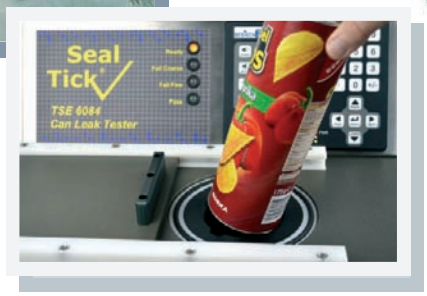
BESTECH

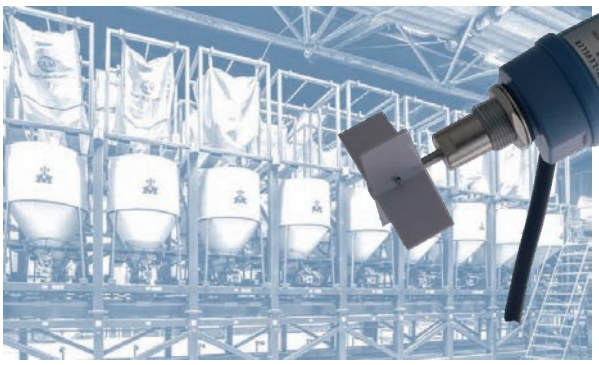
Sensors & Teaching Equipment

Underwater Vacuum Test

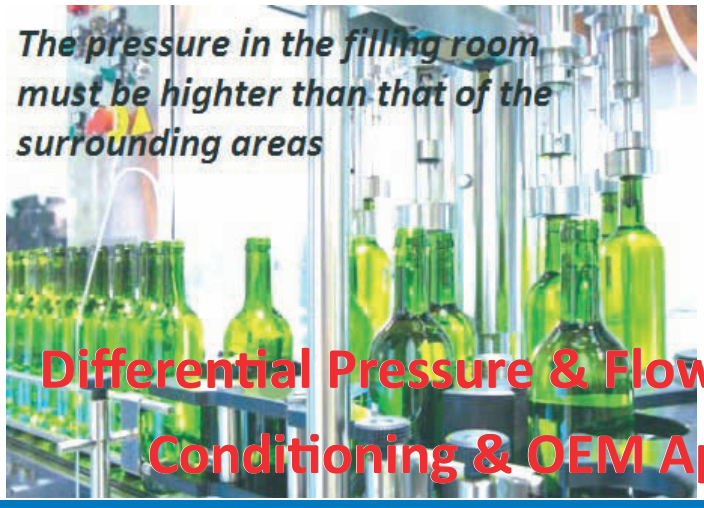


Seal Integrity of Canned Goods

Leak Testing for Pillowcase & Can Packaging Foods



Rotating Paddle Bin Level Sensor, Liquid Level Switch & Radar Sensor for Tank Level Controls



Differential Pressure & Flow Measurement in Cleanrooms, Air Conditioning & OEM Applications, Maintenance Free

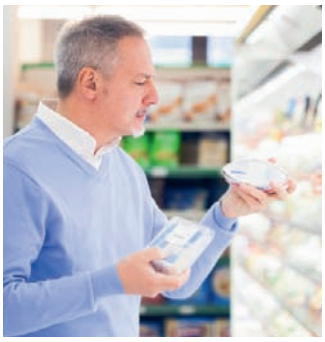
PH: (03) 9540 5100 Email: Enquiry@bestech.com.au www.bestech.com.au

contents

March/April 2016

6
food for thought

11
processing



45
packaging & labelling

55
beverages

60
testing

65
bulk handling, storage & logistics

Front cover pic © Alexlukin/Dollar Photo Club

READ ONLINE!

This issue is available to read and download at

www.foodprocessing.com.au/magazine

Stopping foodborne bacteria at the source

An antimicrobial effective against *Campylobacter jejuni* may offer poultry and meat processors a way to safely extend shelf life and minimise the risk of foodborne disease.

Photo: Beth Wynn

Chander Sharma innoculates a chicken breast with foodborne bacteria. Scientists are testing different compounds to combat bacteria and increase shelf life.

Salmonella and *Campylobacter* cause foodborne disease in millions of people every year, possibly because both bacteria are present in healthy poultry and beef.

While good food handling practices and thorough cooking by consumers usually prevent the bacteria from causing illness, a more effective control would be to rid poultry of these common bacteria before they ever leave the processing plant. Scientists at Mississippi State University are working to do just this.

They recently tested the use of lauric arginate, an antimicrobial compound approved by the USDA, as a processing aid to assist in the fight against *Campylobacter jejuni* (*C. jejuni*) and *Salmonella*. The scientists are also researching if the compound extends the shelf life of poultry, which is currently limited to about a week.

"Lauric arginate has been tested against various foodborne pathogens including *Listeria monocytogenes*, *Salmonella* and *E. coli*," said Chander Sharma, Mississippi Agricultural and Forestry Experiment Station researcher and assistant professor in the Department of Poultry Science. "However, there is limited data on the use of lauric arginate against *Campylobacter* in the meat system."

Foodborne illness from *C. jejuni* affects nearly one million people each year. To determine the effectiveness of lauric arginate against *C. jejuni* and *Salmonella,* scientists conducted a series of experiments.

The first experiment tested the effectiveness of the preservative on a pure culture of *C. jejuni*. Samples of the bacteria were placed in a test tube along with varying solutions of the preservative. Lauric arginate was very effective at destroying the bacteria with no detectable survivors.

Scientists then coated the outside of raw chicken breast fillets with *C. jejuni*, treated it with lauric arginate, then packaged and refrigerated the meat for a week.

Samples were taken periodically to determine if lauric arginate was effective in removing the bacteria.

"At day seven, we had a 94 to 95% reduction of *Campylobacter jejuni* in the inoculated chicken breast," Sharma said. "The preservative reduced *Salmonella* by 80 to 90%."

Findings show that lauric arginate is very effective at controlling *C. jejuni* in raw poultry products. It is also good at controlling *Salmonella*, Sharma added.

"Poultry processors chill birds immediately after slaughter to prevent bacterial growth either through air chilling or water chilling," Sharma said. "Lauric arginate may be applied during post chill to control foodborne bacteria."

In a separate experiment, scientists treated raw chicken breast fillets with lauric arginate to determine if the preservative extends the shelf life of poultry.

"The shelf life of poultry is typically seven days, and when you consider the transportation of poultry — from processing to retail grocery store to your home — poultry has a very short shelf life," Sharma said.

To determine if the shelf life is extended, scientists measure mesophilic bacteria — those responsible for decomposition — and psychrotrophic bacteria — those responsible for spoilage of refrigerated food.

The preservative had little effect on these bacteria, suggesting that further work may need to be done with higher rates of application considered.

With consumer demand for poultry and non-preservative-based foods increasing, scientists are also studying the use of bacteriophage in poultry processing. Bacteriophage is a virus that attacks bacteria. It is very specific in targeting its host.

"In our trials, we found bacteriophage reduces *Salmonella* by 90% in chicken and turkey meat when applied during the post chill processing," Sharma said. "More research is needed but bacteriophage may be the answer to a non-preservative-based additive to assist in the fight against foodborne illnesses."

When applied sequentially with other USDA-approved antimicrobials, bacteriophage reduced *Salmonella* by 99%, Sharma added.

BEHIND EVERY SATISFIED CUSTOMER

THERE'S A DISTRIBUTOR YOU CAN COUNT ON

As the world's leading high-service distributor of electronics, automation and industrial products, we do more than provide quality parts at competitive prices. With our dedicated customer service team, expert technical support and award-winning design tools and resources, you can count on us for all the extra support you need.

au.rs-online.com

Food FOR thought

Seafood consumption soars, but where are the profits?

Australia's love of seafood is tipped to continue, with overall seafood consumption tipped to rise by 3.7% over the next 5 years, according to recent industry reports released by IBISWorld. However, this demand is not forecast to fully translate into growth in our fishing and aquaculture sectors, with industry challenges expected to dampen revenue expectations.

Fishing challenges

The IBISWorld report on fishing in Australia cites ongoing fish stock depletion, increasing competition from imports and seafood farming, rising operating costs, and stricter regulation of catch quotas as key factors that will restrict industry revenue, which is forecast to grow by just 0.9%, from $1.46 billion in 2015–16 to $1.52 billion in 2020–21.

Rock lobsters are the largest contributor to revenue, accounting for 32.6%, followed by fish at 32.4%, crustaceans including prawns, crabs and crayfish at 20.1%, and molluscs including abalone, octopus, scallops and squid at 14.9%.

Fish caught by industry operators accounts for the largest share of production at more than 70% by tonnage. However, increasing competition from Australia's aquaculture industry, particularly in providing popular fish products such as salmon and trout, has resulted in the fish segment decreasing as a share of revenue over the past five years. Sardines are the largest contributor to the industry's fish production volumes, followed by tuna, shark and flathead.

Aquaculture outlook

In the face of ongoing declines in national and global fishing stocks, aquaculture is emerging as one of Australia's most lucrative primary industries, accounting for just under 35% of all fishery production in Australia but approximately 45% of total fishery value, with production increasing at an annualised 4.1% over the past five years. The industry benefits from maintaining a more consistent supply of popular species, such as salmon, due to controlled farming environments. Salmon and trout account for nearly 50% of industry revenue, followed by tuna, edible oysters, pearl oysters, crustaceans, and other fish and molluscs.

However, the IBISWorld aquaculture report highlights rising industry operation costs, such as fuel and wage expenses, as key factors that are negatively affecting profit margins.

Juremont now exclusive Barry Callebaut agent

After many years of association with Barry Callebaut, leading global cocoa and chocolate producer Juremont has won the exclusive Australian agency to supply cocoa powder, butter and liquor to the Australian food manufacturing sector from March 2016.

Juremont has become a significant player within the Australian food scene supplying cocoa product to the nation's largest food manufacturing companies. As a result, cocoa product sales will double over the next 12 months with the range now including premium brand Bensdorp and specialty cocoa liquors.

"Given the current volatility of the cocoa commodity market, it's critical we keep our clients informed around price and supply issues," Juremont Commercial Director Andrew Rolle advised.

This boutique business was established by MD Stuart Rolle 25 years ago in the lounge room of his home in Victoria's eastern suburbs. Originally Stuart saw a gap in the market for icing sugar and blended food ingredients building a factory/mill to meet local and national demand. After 15 years of success, Tatefield was sold to CSR, which led to a sole focus on the Juremont business.

Stuart's hands-on approach to business development and sales saw a significant growth in the product range expanding to sugar, gelatin, IQF, dried fruit and vegetable products and flavours.

Juremont is now a second-generation family business with Andrew Rolle as commercial director and Lisa Pfisterer (nee Rolle) as senior business manager. Their small team is aggressively growing business based on a commercial approach whereby customers and suppliers gain mutual benefit and solution-driven service and advice.

© FreeImages.com/Margaret Young

Mettler-Toledo to open in NZ

Global weighing instruments manufacturer Mettler-Toledo has announced it will commence operation in New Zealand, following its purchase of the main business assets of Ansutek.

Effective from 1 January 2016, Mettler-Toledo will market, sell and service product inspection, industrial weighing and vehicle weighing equipment directly in New Zealand. Mettler-Toledo's laboratory equipment will continue to be distributed by VWR.

All Ansutek Management, field sales, field service and engineering staff will transfer to Mettler-Toledo New Zealand and will keep their current responsibilities. Andy Cashen (Ansutek Owner) will join Mettler-Toledo in the position of country manager New Zealand, reporting to Andrew Bick, Mettler-Toledo's head of region Japan/Pacific and general manager of Australia and New Zealand.

Less meat = less heat, 'Meatless Monday' advocates say

While the focus of the COP21 in Paris has been on the goal to limit global warming to 2°C, scientists have urged world leaders not to overlook the climatic implications of burgeoning global rates of meat consumption.

The 'Meatless Monday' movement has grown from a campaign in 2003 by former ad exec Sid Lerner to promote the health and environmental benefits of cutting out meat one day a week to now include other global benefits like reducing climate change.

"Unfortunately, the connection of meat consumption to climate change is not garnering the serious attention it deserves," said Roni Neff, PhD, attending director of the Food System Sustainability Program at the Johns Hopkins Center for a Livable Future (CLF) and an assistant professor with the Johns Hopkins Bloomberg School of Public Health.

At COP21, representatives from 15 countries including the US, Israel, Korea, Denmark, Nigeria and Kuwait have joined leading scientists, politicians and chefs at a Meatless Monday session to underline the link between meat and climate change and the impact that simple dietary changes, like going meatless one day a week, can make in slowing global warming. CLF researchers presented a review of peer-reviewed research that suggests GHG emissions in 2050 from agriculture alone will total over 20 gigatons (Gt) if current meat consumption grows with GDP as the FAO predicts. This accounts for almost the entire emissions budget of 21 Gt, leaving little room for emissions from other sectors.

Meatless Monday advocates say that studies suggest that the annual savings in GHG emissions in 2050 if everyone went meatless one day a week could be 1.3 Gt, the equivalent of taking over 273 million passenger vehicles off the road or closing 341 coal-fired power plants.

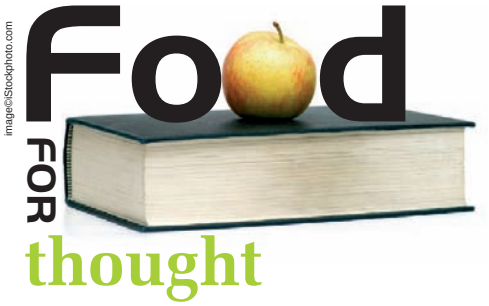
© iStockphoto.com/Lauri Patterson

Ungerer Australia enjoys the sweet smell of success

Following significant growth during 2015, flavour and fragrance company Ungerer Australia has been busy on the recruitment front, announcing several new appointments:

- Prue Coleman has been appointed laboratory manager.
- Jayne Du has been appointed QA/QC supervisor.
- Reiko van der Nest, after 12 months as deputy general manager, has now officially been appointed to the responsibility of general manager.

To accommodate the increased demand, the company is constructing a new applications laboratory and is seeking to appoint an experienced flavour applications technician.



Labelling requirements for irradiated foods under review

Ministers responsible for food regulation have asked Food Standards Australia New Zealand (FSANZ) to review the labelling requirements for irradiated foods.

While no change to current requirements is being proposed at this stage, FSANZ is keen to get feedback from industry stakeholders.

FSANZ has just released a consultation paper on the existing requirements and is seeking submissions on a range of technical and economic issues related to the mandatory requirements and how information about food irradiation is communicated to consumers.

The closing date for submissions is 29 March 2016. Following this consultative period, FSANZ anticipates providing a report to ministers in the second half of 2016.

More information is available at www.foodstandards.gov.au

Lion to invest $40 million in its Perth dairy

The Bentley dairy processing plant in Perth is to be modernised as Lion Dairy & Drinks (LDD) commits to a $40m investment over the next three years.

Money from the sale of surplus land assets will fund:

- the construction of a new Western Australian distribution centre;
- the installation of one-way packaging technology, and a new filling line, to expand manufacturing capacity in milk-based beverages and enhance LDD's efficiency in white milk. This will help meet growing demand for LDD's brands such as Dare Iced Coffee and also support plans to grow the WA Masters brand together with LDD's white milk business;
- a significant upgrade of buildings and amenities;
- new internal roads and a new north/west exit to enhance driver safety and reduce vehicle traffic in adjacent residential areas.

To improve the efficiency and flexibility of its logistics and distribution arrangements, LDD will consolidate its existing multiple depot footprint to a single new depot on-site at Bentley.

As part of this decision, LDD will outsource its warehouse operations to Linfox allowing the company to take advantage of their expertise to drive greater efficiencies around the business. Unfortunately, as a result of this change, 30 logistics roles at the Bentley site will be made redundant.

All Lion people whose jobs have been impacted will receive their full entitlements and will be offered outplacement support. Redeployment opportunities along with relocation assistance will be offered where appropriate.

Keeping your pallets secure using unhackable RFID

If it was impossible to hack radiofrequency identification (RFID) chips, thieves would be thwarted in their attempts to pilfer pallets from warehouses by replacing their RFID tags with dummy tags.

This dream is close to reality as Denso-sponsored research at MIT and Texas Instruments is at the prototype stage with the new chips behaving as expected. The chips have been designed to prevent side-channel attacks where the cryptographic key is extracted by analysing patterns of memory access or fluctuations in power usage when a device is performing a cryptographic operation.

One way to thwart side-channel attacks is to regularly change secret keys. In that case, the RFID chip would run a random-number generator that would spit out a new secret key after each transaction. A central server would run the same generator, and every time an RFID scanner queried the tag, it would relay the results to the server, to see if the current key was valid.

Such a system would still, however, be vulnerable to a 'power glitch' attack, in which the RFID chip's power would be repeatedly cut right before it changed its secret key. An attacker could then run the same side-channel attack thousands of times, with the same key. Power-glitch attacks have been used to circumvent limits on the number of incorrect password entries in password-protected devices, but RFID tags are particularly vulnerable to them, since they're charged by tag readers and have no onboard power supplies.

Two design innovations allow the MIT researchers' chip to thwart power-glitch attacks: One is an on-chip power supply whose connection to the chip circuitry would be virtually impossible to cut and the other is a set of 'non-volatile' memory cells that can store whatever data the chip is working on when it begins to lose power.

For both of these features, the researchers use ferroelectric crystals. Texas Instruments and other chip manufacturers have been using ferroelectric materials to produce non-volatile memory, or computer memory, that retains data when it's powered off.

How do you evolve into a salmon specialist?

Wiley are food facility specialists. We have designed, engineered and project managed facilities for some of the worlds most renowned food manufacturing brands.

When Australian success story Huon Aquaculture partnered with us to create a state of the art, value added salmon processing facility, we integrated some innovative new solutions. Dynamic, flexible solutions for a company with a dynamic and growing future.

Scan here or visit our site for more about this and other success stories.

DESIGN • ENGINEERING • PROJECT MANAGEMENT

linkedin.com/company/wiley @wileytalk /wileytalk **wiley.com.au**

BRISBANE • KUALA LUMPUR • MELBOURNE • SYDNEY • TOOWOOMBA

WILEY

Excellence reimagined

Food for thought

image©iStockphoto.com

© iStockphoto.com/Les Cunliffe

LRQA joins Consumer Goods Forum

Professional assurance services organisation LRQA has joined the Consumer Goods Forum (CGF). The CGF, a global, parity-based industry network, brings together consumer goods manufacturers and retailers to encourage efficient business practices that benefit shoppers and consumers.

"Our collaboration with the CGF will play a major role in allowing LRQA to strengthen our existing food sector credentials," said John Rowley, managing director, LRQA & LR Inspection Services.

One of the primary objectives of the CGF is to create a collaborative network through corporate membership of retailers, manufacturers and service providers, in order to share best practice and identify areas where collective, measurable action is required. Commenting on this announcement, Peter Freedman, managing director of the CGF, said, "We are delighted to welcome LRQA as a member of the Consumer Goods Forum. They are an important player in the consumer industry and have been strong supporters of the CGF's Global Food Safety Conference for many years. We now look forward to deepening and broadening our collaboration in pursuit of building consumer trust in our industry."

Fonterra to rebuild Victorian plant destroyed by fire

Fonterra Australia will invest $132 million to build a state-of-the-art cheese plant at its Stanhope factory in Victoria, replacing the hard cheese plant destroyed by fire in December 2014.

The facility, which will produce cheeses for Australian consumer, foodservice and export markets, will have a capacity of 45,000 Mt of cheeses each year, including parmesan, gouda and mozzarella — an increase of 15,000 Mt on the previous plant.

"Importantly, the new plant will require significant growth of the local milk pool by 2020 and demonstrates Fonterra's commitment to growing the industry long-term. It means our local farmers can be assured of the future of dairy in northern Victoria," said Fonterra Oceania Managing Director Judith Swales.

The multimillion-dollar project will secure the future of the site and generate up to 30 jobs. It is being supported by the Victorian Government through its Regional Jobs and Infrastructure Fund.

Construction of the new plant is expected to be completed in 2017.

© FreeImages.com/Ove Tøpfer

Bosch biscuit packaging system wins WorldStar 2016 packaging award

Bosch Packaging Technology's Two-in-One biscuit packaging system has been awarded the WorldStar 2016 packaging award.

Presented annually by the World Packaging Organisation (WPO), the award recognises products that combine innovation with outstanding execution. For this year's award, the jurors evaluated a total of 293 projects from 35 countries across 10 categories.

The biscuit packaging solution allows for fast changeovers between slug and pile packs on the same line, ensuring optimal product flow and combining high output with careful handling. It enables manufacturers to change pack sizes in a minimum of time, with no changing of machine parts. The Two-in-One biscuit packaging system takes up less floor space than the two separate machines previously required to produce both pack styles.

The award will be presented during the International Packaging Conference to be held in Budapest, Hungary, in May 2016.

© FreeImages.com/Levent Sadik Kucukdaban

processing

Who is dying of foodborne disease?

Every year one person in 10 will become ill after eating contaminated food and, across the globe, 420,000 will die as a result.

Even though children under five make up only 9% of the world's population, they account for 30% of deaths (125,000 deaths) from foodborne disease. This horrifying statistic is among the findings of the World Health Organization's (WHO) recent report on the impact of contaminated food on health and wellbeing — Estimates of the Global Burden of Foodborne Diseases.

The report, which estimates the burden of foodborne diseases caused by 31 agents — bacteria, viruses, parasites, toxins and chemicals, reveals that 600 million people fall ill after consuming contaminated food every year.

Diarrhoeal diseases are responsible for more than half of the global burden of foodborne diseases, causing 550 million people to fall ill and 230,000 deaths every year. Children are at particular risk of foodborne diarrhoeal diseases, with 220 million falling ill and 96,000 dying every year. Diarrhoea is often caused by eating raw or undercooked meat, eggs, fresh produce and dairy products contaminated by norovirus, *Campylobacter*, non-typhoidal *Salmonella* and pathogenic *E. coli*.

Other major contributors to the global burden of foodborne diseases are typhoid fever, hepatitis A, *Taenia solium* (a tapeworm) and aflatoxin (produced by mould on grain that is stored inappropriately).

