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Cover image: ABB’s Delta robot IRB 360 FlexPicker automatically lids desserts at Coppenrath & Wiese in Germany. Image courtesy ABB Robotics.

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July/August 2014

www.foodprocessing.com.au
How can the food industry maximise its sales and yet simultaneously appear to support public health initiatives to combat obesity?

If people eat less, profits to food manufacturers will decline. But the food industry needs to be seen to be responsive to the ‘obesity crisis’.

Food companies frame obesity as an issue of the choices people are making rather than the choices they are being offered, claims Ivy Ken, associate professor of sociology at George Washington University. The companies say they are offering alternatives as well as their full-sugar, full-fat options and consumers can choose to purchase these ‘healthier’ products.

Dr Ken studied food companies affiliated with two non-profit organisations: the Alliance for a Healthier Generation and the Partnership for a Healthier America. She examined the commitments, speeches, websites, annual meetings and other public materials the companies and their partners distribute.

She said: “I found that these organisations might more appropriately be called the ‘Partnership for a Healthier Bottom Line’.”

Companies’ commitments included creating new marketing campaigns for lower-calorie products and making healthier options more prominent on menus.

“These are the activities behind the grand pronouncements made by the Alliance and the Partnership that they are ‘working together’ with the public, ‘partnering,’ and ‘collaborating’ to solve the problem of obesity ‘together’. This message is often delivered by prominent public figures such as former President Bill Clinton, First Lady Michelle Obama, and US Senator Cory Booker, and it is carefully crafted to deflect attention away from how these token gestures are meant to keep junk-food peddlers in the public’s good graces.”

The strategy has been very successful, according to Dr Ken. Some of the corporate partners’ own analyses reveal that acknowledging obesity as a social problem and offering lower-calorie products as the solution has been very profitable. From 2006 to 2011, a set of companies that account for one-quarter of food sales in the US increased their sales by $1.25 billion from lower-calorie products alone. It’s important to note, Dr Ken said, that sales of their higher-calorie products did not decline as a result. Rather, these sales also grew by $278 million in this period.

While better products might be an important step, most of the companies making minor modifications to their products - PepsiCo, J&J Snack Foods, Nestlé and dozens more - are the same companies making the products that contribute to obesity and other health and environmental problems in the first place, Dr Ken said.

“They have received a great deal of attention and praise for their efforts, which helps them avoid regulation and public disapproval,” Dr Ken said. “But great problems have been created by companies’ efforts to increase their profits at the expense of the public’s health. Those who are interested in fighting these problems and combating obesity should not be lulled into ‘working with’ these companies, but rather, against and around them.”

Regards
Janette Woodhouse
Chief Editor
What’s New in Food Technology & Manufacturing
www.foodprocessing.com.au
If you want to squeeze every drop of performance out of your production line, it begins with what you put into them. Bel-Ray high-performance industrial lubricants are engineered to get the most out of your equipment. Plus, they come packaged in an industry first, global compliant, multi-lingual label system. So if your production line needs a little pick-me-up, that just means it’s thirsty for Bel-Ray.

SEE THE ENTIRE LINE OF BEL-RAY PRODUCTS AT BELRAY.COM.
Australian Grape and Wine Authority begins operations

The Australian Grape and Wine Authority (AGWA) has begun operations. The Adelaide-based authority brings together R&D functions and marketing and export regulation functions following a proposal by key industry bodies, the Winemakers’ Federation of Australia and Wine Grape Growers Australia.

AGWA will have a budget of $34.7m in 2014-15, with approximately $11.5m to be provided by the Commonwealth as matching funds for research and development in accordance with relevant legislation.


Certified Food Scientists earn $20K more than non-certified peers

It’s official: Certified Food Scientists earn more than their non-certified counterparts - by as much as US$20,000 per year.

The recently released Employment & Salary survey from Food Technology magazine shows that food scientists with the Certified Food Scientist (CFS) certification from the Institute of Food Technologists (IFT) earn a median salary of US$101,000, compared with a median salary of US$81,048 for those without the CFS certification.


Demand increases for premium prepared meals

Pre-prepared meals are no longer the domain of the low-income, time-poor consumer, according to a new report from Canadean. The gap between rich and poor is beginning to close - at least in terms of prepared meal consumption. The Canadean report shows that 48.3% of the richest consumers and 51.7% of the poorest consumers purchase prepared meals regularly.

Being short on time is a universal problem, it seems, with both low- and high-income consumers citing this as a reason for purchasing prepared meals. However, with more cash to spend on food, higher-income consumers are looking to premium prepared meals to provide a luxury dinner without all the preparation and without having to leave the house.

Fresh Produce Safety Centre addresses gap in industry

The University of Sydney is hosting a new industry-funded centre aimed at ensuring the safety of fresh food produced in Australia and New Zealand.

The centre will work with each sector of the fresh produce supply chain, from growers and processors through to researchers and peak industry bodies. According to the centre’s newly appointed board of directors, the centre was established to address an important gap in the industry: the need to promote research, outreach and education about fresh produce safety throughout Australia and New Zealand.

The research for the Fresh Produce Safety Centre is being conducted in partnership with researchers at the University of California, Davis.


New handbook on certifying food safety management systems

ISO, the International Organization for Standardization, has published a new handbook that compiles two key standards for certifying food safety management systems. ISO says the handbook contains all the information certification bodies need for reliable and efficient audits.

The handbook combines:
• ISO/TS 22003, which outlines requirements for bodies issuing certifications to ISO 22000 on food safety management systems (FSMS).
• ISO/IEC 17021, which sets generic requirements for bodies carrying out audits.

These contain everything that a certification body must know when carrying out FSMS audits or certification.


Could the WA organic canola case change Australian organic standards?

The WA organic farmer who took his neighbour to court for contaminating his organic-certified property with genetically modified canola has lost his battle in the WA Supreme Court. Steve Marsh claimed the contamination caused him to lose his organic certification on more than half of his property for three years.

Experts say they hope the decision will lead to a reconsideration of Australia’s organic certification standards, which set a strict zero-tolerance policy for GM.

“The issue of accreditation is the main problem. Australian organic standards have a zero tolerance for GM whereas international standards allow for the adventitious presence. It is difficult to see why the Australian industry is insistent on its policy as it is likely to be unworkable in the long run. Biological systems can never be 100% controlled and so it is nonsense to pretend.” said Dr Andrew Jacobs, Program Leader at the Australian Centre for Plant Functional Genomics and a Senior Research Fellow at The University of South Australia.

