info@crcind.com.au www.crcindustries.com.au

FDA-approved alternative to stainless steel in geared motors

An anti-corrosion system for geared motors that goes far beyond the effectiveness of surface coatings to deliver a true alternative to stainless steel at a much lower cost has been released in Australia.

According to research by Curtin University of Technology, corrosion is costing the Australian economy around \$30 billion each year.

Within industrial environments, exposure to things like water, acid or salt causes corrosion of geared motors. This, in turn, reduces the strength of the corroded parts and inevitably means they have to be replaced.

In corrosive environments the need for replacement is more than just occasional. Gearboxes need to be replaced as often as every six months. Apart from costs and downtime, such a maintenance regime presents businesses with all too frequent gearbox mounting challenges.

For obvious reasons, businesses in the food and beverage sector are required to maintain high hygiene standards. To do this, they need to follow strict washdown procedures, which have the unfortunate side effect of increasing the rate of corrosion.

Similarly, corrosion is a problem for operations dealing with chemicals, those located offshore or near the coast, and others (such as car washes) which just can't avoid water.

Historically, businesses looking to deal with this problem have had two options: to use stainless products or products with a protective coating.

The attraction of stainless steel for this purpose is obvious. It eliminates the need for harsh cleaning chemicals and decreases the instances of leaks, rust and corrosion.

To date, stainless steel has rightly been regarded as a better anti-corrosion solution than the alternatives, namely paints and surface treatments.

The problem with such coatings is that when used on an original painted aluminium surface, they simply lie on top of the aluminium substrate and may even bridge across pores in the metal. In other words, they do not form a permanent bond to the substrate. They can easily be removed if bumped or scratched, and therefore offer only limited corrosion resistance.

A smart alternative to stainless steel

NORD, one of the world's leading manufacturers of drive technology, recently released the nsd tupH Sealed Surface

Conversion System in Australia. While the system has been available in Europe for some time, this was its local debut.

The system provides protection at a molecular level and has been hailed as a breakthrough in corrosion protection.

Unlike surface coatings, nsd tupH includes a base layer that is permanently bonded to the aluminium substrate and provides a powerful foundation for adhesion of the surface sealant. This foundation provides excellent roughness, is 6–7x harder than the aluminium substrate and up to 1000x harder than paint.

In other words, the product is superior to surface coatings and is a genuine alternative to stainless steel. Indeed, according to the company, it offers two advantages when compared to stainless steel. Firstly, it is significantly cheaper — nsd tupH delivers similar levels of corrosion protection at a fraction of the cost.

And secondly, products coated with the system are much lighter than stainless steel products. This makes mounting and maintenance easier.

The surface treatment creates an easy-to-clean surface that is resistant to acids and alkalis of wide pH range. Free from chromates, it prevents the spreading of corrosion, even in cases where machinery is physically scratched or damaged.

The nsd tupH drives can be used in demanding atmospheres


much beyond the usual service life of paint-coated systems. Since no coating is applied and only the surface is hardened, contamination of products or process media is avoided, which is not possible with chipping paint.

The system conforms to FDA Title 21 CFR 175.300 and has successfully undergone ASTM D714 and proven its resistance to blister formation. Similarly, it has proven its effectiveness against corrosion through ASTM D610-08 and scribe per ASTM D1654-08 according to DIN EN ISO 2409.

Further tests performed on the system included ASTM B117-09 Salt spray test, ASTM D3170 Gravelometer test, DINEN ISO 9227 Salt spray mist test and DIN EN ISO2409 Cross-cut test.

It is approved for food applications according to FDA Title 21 CFR 175.300 with treated systems resisting cleaning agents in the pH2–12 range.

NORD uses nsd tupH on a range of products, including its helical gear units, bevel gear units, universal worm gear units, smooth motors and electronic SK 1xxE.

Businesses which incorporate these into their operations can look forward to high levels of process safety, prolonged service life and significantly reduced maintenance requirements. 

NORD Drivesystems (Aust) Pty Ltd
www.nord.com

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Explosion-proof spray nozzles

Glatt Ingenieurtechnik's explosion-proof removable spray nozzles are suitable for granulating, drying, agglomerating or coating food ingredients by fluidised or spouted bed technology.

The nozzles' 'key and lock' solution consists of protected recesses and catch pins that secure the inner tube, even if the operator omits to turn off the compressed air. Only when the air supply is turned off can the tube be released, by lifting and rotating the nozzle. Due to the very small opening in the empty outer tube, it's not necessary to stop production, even when processing explosive products.

The nozzle device decreases plant downtime, increases personal, operational and occupational safety and reduces possible operating errors. In addition, the empty outer tube can be washed immediately during the cleaning process. The explosion-proof nozzle is a hygienic retrofit-compatible component that is easy to operate and clean.

Glatt Ingenieurtechnik GmbH
www.glatt.com

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Slicing system

Formax's PowerMax3500 is a mid-sized slicer featuring upper and lower infeed drives. With a modular design that allows the system to be configured for single drive bulk slicing or more complex operations, the slicing system gives users the option of up to three AccuPower independent product drives.

By slicing each log separately, the feed rate adjusts to maintain weight control of each portion. Variances in log lengths can also be accommodated within a given slicing load. When slicing larger or heavy products, the upper and lower infeed drives provide slice consistency, integrity and increased yields up to 1–2%, according to the company.

An automated clean-up position and open design provides food safety and sanitation. The safety laser scanner technology produces a hygienic environment with minimal mechanical guards, reducing cleaning times and resulting in a smaller effective footprint.

The centre rear loading system can be loaded from the side or the back. The lift system then pivots the product into the staging area just below the slicing grip line as the previous logs are finished being sliced. Once the slicing is complete and the grippers are retracted, the lift-to-grip system moves the logs into position.

The slicing system is available in 1.2 and 1.6 m models. Fast, easy changeovers to different products enable the slicing of round, square, rectangle and D shapes. The optional PowerScanner can slice natural and irregularly shaped products.

A wide range of blade profiles, edge serration patterns and coatings make it suitable for most slicing applications.

Multivac Australia Pty Ltd
www.multivac.com.au





DAF wastewater systems for large projects and soluble contaminants

Aerofloat has added to its range of dissolved air flotation (DAF) wastewater treatment systems with the development of models for larger installations and for soluble contaminants, resulting in a complete offering for the food and beverage industry.

The original Aerofloat DAF was designed to be compact, odour-free and energy efficient, and due to its design, the system could not simply be made larger. In a number of projects, two or three systems were installed in parallel to increase the overall plant capacity, so company engineers set out to design a new concept to increase the capacity.

The result is the Modular Aerofloat DAF, which can treat up to 50 m³/h and beyond. The design minimises moving auxiliary componentry to keep costs low, while still ensuring the core principles are incorporated to achieve superior effluent quality.

The DAF can remove up to 98% of suspended solids and fats, oils and grease, and is an enclosed and vented system, which all but eliminates odours.

While DAFs are effective for the removal of fats, oils and grease and suspended solids, they will not remove any of the soluble contaminants. In the case of dairy products, for example, which has approximately 12% organic solids, approximately 7.5% of the solids (fats and proteins) can be removed with DAF. However, the remaining 4.5% of the solids are soluble (lactose), and this can only be removed biologically. Aerofloat MBBR is a cost-effective and maintenance-friendly version of the Moving Bed Biofilm Reactor wastewater technique.

Aerofloat (Australia) Pty Ltd

www.aerofloat.com.au



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Encapsulating system for filled cookies

Baker Perkins has developed an encapsulating system enabling high-value filled cookies to be made on any Baker Perkins wirecut machine.



The system enables cookies totally enclosed by dough to be produced on a module attached to a standard wirecut machine — previously a separate unit was necessary.

Fillings can include any ingredients which are low enough in viscosity, including chocolate, caramel, cream, peanut butter or jam.

The optional encapsulation module and iris cutter can be fitted to any new or installed Baker Perkins wirecut to convert the machine from a standard unit to one that can do both cookies and encapsulated cookies.

The process involves pumping a continuous stream of filling into the centre of the dough cylinder formed at the wirecut die. A set of iris-die cutters crimps the dough and filling, forcing the dough to completely enclose the filling.

Once the encapsulated cookies are on the conveyor band they pass under a tamping or gauging roll that flattens them slightly. This removes any machine marks caused by the iris die and ensures that the cookies are uniform thickness to help with packaging efficiency.

Baker Perkins Inc
www.bakerperkins.com

Dry ice blasting

A.K.A. Cleaning Machines provides dry ice blasting to effectively decontaminate surfaces of *Salmonella*, *E. coli* and *Listeria*. The industrial sanitation services are a safe and non-toxic cleaning method for food processing environments.

Using dry ice blasting in food processing facilities requires little or no downtime. Since dry ice evaporates instantly, in most cases equipment can continue to operate. There is zero to little waste and virtually no clean-up. Dry Ice blasting is eco-friendly and more efficient than many other blasting material or cleaning solvents, according to the company.

Dry ice blasting is suitable for cleaning containers, mixers, conveyors and ovens.

A.K.A Cleaning Machines
www.akacleaningmachines.com.au



Ultrasonic sensors

Turck has introduced six line extensions to its ultrasonic sensor offerings.

Ultrasonic sensors are suitable for applications with demanding requirements, such as long sensing ranges, non-metallic, irregularly shaped or transparent targets, wide sensing areas and when dust or oil films are present.

The added and updated ultrasonic sensor products include: M30 barrel sensors with 6 m sensing range; 18 mm barrel sensors with side-sensing transducer; CP40 and CK40 sensors with new housing; compact sensors for retroreflective applications; IECEx-approved sensors for hazardous applications; compact sensors with NPN output.

The ultrasonic sensors are available in a variety of housing styles with multiple feature sets to solve difficult applications. The rectangular packages of the CP40 and CK40 product families offer sensing ranges up to 2 m with either a single digital output or a digital and analog output. The barrel style family offers 18 and 30 mm barrels with either a single digital output, dual digital outputs, or a digital output and an analog output. The digital and analog output version offers the advantage of IO-Link capabilities, making parameterisation, diagnostics and replacement easy.

Turck Australia Pty Ltd
www.turck.com.au



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Further information: www.vega.com/wls61

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Ergonomic mats

VWR Hygiene Mats are ergonomic mats for the food and beverage industry. The design combined with high-quality materials provides durability and true ergonomic relief. The mats assist in eliminating and preventing common problems encountered in standing environments by stimulating the body to increase blood circulation and alertness.

The Softline, Nitro and Endurance Mats are designed with anti-slip properties for work areas with excessive liquid and/or food products. Users can customise the size and shape to suit their needs and workspace.

The mats feature bevelled edges to prevent curling and trip hazards, and are easy to clean, UV resistant, silicon and latex free. The closed-cell and non-porous surface is antistatic and Cleanroom ISO Class 5 (100). The mats are available in bubble and smooth and in various colours.

VWR International Pty Ltd
au.vwr.com



Infant formula processing equipment

SPX Flow has available a range of equipment for the delivery of complete infant formula processing plants, from reception through to drying.

The company's innovation centres provide testing and trialling facilities where customers can work with infant formula process experts.

The range includes a large portfolio of hygienic technology including heat exchangers, valves, mixers and blenders, pumps, evaporators, UHT equipment, homogenisers and dryers.

Products include the Flex-Mix Instant, a vacuum mixer which provides high-capacity, high-performance, gentle mixing. As the system is closed, the mixer has increased hygienic properties. Separation of wet and dry phases of the process, which includes a valve system that prevents backflush of liquid into the powder section of the machine, further increases hygienic performance.

The Waukesha E-Series sanitary centrifugal pump uses high-powered drive magnets and impellers to remove the need for mechanical seals and increase food safety. The Instant Infusion process produces increased log reduction of heat-resistant spores while protecting the nutritional value of the product. The system increases food safety while also extending production run times with low fouling rates.

SPX Flow Inc
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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 -

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Condition-based maintenance meets chocolate moulds

Predictive maintenance extends the service life of production systems and components, supports reliable operation, increases productivity and improves cost-effectiveness. This is especially true for the moulds in the machines. They normally experience extensive wear and have a non-trivial impact on production costs. These were the reasons behind the choice at Switzerland-based Max Riner AG to optimise the use of its injection moulds with Mold ID from Balluff.

Predictive maintenance extends the service life of production systems and components, supports reliable operation, increases productivity and improves cost-effectiveness. This is especially true for the moulds in the machines. They normally experience extensive wear and have a non-trivial impact on production costs. These were the reasons behind the choice at Switzerland-based Max Riner AG to optimise the use of its injection moulds with Mold ID from Balluff.

Mold ID is a standalone system that can be easily adapted to each machine without having to interact with the control system, enabling condition-based maintenance via industrial RFID technology.

The injection moulds used in manufacturing plastic parts are usually very complex and expensive. They are subject to wear and contamination and require regular care, cleaning and maintenance. Amid all of these factors, the regularity of inspections often depends on the experiences of individual employees or handwritten records in mould logbooks or on mould boards or Post-it notes. More advanced operations may even progress to storing records on disks, USB sticks or using databases or Excel tables to track this sort of information. Regardless of the method, real-world experience shows that records kept by hand are prone to errors and ultimately result in some degree of variance in the consistency of action. In many cases, therefore, maintenance and inspection are frequently carried out only if

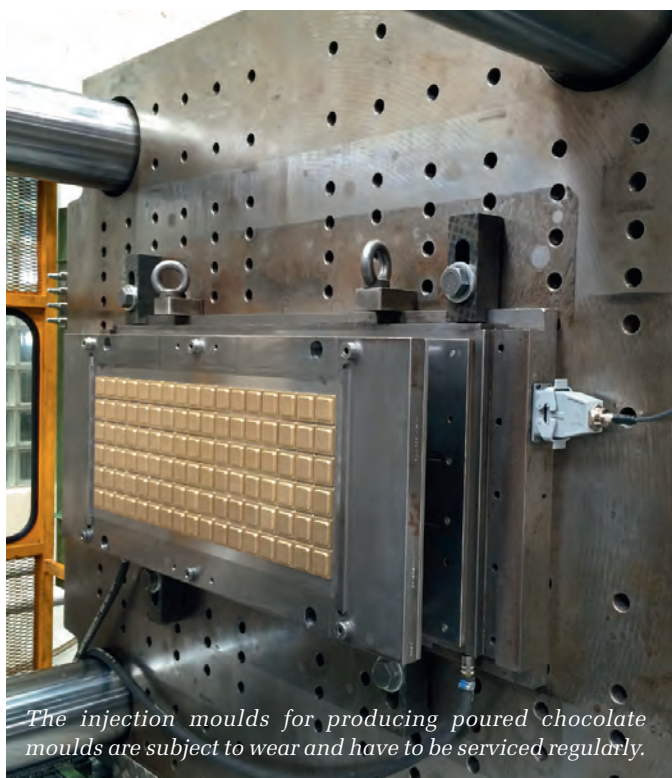


the produced parts no longer meet the required quality standards or if a mould malfunctions.

“Based on our experience in the industry, around 20% of moulds swapped into machines from mould storage are not properly ready for use,” Balluff Product Manager for Mold ID Ralf Pfisterer explained.

The most expensive maintenance is usually repairs after damage has been done, with the associated unplanned downtime. Since many problems recur, you can use empirical values to easily estimate when problems will reappear, provided the problems have been documented. The shot count is one of the essential measurement variables in this approach. In terms of the shot count, however, it is also important to note that empty shots during insertion also result in wear. The number of mould changes is just as important, such as for maintaining couplings and other features.

“Recording the number of mould changes by hand does not actually tend to provide a better overall picture,” explained Urs Truttmann from Max Riner AG in Rapperswil. The head of engineering for the Swiss company is referring to one of the main reasons behind the decision to use Mold ID from Balluff.



The injection moulds for producing poured chocolate moulds are subject to wear and have to be serviced regularly.



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Maintaining oversight during frequent mould changes

Max Riner AG has been producing all manner of poured chocolate moulds for industrial chocolate production for more than 60 years. One of the company's exclusive products, Rilon moulds, are known throughout the world for their perfection and durability.

Moulds like this used in continuous operation on the production lines of chocolate manufacturers are ultimately made in comparatively small batch sizes of 1500 to 2000 units in most cases. This is why injection moulds for producing poured chocolate moulds have a modular structure. Master moulds with exchangeable inserts act as a base. This leads to quick and frequent mould change cycles that make disruptions quite a bit less likely.

“The moulds in particular are subjected to extensive, precisely dictated maintenance with each change,” emphasised Truttmann.

But certain things require increased maintenance effort, such as replacing hoses, lines or connecting components and lubricating mechanical components, which requires removing the master mould. This is why it is especially important to keep track of how many times a master mould has been used so far.

“Mold ID from Balluff lets us track and document this information with incredible detail,” added Truttmann.

Suitable for retrofitting onto any single machine

Mold ID makes the use of injection moulds traceable and ensures their optimal utilisation. RFID data carriers fastened to each mould are one of the core components. The BIS M data carrier family from Balluff offers a wide variety of models in terms of storage capacity, antenna shapes, installation types and other features for providing this core component. This makes it possible to institute a set-up that is perfectly tuned to the specific ambient conditions.

BIS M data carriers ensure ultrafast data transmission at 13.56 MHz and an extensive read/write distance. In addition,

a shot counter is attached at a suitable place on the machine in the form of an inductive or optical sensor to measure the actual physical shot count. An RFID read/write device is installed to communicate with the data carrier on the mould inside the machine.

The central Mold ID unit with industrial PC and software is housed in a separate control cabinet. It includes a gateway to the company network and a connection for a SmartLight signal light positioned with high visibility for the machine operator, giving the operator a continuous visual indication of the current mould status.

All of the system components can be connected to the Mold ID unit with ease using plug-in connectors. This prevents improper connections and completely eliminates any chance of wiring errors. As a result, Mold ID is an autonomous system that can be retrofitted onto any individual machine, regardless of the manufacturer, age, location of the system and without any interaction with the machine control system.

The recorded production cycles and all other relevant data, including a unique mould ID, are directly and distinctly associated with the respective mould using RFID data carriers. Users can make use of mobile terminal devices for reading out the data, opting to either use a handheld device from Balluff or an Android smartphone with state-of-the-art near field communication (NFC) and the corresponding app from Balluff.

Employees at Max Riner AG also use the app provided by Balluff to access mould data. Truttmann appreciates that this


elegant solution individually protects the functions by providing each of them with configurable passwords.

A web service interface provides additional access to the Mold ID system. It enables integration into higher level systems (MES, ERP, etc) via TCP/IP or Wi-Fi. This permits the use of all mould data in a company network. In addition, a standard web browser provides global access to the Mold ID system and the moulds being used in the machines.

One of Mold ID's key features is its ability to visualise the mould status with respect to the inspection intervals specifically adjusted individually for a mould. A SmartLight signal light on the machines displays this visualisation based on the limit values defined for a mould. This can be defined individually using limit values for the number of shots before the next maintenance check and the number of shots before a warning is to be issued.