Certain diseases, such as those caused by non-typhoidal *Salmonella*, are a public health concern across all regions of the world, in high- and low-income countries alike. Other diseases, such as typhoid fever, foodborne cholera and those caused by pathogenic *E. coli*, are much more common to low-income countries, while *Campylobacter* is an important pathogen in high-income countries.

"Until now, estimates of foodborne diseases were vague and imprecise. This concealed the true human costs of contaminated food. This report sets the record straight," said Dr Margaret Chan, Director-General of WHO. "Knowing which foodborne pathogens are causing the biggest problems


© Igor/Dollar Photo Club

in which parts of the world can generate targeted action by the public, governments and the food industry."

While the burden of foodborne diseases is a public health concern globally, the WHO African and South-East Asia Regions have the highest incidence and highest death rates, including among children under the age of five years.

"These estimates are the result of a decade of work, including input from more than 100 experts from around the world. They are conservative, and more needs to be done to improve the availability of data on the burden of foodborne diseases. But based on what we know now, it is apparent that the global burden of foodborne diseases is considerable, affecting people all over the world — particularly children under five years of age and people in low-income areas," said Dr Kazuaki Miyagishima, director of WHO's Department of Food Safety and Zoonoses.

The risk of foodborne diseases is most severe in low- and middle-income countries, linked to preparing food with unsafe water; poor hygiene and inadequate conditions in food production and storage; lower levels of literacy and education; and insufficient food safety legislation or implementation of such legislation.

Foodborne diseases can cause short-term symptoms, such as nausea, vomiting and diarrhoea (commonly referred to as food poisoning), but can also cause longer-term illnesses, such as cancer, kidney or liver failure, and brain and neural disorders. These diseases may be more serious in children, pregnant women and those who are older or have a weakened immune system. Children who survive some of the more serious foodborne diseases may suffer from delayed physical and mental development, impacting their quality of life permanently.

Food safety is a shared responsibility, WHO said. The report's findings underscore the global threat posed by foodborne diseases and reinforce the need for governments, the food industry and individuals to do more to make food safe and prevent foodborne diseases. There remains a significant need for education and training on the prevention of foodborne diseases among food producers, suppliers, handlers and the general public. WHO is working closely with national governments to help set and implement food safety strategies and policies that will in turn have a positive impact on the safety of food in the global marketplace.

Regional highlights

African Region

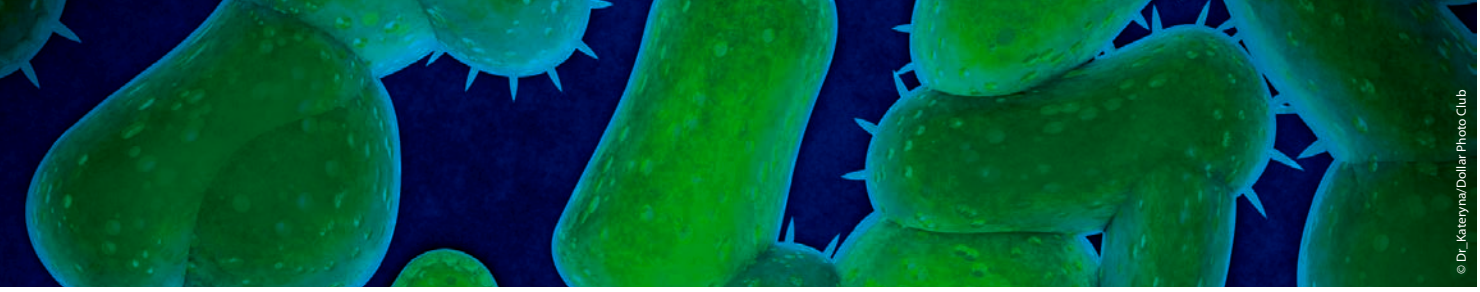
The WHO African Region was estimated to have the highest burden of foodborne diseases per population. More than 91 million people are estimated to fall ill and 137,000 die each year.

Diarrhoeal diseases are responsible for 70% of foodborne diseases in the African Region. Non-typhoidal *Salmonella*, which can be caused by contaminated eggs and poultry, causes the most deaths, killing 32,000 a year in the region — more than half of the global deaths from the disease. 10% of the overall foodborne disease burden in this region is caused by *Taenia solium* (the pork tapeworm).

Chemical hazards, specifically cyanide and aflatoxin, cause one-quarter of deaths from foodborne diseases in the region. Konzo, a particular form of paralysis caused by cyanide in cassava, is unique to the African Region, resulting in death in 1 in 5 people affected.

Region of the Americas

The WHO Region of the Americas is estimated to have the second-lowest burden of foodborne diseases globally. Nevertheless, 77 million people still fall ill every year from contaminated food, with an estimated 9000 deaths annually in the region.



> *There remains a significant need for education and training on the prevention of foodborne diseases among food producers, suppliers, handlers and the general public.*

Of those who fall ill, 31 million are under the age of five years, resulting in more than 2000 of these children dying a year.

While the overall burden of diarrhoeal diseases is lower than in other regions, it is still the most common foodborne disease in the Region of the Americas with norovirus, *Campylobacter*, *E. coli* and non-typhoidal *Salmonella* causing 95% of cases.

Toxoplasmosis and the pork tapeworm (*Taenia solium*) are very important food safety concerns in the Central and South America. Toxoplasmosis is spread through undercooked or raw meat and fresh produce, and can result in impaired vision and neurological conditions.

Eastern Mediterranean Region

The Eastern Mediterranean Region has the third-highest estimated burden of foodborne diseases per population, after the African and South-East Asia Regions. More than 100 million people living in the Eastern Mediterranean Region are estimated to become ill with a foodborne disease every year and 32 million of those affected are children under five years.

Diarrhoeal diseases (caused by *E. coli*, norovirus, *Campylobacter* and non-typhoidal *Salmonella*) account for 70% of the burden of foodborne disease.

An estimated 37,000 people in the Eastern Mediterranean Region die each year from unsafe food, caused primarily by diarrhoeal diseases, typhoid fever, hepatitis A and brucellosis. Both typhoid fever and hepatitis A are contracted from food contaminated by the faeces of an infected person and brucellosis is commonly caused by unpasteurised milk or cheese of infected goats or sheep. Half of the global cases of brucellosis are in people living in this region, with more than 195,000 people infected every year, causing fever, muscle pain or more severe arthritis, chronic fatigue, neurologic symptoms and depression.

European Region

The report highlights that although the WHO European Region has the lowest estimated burden of foodborne diseases globally, more than 23 million people in the region fall ill from unsafe food every year, resulting in 5000 deaths.

Diarrhoeal diseases account for the majority of foodborne illnesses in the WHO European Region with the most common being norovirus infections, causing an estimated 15 million cases, followed by campylobacteriosis, causing close to 5 million cases. Non-typhoid salmonellosis causes the highest number of deaths — almost 2000 annually.

Foodborne toxoplasmosis, a severe parasitic disease spread through undercooked or raw meat and fresh produce, may cause up to 20% of the total foodborne disease burden and affects more than 1 million people in the region each year. *Listeria* infection also has a severe impact on the health of people who contract it and causes an estimated 400 deaths in the European Region annually. *Listeria* can result in septicaemia and meningitis, and is usually spread by consuming contaminated raw vegetables, ready-to-eat meals, processed meats, smoked fish or soft cheeses.

South-East Asia Region

The WHO South-East Asia Region has the second-highest burden of foodborne diseases per population, after the African Region. However, in terms of absolute numbers, more people living in the WHO South-East Asia Region fall ill and die from foodborne diseases every year than in any other WHO Region, with more than 150 million cases and 175,000 deaths a year. Some 60 million children under the age of five fall ill and 50,000 die from foodborne diseases in the South-East Asia Region every year.

Diarrhoeal disease-causing agents norovirus, non-typhoidal *Salmonella* and pathogenic *E. coli* cause the majority of foodborne disease deaths in the region. Additionally, the pork tapeworm (*Taenia solium*) has a major impact on health. It can cause cysts to develop in the brain, which is the most frequent preventable cause of epilepsy worldwide.

Globally, half of the people who are infected and die from either typhoid fever or hepatitis A reside in the South-East Asia Region.

Western Pacific Region

Every year, 125 million people in the WHO Western Pacific Region become ill from contaminated food, causing more than 50,000 deaths. As in other regions, the burden is highest in children under five years of age with 40 million falling ill and 7000 dying every year.

Unlike other regions of the world, where diarrhoeal diseases cause the highest proportion of deaths, aflatoxin is estimated to be the leading cause of foodborne disease deaths in the Western Pacific Region. Aflatoxin is a toxin produced by mould that grows on grain that has been stored inappropriately, and it can cause liver cancer, one of the most deadly forms of cancer. More than 10,000 people in the Western Pacific are estimated to develop liver cancer due to aflatoxin every year, with the disease proving fatal in 9 out of 10 people. An estimated 70% of people who become ill from aflatoxin worldwide live in the WHO Western Pacific Region.

The region also has the highest death rate from foodborne parasites, particularly the Chinese liver fluke (*Clonorchis sinensis*), *Echinococcus multilocularis* and *Taenia solium*. The Chinese liver fluke, which is commonly contracted through raw and incorrectly processed or cooked fish, infects more than 30,000 people in the region a year, causing death in 1 in 5 cases. Almost all of those who are infected with Chinese liver fluke in the world live in the Western Pacific. The highest disease burden results from the disabling impact of *Paragonimus spp.* infections of the lungs and central nervous system.

PURE EFFICIENCY

Premium No-Tox® Food Grade Lubricants

- Increase Efficiency & Reduce Operating Costs
- Reduce Wear & Extend Component Life
- Multiple Lubrication Capabilities
- SAVE Time SAVE Money

Bel-Ray's high-performance industrial Food Grade greases and oils are specially engineered to withstand the effects of load, heat, water and dust. Maximize performance and reduce downtime by using superior lubricants from Bel-Ray®.

SEE THE ENTIRE LINE OF BEL-RAY® PRODUCTS AT BELRAY.COM

BEL-RAY TOTAL PERFORMANCE LUBRICANTS®

MADE IN THE USA

Contact us for a **FREE** onsite lubricant survey.

On-site nitrogen generator

The Atlas Copco NGP+ nitrogen generator enables food and beverage producers to create their own nitrogen on-site. Compared to delivery of bottled nitrogen gas or bulk gas deliveries, the advantages include cost savings and continuous reliable availability. The generator delivers a continuous reliable flow of nitrogen at purity levels of up to 99.999% and connects to an existing compressed air network, using the Atlas Copco plug-and-play system for easy installation and integration.

The nitrogen generator uses PSA (pressure swing adsorption) technology to generate nitrogen from compressed air, which uses the available air in an atmosphere. Water vapour, oxygen, CO_2 and other gases are adsorbed and released safely and cleanly back to the atmosphere. The result is virtually pure nitrogen at the outlet of the generator, making the device a safe, reliable and cost-efficient source of nitrogen for the food and beverage industries.

The system can be connected to 100% oil-free compressed air to produce continuous nitrogen which is up to 99.999% pure and 100% oil-free.

The generator is delivered ready for use and requires only dry compressed air. The design is robust and the system offers the ability to set the nitrogen concentration to the desired level (ranging from 95% to 99.999% purity). The NGP+ has a payback period of 18–24 months in many scenarios, according to the company.

Atlas Copco Compressors Australia

www.atlascopco.com.au

Magnet and filter combination

The MAGNATTACK Magnet Filter Combo has been designed for use in sensitive liquid applications. The design combines both 316SS fine filtering systems and high-temperature-resistant RE80 magnet technology within one body, to attract and retain work-hardened stainless steel, magnetic stone and fine microscopic metal contamination that could escape filters.

This combination improves magnetic separation efficiency for product protection against metal fragment issues and product complaints, and maximises protection against damage to pumps, homogenisers and highly sensitive equipment. The design also reduces leakage, blockage and distortion and is suitable for product and CIP temperatures to 150°C.

The >10,000 gauss magnet element intercepts the flow of product, providing maximum contact of product with the magnet with minimal resistance to flow. The system is suitable for both viscous and non-viscous liquid products and has proven effective in chocolate, syrup, liquid sugar, oils, soups, sauces, pet food slurries and liquid dairy product applications.

The system is endorsed by HACCP International. It enables users to eliminate old-style, difficult-to-clean, finger-style magnets, saving the operator time in cleaning of magnets and separate filters, and reducing costs.

Magnattack Global

www.magnattackglobal.com

bürkert
FLUID CONTROL SYSTEMS

What does a Smartphone have to do with pasteurized milk?

Fluid control technology from Bürkert provides freedom of choice for both. Fresh milk lasts longer when it is pasteurized or processed with UHT (ultra-high temperature) by Bürkert solutions. The consumer has the choice. And smartphone users type smarter, because of a wafer-thin coated touchscreen that delivers brilliant screen resolution quality, and which replaces cumbersome keyboards. Wherever gases or liquids come into play, specialists in all industries trust in solutions from Bürkert. Because we deliver ideas that give you the choice.

We make ideas flow.

www.burkert.com.au

Snack manufacturer stays a step ahead

As a producer and co-packer of a variety of corn-based snacks, from tortilla chips to snacks mixes, popcorns and extruded snacks, Keystone Food Products depends on flexible, high-performance packaging solutions that can be easily integrated into its existing production line in Pennsylvania, USA. With a growing market requirement for smaller bag sizes, Keystone needed to expand its plant's manufacturing capabilities while still maintaining profitability.

Flexible solutions for expanded capabilities

Keystone chose the tna robag FX 3ci for its facility, as its turnkey packaging system could be easily integrated with existing equipment. With performance improvements of up to 30% in both output and the reduction of rejects, the new packaging system has significantly increased the speed and precision of the entire production, helping Keystone to optimise performance while catering to the demand for smaller bags.

Allowing for any jaw configuration (single, flat, double or triple) or size, the tna robag FX 3ci offered Keystone the flexibility it needed for its range of packaging services, including its quattropack operations. Plus, the tna system does not require any mechanical adjustments when changing product or film — an important benefit for Keystone, which required a simple, yet efficient machine to facilitate the switch between different bag formats and products. Future performance increases can be realised by upgrading the jaw set-up, leaving Keystone prepared for the future.

Ensuring accuracy

Keystone is responsible for the packaging of both its own and other brands' premium snacks. As such, the company needs a highly accurate weighing system to ensure that only the exact amount of product would be included in the bag. This avoids raw material waste and allows Keystone to produce an increased number of units from the same quantity of material.

The tna intelli-weigh omega 314 has proved to be an effective solution to Keystone's challenges. By combining strain gauge load cells with digital filtering to virtually eliminate the influence of external vibration, the system allows for precision, high-speed weighing. As a result, discrepancies between bags are negligible. The modular design enables quick and easy troubleshooting and maintenance, and enhances product flow.

Improved product verification

Keystone also required a more automated verification system to enable it to maintain its quality standards.

Installation of the tna intelli-read 3 barcode scanner has enabled Keystone to maintain rapid packaging speeds while ensuring that its products are checked to the highest standards. The solution automatically scans the barcode on the film and crosschecks it to verify that the correct product is being processed. Mounted directly onto the film system of the tna robag, the tna intelli-read 3 scans the entire product's width, making it virtually impossible to bypass as every barcode — regardless of where on the film it is printed — will be read. With the barcode scanning system in place, Keystone was able to speed up the bagging process, while being assured that only products at the right weight and with the correct packaging would leave the plant.

Maximising plant footprint

Keystone wanted a system that would increase its production capacity within the limited space that was available. Because the previous production set-up was fragmented, an important part of the installation process was to analyse the arrangement and provide more continuity in the way equipment was laid out.

Previously, each of Keystone's machines had its own platform, occupying valuable floor space. By designing a single platform that would incorporate the three new packaging machines, tna was able to optimise the plant's surface area, saving both time and space.

Another challenge was to adapt the layout to the plant's low ceiling height. New machines were specifically tailored to meet space requirements and facilitate product transfer between different packaging stages. Before they could be packaged downstairs, light corn products were washed in the upstairs station. The lack of space, however, meant that conveyors could not be installed. The tna intelli air distribution system has a small footprint and gently transports bags and other lightweight packed products along a bed of air. It automatically discharges empty packets for optimal output and has flexible configuration plus several layout options.

The tna hyper-detect metal detector enabled Keystone to maximise the available floor space. Its design allows the metal detector to be positioned closer to the multihead weigher, reducing machine height and increasing the speed at which the bagger can produce finished bags. The system offers improved metal detection capabilities, while eliminating degradation in product transfer to ultimately deliver safe product throughout and minimise rejects. This provided Keystone with a stable operation for optimum sensitivity and consistent performance when inspecting products.

Forward-thinking solutions

From the start of the project to its completion, Keystone expressed its desire to think ahead and introduce lasting and sustainable production solutions. With plans to move its entire production to a new, bigger site, Keystone challenged tna to deliver forward-thinking options that could be easily moved to meet future requirements.

TNA Australia Pty Ltd
www.tnasolutions.com

Always a good solution

OPTIMASS 6400 –
Mass flowmeter with highest precision available for aerated products

OPTIBAR PM 5060 –
Process pressure transmitter with stainless steel diaphragm

OPTITEMP TRA-H30 –
Hygienic temperature assembly for on-site calibration

OPTIWAVE 6300 –
Level transmitter for solid applications

SMARTPAT PH 8570 –
Hygienic pH sensor with integrated transmitter technology

KROHNE
measure the facts

You're searching for an efficient measurement solution? No problem with KROHNE.

KROHNE has met the challenges of the food and beverage industry with innovative measuring solutions.

KROHNE offers a whole spectrum of flow, level, temperature and pressure measurement as well as process analysis technology including complete solutions and the pertaining services.

Our extensive range includes measuring devices for storage and interim storage, dosing and mixing, filling and CIP/SIP cleaning and utility systems for steam and hot water.

We are standard supplier of numerous well known producers thanks to the high reliability and long term stability – in all different stages of food production and refinement.

KROHNE – Food and beverage is our world.

Please see our website for more information.

KROHNE Australia
5 Phiney Place, Ingleburn NSW 2500
Tel: 02 9426 1700

www.krohne.com

Photometric converter for haze measurement

The Haze Control 4000 photometric converter has been designed for high-precision haze (turbidity) measurements. The menu-based software is easy to use and configure and is available in German, English, French, Dutch, Spanish, Russian and Portuguese. The software includes adjustable signal damping, 16 linearisation tables and advanced calculation capabilities. An integrated data logger captures process information for quality assurance and plant control records. This data can then be transferred to a PC via an RS232 port.

The photometric converter is designed to operate with the optek DTF16 (11°/90° scattered light sensor) and additionally with AF16 or AS16, visible (VIS) or near-infrared (NIR) based sensors. The graphic display can show absorbance, turbidity and concentration in real time and in any unit of measure such as EBC, FTU, ppm (DE), NTU, ASBC and Helms. These measurements may be displayed as text, bar graphs or trend values. A factory zero point is implemented for the scattered light sensors.

A secondary user zero for additional offset is included, as well as a slope and shift adjustment. This manual adjustment can be used to compensate for long-term process-related disturbances.

AMS Instrumentation & Calibration Pty Ltd

www.ams-ic.com.au

© Freelmages.com/www.LockStockPhotography.com

Tassal top of the table for sustainability

Tasmanian salmon producer Tassal has been ranked number one in a report that benchmarks sustainability reporting and transparency in seafood companies.

Tassal is the only Australian company listed in the 2015 Seafood Intelligence report, and one of only four companies to achieve a corporate, social and environmental responsibility rating of excellent.

The report, which benchmarked companies against 145 key performance indicators, said comprehensive sustainability reporting enabled a seafood firm to deal with risks and crisis situations, helped drive the firm's sustainability vision, provided credentials to justify its social licence to operate, and provided a means to engage with stakeholders.

Tassal chairman Allan McCallum said the company's global number one ranking in the report was a significant achievement.

"There is no question that our sustainability program has delivered better outcomes for all our stakeholders and the business more broadly."

The Seafood Intelligence report provides a snapshot of the 2014 and 2015 global seafood industry, available data and trends. It also provides context-setting information regarding the global salmon market and some of the challenges it faces.

The report provides industry organisations, authorities and ENGOs with an overview of the current status of the global aquaculture/farmed salmon 'sustainability' debate; and giving an insight into key industry decision-makers' positions and expectations.

© Freelmages.com/quil

Thermo SCIENTIFIC

A Thermo Fisher Scientific Brand

Move over, metal detection:
easy X-ray inspection

Your brand name goes on every package. You can't compromise it with physical contaminants inside. Thermo Scientific™ X-ray detection solutions are superior to metal detection for today's innovative food packaging. Our sensitive, easy-to-use, affordable Thermo Scientific™ **NextGuard™ X-ray Detection System** meets a broad range of food safety and quality requirements. It makes X-ray detection and the ability to evaluate and adjust operation on the fly easy and affordable. You can even inspect packaged products for what's missing and avoid under and overfills with new and easily customizable vision software. With our 65 years of product inspection applications expertise, you'll get the answers you need, simply packaged.

is here

• Learn more: thermoscientific.com/xrayinspection

1300 735 292
thermoscientific.com/nextguard
infoau@thermofisher.com

NextGuard
X-ray System

Thermo Scientific™ Xpert™ X-ray Inspection System
Vertical beam systems for large packages and bulk flow

Xpert S400
Horizontal beam system for tall, upright packages

HACCP management system

Testo has released the testo 250 HACCP management system, which controls all measurements, checks and documentation that occur in the context of HACCP, without paper.

The HACCP management system supports the guided set-up of a HACCP plan based on the Codex Alimentarius. Improving the efficiency of HACCP processes saves time and money, and using a digital solution minimises human errors when filling in checklists by hand. Quality managers can trace all quality data at the touch of a button, and are therefore prepared for audits and complaints at any time.

With the web-based control centre of the system, the quality manager defines HACCP processes and correction measures, as well as all measurement and checking tasks. Measurement data can be analysed in real time, and task status is displayed.