Thank you to all of you who lent a hand

Visitors to the Wiley stand at Foodpro took part in an interactive exercise in collaborative data harvesting. Simply by prioritising a set of icons representing a range of human-centred design possibilities, each of you answered the question....

What will you value in a future food facility?

Manifested as visual data evolving in real time, your contributions have become part of a shared vision that the creators of food facilities will use to shape the future of food manufacturing.
IF YOU’VE MISSED OUT, JOIN IN ONLINE

Over the next six months the entire industry is invited to keep growing this insight into an ideal future of facility design. Spend five minutes, perhaps with your staff or colleagues, and literally watch our collective values shape this growing new data resource.

Help us create today what you will value tomorrow.

www.foodfrontier.com.au
Finding E. coli earlier and more accurately

US researchers have developed a new method to detect Shiga toxin-producing E. coli O157:H7 earlier and more accurately.

The newly developed test is a molecular assay, or polymerase chain reaction, that detects bacteria based on genetic sequences. The test is rapid and reportedly less labour-intensive than existing detection methods and can be automated.

The test can be used in a diagnostic or research laboratory to accurately detect E. coli and can help with quality control in cattle facilities.


$15m funding available for small exporters

The government has followed through on its election promise to dedicate an additional $15 million in funding over the next four years to help small exporters deal with the cost of export fees and charges. Small exporters in the meat, dairy, fish, horticulture and grain industries may be eligible for a rebate, Agriculture Minister Barnaby Joyce said. Available in 2014-15, the rebate will cover 50% of export registration charges up to a maximum of $5000.

For the remainder of 2014-15, the export sectors will work with the Department of Agriculture to review the export certification fees and charges through existing government-industry consultative committees.


Revised Food Industry Recall Protocol now available

A revised food recall protocol has been launched by Food Standards Australia New Zealand (FSANZ). Assistant Minister for Health Fiona Nash says every Australian food manufacturer, importer, wholesaler and distributor should have a copy.

“This latest edition of the Food Industry Recall Protocol, developed by FSANZ in collaboration with the state and territory food enforcement agencies and key industry stakeholders, will help ensure the Australian food industry remains well prepared to conduct a food recall,” said Minister Nash.


EUROPE'S LEADING SAFEGUARDING SOLUTIONS ARE NOW AVAILABLE FROM FOODMACH

Foodmach Pty Ltd has joined the global network of HEUFT SYSTEMTECHNIK GMBH of Germany, as the channel partner for Australia and New Zealand. As the official supplier, Foodmach will supply and support the food, beverage and pharmaceutical industry with innovative quality-assurance and safeguarding equipment for all package types.

"We could not be more excited to welcome HEUFT SYSTEMTECHNIK GMBH to Foodmach's product offerings," says Robert Stojanovic, Director of Sales and Marketing at Foodmach. "They have really developed the leading range of inspection and quality-assurance products in Europe, which aligns perfectly with FOODMACH's innovative robotic, palletising and conveying solutions. From empty and full container inspection to high performance labelling machinery, you can expect to see some incredibly fast and accurate production lines being installed by Foodmach in the near future."

"HEUFT is already present in Australia and New Zealand with a wide range of sold devices and an own service organisation. The cooperation with Foodmach will now offer all customers further opportunities to get quick and qualified support for their new project development. We expect that the combination of the knowledge of both companies will provide a big advantage to existing and new customers in this region" is the comment of Juergen Kurz, General Manager of HEUFT ASIA Ltd., responsible for the APAC region.

HEUFT quality-assurance equipment is now available through Foodmach's nationwide offices including Echuca, Melbourne, Sydney and Brisbane. Our Solution Engineers are currently on tour across Australia and New Zealand, we encourage interested parties to book a feasibility study of their production site and learn how HEUFT and Foodmach can increase quality and speed up output.

Contact Lachlan Hyndman on +61 3 5482 4666 or email lachie.hyndman@foodmach.com.au

Learn more: www.foodmach.com.au/heuft
New Zealand’s largest three-day food manufacturing, packaging and processing technology event is worth putting into your calendar as a ‘must attend’.

The trade-only event reaches thousands of businesses and workers in the food and packaging technology industries and has a long, proven track record of providing business opportunities. The sector is key to New Zealand’s domestic economy as well as its vital export earnings, and the technologies and developments visitors will experience at Foodtech Packtech will help them find solutions that will keep their business, and New Zealand, internationally recognised as among the best in the world.

Over 200 local and international exhibitors are scheduled to showcase their products and services to thousands of the industry’s most high-profile professionals as well as many others associated with the food and packaging industry. These exhibitors will be demonstrating brand-new technology and have experts available to answer questions and offer insights into global best practice.

Through detailed research, event organiser XPO Exhibitions knows that millions of dollars in business and trade will be achieved at the event. At Foodtech Packtech 2012, almost half the visitors organised a quote or appointment at the show, 56% saw something they were likely to buy and 83% were likely to make contact with an exhibitor after the event. For anyone serious about growing their business and finding the latest opportunities for the sector, this event is certainly one you won’t want to miss.

This year’s Foodtech Packtech will be at least as good as the last. Not only will visitors experience the multitude of displays and technologies that exhibitors have on offer, they can also attend the free development and business seminar series where industry leaders and guest speakers such as Professor Gordon Robertson, author and expert in the food packaging industry, will be present. The Plastics NZ Awards and the Pride in Print Awards will feature and the internationally renowned NZ Food Awards (www.foodawards.co.nz) will run alongside the show on Thursday 25 September, the last of the three days of Foodtech Packtech. The Australian Institute of Packaging will be present running a half-day training course on Labelling & Matching the Label with the Package - tickets are now available for this.

In addition, the New Zealand Food Innovation Network (NZFIN) will be on hand to showcase its services. Set up as a national network of science and technology resources, NZFIN is resourced to support the growth and development of New Zealand food and beverage businesses of all sizes by providing facilities and the expertise needed to develop new products and processes from idea to commercial success. The network’s leaders and others will speak about those who have been through the program and achieved commercial success. Alongside the NZFIN, the ingredients sector will be featured in a dedicated space.