Summary

"Mold ID's elegance stems from its simplicity," said Truttmann.

"A system can be installed on a machine in less than three hours, which is even more noteworthy because Mold ID is entirely independent from other systems. This is a benefit we really appreciate, especially because we operate machines from different manufacturers and generations." 

Balluff Pty Ltd
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Digital sorter for processed potatoes

Key Technology has introduced VERYX digital sorters for potato strips and specialty potato products.

Featuring sustainable all-sided surface inspection, multisensor Pixel Fusion, high-resolution cameras and laser sensors and an intelligent ejection system, the sorter is suitable for wet and frozen French fries and specialty potato products.

With a customisable modular platform, each system is built with the correct sensors, sensor positions, lighting, separation/ejection system, product handling and software for each customer application.

For wet potato products, the sorter offers in-air inspection and the ability to view all sides of the product to maximise defect detection and removal. In-air inspection improves inspection consistency and can sustain all-sided surface inspection throughout the production cycle because the sensor surfaces, light sources and backgrounds are positioned away from product splatter and contamination zones.

For sorting frozen potato products prior to packaging, the detection module provides high contrast and clear separation between good product, defects and FM. The technology combines channel input from multiple camera and laser sensors, allowing the system to sort difficult-to-detect defects and FM such as glass, metal, rubber, paperboard, foam and plastics of different colours.

With Sort-to-Grade software for potato strips, the system can perform length grading and optimise defect removal, eliminating the need for traditional mechanical length graders.

The intelligent sorter's smart features, such as auto-learning, self-adjustment algorithms, predictive system diagnostics and smart alarms, enable it to adapt to normal changes in the product and environment without operator intervention.

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Global standard will facilitate management of food loss and waste

Every year Australians scrape \$10 billion off their plates into the garbage, according to the RaboDirect 'Food & Farming Financial Health Barometer' report. How does this compare to the rest of the world? An interesting question that would once have been impossible to answer because until recently there was no globally agreed standard on how to measure food loss and waste (FLW).

It is estimated that one-third of all food is lost or wasted worldwide as it moves from where it is produced to where it is eaten — costing up to \$940 billion per year. This lost or wasted food translates into about a quarter of all water used by agriculture and requires cropland equivalent to an area the size of China.

Compounding this loss is the effect on global greenhouse gas emissions — with about 8% of these emissions estimated to arise from FLW. To put this into perspective: if FLW was a country, it would be the third-largest greenhouse gas emitter — only beaten by China and the United States.

International momentum to curb food loss and waste is growing with governments and businesses making commitments to address this issue. However, most do not know how much food is lost or wasted or where it occurs within their borders, operations or supply chains. Moreover, the definition of food loss and waste varies widely, and without a consistent accounting and reporting framework it is almost impossible to compare data and develop effective strategies.

Many countries, cities, companies and other entities currently lack sufficient insight into how much, why and where food and/or associated inedible parts are removed from the food supply chain. This makes it difficult to develop strategies and prioritise actions to prevent FLW, and to identify the most productive use of the FLW that does arise. In short, it is challenging to manage what you do not measure. Moreover, what's considered "food loss and waste" varies widely and, without a consistent set of definitions or an accounting and reporting framework, it is difficult to compare data within or among entities over time and draw useful conclusions.



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Last June a partnership of leading international organisations launched the Food Loss and Waste Accounting and Reporting Standard — the first-ever set of global definitions and reporting requirements for companies, countries and others to consistently and credibly measure, report on and manage food loss and waste.

The purpose of the FLW Standard is to facilitate the quantification of FLW (what to measure and how to measure it) and encourage consistency and transparency of the reported data. The standard enables the consistent quantification of baselines and tracking of progress towards Target 12.3 of the United Nations Sustainable Development Goals as well as other targets.

Using the terminology and requirements provided by the standard will ensure international consistency, enable comprehensiveness and support transparent disclosure of FLW inventories both within and among entities. Quantifying FLW is an important foundation for reduction efforts that can deliver a diverse array of benefits — from reducing costs associated with over-purchase and disposal, to avoiding greenhouse gas emissions or supporting efforts to eliminate hunger.

“This standard is a real breakthrough. For the first time, armed with the standard, countries and companies will be able to quantify how much food is lost and wasted, where it occurs and report on it in a highly credible and consistent manner,” said Andrew Steer, President and CEO, World Resources Institute. “There’s simply no reason that so much food should be lost and wasted. Now, we have a powerful new tool that will help governments and businesses save money, protect resources and ensure more people get the food they need.”

The standard is designed to be practical so that entities of all kinds can develop an FLW inventory based on their particular quantification goals. Entities that prepare inventories in conformance with the FLW Standard will be better informed

about how much FLW is generated and where it ends up, and therefore better equipped to take action.

Creating inventories in conformance with the FLW Standard will provide a critical foundation to develop effective strategies for reducing food loss and waste and monitor progress over time. Moreover, it can help governments and companies meet international commitments, including the Paris Agreement on climate change and UN Sustainable Development Goals (SDGs). In particular, SDG Target 12.3 calls for a 50% global reduction in food waste by 2030, along with reductions in food loss.

This standard addresses these challenges by providing accounting and reporting requirements that can be used consistently by entities around the world. It also includes universally applicable definitions for describing the components of “food loss and waste” included in an inventory.

The FLW Standard will also help reduce food loss and waste within the private sector. In 2015, The Consumer Goods Forum, which represents more than 400 of the world’s largest retailers and manufacturers from 70 countries, adopted a resolution for its members to reduce food waste from their operations by 50% by 2025, with baselines and progress to be measured using the FLW Standard. Some leading companies, like Nestlé and Tesco, are already measuring and publicly reporting on their food loss and waste.

The Food Loss and Waste Protocol is a multi-stakeholder partnership convened by World Resources Institute and initiated at the 3GF 2013 Summit. FLW Protocol partners include: The Consumer Goods Forum, Food and Agriculture Organization of the United Nations (FAO), EU-funded FUSIONS project, United Nations Environment Programme (UNEP), World Business Council for Sustainable Development (WBCSD), WRAP (The Waste and Resources Action Programme) and World Resources Institute.

The Food Loss and Waste Protocol can be found at www.FLWProtocol.org. 





Industry 4.0 advanced production systems for beverage manufacturing

Gebo Cermex has released the Agility 4.0 Advanced Production Systems program for beverage manufacturing plants.

The program increases performance via four steps in its asset management model: design, build, maintain and improve.

In design, the company brings the virtual factory, enabling it to accurately simulate daily operations in a production plant, and develop and test new production models.

In the build step, the energy consumption simulation tool can be used to audit existing installations or to assist in the design of new ones, enabling beverage producers to test a wide range of possible configurations, validate design variants and optimise energy-saving proposals.

Focusing on water management, particularly in relation to tunnel equipment such as pasteurisers, is also an important part of the sustainability equation.

To maintain systems, and achieve the lowest total cost of ownership, effective and connected maintenance and troubleshooting help to reduce downtime. The conveyor monitoring software gives real-time views of the whole line's status, providing preventive maintenance instructions and automatically generating email alerts.

Remote Video Assistance uses video, audio and augmented reality technology to allow a better understanding of the issue through real-time viewing from a remote location.

To improve efficiency, the packaging line Efficiency Improvement Tool is a real-time supervision system, monitoring key machine performance indicators, product flows and accumulations, as well as consumptions. The tool handles production issues to meet ongoing challenges and also anticipates them through trends and forecasts based on historical and multiplant analysis.

Gebo Cermex at Tetra Pak Marketing Pty Ltd

www.gebocermex.com



www.burkert.com.au

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

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Rotary lobe pumps for hygienic applications

Alfa Laval's SRU rotary lobe pumps are suitable for industries such as dairy, food, beverage, personal care and pharmaceuticals, which require contamination-free pumps to meet high standards of hygienic, low-shear, low-pulsation operation.

The pump handles both cleaning-in-place and sterilisation-in-place, and can be supplied with documentation to support validation requirements.

Features designed to maximise performance and minimise contamination risk include a defined compression front cover sealing, rotor nut retention design, drainable pump head and ultraclean surface finishes.

To ensure high-efficiency fluid transfer with low pulsation, low shear and low noise characteristics, the company employs computational fluid dynamics (CFD) to establish exact geometry for the rotors and rotor case.

The pumps have a robust gearbox construction with heavy-duty shafts, torque locking assemblies and taper roller bearings throughout. They comply with EHEDG, 3-A, 3.1 and FDA hygienic standards and have ATEX approval for use in explosive environments.

Alfa Laval Pty Ltd

www.alfalaval.com.au



Air/water cleaning gun

Tecpro Australia's Air/Water Cleaning Gun combines low pressure water with compressed air, enabling efficient cleaning when water pressure is low or clean water supplies are limited.

The hose gun allows users to run two supply hoses into it — one for air and one for water. The air propels the water inside the gun so that, when the trigger is pulled, a powerful jet of water is released. This has the effect of increasing the impact force of the water stream so that cleaning teams can work more efficiently. At the same time, it decreases the amount of water required.

According to the company, the gun uses 50% less water than a water-only hose gun when used in the same cleaning applications. The gun can also reduce costs as air is cheaper than water in most locations. Lower water usage contributes to greater worker safety due to reduced water pooling and floors drying faster, resulting in fewer potential slip hazards.

The gun is made from heavy-duty aluminium with a heat- and chemical-resistant EPDM cover. The cleaning gun is suitable for hot water usage up to 50°C, and the air and water inlets both handle a maximum inlet pressure of 5 bar.

The cleaning gun is suitable for heavy-duty cleaning applications as required by, for example, food manufacturers and abattoirs.

Tecpro Australia

www.tecpro.com.au



Humidification unit

The MiniFogger III from Spraying Systems Co is suitable for processors looking to improve product quality, increase efficiency and reduce compressed air use in their humidification operations.

The compact and lightweight humidification unit is suitable for installation on walls, ceilings and in corners as users have the option of using one to four nozzles at a time. The unit is designed for use in the dairy, bakery and meat processing industries as well as other food-related industries.

The unit emits an ultrafine mist that does not leave floors or surrounding areas wet, preventing possible OH&S risks. The unit produces very small drops in the 6.7–12 micron range for fast evaporation.

The design of the user-friendly unit allows for automatic spray alignment of the nozzles. The body, retainer caps and tank are made of corrosion-resistant, glass-filled polypropylene, while other parts are made from stainless steel and Viton. The flat spray set-ups are available in a choice of stainless steel and Teflon with flow rates ranging from 0.9 to 4.6 L/h. The materials used offer good chemical resistance, which makes the humidification unit suitable for use with deionised water.

The benefits of the humidification system include consistent misting, automatic spray alignment of the spray nozzles and overall energy-efficient operation. The unit is easy to maintain and at 207 g and 115 mm tall, it fits into the palm of a hand.

Spraying Systems Co Pty Ltd

www.spray.com.au





Handheld communicator

Emerson Automation Solutions has introduced the AMS Trex Device Communicator, a handheld communicator suitable for harsh industrial environments.

Protected against moisture and extreme temperatures, the communicator incorporates a rugged design to withstand bumps and drops. The full-colour touch-screen display adjusts to lighting conditions to

aid troubleshooting in areas with too much or too little light.

Using the built-in Foundation Fieldbus and HART device diagnostic software, technicians can isolate and repair problems while devices continue to run, avoiding unnecessary interruption to production. Segment and loop diagnostic tools allow users to validate loop and fieldbus segment characteristics for troubleshooting. With the ValveLink Mobile app, technicians can analyse valve diagnostics results on the communicator's large screen.

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Industrial switchgear

Clipsal by Schneider Electric has developed the 56 Series Industrial Switchgear in different materials to suit the environment it is installed in.

The Grey (GY) range is the original switchgear for 56 Series Industrial plugs and sockets for general commercial and industrial applications. It is suitable for resisting the effects of high impact and long exposure to UV, both indoors and outdoors. It can be used in areas subjected to low and high temperatures and in dusty/damp environments.

The Chemical Resistant Grey (CG) range has been designed for indoor food environments where aggressive alkali/caustic cleaners are used and washdown procedures are the norm. This includes dairies, abattoirs and food processing plants. It is suitable for indoor applications and resisting cooking oils such as canola.

The Chemical Resistant Orange (RO) and Chemical Resistant White (RW) material offers resistance to a wide range of chemicals. They are suitable for butcher shops, delicatessens and automotive workshops, and in environments where high visibility is important (RO) or where aesthetics are important (RW). They resist corrosive and industrial chemicals, general chemicals such as detergents, oils/grease found in automotive and workshop environments, petroleum-based products and UV damage.

Clipsal by Schneider Electric

www.clipsal.com

Coagulant for soft cheese

Chr. Hansen has launched coagulant CHY-MAX Special for soft cheeses, which prevents undesired bitter notes developing throughout shelf life.

Changes in the texture and flavour of cheese can occur as proteins break down into peptide fractions. Ultimately this can lead to an increased amount of bitterness, a runny texture or the unpleasant smell of ammonia.

The coagulant also provides a stable ripening profile, which extends shelf life.

CHR Hansen Pty Ltd

www.chr-hansen.com

Training video for homogeniser maintenance

SPX Flow has released a video providing maintenance personnel with detailed instruction and training on inspecting and maintaining its APV Gaulin homogenisers.

The homogenisers are suitable for a range of applications in industries including dairy, food, beverage, cosmetics and pharmaceuticals. To preserve optimum performance, the equipment needs to be properly maintained. The step-by-step online video gives maintenance personnel clear and detailed instructions on how to remove and inspect packing gland components, plungers and check valves as well as inspection of drive belts to ensure machine reliability and performance is well maintained.

The video can be found on the company's YouTube channel.

SPX Flow Inc

www.spxflow.com/au



Data management system for food and beverage industry

Tetra Pak has launched an updated version of the Plant-Master, enabling manufacturers to program an entire plant through a single data management system. The upgrade includes the Tetra Pak Plant-Master MES (Manufacturing Execution Systems) Suite, a software program designed for the food and beverage industry, which provides a user-friendly interface.

In the food and beverage industry, manufacturers often have equipment from different suppliers in one plant, using separate information systems. Some of these machines even require manual data collection. The software provides a single set of tools that integrate all operations, from incoming raw materials to finished, palletised products. This gives manufacturers complete control of the plant, streamlining data collection, facilitating accurate data analysis and improving efficiency.

Tetra Pak Marketing Pty Ltd

www.tetrapak.com/au



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tna helps gourmet chip manufacturer improve consistency and flexibility

Canada-based gourmet chip manufacturer Naturally Homegrown Foods supplies leading retail locations in Canada, the US and Asia. To meet growing demand, the company needed to replace its out-of-date steel coating drum and dry-powder applicator with an efficient automated system.

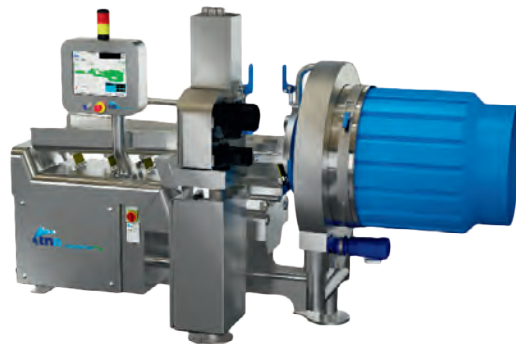
For its high-end brand Hardbite Chips, the company needed a flexible seasoning solution that ensured consistent and efficient application of eight different dry seasonings, with minimum machine downtime between flavour changes. The new system had to integrate and work seamlessly alongside other processing machinery in the facility.

Improved flavour consistency

With an objective to improve overall product consistency, Naturally Homegrown Foods installed the tna intelli-flav OMS 5 seasoning system, a responsive variable-mass seasoning system with a dynamic vibratory weigher to directly control powder application from the drum. This enables an accurate, proportional amount of seasoning to be consistently applied to the product for improved coverage and flavour dispersion — even for products with irregular surfaces such as batch-fried chips.

“We’ve seen a vast improvement in seasoning consistency as a result of installing the tna intelli-flav OMS 5 — most notably, we’ve been able to reduce our seasoning application rate from 8–9% down to 5–6%,” said Kirk Homenick, president of Naturally Homegrown Foods.

The positioning of the scarf plate on the system’s infeed realises further performance benefits. Positioned closer to the top of the tumbling product, the scarf adds dry powder into



the flavouring area more accurately, providing high-quality, consistent seasoning. “The addition of this equipment has made such a difference for our facility compared to the older screw auger feature in our previous system,” noted Homenick.

The scallop-designed infeed conveyor curves to match the shape of the drum, which reduces product drop, helps control product direction and reduces product waste.

Flexible processing

With the Hardbite Chips range including eight different flavour profiles, Naturally Homegrown Foods required a seasoning system that offered rapid cleaning time for flavour changes and minimum downtime. The tna intelli-flav OMS 5 has a simple modular design that is fully enclosed to help prevent seasoning, dirt and other materials from building up, allowing for increased levels of hygiene and ease of cleaning. The system’s pivoting drum provides accessibility for hard-to-reach areas, simplifying day-to-day operations.

“As a small plant that is experiencing growing demand, it’s imperative that seasoning changeovers and cleaning downtime is kept to a minimum to ensure optimum production levels. Since the tna intelli-flav OMS 5 was installed, changeover times have been reduced by 15–20%. Now we are able carry out a seasoning changeover in less than 20 minutes thanks to the system’s simple design,” said Homenick.

tna solutions Pty Ltd
www.tnasolutions.com



Dry claw pump

Atlas Copco's DZS vacuum dry claw pump range is based on innovative design featuring simplicity, robustness, efficiency and contamination handling capability. Designed and built with the demands of the end user in mind, the dry claw pump provides a trouble-free and cost-effective solution.

Built to last with materials and coatings that will last the life of the pump, the pump features easy maintenance and long-lasting bearings and seals. Separate and isolated pumping elements

are designed for quick access to the pumping chamber, allowing for easy cleaning in the event of product carryover.

The versatile product can be ordered as a dry vacuum pump or set up as a 2.5 bar lower pressure blower.

Atlas Copco Compressors Australia
www.atlascopco.com.au

testing

Bagged salad

and food poisoning

Somewhat of a kerfuffle has arisen following the publication of a University of Leicester article claiming that just a small amount of damage to salad leaves can massively stimulate the presence of *Salmonella* in ready-prepared salad leaves and that juices released from damaged leaves also had the effect of enhancing the virulence of the pathogen.

Cut leaves in bagged salad leads to a 2400-fold increase in *Salmonella* pathogen growth and the leached juices also increase the pathogen's capacity to form a strong and wash-resistant attachment to the leaves, according to the article. The lead author, Dr Primrose Freestone of the Leicester's Department of Infection, Immunity and Inflammation, said: "Salad leaves are cut during harvesting and we found that even microlitres of the juices which leach from the cut ends of the leaves enabled *Salmonella* to grow in water, even when it was refrigerated. These juices also helped the *Salmonella* to attach itself to the salad leaves so strongly that vigorous washing could not remove the bacteria, and even enabled the pathogen to attach to the salad bag container.