The system's compact control unit is suitable for use by on-site staff charged with measurement and documentation tasks. It consists of a tablet with a long battery life and a washable, durable protective cover which is suitable for use in rough and humid surroundings.

The Check App installed on the tablet guides the user through all individual HACCP process steps. Measurement values are input directly or via Bluetooth. If measurement results are critical or limit values exceeded, the app immediately gives instructions on corrective measures. Documentation using photos, scanning of barcodes and identification of users and locations via NFC technology are also implemented.

The HACCP management system can be combined with an existing wireless LAN. All processes, proofs and measurement values are collated and securely stored in the Testo Cloud, to be protected from data loss and manipulation.

Testo Pty Ltd

www.testo.com.au

Enclosed visible contact break isolators

Kraus & Naimer has available a range of Visible Contact Break Isolators from 63 to 800 A, which can be fitted into an IP66, 316 marine-grade stainless steel enclosure. The stainless steel enclosure includes No. 4 finish as standard, an IP66 safety laminated glass viewing window and a sloped roof extending over-door design.

Other features include: polyurethane pour in place gaskets (non-memory); stainless steel front- or side-mount handle; robust, stainless steel hinges and locks; mild steel 2 mm white base plate; panel construction 1.5 mm with option of 2 mm.

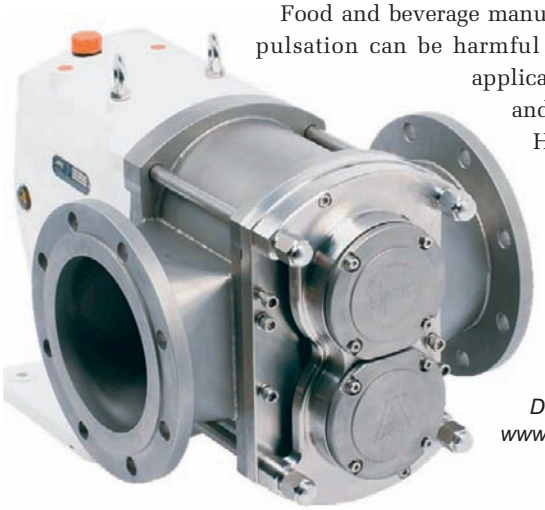
Kraus & Naimer Pty Ltd
www.krausnaimer.com

Pump technology doubles the flow

One of Korea's biggest confectionery companies, Orion, has extended its business to the international market with its popular Chocopie biscuits. Huge demand for the biscuits, particularly in China, meant Orion needed new pumping technology capable of delivering the large flow rates required to match production.

It engaged JEC to develop a PD pump for its Shenyang plant. JEC installed a large sanitary PD pump utilising the Heli-lobe rotor technology.

Generating 10 L/revolution, the system operates at a flow rate of 120,000 L/h (200 rpm), which is suitable for Orion's application in confectionery, as well as other food, beverage and chemical duties.



Food and beverage manufacturers understand that pulsation can be harmful for a pump and system applications, creating production and maintenance issues. The Heli-lobe reduces pump pulsation significantly, operating quietly and vibration-free. This results in increased seal and wear parts life, in some cases double the time frame.

Dixon (Asia Pacific) Pty Ltd
www.dixonvalve.com

10-12 May 2016

Melbourne Convention and Exhibition Centre

AUSTRALIAN WATER ASSOCIATION

Water: For Liveable Communities and Sustainable Industries

ozwater'16

Australia's international water conference & exhibition

EARLY-BIRD REGISTRATIONS CLOSE 31 MARCH!

Some of Ozwater'16 keynotes include:

- Kerry Bodine – Co-author of Outside In: The Power of Putting Customers at the Centre of Your Business
- Professor John Thwaites – Chair of ClimateWorks, Chairman of Melbourne Water
- Andrew Geczy – CEO, International and Institutional Banking, ANZ

Ozwater'16 will showcase the latest in:

- Liveable and Sustainable Cities of the Future
- Operations and Asset Management
- Governance, Regulation and Structure
- Customers and Community
- Contemporary Management
- Water for Rural, Remote and Regional Communities
- Sustainable Industries

Ozwater'16 will feature workshops on:

- Transitioning to a water sensitive city – part 1 and 2 - CRC for Water Sensitive Cities
- Validating Water Treatment in Integrated Water Management: Introducing 'Waterval' - Australian Water Recycling Centre of Excellence
- Future water infrastructure investment – where will the money come from? - Aither Pty Ltd
- Enhancing Business Outcomes though education – Australian Water Association, Water Education Specialist Network...and more

For a detailed program and to register visit

www.ozwater.org

PRINCIPAL SPONSORS:

Melbourne Water

SUEZ

Specialist technical training short courses

Australian technical support company FoodStream runs a range of short courses in areas such as extrusion, thermal processing and drying.

Internationally, the company works with the Institute for Food Research and Product Development at Kasetsart University in Thailand to provide an 'applied' version of the Food & Feed Extrusion program, using a range of equipment to involve attendees in making five different types of product on three different types of extruder in the three-day program.

Cooperation with the Centre for Feed Technology (FôrTek) at the University of Life Sciences (NMBU) in Norway led to an Aquafeed Extrusion program being run using the centre's facility. In 2016 the Aquafeed Extrusion program will run again, with an additional course on Food & Feed Drying Technology as well.

In cooperation with CSIRO's Food Innovation Centre in Werribee, Victoria, Food & Feed Extrusion courses are held at CSIRO's facility. In 2016, the first cooperative 'Food Drying Technology' course will be held.

The company uses the Goulburn-Ovens TAFE facility for retorting/thermal processing training and provides retort training to the seafood canning industry in the Pacific, with courses in Papua New Guinea and Fiji.

Training programs are also provided to a range of food companies at their premises.

FoodStream Pty Ltd
www.foodstream.com.au

Compact thermal and visual camera combo sensor

RS Components has available the FLIR AX8 thermal camera with automated multi-spectral temperature sensor.

The compact thermal camera can be mounted in a range of diverse applications, including the Internet of Things. It is suitable for applications including process and manufacturing industries, data centres, energy generation and distribution, transportation and mass transit, storage facilities and refrigeration warehouses.

Designed for the continuous thermal monitoring of critical installations and facilities, the camera has an integrated intelligent temperature sensor that senses temperature change and has built-in analysis features to ensure that the camera can determine the change and act on it. Housed in a 54 x 25 x 95 mm package, the device can be installed in space-constrained areas.

Providing continuous safety monitoring to detect hot spots without the need for periodic manual scans, the camera helps the early identification of problems, which could include a loose connection or an overloaded fuse, and can guard against unplanned outages, service interruptions or equipment failure.

The streaming video output provides live video of every installation and automated alarming in the case of preset temperature thresholds being exceeded. More advanced alarms such as temperature trending types can be configured using PLCs. There are multiple video options available, with views of thermal imagery, visible light imagery or the two combined into FLIR's MSX multispectral dynamic imaging.

The camera provides: Power over Ethernet (PoE); interfaces including Ethernet/IP and Modbus TCP; multiple video streaming formats including MPEG, MJPEG, and H.264; FLIR's Lepton microthermal camera core; a 640 x 480-pixel built-in digital camera; and an IP67-rated housing.

RS Components Pty Ltd
www.rsaustralia.com

Pumping peanut butter made easy using MasoSine SPS200

Faced with a failing progressive cavity pump when trying to transfer peanut butter from the grinder to a holding tank, a food plant in Pretoria, South Africa, has found a more reliable and cost-effective solution in a MasoSine SPS200 process pump from Watson-Marlow Fluid Technology Group.


© Crystal Alifanow/Dollar Photo Club

Selected, among other factors, for its viscous pumping ability, the MasoSine SPS200 features a sinusoidal rotor that delivers a lower shear, gentle pumping action that safely transfers delicate products without risk of degradation. This is in contrast to the PC pump deployed previously, which battled to pump the high viscosity of peanut butter, while the dry running due to inconsistent feed between the grinder and the hopper led to reduced suction.

The SPS200 was installed in April 2014 and was immediately set to work pumping 250,000 cP viscosity peanut butter at a rate of 1000 L/h (85°C, against ±9 bar).

MasoSine SPS pumps are suitable for a multitude of applications up to 15 bar pressure and 99,000 L/h flow rate. Products with viscosities up to 8 million cP can be transferred with powerful suction.

Capable of handling soft solids up to 60 mm, the pumps are able to deliver a constant feed of whole foods, meats, confectionery, dairy products and concentrates.

To date, the Pretoria peanut butter plant reports that the MasoSine SPS200 has been pumping successfully with minimum downtime and has offered considerable savings in maintenance costs compared with the progressive cavity pump. This is due to the pump's simple design, with one shaft, one rotor, one seal and no timing gears.

Maintenance and cleaning of the SPS200 takes just minutes and can be performed in-situ by a line operative (or by a CIP process, if required).

The SPS200 runs intermittently to pump circa 5 tons of peanut butter to the holding tank every day.

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

GEA's NZ test lab reaps benefits for customers

A new in-house test laboratory at GEA's facility in Hamilton, New Zealand, will enable GEA engineers to carry out extensive tests on the properties of powders and to design powder packaging systems based on scientifically obtained data to optimise production and reduce waste.

In the past, tests have focused on characteristics such as particle size and density, which did not enable engineers to predict how the powder would flow or how it would react to fluidisation and compaction on the production line. The new lab equipment measures seven vital characteristics of any given powder and enables engineers to design systems to suit each individual product.

"Until now, working out how any given powder would behave was something of a 'black art' or at least a 'black science', relying very much on experience and gut feel," said engineering manager Chris Singleton. "We have used outside labs in the past, but the turnaround was very slow and it was very expensive. Having our own lab means we can get accurate quantifiable numbers quickly and relatively cheaply and use them in the design process."

Having accurate information about the powders also enables GEA's engineers to advise customers on the design of factors such as the optimum wall angle of the filling hopper and the most suitable discharge diameter from vessels. GEA will also size and shape vessels to ensure customers don't have any problems with product transport or clogging during discharge.

The laboratory is also able to carry out the more traditional tests to classify powders for flowability, bulk density and particle size distribution. A vacuum filling test is available to enable engineers to measure the accuracy that can be achieved when filling containers such as packs or cans with the customer's product. The lab can test a wide range of powders including infant formulas, coffee, muscle-building formulas and sports drink powders.

During a recent upgrade to an infant formula can filling line, GEA's engineers used data obtained from the laboratory to make modifications to improve the accuracy of filling from ±5 to ±1.5 g. With such a high-value product this represented a significant saving and the customer recovered the investment within a few months of implementation.

Keeping 90 tons of yoghurt/day foreign contaminant-free

Greek yoghurt manufacturer Kri Kri makes 80–90 tons of yoghurt each day in its plant in Macedonia. All of the company's milk is supplied by local farms in the Serres area and Kri Kri is able to process and pack its yoghurt within 24 h, requiring just one pasteurisation process. This ensures that all the nutrients from the milk remain in the finished yoghurt.

While the advanced production processes incorporate the highest hygiene levels, it is vital that Kri Kri remains vigilant against potential foreign bodies such as metal, glass or other foreign materials that could contaminate the yoghurt if there was a problem with any of the equipment on the line.

Kri Kri's extensive portfolio of around 140 different products includes plain and fruit yoghurts, traditional varieties and a children's range, packed in pots from 150 to 500 g in size. The pots are first filled and then packed into cases before inspection in the Ishida X-ray machine.

To accommodate complete cases, the company opted for the Ishida IX-GA-65100, which is specially designed for larger products.

For Kri Kri, the major benefits of the Ishida X-ray system are its ease of use and flexibility. With the many different product types and pack sizes, there can be up to four changeovers in each 8 h shift. The IX-GA-6100's user-friendly colour touch screen enables specifications for each product to be held in the memory and called up at the touch of a button for fast and simple changeovers. In addition, the touch screen provides different levels of security, meaning that only designated and trained operators are able to make adjustments or change settings.

Equally important, the IX-GA-65100 offers versatility in its sensitivity and levels of detection. Like all Ishida IX-GA models, it features the company's Genetic Algorithm (GA) technology, which uses image data analysis over a number of inspections to achieve a particularly high level of inspection accuracy. This enables Kri Kri to 'train' the machine to focus solely on the yoghurt contents in each pot, and exclude any external areas. The machine is able to distinguish between the fruit pieces in the fruit yoghurts and any unwanted contaminants, and to mask the small chocolate pieces used as a topping for children's yoghurts which are packed in a separate plastic dome above the lid of the pot.

"I compare the versatility of the Ishida X-ray to that of a Swiss Army knife, with so many different options available. This means we can tailor the machine to our exact detection requirements, and so are able to handle many different product types," Kri Kri's production manager Petros Kissas commented. "We place huge emphasis on the premium nature of our yoghurts and on our commitment to deliver the highest quality, so it is absolutely vital that we can carry out stringent monitoring to ensure that all our products leave our factory in the best possible condition."

Equally important, the Ishida X-ray inspection system provides valuable traceability information so that in the event of any complaint, an image of the pack in question can be retrieved to establish beyond doubt if there was a problem with the contents.

Kri Kri is currently processing around 80–90 tons of yogurt/day, with the Ishida X-ray system monitoring approximately 12,000 to 14,000 cups/h. "These numbers are well within the capabilities of the X-ray machine," explained Kissas, "but we prefer to operate it at medium to high speed in order to ensure that every pack is checked thoroughly."

Kissas confirms that the reliability of the IX-GA-65100 has been exceptional with no breakdowns since its installation. The machine is also easy to clean as part of Kri Kri's regular and strict hygiene procedures.

Based in Northern Greece, Kri Kri was established in 1954 when George Tsinavos opened a small pastry shop, producing ice-cream and other dairy products. Strong and consistent growth over the years led to the construction of a new factory in 1987, which enabled the company to expand its product range to include yoghurts.

Kri Kri's new state-of-the-art production and packing line was borne out of an initial catastrophe

when a fire on Christmas Eve 2013 caused severe damage to its dairy production plant. However, within seven months, the new facility had been created with double the production capacity. Given the opportunity to specify the newest and best equipment for the new factory, Kri Kri turned to Ishida and its Greek agent Europack for its X-ray inspection solution.

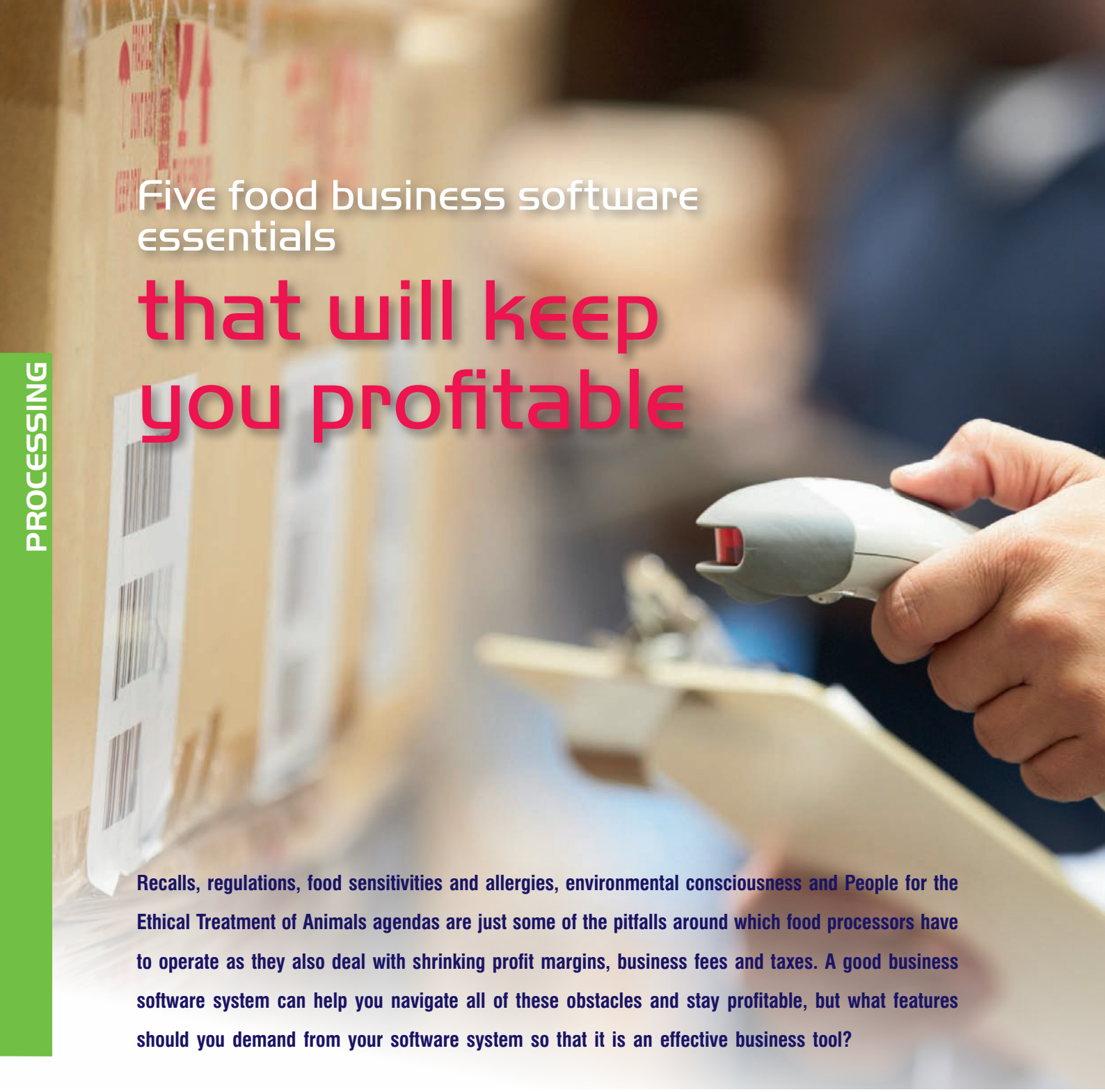
"We knew of Ishida's reputation for reliable, top-of-the-range equipment and we had already enjoyed excellent collaboration with Europack, so these were key factors in our decision," Kri Kri's technical manager Dimitris Barboutis explained.

"Naturally we were looking for value for money from our investment, but the overriding concern was quality and safety — these simply cannot be compromised, since ultimately it is our reputation that is on the line. And we know that with Ishida we have the equipment that will help us maintain our hard-earned reputation."

Equally significant, this ability to demonstrate its high-quality control standards has been a fundamental part of Kri Kri's drive into export markets, meeting growing global demand for traditional Greek yoghurt. The company's products are now sold in 20 countries in Europe, the Balkans and the Middle East, with listings in several major supermarket chains, including the UK.

Heat and Control Pty Ltd
www.heatandcontrol.com

Five food business software essentials that will keep you profitable



Recalls, regulations, food sensitivities and allergies, environmental consciousness and People for the Ethical Treatment of Animals agendas are just some of the pitfalls around which food processors have to operate as they also deal with shrinking profit margins, business fees and taxes. A good business software system can help you navigate all of these obstacles and stay profitable, but what features should you demand from your software system so that it is an effective business tool?

Tight control of all aspects of food production from the acquisition of ingredients all the way to delivery of the food product to the consumer is essential if a food business is to survive and prosper. Legacy stand-alone systems for processing, inventory control, sales and accounting simply cannot keep up.

"What's been done in the past is no longer good enough," said Jon Mainwaring, executive vice president of Oneir Solutions, a Canadian provider of scalable ERP software. "Producers cannot risk their corporate existence by offering food for public consumption without stringently tracking every aspect of their operations. With the introduction of today's affordable integrated enterprise systems, you have no more excuses."

With over 30 years of experience of developing ERP systems for businesses of all sizes, Mainwaring provides a list of the five most critical features all food processors and their distributors must demand in order to keep their companies in the black and out of the courtroom.

1. Readily accessible order placement

"You can no longer afford to stand around and be an order taker," Mainwaring stressed. "Describing your products on a company website or through a Facebook presence won't keep you in the game. You need to take the next step by using your business-line software to leverage all the power and opportunity of the internet to close sales."

A modern ERP system should allow 24/7 order processing options for buyers — whether they represent a supermarket chain, wholesaler or franchised convenience store or restaurant. The customer should be able to review their purchasing history per period, along with favourable pricing plans and a suggested retail price. The customer must be able to place

the order on the spot, which would generate an automatic email confirmation and simultaneously forward the order directly to the food producer's warehouse for picking, packing and shipping.

"Modules such as 'order guides' are vital to businesses like ours," said Silvana Falsetto, vice president and controller of Falsetto Fine Foods, a wholesale distributor of a broad range of food products to local stores and restaurants in the Ottawa and Quebec areas.

For example, Falsetto's sales order module, provided by Oneir, assists sales reps when making calls on its foodservice customers. These guides, which can be downloaded onto the screen of a laptop or tablet, provide product data and show the customer's contact notes and order history, making it an important adjunct for generating repeat sales. A very detailed order history can even be used to remind the customer that they forgot something, such as an essential ingredient, saving them the inconvenience of placing a second order at a later date.

"Customers tend not to overstock today, relying instead on just-in-time delivery, so they don't provide a long lead time for ordering," observes Mainwaring. "Having a handle on what is in stock and when deliveries are expected is critical for both the sales team as well as the customer."

2. Accurate inventory control

Unfailingly, accurate inventory control tops the list as the most effective way to contain the damage in the case of a product recall.

"You can no longer rely on hand-entered amounts in an Excel spreadsheet, as the cost of human error is too high," warned Mainwaring. "You must use automated electronic tracking of all ingredients, all resultant food products and their respective lot numbers in order to cover yourself."

By electronically and logically joining what were previously separate functions, the connectivity of enterprise-wide systems facilitates efficiency and greatly improves accuracy. Ingredients can be tracked from their source at the farm or factory, all the way down to individual lots and pallets, and put on trucks for delivery to individual stores.

"A well-integrated tracking module will identify which batch of ingredients went into which product at what date," continued Mainwaring. "This can save a food producer hundreds of thousands of dollars, if not millions, in the case of recall because they can quickly identify and locate orders shipped with the tagged ingredient, rather than recalling all of that particular product or brand."