Put Foodtech Packtech into your diary now.
This is the trade show for New Zealand’s food, beverage, processing and packaging technology industries. Experience the latest technical advances first hand, talk to the experts, and connect with the products, services, and machinery you need to meet the demands of tomorrow’s market place.

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High-performance grill

JL Lennard has available the Zanussi Evo 900 high-performance grill. The grill combines energy efficiency features with a heavy-duty cast iron cooking grid capable of reaching temperatures up to 350°C.

The product’s design ensures uniform heat distribution across the whole cooking surface of 400, 800 and 1200 mm widths. The grill features stainless steel AIS1441 burners, with self-stabilising flame and a stainless steel handle for removal of the cooking grid.

The company says the control knob system guarantees against water infiltration and allows fine-tuning of power on a 240° rotation range between maximum and minimum. The stand-by position minimises power consumption during non-peak periods, while allowing fast recovery when required.

The full-depth grease collection drawer, which has a hole to indicate when full, collects residual cooking grease and fat and can also be filled with water for a vapour-emission effect. The grill has stainless steel removable splashguards on the rear and sides and all components can be dismantled for cleaning.

JL Lennard Pty Ltd
www.jllenard.com.au

Meat analyser

The Tomra QVision 500 analyser is currently focused on the meat and protein sector, measuring fat and lean, protein, collagen and moisture with accuracy. The product also provides a live batch weight measurement and can operate at up to 30 t/h.

Measuring fresh or frozen meat, the device works with any grind size, covering ground, diced and small trims, across the full width of its conveyor belt, with analysis penetrating as far as 20 mm deep into the meat. It is easy to integrate and can simplify production control.

Real-time fat measurement and batch formulation eliminate the reliance on inconsistent grab samples and chances for human error. Now with the addition of horse meat detection, the product is especially suitable for the meat industry.

The benefits offered by the device include lean meat savings; live inline data; good product quality and consistency; and tracking of raw material fat% from suppliers.

Heat and Control Pty Ltd
www.heatandcontrol.com
Dairy spray drying

The Click and Dry spray dry nozzle now has an improved sealing system. The sealing system uses an axial face-to-face seal that provides higher pressure-handling ability than the conventional radial seals which are limited due to the gap that exists in the plug-and-socket system. This combined with a cap design which meets internationally recognised piping code compliance improves safety.

The Click and Dry design was a finalist at the Fonterra 2013 Vendor awards in the 'Excellence in supporting product development in dairy' category. The product was recognised for reducing scorched particles, which could result in a potential drier fire.

Spray Nozzle Engineering Pty Ltd
www.spraynozzle.com.au

FMCG retail display pallet

CHEP Australia has made improvements to its range of small-footprint, retail-ready display pallets.

The company claims that the maximum fork entry width of 735 mm will mean most manufacturers and retailers can integrate the display pallet into their operations without the need for any capital investment. The company has developed a racking cradle that enables both the display pallets and timber pallets to be racked using the same infrastructure.

The pallet also incorporates anti-slip technology for increased safety. The top deck features additional rubber grommets to minimise load movement and the fork lift entry points have been fitted with rubber grommets to ensure the display pallet doesn’t slip off fork tines while in transit.

CHEP Australia
www.chep.com
Enhanced wholegrains: nature’s best superfood

Wholegrains have long been associated with improved health and vitality. Naturally rich in fibre, wholegrains can lower the risk of developing colorectal cancer, cardiovascular disease, obesity and type 2 diabetes. They provide important sources of many nutrients, including dietary fibre, several B vitamins (thiamin, riboflavin, niacin and folate) and minerals (iron, magnesium and selenium).

Humans have been eating wholegrains for thousands of years, and prior to advances in food processing, grains came straight from the stalk - including the fibre-rich coating of the outer layer of bran surrounding a starchy endosperm and a small reproductive kernel known as the germ.

As civilisation developed and food processing techniques advanced, refining wholegrains provided a way to make wholegrains tastier and prolong their shelf life. The downside of this is that by removing the bran and germ and only eating the endosperm portion of the grain, the B and E vitamins, fibre, minerals and phytochemicals contained in the bran and germ are stripped away, leaving only the carbohydrates and protein from the endosperm for consumption.

According to Robert Burbury, CEO at BARLEYmax - the healthy grain, “A growing body of research shows that returning to wholegrains and cutting back on refined grains improves health in a number of ways.”

In spite of the many health benefits of wholegrains, the majority of Australians are not including the recommended amount of wholegrains in their diet. A recent study by the Australian Grains and Legumes Nutrition Council shows that at least 75% of Australians are not

With consumers becoming increasingly health conscious, the demand for cereal and bread products with wholegrains will continue to increase - placing pressure on food manufacturers to incorporate new superfoods in their products to keep up with consumer demands.
meeting the recommended three or more serves of wholegrain foods each day.

It’s clear that Australians need to have an effective way to increase the amount of wholegrains in their diets. “To help achieve this, scientists at CSIRO developed BARLEYmax - an enhanced wholegrain that contains two times the dietary fibre and four times the resistant starch of a regular grain. It’s been tested by the CSIRO and foods containing BARLEYmax are widely available on the shelves of Australian supermarkets,” said Burbury.

Adding to the difficulty of meeting wholegrain dietary recommendations is the lack of a consistent definition of what constitutes a wholegrain food. To help consumers meet the recommended daily 48 g of wholegrains in their diet, the Grains and Legumes Nutrition Council recently developed a voluntary standard for Australian wholegrain ingredient claims.

“Consumers are becoming increasingly health conscious, which is placing pressure on manufacturers to keep up with changing consumer preferences. An effective way for manufacturers to stay ahead of consumer demands is by including superfoods such as BARLEYmax in their products,” said Burbury.

According to Dr Lakshmi Iyer, Group Manager-Product Development at Popina Foods, “Not all whole grains are similar, so when we were presented with the opportunity to value add a superior grain such as BARLEYmax, it was an opportunity too good to miss - with double the amount of fibre and unsurpassed levels of resistant starch, it was the ideal ingredient in a cereal to promote good gut health.

“BARLEYmax has given Popina Foods a unique competitive advantage with our Goodness Superfood range and helped us develop a non-gimmick functional food, with a point of difference from our competitors. Its benefits are well understood by its loyal consumers that can see the cereal work for them in one of many ways, such as better diabetic control, cholesterol reduction, improved weight management and general wellbeing.”