"This strongly emphasises the need for salad leaf growers to maintain high food safety standards as even a few *Salmonella* cells in a salad bag at the time of purchase could become many thousands by the time a bag of salad leaves reaches its use-by date, even if kept refrigerated. Even small traces of juices released from damaged leaves can make the pathogen grow better and become more able to cause disease.

"It also serves as a reminder to consume a bagged salad as soon as possible after it is opened. We found that once opened, the bacteria naturally present on the leaves also grew much faster even when kept cold in the fridge.


"This research did not look for evidence of *Salmonella* in bagged salads. Instead, it examined how *Salmonella* grows on salad leaves when they are damaged."

The article caused a number of fresh salad producers to refute the "ridiculous" study.

"I think consumers understand that there's no such thing as zero risk," responded Trevor Suslow, a member of the technical committee of the Center for Produce Safety and an extension research specialist at the University of California-Davis.

Bruce Taylor, CEO of Taylor Farms (US), said in an email: "For 30 years consumers have enjoyed hundreds of millions of bagged salads weekly with great benefit to their health and wellbeing."

In another email, Jennifer McEntire, vice president of food safety and technology at United Fresh Produce Association, said, "I hope people realise that *Salmonella* won't grow in salad, or any other produce, if it's not there to begin with, and the industry does an incredible job producing safe fruits and vegetables. This study shouldn't change people's perception of the safety of these products."

Will the journal *Applied and Environmental Microbiology* article change people's salad eating habits? Probably not — the convenience factor is just too great. 

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Testing



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Rapid screening of gutter oils

A new method for direct analysis of edible oils has been developed.

Using matrix-assisted laser desorption/ionisation mass spectrometry (MALDI-MS), the method involves direct sample loading, automated data acquisition and simple data processing, and has been applied to establish a preliminary spectral database of common edible oils.

As different types of edible oils have different MALDI-MS spectral patterns, a sample of edible oil can be authenticated by comparing its spectrum with the spectra of the labelled oil in the database, and gutter oils can be screened out, shortening the oil identification process from a few hours to a few minutes.

The method, developed by Dr Zhongping Yao, Department of Applied Biology and Chemical Technology at The Hong Kong Polytechnic University, sets up a simple analytical protocol and a spectral library of edible oils, and delivers high-quality and highly reproducible results.

IUFoST reports on food fraud

The International Union of Food Science and Technology (IUFoST) has released a Scientific Information Bulletin (SIB) addressing the evolving focus on food fraud. The SIB covers an introduction to the issue, a review of incidents, the fundamentals of prevention and insights into the optimal role of food science and technology. The bulletin also presents the latest authoritative science on emerging and headline food science issues.

Food fraud is illegal deception for economic gain using food. The broad types of incidents include adulterant substances (including dilution, substitution, concealment, etc), tampering, theft, diversion or grey market, over-runs or unauthorised production, and simulations and intellectual property rights counterfeiting. While the greatest health hazard is usually from adulterant substances and counterfeits, reducing the fraud opportunity is the most efficient focus for prevention of the fraud.

Food fraud is one of the most active global food industry and regulatory issues, with food companies and agencies being held accountable by consumers and agencies for food fraud prevention. Beyond the potentially catastrophic economic impact of a recall or manufacturing shutdown, corporate officials are also being held personally criminally liable for incidents. For these and other reasons discussed in the SIB, there has been an intense focus on food fraud research and specifically on prevention.

In its review of incidents, the SIB notes the lack of a strategic or holistic approach to fraud prevention and the global megatrends that have led to food fraud becoming a more recognisable threat. How food is determined to be safe and its impact on the goal of preventing, rather than catching, food fraud is discussed, as is the need for an interdisciplinary approach to understanding fraud opportunity. Criminology and business fraud theories are also applicable to food fraud prevention and are addressed in the SIB, along with regulatory and business food fraud prevention strategies.

Traditional detection and alert systems often do not detect food fraud because there is usually no health hazard. The SIB concludes that the role of food science and technology will be in developing the specific tests and methods that prevent food fraud and, most importantly, in taking a holistic, all-encompassing view of food fraud prevention.

Wacker opens food laboratory in Singapore

Wacker Chemie AG has opened a new food laboratory in Singapore, dedicated to innovative food ingredients, dietary supplements and gum base applications.

The company currently operates food laboratories in the USA and Germany. The Singapore laboratory will focus on applications involving cyclodextrins, cysteine and hydroxytyrosol intended for the particular demands and needs of Asia.

Ring-shaped cyclodextrin sugar molecules, which are engineered from plant-based raw materials like corn and potatoes, can replace conventional animal-derived emulsifiers, such as egg yolk in mayonnaise, egg white and hard fats in desserts, and icings and milk protein in instant coconut milk powder. They can also protect sensitive ingredients such as vitamins and coenzymes against the harmful influences of oxygen and light, increase the bioavailability of hydrophobic substances such as curcumin, and mask the bitter taste of substances such as green tea extract.

Fermentation-prepared cysteine can serve as a vegan and halal-certified raw material for meat flavours and as a processing auxiliary in bakeries. HTEssence, the company's hydroxytyrosol, is used in food supplements such as hard capsules, energy bars and drinks.



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What role did the sugar industry play in 1960s heart disease research?

A report by *JAMA Internal Medicine* suggests the sugar industry sponsored research to influence the scientific debate to cast doubt on the hazards of sugar and to promote dietary fat as the culprit in heart disease.

Stanton A Glantz, PhD, of the University of California, San Francisco, and coauthors examined internal documents from the Sugar Research Foundation (SRF) (which later evolved into the Sugar Association), historical reports and other material to create a chronological case study. The documents included correspondence between the SRF and a Harvard University professor of nutrition who was co-director of the SRF's first coronary heart disease research program in the 1960s.

The SRF initiated coronary heart disease research in 1965 and its first project was a literature review published in the *New England Journal of Medicine* in 1967. The review focused on fat and cholesterol as the dietary causes of coronary heart disease and downplayed sugar consumption as also a risk factor. SRF set the review's objective, contributed articles to be included and received drafts, while the SRF's funding and role were not disclosed, according to the article.

The authors point out the *NEJM* has required authors to disclose all conflicts of interest since 1984. They further acknowledge there is no direct evidence that the sugar industry wrote or changed the *NEJM* review manuscript and evidence that the industry shaped its conclusions is circumstantial.

The papers and documents used in the research provide only a small view into the activities of one sugar industry trade group. The authors did not analyse the role of other organisations, nutrition leaders or food industries, and key figures in the historical episode detailed in this article could not be interviewed because they have died.

"This study suggests that the sugar industry sponsored its first CHD [coronary heart disease] research project in 1965 to downplay early warning signs that sucrose consumption was a risk factor in CHD. As of 2016, sugar control policies are being promulgated in international, federal, state and local venues. Yet CHD risk is inconsistently cited as a health consequence of added sugars consumption. Because CHD is the leading cause of death globally, the health community should ensure that CHD risk is evaluated in future risk assessments of added sugars. Policymaking committees should consider giving less weight to food industry-funded studies, and include mechanistic and animal studies as well as studies appraising the effect of added sugars on multiple CHD biomarkers and disease development," the article concludes.



Microbial counting plates

Compact Dry is an easy-to-use plating alternative for the enumeration of bacteria in raw materials, finished product, water and environmental swabs.

The range includes total count, coliforms, coliforms and *E. coli*, yeast and mould, *S.aureus*, *Listeria* species and more.

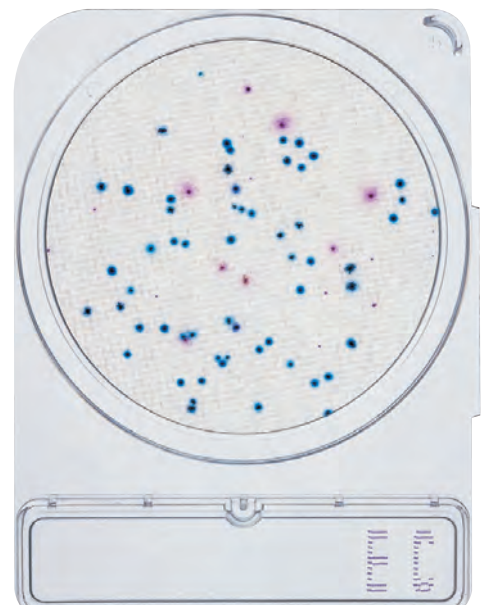
Users add their prepared sample to the plate and it automatically diffuses across the plate without the need for spreading. The plates are then incubated and read. Results are usually available within 24–48 h depending on the plate type. Colonies are highlighted by chromogenic substrates in the medium, which makes visual interpretation easy.

The plates do not require refrigeration and have a long shelf life.

Most Compact Dry plates have AOAC and other internationally recognised approvals such as MicroVal.

Australasian Medical & Scientific Ltd

www.amsl.com.au





Luminometer upgrade

3M Food Safety's LM1 Clean-Trace Luminometer has been upgraded to provide greater sensitivity, more powerful and intuitive software, wireless connectivity and a rugged, user-friendly ergonomic industrial design.

Advances with the Clean-Trace Hygiene Monitoring and Management System include the use of photomultiplier technology to amplify any luminescence and boost the likelihood of detection.

The system's upgraded software has a new user interface, with a streamlined and more intuitive dashboard to make navigation easier, minimise the amount of clicking between displays and allow reports to be generated more quickly.

The luminometer also offers users wireless connectivity, with the capability of transferring data via Wi-Fi or Bluetooth technology to the device or computer where it will be analysed by the system software.

The housing and structure have been redesigned to be tougher and more ergonomic in use.

The improved system is designed to assist users in automating and streamlining time-consuming testing procedures, while maintaining precision and consistency.

3M Food Safety

www.3m.com.au



TESTING



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VAISALA

Sanitation monitoring system for the food industry

Neogen has received approval from the AOAC Research Institute for its AccuPoint Advanced ATP Sanitation Monitoring System.

Adenosine triphosphate (ATP) sanitation monitoring systems are used in the food industry to instantly assess the effectiveness of sanitation programs. The system is the first of its type to receive an AOAC approval, according to the company, and the approval follows a study by NSF International that showed AccuPoint Advanced exceeded the performance of competitive systems.

The results in the AOAC validation report (Performance Tested Method 091601) provided evidence that the system produces consistent and reliable data for evaluating sanitation program effectiveness in food processing and foodservice facilities.

The system is an enhanced version of the earlier AccuPoint test system. Improvements include: improved sampler chemistry to produce more consistent results with greater sensitivity; an enhanced instrument to produce faster results (less than 20 s); and advanced Data Manager software to streamline the testing process by creating test plans and syncing important data, while keeping a permanent record of sanitation test results.

Cell Biosciences Pty Ltd

www.cellbiosciences.com.au



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Oxygen permeability tester

Bestech Australia has introduced the OX2/231, an oxygen permeability tester to determine oxygen transmission rate of film and package products, including plastic films, composite films, sheeting, plastic bottles, plastic bags and other packages. This is important to ensure the food product maintains a long shelf life. The tester comes with two test modes for both films and packages, for accurate tests.

The tester can test three specimens at once, and then export test results for analysis. An easy-to-use menu interface with LCD display ensures viewing and exporting data is convenient.

The OX2/231 is suitable for films, including plastic films and aluminium foils and sheeting such as engineering plastics, rubber and building materials. It is recommended for use on package caps, plastic pipes, blister packs, wine bottles and contact lenses.

Bestech Australia Pty Ltd

www.bestech.com.au





Large crushers and grinders

Retsch has released a line of instruments for applications with large feed sizes and high throughput rates.

Integrated into the existing product line, the XL models of ball mills, vibratory disc mills and sample dividers provide a higher throughput than the laboratory-scale models. The portfolio also includes testing equipment to determine the Bond grinding indices.

The products range from ball mills for nano grinding to jaw crushers with a throughput of 3500 kg/h.

The range includes: Jaw Crushers for batch or continuous operations, used for rapid, effective crushing and precrushing of medium-hard, hard, brittle and tough materials; the Vibratory Disc Mill RS 300 XL, for the grinding of medium-hard, brittle and fibrous materials to analytical fineness; the Bond Index Tester BT 100 XL, to calculate crushing/abrasion behaviour of mineral samples; the Flotation Tester FT 100 XL, used to determine the percentages of the reagents required in a production flotation cell and for metallurgical sampling; and the Abrasion Tester AT 10 XL (Bond Index), to calculate metal wear rates in crushers and ball consumption rates in ball mills.

MEP Instruments Pty Ltd

www.mep.net.au



Updated wine-profiling module

Bruker has released version 3.1 Wine-Profiling module of its NMR FoodScreener platform. The release improves coverage of white wines in the three most recent vintages and enhances coverage of certain regions, appellations and grape varieties.

Wine profiling by nuclear magnetic resonance (NMR) combines quality control and testing of authenticity. Based on 19,000 reference samples (an increase of 46% from version 3.0), the release delivers easy and cost-efficient analysis for quality and authenticity of samples regarding origin, variety and the addition of water.

The wine-profiling module has added capabilities for verification of geographical origin by country for white wines (Austria, France, Germany, Italy, Spain) and for red wines (Chile). It verifies special regions: Bourgogne (red, white), Languedoc (red), Rhone (red) and Loire (red), as well as certain appellations: Chablis (France) and Valpolicella (Italy), and one new grape variety: Verdejo (Spain).

The analysis of wine using NMR spectroscopy relies on the acquisition of the spectroscopic fingerprint specific to each individual sample. These metabolic profiles are compared to a large database of authentic wine samples using a multivariate statistical approach. This high-throughput technique provides a wide range of information that is both targeted (quantification of defined substances) and non-targeted (identifying deviations from reference spectra).

Bruker Pty Ltd

www.bruker.com

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The art — and science — of the mojito

The Bacardi Bottling Corp plant in Jacksonville, Florida uses a blend of science and art to produce its Mojito premixed highball. Because while the natural ingredients used can give the mojito its mojo, they can also make the end product a little unpredictable.

“We can’t just follow the exact same recipe for every batch of Bacardi Mojito that we mix because of the incoming colour variations of a few ingredients. Using natural ingredients can make final product appearance notoriously difficult to control,” explained John Scussel, lab supervisor for the beverage plant. “A small change in lot-to-lot colour of these can make quite a difference in our Mojito, and our consumers demand consistency in not only taste, but appearance in our products.”

It’s a costly error to mix a 38,000 L or more batch of Mojito only to find that its colour doesn’t match Bacardi’s strict standards, so the Bacardi plant has begun using X-Rite’s Color i7 benchtop spectrophotometer in transmittance mode and Color iQC software to measure 2 L samples of test batches

and determine just the right recipe for a full production batch.

“Now that we have this instrument, I think we can do things we never dreamed of, things we couldn’t do with our previous colour software and hardware,” Scussel said. “For instance, the software has just about every colour theory system that anyone could possibly want, so using a different system is just a matter of telling the software what you need. And the graphic representations are great. We build what we call the colour box — a rectangle that gives you a graphic representation of the colour specs. It’s easy to see, to understand and to print out. You can put it in someone’s hands and show them why they are out — ‘Oh, it’s a little too yellow’.”

The Color iQC software allows customers to record measurements, process parameters, history and other information in files that can then be easily shared among individuals or managed between multiple locations.

Since Bacardi is an international company operating 27 production facilities in 17 countries, it’s desirable for instruments at various locations to be using the same standards when they are sharing results. Scussel says X-Rite’s NetProfiler technology enables him to share standards and data with colleagues at a Bacardi plant in Spain who are also using the X-Rite system.

The NetProfiler2 system allows companies to automatically test, measure and profile their instruments over the internet, ensuring that every instrument is running at peak accuracy. Using proprietary software and certified physical standards, the system takes just minutes to produce performance NIST traceable statistics on every instrument within a network. That allows plants to exchange spectral colour data with confidence they are using the same standards.

Scussel says he is also thinking about enabling other aspects of the Color iQC software that can help with predicting the colour of products by inputting information about the ingredients of recipes — essentially performing virtual trials without mixing the formulas.

ColourSpec Australia
colourspec.com.au

Rapid fat analyser

CEM Corporation has introduced the ORACLE Fat Analyzer. Based on NMR technology, the analyser requires no method development and can analyse fat in any unknown food sample with high repeatability in 30 s.

Existing NMR techniques have partially reduced method development through the ability to directly analyse an entire sample and not be affected by surface properties; however, those technologies still require some form of method development and correlation to reference chemistry. The fat analyser is based on an NMR technique that completely isolates the fat response signal in any sample type or matrix.

The instrument comes in two configurations: rapid and high throughput. The rapid system is paired with the SMART 6 Moisture/Solids Analyzer, allowing for moisture and fat analysis in less than 5 min. The high-throughput option incorporates a robotic system, allowing for the unattended processing of up to 100 samples.

CEM Corp
www.cem.com





bulk handling storage & logistics

NZ expertise shines in new beverage processing plant

As the global demand for new and innovative beverages is entering a new age of lower sugar, greater convenience and higher value we are beginning to see more and more companies pushing the boundaries of what was once considered traditional beverage production techniques.

In early 2015 Australian-based Multipack, a contract beverage processing and packaging company, wanted a new beverage processing plant to produce a new coffee creamer for a major US manufacturer along with various other products. Multipack contacted Thermaflo for the design, fabrication, installation, automation and commissioning of a multipurpose beverage processing plant.

The plant was designed to process a wide range of beverages of various viscosities with up to 75% solids. To ensure the system ran smoothly and could handle the demanding duties, Thermaflo staff spent a lot of time developing the design. Once the design had been finalised the system consisted of two scraped surface heat exchangers, two tubular heat exchangers and three different sets of holding tubes which were all controlled by a PLC (process logical controller) and HMI (human machine interface) touch screen. This allowed for flexibility in process as the various recipes and parameters were saved within the PLC.

At the beginning of the process, product is transferred via a progressive cavity pump from the product mix tank through to the pasteuriser's balance tank where it is level controlled. From the balance tank, product is then pumped through the tubular heat exchanger for preheating, utilising an onboard electric hot water system.

From the preheater, product is transferred to a scraped surface heat exchanger, where the product is heated further to achieve the heating setpoint. Following heating the product is transferred through a set of holding tubes — the length of the holding tube can be set prior to starting production; this is achieved by connecting the appropriate pipework to adjust the holding tube length, this in turn sets the holding time (the time it takes product at the set flowrate to traverse the holding tube).

Once the product has progressed through the holding tubes, the temperature is recorded before reaching a divert valve. If the desired product temperature is not

met the product will be diverted back to the pasteuriser balance tank for further processing via the automated diversion system. When the product temperature setpoint is reached the divert valve will automatically change the product flow forward again for further processing.