3. Non-stop monitoring

Aside from mandatory requirements, customers in the distribution channel, and ultimately food consumers, demand assurance that proper precautions are taken during production. A literal 'paper trail' isn't good enough. You need electronic documentation to guarantee food safety.

Look for quality control software in line with HACCP policies and procedures. Starting from a production bill of materials, these systems continuously track ingredients, quantities, any special equipment and preparation procedures, and quality control sampling, among other critical elements. At the end of the production process the lot numbers for the products are recorded along with their respective quality control results and the expiry dates.

"Of course there are organisations that come in and audit food producers on a random basis," reminded Mainwaring. "They identify an ingredient with a single lot number and ask the producer to show where it's been used. One of our clients had a case where the auditors were presented with 130 pages of computer-generated output that listed the instances

of where a lot of a single ingredient ended up. There is no way you could do this manually."

4. Customisation and scalability

Horror stories of exorbitant costs, high maintenance fees and years-long implementation snafus have worked to keep many companies from even considering end-to-end software systems. But with the latest breed of software programs written specifically for the food industry, nothing could be further from the truth. The interoperability and scalability of these new applications allow businesses to add just the modules they need to fit their growth, without breaking the bank.

"When you picture a $250 billion industry giant you can see that there are a lot of aspects of their proprietary ERP system that are vital to them, but we wouldn't necessarily need all that," said Falsetto.

Much interoperability can be attained from systems built on the Linux OS. The efficiency of Linux also allows smaller IP packets, thus improving transmission speed and reducing processing overhead within internal networks, as well as over the internet. Rapid remote access through virtual private tunnels into the cloud allows the tracking of orders and metrics on a worldwide basis.

Just as Linux's interoperability allows the easy incorporation of additional modules on an 'as need' basis, it also flattens the learning curve for operators who are more familiar with consumer-oriented human-machine interfaces. For example, Windows terminals communicate effortlessly with Linux servers, as is the case with most website hosting.

> *Producers cannot risk their corporate existence by offering food for public consumption without stringently tracking every aspect of their operations.*

5. Affordability

What good is any software system if purchasing and maintaining it doesn't provide a favourable ROI? But while food costs have gone up, technology costs have levelled off and in some cases dropped, at least in terms of performance versus cost. As such, Moore's Law has trickled down to ERP software. At one time an expensive luxury that only the big boys could afford, complete systems now exist at rates that even small food producers can afford.

Credit this newly realised affordability to the use of open software operating systems based on Linux. In the case of Oneir, the basic three-user version comes in at less than $5K, whereas the norm for traditional systems can easily approach $50K or more.

"One of the ways that fully integrated ERP software increases profitability is by avoiding duplication of effort," noted Mainwaring. "Reducing human intervention in ordering, accounting and tracking helps relocate manpower to more creative and substantive activities. Additionally, opportunities for improving the company's efficiencies, such as keeping accounts receivable on a 'short leash', can be identified with more accurate and immediate reporting."

As an open-source software, using Linux means that users aren't bound to expensive proprietary systems that tie the user to one vendor and its potentially excessive maintenance and support fees.

For a growing number of food producers the ease of ordering, accuracy, affordability, scalability and user-friendliness of these new business management systems means they can grow within their industry without sacrificing functionality, sophistication or their reputation.

Oneir Solutions Inc
www.oneirsolutions.com

Biogas project to deliver self-sufficiency to pork producer

© IStockphoto.com/Murat Giray Kaya

A biogas project to be undertaken at a large Western Australian pork producer will offset 100% of grid-supplied electricity.

The project, located an hour from Perth, is set to generate up to 1 MW of renewable energy by converting manure from the pig-housing facility into biogas. The biogas will be refined and used as fuel for a renewable power station that will be constructed on site.

The development of the project, to be constructed by Gold Coast bioenergy company Quantum Power, will be conducted under a build-own-operate-maintain (BOOM) model, the first of its kind for a biogas project within the Australian pork industry.

Quantum Power Business Development Manager Kunal Kumar said the biogas project will deliver environmental benefits and energy savings to the facility and make the operation self-sufficient.

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

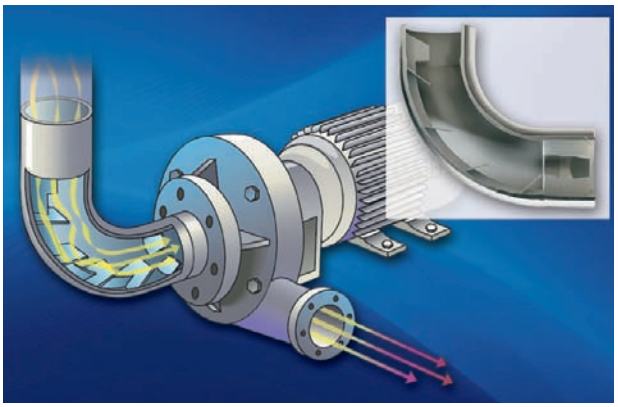
"The biogas, which would otherwise escape to the atmosphere, is being harvested and treated before being used as fuel for on-site electricity generation. The covered anaerobic digester will also reduce odour coming from the treatment of manure compared to the current system in place.

"The engineered anaerobic digestion system will not only save the facility a significant amount on their electricity bills over many years by replacing expensive power drawn from the grid — it is also remarkably better for the environment, as methane has 21 times the global warming effect of carbon dioxide," he continued.

Kumar expressed the view that a stable policy environment is critical for the success of the renewable energy industry in Australia, confirming that announcements regarding a bipartisan approach to the Renewable Energy Target and the success of the federal government's first auction of Australian carbon credit units under the Emission Reduction Fund were a major catalyst for the decision to tender for the project.

Construction of the biogas facility is contingent on the project receiving the relevant regulatory approvals.

Quantum Power Limited
www.quantumpower.com.au



Elbow flow conditioner

The Vortab Elbow Flow Conditioner helps to eliminate the turbulent fluid flows that result in pump cavitation, which can lead to line shutdowns, maintenance and shorter pump life.

Pump cavitation often occurs after liquid swirls and bubbles form in a pipe. These turbulent asymmetrical flow patterns create a vacuum suction that once it reaches a pump's impeller will cause high-pressure shock waves. The resulting stress on the impeller blades pits them and requires extra maintenance or costly replacement.

Pump manufacturers typically recommend 10 diameters of straight pipe be placed upstream from their pumps to avoid creating the turbulent flow conditions that can lead to pump cavitation. When this is impractical, the pre-conditioned flow stream achieved with the elbow flow conditioner mimics the straight run needed for efficient pump operation and removes asymmetric velocity flow profiles. In addition to conditioning the flow stream, the 90° angle tab-type conditioner eliminates the straight pipe run cost and installation technician labour.

The conditioner's anti-swirl and inclined vortex generating profile correction tabs, projecting from the inside pipe surface, generate vortices that accelerate natural pipe effects to create a uniform, non-swirling, symmetrical flow profile in a much shorter section of pipe.

The flow conditioners can be made from carbon steel, 316L stainless steel or Hastelloy C-276. A variety of process connections are also available, including ANSI flanges, male NPT threads, butt welded preps or retaining wafers.

AMS Instrumentation & Calibration Pty Ltd

www.ams-ic.com.au

Spray heads

The Breconcherry Turbodisc spray heads, available from Tecpro Australia, are suitable for small and medium process vessels, reactors, driers, granulators, storage tanks, tablet-coating machines and IBCs.

Constructed with high precision, the spray heads contain only one moving part which rotates freely on a hydraulic bearing to produce a dense spray of fast-moving droplets to achieve higher impingement and coverage than traditional spray ball cleaners. The low flow rate and high wash speed reduces effluent costs and downtime.

The backwash action minimises wash pattern interference and ensures purity and hygienic cleaning by allowing no product to settle on the cleaning head. The range includes a choice of models in 316 and 316L stainless steel and Hastelloy C22. It is also available in chemical-resistant, ATEX-certified, carbon-filled PTFE.

Suitable for pressures up to 4 bar and flow rates of up to 250 L/min, the range provides models with a cleaning radius of between 0.5 and 2.5 m. They have a maximum operating temperature of 95°C and an ambient temperature of 140°C. Available with a 360° or 180° wash pattern, they are compact and can be placed into small tanks at any angle.

Tecpro Australia

www.tecpro.com.au

Bellamy's and Fonterra join forces in baby formula

Bellamy's will enter into a five year, multimillion-dollar strategic agreement with dairy producer Fonterra to manufacture a range of baby formula products.

Fonterra Managing Director Oceania Judith Swales said the agreement reflected the company's strategy for Australia, to focus on winnable areas within the highly competitive market.

"We are actively growing our nutritionals business through strategic partnerships and agreements which will see the Darnum nutritionals plant move towards full capacity," she said.

"Our Australian business has particular ingredients strengths in cheese, whey and nutritionals, complemented by our strong consumer and foodservice businesses, and today's announcement with Bellamy's Australia — one of the fastest growing infant formula companies — reaffirms our strength in nutritionals."

Bellamy's has strong brand recognition and expertise in the organic ingredient supply chain. Revenues have been increasing over recent years, culminating in revenue growth of 156% in 2014–15. Formula comprises 88% of Bellamy's sales.

Swales said the proposed strategic agreement will help support the growth of Bellamy's Organic in Australia and abroad. The popularity of the product, particularly in China, has led to complaints from Australian consumers of supply shortages.

High-pressure tech reaps high-flavour juice

Food and beverage manufacturing companies are constantly striving towards meeting consumer demands for new food and drink experiences, exciting flavours, healthier choices and convenient packaging.

In the past, most fruit juices were reconstituted, had preservatives added and were heat treated — which, although making juice safe to drink, can change the natural taste and colour of the juice and destroy some of its nutrients.

A small Victorian company, Preshafood, has worked with CSIRO to develop premium fruit juices that are pasteurised using high-pressure processing (HPP) instead of heat.

HPP technology

HPP is an emerging technology that uses very high pressures to kill yeasts, moulds and bacteria.

The technology has the potential to extend the shelf-life of chilled perishable products and provide improved safety, taste, texture, quality, fresh-like characteristics and nutritional value — without having to use chemical preservatives.

CSIRO has been at the forefront in the development and implementation of HPP technology in a range of product categories, such as juice, meat, poultry, seafood, fruit and vegetable products, meal solutions, dips and sauces.

The results

Preshafood began by manufacturing Preshafruit single-variety apple juices such as Pink Lady, Granny Smith and Royal Gala in distinctive, triangular-shaped bottles.

Thanks to HPP, the juices retain the taste, colour and fresh-like characteristics of fruit and can be stored for up to five times longer than other chilled juices.

The company has now expanded into seasonal juice blends, smoothies and vegetable juices, which are sold in supermarkets nationally. It is also increasing its sales in Asia, where the consumer demand for premium Australian food and beverages is high and there are still few similar-quality juice products competing with the Preshafruit juices.

The company, which began its life in CSIRO's pilot plant in Werribee, has recently expanded its investment in HPP technology and is now the largest HPP operation in Australia.

CSIRO Food and Nutrition
www.csiro.au/food-innovation

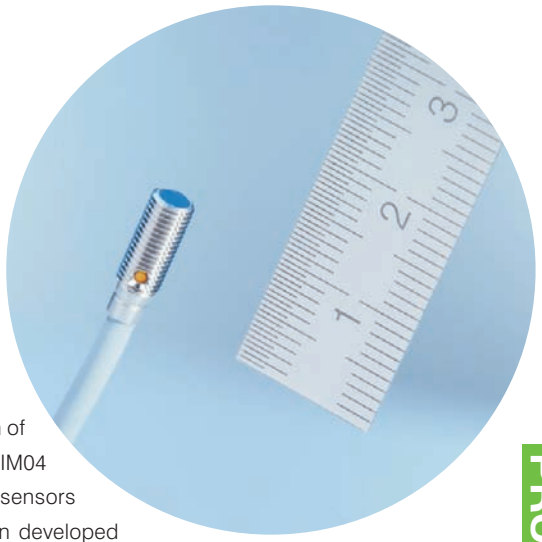
Entrained gas management webinar

IHS Engineering360 has released a webinar entitled Measurement of Liquid Media with Entrained Gas.

Key topics addressed include:

- Understanding where air or gas entrainment has been a challenge in food applications and learning how to overcome this challenge with entrained gas management (EGM).
- Replacing offline lab sampling of aerated products with inline, real-time process density measurement.
- Discussion of examples where EGM has overcome problems associated with traditional measurement and safeguard process engineering.

Presented by Ryan Kromhout, global industry division food manager, Krohne, the webinar will be available on-demand until Tuesday, 8 March 2016.



Inductive miniature sensors

With an overall length of 12 mm, the IH03 and IM04 inductive miniature sensors from SICK have been developed for applications with minimal installation space. With fully integrated electronics, they do not need any external amplifiers.

The devices enable positioning tasks in application fields such as handling grippers, linear units and tool spindles. As well as being short, the sensors have good performance thanks to ASIC technology with a precise double sensing range of up to 1 mm. They feature a high switching frequency of up to 8000 Hz, allowing the inductive miniature sensors to handle fast operating processes. The small sensors are also quite rugged due to their stainless steel housing. Integrated IO-Link communication simplifies sensor diagnostics, device swapping and identification.

SICK Pty Ltd

www.sick.com.au

Hyperactive monocytes

key to childhood food allergies?

Adam Florance

An Australian study has found an immune 'signature' that identifies babies at risk of developing allergies to common foods in their first year.

Food allergy-related hospital visits by infants have tripled in recent years and while the new study is yet to determine the cause, it does identify those babies most at risk of developing allergies to common foods including milk, eggs, peanuts and wheat. By analysing the cord blood of over 1000 Victorian babies, the research team discovered that those with hyperactive immune cells at birth showed a far higher likelihood of developing the most common types of food allergies by their first birthdays.

The data was collected as part of the Barwon Infant Study (BIS), conducted by Barwon Health, in collaboration with the Murdoch Childrens Research Institute and Deakin University. Associate Professor Peter Vuillermin of Barwon Health said the reason why nearly 10% of Australian babies are developing these allergies has yet to be determined, but the study indicates that some individuals appear to be primed for chronic immune and inflammatory disorders from before birth.

Professor Len Harrison and Dr Yuxia Zhang of the Walter and Eliza Hall Institute led the research, which was published by *Science Translational Medicine*. They are hopeful that their research will lead to future treatments that may prevent these early-onset food allergies in infants. Dr Zhang said those babies whose monocytes were activated before or during birth appeared to be predisposed to developing allergic reactions to particular foods.

Professor Harrison next wants to determine why some babies have these hyperactive immune cells and whether this activation occurs at birth or at some earlier stage of the pregnancy:

"This study really emphasises how critical it is to look at pregnancy and early life to really understand why chronic immune and inflammatory disorders such as allergies develop in childhood and later."

The Barwon Infant Study (BIS) is analysing data related to neurological, cardiovascular and respiratory development in over 1000 mothers and babies from the Barwon region of Victoria. Funding for this research has been provided by the Australian Food Allergy Foundation, the Victorian State Government Operational Infrastructure Support Program, the Walter and Eliza Hall Institute Catalyst Fund and the Australian National Health and Medical Research Council.

Extrusion sheeting technology for snacks

Baker Perkins has introduced sheeting technology to produce snack crackers and other products that are cut from a sheet of dough before being baked or fried. Extrusion sheeting uses a twin-screw extruder with a wide-slot die to produce the thin sheet of dough directly feeding a rotary cutter.

Using extrusion sheeting instead of conventional mixing, sheeting and gauging reduces both the capital investment needed for a snack cracker line and the floor space required. The lines are simple to operate and, having fewer units, give reductions in cleaning time and maintenance costs.

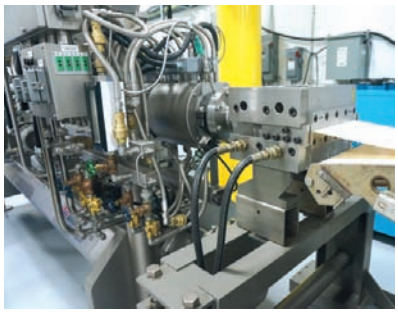
The system is suitable for any type of baked or fried snack that is cut from a sheet of dough. Wheat and maize are the most common ingredients but many types of flour can be processed, either on their own or as part of a blend.

The process supports dedicated lines running at high output, and the low cost and flexibility of the line makes the production of small batches of snack crackers economically viable. The extruder can be quickly switched to make other snacks such as direct expanded curls and balls, or co-extruded filled pillows, bars and wafers.

Extrusion provides the flexibility to make a wide variety of different products in small batches from alternative ingredients, such as high-protein and high-fibre products, as well as 'free-from' snacks that are made without nuts, wheat, dairy, GMO etc.

The extruded dough sheet is produced on a Baker Perkins SBX Master twin-screw extruder and cut into regular, interlocking shapes by an inline rotary cutter.

Baker Perkins
www.bakerperkins.com



Granulated hard floor sanitiser

Jasol has launched Sanicrunch, a granulised hard floor sanitiser, designed for all areas where microorganisms thrive. Activated when walked on in semi to wet conditions in dairy, meat, poultry and food preparation environments, the sanitiser helps to eradicate bacteria on floors and in drain systems.

The sanitiser is a blue granular, free-flowing powder that is spread evenly onto a wet floor. It is biodegradable and non-slip.

Jasol Australia
www.jasol.com.au

Plant-based INOX metal cleaners

Suhner Australia has released a 'green' based INOX range of cleaning agents for stainless steel and other metals. The cleaning, protecting and polishing agents are made from plants, are free of harmful chemicals and effective against contamination and dirt on metals.

The cleaning agents clean metals and remove contamination embedded in metal pores as well as rust. They also protect and polish metals. Included in the range are the INOX Sun Clean, Sun Protect and Sun Polish. The plant-based, fast-acting ingredients of all three agents can be used independently or collectively by hand on various metals.

Sun Clean removes rust and deposits from stainless steel, aluminium, copper and mild steel. The deep cleaner removes dirt without damaging the oxide film on the metal.

INOX Sun Protect is a neutral and mild agent that washes away residues and protects metals against corrosion and contamination by creating a barrier of nanoparticles to promote the exchange of oxygen needed to build an oxide layer. The regular use of the agent helps to eliminate corrosion, including in environments that possess aggressive ambient air.

The INOX Sun Polish is suitable to clean matt surfaces such as stainless steel, nickel, cop- per, bronze, chromium and aluminium.

All three agents are NSF certified, which means they can be used to clean machines involved in producing both food and pharmaceuticals.

SUHNER Australia Pty Ltd
www.suhner.com

© Michaela Kobyakov/Dollar Photo Club

Taking the allergen out of the peanut

Popular in food processing due to their rich content of fats and protein, peanuts are also one of the eight major food allergens. However, in a recent study from the *Journal of Food Science* published by the Institute of Food Technologists (IFT), researchers from China found that seed germination could reduce the allergen level in peanuts.

The researchers found that by altering the natural process of germination by controlling certain environmental factors, peanut allergenicity could be reduced. The study specifically looked at temperature and light effects on Ara h1, a previously identified peanut allergen.

The authors concluded that short-term germination could be a relatively easy way to improve the food safety of peanuts and to produce hypoallergenic peanut food. They said that further studies are needed to assess the effects of germination on other major peanut allergens.

Stainless steel washdown system

Reel Tech has launched a stainless steel washdown system for food, beverage, dairy and pharmaceutical plants. The system includes a stainless steel hose reel, food-grade hose and water-saving washdown gun.

The washdown system is high quality and easy to service, and it also meets stringent hygiene specifications.

Loose hoses are a significant tripping hazard. Stainless steel spring rewind hose reels are the most commonly employed hose reels for washdown in food, beverage, dairy and pharmaceutical manufacturing plants.

Reel Tech's washdown guns have been accredited with the Smart Approved WaterMark in Australia, saving costs associated with water usage. Reel Tech also offers fully customised washdown systems, with a range of water-saving washdown guns, hose lengths and sizes.

An additional benefit of the washdown system is that a Safe-R-Reel speed control rewind system can be retrofitted to the spring rewind reel to reduce hose rewind speed, helping to prevent damage to employees and equipment. A booklet — 10 facts of hose reel safety — is an industry guide that supports awareness of the risks and hazards associated with hose reels, including rewind speed.

Spray Nozzle Engineering

www.sprayingsolutions.com.au

COD analyser

The Thermo Scientific Orion 3106 COD analyser is used to detect levels of organic pollutants in water.

The analyser combines a digestion step with colorimetric analysis to measure the concentration of organic compounds that can affect water quality. Particularly high levels of COD may require additional treatment processes. The presence of high COD levels during the disinfection process will lead to additional hypochlorite dosing. This results in the formation of chloramines, which, if present in high levels, can be carcinogenic.

The analyser is designed to reduce ongoing operating costs due to its low maintenance and reagent consumption. By controlling the treatment process, users can also reduce disinfection costs. The intuitive user interface simplifies navigation.

Thermo Fisher Scientific

www.thermofisher.com.au

When prevention is the cure

Best practices for allergen testing

While virtually unknown before the 1950s, food allergies have emerged as one of the most serious and prevalent public health issues in the developed world. It is now essential that food processors can identify and control allergens where there is potential for cross-contact as part of their risk management program.

According to the Allergen Bureau, food allergens are typically naturally occurring proteins in foods or derivatives of them that cause abnormal immune responses. The prevalence of food allergies around the world is believed to be increasing, with more than 8% of children and 2% of adults in countries like Australia and New Zealand having an allergy to one or more foods. The most common allergens for young children are milk and egg, but fortunately many children outgrow these allergies by the time they have reached 5–7 years of age. On the other hand, allergies such as those to seafood, peanut and tree nut may develop later and are lifelong conditions.

Allergic reactions to foods vary greatly from mild gastrointestinal discomfort to skin rashes and potentially life-threatening asthma and anaphylaxis. Commonly, many adverse reactions to food are collectively referred to as food allergies. However, true food allergies represent only a fraction of the diverse range of individualistic adverse reactions to ingredients that also include food intolerances. Examples of common food intolerances include coeliac disease (reaction to gluten) or deficiencies in the digestive system (eg, lactose intolerance).