Australians who want to increase their consumption of cereal fibre can consult the information on www.thehealthygrain.com for more details of healthy high-fibre products available on supermarket shelves.

About BARLEYmax
BARLEYmax - the healthy grain represents the next evolution of superfoods, an enhanced wholegrain. Discovered and tested by the CSIRO, BARLEYmax is 100% GMO free, and contains two times the dietary fibre and four times the resistant starch of a regular grain.

BARLEYmax Enterprises is a company established by CSIRO and Australian Capital Ventures Limited (ACVL) specialising in the development and commercialisation of novel grains with known health benefits. BARLEYmax Enterprises has an exclusive licence from CSIRO and ACVL to commercialise the BARLEYmax grain, which is already available on supermarket shelves throughout Australia.

BARLEYmax Enterprises
www.thehealthygrain.com

Flexible ducting for grain and seed handlers
Eximo SpeedLock has released GranuFlex, a 1.4 mm thick polyurethane clear ducting with a helix containing spring steel.

The system contains an organic compound that is added to the polyurethane to attract airborne moisture to create a continuous circuit. The removal of static build-up occurs as product moves through the ducting, so no snakeskins will form.

The product does not lose its antistatic properties as it wears over time and the helix does not require grounding. Temperature resistance ranges from -40 up to +100°C.

The product has a smooth bore and provides resistance to abrasion, oil and petrol. It is non-toxic and free of halogen and softeners.

The ducting has a high chemical resistance and flame retardation characteristics and offers flexibility, axial compressibility and resistance to fumes and dust.

Eximo
www.eximo.com.au
Ultrasonic cutting machine for cake, pastry and pizza

Bakon has improved the user-friendly software on its Compact Ultrasonic Cutting Machine to make it even simpler for users to configure up to 50 favourite cutting programs using the well-organised full-colour touch screen. Users have complete control over a wide range of parameters such as speed, dimension and the required ultrasonic power.

The latest addition to the company’s new generation of ultrasonic cutting machines has been developed for medium-sized companies and small bakeries. The machine can cut pastry, pizza, cheese very efficiently and, with less cutting waste, profitability is enhanced.

The machine processes products up to a height of 65 mm and has plate dimensions of up to 600 x 400 mm and a diameter of 290 mm (max).

Triangular and diamond shapes can be cut with the cutting machine. This ensures that users can give products a distinctive look. This precision machine is equipped with a clever ultrasonic system with high-quality titanium ultrasonic blades that are “tuned” on their specific properties for the best cutting result.

The cutting machine operates during the end phase of the production process when hygiene is the most essential factor so all parts that may become contaminated are easy to clean.

The cutting machine is equipped with a sophisticated mechanical and electronic safety system.

Bakon bv Food Equipment
www.bakon.com

PTFE and silicone-coated food conveyor belts

Rydell Industrial has available the Peak PTFE and silicone-coated food conveyor belts from Ammeraal Beltech. These have good release properties and are capable of conveying bakery industry and other food products through ovens at working temperatures up to +260°C or via freezing chambers at cryogenic temperatures as low as -70°C.

The belts are suitable for use in traditional baking with flour-based products such as croissants and biscuits, as well as for press-baking products, such as tortillas and pizza bases and open-flame baking items, including pita and piadina breads.

The company says the belts also function very well in the conditions of intense cold encountered in cryogenic freezing systems.

Rydell Industrial (Belting) Co
www.rydell.com.au

Battery electric forklift with bakery basket

A Jungheinrich forklift which has been customised with a basket for bakery products is available from NTP Forklifts. Originally built for British Bakeries, the product was designed to carry bakery baskets for UK supermarket chain Tesco. The forklift is suitable for production and storage halls. The truck length is 3462 mm, width is 810 mm and lift is 500 mm.

A square pipe has been welded around the carriage to carry the baskets safely and baskets can also be belted on. The underfloor is even, to prevent snagging on ramps, and there is an automatic rear spotlight. The forklift has a capacity of 650 kg at a load centre of 840 mm.

NTP Industrial Equipment
www.ntpforklifts.com.au
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Tingalpa, Qld 4173

www.janbak.com.au
Carbohydrates and dietary fibre assay kits

Megazyme International carbohydrates and dietary fibre assay kits can be used to assay the available carbohydrates in grains, fruit and vegetables, cereal and fruit products and foods. The kits are particularly useful for the analysis of samples containing resistant starch (specifically RS2 and RS3).

The term ‘available carbohydrates’ refers to carbohydrates that are digested and absorbed by the human small intestine; these include D-glucose, D-fructose, sucrose, maltodextrins, non-resistant starch and the D-glucose component of lactose; all measured as D-glucose plus D-fructose following enzymic hydrolysis.

Dietary fibre is a mixture of complex organic substances including a range of hydrophilic compounds such as soluble and insoluble polysaccharides and non-digestable oligosaccharides as well as non-swelling, more or less hydrophobic compounds such as cutins, suberins and lignins. This assay measures all of the above except for non-digestible oligosaccharides, as these remain soluble in the ethanolic solution used to precipitate high-molecular-weight dietary-fibre components.

VWR International Pty Ltd
au.vwr.com

Gluten test

Arrow Scientific’s Romer Agras-trip Gluten G12 test strip has received AOAC performance tested certification.

Research has found that a short piece of protein called G12, identified as a 33-mer peptide from alpha-2 gliadin, is the principal toxic chemical causing gluten intolerance.

The monoclonal antibody G12 is used to make a lateral flow device for on-site factory testing, enabling real-time testing and immediate decision-making. No equipment is required and the kit can be stored at ambient temperatures to allow immediate use. The company says the kits are easy to use and require only a minimal amount of training.

Arrow Scientific
www.arrowscientific.com.au
Flexibility the key ingredient in production overhaul

Founded over 100 years ago, the Bakels group of companies manufactures and supplies specialist, high-quality ingredients to the global commercial baking market. Their customers range from individual craft bakers, high street and supermarket chains to international food service chains.

In 2012, British Bakels (UK) began the first phase of a $4.5m investment to improve their production flexibility in order to accommodate their broadening portfolio of bakery ingredient premixes. They looked to Matcon to help provide the solution - a more agile system to cope with small batch runs and handle recipe variety, some of which include allergens.