After the holding tubes the 'heat treated' product is cooled via two cooling sections; the cooling system consists of a tubular pre-cooler heat exchanger that utilises a closed cold water loop running at 20°C. This pre-cools the product down approximately 20°C. From there product is transferred to a scraped surface heat exchanger where it is further cooled to achieve the cooling temperature setpoint using 7°C chilled water.

After the cooling section the product is sent to a pasteurised product tank where it remains until it is forwarded to a filler for bottling and packaging.

This system is all mounted on a stainless steel skid frame, which allowed for a much simpler installation once the skid arrived on-site. This also allowed Thermaflo to set the plant up in its workshop in Palmerston North, New Zealand, to carry out the pre-commission prior to shipping.

This project has definitely been a one of a kind that has surpassed both Thermaflo's and the client's expectations.

Thermaflo
www.thermaflo.co.nz





Anti-slip floor film

3M's Anti-Slip Surface Protection Film protects floors from the damage caused by finish-eroding events such as liquid drips, spills, heavy traffic and rolling chairs.

The product is a thin, almost invisible film that protects surfaces from everyday wear and tear. It has been certified to a P4 slip rating. The product comes in a 1.2 x 15 m mini roll and an 80 mm x 15 m roll suitable for staircases.

Reducing the number of stripping and recoating events required, the film needs no special tools or techniques for installation or removal. It is suitable for waxed vinyl, sealed concrete, marble, ceramic tile, terrazzo and more. It is compatible with standard floor cleaning procedures and cleaning chemicals.

3M Australia Headquarters

www.3M.com/au

Food safety and checklist system

ParTech's SureCheck Advantage food safety system incorporates an automated temperature probe, a bar-code scanner and an RFID infrared temperature reader.

The system ensures HACCP compliance and improves operational efficiencies compared to traditional pen and paper. The food safety and checklist system captures required data in real time and synchronises it to the system cloud for automated storage and recall of food safety records for management, maintenance, analytics and auditing.

The 5" handheld hardware device is powered by Intel Atom Processor technology.

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Vibratory feeders

Vibration technology from Enmin Vibratory Equipment is suitable for many materials handling and packaging processes.

Enmin's Vibratory Feeders can be used instead of a conveyor. They are easy to install and clean and require little maintenance. The hard-wearing feeders, which can move horizontally or vertically, are suitable for hygienic environments as there is no carry-back on the belt return and no contamination of product.

For products that need to be aligned for further processing or for packaging, such as hot dogs, carrots or fish, a cascading vibratory feeder, with attachments to suit the product, can handle tasks such as placing products in parallel lanes, presenting items head first, presenting items right side up, or combinations of all three.

Enmin Pty Ltd

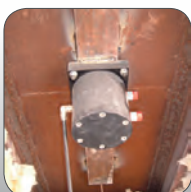
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Integrated stepper motors

JVL Industri Elektronik A/S has updated its NEMA23 integrated stepper motors.

The integrated motors have an RS485, an optional CAN-open or an industrial Ethernet interface as well as an easy programmable motion controller. The high step resolution of 409,600 steps per revolution results in smoothness and silent running.

Users can choose between top or rear end-mounted M12 connectors. The MIS23 motors come in three different sizes and two different motor types. Three have standard high-torque stepper motors: the MIS231 with 1.1 Nm, length 102 mm; the MIS232 with 1.6 Nm, length 122 mm; and the MIS234 with 2.5 Nm, length 170 mm.

Two versions have ultrahigh-torque stepper motors with 40% higher motor torque: the MIS231 with 1.6 Nm, length 102 mm; and the MIS232 with 2.5 Nm, length 122 mm.

The motors can be operated as stand-alone units or controlled from a PLC or PC. The eight I/Os can be individually configured as digital input, digital output or analog input.

The series allows connectivity to all industrial Ethernet interfaces such as Profinet, EtherCAT, Powerlink, EtherNet/IP, Modbus TCP and SERCOS III.

The integrated stepper motors in the MIS series are also available with wireless Bluetooth, ZigBee or WLAN.

Motion Technologies Pty Ltd

www.motiontech.com.au

Lube-free chain for food environments

Tsubaki's G8 Series Lambda chain is suitable for food production environments.

Designed with an oil-impregnated bush, the chain is internally lubricated meaning it benefits from a long operating life without requiring additional maintenance or external lubrication. By eliminating external lubrication the roller chain is kept a lot cleaner, meaning that it is far easier to specify and install in areas with strict hygiene regulations in place. While the chain does need some form of lubrication to avoid premature wear, in the case of Lambda chain microscopic pores in the seamless sintered bush are vacuum filled and the lubricant is held in place where it's needed most.

While the majority of the lubricant is held in place, it is inevitable that a small amount will always migrate to the surface of the chain, meaning that it must be deemed suitable for use within the food industry. Food-grade lubricant has always been available with Lambda chain, but now, for the first time, it is supplied as standard.

This lubricant now meets all NSF-H1 requirements so can be used in situations where there is the possibility of incidental contact with food.

Lambda chain can be used in temperatures from -10 up to 150°C and a heat-resistant Lambda is available on request that can be used in temperatures up to 230°C.

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How to reduce dehydration in frozen products

Dehydration happens when more water is being lost rather than absorbed.

As humans, we lose moisture via breathing and through our skin on a regular basis, but this is usually balanced from a consistent water intake. The same process occurs in other organisms that have cell structures with a high water content.

Vegetables and meat start the dehydration process right after being harvested, as water leaves the cells and evaporates into the air. Dehydration happens through both evaporation, when water turns into a gas from a liquid state, and sublimation, when water turns into a gas from a solid state. This phenomenon does not only occur during the freezing process.

In a freezer, dehydration causes shrinkage and damage of the product and an actual weight loss that reforms as snow. The snow that forms takes away weight and quality from the finished frozen product.

The environment inside the IQF freezer plays an important role in reducing dehydration. In an open space water vapours just escape, in a closed freezer, however, snow and ice will start to develop if the air is saturated with moisture. This occurrence is called precipitation.

What are the factors that cause dehydration of the product?

The factors that have an effect on dehydration are the following:

- Infeed temperature
- Temperature of air
- Freezing time
- Saturation
- Relation of surface and volume
- Surface water
- Water content
- Air speed

As the temperature goes down air becomes dryer. This interrelationship between dewpoint and temperature results in more dehydration. As air dewpoint plays an important role in the water loss process, dehydration will happen quicker if the air is dryer.

A smaller product, with larger surface area compared to its volume and weight, will dehydrate more than a larger product. Moisture on the surface of the product, such as water or juice, will have the tendency to evaporate.

A product containing a higher amount of water will dehydrate more than a dryer one and more air movement will speed up the dehydration process.

How can dehydration be reduced in freezers?

Essentially, if precipitation (snow formation) can be avoided then dehydration can be reduced. The key is to keep the air damp so that it will not take on moisture from the product. During the IQF process, low infeed temperature and efficient crust freezing also help in reducing dehydration.

A conventional IQF tunnel freezer will have about 1.5 to 2% of dehydration; this can be measured from snow formation.

In a spiral freezer, product can lose up to 4% of its initial weight through dehydration. Sometimes this can be seen on products as ice crystals formed around them resulting in a less encouraging appearance.

A product that suffers freezer burns will decrease in quality and value. The product has a decreased surface moisture due to the washing process made before freezing; this way the product is protected, though there might still be a slight weight loss.

Snow formation during dehydration requires the same amount of energy to create as it takes a product to freeze, which means that the final product will suffer a loss. To put things in perspective, if a yearly production cost is of \$6,000,000, the producer will be saving \$60,000 per year if dehydration is decreased by 1%.

Dehydration is influenced by many factors that occur during the freezing process. By understanding these factors, users can choose an optimal freezing technology that will reduce cost and increase productivity and quality.

OctoFrost IQF technology

- The OctoFrost IQF freezer balances the airflow and speed maintaining the right moisture and freezing time — the percentage dehydration is reduced to 0.3 to 0.5%.
- Using the OctoFrost IQF freezer will result in less dehydration as there is less sublimation before the surface of the product is completely frozen.
- The OctoFrost freezer has a levelled airflow with good aerodynamics that reduces turbulence, which results in minimal precipitation. In the IQF freezer, air is kept in a continuous flow because as soon as it stops it will start to precipitate. As air moves through the coil it cools and therefore has a tendency to precipitate. The OctoFrost IQF freezer avoids this issue by accelerating air speed after it exits the coil.
- OctoFrost IQF freezer cannot be directly compared to a cold storage freezer as it could not handle washed products. Both cold storage freezing and spiral freezing are too slow, therefore the ice crystals will be large and the integrity of the cell structure will be affected. This is when the drip loss after defrosting a product shows the importance of freezing quality.

OctoFrost
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Sanitary-specific bag dump station

National Bulk Equipment's sanitary-specific bag dump station is designed to be compliance-ready at start-up and to ensure optimal compliance contribution during operation and cleaning in sanitary applications.

The construction of the station meets the FDA, cGMP definition for product safety and cleanability according to 21CFR110.40, with features including a single-sheet, hopper-and-hood design formed of 304-2b stainless steel; the elimination of joint flanges where material build-up can occur; quick disconnects for utilities; tool-less grate and filter removal; and single-step reassembly to speed up inspection and return to service. The 32 Ra finish on all internal and external welds resists material accumulation and improves product release, while a food-grade, MERV 11 efficiency (ASHRAE 52.2) filtration system protects personnel and facilities from migrant dust release. A large, 42" operator access area promotes proper operator interaction posture.

The sanitary-specific design of the bag dump station provides a higher OCC than repurposed, general-industry bag dump station designs by reducing the process material's exposure to contaminants, meeting or reducing cleaning time targets, facilitating validation and inspection and ensuring compatibility with sanitary facility design principles.

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Coca-Cola chooses CompAir compressor for Turkish plant

Coca-Cola Icecek produces nearly 60% of all bottled carbonated drinks consumed in Turkey, operating six facilities across the country.

In a sterile bottling environment the need for clean air is paramount, but manufacturers also need to conserve energy.

The company's Corlu plant produces 50 million cases of soft drinks every year, and energy costs in Turkey are high — around US\$0.10 per kWh. So, when selecting new compressors for the factory, reliability and energy efficiency were key considerations.

Josef Tari at CompAir's Turkish distributor, Tahas, explained: "With no oil being used in the CompAir D75H SR oil-free compressor at all, plus water-lubricated bearings, there is no risk of product contamination and no environmental costs associated with oil disposal".

He continued: "The CompAir D75H SR oil-free compressor, with its efficient, switched-reluctance, variable-speed motors balances energy input to air demand, ensuring that energy isn't wasted and reducing running costs."

The new Cold Aseptic NR PET line (CAF) and the new PET line are using sterile oil-free air.

If both production lines are working, a turbo compressor provides the majority of the compressed air with top-up air supplied by the D75H SR. When only the PET line is in operation, just the D75H SR is used, supplying all the air needed.

Selim Mizrahi, Coca-Cola Icecek's engineering services manager, said: "As with most beverage processing plants, we have variable shift patterns that result in inconsistent demand for compressed air. To ensure efficient compressed air operation, we chose a variable-speed compressor from CompAir to work alongside the fixed speed turbo compressor, to achieve optimum energy and operational cost savings."

Gardner Denver Industries Pty Ltd
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Preserving brand reputation

through best practice supply chain management

*Mike Stewart**

Your brand is your biggest asset. Protecting it from irreparable damage through exceptional supply chain controls is undoubtedly a given — or is it?

As Australia trades and sources extensively from low-cost countries, it takes much time and commitment to imbed Australian supply chain standards into low-cost supply partners. Crises such as the 2008 melamine contamination of China's domestic dairy industry demonstrate just how quickly positive brand equity can come undone. The impact of that crisis left a permanent dent on the reputation of China's food exports and to this day, consumer confidence in Chinese dairy products is extremely weak. Half of the Chinese baby formula market is dominated by foreign brands, and in some cities, the share is as high as 80%.

Thus mitigation of business risk is paramount. Brands must weigh the balance between cost and risk mitigation. The

question of risk is one that should not be addressed lightly — have suppliers done enough due diligence to safeguard brand reputation? How much due diligence is enough?

Sourcing from low-cost countries — getting started

A proven low-risk approach for sourcing from low-cost countries is to partner with and invest in a few strategic suppliers. The early stages are critical and will involve identifying sound business partners, building a trusted working relationship and investing in the relationship.

Via audits, companies can assess the maturity of quality and management systems, environmental and government systems, as well as corporate responsibility compliance. It



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help to create confidence and build a stable and lasting partnership.


Managing offshore sourcing requires rigorous controls

When purchasing packaging from low-cost countries, it is essential to implement inline testing processes as the first measure of conformance.

In order to safeguard their brand and maintain optimal brand quality, companies should implement their own business management protocols into their supply partners. The standards and expectations of the business should systematically apply not just to the suppliers but all providers down the chain.

Full second party positive release is another strict measure Sealed Air deploys to mitigate risks to safeguard brand reputation. All products deemed conforming during the first phase of testing are reassessed in a Sealed Air laboratory. This process not only confirms quality conformance, but serves to keep operations efficient by avoiding stock shortages which can surface if a product is found to be non-conforming after having spent several weeks in sea freight.

And because consumer safety is paramount, Sealed Air's 75-year Cryovac brand demands food safety controls. These controls require full disclosure of every single ingredient of every additive in a material. The United States Food and Drug Administration and European Union approvals are required on all ingredients for their intended purpose such as microwave, retort and freezer applications. Open communication with supply partners is crucial for this supply model to succeed.

By partnering and investing with a few trusted strategic suppliers and introducing rigorous controls, the company can rest assured that the risk of a crisis is minimised. However, planning for an unlikely crisis makes good business sense. Fully transparent and cohesive supplier relationships will ensure there is proper crisis management and communication protocols in place to curtail the impact, both on your brand and the communities you serve. 

is vital for any brand to regard ethics as significantly as brand growth and sales.

Driving sustainable supplier relationships

A long-term, healthy and mutually valuable relationship requires considerable investment of time from both parties. In engaging a partner, companies and brands should seek to understand supplier growth strategies and vision.

Understanding and sharing cost drivers, sharing short- and long-term plans and openly discussing concerns with frequent review meetings are positive ways to instil two-way trust. The recurrent dialogue to audit financial stability, quality systems, maintenance and process controls will

**As Sealed Air's Director of Dairy Rigids and Flexible films, Michael delivers strong leadership to the Sealed Air organisation. Michael has over three decades of industry experience, previously working at Ford Motor Company, Containers Packaging (now Amcor) and Omicron (now Cryovac). With strong experience and influence in areas including production, quality, process engineering and business management, Michael brings his vast insights to Sealed Air's supply chain. He works to develop protocols that protect Sealed Air's brand and industry reputation, and that of its partners. Michael believes that in today's fast-paced globalised world, managing supply chain risk is a highest priority. Michael holds a Bachelor of Applied Science from the University of Melbourne, graduating with First Class Honours in Material Science and Chemistry.*

Sealed Air
www.sealedair.com



Food-grade cleaner

Flexco has added the FGP Food Grade Primary Cleaner to its line of light-duty belt conveyor products.

The easy-to-install, easy-to-maintain food-grade cleaner can be disassembled in less than a minute for regular cleaning and sanitation.

The simple design of the cleaner features stainless steel components and FDA-approved, food-grade materials that limit negative spaces and crevices, which can encourage bacteria growth. There is no need to remove the cleaner from the structure for cleaning, sanitising and blade changes, due to the snap-in-place design of the blade.

Suitable for the food processing industry, the cleaner can be used from the time the food is harvested to the finished product. The product is designed to meet strict sanitary guidelines and has been certified by the USDA for use in meat, poultry and dairy operations. Blades are available in white, blue or metal-detectable grey.

Each cleaner comes with stand-offs so that it can be bolt-mounted and still meet USDA requirements. The stand-offs enable cleaning between the end plates and the conveyor without any disassembly of the cleaner. The cleaner is also easily tensioned in order to minimise blade wear and belt damage and maximise cleanability.

The cleaner is suitable for light-duty belts from 102 to 1500 mm.

Flexco (Aust) Pty Ltd

www.flexco.com.au



Bulk material blending system

National Bulk Equipment's bulk material blending system is a fully automated, self-contained, bulk material mixing system which blends a combination of five, highly caustic, free-flowing powdered additives with a sluggish flowing, high dusting base ingredient.

The base ingredient is automatically introduced into the system from a single, 1.8 m³ surge hopper that feeds either of two horizontal screw conveyors, depending on the blend recipe and the material requirements of downstream packaging operations. The caustic, free-flowing additives, previously manually added to the process, are input to the system using five, Lift-and-Seal drum dumper units.

Each drum dumper unit has an automatic centring system to ensure a precise seal of the drum to the dumper unit's discharge hood. A 340 kg capacity hydraulic carriage lifts the drum up 4.2 m to the discharge point and rotates the drum 180° for a precise, dust-free seal of the 304-2b stainless steel discharge hood to the receiving surge hopper.

A pneumatically actuated slide gate valve controls material discharge from the drum into the hopper to ensure uninterrupted supply to the volumetric feeder. Automated controlling of the volumetric feeder's variable frequency drive gearmotor and pneumatically actuated diverter valve ensures properly blended material is supplied at the correct volume to the specified downstream packaging operation.

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Sanitary high-lift box/ container tipper

The sanitary Tip-Tite High-Lift Box/Container Tipper from Flexicon discharges dust-free into vessels 1830 to 3050 mm above the plant floor.

Boxes and other containers are loaded at floor level and hydraulically seated against a discharge hood. The assembly is then hydraulically elevated and tipped, causing the discharge hood spout to seat against a gasketed receiving ring installed on any receiving vessel or process equipment. Opening of a pneumatically actuated slide gate valve at the spout outlet allows controlled, dust-free discharge, while closing it allows partially empty boxes and containers to be returned to the plant floor.

The unit accommodates boxes and other containers from 915 to 1220 mm on a side and 990 to 1117 mm overall height.

Constructed of stainless steel finished to food, pharmaceutical or industrial standards, the unit is suitable for use in demanding environments.

It is also available constructed of carbon steel and offered with optional receiving hoppers configured with the company's mechanical or pneumatic conveyors to transport discharged material.

Flexicon Corporation (Aust) Pty Ltd

www.flexicon.com.au

Complete line handling for crates

Tavil has available complete line handling systems for the transport, storage and washing of crates, including elevators and dumpers.

Systems feature elevators/lowerators, dumpers and crate washing. Options include: automatic loading of crates using robots; palletisation/depalletisation; crate storage management; in-house software for crate transport management; product and crate identification points: point of origin, destination point, product code, product name, units, weight; reading and identification of crates using RFID radiofrequency.