Currently, there is no cure for food allergies. The only successful method to manage a food allergy is avoidance of foods containing the allergen.

Potentially, all foods have the capacity to cause an allergic reaction in a person who has become sensitised to proteins in it. However, in Australia and New Zealand there are nine foods or food groups that cause about 90% of all allergic reactions:

- Peanuts
- Tree nuts such as almonds, walnuts and cashews
- Soy
- Milk including cheese, butter and milk powder
- Eggs
- Cereals including rye, oats and barley
- Crustaceans such as crabs and prawns
- Fish
- Sesame

These foods have been documented within the Food Standards Code. Warning statements must appear if the food or an ingredient derived from the above contains the allergen.

It can be incredibly difficult to shop or dine out with a person who has a food allergy. More so, with the plethora of confusing cautionary statements such as ‘may contain’, ‘may be present’, ‘made on equipment that is also used to make’ etc.

The challenge for the food industry is to identify and control allergens where there is potential for cross-contact as part of a risk management program. This is especially the case where there is an unintentional transfer of allergens from ingredients or the

© Africa Studio/Dollar Photo Club

products where they are manufactured, moved, transported or stored using common equipment, people and facilities.

As such, the food industry bears a significant due diligence to not only ensure allergen warnings are clearly spelled out on packaging but their food products are not exposed to inadvertent contamination from potential allergens.

Your essential tool for allergen control

Ideally, the best control for food allergens is to not bring them into the workplace. For example, a dip manufacturer might only make a range of dairy- and gluten-free products at the site. However, this is often not viable as many food businesses need to be competitive and are required to make a wider range of products. An example of this is where a bakery produces a macadamia nut cookie for a unique customer once per week. Where there are non-shared allergens that are only used in a smaller range of products on-site, they are often controlled via a number of overlapping practices. These can include:

- Ingredient supplier management
- Production scheduling
- Cleaning
- Colour coding
- Dedicated processing equipment
- The unique storage of ingredients
- Staff training
- Defined movement paths within the workplace

Although the above practices may be in place, appear to be working well and have been verified by visual monitoring, often a question is raised as to how effective they are. Verification by testing after cleaning provides a greater degree of confidence that this step is being performed correctly.

Today a variety of advanced methods exist to test for or indicate the presence and concentration of allergen-causing food proteins. These include enzyme-linked immunosorbent assays (ELISAs) for specific allergen residues, ATP detection, general protein detection and polymerase chain reaction (PCR) to detect DNA fragments from the allergenic food.

One key step within an effective allergen management program is the rapid and efficient detection of allergen protein residues from visually clean surfaces. In one case study the FDA found that protein tests are the most sensitive predictor of allergenic residues on surfaces compared to ELISA and ATP methods.

Simple and easy-to-use protein sensitive swab tests offer one of the most effective and efficient means to determine the presence of proteins including allergenic proteins from egg, milk, gluten, soy and peanut. The swab is rolled over the surface, then activated followed by a quick incubation. This test can be easily performed by proficient food production staff.

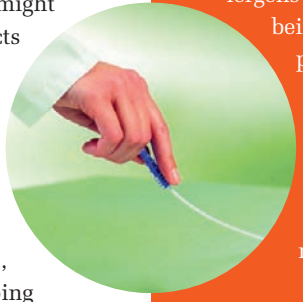
This highly sensitive protein detection technology allows for a broad range of potential allergens to be tested in a single swab with results displayed soon after testing.

The high degree of accuracy makes protein swab tests one of the most reliable weapons in your Allergen Management Plan arsenal.

3M Food Safety
www.3m.com.au

Swab tests to detect allergen residues

Checking for removal of protein residues after cleaning can quickly identify contamination. As the majority of allergens are proteins, it indicates low risk of allergens being present if a surface is found to be virtually protein-free.



3M Clean-Trace Surface Protein (Allergen) is a simple and very sensitive swab test for the detection of protein residues on surfaces and in solution. It has been validated for a range of allergenic proteins, including egg, milk, gluten, soy and peanut.

If you are interested in finding more about this product visit www.3M.com.au/foodsafety (in Australia), www.3M.co.nz/foodsafety (in New Zealand), email 3mmicrobiologyau@mmm.com or call 130 363 878 (Australia) or 0800 326 886 (New Zealand).

10-11
March 2016
Royal Randwick
Sydney

AUSTRALIAN WATER ASSOCIATION

2016
WATER INNOVATION FORUM & EXPO
Be part of the 'ideas boom'

The Water Innovation Forum and Expo is the ultimate showcase of water innovation, bringing together the utility, medical, oil and gas, construction, food and beverage, and agricultural industries with technology providers and financiers to share ideas and discuss the latest developments in cutting-edge water technology.

This is your chance to hear from some of Australia's leaders in innovation including

- *Urban water management and innovative urban design* – Tony Wong, CRC for Water Sensitive Cities; Paul Mulley, Sydney Water; Professor Stuart White, UTS; Daniel Lambert, Arup; Professor Zhiguo Yuan, The University of Queensland
- *Harvesting energy from water and wastewater* – Timothy Nelson, AGL Energy and Ian Donal, Yarra Valley Water
- *Measuring and adapting to climate variability* – Dr Suzanne Hollins, ANSTO and Ian Prosser, Bureau of Meteorology
- *Transferring innovations to the world market* – Grantly Butterfield, Australian Water Partnerships and Dr Paul Smith, Australian Water Association
- *Digital water management improving utilities efficiency* - presented by WSAA

+ 30 innovation product pitches from Australia's brightest sparks

Register now!

Major Sponsors

Australian Government
Department of Agriculture and Water Resources

ANZ

www.awa.asn.au/InnovationForum16

packaging & labelling

Simplified nutritional labels

trim waistlines while boosting profits

When it comes to effective nutritional labels — those that actually succeed in helping customers make healthier food choices — the simpler they are the better. In fact, merely displaying a single number that represents the product's nutritional 'score' will make consumers more likely to buy healthier products, while simultaneously reducing their price sensitivity.

These findings have emerged from a study of more than 535,000 shoppers and eight different food categories in a major US grocery store chain.

Co-authored by researchers from Boston College and the University of Pittsburgh, and published in the *Journal of Marketing Research*, the study entitled 'Healthy Choice: The Effect of Simplified Point-of-Sale Nutritional Information on Consumer Food Choice Behavior' examined the efficacy of the NuVal (Nutritional Value) simplified scoring system.

Simplifying nutrition

The NuVal System scores food products on a scale of 1 to 100 — the higher the score, the better the nutrition. It was developed by a team of nutrition, public health and medical experts, and is currently available in more than 1600 stores in the US.

NuVal was developed in response to a perceived failure by the 1990 Nutritional Labeling and Education Act (NLEA) to reduce obesity rates in the US. NLEA mandated nutritional labels list ingredients such as fat content, sodium, calories, carbohydrates, etc. According to the study, while well intentioned, the labels "are somewhat difficult and time-consuming to understand", because shoppers look at the product packaging and have to "combine all the information into an overall evaluation".

Researchers also cite a 2012 Nielsen study that found 59% of grocery shoppers experience difficulty in understanding nutritional facts on product packaging.

"Our study indicated that the NuVal nutritional scale had an immediate and powerful impact on shoppers' decisions," said co-author J Jeffrey Inman. "They changed their purchasing behaviour to pick healthier choices and they switched to higher-scoring products. In fact, the simplified nutritional information boosted healthy choices by over 20%."

Researchers worked with the grocery store chain that began implementing the NuVal scoring system in its stores in 2008. The study compared purchases of more than 535,000 frequent shoppers in the six-month pre-rollout period and the six-month post-rollout period across eight food categories — frozen pizza, tomato products, soup, salad dressing, yoghurt, spaghetti sauce, granola bars and ice-cream.

Price sensitivity dropped by 19%

The researchers said NuVal — and other POS nutritional scoring systems — helps consumers to save time. This benefit, combined with America's increased focus on health, resulted in a decrease in price sensitivity. In the grocery chain the study examined, price sensitivity decreased by 19%, while overall sales increased.

And while consumers were paying less attention to price, they actually paid more attention to a store's promotions, giving grocery stores the opportunity to increase sales via promotions rather than price reductions.

Co-author Hristina Nikolova explained: "After the introduction of a POS simplified nutrition scoring system, shoppers start paying more attention to nutrition and they have less attention to devote to other factors in their shopping decisions, such as price for example. They are then looking for shopping heuristics that would save them mental energy — anything that makes their decisions easier. Promotions, which are usually prominently highlighted in the store, are one such heuristic. Thus, shoppers become more sensitive to promotions."

The study's authors say the results indicate that failing to implement a simplified nutrition scoring system could be a competitive disadvantage for stores, particularly if their competitors offer the information.

Product ID is easy when you have the solution that fits together.

Talk to Matthews Australasia for solutions to **CODE** your product with technology that meets all your goals, **CHECK** your product quality before the product leaves your production facility and **CAPTURE** more real-time data for production metrics.

1300 CODING (1300 263 464)
www.**matthews**.com.au
Call us today to discuss your application

Matthews
INTELLIGENT IDENTIFICATION

coding**labelling**traceability**coding**labelling**traceability**coding**labelling**traceability**coding**labelling**traceability**

Insourcing PET bottle production pays off

The management at German mineral water bottler Herzog Mineralbrunnen had long been toying with the idea of producing PET bottles on-site rather than buying them in ready-made. However, there was concern that there was not enough room for the new system, the effort involved in converting the engineering seemed too great and the existing production set-up was established and running well.

Then, in 2014, plant manager Gerd Stork attended a trade show and met Frank Fretwurst, head of Area Product Management for KHS Corpoplast. At the end of their conversation, Fretwurst was convinced that the Herzog bottling plant held potential for making savings. He suggested the company consider a KHS InnoPET Blomax Series IV stretch blow moulder. Herzog Mineralbrunnen would buy in PET preforms, which are much cheaper than finished bottles, and these would be manufactured on-site.

The machine has low operating costs; however, the site in Bochum did not have the necessary electrical power, meaning that new cables had to be laid and the transformer house expanded. The new system would also need an extension connected to the existing filling section by conveying segments. However, the company considered that the potential savings were worth the effort.

Moving towards greater efficiency

In total, Herzog Mineralbrunnen invested around €1.6 million in the new engineering set-up. The system has been operational since August. The KHS InnoPET Blomax Series IV stretch blow moulder has a capacity of up to 13,500 bottles per hour, which gives the medium-sized family business a capacity utilisation of around 80%.

The energy efficiency and compact design of the machine were major criteria in Herzog Mineralbrunnen's decision to invest, as well as the quality of the bottles, which continue to have optimum stability and low weight.

"It's important that production doesn't stop. All of our lines run continuously," states Stork. Approximately 35% of all products leave the production line in PET, with the rest in glass. "The percentage of PET is growing, however," he says. The plant in Bochum fills about 29 to 30 million PET bottles a year.

To meet the varying demands of the company's production operations, the heater on the KHS InnoPET Blomax Series IV can be used in combination with any type of transfer and blow moulding equipment. Because the heater is modular, upgrades such as additional heating chambers can be installed at a later date. The stretch blow moulder can also be adapted to cater for any extensions to the product portfolio whenever needed.

"In two years, the system will have paid off. We have more line availability and are more flexible," says Stork.

KHS Pacific Pty Ltd
www.khs.com

Labelling system

The Bizerba GLM-I Evo Series is a high-performance labelling system for the food industry. The fully automated machine offers flexibility, robustness and maintenance-friendly design, which can grow to keep pace with changing demands.

With a flow rate of up to 200 packs/min, all models are network-compatible, modular for individual expansion and offer ease of operation and maintenance.

The series includes a quick-change belt system, Plug-In-Label functionality and a modular control cabinet for easier error analysis. The system is suitable for all weight/non-weight and FPV-related (pre-packed products regulation) applications. The software offers flexibility — from operational processes and quality management up to label design, creating the framework for synchronous flows of products and data from the moment goods are received through to dispatch.

MULTIVAC Australia Pty Ltd
www.multivac.com.au

Carton sealing machines

Fromm Packaging Australia has released a range of carton sealing machines to make the taping process easier and more efficient.

The three machines — the FCS-10R, FCS-10U and FCS-30SDR — cover every taping application.

The FCS-10U and 10R are simple plug-and-play machines: the 10U catering to uniform box sizes and the 10R for random sizes. The FSC-30SRD is a fully automatic machine, capable of sealing diverse parcel sizes.

The carton sealers are designed for round-the-clock operation and are durable.

Each machine can be seamlessly placed into existing packaging lines. Built with ease of operation in mind, the carton sealers require no previous experience to operate. The user simply has to input information on the packages to be taped and press start.

The machines are available to rent.

Fromm Packaging Australia
www.fromm-pack.com.au

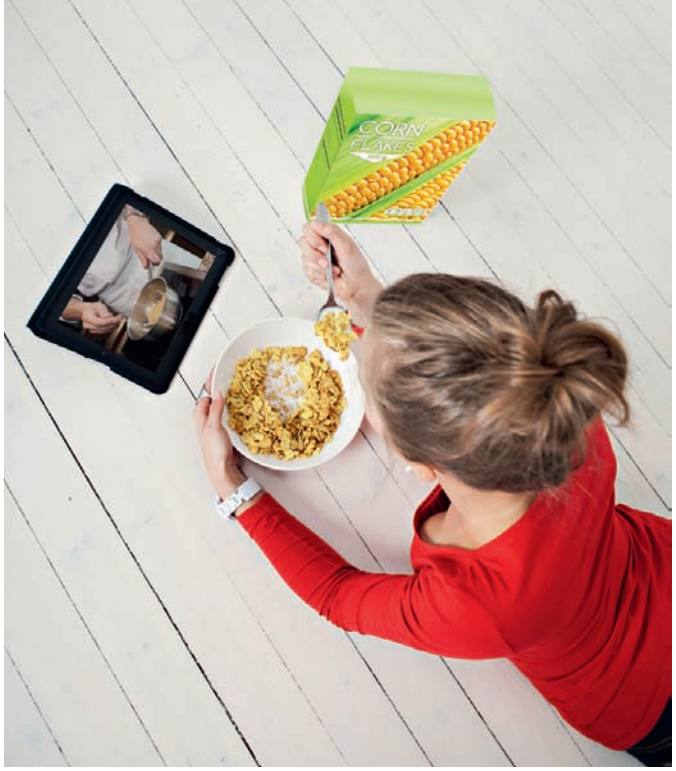
Product identification training course

The Australian Institute of Packaging has announced a new half-day training course: Introduction to Product Identification.

Presented by Matthews Australasia General Manager – Operations Mark Dingley, the course will provide an insight into product identification requirements through the supply chain and the technology needed to achieve compliance, as well as process improvements. The course will also incorporate where product identification is heading, including trends such as serialisation and product identification technology for reducing waste and improving profitability. Some hands-on training will be included on a wide range of identification and inspection equipment such as label print and apply and vision systems.

The course is suitable for packaging technologists, designers, engineers, production and operations personnel.

The first course will be held on 17 March in Scoresby, Victoria. To book your place click here.



Polymer laminate packaging with mineral-oil barrier

Walki has developed Walki Pack MOST (Mineral Oil Safe Technology), a polymer laminate packaging product that provides a barrier against mineral-oil contamination.

The product, which is glueable, sealable and recyclable, shuts out grease and water, and creates a barrier against unwelcome substances, such as benzophenone, bisphenol A, DIPN and softeners, which can be found in recycled fibres. It also prevents cross-contamination from other transport packaging.

The effectiveness of WALKI Pack MOST has been verified by independent research institutes such as VTT in Finland and Innoform in Germany, and has been approved for direct food contact, in accordance with EU directive 10/2011.

Walki Group

www.walki.com

Bradman Lake's cool packaging solution

When launching the Froozer range of all natural whole fruit snacks in frozen bars to the market, US manufacturer Cool Frootz faced a packaging challenge.

Its existing packaging process involved manual labour to erect a carton, hand loading of the product and manual closing of the carton. It needed a fully automatic carton forming and closing operation that was flexible enough to handle a wide variety of bar count quantities and had the potential for future expansion as market demand grew.

The Bradman Lake Group, a supplier of packaging technology to the food, consumer and healthcare industry sectors worldwide, provided a solution consisting of a top load cartoner that incorporated an HS double-head carton forming machine, integrated carton takeaway and packing conveyor linked to its RA90 right-angle, lugless, 3-flap carton closer.

The use of a 3-flap lid cover provided Cool Frootz with access to more on product branding, ease of product loading and the flexibility to produce a wide variety of carton sizes and count quantities on the same machine.

"The relationship with Bradman Lake has been crucial to our success in that the equipment has dramatically increased our efficiency," said Arnie Zweben, founder of Cool Frootz.

Bradman Lake is represented in Oceania by HBM Packaging Technologies.

HBM Packaging Technologies
www.hbm.com.au

Continuous ink jet printer for high-speed bottling lines

The BestCode Model 88S High Speed prints fast, high-quality single- and multi-line codes on the highest speed bottling and canning production lines. It is capable of print speeds in excess of 8.6 m/s), and can mark and code at speeds above 50,000 bottles or cans per hour.

88S High Speed systems are targeted at the beverage and canning industries where the fastest production lines are employed. Systems print fast, produce high-quality marks and codes, and are easily installed into high-speed production lines.

The units can print human-readable text, graphics and barcodes at a touch of the screen — 1 line of text at 518 m/min, 2 lines at 136 m/min, 3 lines at 68 m/min and 4 lines at 47 m/min.

Model 88S High Speeds are offered with a complete range of specialised inks for glass bottles, returnable bottles, wet glass bottle coding, plastics, metal, thermo-sensitive colour change inks and more. Ink dries in a second and can be permanent or removable with caustic solutions or water as required.

Key operational features of the printers include the EZTouch User Interface, a 10.4″ colour touch display and intuitive icon-based buttons.

SmartFill Fluids are externally filled allowing on-the-fly ink and solvent filling without opening the enclosure. The LargeVolume ink and solvent tanks hold multiple litres [JW1] for extended run time. Ink tank volumes can operate multiple months between additions. Solvent tank volumes can operate 1000+ operational hours between additions.

Systems are enclosed in an industrial, all metal, stainless steel enclosure.

BestCode
www.bestcode.com

Alkali-washable yellow ink

Domino Printing Sciences has introduced 2YL955i — a high-contrast, alkali-washable yellow ink for coding onto dark-coloured, re-usable glass bottles.

The ink is particularly suited for use in returnable glass beverage plants as it can be readily removed when the bottles are 'caustic wash' cleaned for refilling.

With good adhesion even in areas where surface condensation is present during the coding stage, the ink has fast dry properties (1–2 s), and the printed code resists refrigerator storage and immersion in water, making it suitable for beer, soft drinks and other beverage applications.

The yellow ink is also suitable for coding onto re-usable rubber, black plastic kegs and some PET bottles.

The ink runs in Domino's A-Series i-Tech printers (A320i, A420i and A520i), including the XS and Duo variants.

insignia Pty Ltd
www.insignia.com.au

Metal detector system for inline applications

A CEIA metal detector can be integrated with any checkweigher or other inline equipment using the CEIA THS/RB-800 system from Heat and Control.

Only 800 mm long, the system includes a CEIA THS/SL21 series slimline metal detector, round belt conveyor, an optional conveyor speed-sensing encoder and operating controls, all pre-assembled on a sanitary support frame.

The system is available with different CEIA metal detectors, including models THS 21, 21E, 21E-3F, and the MS21 which features CEIA's proprietary multispectrum technology that eliminates product effect rejects without reducing detection sensitivity. The MS21 typically detects smaller particles of 316 stainless steel, ferrous and non-ferrous metals in the most challenging applications, such as cheese, wheat tortillas, fresh spinach leaves, ground meat and partially frozen foods.

Heat and Control Pty Ltd
www.heatandcontrol.co.nz

UV disinfection for bottles and jars

Germ-free surfaces are essential for any manufacturer involved in food and beverage production.

Disinfection with ultraviolet light is a cost-effective and more environmentally friendly alternative to frequently used chemical processes. In just a few seconds, intensive UV light from a high-performance source inactivates germs such as bacteria and viruses which can accumulate, for example, in the thread around a bottle neck.

Unless washer water is treated and/or the container is ultra-heat treated to destroy any residual microbial load, chances are that the bottle neck remains contaminated.

A UV disinfection tunnel specially designed for bottles and jars can reliably improve hygiene and storage conditions. In addition, tins for milk powder and trays for ready meals can be exposed to intensive UV light for a short period to ensure any contaminants are inactivated.

UV light provides dry and cold disinfection on inline FMCG processes using UV fixtures that are easily retrofitted to existing lines.

Heraeus has developed high-power Amalgam UV lamps and nano-coatings to extend lamp lifetimes.

UV fixtures include Cleancover tunnel for bottles, jars and small tins, Bluelight module and Premium module for large tins and fast, cold-fill lines such as yoghurt and Steribelt for continuous UV disinfection of conveyors in the meat and dairy industries.

Heraeus Noblelight Australia Pty Ltd

www.heraeus-noblelight.com

Compact inline labellers

Compact's inline labellers are compact, robust, simple-to-operate, modular product labelling systems.

Available from Matthews Australasia, the labellers are suitable for a variety of applications and needs, including top labelling, wrap labelling, wrap labelling with seam orientation, front and back, a combination of front and back and wrap, wrap labels oriented to flip marks on tubes, and wrap labelling or partially wrap labelling cones.

Matthews Australasia Pty Ltd

www.matthews.com.au

Metal detection and checkweighing equipment

DFC Group of Companies has introduced a range of inspection systems, including stand-alone metal detectors and checkweighers and combination units.

Designed and fabricated using high-quality stainless steel materials, the systems include user-friendly operating systems with 7″ colour touch screen, USB data capture download or Ethernet cable connection available. Features include easy set-up with up to 100 programmable settings and detachable belts for easy cleaning and maintenance.

A selection of reject devices is offered, depending on the weights and product specification, including pusher/paddle arm, air reject or belt drop systems.