The original powder blending facilities at British Bakels are centred on two vertical conical fixed mixers with capacities of 2000 kg and 1500 kg, which are fed via a conveyor system from silos holding bulk flour and sugar. Other ingredients are added from big bags and sacks via mechanical conveyors. These mixers are then directly coupled to the packing lines, which pack off bags of bakery pre-mixes for use within the bakery sector.

As their R&D program expanded the product portfolio, British Bakels recognised that there was no spare production capacity, even with 24/7 operation. In addition, the inline production process was not flexible enough to cope with smaller batch runs. Each mixer was taking four operators around 3 hours to clean, resulting in a 22% downtime for cleaning alone. This led them to campaign manufacture to cope with the demand, which subsequently created expensive inventory as completed batches were stored in the warehouse.

The small footprint of the Matcon equipment has meant that it fits into the existing production area, where it can run alongside the existing fixed mixers, which have become dedicated to the high-run, high-volume product lines. The Matcon system is used to process the small batch runs where there is a variety of recipes to be handled, and particularly where allergens are involved.

Being based on ‘lean’ philosophy, the Matcon system separates out the processes of filling, blending and packing by using intermediate bulk containers (IBCs) to transport material throughout the manufacturing process, which allows each procedure to take place simultaneously.

IBCs are prepared offline in readiness for the blending process. The sack tip unit provides a closed transfer of material from sack to IBC, improving housekeeping and reducing the risk of cross-contamination. All ingredients are sieved and passed over a permanent magnet during the filling operation, giving further quality assurance.

Blending takes place within the IBC itself. The IBC is loaded onto the blender, which tumbles it on an asymmetrical 360° axis to create a homogenous mix. Because the ingredients are blended within the IBC itself, there is no need to clean the blender between recipes - even when using allergens. This provides a flexible production capability and has enabled British Bakels to develop its gluten-free ranges.

A further benefit of the Matcon blending system is the reduction in the overall mixing time required for recipes that have both liquid and solid fat additions. The previous fixed mixers took an hour for the process, as the fat needed to be whipped together with sugar before the other ingredients could be added. By using the supplementary intensifier on the Matcon blender, this can now be achieved in a single-stage process, taking just 12 minutes per batch, significantly improving the productivity and process efficiency.

The bakery pre-mixes are packed off into bags using an existing auger vertical form fill seal packer. The IBCs are loaded onto a Matcon discharge station where they feed directly into the packer, without the need for additional equipment to regulate the flow. The action of the cone valve within the IBC and the operation of the discharge station safeguards against product segregation and helps the more ‘sticky’ recipes to flow, thereby optimising the efficiency of the packing line, ensuring that the final product is of consistent quality.

The production system has generated an instant return on investment, with $318,000 of cash released by significantly reducing inventory, 88% equipment availability (previously 68%), a 25% reduction in labour cost and a 55% reduction in manufacturing time.

British Bakels are delighted with the results to date. “The new plant means we can produce an innovative range of pre-mixed ingredients, many of which will be fresh to the UK,” says managing director Paul Morrow.

Matcon Pacific
www.matconibc.com
Tecpro has introduced an ATEX certified version of its fog makers that suppresses dust in areas in danger of explosion.

The fog maker operates at high pressure 50 bar and it can propel a fine mist up to 60 m in the absence of wind.

The mouth of the fog maker contains 156 nebulising nozzles and the size of the fog droplets generated is similar to the size of dust particles. When the fog and dust come into contact, they combine readily and fall to the ground, aided by gravity.

The nozzles are mounted in three spray rings which can be operated independently, giving the ability to change the volume of mist to suit the conditions. In addition to this, there are 10 different capacity sizes of nozzles that can be fitted to the rings to fine-tune the fog maker.

According to the company, the fog mist evaporates quickly, which eliminates the risk of water pooling or run-off, further reducing environmental and safety risks.

The fog maker has a rotation field of 340° and it is fitted to a steel platform, enabling it to be moved to direct the fog stream to where it’s needed.

The product also has a noise barrier which reduces the noise output when it’s operating.

Tecpro Australia
www.tecpro.com.au

JL Lennard Food Service Equipment has available Henny Penny Evolution Elite fryers that require 40% less frying oil than conventional alternatives.

The fryers have an auto top-off system that ensures consistent oil levels in the vat, an integrated and automated filtration system which means staff are not directly exposed to hot oil and an oil disposal shuttle, which makes transporting of disposed oil safe and easy.

The fryers are suitable for high-volume frying operations, with functions including a filter beacon that identifies which vat is ready for filtering and a smart filter express that makes it possible to quickly filter one vat while operators continue frying in other vats. The fryers are available in electric, gas or split-vat configurations. The electric models have hinged elements and an element lift tool to assist with cleanout.

The design has earned the globally recognised Energy Star rating for both electric and gas models under the joint program of the US Environmental Protection Agency (EPA) and the US Department of Energy.

JL Lennard Pty Ltd
www.jllennard.com.au
Urschel designs and manufactures over 50 different models of precision food cutting machinery. Dicers for small to large cubes. Cutting equipment to produce fine to coarse hand-pulled look shreds. Dependable, rugged Urschel cutting equipment delivers consistent cuts at high capacities.
Why you should care about total cost of ownership

Dannielle Furness

Australia’s business climate has never been so competitive. While seemingly untouched by the crisis that brought much of the world to its knees not so long ago, our local economy suffers other significant stresses - particularly in the manufacturing sector.

The landscape shifted pretty quickly - when the Aussie dollar strengthened to levels not seen or sustained for decades, cheap imported product became increasingly attractive to local buyers. The challenge for Australian manufacturers in this environment is to find ways to reduce costs, while still maintaining high-quality output.

When the bottom line isn’t really the bottom
While many manufacturers opt for staff cuts and facility closures or consolidations to make an immediate positive impact on profits, the savviest operators realise the obvious - sometimes the bottom line isn’t really the bottom. They understand that investing in core business competencies and optimising the management of non-core activities is the most effective way of delivering a sustainable competitive advantage.

A key non-core business activity in manufacturing is the life cycle management of capital assets and machinery that supports overall business operations. To fully and effectively manage these elements requires optimisation of the total cost of ownership, or TCO. Contrary to what most business owners and operators think, TCO is not just a job for the accountants. TCO affects multiple parts of the business and should be factored in not only for purchasing, but for many ongoing operational and staffing decisions as well.