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Lighting, packaging and milk flavour

Fresh milk is supposed to taste 'sweet' and 'rich' but sometimes consumers use terms like 'cardboard', 'stale' and 'painty'. Now it seems that these negative descriptors could be a result of fluorescent lighting-induced flavour changes in the milk.

However, a simple solution may be at hand as these flavour changes do not occur when the milk is exposed to LED rather than fluorescent lighting systems. So, not only do the LED lights that are being installed in milk display cases reduce energy bills they also help the milk to taste better.

Milk consumption has been decreasing for several decades, and it is feasible that the lighting used in retail display cases that change the taste of milk may be one of the factors for this decline.

Riboflavin oxidises when it is exposed to fluorescent lights, not only causing the taste of the milk to alter but also reducing the nutritional content.

Virginia Tech researchers, led by Susan Duncan, a professor of food science and technology at the Virginia Tech College of Agriculture and Life Sciences, found that when milk is stored in the traditional translucent HDPE jugs, these oxida-

tion reactions can take place in as little as two hours. When light-blocking pigments in HDPE or plastic PET containers were used, the flavour wasn't changed as dramatically and consumers thought the milk tasted fresh.

Opaque milk packaging that protects riboflavin and other nutrients from lighting also helped to deliver a fresh, sweet, rich taste.

Duncan conducted a series of tests at the Virginia Tech Sensory Evaluation Laboratory that showed the new LED lights leave milk with a more satisfactory taste that consumers prefer over milk that has been exposed to fluorescent lights.

Duncan said more work still needs to be done on packaging to protect flavour profiles even further. Though improved packaging costs more than the traditional jugs, Duncan said the cost is worth it to maintain the best flavour of milk.

Duncan's findings were recently published in the *Journal of Dairy Science*. 

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Oil-free rotary screw compressors

Kaeser Compressors has launched two additional versions of its CSG-2 series dry compression rotary screw compressors: the CSG-2 T with integrated refrigeration dryer and the CSG-2 RD with integrated i.HOC rotation dryer. The compressed air systems can produce clean and high-quality compressed air with pressure dewpoints as low as -30°C .

Suitable for the food and pharmaceutical industries or for high-grade industrial air, the two-stage oil-free compression rotary screw compressors can perform efficiently even in extreme conditions.

An integrated design, together with a generously dimensioned aluminium block heat exchanger, helps to ensure a minimal pressure loss in the CSG-2 T of less than 0.1 bar. In addition, the energy-saving scroll refrigeration compressor helps to achieve further compressed air energy savings. All refrigeration dryer components in the model are easily accessible via the service door on the front of the unit for ease of maintenance and service work.

Where pressure dewpoints below $+3^{\circ}\text{C}$ are required, the CSG-2 RD with an integrated i.HOC rotation dryer is a suitable solution. The hot compressed air from the second compression stage is used to regenerate the desiccant. This heat is essentially available for free, as no additional energy is required to power the drying process.

The i.HOC rotary dryer's intelligent control ensures dewpoint stability even with fluctuating flow rates and at compressor partial load. When commissioned, the target pressure dewpoint is reached after just one rotation of the drum.

Both the air- and water-cooled CSG packages are available with the integrated i.HOC rotary dryer or integrated refrigeration dryer. Drive powers range from 37 to 90 kW and operating pressures from 4 to 10 bar, with flow rate up to $13.5 \text{ m}^3/\text{min}$.

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Tubular conveyors keep coffee processor moving

Porto Rico Importing Company has been doing business in New York since 1907, and today ships 1360 kg of coffee/day to its four retail stores, mail order customers and wholesale accounts.

At its Brooklyn roasting facility, Porto Rico roasts, blends, grinds and packages beans according to a strict schedule. At 465 m², the facility is relatively small, so efficient material handling is critical to maintain production schedules, explained warehouse manager Mark Kasper.

To accomplish this, Porto Rico installed two tubular cable conveying systems, special hoppers, a portable flexible screw conveyor and a half-frame bulk bag discharger with an upper frame section that doubles as a filler, from Flexicon Corporation.

At the heart of the system are two FLEXI-DISC Tubular Cable Conveyor (TCC) circuits, which are able to move fragile coffee in all of its forms without degradation, dust or residual material in the conveyor at the end of a conveying cycle.

The conveyors transport coffee beans through 10 cm stainless steel tubes using low-friction polymer discs affixed to a stainless steel cable.

Immediately following discharge, the cable-disc assembly is turned 180° and passes an air knife for cleaning of any residual material, before travelling through the return circuit. At the intake end it is again turned 180°, before passing through a pick-up adapter where coffee is metered into the system.

Beans automatically feed from multi-bin hopper to blender

Porto Rico receives green beans in bulk bags that are unloaded from a discharge station and hopper, manually weighed and transferred in batches by a pneumatic conveyor into a roaster.



After roasting, beans gravity feed into a floor hopper where they are metered into the first tubular cable conveyor circuit, travelling 2.7 m horizontally, then 3.6 m vertically, and another 3.6 m horizontally to either a wall-mounted 368 L-capacity surge hopper for manual bag filling of non-blended batches or through two inline tubular discharge valves and two wye diverter valves into a special four-compartment hopper mounted on load cells in preparation for blending with other bean varieties.

"We need to convey the coffee quickly so we don't slow down the blender," explained Kasper.

Once the bean varieties have been delivered to the four-compartment hopper, a PLC weighs batches of up to four varieties, by selectively actuating the discharge valves beneath each compartment to deposit the desired amount of each bean into the blender, according to weight gain information transmitted by load cells underneath the hopper. Once the correct amounts are in place, blending begins.

Second TCC circuit from blender to grinder

The second TCC circuit, installed at a right angle to the first, transports blended beans from the hopper beneath the blender 1.8 m horizontally, then vertically 4 m and horizontally another 3.9 m where the beans are gravity fed through a hopper and a wye diverter valve. One leg is for filling 23 kg bags of whole bean blends and the other leg feeds the grinder.

From the grinder, a portable flexible screw conveyor, 3 m long, transfers ground coffee at a 45° angle into a bulk bag, secured in the upper section of the half-frame bulk bag discharger. The ground coffee degasses overnight in the packaging area. The next morning the bulk bag contents are discharged into a 113 L-capacity floor hopper within the split frame, from which a flexible screw conveyor transfers the coffee to a packaging machine for small wholesale packages.

Conveyors deliver undamaged product

The tubular cable conveyors replace a large pneumatic conveying system used in a previous warehouse. Kasper said the pneumatic conveyor was powerful and did a good job moving material. However, it broke a percentage of beans in the process, which detracted from product appearance.

The smooth operation of the lines requires minimal manpower for operations. Kasper said only two people work with him in the warehouse.

Flexicon Corporation (Aust) Pty Ltd
www.flexicon.com.au



Bag discharge station

Enmin Vibratory Equipment has released a bag discharge station that utilises vibratory conveying and screening.

Full bags are manually or automatically loaded onto a simple flat belt conveyor that sends them onto a vibratory conveying system which presents them to a special cutting head. Bags are effectively slit during the vibratory conveying process and the released product is conveyed to the discharge chute at the end of the system.

The discharged product goes through the screening platform ensuring any unwanted material is retained and unwanted lumps broken down in the process.

The bag is subject to continuous vibration during the process ensuring complete discharge of the bag's contents onto the screening platform. The empty bag can be either manually removed or, where automation is required, via a simple pick-and-place robotic arm.

The cutting head is safely protected by an enclosed cage which is locked to prevent unauthorised entry.

The equipment offers a safer and more cost-effective process that is suitable for use within food and pharmaceutical industries where strict hygiene standards are required as all contact surfaces are stainless steel, making them easy to clean.

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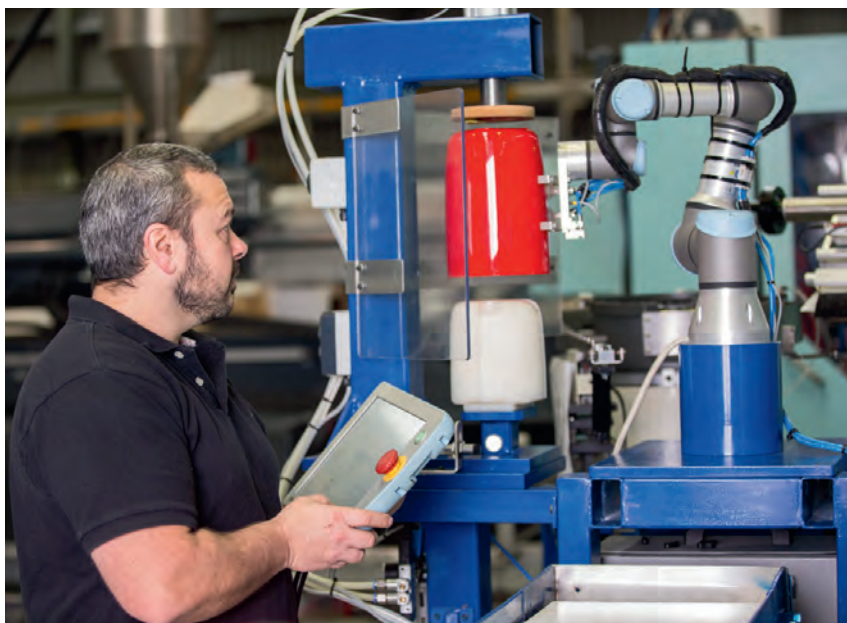
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Robotic arms aid labelling and assembly



Auckland-based plastic injection moulding company TCI New Zealand was looking for an automated, cost-effective way to produce its customers' products and decided to investigate using 6-axis industrial robots. Now, TCI is using Universal Robots' UR3 and UR5 industrial robotic arms to perform labelling and assembly tasks for the EasiYo Yoghurt Maker line, as well as its storage bins.

With a Universal Robot assisting, several key processes in the manufacture of these products have been automated, relieving employees of repetitive assembly processes and ensuring smooth production flow.

The UR3 was the first machine implemented by TCI, with the costs of the robot recouped six months after it was first purchased. Satisfied with this return on investment, TCI then decided to purchase the UR5, with the payback period expected to be under 12 months.

"Previously we were paying two employees to work in 12-hour shifts to ensure around-the-clock production of our EasiYo Yoghurt Maker. If one employee didn't turn up for work, it meant the entire production line would be halted. This wasn't really financially sustainable for us, so we were looking for an automated solution that would guarantee quality assurance and help us to reduce costs," said Quintin Fowler, managing director at TCI.

During its search for an automation solution, TCI came across Universal Robots' technology at a trade show and made contact via Design Energy, Universal Robots' New Zealand distributor.

"We developed the layout for the production cell and designed and built an appropriate gripper unit for

each of the applications," said Mike Shatford, managing director at Design Energy. "TCI then manufactured the machine frames and mounted the various operating units in the relativities we had laid out. Once the machines were completed, our technician spent time at TCI writing the robot programs and getting each cell operating to the customers' requirements."

"Design Energy were fantastic. We were initially considering an off-the-shelf robot from overseas, but I'm glad we were able to find a customisable solution," said Fowler.

All UR robots can be completely reprogrammed and deployed for other tasks in a matter of minutes. A graphical user interface with a teach function enables an operator to simply grab the robot arm and show it how a movement

should be performed. The user-friendly interface then allows staff to drag and drop the routines to do their programming.

In contrast to traditional industrial robots in the market, Universal Robots' small and lightweight robotic arms are able to work safely alongside staff (subject to prior risk assessment). The robots' state-of-the-art force limit safety feature automatically stops the robot from operating when its movement is obstructed. The robot will not exert a force greater than the limit specified in the adjustable safety settings.

"One thing I loved about Universal Robots was that we didn't have to worry about guarding, whereas [for] a lot of the other robots in the market guarding was an issue because you'd have to use safety barriers for all the machines, which just complicates the situation," said Fowler.

Design Energy
www.designenergy.co.nz



packaging



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Food Trays

With the growth of the ready meal market within Australia, DFC Packaging has set its course to become a major supplier to many of the manufacturers within this part of the food industry. With the growth of the dual ovenable smooth wall aluminium trays within this category, our customers are seeing us as a viable and forward moving supplier. We offer a wide range of lidding films to suit most tray types and can generally offer positive solutions off the shelf to our customers.

Machinery

DFC Packaging has also expanded its range of machinery and are now able to supply tray-sealing equipment to support our lidding films and trays as a one-stop shop. This machinery is already market proven and we have several machines already installed and running successfully with key market suppliers. We can also offer VFFS, HFFS, checking weighing and metal detecting units as well as a full range of shrink film systems. Also talk to us about our wide range of material handling equipment.

Decorative Shrink Sleeves



DFC Packaging supply printed, plain and pre-form shrink sleeves for many different applications.

Printed shrink sleeves provide a 360° decorative labelling opportunity, thereby offering greater shelf presence. Shrink sleeves can be provided in different substrates, including PET, PVC and OPS. Plain and pre-form shrink sleeves provide a level of tamper evidence and can be perforated for ease of removal by the consumer.

DFC Packaging can provide the total solution by providing not only the sleeves but also the equipment to apply and shrink.



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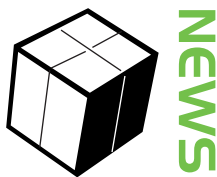
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Packaging

Get the last drop out of the bottle

The formula for a non-toxic, non-stick coating that lets loose every last drop of tomato sauce from the bottle has been cracked.



NEWS

Colorado State University materials scientists have created a 'superhydrophobic' coating that easily slicks away viscous liquids like syrup, honey and tomato sauce.

The research team, led by Arun Kota, assistant professor in the Department of Mechanical Engineering and the School of Biomedical Engineering, have published detail about synthesising and testing coatings made from beeswax and carnauba wax in *Applied Materials and Interfaces*.

Superhydrophobic coatings are not new, but they're typically fabricated with fluorocarbons. These materials, while generally safe in low doses, are labelled as "emerging contaminants" because of their potential decomposition into perfluorooctanoic acid, a known human toxin, according to the paper.

The use of coatings in food-related applications is regulated by the Food and Drug Administration and the FDA recently banned three perfluorinated compounds (PFCs), which are used in food packaging for grease-proofing pizza boxes and other items.

"Companies are very specific about toxicity levels in these products, which is why they don't get into the market very easily," Kota said of hydrophobic coatings. However, the edible waxes used in the latest liquid-repellent coating are non-toxic and so particularly suited to food packaging.

One of Kota's students came up with the idea of trying to make such a coating out of beeswax. Its chemical properties are similar to non-sticky fluorocarbons, but even at extremely high doses, they are safe to ingest. The researchers came up with a way to spray the coating onto a surface by first dissolving the wax.

Their coating allows a wide range of aqueous liquids to bounce and roll away. They tested a long list of substances, including Lipton green tea, Gatorade, pancake syrup, Coca-Cola, orange juice, milk and coffee. They used common polystyrene cups for their demos.

There is room for improvement in the mechanical durability of their coatings, which currently can't withstand harsh and abrasive environments, according to the paper.



Image courtesy of Marc Majcher (via Flickr) under CC BY-SA 2.0

Question time ...



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What are my options to mark directly onto film packaging?

Q. What are the advantages of marking directly onto film packaging?

A. The main one is being able to use generic film rather than having product-specific packaging for every single SKU you produce. This saves a lot of money tied up in inventory stocks, as well as the physical space to store it. Direct coding is a highly cost-effective printing solution, particularly if you produce snack foods, confectionery or fresh produce.

Q. So what can I use to code?

A. The most commonly used technology is thermal transfer overprinting (TTO); however, the other alternatives are CIJ (continuous inkjet) and laser.

Q. Why is TTO the most widely used?

A. Firstly, because the technology can print such a broad range of marks, from simple date and batch codes, to more complex barcodes, logos, product descriptions, ingredients lists and nutritional panels. The second point is the print's clarity and durability — even on flexible film.

Q. Do retailers accept TTO-produced barcodes?

A. Yes, because TTOs produce crisp, resilient printing, barcodes printed with a TTO are high density and fully compliant with GS1 standards. They're also highly resistant to abrasion and chemicals, as well as climatic changes the packaging may face through the supply chain (think humidity and UV).

Q. Can I integrate a TTO into my existing production line?

A. Absolutely. TTOs can be mounted on packaging equipment, such as vertical form fill machines, and are easily integrated into existing lines.

Q. How fast are TTOs?

A. This technology is actually well suited to high-speed production lines because the thermal transfer ribbon's smooth, waxy surface creates less friction when coding onto a product.

Q. How robust is the technology?

A. Very. TTOs are designed for reduced downtime and maximised ribbon economy. Another good point for manufacturers is that compared with direct thermal barcode printing, print-head life is frequently doubled with thermal transfer. TTOs are highly efficient printers.

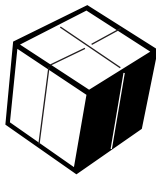
Q. What else can print date codes on flexible film?

A. CIJ is another option, and depending on what you're trying to achieve, you can also code with lasers.

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Packaging



NEWS

PACKAGING, LABELLING & CODING



Amcor acquires flexible packaging plant in China

Amcor has announced it will expand its flexible packaging platform in the northern China region with the US\$28 million acquisition of Hebei Qite Packing (Qite).

Qite has one plant located in Hebei, North China and generates sales of US\$28 million from the supply of flexible packaging products to large domestic customers within the dairy and food segments.

Amcor currently has a total of 11 flexible packaging plants in China, including two plants in close proximity to Qite in Northern China.

Amcor's managing director and CEO, Ron Delia, said, "Globally and especially within Asia, China is a very attractive growth market for flexible packaging."



GS1 Australia holding hands with Brandbank for better online marketing

GS1 Australia has entered into a long-term agreement with Brandbank to provide a complete digital content creation and management service.

This agreement mobilises Brandbank's expertise in content creation and complements the existing GS1 Australia Smart Media product data and self-managed digital content distribution service.

The rich data model provided by Brandbank and loaded into the Smart Media service will help to improve online product content with professional, consistent images and product data for the benefit of the consumer. This will allow retailers to build out their online product catalogues to closer reflect the range and assortment that is typically sold within their traditional bricks and mortar stores.

The new workflow process will be launched in the coming months and will complement GS1 Australia's existing Photography and Self Managed content services. This will provide retailers, brand owners and manufacturers with the option to outsource to GS1 Australia the creation of customer and consumer facing content as a value-added option when using the Content Creation service.



UPM Raflatac directs label waste to energy, not landfill

At this year's Labelexpo Americas event in Chicago, UPM Raflatac partnered with organisers to enable

exhibiting label converters to give their label, matrix and liner waste a new life in the form of energy.

UPM Raflatac collected the label waste generated by exhibitors and showcased it in their waste collection feature area. At the conclusion of the expo, the label waste was sent for energy recovery.

"Our goal was to showcase that there are alternative means of responsible disposal aside from the landfill," said Tyler Matusevich, sustainability specialist, UPM Raflatac, Americas, who manned the company's waste collection area during the event. "And we did a great job educating the many visitors who stopped by. The initiative provided perspective that there are a lot of opportunities to utilise label waste as a resource to make new products or energy."