A failsafe control system is available on selected models, with sensors placed in the reject path to verify the rejected product has reached the reject bin. Units can be supplied with full stainless steel lockable reject bins, compliant with the latest HACCP guidelines for manufacturing.

DFC Packaging Group

www.dfc.com.au

© FreeImages.com/Adam Davis

Australian dairy delivers reassurance to China's parents

Camperdown Dairy International has adopted a new platform to allow Chinese consumers to check the authenticity and provenance of its products using their smartphones.

Developed with product identification and inspection experts Matthews Australasia and the cloud-based authenticity platform Trust Codes, the system prints each tin of infant milk formula with a unique QR code with human-readable information managed by iDSnet. The printed QR code allows consumers to scan and identify the individual product and report its history. It also displays information about Camperdown Dairy International, Australian dairy products and how best to consume the product.

Using a proprietary algorithm based on scanning history to validate each individual product, each Trust Code assures consumers that the product is not counterfeit, is not subject to a recall and is not beyond its shelf life, as well as other safety checks.

Camperdown General Manager Gavin Evans said, "We recognised that Chinese consumers want surety that the product they give to their children is real and is sourced from the country of origin that is stated on the packaging. We want them to be able to easily access that information with just their smartphone, and they can do this at the retail store or later at home."

The code works with any smartphone. There is no dedicated app to download, which Camperdown considered to be a major barrier to adoption.

Camperdown is one of eight Australian infant-formula manufacturers approved by the Chinese Government. Since being granted its Chinese infant-formula manufacturing and export licence in July 2015, Camperdown has been focused on increasing production at its Melbourne-based site to supply China and the domestic market.

Chinese regulators are requiring infant-milk-formula producers to provide comprehensive tracking and identification systems in response to consumer concerns about food safety.

what's new in Food technology & manufacturing

beverages

New partnership aims to transform winery waste

A new partnership between Swinburne University and DAL Group Australia (DGA) seeks to develop technology to transform winery waste into natural compounds that can be re-used in the winemaking process.

In the European Union the skins, pulp, stalks and seeds left over after grape pressing are now classified as industrial waste.

The Swinburne and DGA partnership wants to develop technology that transforms winery waste into natural compounds that can be re-used in winemaking. They are interested in exploring what can be done within the parameters of winemaking to get the best possible product — and that's all natural, not artificially manufactured.

Working with the university's commercialisation unit in Swinburne Research, researchers from Swinburne's Department of Chemistry and Biotechnology are building on a PhD research project to turn winery waste products into something more valuable. Swinburne is going to provide research and development support for wine and beverage business DGA.

"Australia produces around 1.8 million tonnes of wine grapes every year. After the grapes are crushed almost half of that amount — comprising skins, pulp, stalks and seeds — is disposed of as solid waste in landfill, polluting the environment," said chemist Dr Avinash Karpe, whose initial PhD research project investigated turning this waste into biofuels.

The new partnership with DGA seeks to develop the technology to transform the waste into chemicals that can be re-used in the winemaking process.

As part of its strategy to expand its beverage offering globally, DGA acquired Southern Estate Wines earlier this year, giving the group the ability to form more strategic partnerships with customers and suppliers, improved process control and the opportunity to focus on new product development.

The Griffith facility is capable of producing 20 million litres of wine and also gives DGA the chance to expand into the broader beverage category.

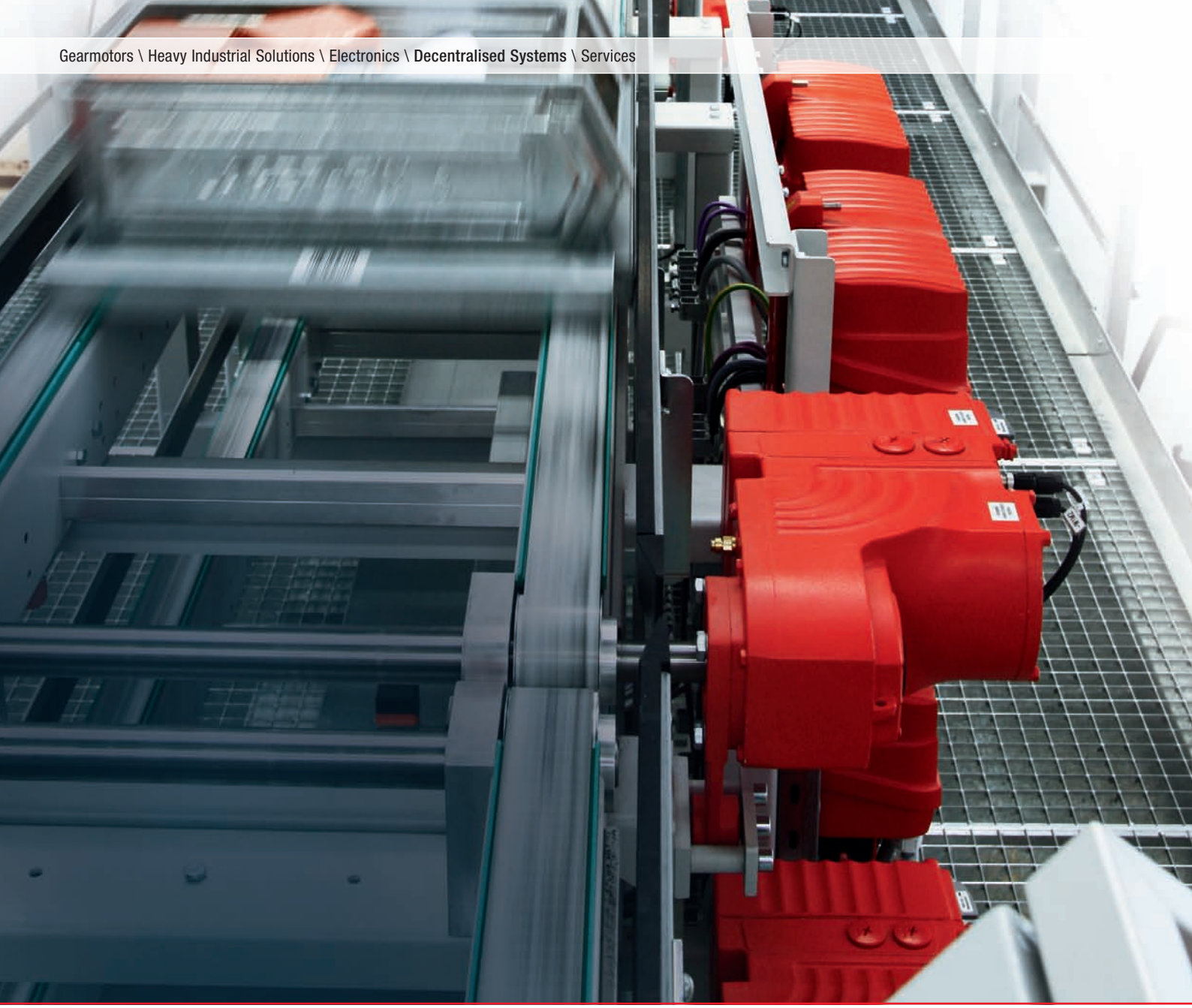
"We're interested in exploring what we can do within the parameters of winemaking to get the best possible product — and that's all natural, not artificially manufactured," a spokesperson for DGA said.

"The possible cost efficiencies to industry are simply astonishing. Never before have we seen such an opportunity."

The chair of Swinburne's Department of Chemistry and Biotechnology, microbiologist Professor Enzo Palombo, said: "At the time we approached DGA, we were looking for a client for the technology we had developed.

"It became apparent that the wine industry had other possible applications so we started the conversation about how we could work with DGA, and the wine industry in general, to find solutions to other problems.

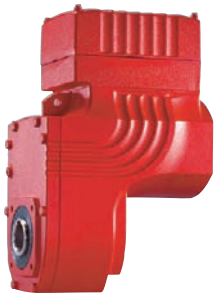
"In a way, we are acting as the R&D arm of their business."



Less is more with MOVIGEAR®

Are you under pressure to reduce costs in your facility? SEW-EURODRIVE can help! The **MOVIGEAR®** Mechatronic Drive System substantially reduces your inventory with its ability to cover a broad range of gear ratios with a single unit. Independent research has also proven that the **MOVIGEAR®** reduces start-up and operating costs in materials handling by 20-30%. So, relax...We've got this!

SEW-EURODRIVE- Driving Australian Industry



MOVIGEAR®

- Compact design
- High degree of protection
- IE4 Super Premium Efficiency class
- Motor, gear unit and electronics are combined in a single housing
- Optimum efficiency due to precise matching of all drive components and the use of permanent magnet motor

www.sew-eurodrive.com.au
1300 SEW AUS (1300 739 287) to be directed to your nearest office
Melbourne (Head Office) I Sydney I Brisbane I Townsville I Perth I Adelaide

SEW EURODRIVE

The water-energy nexus

Increasing output while reducing consumption of water is challenging the beverage and brewing industries.

Water is the most important basic ingredient for the brewing and beverages industry. But that's just part of the story. In the production processes, water fulfils many other functions — either as process water, an energy carrier or in cleaning operations. Water demand and water consumption is therefore correspondingly high. For this reason in the production of beverages and liquid food the emphasis is more and more on a holistic consideration of the way resources are consumed. Economic factors, but also image concerns, in relation to sustainable production, play an important role.

For the manufacturers of bottling and packaging machinery, too, economical use of energy and resources is becoming an ever more powerful commercial argument, important not only as regards a company's own internal processes, but also in terms of its external image, ie, towards its customers. Themes such as reduced water consumption, the use of process heat, closed-loop production processes, water quality and the use of efficient components are all exercising minds in the industry. Continuing to increase output while reducing consumption of resources — that is a goal for the future.

In the opinion of Richard Clemens, managing director of the VDMA Food Processing and Packaging Machinery Association (Fachverband Nahrungsmittelmaschinen und Verpackungsmaschinen), efficient resource and energy management has not yet penetrated all corners of the beverages and food industry, neither in Germany, nor in the markets worldwide.

Residue-free water

Just why the resource of water is attracting so much attention is explained by Dr Karl Glas, of the Working Group on Water Technology at the Technical University of Munich. He identifies four reasons:

- Every litre of water and every litre of wastewater costs — and those costs are rising.
- The multinationals want to standardise production worldwide. And as part of that, the water used has to meet very rigorous standards in terms of quality and technology. The key word here is 'water design'.
- How carefully a company uses resources has for some time been influencing consumer decisions on whether to buy or not, and it is very much a factor in authorisation procedures for new and follow-on investment.

© iStockphoto.com/Ashok Rodrigues

- There are increasing calls for ever cleaner, residue-free water for use in table water and for brewing, mixing or diluting. And residue-free means: no undesirable substances detected with modern analytical methods, regardless of the source of the water. This is an immense challenge in a time when even groundwater can contain traces of statins, painkillers, anti-inflammatory drugs, various analgesics, X-ray contrast media and hormones.

Currently, the demand for residue-free water is largely met through the use of membrane processes such as ultra- or nanofiltration, and through reverse osmosis.

Other applications are also using membrane processes such as wastewater processing, deaeration of water and ensuring the biological quality of water.

Dirk Scheu from Krones AG observed: "This is prompted by the problem of secondary products that can arise during chlorination and that during ozonisation bromide changes to bromate. The WHO has now reduced the limit value here to 0.01 mg/L, but many international companies are adopting much more rigorous standards. Ultrafiltration, with its log rate of 6, can gain ground here. The producers then either don't have to sterilise any more or they only need to treat the headspace of the bottle with ozone. As a result the danger of bromate formation is correspondingly reduced, and that's more sustainable."

Resource recycling calls for optimisation across all areas

When it comes to water recycling, there are basically two ways: in the first the water is collected and sorted according to its pH content or degree of pollution, and then re-used in similar applications. The second way is what's known as the 'end-of-pipe' solution. All the wastewater is collected in a central point and treated anaerobically. The biogas this generates can be used to cover around 20 to 30% of the energy consumption of a brewery. Also possible would be a downstream zero-liquid discharge stage which would enable around 95% of the volume of wastewater to be re-used in production.

Theoretically, even the water in the zero-liquid discharge stage could be treated to reach process water quality.

However, there is an overriding problem here: the more frequently the water is recycled, the more energy is needed. So one resource is saved while perhaps another is being consumed. In order to really get to grips with the issue of resource recycling, the approach has to encompass all areas; many cogs from the many different disciplines all have to fit smoothly together.

Save the date

In September next year, drinktec, the "World's Leading Trade Fair for the Beverage and Liquid Food Industry", will be highlighting the whole theme of water and energy management. Approximately 1600 exhibitors from all over the world will be presenting sustainable solutions in this field.

All the relevant areas in the production of beer, beverages and liquid food will be covered at drinktec 2017. Systems for water treatment will be found alongside concepts for the use of renewable energy in breweries. And visitors will be able to find out about a hot-filling process in which cooling energy is recycled for use in production. Highly efficient systems for generating biogas, including membrane separation of the CO_2 contained within the gas to produce bio natural gas, for use in standard burners and motors, or for feeding into the gas grid will also be covered.

From 11–15 September 2017 in Munich, drinktec will be highlighting the technology that makes sense today and tomorrow, and the many ways in which this technology keeps coming up with answers as to how to balance economics, the environment and entrepreneurial initiative.

Are you sure your surfaces are clean?

The effectiveness of your sanitation system can easily be checked using readily available ATP sanitation monitoring systems. But, while these systems are the current 'gold standard' for monitoring hygiene program effectiveness in food and beverage production facilities, how can you be sure that your system is delivering reliable and accurate results?

ATP systems provide an easy and quick measure of a facility's cleanliness by measuring levels of ATP (adenosine triphosphate), a chemical found in every living cell. ATP hygiene monitoring systems determine cleaning effectiveness by measuring the reduction (or removal) of ATP on food contact surfaces. The method has been used in the food production industry for over 20 years and can easily be customised for the specific equipment, people, product and processes used in any food production facility. The system enables users to set an objective, recordable and traceable standard to help avoid the costly consequences of substandard cleaning efforts.

Real-world comparison of commercially available hygiene monitoring systems

The Applied Research Centre at NSF International has conducted a comparison performance study examining the performance of five commercially available ATP-based hygiene monitoring systems.

The results were clear with Julie Vantine, project manager at NSF International, concluding, "Neogen's AccuPoint Advanced

Reader/ sampler	Neogen AccuPoint 3.04/ AccuPoint Advanced	System A	System B	System C	System D
Mean RLU	593.32	871.56	206.64	29,809.04	594.12

Table 1: Mean RLU response of five ATP monitoring systems against an ATP standard of 100 femtomoles.

Reader/sampler		Neogen AccuPoint 3.04/ AccuPoint Advanced	System A	System B	System C	System D
Mean RLU recovered from surface	Average	165.2	62.8	31.1	8618.10	123.7
	Std dev	34.87	20.08	18.62	5236.99	47.34
	%CV	21.11%	31.98%	59.86%	60.77%	38.27%
% ATP recovery from surface	Average	27.84%	7.21%	15.05%	28.91%	20.82%

Table 2. Recovery of ATP standards from a homogenously contaminated stainless steel surface.

Recovery of ATP from stainless steel surfaces inoculated with varying concentrations of orange juice.

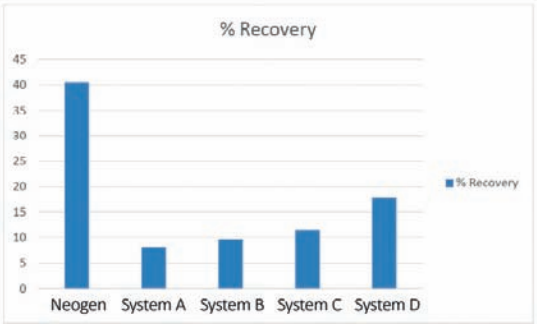


Figure 1. Recovery of an ATP standard from a single contamination spot on stainless steel surfaces.

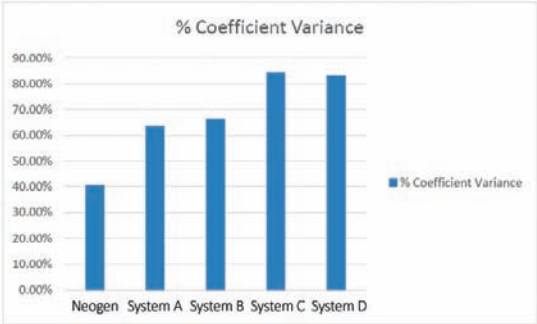


Figure 2. Recovery of an ATP standard from a single contamination spot on stainless steel surfaces. Coefficient of variance (%) was calculated and lowest % indicates the most consistent (least variable) readings.

ATP system consistently yielded the highest percent recoveries and the most consistent readings of the target analytes, when compared to the other four test systems."

The Neogen AccuPoint Advanced hygiene monitoring system offers state-of-the-art samplers, a simple and accurate reader and data manager software to effectively detect adenosine triphosphate (ATP) from food residues and microorganisms present on surfaces and in liquids. The robust handheld AccuPoint Advanced reader can be used to test virtually anywhere and produces results in less than 20 s. In addition, the system comes complete with user-friendly data manager software that allows the user to create test plans to track, analyse and trend test results over time.

The performance study attempted to mirror typical field usage, looking at how each system recovered both ATP standards and commodities (in this case, orange juice) from a common surface (stainless steel).

A comparative evaluation of the ability of five commercial ATP monitoring systems to accurately report ATP levels from stainless steel surfaces was performed.

Evaluations of the sanitation systems were conducted in four protocols. The studies examined the difference in recovery of ATP standards when applied in a homogenous manner across the carrier as well as to a random spot contamination. The study also assessed the ability of the five ATP monitoring systems to detect a standard commodity food, orange juice, which was applied to carriers in varying concentrations.

Protocol 1

The RLU (relative light unit) outputs for the five test systems were observed when ATP standards were directly introduced onto the swabs/sample pads. The mean RLU output was calculated for 25 replicates and reported in Table 1.

Homogenously contaminated stainless steel

Stainless steel coupons were prepared with the 100 femtomoles of ATP and then the surface was sampled using each monitoring system's operational instructions. A real-world approach to the exposure time of the swab contact on the sample surface was employed with a standard run/return pattern used over the sample coupon on two axes. Each axis had the timed exposure of swab to surface of 5 s making the entire exposure 10 s. This time frame is relevant to compare the results of a lab study to a real-world, situational use of the monitoring system. The percent of ATP recovered was determined by comparing the mean response from the surface recovery to the mean response of direct swab inoculation observed in Protocol 1.

Assessing ATP recovery efficiency

ATP recovery efficiencies were assessed by swabbing stainless steel coupons that had a random spot of 5.0 nM ATP solution (100 femtomoles) dried on it. The surfaces of 10 replicant coupons were sampled utilising the real-world situational sampling method utilising each of the five monitoring systems to determine the mean response of each unit.

Samplers	Orange juice dilution	Neogen AP Advanced	System A	System B	System C	System D
Average	1:1000	1783.4	3629.1	639.6	145,735.9	2071.9
Average	1:5000	418.5	832.6	165.6	34,517.6	582.4
Average	1:10,000	90.7	217.5	34.0	6394.1	139.9

Table 3. Mean RLU for recovery of orange juice pipetted onto the sample pad/swab.

> *In a production environment, more accurate and consistent results mean more reliable data.*

Samplers	Orange juice dilution	Neogen AP Advanced	System A	System B	System C	System D
Average	1:1000	553.3	71.4	65.7	14,468.30	271
% ATP recovery		31.03%	1.97%	10.27%	9.93%	13.08%
% CV		33.1%	74.3%	37.2%	47.6%	55.3%
Average	1:5000	119.8	48.2	27.9	2115.40	148.1
% ATP recovery		28.63%	5.79%	16.85%	6.13%	25.43%
% CV		46.7%	32.0%	43.3%	36.5%	38.8%
Average	1:10,000	14	26.6	0	14.4	10.5
% ATP recovery		15.44%	12.23%	0.00%	0.23%	7.51%
% CV		146.7	111.52	NA	316.2	31.2

Table 4. RLU values observed from sampling 10 x 10 cm stainless steel surfaces amended with three dilutions of orange juice.

The percentage recovery was calculated by comparing the mean response from the surface spot recovery to the mean response of direct swab inoculation observed in Protocol 1. The Neogen AccuPoint Advanced system had the highest percentage recovery of all five monitoring systems at 40.50% recovery of the ATP solution from the unit surface. This represents a two-fold greater percent ATP recovery than the next most efficient monitoring system. The Neogen AccuPoint system also exhibited the greatest consistency in readings (with a CV of 21.11%), indicating that the system is very precise.

Mimicking real-world contamination scenarios

The final study involved contaminating stainless steel surfaces with orange juice at 3 dilutions: 1:1000, 1:5000 and 1:10,000. RLU reference values for each dilution were first generated by direct inoculation onto the ATP monitoring system swabs. Recovery sampling using a real-world approach, as previously described, was performed on homogenously inoculated stainless steel surfaces. The percentage recovered from each surface was determined by comparing the RLU of the surface reading with the RLUs observed from direct swab inoculation.

Once again, the Neogen AccuPoint Advanced had the highest observed percentage recovery of all five monitoring systems. For each of the orange juice dilutions evaluated, the percent recovery of ATP by the Neogen AccuPoint Advanced was significantly higher than that of the other four ATP monitoring systems evaluated. Once again, the Neogen AccuPoint system proved to be the most consistent of the devices evaluated (with a CV of 40.58%).

Conclusion

In conclusion, across all real-world test simulations, the larger sampler size of AccuPoint Advanced assisted the unit to be more consistent and accurate in its detection of the amount of ATP on a surface.

In a production environment, more accurate and consistent results mean more reliable data. This data can be used to make critical decisions such as whether to continue with a subsequent production run or delay that production until a second clean can be performed. Reliable information can also result in the prevention of costly product recalls due to undiscovered contamination issues.