What is TCO?
As the name implies, total cost of ownership refers to all costs - direct, indirect and hidden - associated with the procurement and operation of capital assets. TCO assessment should cover the full equipment life cycle:

- Acquisition
- Operational maximisation
- Performance maintenance
- Timely disposal
Direct vs indirect and hidden costs

Direct costs are usually those planned within a budget, where purchase orders are generated and invoices paid. This clearly defined process makes it easier to identify and track these types of costs in comparison to indirect costs and hidden costs, which are more difficult to measure and quantify.

These costs are often not factored in to the TCO of assets or, as is often the case, factored in at initial assessment yet not monitored over the life of the equipment to ensure that original expectations are actually being met.

Is your payback period calculation even close?

When purchasing capital equipment, it pays to undertake a thorough analysis that factors in all costs, prior to making any buying decisions. Equipment investment is often made on the basis of a calculated ‘payback period’ - ie, the expected time frame in which the equipment cost will be fully recovered.

Unfortunately, this metric becomes irrelevant in a scenario where hidden costs are not defined or captured and the true economic implication is therefore not understood.

TCO in action

To illustrate the TCO framework, we’ll use the Australian manufacturing industry as an example. Manufacturers must maintain required regulatory and compliance standards in the production of goods, which include coding and labelling obligations. When determining the costs associated with investment in labelling machinery, a manufacturer may consider some or all of the following direct costs:

- Capital outlay - the cost of the equipment itself.
- Consumables over the period - labels and other physical elements that are exhausted through the production process and require continual re-purchase.
- Routine maintenance - to ensure that equipment remains in operation when required.
- Service contracts - designed to ensure equipment performance.
- Corrective maintenance - in the event of a breakdown or malfunction.
- Spare parts - required through general wear and tear or breakdown.
- Installation costs - labour costs associated with the original equipment installation and set-up.

While all of these costs are completely relevant and obviously need to be factored in, they don’t provide the potential buyer with the whole picture. Again, using labelling machinery as an example, the purchaser needs to consider the ‘hidden’ elements:

- Unplanned downtime in the event of an equipment breakdown.
- Shipping if the servicing requirement is return-to-base.
- Planned downtime due to routine maintenance tasks.
- Operator training.
- Financing costs if it is a lease/rental arrangement.
- Cost of disposal.
- Training time.
- Equipment relocation installation costs - in the event of physical changes to lines and factory layout or due to relocation to a different facility.

Key takeaway:

- Total cost of ownership is much more than the initial cost of capital.
- The quality and reliability of the equipment greatly influences the costs.
- Unplanned downtime, recalls and rework can be the biggest hidden costs.

For example, return-to-base servicing for equipment might seem to be the cheaper alternative initially but the downtime caused as a result of the machine being sent for repairs can be a much larger problem.
Be proactive with TCO

Manufacturing organisations can save money, increase equipment performance and improve workforce productivity simply by understanding the life cycle costs associated with equipment ownership and by implementing proactive strategies and tactics to optimise these costs.

Some of the recommended strategies to minimise TCO and maximise the ROI on equipment include:

• evaluate the equipment reliability and factor in the capital cost vs cost of downtime - a cheaper alternative that is only operational half the time is not delivering savings in the long run;
• regularly inspect and maintain machinery, with fixed-price service contracts - any planned and managed downtime is more economical than an unforeseen crisis, especially if it avoids additional delays due to the unavailability of parts, tools or maintenance labour;
• invest in proper operator training - don’t run the risk of failures and subsequent expensive reworks, or any unplanned downtime, due to simple operator error or incorrect machine settings;
• evaluate the mean time between failure, response times and same-day fix rates - the clichés are true; time is always money and knowledge always power;
• look at capital outlay vs ongoing overheads - remember that a low capital cost/high running cost combination is a hidden TCO.

Identifying hidden costs - questions you should ask yourself:

• Have our operators received proper training?
• How many different supplier relationships am I managing?
• Am I buying and standardising on the best equipment available?
• Am I leveraging my purchasing power and volume?
• Have I compared the TCO between one manufacturer and another to know if I am really getting the best value for money?

• Do I know if it’s going to cost more to service existing equipment than if I were to buy new?

Your answers to these questions will help you determine whether or not you have hidden costs. You can easily eliminate additional financial burden through rationalisation of your asset base and by reducing the number of suppliers with whom you do business. This will not only maximise your purchasing power and lead to increased operator performance, but also reduce some of the management and administrative obligation that comes from dealing with multiple manufacturers and service providers.

TCO assessment will not only assist in asset life cycle management, but provide additional benefits including budgeting and planning assistance, guidance for capital acquisition prioritisation and clarity when making lease versus buy decisions.

The equipment life cycle is just that - a cycle. This means that business decisions made in each phase can have a direct impact on factors in the next phase. For instance, an unwise decision at the acquisition stage can have disastrous effect on the ongoing operations - decide to go with the low capital outlay yet less reliable option and you may see a snowball effect generating more non-operational hours and reworks. Similarly, by electing not to implement a program of preventative maintenance, you may go down the path of an expensive series of emergency repairs and a premature requirement for disposal and repurchase ... And so the cycle continues.

Companies that take a holistic view to TCO - those that inherently understand that today’s out-of-pocket expense is not the only contributing factor to ongoing profitability - are likely to have a significant and sustainable competitive advantage over other vendors in their industry. And let’s be honest ...

In today’s economic environment, what business can afford not to think that way?
Food For Thought

Food and Beverage manufacturers across Australia are taking a close look at their operations to see where they can make savings – be it energy, space, down-time or through optimisation of processes. SEW-EURODRIVE can assist system designers and operators in reaching savings throughout their plant all the while maintaining strict hygiene standards. SEW offers a number of decentralised drive solutions including the MOVIGEAR® and DRC Motor, both which offer IE4 (Super Premium Efficiency) standards. Additional features, such as the HP200 anti-stick coating are also available to assist with optimising these systems for the food and beverage industry.

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Heat exchanger

FusionLine, an open flow plate heat exchanger from Alfa Laval, is suitable for viscous and particulate products such as juices, prepared foods, soups and sauces, which have traditionally been processed in tubular heat exchangers. It combines the energy efficiency, accessibility and modularity of plate technology with the viscous and particulate-handling capabilities of tubular technology.