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Preform deduster

PET preforms can be soiled for a number of reasons. Sometimes particles such as PET dust or foreign bodies, including splinters of wood or fragments of PET, can enter preforms during production, transportation or storage, leading to rejection of the preform during inspection.

Although the rejection rate for soiling of this kind is usually under 0.5%, at high production volumes this can translate into significant cost.

A preform deduster from KHS can be located upstream of an inspection system. Using a compressed air lance inserted into each preform, the system removes unwanted particles at a rate of up to 81,000 preforms/h. As a result, not only are considerably fewer PET preforms lost, the risk posed by contaminated preforms is further minimised when used in combination with an inspection unit.

The cleaning system is supported by an extraction unit which ejects all particles into an easy-to-clean collection vessel.

The cleaning module has been designed so that it can be retrofitted for all customers with InnoPET Blomax stretch blow moulders in series III and IV.

KHS Pacific Pty Ltd

www.khs.com

Label adhesives

HERMA has launched two label adhesive products.

HERMAsuperTack (63Vst) is a completely resin-free adhesive for labels that require strong initial tack. The adhesive offers low migration levels and features correction factor 2, thereby reaching the approval for dry, moist and fatty foods.

Suitable for labels applied to whole sausages or raw ham without a barrier layer made of film, the multilayer technology of the adhesive dispenses with resins without compromising initial tack. The product is temperature resistant, so it is suitable at temperatures below -20°C. It is also suitable for foodstuffs that have been recently heated, such as boiled chicken.

HERMAsuperPerm (63S) enables even conventional labels to be used to implement tamper-evident solutions, allowing users to equip packaging for pharmaceuticals as well as other products with tamper-evident labels.

The final adhesion of the product is so high that sealing labels equipped with the adhesive cannot be removed from lacquered pharmaceutical packaging, as well as other polar and non-polar surfaces such as paper, cardboard, plastics and steel, without destruction of the label or the packaging surface. Elaborate special materials like self-destructive films, holograms, cellophane wraps or folding box designs are thus no longer required.

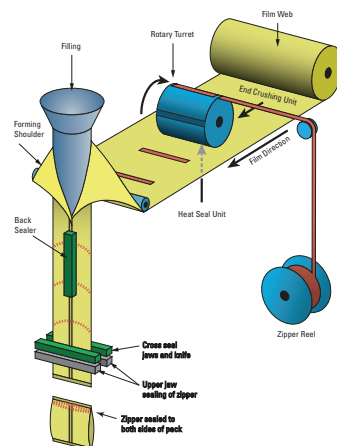
Resistant to ageing, water, hot air and various solvents, the adhesive materials can be easily processed in spite of relatively thick adhesive coating.

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Vision system for product inspection

Mettler-Toledo's V2630 Flex flexible vision system's CIVCore software incorporates Matrox Imaging's SureDotOCR vision tool, which is designed to overcome the challenges involved with reading dot-matrix text.

The software is suitable for process inspection tasks such as label inspection for oriented packaging. Along with verifying that correct labels have been applied, the software can detect expiration dates imprinted on the bottle using an inkjet printer.

It is suitable for use with non-uniform dot spacing, deformed and skewed characters, rotated text strings, varying contrast, uneven backgrounds and other anomalies.

Mettler-Toledo Ltd

www.mt.com



Elapsed time indicator label

UWI Technology has developed the UWI Label, an elapsed time indicator which is activated automatically and, once started, cannot be stopped. It is therefore tamper-proof and provides reassurance to consumers as to the authenticity of the product.

Utilising the universally understood colours of green for good and red for bad, the label is easy to understand. Its flexibility means it can be calibrated to specific requirements and tuned to minutes or hours, days, weeks or months.

UWI Technology

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Services are versatile and compatible with all major sealing machines, including thermoformers and those that seal to premade trays. For form fill seal machines, both top web skin film and the thermoforming base webs can be supplied.

The films reduce wastage throughout the supply chain due to their seal integrity, which still provides smooth, easy-peel opening. Films can be supplied that will seal to mono-APET and mono-PP trays without a PE layer, enabling the base webs or trays to be more easily recyclable.

Available in two grades, 100 and 150 μm , the films seal tightly to the product and tray corners to avoid 'creep' and also feature high clarity, providing visibility and stability for the contents. A high-oxygen barrier helps to extend shelf life and, for packaging machinery manufacturers, the films have good machining capability, robustness and heat tolerance to a wide range of temperatures.

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Product traceability and anti-counterfeit solutions

A partnership between Result Group and IDlocate will provide users with the technology to deliver best practice traceability and anti-counterfeiting.

The partnership will result in a complete turnkey solution from coding and marking equipment and control software, to print a unique QR code on every product that will read and engage with any consumer on any handheld platform, without the need for a specific reader or app.

The brand owner is able to build custom content relevant to their products and existing systems. Information such as authenticity is the basis of the platform, but this can be expanded by creating content as broad as a brand owner wishes to share, such as growing information, ingredient details, promotional offers, export origin and serving suggestions. Benefits to the brand owner include being able to check supply chain and distribution without the need for third-party feedback, as well as being able to understand consumer buying behaviour directly.

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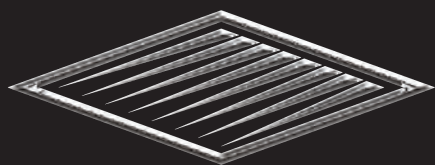
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G. MONDINI





Extending the shelf life of fresh fruit and vegetables through customised packaging

Currently, refrigerators don't automatically convert any rotting fruit and vegetables in them into biofuel which is then used to power the refrigeration system.

Up to \$10 billion worth of food is wasted in Australia each year — and the food service/ready meal sector is a contributor to this.

But judicious use of intelligent packaging systems can reduce this figure — and the technology is proven and in use across Europe and in Marks & Spencer (M&S).

In order to extend the shelf life of fresh fruit and vegetables, M&S researched packaging systems that could retain the 'freshness' of fruit and vegetables for longer.

The best system the company found and implemented was 'appropriate modified atmosphere packaging' (AMAP) supplied by Dutch company PerfoTec.

With PerfoTec's AMAP technology, all fresh produce is assessed for its respiration rate prior to packing, as respiration rates can vary from season to season and product to product. The product can then be exposed to the right amount of oxygen for sustainability, as too much oxygen causes rapid deterioration and too little causes an anaerobic environment leading to rapid decay. This atmospheric control is maintained through breathing holes in the produce packaging film.

The PerfoTec system uses a laser to make miniscule perforations in the packaging film. The acquired respiration data is passed to the laser system integrated onto the packing unit and, as film passes through, predetermined breathing holes are made and then inspected by a camera for consistency. The perforations are customised to suit each fruit type to prolong freshness.

Using this PerfoTec system has enabled M&S to extend the life of grapes by 5–7 days, raspberries by 5–10 days and strawberries by 4–8 days. As extra benefits the company has reduced food waste, increased profits and enhanced consumer perceptions. M&S will not accept some lines of fresh fruit unless it has been packaged using the PerfoTec system.

Why aren't we packaging our fruits and vegetables like this in Australia and New Zealand?

The local supermarkets insist that Australians prefer to self-select from open bins and that consumers believe that pre-packed fruit and vegetables are seconds, poor quality, old stock or no longer fresh. This perception is reinforced when packaging is used to move slow-selling or tired-looking items — for example, celery and rhubarb are cut into lengths and wrapped 'ready to go', or pumpkin cut and wrapped into 'smaller portions'. However, fresh produce purchases could retain quality, taste and smell, and last longer in the refrigerator, if they were packaged with the life of the product in mind.

Innovation is the key to change. By keeping fresh produce fresh, giving it a longer shelf life will not only increase benefits for local consumers but our overseas markets as well.

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www.raymax.com.au



Compact auto sleeving machine

The Keymac K50 is a compact auto sleeving machine suitable for smaller capacity lines. With a 1.5 m footprint, the machines can fit most production lines and run at up to 35 sleeves/min.

The fully automatic machine is capable of placing pre-glued sleeves around trays or tubs in square, round and oval shapes. Size changes can be achieved in less than 5 min. The machine's simple design results in low maintenance requirements.

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Coveris develops new linerless print technology for Aldi premium beef

Aldi sells over half a million British beef steaks every week. When launching a new range of beef in its British stores, the retailer sought a labelling solution that would enhance the premium look and feel of its packaging.

Global packaging manufacturer Coveris used a pioneering printing process in the launch of the new linerless labels for Aldi's Specially Selected Aberdeen Angus steaks, which comprise four lines of British beef steak. Combining multiple decorative effects inline, the printing system adds a fourth, tactile dimension to the labels to reflect the quality of the product and its high-profile launch.



Producing a premium finish for shelf presence, the label production process blends a complex mix of inks, varnishes and foil inline using a newly developed method of application. The use of high-build silkscreen varnish creates a glossy, tactile stamped effect, while the use of further varnishes and cold foil combine to produce a multisensory, luxury appearance.

Coveris says the evolution of printing capabilities on linerless labels during this project creates opportunities for the production of more complex designs and premiumisation techniques.

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Metal-detectable safety cutter

The Secumax 145 MDP is a compact safety cutter from Martor that is made with a high-quality metal-detectable plastic (MDP) developed in collaboration with the plastic industry.

This plastic is detectable in both metal detectors and X-ray machines commonly used in food and pharmaceutical production.

The concealed cutting edge is suitable for use on single-layered cardboard, wrapping, stretch and shrink film as well as packing tape, bags and foil.

The blade head provides two functions: cutting and piercing. With a 4 mm cutting access, the blade is highly concealed so it protects both the user and the contents under the cutting surface.

Martor Australia
www.martor.com.au



Checkweigher

OFI Weigh & Inspection Solutions' C80 is a high-precision, high-speed checkweigher built to last in harsh environments.

Operation is performed using a PC-based Windows operating system and the checkweigher is fitted with a large, 15" multifunction touch-screen display for ease of use and operator flexibility. Designed and manufactured for longevity in hostile environments, the machine is available in either anodised aluminium or high-grade stainless steel.

The weigh platform provides weight stability and repeatability with conveyors driven by virtually maintenance-free brushless DC motors. The weigher offers a range of belt sizes and reject devices to suit various applications, including air blast, pusher, single or double flipper/divert arm, drop flap, etc. Combination systems are also available to include label application, metal detection and vision inspection.

Multiple checkweighers can be connected to InControl management software via Ethernet or Wi-Fi to enable reporting on the efficiency of each production line in real time and to monitor the OEE.

Product changeovers can be carried out remotely and remote access is available to troubleshoot or to monitor production. Statistical data for QA compliance can be transmitted directly to a USB in a range of formats.

The BRC version is supplied with various feedback monitors such as bin full, reject bins open, reject verify, low air-pressure alarm, product jam detection, metal detector offline, key switch acknowledgment and password protection.

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VFFS system with full washdown function

tna has launched a vertical form fill and seal (VFFS) system with full washdown functionality. Featuring a hygienic design, the tna arctic 3 is able to run in hostile wet and cold processing environments while maintaining high levels of sanitation and flexibility.

The system represents the latest generation of Sabalpack's arctic range of full washdown VFFS systems, after tna acquired the Italian manufacturer in 2016.

Central to the design is the system's A2 (AISI 304) stainless steel, corrosion-resistant cubicle, which ensures that key components like motors, vacuum pumps and sealing jaws are fully protected from any dirt or water ingress. A separate electrical cabinet and user-friendly external, side-swinging touch screen further aid ease of operation, facilitate sanitation and simplify cleaning operations.

With an IP65 (NEMA 4x) rating, the system is able to withstand intensive washdown procedures.

Capable of both constant and impulse sealing, the system is suitable for a wide range of packaging films, including laminated polypropylene and polyethylene films such as LLDPE. It supports multiple bag options, including pillow, gusseted and square bottom bags, plus multipacks.

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Labelling the “Australian-ness” of food

A review of the new Country of Origin Food Labelling System 2016

Anita Cade* and Joanna Lawrence*



On 1 July 2016 the new *Country of Origin Food Labelling Information Standard 2016 (the Standard)* came into force. The Standard sets out new mandatory country of origin labelling requirements for food sold in Australia.

Why have new country of origin labelling requirements been introduced? Over the past few years there has been an increased interest from Australian consumers about the country of origin of food products and a focus on consuming foods that are “home grown”.

Recent incidents such as the hepatitis A outbreak in Australia in 2015 which was linked to the consumption of a contaminated batch of Nanna’s brand frozen berries sourced from China have highlighted consumers’ concerns about the origin of the food they purchase. That incident prompted the Australian Government to implement new country of origin labelling requirements with the aim of giving consumers better certainty about the origin of the products they are purchasing and consuming.

What are the new labelling requirements?

The Standard requires food businesses to include country of origin information in a clearly defined box on their product packaging. This is designed to make the information more easily visible to consumers. The requirements for what information is contained in the box vary according to whether the food was grown, produced, made or packaged in Australia or overseas.

As observed above, there has been considerable consumer confusion about the meaning of the terms “grown”, “produced” and “made”. These terms are defined in the Standard as follows:

- **Grown** = food is “grown” in a country if it has been germinated, materially increased in size or altered in substance, harvested, extracted or otherwise derived from a living organism in that country, or if all of its significant

ingredients were grown in, and its processing occurred in, that country.

- **Produced** = food is “produced” in a country if each of its significant ingredients was grown or otherwise wholly obtained in that country and virtually all of the processing occurred in that country.
- **Made** = a food is “made” in a country if it underwent its last substantial transformation in that country. Food is “substantially transformed” if it undergoes a fundamental change in form, appearance or nature, such that the changed food is new and different from the food prior to the change. The definition does not include a requirement that 50% of the costs of producing or manufacturing the food were incurred in the “made in” country, as is currently required under the *Australian Consumer Law* (although this requirement will most likely be removed from the ACL as well).

There is no definition of “Packed”.

Grown, produced or made in Australia

If the food was grown, produced and/or made in Australia, the box must include the following:

- the Kangaroo logo;
- a bar chart showing the proportion of Australian ingredients; and

The new requirements will apply to all food that is offered for retail sale in Australia, including both packaged foods and foods that are sold loose, and food sold through retail outlets, markets, online or from vending machines.



© eptaw/Dollar Photo Club

- a statement that the food was grown, produced or made in Australia and identifying the minimum proportion of Australian ingredients, measured by ingoing weight.

Examples of how the labels will look for Australian grown, produced or made products are depicted below:

These labels may also be used on packaging for Australian grown, produced or made food intended for export, which means that businesses may use the same packaging for food sold in Australia and overseas.

Packaged in Australia

If the food was packaged in Australia but not all the ingredients were exclusively grown, produced or made in Australia, the box may not include the kangaroo logo, but must contain a bar chart with the percentage of Australian ingredients, a “packed in Australia” statement and an Australian ingredients statement consistent with the bar chart (eg, “Packed in Australia from at least 10% Australian ingredients”).

Imported food

For imported food, the label must state the country where the food was grown, produced or made. The label may also state the country where the food was packed if that is different.

When food cannot claim to have been grown, produced or made in a single country, the label must state the country where the food was packed and that the food comes from multiple origins or is comprised of imported ingredients (eg, “Packed in Thailand from imported ingredients”).

The kangaroo logo may not be used on the label of imported food, even if all or a substantial proportion of the ingredients are Australian. However, the label of such products may include a statement specifying the proportion of Australian ingredients, along with a bar chart shaded to represent that proportion.

What food is covered by the new labelling requirements?

The new requirements will apply to all food that is offered for retail sale in Australia, including both packaged foods and foods that are sold loose, and food sold through retail outlets, markets, online or from vending machines.

Exempted and non-priority food

Foods sold in restaurants, takeaway shops, schools and other places where the food is intended for immediate consumption are exempted from the new labelling requirements.

Some of the labelling requirements will be optional for what are called “non-priority foods”, such as seasonings, confectionery, biscuits and snack foods, soft drinks, tea and coffee and alcoholic beverages. These foods will only be required to include a text statement of origin on their labels (ie, not within a box). However, businesses may use the country of origin labelling specified for priority foods if they wish.

Trade marks

The Standard does not operate to limit the exercise of a right given under the *Trade Marks Act 1995* (Cth) in relation to a registered trade mark (section 5 of the Standard).

This means the Standard will not prevent a trade mark owner from using its registered trade mark in relation to its food products, even if the trade mark includes a similar kangaroo logo or bar chart device.



Food businesses need to be aware that the use of such a mark, or any mark containing words or symbols denoting Australia, in relation to food sold in Australia could still be misleading or deceptive in breach of sections 18 and 29 of the ACL if it falsely suggests that the product is grown, produced or made in Australia or contains Australian ingredients.

What will the changes mean for business?

The changes to country of origin labelling requirements are likely to have minimal impact on imported food, the only significant change being the requirement to include the country of origin statement in a clearly defined box on packaging for priority food.

The greatest impact will be on food businesses making “Australian” claims. These businesses will need to assess all priority food products to determine which new country of origin label is required and then redesign their packaging to incorporate the box containing this information.

In addition, businesses required or wishing to specify the percentage of Australian ingredients in their food will need to keep accurate records of the incoming weight of all these ingredients, including where the percentage may change due to seasonal availability of certain ingredients. It will be possible for businesses to indicate the average Australian content as long as consumers are directed to where they may obtain additional information about how the Australian content is calculated.

One positive outcome of the changes for businesses making “made in” claims is that they will no longer be required to determine the percentage costs of production or manufacture in the country of origin to substantiate such a claim. The “safe harbour” defences under the ACL still need to be amended to reflect this change (ie, by removing the requirement for a business to establish that 50% of its production costs were incurred in the “made in” country).

Transition arrangements

Businesses will have two years, until 1 July 2018, to transition to the new labelling requirements. Businesses must continue to comply with the country of origin labelling requirements under the Food Standards Code until 1 July 2018, unless they choose voluntarily to adopt the Standard earlier. Food labelled after 1 July 2018 must comply with the new requirements, although businesses will be allowed to continue to sell stock in trade after 1 July 2018 until that stock reaches its use by or best before date as the case may be.

Will the new labelling laws have the desired effect?

As discussed at the beginning of this article, consumers want to be informed about the source of the food they are purchasing and consuming. There are a variety of reasons for this: consumers may wish to support local business by buying Australian products; they may perceive products from Australia or a specific country to be of better quality, fresher or less harmful to the environment; or they may have health and safety concerns about food sourced from a particular country. These concerns are reflected in the consumer testing conducted in the lead up to the new changes.

Identifying the “Australian-ness”

Identifying the “Australian-ness” of the food more clearly is an important way of addressing many of the concerns held by consumers, and the new labelling requirements do this by requiring the consistent use of the kangaroo logo, the bar chart showing the percentage of Australian ingredients, and the Australian country of origin claim, as described above. This labelling should make it easier for consumers to see at a glance the “Australian-ness” of the food they are purchasing.