Cell Biosciences Pty Ltd
www.cellbiosciences.com.au

METTLER TOLEDO

Your Trusted Partner for Food Safety

Metal Detection & X-ray Inspection, Checkweighing, Vision Inspection, Weighing Equipment, Printers, Labels & Barcode Scanners, Process Analytics, Dimensioning Equipment, Laboratory Analytics, Basic Weighing, Net Weight Control, O2/CO2 Measurement, Service

HACCP • NTEP • OIML • NSF • BRC • IFS • FDA • GMP • SQF • FSSC22000 • EHEDG

ACCEPTED

Visit **www.mt.com/au-foodsafety** to learn how our equipment can guarantee the safety of your food

Australia
1300 659 761

New Zealand
0800 722 6348

Listeria doesn't like the light

Scanning electron micrograph of Listeria monocytogenes (Wikipedia).

In interesting new research, researchers at Umeå University in Sweden have now discovered a new property in *Listeria* that the food industry may be able to exploit to prevent the spread of the bacterium. *Listeria* doesn't like the light!

Even though *Listeria monocytogenes* is ubiquitous in the environment, by far the most likely source of infection with the bacterium is via the ingestion of contaminated food products.

For healthy individuals, the *Listeria* bacterium doesn't usually cause much more than a few days of gastro. However, the same is not true for the elderly, newborns, those with compromised immune systems or for pregnant women, where the bacterium can be very dangerous. In these individuals the bacterial infection can be invasive and spread to the bloodstream and hence to the brain. This carries a mortality rate of 20–30%. If a pregnant woman is infected, the bacteria can spread to the foetus and cause miscarriage.

Listeria monocytogenes, named after the British surgeon Joseph Lister, is a particular risk in unpasteurised dairy products and charcuterie. Unlike most foodborne disease causing bacteria, *Listeria* is not deterred by low temperatures and can grow in refrigerated food.

In interesting new research, researchers at Umeå University in Sweden have now discovered a new property in *Listeria* that the food industry may be able to exploit to prevent the spread of the bacterium. *Listeria* doesn't like the light!

When *Listeria* is exposed to light, the bacterium activates protective mechanisms.

In his dissertation, doctoral student Christopher Andersson also described the discovery of two new molecules that combat the pathogenicity of the *Listeria* bacterium. The researchers also studied how the molecules can be used to prevent the bacterium from causing disease.

"Hopefully, this new knowledge on how light and these small molecules affect the bacterium can, in future, be used to prevent the spread of *Listeria* and help treat listeriosis," said Christopher Andersson, doctoral student at the Department of Molecular Biology at Umeå University and author of the dissertation.

bulk handling

Joining and fastening food-grade conveyor belts

There comes a time when the ends of a conveyor belt must be joined. Whether a first-time installation, replacement or repair, the question is: what methods are available to fasten the two ends, and which one is best for your application.

Shutting down a conveyor system to install a new belt, or repair an old one, involves downtime — and downtime means lost productivity. Even if the belt is replaced during scheduled maintenance, care must be taken to ensure that the splice meets certain operating criteria. For raw food processing in particular, the belt splice must meet strict hygiene standards.

Other key considerations include belt installation know-how and cost. Maintenance crews in food manufacturing plants are probably familiar with mechanical splicing equipment and techniques. Mechanical splices are easier to make and less costly than vulcanised or welded splices; however, they may compromise belt integrity and pose a food safety hazard.

Food-grade conveyor belts

Not long ago, fabric-ply rubber belting was the prevalent technology for a wide range of conveying applications, including food processing.

For food-handling operations, the ends of PVC-coated fabric belts were usually joined on conveying equipment by vulcanisation (heat welding). The two ends were cut in opposing zigzag patterns, called a finger splice, and then placed into a heated press that melted the vinyl ends together. Using the equipment to make these splices took skill and craftsmanship. Maintenance departments were trained in the use of the machinery and had the know-how to complete the operation successfully, and many distributors also had the necessary equipment and skill.

When a fabric-ply belt needed to be replaced due to wear or damage, mechanical splices were generally used. In comparison to the vulcanisation process, mechanical splices were easy to accomplish in the field and only required simple, inexpensive tools.

Modular plastic belting

Over time, modular plastic belting began to replace fabric-ply rubber belting. Modular plastic belting is also referred to as tabletop chain or modular chain, and this type of belting is formed by a series of interlocking hinges and pins. Because it is strong and durable, it has gained popularity for a wide range of conveying applications, including food manufacturing.

Since replacing hinges and pins is a relatively simple matter, belt ends could be joined easily to any length in the plant. The need for expensive vulcanising equipment went by the wayside, along with the skill of vulcanising belts. Today, vulcanising operations are primarily performed by belt manufacturers and specialised fabricators.

Despite its popularity, modular belting has a major drawback in relation to sanitisation, as the hinges and crevices can harbour bacteria.

Polyurethane belting

The newest technology in conveyor belting is extruded polyurethane, which offers many benefits over modular plastic chain in food-conveying operations. Polyurethane belts are available in a wide range of profiles, materials and covers. They can be reinforced with tensile cords to add load capacity and resist stretch, and they offer high resistance to the harsh detergents and chemicals used in washdown.

Having smooth surfaces and sealed edges, there is no place for microbes to take hold, so polyurethane belts can be easily sanitised using clean-in-place (CIP) practices and there is no risk of contamination by broken hinges or pins.

Joining or fastening a polyurethane belt offers the same challenges as did splicing the fabric-ply rubber belting of the past.

Vulcanising or welding

Heat welding the two ends of a polyurethane belt can be done in the factory, in a specialised belt shop or in the field. The belt ends are typically joined using either a finger splice or a butt splice.

Finger splice — factory weld

At the factory or in a fabricator's shop, an endless belt is formed using a long finger splice. The ends of the belt are precisely cut in an interlocking pattern and, using specialised equipment, the long fingers are joined together and subjected to heat and pressure — the result is a heat-welded bond that is virtually indistinguishable from the rest of the belt.

A factory finger splice produces the highest-strength bond possible. This heat-welding process completely seals any exposed tensile cords or fibres in reinforced belts, eliminating any places for microbes to hide.

Producing a factory finger weld requires a large, water-cooled press and needs to be performed in a controlled environment with respect to temperature, moisture and contaminants. Factory splicing equipment costs typically more than $10,000, so given the time and cost considerations, factory splices are impractical for many end-user operations.

Finger splice — field weld

In the field, you can form an endless belt by joining the two ends using a short finger splice. This splice is similar to a factory weld, but the fingers are shorter and therefore easier to weld. Like the factory weld, a field finger weld produces a strong, smooth bond that maintains the integrity of the belt profile and provides a sanitary surface for ease of cleaning.

However, the equipment and operator skill needed to produce a field finger splice is similar to that required for the factory splice.

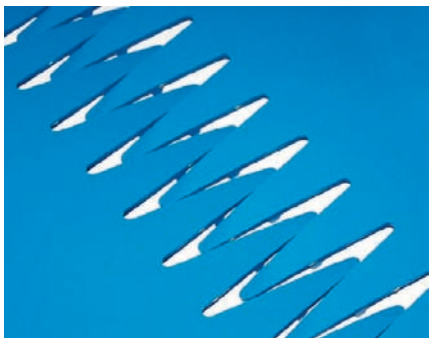
Field butt splice

A butt splice involves making a straight cut perpendicular to the belt centreline, and then joining the two ends using a hot vulcanisation process.

Different belt manufacturers have different methods of heat welding the straight belt ends together. One method uses a 'hot plate' to melt the ends of the belt while the ends are pushed together. Another method involves cutting a 'V trough' into the end of each belt and the ends are melted together using a plastic electrode.

Another butt splice method uses a heat wand placed between the clamped ends of the belt. A fixture drives the two belt ends together against the heat wand, melting the urethane. The heat wand is removed and the ends cooled and trimmed to complete the splice.






Making butt welds in the field involves smaller, more user-friendly and less expensive equipment than that used for finger welds. The equipment applies pressure to the belt ends from top and bottom and operates on an eight-minute heat cycle. At roughly $5000, it costs half as much as finger welding equipment.

While easier to use in the field, butt welds do not produce the strength of finger welds — a butt weld is more likely to come apart as it stresses over the pulleys. When there are reinforcing tensile cords, some methods are unsuitable because they push the cords to the top of the belt, destroying the integrity of the reinforcement.

Mechanical fastening

Mechanical fastening is the process of joining belt ends by means of metal or plastic hinges or plates. Many fasteners used today were born in the era of fabric ply belts and are now being applied to the newer polyurethane belts.

Food-grade polyurethane belting is typically joined using hinged fasteners, including wire hooks, lacing, staples and rivets. The fasteners are attached to each end of the belt and then joined by means of a hinge pin.

Operational considerations

Belt working tension is rated in pounds per inch of belt width (PIW) or N/mm. Factors that affect belt tensioning include the load to be carried, gravity, acceleration and coefficient of friction. When deciding which splicing method to use, one must consider the weakening effect of the splice on belt working tension.

Before deciding which fastener system to use, determine the belt tension rating (in PIW), measure the thickness of the belt and measure the smallest diameter pulley in the system. Based on these criteria, choose the appropriate fastener size and then choose the material suited to the application. Hinge pins and fasteners are available in a wide range of metallic and non-metallic materials, including stainless steel and plastic.

Pros and cons of mechanical fastening systems

Mechanical splicing is quick and economical compared to vulcanising or heat welding. Splicing materials and installation tools cost relatively little, and splices can be made in minutes versus hours.

While some skill is needed to make a field mechanical splice, nearly anyone can do so. Some mechanical splices can be installed with nothing more than a straight edge, a knife and a hammer. A mechanical splice also wastes less belt material — just the amount needed to square both ends of the belt.

The ability to make quick splices on the plant floor helps reduce downtime. Splices are safe to install — since there is no exposure to heat and chemicals — and they are easy to inspect for damage, because the splice is plainly visible. Mechanical splices are compatible with almost any type of belt.

In food operations, the biggest disadvantage to mechanical splices is sanitisation. Unlike vulcanised splices, mechanical splices penetrate the belt, leaving holes where bacteria can accumulate. Also, with reinforced polyurethane belts, mechanical splices leave the tensile cords on the belt ends exposed, providing another area for microbes to grow.

Some mechanical fastening systems are also prone to breakage. The broken pieces can potentially contaminate the food being conveyed and, in cases where food streams must pass through metal detectors, fastening systems should not have metal parts.

Mechanical splices are also not as strong as vulcanised finger splices, so tensile strength is compromised to a greater degree. Mechanical splices also require a larger pulley diameter because the splice components lack flexibility. Some mechanical splice styles also raise the belt profile, so they don't pass as easily over pulleys and cleaners. If not properly installed they can snag and tear, leaving pieces that can contaminate the food stream.

Common hinged mechanical fastening systems

Wire hooks

Wire hooks date back to the days of flat, fabric belts. The hooks were designed to penetrate and grab onto the fabric plies of the belt carcass and they offer a low-profile fastening system that is relatively simple to install. The tooling is inexpensive, and hooks are available in a wide variety of sizes and materials such as stainless steel. There are various methods of installation, including a rolling device and a hydraulic device.

The key benefit to this fastening system is ease of installation and the ability to take the belt on and off. However, the risk of the hooks breaking and contaminating the food stream is a factor to consider before employing this fastening method.

Metal staples

Metal staples are suitable for light- and medium-duty fastener applications on synthetic carcass belts. The staples can be pre-inserted into a one-piece fastener strip which is placed over the ends of the belt and installed using a lightweight tool. The staples are then driven into place with a hammer. They are available in stainless steel alloys for food-grade applications and can be used to repair a belt for temporary use or as a permanent splice.

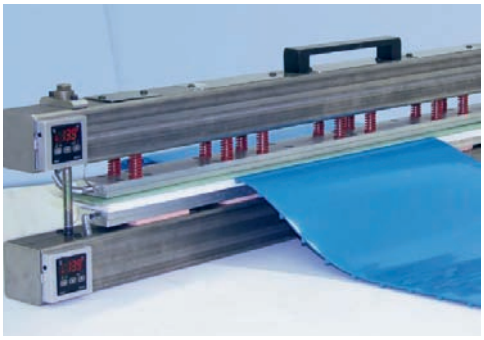
Metal lacing

Metal lacing gives the appearance of a piano hinge. The laces are provided in a continuous strip to match the width of the belt, they are placed over the ends of the belt, and the teeth are embedded into the belt carcass with a hammer. Metal lacing creates a low-profile splice that is economical to install. It can operate over pulleys as small as 1″ in diameter.

Both fasteners and hinge pins are available in stainless steel for food-grade applications. The hinge pins are removable so the belt can be separated for cleaning.

Plastic rivets

Plastic rivets are a non-metallic fastener that can pass through metal detectors. This non-scratching, non-magnetic



> *In raw food processing operations especially, hygienic considerations may outweigh the lower cost and ease of installation that characterise most mechanical fastening systems.*

fastening system has rivets with bevelled front edges that are moulded into the carcass to present a flat surface, and they travel over conveyor components more easily and quietly than metal systems.

Plastic-rivet fasteners have hinge pins that can be removed for belt disassembly and cleaning. This fastening system requires a special tool for assembly and offers a low-cost alternative to vulcanisation.

Hybrid joining systems

There are joining systems that combine both vulcanisation and mechanical fastening, such as the Gates Mectrol Posi-Lace joining system. Designed for light to medium-weight loads using fibre-reinforced polyurethane belts, the fastening system has no metal parts to set off metal detectors.

In this case, the vulcanisation process takes place at the factory, where urethane is welded to the belt in the pin area. An end cap is welded to the belt ends to seal off the tensile cords and maintain the integrity of the reinforcement. This process also prevents exposing the cords to bacteria. A plastic pin is inserted through the splice to join the belt ends in the field. No special tooling or equipment is needed. The splice is easy to clean and sanitise.

Conclusion

There are many factors to consider when choosing a belt-joining or fastening system. For food-grade polyurethane belts, vulcanisation is a superior method for creating a splice that meets the highest sanitisation standards. In raw food processing operations especially, hygienic considerations may outweigh the lower cost and ease of installation that characterise most mechanical fastening systems.

Gates Australia Pty Ltd
www.gates.com/australia

Automated, bulk material handling and packaging system

National Bulk Equipment (NBE) has introduced an automated, bulk material handling and packaging system - including pallet/base supply, slipsheet pick-and-placement, bulk material infeed, packaged contents isolated densification, NTEP-certified weighing and finished-package accumulation conveyance. The system operates on paired, process-specific structural framework chassis with all automation and control functions centralised to a single, menu-driven HMI to enable standardised and system-wide data reporting.

The automatic pallet dispenser phase eliminates manual handling of pallets. The pallet stack, delivered by forklift, is conveyed into the dispenser where the stack is automatically formed and each pallet is aligned and staged to advance into the slipsheet dispenser. The slipsheet dispenser magazine can hold up to 1100 kg of sheet. Sensors and automated controls guide the dispenser lift carriage along horizontal and vertical flanged cam rollers, to provide accurate pick and place of up to 30 slipsheets/h.

The system's bulk bag filling stage uses a cantilevered fill head/bag hanger carriage design with pneumatic actions to bring the fill head and rear bag hooks to within the operator's reach; eliminating the need to step or lean into the equipment. The 8 GPM hydraulic lift carriage lifts bag capacities up to 2000 kg; exceeding the lift speed and capacity of ball screw designs. The NTEP-certified hang-weigh system provides repeatable weighing of bulk bags to an accuracy of ±.05%.

The bulk bag densification platform uses 3 Gs of high-speed, low-intensity vibration to settle material to a dense, stable and safe load. The vibratory action is isolated from the deck and focused on the bulk package to ensure precise package weight accuracy.

The system conforms to the specific, regulated processes and practices of a Class II, Div. 2, process area, including Type Z purge.

Mercer Stainless Ltd

www.mercers.co.nz

Mechatronic drive system

SEW-Eurodrive MOVIGEAR combines three core products — gear unit, motor and electronic drive — into a compact and totally enclosed housing. Integrating these components extends the product's service life and reliability by utilising the technical and practical advantages of all three drive components. This allows the drive system to be easily integrated into most materials handling applications such as conveyor systems.

The hygienic surface design, finished with a non-stick coating, minimises cleaning, leading to reduced system downtimes and reduced operating costs. The anti-stick properties prevent the build-up of debris in the unit, while the enclosed mechatronic drive system applies the principle of surface cooling, eliminating the need for motor fans. Air swirls which spread germs and bacteria are eliminated and there is a high degree of ingress protection.

The motor complies with IE4 (Super Premium Efficiency) standards, offering good energy savings. The system can also improve the standardisation of components in an application, reducing stock holding for end users.

SEW-Eurodrive Pty Ltd
www.sew-eurodrive.com.au

Vibration systems

Products often need some assistance to flow from storage and 'just need a vibrator' to help. Vibration Systems & Solutions provides a range of pneumatic, electric and hydraulic vibrators, plus the expertise and calculation tools to accurately select the correct one for the job.

In Australia, VSS distributes for Netter (Germany) and Martin (USA), and all vibrators are made in Europe or the USA.

Vibration Systems & Solutions (Australia) Pty Ltd
www.vibrationsystems.com.au

© FreeImages.com/chris panteli

Bundaberg invites visitors to immerse themselves in rum

Bundaberg Distilling Company has engaged food facilities designer Wiley to create a visitors' experience centre at the home of one of Australia's most iconic brands, Bundaberg Rum.

The project will use technology to transform the customer experience, offering interactive self-guided tours and enabling visitors to learn the art of rum-blending by creating their own take-home blend.

Forecast for completion in mid-2016, the multimillion-dollar centre will be housed in two repurposed bond stores. The centre aims to attract additional tourists to the distillery, which is a leading Queensland tourist destination attracting around 60,000 domestic and international visitors a year.

Wiley Marketing Director Clare Mitchell says brand loyalty is increasingly relying on innovative and immersive customer experiences.

"Retail is no longer just about the product. We are finding a number of our clients are exploring how they can transform traditional customer experiences through integrating innovative design and next-generation technology," Mitchell said.

Wiley Project Manager Logan Ashmole said, "Wiley is managing construction and delivery of a vat museum, cinema, alfresco dining area and retail outlet, as well as creating a function centre and conference rooms.

"One of the biggest challenges is that the project needs to be constructed while the plant is operating. Alcohol is dangerous to work around, due to the flammable nature of the product, so managing site risk and safety is paramount," Ashmole said.

The new visitor experience will be ready in time for the annual The Spirit of Bundaberg Festival, to be held in late 2016.

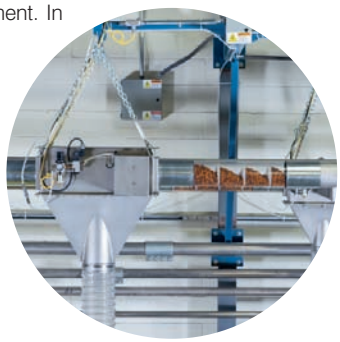
Tubular cable conveyor test lab

Flexicon has completed construction of a test laboratory for Flexi-Disc tubular cable conveyors and integrated bulk handling equipment.

The laboratory is centred around separate 10 and 15 cm diameter tubular cable conveyor circuits with drive systems and tensioners which can be demonstrated as stand-alone systems. Both circuits are configured with metered and non-metered inlet adapters, and valved and full-flow discharges that allow for rapid connection to a variety of full-size upstream and downstream bulk handling equipment also produced by the company.

Full-size equipment that can be integrated with the conveyors includes inlet hoppers, bag dump stations, bulk bag dischargers, bulk bag fillers, drum/box/container tippers, weigh batching/blending systems, screeners, filling machines and storage vessels.

Using customer supplied bulk materials, engineers and laboratory technicians verify system performance prior to final equipment design and fabrication, and demonstrate newly constructed equipment for visiting customers prior to shipment. In addition, engineers utilise the laboratory to study the performance of new designs.



The Tubular Cable Conveyor uses high-strength polymer discs affixed to a stainless steel or galvanised cable to slide fragile bulk foods and non-foods within smooth stainless steel tubing routed at any angle, over short or long distances.

Gentle handling offered by the conveyor makes it suitable for food products that are prone to breakage or degradation including: cereals, coffees, teas, dried fruits, frozen vegetables, grains, nuts, peas, pet foods, seeds, snack foods and spices.

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

Research report on China's FMCG supply chain

CHEP has collaborated with research institute the Chinese Academy of International Trade and Economic Cooperation (CAITEC) in a six-month research project that analyses the status, challenges and trends in China's FMCG supply chain.

The joint CAITEC-CHEP report includes a detailed cost analysis of a number of logistics scenarios based on pilot projects and case studies, before recommending practical actions to support the Chinese government's aim of standardised and more efficient supply chain management.

Commenting at the launch event, the president of CHEP Asia Pacific, Phillip Austin, applauded the efforts by China's government towards standardisation and the adoption of the dynamic flowing supply chains, which he says has the potential to accelerate industry development in China and lower the currently high cost of logistics as a percentage of GDP.

The recommendations made in the report include the potential for government to help accelerate the development of standards for pallets, transportation vehicles, facilities and other equipment through the use of policies and financial incentives; and also to promote good practices and educate stakeholders.

The report also encourages companies to take an overall view of the supply chain and look for ways of collaborating with other participants and with pallet pooling companies. Practical recommendations for companies include upgrading equipment and facilities to national standards, adapting standard processes and prioritising lanes to facilitate palletised delivery, adjusting order sizes to full pallets, and investing in forklifts and related equipment.

To obtain a copy of the report, contact Carter Feng, associate director of sales, marketing and customer service, CHEP China, email: carter.feng@chep.com.

Turnkey refrigeration solutions

Food processing plants and cold storage facilities need to strike a balance between standardised refrigeration systems that keep costs in check and customisation to suit local climates and store layouts. A fundamental requirement is to ensure the installed equipment can operate under a range of conditions with failsafe checks to manage unexpected events and minimise downtime or product spoilage.

BITZER and Buffalo Trident offer a suite of products including customised compressor systems, evaporators and condensers, complemented by services including electrical engineering, controls and monitoring systems, plus technical assistance.

The two brands offer end-to-end system development for supermarket and retail cooling, fresh produce storage, dairy and meat processing, and other cooling applications.