The product features a 4 to 6 mm open channel on the product side, which is easy to CIP and fully accessible. The open-channel design is made possible by bonded plate cassettes on the media side. The cassettes are bonded using the company’s AlfaFusion technology, which bonds two stainless plates together into one piece with no joints.

The AlfaFusion technology allows the use of thin plates providing optimum heat transfer and thus maintains a high resistance against product pressure. The channel geometry ensures gentle product treatment. Plates can be easily added and removed, providing the flexibility to react to changes in production volume. The footprint is 30 to 40% smaller than a tubular heat exchanger.

Other features include: zero contact points on the product side; low pressure drop, requiring low pumping power; small footprint; easy to clean and inspect.

Matrix Process Solutions Pty Ltd
www.matrixps.com

Self-priming centrifugal wastewater pumps

Gorman-Rupp Ultra V Series are high-performance and high-efficiency pumps that are mounted up to 7.6 m above wastewater pits.

The self-priming centrifugal wastewater pumps use a self-cleaning wear plate system which reduces choking from stringy materials such as rags. Servicing is performed quickly by one operator, including internal clearance adjustments (done in less than 5 min) to keep pumps at their peak operating efficiency.

Corrosive and/or abrasive wastewater can be managed by the various materials options available, including stainless steel, duplex stainless steel, hard iron and high chrome iron. A built-in safety mechanism also protects operators and the pumps.

The pumps are used in many food industry environments, including abattoirs, milk processors, potato processors, bird processors, sugar refineries, canneries and others.

Hydro Innovations
www.hydroinnovations.com.au

Immersion tube heat exchangers

Lanemark tank heating installations are immersion tube heat exchangers, fired by a gas burner. They are suitable for use by small breweries operating vessel sizes 600 to 10,000 L, with required heat input of 15-700 kW. The systems provide helical coil immersion tube diameters between 3.8 and 15 cm to fit into both cylindrical and rectangular brewing vessels.

The helical coil design results in minimum intrusion into the brewing volume. The heat exchanger is connected to the externally mounted gas burner, which can be run on gas or LPG. The burner system raises the temperature of the vessel from 60 to 100°C in 1 h. The modulating control system allows the brewer to maintain the optimum brewing temperature and obtain the desired qualities in the beer.

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Hygienic-design mounting system

In ensuring product safety, the pharmaceutical and food processing industries have tough requirements for the machines and components they use. In order to meet these demands, Sick has developed a hygienic-design mounting system.

The system minimises the risk of a bacterial contamination of products during manufacturing. Altogether, the system consists of sensors, reflectors and mounting components.

*Sick Pty Ltd
www.sick.com.au

Beverage technology

With a lot of talk in the beverage industry about non-heat pasteurisation, The Beverage Food Group announces a method claimed to be more economic, more efficient, more beneficial and more compact than other alternatives. Its non-invasive alternatives to heat-based pasteurisation preserve the organoleptic integrity of the raw materials and the finished product.

With increasing desires to process and consume beverages/food with all the nutritional components still intact, the company has solutions relevant to products such as fruit juices, protein drinks, isotonics, milk, bottled water and RTDs.

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July/August 2014 www.foodprocessing.com.au
In the past, new crops were introduced into the food supply without any formal scientific evaluation. Humans learned by trial and error how to safely prepare foods such as cassava and potato, even though they can be toxic.

With the advent of crop genetic engineering in the 1980s, public controversy and intense public scrutiny over genetically modified (GM) foods meant that the trial and error method of discovering whether new GM foods were safe became unacceptable.

Scientific safety assessment of new GM foods as well as government regulation of their introduction was introduced in many countries.

In Australia, this occurred during the major policy reform of all Australian food safety regulation, through the revision of the national Food Standards Code (1994-2002).

During this period, safety assessment of GM foods became the responsibility of Food Standards Australia New Zealand (FSANZ). Section 1.5.2 of the Food Standards Code defines the requirements for the compulsory pre-market assessment and labelling of foods produced by gene technology.

**Comparative safety assessment for new whole foods**

Food scientists carrying out GM food-safety assessments realised that unintended variation in potentially toxic non-nutrient plant chemicals was a possible source of hazard in new GM crop varieties.

The presence of thousands of potentially toxic natural substances in plant foods meant that the safety assessment of GM foods had to be done by different procedures than those that had worked well with food additives and synthetic pesticides.

Regulators realised that if the hundreds of thousands of natural substances present in plant foods - such as soybeans or maize - were subjected to the same standards used with food additives and synthetic pesticides, all food - GM or non-GM - would fail regulatory standards.

A solution to this quandary was developed. Relative safety of GM foods is assessed by systematically looking for all the chemical differences that can be found between:

- a GM food and
- an otherwise comparable non-GM food that can be presumed to be already safe because of its history of safe use.

If no meaningful differences are detectable in a new crop variety, the GM food can be assumed to be at least as safe as its non-GM counterpart.

The standards agency FSANZ provides many further details of how safety assessment of GM foods is carried out, before they are allowed to enter the commercial marketplace.
Box 4.1 from their introductory booklet on the topic gives the main features of the process.

**Who’s involved in setting standards?**

Most GM crops are commodities that are extensively traded on world markets, such as maize, soybeans and canola. These have to meet food and regulatory standards in several different jurisdictions (such as in the US, the EU, Japan and China).

In practice, traded GM commodities have to pass regulatory scrutiny in counties to which they are exported. The safety assessment frameworks in these different trading countries have a substantial degree of consistency.

The UN forum Codex Alimentarius Commission is the major international intergovernmental forum in which this safety framework was developed.

Codex has established international guidelines for the safety assessment of foods derived from modern biotechnology. The Australian protocols for the pre-market safety assessment of GM foods are congruous with Codex principles.

Codex emphasises the use of sound scientific evidence for food risk assessment, and the separation of risk policy and risk management from scientific risk assessment. In Australia, the management of GM food safety follows these principles.

Food regulatory policy and political oversight are decided by an Australian intergovernmental board called the Legislative and Governance Forum on Food Regulation.

GM safety assessment and food standards development are carried out by FSANZ.