“Non-Australian” food and ingredients

However, providing clearer information about the origin of “non-Australian” food and ingredients, is arguably also im-

“ It seems inconsistent that a “made in Australia” product which contains no Australian ingredients must use the kangaroo logo, while a “packed in Australia” product made from 99% Australian ingredients is not allowed to use the kangaroo logo. ”

portant to consumers (albeit not to the same degree as the “Australian-ness” of food), and the new labelling requirements only go so far in addressing this issue. While the country of origin claims must be contained in a clearly defined box, and only food which contains 100% ingredients from the country of origin may use “grown in” or “produced in” claims, there is no requirement for food “made in” or “packed in” Australia or another country to identify the origin of the non-Australian ingredients. A product labelled “Made in Australia from imported ingredients” complies with the Standard but leaves the consumer none the wiser about the origin of ingredients contained in the product. If, by way of example, this product had contained berries sourced from China around the time of the hepatitis A incident referred to earlier, that might have been information that consumers considered relevant to making a purchasing decision.

“Made in” claims

“Made in” claims may also continue to confuse consumers, particularly where this claim is used in relation to food made entirely or mostly from ingredients imported from other countries. For example, consumers may be surprised to learn that a product labelled simply as “Made in Canada” could, in fact, contain no Canadian ingredients. For food labelled “made in Australia”, consumers may have an expectation that such food would contain at least a reasonable proportion of Australian ingredients, in which case they may consider the use of this claim, along with the kangaroo logo, on food that contains no Australian ingredients to be “un-Australian”, despite the fact that the unshaded bar chart and the statement clearly indicate that the product has zero Australian ingredients. It seems inconsistent that a “made in Australia” product which contains no Australian ingredients must use the kangaroo logo, while a “packed in Australia” product made from 99% Australian ingredients is not allowed to use the kangaroo logo. Consumers may regard the “packed in” product as being more Australian than the “made in” product in this instance.

The new labelling requirements as they relate to “made in” claims and the origin of non-Australian ingredients in “made in” or “packed in” products could be improved, although it may not be until we have another “frozen berries” type incident that consumers start calling for further changes to food labelling to reflect these other concerns. For now, however, in most cases the new requirements will assist consumers to quickly identify the “Australian-ness” of the food they are purchasing and consuming and in this respect they are a significant improvement on the labelling standard under the Food Standards Code.



What you need to know

- On 1 July 2016 the new *Country of Origin Food Labelling Information Standard 2016* (the Standard) came into force. The Standard sets out new mandatory country of origin labelling requirements for food sold in Australia.
- The new labelling requirements are intended to make it easier for consumers to identify where food has been grown, produced, made or packed, as well as the proportion of Australian ingredients contained in the food.
- Food which has been grown, produced or made in Australia must display the kangaroo logo, together with a bar chart and statement confirming the percentage of Australian ingredients.
- Food businesses may identify the country of origin of overseas ingredients contained in food “made” or “packed” in Australia or another country, but are not required to provide this information on the label.
- The Standard is made under section 134 of the *Australian Consumer Law* (Schedule 2 of the *Competition and Consumer Act 2010* (Cth)) (ACL) (rather than under the *Australian and New Zealand Food Standards Code* where the current standard is located).
- The new labelling requirements came into force on 1 July 2016, although the requirements will only become mandatory from 1 July 2018.

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Ashurst LLP
www.ashurst.com

Plastic closure machine

Sacmi's Plastic Closure CCM machine can produce 2000 caps/min.

They can be paired with integrated inspection and quality control systems that cover every stage of the beverage production cycle, including high-speed cap inspection directly inline on the CCM machine.

HBM Packaging Technologies
www.hbm.com.au

Mid-range industrial label printer

The Honeywell PM42 mid-range industrial label printer combines quality industrial printing, reliability and state-of-the-art features into an affordable and easy-to-use device.

The PM42 is small in size, but includes features such as a full-colour interactive LCD display, multi-language support and customisable short cuts for one-key label set-up. These features are user friendly, reducing the need for device support and training. Integrated web interface operators can easily set up, conveniently manage and configure their printing jobs from nearby or afar using their smartphones and tablets.

The printer's quality and reliability minimises maintenance costs, thanks to its robust aluminium construction, easy-to-replace quick mount magnetic printhead and easy-to-remove print roller. Suitable for organisations printing 5000 up to 15,000 labels per day, the printer offers print speeds of up to 300 mm/s, with high-volume print speeds possible during peak hours.

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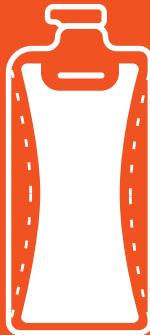
Size range:
40 - 200mL



The Flat Bottle.

Central opening.
Side gussets.

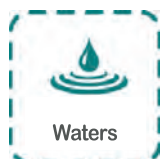
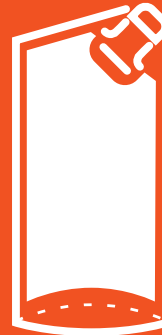
Size range:
50 - 500mL



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Automatic wrapper

Ishida's WM-AI is an integrated weighing, wrapping and labelling machine that uses artificial intelligence features to improve weighing and labelling accuracy, efficiency and productivity.

The mid-level automatic wrapper, with integrated scale and label applicator, is suitable for a variety of tray products, such as meat and cheese, and for use by mid- to large-sized supermarkets, delicatessens, fishmongers and butchers.

Its high-speed wrapping and labelling of up to 35 packs/min can accommodate a range of tray sizes. Its two-fill roll mechanism instantly selects the correct film size and associated parameters from the machine's database to create optimum wrap quality using the minimum amount of film, meaning unsealed and incorrectly wrapped trays are no longer a problem.

The wrapper uses a powerful image sensor, known as a CMOS camera system or complementary metal-oxide-semiconductor, to automatically identify the tray as it is placed on the weighing area of the in-feed. The machine has a wrapping weight capacity of up to 6 kg, and its tray height detection system can automatically adjust the film length and tension, ensuring overfilled trays are perfectly wrapped.

Heat and Control will be showcasing the Ishida WM-AI at Auspack 2017 — Booth 72.

Heat and Control Pty Ltd
www.heatandcontrol.com

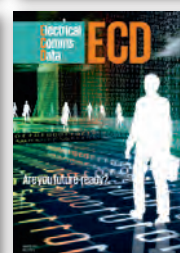


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Biscuit-on-edge packaging system

Bosch Packaging Technology has developed a biscuit-on-edge packaging system, for biscuits and crackers in slug packs.

The modular system consists of a loader, a transfer unit, a feeder and the Pack 301 LS (Length Slug) horizontal flow wrapper.

The system, which includes a Smart Measuring Loader for slug portioning, has been designed to provide gentle product handling for delicate and brittle biscuit-type products, even at higher speeds, as the loader allows for smooth placement of the portioned biscuits into the cross chain.

To keep the biscuits in an upright position while being transported into the film tube, the biscuit portion is supported by a counter holding pin. Between the folding box and the cross-sealing station the slug is guided by side belts or chains towards the cross-sealing station. The narrow design of the cutting head improves sealing performance and creates tight seals.

The system can be accessed from all sides for fast and easy cleaning and maintenance. Machine parts in contact with the product are made of stainless steel, and the open design allows crumbs and rejected products to fall through or be removed easily.

The system allows quick format changes, and when a product is missing, the machine and the infeed stop to avoid empty packages.

The system can package rectangular, square and round products, as well as sandwich biscuits, and can be equipped with up to 10 vibratory channels. The modular design allows for scalable solutions and layout flexibility.

Bosch Rexroth Pty Ltd

www.boschrexroth.com.au



Robot-assisted packaging automation system

Hugo Beck has released a robot-assisted automation system for horizontal film packaging.

The fully automated feeder system can be integrated across sectors into the packaging line of companies from the post-print processing, pharmaceutical, medical device, cosmetic and food industries. With a load-bearing capacity of up to 8 kg, the robot locates, sorts and dispenses a diverse range of 3D products and packaging in large or small quantities. Its washdown design, IP65 rating and corrosion protection provide maximum hygiene standards.

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How is smart packaging smart?

*Prof Pierre Pienaar MSc, FAIP, CPP, Education
Director - AIP, Vice President Education - WPO*



Intelligent packaging is an extension of active packaging. While active packaging is designed to take action in order to extend the shelf life of a product — such as releasing or absorbing substances, thereby extending the duration of high quality for any given product — intelligent packaging goes further. Here, the purpose of the design is to monitor the condition of the product and to communicate to the consumer any changes in the product.

Intelligent packaging should provide more reliable information than just the expiry date printed on the packaging. It should monitor certain aspects of a food product (for example, shelf life) and report information to the consumer. Some of the chief purposes of the intelligent packaging system are to improve the quality or value of a product, to provide more convenience or to provide tamper or theft resistance to the pack.

There are currently three major types of intelligent packaging technologies employed:

- Sensors (biosensors, gas sensors).
- Indicators (temperature, freshness).
- Data carriers (barcode, radiofrequency identification or RFID).

There is a great variety of indicators used in each of these types, which shows great opportunities for developments.

As an example, time-temperature indicators (TTIs), one of the commonly used indicators, can be classified as:

- biological
- physicochemical
- chemical
- enzymatic
- diffusion-based
- polymer-based.

Time-temperature indicators

Diffusion

Based on Fick's law, diffusion-based TTIs are widely used. The diffusion rate of a liquid material is higher at higher temperatures and the extent of diffusion shows the total influence of environmental temperature.

Chemical

The applied principle of chemical TTI is a temperature-dependent chemical reaction. This type of TTI includes polymerisation-based, photochromic-based redox reaction-based TTI depending on the different reactions utilised.



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Biological

This relates to biological reactions referring to enzymes or microorganisms. Enzyme-based indicators present colour change caused by the reaction between enzymes and substrate with a pH change. One part includes lipolytic enzyme solution, lipase and a dye with pH indication. The other part is a substrate, predominantly triglyceride. The indicator will be activated when the gap between enzyme and substrate is broken so that two parts are mixed.

Photochemical

This type of intelligent packaging contains thermochromic ink consisting of dye, reagent and solvent. UV light activates the indicator because the ink absorbs photons with certain wavelengths, and activates them to excited states and forms free radicals or ions.

Controlled permeability packaging

A less expensive alternative to modified atmosphere packaging (MAP) is controlled permeability packaging (CPP). In this type of packaging, no gas is flushed out or injected, but rather the produce is packaged within a film that controls the quantity of O_2 and CO_2 flowing into and out of the package. This type of packaging is suitable for small-scale suppliers in developing countries, where pure MAP might result in the product cost being too high for the average consumer. This packaging produces shelf-life results close to, but not as high as pure.

Controlled permeability packaging could be the solution to food waste, especially in developing countries where suppliers might not be able to afford pure modified atmosphere packaging machinery and processes, and also where the average consumer might not be able to afford modified atmosphere packaged produce.

Nanotechnology

Nanotechnology is a form of active packaging that utilises bio-nanocomposites consisting of nanoparticles embedded into a biopolymer matrix — with dimensions less than 100 nm.

Antimicrobial nanoparticles

Antimicrobial action of silver nanoparticles

The antimicrobial action of silver nanoparticles is attributable to their high surface area-to-volume ratios which favour their interactions with microbial cells. These silver nanoparticles cause direct damage to the cell membranes of harmful microorganisms by interacting with negatively charged biomacromolecular compounds with disulfide or sulfhydryl groups and nucleic acids. This results in cell membrane deformation, inactivation of metabolic processes and cell death.

Barrier properties of nanoclay

Nanoclays consist of montmorillonite silicate layers also known as nanoplatelets which are in a stacked arrangement with a nanometric thickness of 1 nm and a structural dimension of 100 nm.

These nanoclays are incorporated into the matrices of a polymer to delay the flow of gases such as O_2 and CO_2 from the external environment to the internal environment. Nanoclays exhibit excellent barrier properties due to their high rigidity, aspect ratio and affinity as a result of the interfacial interaction between the matrices of the polymer and the dispersed nanoclay.

Nanosensors

Nanosensors as microorganism detectors

Nanosensors are excellent microorganism detectors as they are able to monitor the safety and quality of food products at various stages of the food supply chain. These sensor systems have the ability to accurately detect food spoilage or microbial contamination in food by interacting with the external and/or internal environment of the food, thus producing a response in the form of a visual signal such as colour indicators on nanosensor labels which correlate with the current state of the food product.

Active and intelligent packaging are the ultimate aspects that extend food shelf life, enhance quality, ensure safety and monitor or acquire information regarding product performance through the supply chain. Nanotechnology has the potential to be the next 'big thing' in the science of smart packaging.

Australian Institute of Packaging
www.aipack.com.au

Anti-counterfeit cap for wine and spirits

Amcor Capsules and Selinko have collaborated to launch InTact, a connected overcap to protect wines and spirits against counterfeiting and fraudulent refilling.

Using an NFC (near field communication) smartphone or device to tap the chip embedded in the tag, any industry player or consumer can verify the authenticity of their bottle, verify its status (opened/not opened yet) and get information about the product (vintage, production, history, serving tips, etc) as well as the brand.

The platform also allows brands to better control their distribution network to detect grey markets by involving the end consumer as final controller. The level of security of the NFC tag can be adapted to the brand needs and budget: from no security for marketing engagement for instance up to bank-level security.

The overcap is a ready-to-cap solution that requires no change on the bottling line, while the discreet integration of the tag allows brands to maintain their premium image.

Amcor Global
www.amcor.com.au



Bottle filler

The KHS InnoFill Glass DRS filler is a flexible inline machine for up to 75,000 bottles/h, providing hygienic filling with low CO₂ and product consumption.

The machine incorporates pressure sensors in each filling valve to monitor the filling process.

In brewery applications, optimised high-pressure injection utilises foam measurement via a camera and the central fill-level adjustment unit, ensuring precise filling volumes and minimised beverage loss.

A camera on the crowner checks and records the foam formation. Operators are informed by the system if there is either too much or too little foam and badly foamed bottles are automatically channelled out. An intelligent post-regulation unit is also available.

The hygienic crowner is easier and quicker to clean than in previous models and short conversion times are enabled by the quick-lock system for format parts.

The process valves and sensor technology are all monitored. The operator can recognise the status of the process valves through local status indicators.

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How MEG is increasing its regranulate quotas

Germany's second-largest beverage producer Mitteldeutsche Erfrischungsgetränke GmbH & Co. KG (MEG) is part of the Schwarz Group that also owns the Lidl and Kaufland supermarket chains. The soft-drinks producer has domestic sales of more than 25 million hectolitres and also exports its wares throughout Europe.

Since 2010, MEG has taken back the deposit-bearing, non-returnable bottles from the DPG system (German deposit system; Deutsche Pfandsystem) handed in at Lidl and has been having these processed into regranulate at its own recycling plant and at various contract recycling companies. Needless to say, this regranulate has to meet the most stringent of quality stipulations. So as to be able to increase regranulate quotas still further, MEG is building another recycling plant near Aachen.

As part of this project, Krones was awarded the order for the installation of a module that grinds bottles into flakes, and of a washing module.

The intensive and technologically sophisticated washing process implemented in the Krones system was for MEG one of the key elements for assuring top-class flake quality. What's more, MEG likewise appointed Krones as the vendor

responsible for the interfaces to the upstream and downstream process steps, in view of Krones' extensive experience in completing turnkey projects.

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



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AUSPACK is a 'must attend' event for everyone in the food and business processing and packaging industries.



More than 1200 brands in the processing, packaging, materials, components and materials handling sectors will be on display at the Sydney Showground, at Sydney Olympic Park, from 7–10 March (incl). Set to be the biggest show in its Sydney history, AUSPACK 2017 will see more than 350 exhibitors demonstrate and explain their products and services to an expected 6000 visitors.

This AUSPACK will be the largest ever for Sydney and it is including lots of new event features, an all-inclusive educational program, awards, networking opportunities and more.

Packaging is getting smarter all the time — make sure you are too

Currently estimated at \$5.3 billion globally, and expected to reach \$7.8 billion/year by 2021, smart packaging is an important growing trend. At AUSPACK you will be able to find out about all the latest equipment, trends, themes and directions in both active and intelligent packaging. And you can do it all in one place!

Australian companies exhibiting at AUSPACK are developing solutions for brand owners that enable the development of experience-rich marketing campaigns; relay vital information on nutritional content and product provenance; and provide a platform for authentication, traceability and brand protection.

Big on food processing as well

Wednesday, 8 March will be the inaugural Processing Day at AUSPACK 2017.

"Each show we grow the processing side of AUSPACK and this will continue in 2017 with more exhibitors providing more processing machinery and solutions than ever before. Processing Day will be launched as part of AUSPACK, highlighting the latest and best the industry has to offer," explained Luke Kasprzak, Portfolio Director – Industrial Division, Exhibitions and Trade Fairs.

"Multiple processing events will be held throughout the day with dedicated educational sessions, workshops, meet-

ings and networking gatherings. Processors and processing machinery suppliers will discuss issues industry is currently facing and learn how the latest technology can help them to overcome those.

"The processing equipment side of AUSPACK continues to grow with more processing content than ever before. This will add true value to the visitor experience at the show so we encourage anyone involved in processing to register and attend this main event for processing and packaging industries."

Networking through THE NETWORK

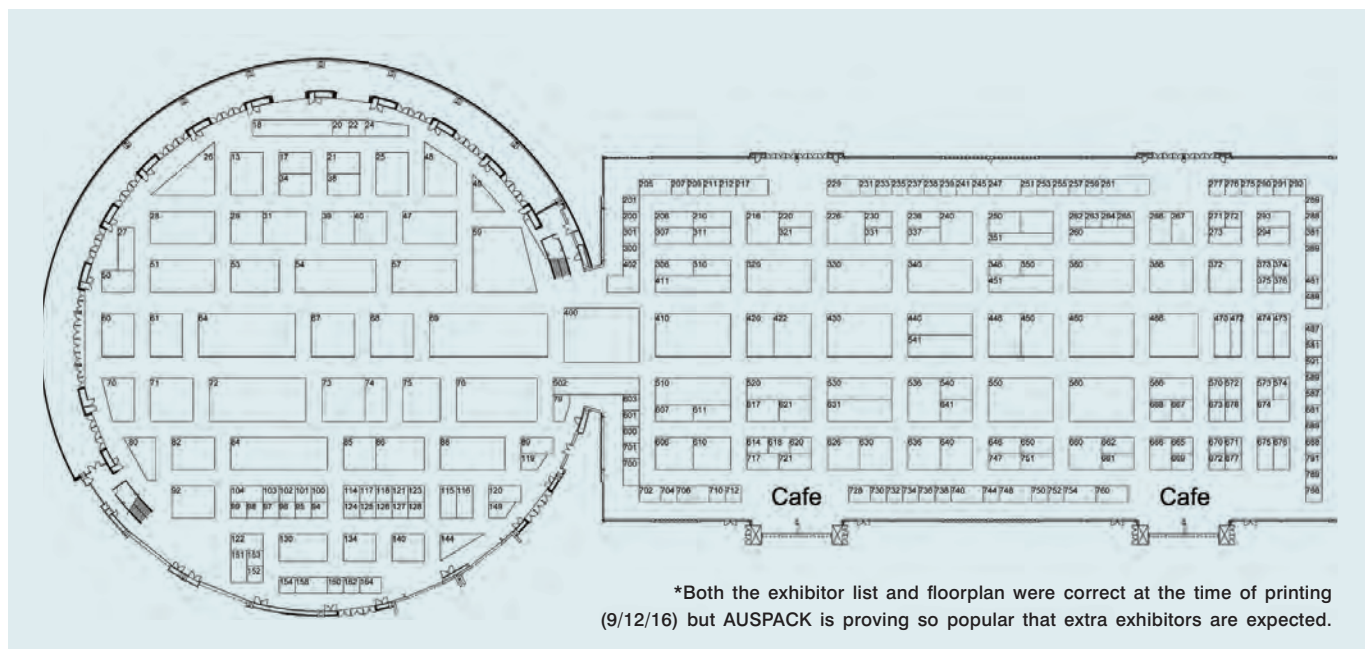
'THE NETWORK' is an international network of processing and packaging trade shows that the Australian Packaging and Processing Machinery Association (APPMMA) via its exhibition, AUSPACK, has joined.