Bitzer Australia Pty Ltd
www.bitzer.com.au

Securing a cut of the beef boom

Media baron turned beef exporter Harold Mitchell told *60 Minutes Australia* earlier this year that "beef export is the new iron ore". His reasoning? Australia's iron ore helped build China and now someone has to feed the growing middle classes.

Industrial Conveying (Aust) (ICA) General Manager Bruce Granger believes Mitchell's comments highlight the reason many businesses in the meat processing industry are turning to automation.

"A client we recently manufactured a turnkey system for is a family owned and run business that not only supplies local butchers but maintains a Tier 1 export licence. What they found with their previous production line was that they couldn't meet demand from overseas relying solely on manual handling."

The challenge put to ICA was to manufacture a system that would significantly reduce manual handling, increase yield from raw materials and ensure best practice food safety standards were met. Hygiene is particularly important to avoid contamination of raw meat, something that can easily happen when manual handling is involved.

"Biosecurity issues around food are huge, and that makes Australia a desirable food source. Not only do these markets — particularly China — want clean, safe food, but they want a lot of it and and they want it now," said Granger, noting that the growing demand for paddock to plate identification was also a consideration when designing for the meat processing sector.

"The food safety technology industry has advocated for greater traceability throughout the supply chain and automation aids this process."

By implementing an automated system, ICA's client was able to reduce costs and increase throughput. An investment in capital infrastructure enabled the business to increase output to meet the volumes demanded for export while saving money on raw materials and labour.

Granger predicts that the demand for Australian food will grow as a result of the free trade agreement.

"We deal with many clients in the food processing area — particularly meat and dairy. We think these two sectors will be among the ones to benefit most from this agreement."

Industrial Conveying Australia
www.icaust.com.au

Aurizon signs sugar and molasses haulage contract with Wilmar

Aurizon has expanded its relationship with Wilmar Sugar Australia Limited with the signing of a new rail haulage agreement. The two-year agreement will see Aurizon haul approximately 245,000 tonnes per annum of bulk sugar from the Proserpine Mill to Queensland Sugar at Mackay Harbour and 60,000 tonnes of molasses from the Burdekin mills to Port of Townsville from January 2016.

The new agreement is in addition to the existing 1.2 million tonnes of bulk sugar contract Aurizon has with Wilmar in North Queensland's Burdekin region.

Aurizon EVP Commercial & Marketing Mauro Neves said Aurizon was delighted to reach agreement on a new contract with Wilmar, which extends a relationship dating back more than 20 years.

"The contract guarantees rail capacity to Wilmar, provides the company with an efficient rail service from mill to port and meets our needs commercially as we grow our business.

"Sugar plays an important part in Aurizon's diverse portfolio of bulk freight businesses in Queensland, which range from minerals and fertiliser to agricultural commodities and livestock.

"Our commitment is to continue providing safe, quality, reliable and efficient services which help Wilmar deliver its product to market."

Upgraded position controllers

maxon motor has launched the next generation of the EPOS product range of CANopen position controllers, which will now feature additional functionality and improved control performance. A modular expansion project enables connection to various fieldbus interfaces and feedback providers.

The first product in the range will be the high-performance EPOS4 module with detachable pin headers in two power variants. Both modules have a power density up to 1500 W peak power at dimensions of 57 x 62 mm. They are for both the control of brushed and brushless DC motors.

maxon motor Australia Pty Ltd

www.maxonmotor.com.au

Explosive growth and the global cold chain

If the world had a properly functioning cold chain, it is claimed that perishable food loss could be brought down to just 2%.

Rising disposable income, growth in the food retail market and rapidly growing demand for frozen food are forecast to drive high growth in the cold chain industry.

While North America dominates the cold chain market with a 40% share in global market in 2014, the highest compound annual growth is expected in the Asia Pacific region.

Zion Research's report 'Cold Chain Market for Fruits & Vegetables, Bakery & Confectionery, Dairy & Frozen Desserts, Meat, Fish & Seafood, and Other End-users: Global Industry Perspective, Comprehensive Analysis, Size, Share, Growth, Segment, Trends and Forecast, 2014–2020' estimates that the global cold chain market was worth US$110.20 billion in 2014 and forecasts it growing at a CAGR of 13.9% between 2015 and 2020. This will make the market valued at about US$271.9 billion in 2020. In 2014 the global cold chain market was estimated at 552.09 million m^3.

What is the cold chain?

The cold chain is a temperature-controlled supply chain that involves the storage and transportation of temperature-sensitive, perishable goods. This means that all storage and distribution activities must occur under temperature-controlled conditions. It is no good keeping your ice-cream stored at -18°C but moving it in unrefrigerated trucks where it can melt and spoil.

Good cold chain management will help to preserve and extend the shelf life of products including meat and poultry, seafood, fruit and vegetables, and frozen foods. The food and pharmaceutical industries are the major end users of cold chain services.

The global cold chain market is mainly driven by increasing need for an efficient storage system for perishable goods to avoid wastage of food products. Cold chains facilitate farmers to store perishable agriculture produce such as vegetables and fruits and increase its shelf life.

Rapid growth in the frozen food market is also expected to drive the cold chain market in the years to come. However, the high cost of real estate and energy are expected to produce significant challenges for the growth of this industry.

Meat, fish and seafood currently dominate the global cold chain market with around 45% share. Fruits and vegetables, bakery and confectionery, dairy and frozen desserts are also key end users of the cold chain market.

Why the cold chain needs to expand

The International Institute of Refrigeration estimates 23% of food loss and waste in developing countries is due to the lack of a cold chain. For perspective, Ethiopia has just 2 L/person of refrigeration compared to 344 L/person in the US.

Prevention of waste is one of the main drivers of the global cold chain market. This was explored in depth in December last year at Carrier's World Cold Chain Summit to Reduce Food Waste.

"Only 10% of worldwide perishable foods are refrigerated today, so there is immense opportunity to cut food waste and the resulting greenhouse gas emissions by implementing or improving the cold chain. As a leader in high-technology refrigeration solutions, Carrier actively contributes to the development of the cold chain by providing a communication platform, like this summit, where all stakeholders have the opportunity to share, learn and build sustainable cold chain solutions to reduce food waste.

"One-third or more of the food we produce each year is never eaten, yet more than 50% of the wasted food can have its shelf life extended by the cold chain," said David Appel, president, Carrier Transicold & Refrigeration Systems.

The conference, which was held in Singapore, convened 131 delegates from 33 nations, including global leaders in the supply chain private sector, academia and government to discuss and develop scalable, sustainable solutions to expand and improve the cold chain to reduce food loss and waste.

Summit highlights

- The summit endorsed the new United Nations Sustainable Development 12.3 Goal that calls for halving food waste — at retail and consumer levels, as well as reducing food losses along the entire global food supply chain — by 2030.
- A new, independent study shows that greenhouse gas emissions associated with food waste could see a 10-fold net reduction if developing countries have the same level of cold chain implementation as the developed world. This is powerful evidence that a green cold chain can be effective not only in feeding more people, but taking a bite out of the astounding 3.6 gigatons of CO_2 associated with food waste every year. If food waste were a country, it would be the third-largest emitter of greenhouse gases. The study confirms that clear improvements are achievable.
- According to Professor Judith Evans of London South Bank University, in developed countries, 42% of food waste happens at the household level, confirming the need for greater consumer awareness. The UK awareness campaign 'Love Food Hate Waste' is credited with generating a 21% reduction in household food waste since 2010, she shared.
- The US Green Building Council's LEED green building standard could be an effective model for consideration for a green cold chain standard.
- One of the keynote speakers at the conference, Dr Joseph Mpagalile, agro-food industries officer, Food and Agriculture Organization of the United Nations (FAO), said the FAO is considering a new Cold Chain Coalition to fight food waste in developing countries.
- The summit also endorsed the new UN Sustainable Development Goal that calls for halving food waste — at retail and consumer levels, as well as reducing food losses along the entire global food supply chain — by 2030.

According to John Mandyck, UTC chief sustainability officer: "We know there are many reasons why food is lost or wasted — but among them is the lack of or the underdevelopment of the cold chain.

"Refrigeration is the best technology to ensure food safety for perishable goods and prolong its shelf life. That's why this summit is so important, as it helps connect a global dialogue on how we can sustainably grow the cold chain — which, in turn, can reduce food waste and feed a growing population with fresh foods containing necessary micronutrients for good health and development.

"Over the last 20 years," Mandyck added, "we've experienced the 'Age of Energy Efficiency', taking the same power base and spreading it more efficiently to urbanise in a sustainable manner. Energy efficiency has gone far, with more to go. It is now time for the 'Age of Food Efficiency', using the same food supply base that produces enough to feed 10 billion people — enough for those on the planet today and enough for those that will join us in 2050 — and in the process avoid more production and environmental emissions that come with it. The potential to extend food supplies, with the help of an improved green cold chain, is extraordinary."

Electric actuators

Servomech Italy's range of electric actuators for industrial applications has been extended to include servo motor-driven ballscrew actuators and drives for high dynamic applications.

These have been added to the company's range of actuators in both acme and ball screw versions with a range of speeds from 1.4 to 140 mm/s, and equal push-pull forces ranging from 600 N to 350 kN. Strokes up to 800 mm are standard with longer strokes available. There is a range of motors available including 12/24 VDC, 240 VAC and 415 VAC with optional motor brakes.

Options such as encoders, potentiometers, end-of-stroke switches and a range of end fittings are also available. Duty cycles of 100% are achievable. The actuators provide a reliable alternative to air and hydraulic cylinders with the added possibility of accuracy of stopping in multiple positions, less maintenance and a much lower energy footprint than air cylinders. Higher safety in load lifting applications is also a feature.

Motion Technologies Pty Ltd
www.motiontech.com.au

Dust-containing bulk bag unloader

National Bulk Equipment's bulk bag unloader has been designed to provide dust reduction and improve process operation efficiency.

Material dust release during the bag-spouting sequence presents operator hazards and slows process cycle times and changeovers. The process-specific bulk bag discharger enables the operator to spout the bulk bag while simultaneously enclosing the bag spout interface within the closed-cycle dust recovery system, which prevents the release of dust into the work area by recovering the contained dust and reintroducing the material dust back into the discharge path.

As material flow moves from the bulk bag through the bag spout interface, the suspension system automatically reacts to the lessening volume of material in the bulk bag and lowers the bag spout interface to pull the bag into a taut, conical shape. This bag-shaping function ensures no residual material remains in the bulk bag and, as a result, no residual material dust is released during unspouting.

The bulk bag discharger unloads various semi free-flowing, hygroscopic, contaminable powders at a rate of 2721 kg/h. Changeover times are shortened due to reduced equipment cleaning times and improvements in operator bag-spouting efficiency.

The complete process sequence operates on paired, process-specific structural framework chassis, with all automation and control functions centralised to a menu-driven HMI to enable standardised and system-wide data reporting.

Mercer Stainless Ltd
www.mercers.co.nz

Flowfresh floor stands up to brewing's challenges

When founding the Pale Fire Brewing Co. in the US state of Virginia, head brewer Jamie Long knew a robust floor would be essential to withstand the challenging demands of high-quality craft beer production.

The site he'd chosen for his business was an 80-year-old building that was in the process of being renovated. However, the existing floor was unsuitable for the thermal shock, chemical spills, heavy pallets, dropped kegs and slippery conditions inherent to a brewery.

Long undertook extensive research into the best flooring solution and visited a neighbouring brewery, where he reviewed the Flowfresh floor to see how it coped with the on-site challenges.

Flowfresh is an HACCP International Certified, cementitious urethane system manufactured by global resin flooring manufacturer Flowcrete. The product was compared to several alternative materials before being specified for the project.

"I knew we needed floors that would be able to handle the stress from brewery operations. The floor has held up remarkably well in the seven months we have been open … and we are constantly complimented on the cleanliness and professional look of the floor."

Prior to applying the coating, concrete was poured in the brewing areas to ensure that the floor would be able to handle the weight of the heavy equipment. The floor was also sloped so that any liquids would flow into the newly installed trench drains.

Approximately 232 m² of Flowfresh SL was laid down in the production area, bottling line and storage rooms. A topcoat of Flowfresh SR Sealer was then applied to complete the floor's seamless, impervious and durable finish.

As customers in the Pale Fire Brewing Co.'s stylish Tap Room would be able to look into the production area, it was important that everything in the brewery was both functional and aesthetically appealing. A contemporary, dusky red colour was chosen for the floor.

The incorporation of the Polygiene bactericidal additive was particularly appealing to the Pale Fire Brewing Co. The silver-ion based additive is homogeneously distributed throughout the Flowfresh material to complement regular floor cleaning and hygiene practices. Flowfresh samples have been evaluated to the ISO 22196 test method, which measures a surface's antibacterial effectiveness on plastics and other non-porous surfaces.

Slips and trips were another key brewery concern, as spillages of beer, by-products and ingredients during the brewing process can all become dangerous hazards. The floor was installed with a full broadcast of aggregates to help avoid such accidents by enhancing traction underfoot.

The brewery's owners had initially decided against a cove base; however, the application contractor convinced the client during the shotblasting process of its advantages. Since opening, Long has been impressed with how much easier the coving makes it to wash the site.

"There are always small pieces of grain in the brewhouse after a brew day and the cove makes it much easier to spray around the perimeter to send it to the drain. Without the cove, grain and dirt would likely get trapped at the 90-degree edge of the floor," explained Long.

Being unable to clear away contaminants could leave a brewery vulnerable to being compromised by dangerous microbes. The ability of Flowfresh to effectively minimise the potential for contamination incidents in food and beverage manufacturing facilities led to it being awarded HACCP International Certification.

Flowcrete Australia
www.flowcrete.com

Level measurement technology for bulk solids

Emerson Process Management has enhanced the features of the Rosemount 5708 Series 3D Solids Scanner, for accurately measuring level and volume of bulk solids and powders in large vessels, bins and silos.

The scanner, which uses acoustic measurement and 3D mapping technology to provide accurate continuous level and volume measurement, is now suitable for a broader range of applications. The device is now ATEX/IECEx certified for installation in areas with potentially explosive atmospheres. A mounting adaptor allows the device to be installed within electrostatic precipitator (ESP) hoppers. By using its 3D visualisation capability to map out the surface of the fly ash that builds up in the hopper, operators can optimise the process, reducing cost, risk, and wear and tear on the hopper.

Emerson has also introduced full SCADA integration support for the solids scanner. Users can now integrate 3D visualisation of the surface level into Emerson's Ovation or DeltaV distributed control systems.

For remote solids applications or where there is no existing cable infrastructure, both the solids scanner and the Rosemount 5402 Non-contacting Radar, which provides bulk solids level measurement for applications with smaller sized vessels, can now be connected to a WirelessHART network using a Smart Wireless THUM Adapter.

The air purging connection for the Rosemount 5402 prevents clogging of the antenna in applications with dusty environments. The self-cleaning function on the Rosemount 5708 can be complemented with a PTFE-coated antenna that helps extend maintenance intervals, especially where extremely sticky materials are present.

Emerson Process Management Aust P/L

www.emersonprocess.com.au

Wiley to expand and upgrade leading Australian red meat processor

Getting set to serve the world, Casino-based livestock processing company Northern Co-operative Meat Company Ltd (NCMC) is gearing up for long-term growth. The upgrade and expansion investment will enable its many operators to meet increased national and international demand for premium Australian meat. Brisbane-based international food facilities designer Wiley has been trusted to deliver on the 4-stage project set to run over 2016.

The projects consist of design and construction of a new state-of-the-art cold chain management facility; design and construction of a beef knocking box and race system; design, supply and install of a steam repair and relocation; and finally the tannery wastewater treatment plant upgrade.

NCMC Chief Executive Officer Simon Stahl said: "We have more than 100 operators who use our facilities in Casino to process their livestock. Our main focus is to provide them with efficient facilities using a highly trained workforce and specialised equipment to service all major global markets including Australia, the USA, China, Japan, Korea, European Union, Halal and organic markets.

"We chose Wiley to undertake the design and construction of our latest projects because we are confident in their specialist knowledge of the demanding standards of food safety and hygiene, especially in meat and across the cold chain production line.

"The knocking box and race system are a pivotal part of our abattoir and will set the rhythm for the rest of the facility. Wiley have experience in designing to international standards of animal welfare and this design complied with design principles created by US animal welfare expert Dr Temple Grandin.

"We look forward to our continued work with Wiley, which began earlier this year."

Wiley Managing Director Tom Wiley said: "NCMC has been around for nearly as long as we have and are well known as an industry leader in red meat processing.

"Our team has worked closely with NCMC over the last few years to understand the requirements of each project and their desire to continue providing quality services and products to its customers servicing Australia and the world. They have strong values which align with ours, which further strengthens our long-standing relationship with them."

Wiley Senior Project Manager Barry Murphy said: "Our multidisciplinary team has drawn upon nearly a century of food industry experience to design and deliver highly innovative and best practice solutions in line with NCMC's budget and timeframes. For their new cold chain management facility, NCMC wanted to freeze and chill all beef and veal cartons on-site, reduce the transportation of products off-site, and improve staff and product flows throughout the facility.

"The design we came up with improves carton management, increases storage capacity on-site and improves load-out capabilities, ultimately reducing manual handling, forklift movements, and creating a safer environment for all workers.

"We'll also be installing an ASRS automated sortation and retrieval system, which is the first of its kind used in a frozen environment in Australia and only the second in the world. This system provides NCMC with the ability to better manage product flow and traceability.

"We're pleased that the building footprint and the equipment we have selected will allow NCMC to expand and modify their operations in the future.

"Meanwhile, our works on the tannery infrastructure will improve the segregation of the water waste streams.

"We look forward to working with NCMC on all four projects, taking approximately one year to complete."

WESTWICK-FARROW MEDIA

A.B.N. 22 152 305 336
www.westwick-farrow.com.au

Head Office
Cnr. Fox Valley Road & Kiogle Street,
(Locked Bag 1289) Wahroonga NSW 2076
Ph: +61 2 9487 2700 Fax: +61 2 9489 1265

Chief Editor: Janette Woodhouse
wnift@westwick-farrrow.com.au

Assistant Editor: Melissa Barks

Publisher: Geoff Hird

Art Director/Production Manager: Julie Wright

Art/Production: Tanya Barac, Colleen Sam

Circulation Manager: Lora Tomova
circulation@westwick-farrow.com.au

Copy Control: Mitchie Mullins
copy@westwick-farrow.com.au

Advertising Sales
Kerrie Robinson
Ph: 0400 886 311
krobinson@westwick-farrow.com.au

Germany, Austria, Switzerland - Eisenacher Medien
Ph: +49 228 249860 info@eisenacher-medien.de

If you have any queries regarding our privacy policy please email privacy@westwick-farrow.com.au

Subscriptions for unregistered readers
- price on application

Audited Media Association of Australia

September 2015 total CAB audited circulation (Aust + NZ):
6443 readers (82% personally requested)

Printed and bound by SOS Print + Media
Print Post Approved PP100007395
ISSN No. 1039-8414

Complete Food Packaging Solutions

Filling and Packaging machines:

- Pouches
- Cheese Cutting
- Cheese Wrapping
- Cups
- Bottles
- Cans
- Bag in Box
- Cartons
- Cases
- PET Bottles

KHS
Filling and Packaging — Worldwide
ALPMA
BOSCH
Invented for life
Pattyn
PACKING LINES
ferrum

PO Box 378, 1-3 Freight Road Tullamarine 3043 Victoria Australia
Telephone: +61 (03) 9335 1211 Fax: +61 (03) 9335 1331
Email: info@khspacific.com.au

READY-MADE SOLUTIONS

To Your Specific Bulk Bag Handling Problem

FILL

Fill one bulk bag per week or 20 per hour with REAR-POST, TWIN-CENTREPOST™, and SWING-DOWN® Bulk Bag Fillers

Flexicon's extra-broad model range, patented innovations and performance enhancements let you exact-match a filler to your specific cost and capacity requirements. Patented TWIN-CENTREPOST™ models maximise strength, accessibility to bag loops and economy. Cantilevered REAR-POST models allow pass-through roller conveyors. SWING-DOWN® models pivot the fill-head to the operator at floor level for quick, easy and safe spout connections. Optional mechanical and pneumatic conveyors.

CONDITION

Loosen material solidified in bulk bags during storage and shipment with BLOCK-BUSTER® Bulk Bag Conditioners

Opposing hydraulic rams drive contoured conditioning plates to crush and loosen solidified bulk material safely and easily. Bulk bags can be raised, lowered and rotated to allow complete conditioning of the entire bag through the use of automated turntables and scissor lifts, or electric hoist and trolley assemblies. Offered as stand-alone units for loading with forklift or electric hoist and trolley, or integrated with bulk bag dischargers for reduced cost, footprint and loading time.

UNLOAD

Save time, money and space with BULK-OUT® Multi-Function Bulk Bag Dischargers and Weigh Batching Stations

Condition, de-lump, screen, feed, weigh batch, combine with liquids, and convey as you discharge, with a custom-integrated, performance-guaranteed, dust-free discharger system. Offered as stand-alone units for loading with forklift or electric hoist and trolley, split frames for low headroom areas, economical half frames and mobile frames. All available with mechanical and pneumatic conveyors, flow promotion devices, bag dump access, automated weigh batching packages, and much more.

Stand-alone units to complete, automated systems integrated with mechanical and pneumatic conveyors

flexicon® .com.au

See the full range of fast-payback equipment at flexicon.com.au: Flexible Screw Conveyors, Tubular Cable Conveyors, Pneumatic Conveying Systems, Bulk Bag Unloaders, Bulk Bag Conditioners, Bulk Bag Fillers, Bag Dump Stations, Drum/Box/Container Tippers, Weigh Batching and Blending Systems, and Automated Plant-Wide Bulk Handling Systems

USDA ACCEPTED

AUSTRALIA
sales@flexicon.com.au
1300 FLEXICON

USA +1 610 814 2400
UK +44 (0)1227 374710
SPAIN +34 647 670 302
SINGAPORE +65 6778 9225
SOUTH AFRICA +27 (0)41 453 1871
CHILE +56 2 2415 1286

Available to Industrial, Food, Dairy & Pharmaceutical Standards

D-0869