AUSPACK will now cross-promote THE NETWORK to its members, facilitate relationships and encourage the sharing of experience among major international events including:

- ALL4PACK — Paris, France (COMEXPOSIUM Group)
- AUSPACK — Sydney, Australia (APPMMA/ETF)
- DJAZAGRO — Algiers, Algeria (COMEXPOSIUM Group)
- HISPAC — Barcelona, Spain (FIRA BARCELONA)
- KOREA PACK, KOREA MAT, KOREA CHEM, COPHEX — Seoul, South Korea (KPMA/KYUNGYON Exhibition Corp)
- PACK PLUS — New Delhi, India (PRINT PACKAGING.COM (P) Ltd)
- PACK PLUS South — Bengaluru, India (PRINT PACKAGING.COM (P) Ltd)
- 3P PLAS PRINT PACK — Lahore, Pakistan (FAKT Exhibitions Pvt Ltd)

Register online now

Attendance at AUSPACK is free — register online at www.auspack.com.au now so you will be able to walk straight in and start discovering what you need to make your business more efficient and profitable.



Exhibitors and floorplan*

Exhibitor	Stand number	Exhibitor	Stand number	Exhibitor	Stand number	Exhibitor	Stand number
3M	630	CP Packaging Industry Co/CP		Hybrid Software	140	National Weighing	674
A&D Weighing & Inspection	70	Poly-Industry Co	587	Icon Equipment International	206	NDA Engineering	277
AAA Packaging Supplies	311	CPS	51	ifm efector	721	Netzsch Australia	688
AB Autopack	700	Crafrers Group	747	InControl Hygiene	262	Nordson	226
ABB Australia	502	CS Machinery Co	20	Industry Update Media	581	NSK Australia	603
AccuWeigh/AccuPak	92	Dandong Mingcheng		Industrysearch.com.au	650	Nupac Industries	430
Adept Turnkey Vision Systems	50	Environmental Protection		Innpack Suzhou Co	782	OFS	272
ADM Packaging Automation	440	Products Co	736	Inside FMCG	704	Omniverse Group	27
Aerofloat - Wastewater		Dansensor - Pryde		insignia	410	OMS Australasia	474
Treatment Specialists	79	Measurement	289	Integrated Machinery /		Oriental Packing	144
AmbaFlex Spiral Conveyor		Datalogic Automation	321	Sinolion	446	Packaging and Food	738
Solutions	120	Department of Industry,		Intralox	86	Packaging Council of New	
Anderson Wholesale		Innovation and Science	207	ITW Zip-Pak Australia	17	Zealand	153
Packaging	233	Eletric 80	216	Jet Technologies	660	Packline Solutions	372
APPMA	60	Elliott Automation	160	Jialong Group	381	Packsizes	39a
Approval Laboratories	744	Emrich Packaging Machinery	28	JL Lennard	320	Packweigh Equipment	247
Asafe Australasia	646	Enterline Packaging Solution	712	JMP Engineering	411	Paksmart Machinery	402
ATS Applied Tech Systems	481	Environmental Control		Johns Adhesives /		Perfect Packaging	48
Aupacific Co	257	Products	748	Beardow Adams	230	PerForm-Meypack-Kliklok	636
Aurora Process Solutions	541	ErgoPack Australia	245	Joseph Lee & Co	261	PharmEquip	600
Australian Institute of		Eriez Magnetics	601	Keneng Packaging	620	Phillro Industries	346
Packaging (AIP)	122	Ernest Fleming Machinery		KHS Pacific	702	Pilz Safe Automation	730
Australian Wrapping		& Equipment	240	Kiel Industries	621	PKN Packaging News +	
Company	360	Esko Australia	84	Kockums Bulk Systems	75	Food & Drink Business	151
Australis Engineering	67	Falsdell Machinery	510	Koelnmesse	618	Polytj	201
AutoCoding Systems	450	Fanuc	530	Krones Pacific	330	Pressco Technology Inc	681
Automaint Solutions	68	FB Propak	76	Krueger & Salecker	717	Print & Pack Australia	307
Avian Granulator Group	760	Fibre King	71	Kuka Robotics	53	Prior Packaging	267
Axellent Automation & Safety	626	Filling Machines Australia	607	Label Power	487	Product Identification	
Barry-Wehmler Australia	29	Fletcher International	732	Lachenmeier / Bliss & Reels	466	Solutions	610
BCDS Group	706	Flo-gineering	689	LD Packaging	310	Propac Industrial	47
Beagle Pack	728	Food & Beverage Asia	200	Leussink Engineering	276	ProPak Events	673
Biofiba	290	Food and Beverage Industry		Leuze Electronic	116	Proseal Australia	420
BioSteam KHD Belt Cleaning	300	news	231	Lighthouse Systems	754	Qimarox	34
Biotech Solutions	460	Foodmach	260	Linco Food Systems	54	QLM Label Makers	292
Blueprint Automation	25	Foster Packaging	337	Machine Knives (Aust)	570	QPM Packaging	236
Busch Vacuum Pumps and		FPC Industry Co	789	Magnattack Global	366	Qualicaps Co	788
Systems	134	Fromm Packaging Australia	560	Makum	641	Recopak Machinery	130
C21 Systems	751	Fujian Henglong Plastic		Martor Australia	235	Regethermic	306
Cama Australia (Cama Group)	550	Industrial Co	710	Matthews Australasia	59	Result Group of Companies	38
Case Packing Systems	31	Fulun Packing Manufacture	489	Metro Plastic Manufacturer		Retailquip	164
CDE Design Solutions	669	Global Packaging	229	SDN BHD/Malaysia	734	Rhima Australia	451
CGP Coating Innovation	566	GMD Innovation	750	Milliken Chemical	21	RK Rose & Krieger	301
Chart Inc	220	Grain Tech	389	Millsom Materials Handling	470	RML Engineering	422
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Package leak tester

Bestech Australia's TSE6086B is a non-destructive package leak tester that conducts package leak testing in as little as 5 s. The aim is to ensure the quality of finished products and improve their shelf life, thus contributing to a greater guarantee of product compliance.

The benchtop model can detect holes (leaks) as small as 10 µm in diameter, with a chamber design that allows sensitive measurement without stressing package contents. The leak testing equipment is suitable for testing biscuits, snack foods, salad, MAP packs, milk powder, medical bandages and pharmaceuticals.

The testing chamber is designed to fit most package sizes found in the supermarket. Finished products are placed manually and the handle is closed to initiate a fully automatic test sequence. Results are displayed with Pass or Fail lamps, along with a quantitative measure of the leakage rate. Results are logged into a spreadsheet-importable format to PC for trend analysis and traceability.

The company also offers traditional water bath leak testers and modified versions based on customers' specifications.

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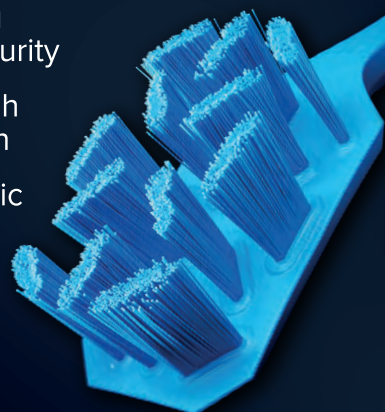


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2017 AIP National Technical Forums

Alongside AUSPACK, the Australian Packaging & Processing Machinery Association (APPMA) and the Australian Institute of Packaging (AIP) will be hosting the 2017 National Technical Forums.

This three-day educational program will cover a broad range of topics relating to the theme 'Innovation & Design' and feature a range of national and international speakers.

Appealing to those in management positions (including design, development, marketing, production, engineering, supply chain and logistics personnel), as well as equipment suppliers, raw material providers, users of packaging, retailers and consumers, the forums will add depth and networking opportunities to those visiting AUSPACK.

Topics likely to be covered in the forums include:

- Packaging and processing innovations Machine vision inspection systems
- Total cost of ownership
- Sortation systems — test, measurement and detection equipment
- Palletising systems — pallet handling and depalletisers
- Weighing systems — scales, balances, checkweighers, analysers and feeders
- Innovative batching, bottling and bundling systems
- Carton erectors, sealers and handlers
- Case handling, packing and sealing systems
 - Food & beverage innovations & designs Modified atmosphere packaging (MAP)
- Nanotechnology
- Chemical migration from packaging into food
- Ease of opening/accessibility
- Antimicrobial packaging
- Sustainable packaging designs
 - Robotics and automation solutions
 - Primary packaging
 - Materials
 - Responsible packaging
 - Food waste
 - Active & intelligent packaging
 - Tamper evidence the internet of things
 - 3D printing
 - Retail ready packaging

- Packaging printing
 - Eco design tools
 - Australian innovations for the export market
 - The 2017 AIP National Technical Forums will be held as a part of Packaging & Processing Week at the Sydney Showground, Sydney Olympic Park, from 7–9 March 2017.
- Visit aipack.com.au/event-registration to show your interest in attending this event now.

Gala PIDA Award Dinner

The AIP and the APPMA have established the Packaging & Processing Innovation and Design Awards (PIDA) for Australia that recognise companies and individuals who are making a significant difference in their field.

The PIDA Awards are the exclusive award program for all Australian entries into the prestigious WorldStar Packaging Awards.

The Design Innovation of the Year company awards recognise organisations that have designed innovative packaging and processing materials, innovative packaging and processing machinery and equipment within the food, beverage, health, beauty and wellness, and domestic and household sectors.

In each of these four categories there will be an award given for: Materials & Packaging and Packaging Machinery/Equipment.

In addition there will be two company awards — the Sustainable Packaging & Processing Award and the Save Food Packaging & Processing Award.

Individual awards will recognise people whose have made specific contributions to the packaging and processing industry.

- Young Packaging & Processing Professional of the Year
- Industry Packaging & Processing Professional of the Year
- The APPMA Scholarship, which gives one person the opportunity to enrol in the Diploma in Packaging Technology; an internationally recognised and accredited course.

All award winners will be announced during the PIDA Gala Dinner. To register to attend the dinner, visit aipack.com.au.

Australian Institute of Packaging
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INNOVATION & DESIGN NATIONAL TECHNICAL FORUMS

7-9 MARCH 2017

in conjunction with AUSPACK 2017
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MARK THESE DATES IN YOUR DIARY!

Following a number of highly successful events that have been run over the last seven AUSPACK exhibitions, the 2017 National Technical Forums will be designed to deliver a three-day educational program relating to the theme Innovation & Design. The AIP and the APPMA intend to break the National Technical Forums into breakout sessions, to ensure that a diverse range of issues and topics are covered over the three days.

The 2017 Packaging & Processing Week National Technical Forums will attract delegates from all facets of the packaging and processing industry of both technologist and management levels (such as design, development, marketing, production, engineering, supply chain and logistics personnel) to equipment suppliers, raw material providers, users of packaging, retailers and consumers. All of industry is invited to attend.

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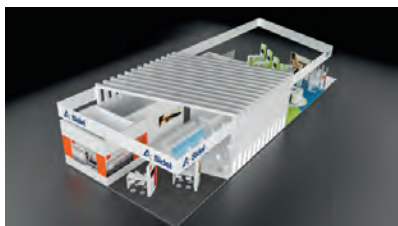


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PET bottling equipment

Sidel has a full range of production equipment and services for liquids in PET.

The Sidel Matrix system provides a complete line solution for CSD (carbonated soft drinks) applications, with particular emphasis on line flexibility, product integrity, production efficiency and consumption reduction.

Sidel Services helps producers increase the value of their beverage production, lower energy consumption and optimise production efficiency and sustainability.

Packaging solutions such as Sidel Actis technology for PET bottles are designed to extend beverage shelf life while offering potential for packaging lightweighting.

Sidel Oceania Pty Ltd

www.sidel.com

Antimicrobial absorbent packaging

Sirane has launched a range of antimicrobial absorbent packaging. The AB technology — ABM for meat, ABS for seafood and ABV for fruit — contains a blend of natural bio-flavonoids and organic acids which work together to extend shelf life. Together with the inherent absorbency already offered within the pads, they offer high protection and shelf-life extension.

The technology can be supplied as standard absorbent pads or incorporated into the company's other pads including standard absorbent meat pads, compostable pads, absorbent cushioned pads for soft fruits and absorbent ovenable dividers.

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Shrink bags for meat

Coveris has launched its Nextrus Boneless Shrink Bags for meat packaging.

The bags feature premium gloss that creates a low level of haze, allowing the product to be viewed with maximum clarity and visibility.

The product's shrink capabilities allow for vacuum tightness with less packaging, an eco-friendly alternative to other products.

The resins used have been improved to be more environmentally friendly. They provide seal integrity by reducing leaks and providing puncture resistance and oxygen and moisture barriers, so products look fresher and are protected during delivery.

The bags use a barrier system that eliminates the potential for the yellowing tendencies of traditional protein packaging solutions. The outside PET layer and 10-colour front and back printing promotes the product brand and attracts customers to the package.

Coveris Australasia

www.coveris.com



Weigher/fillers

ERC Packaging has released a range of weigher/fillers that are suitable for products including powders, grains, granules and mixed products such as nuts and dried fruit.

The 60 L hopper feeds a 3-stage vibration flow tray that in turn feeds a weigh station hopper. The HMI screen can be programmed with predetermined weight parameters, simplifying changeovers to different products and/or weights. The standard

machine will accommodate weights from 100 g to 2 kg, subject to product type and density. Other weight ranges can be made to suit.

All food contact parts are made from stainless steel. The machines have a small footprint of less than 1 m² and stand just under 2 m in height. The hoppers can be hand filled, or bucket or auger feeders can be fitted and supplied. The units can include a built-in bag sealer so that bags can be sealed immediately after filling. Other fillers such as auger and liquid are also available.

ERC Packaging

www.ercpackaging.com.au



Pilz Safe Automation: The Next Generation

Pilz has expanded its new PNOZ Multi range to include the new mB0 & mB1 safety controllers. The new base units offer significantly higher performance especially for machines that require a greater range of safety functions. As well as providing a large array of customisation & expansion, to easily meet all customer safety requirements, especially when integrating it into any type of manufacturers standard control system or PLC.

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Where filling technology is heading in 2017



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How do you get your carefully produced beverage into its transport packaging, in precisely the right quantity, in a safe and hygienic way, as gently as possible and above all efficiently? This, in essence, is what it's all about in the discussion about the right filling technology.

Three major trends are emerging in filling technology:

- 100% product safety through consequent hygienic design
- Maximising the filling performance
- Strengthening sustainability and reducing consumption of media

"This is being made possible through continuous improvements along the entire product route, for example, by increasing the degree of automation of filling valves or by using intelligent filling valve components," explained Thomas Ricker, director at Krones.

A block configuration, mechanically and electronically combining individual machines into a single unit, has also proved to be an excellent tool in further optimising filling processes. The inline production of PET containers and immediate filling without intermediate conveyors also facilitates the use of lightweight bottles.

"In filling, PET bottles are becoming increasingly important. With suitable coating processes the optimum qualities of glass can be combined with the weight advantages of the PET bottle," said the chairman of the executive board of KHS, Dortmund, Professor Dr.-Ing. Matthias Niemeyer. Innovations like a lightweight 1-litre PET bottle for milk and milk-based beverages underlines this drive. It can be filled aseptically, it protects the product, reduces production costs and is fully recyclable. Niemeyer also sees efficiency and flexibility benefits for the user through direct connection of the blower, labeller and filler. These benefits are especially clear in the case of the high-performance requirements of the global players.

At least for the filling of sensitive, weakly acid beverages in PET containers, aseptic seems to be emerging as the favoured option. Already a wide variety of choices are being offered by the manufacturers and used by the fillers, always carefully targeted to the specific application. Whether cold-aseptic filling with paracetic acid or dry-aseptic filling with hydrogen peroxide, whether sterilisation of the finished container or already of the preform, whether an individual machine or blocking of units — the best solution for the application depends on the requirement criteria of the operator.

In aseptic filling in particular, developments can be expected to increase the flexibility of the system concept, in expanding the performance levels and using sterilisation technologies that help reduce the overall consumption of a system. Given the rising number of products, the availability of a system is a key theme, especially in aseptic filling. Availability is expressed in the total cost of ownership (TCO), a parameter that fillers are having to pay more close attention to.

In dry-aseptic filling, preform sterilisation is state of the art; in wet sterilisation it's about further reducing media consumption.

To find out more, consider going to drinktec 2017, a world-leading trade fair for the beverage and liquid food industry. You will be able to see all the technological developments and filling innovations for glass, PET, cans and cartons for producing and processing beverages, milk and liquid foods at drinktec in Munich from 11–15 September 2017.

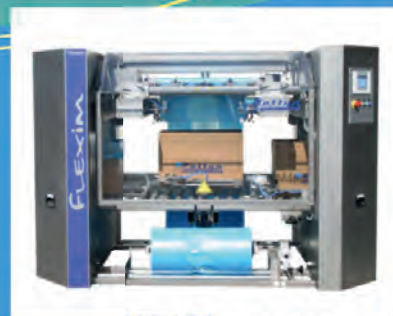
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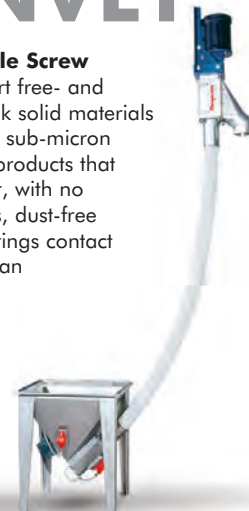
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