In establishing standards and evaluating pre-market applications for the commercialisation of GM foods, FSANZ interacts with other agencies - in particular the Gene Technology Regulator, whose responsibilities include licensing the deliberate environmental release of genetically modified organisms.

Genetically modified foods have now been in the marketplace for nearly two decades without any harmful effects identified.

The absence of any evidence pointing to the lack of food safety in the recent farmer court case in Western Australia (fought over the unintended presence of genetically modified canola plants on another farmer’s property), underlines the overall conclusion that there is no credible evidence of any food safety risk with the GM foods that have been approved so far.

More tangible problems of food safety - such as the mould toxins that can ruin staple grains and cause cancer in developing countries should now get more attention.

Further reading: GM techniques: from the field to the laboratory (and back again).

David Tribe does not work for, consult to, own shares in or receive funding from any company or organisation that would benefit from this article except the University of Melbourne, where he is paid for teaching research and community outreach by a standard salary arrangement with the University, and not-for-profit outreach organisations Academics Review and Biology Fortified Inc. where he is a non-paid board-member. He has no relevant affiliations that might entail a conflict of interest in scientific analysis.

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Thermoset polymer
Oz Seals has released the Wifflon Super Polymer. The product offers good durability and is suitable for high-pressure applications. The company claims that seal life is improved by 10 times, when compared to the conventional seal.

The polymer is a thermoset with memory and can be stretched onto pistons without having to resize the glide ring, unlike PTFE thermoplastic which stays deformed. Featuring a hardness of 60 Shore D, it is resistant to ageing and oil. At a hot water resistance of 95°C, the product can withstand temperatures from -50 to 120°C.

Oz Seals United Pty Ltd
www.ozseals.com

Detectable dispensers
Detectamet’s Detectable Dispensers have been designed to offer an easy and safe way to access disposable gloves. They are made from Detectamet’s unique polymer from which pieces can be identified by metal detectors and X-ray inspection systems.

CK Safety is the sole Australasian supplier of Detectamet products - products that can be detected by conventional X-ray systems (dependent on detection sensitivity), inline metal detectors and magnetic extraction systems.

Detectamet products can be used in conjunction with the HACCP benchmark. Selected metal-detectable products can be ordered with Microban antibacterial protection, to reduce possible food poisoning, fungi and bacteria contamination from Detectamet product exposure.

CK Safety and its sister companies SprayNozzle Engineering and Reel-Tech work together to provide complete spraying and metal-detectable solutions for both the Australian and New Zealand food and beverage industry.

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CK Safety
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Preventive maintenance programs for liquid processing in the food industry
FDPI Spare & Maintenance is an independent supplier of preventive maintenance programs to the dairy, food, beverage and chemical processing industries.

The company also supplies spare parts and provides a professional installation and maintenance service.

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Professional support is available during major overhauls and installation work with 24/7 call out available.

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Pack integrity vital when transporting food, drink for retail outlets

The days of careless wrapping of packaged food and drink bound for retail are all but over as the large supermarket and grocery chains force ever greater liabilities on suppliers who take short cuts.

With packaging integrity such a key factor for product placed on shelves, the tiniest blemish or dent during transit renders an item ‘unsellable’, and the burden is instantly shifted back by powerful retailers to the supplier.

There are so many examples, but bottled water and other drinks is an excellent case in point, according to packaging specialist Nelson Joyce & Co.

Managing director Nelson Joyce says the likes of Coles, Woolworths and other powerful retail giants have very strict rejection criteria to protect their own quality standards and aesthetics, so suppliers need to be wary of the situation.

“There is such strong competition to be on the shelf space of the retail giants, so the retailers themselves have to protect their own visual standards and bottled drinks are a very good case scenario where rejection often happens,” said Joyce.

“As a packaging specialist, we are regularly consulted by suppliers whose palletised goods have suffered some sort of change before or during shipment and thus paid the price.

“For instance, if a mineral water supplier’s pallet moved under its shrink wrap during transport and bottles were bumped so that, say, the tops and necks were bent inwards, the retailer will not place them on the shelves, but will reject the pallet - plus it is highly likely to charge for the space on the shelves reserved for it.

“It may sound like rough justice, but the retailers run operations based on margins and quantity sales and will not have time to replace that product with anything else, so the supplier suffers the penalty - which is likely to be written into the agreement.

“This is even more prominent in the regional areas to where freighting takes even longer and a Plan B is almost always out of the question.

“It is like a demurrage cost in the transport game where the stock movement failures by one party will not be suffered as incurred charges by another.”

Various emerging packaging technologies can protect against such incidents; cheap stretch wrap should be avoided, versatile and cost-identifiable machines can replace slow, wasteful and substandard manual wrapping.

Even an entire evaluation of a packaging line - which is an inexpensive exercise - can identify so many shortfalls and provide answers as to how a supplier can professionalise, increase quality and speed up its own packaging and delivery systems.

Retail-ready packaging often is ignored for the multifaceted approach it needs; for instance, fill form and seal/rewind films and machines, barrier products, carton liners, separation sheets, crate liners, carcass covers and all other manner of products are affordable and can make the ultimate difference in maintaining a profitable supply line free of mishaps, says Joyce.

“The bottled water sector is such a good case study on this issue,” he said. “A plant that packs bottled water needs to ensure its product is presented to customers in a uniform way.

“The moment a single item moves out of alignment during transit, it can pop out and cause damage to more of the shipment - and bear in mind this type of item can be moved five or six times depending on its final destination.

“From warehouse to secondary handlers and finally to retailers, restaurants and cafes, it is multihandled and suppliers need to protect the integrity and clarity of each pack, making sure no deformation takes place.

“Once plastic bottle necks are turned inwards, they are harder to stock properly.

“Even to take a basic re-evaluation of their heat-induced wrapping systems can make an enormous difference.

“In some cases, we have found that reducing heat from 200 to 175°C and increasing the rate of pack movements through blow formers and fillers etc will optimise your bundle shrink systems and positively affect overall productivity and transport quality.

“We have seen in so many food and beverage handling plants that making such straightforward analysis of the entire supply procedure can increase the speed and efficiency by 30%, plus protect the packaging integrity.”

Nelson Joyce & Co Pty Ltd
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Compact high-volume continuous cooking system

The DSI 40 RotaTherm is a high-volume, compact, continuous cooking system. With 40 direct steam injectors on a single cooking column, the system can heat products in 15-20 s and process at a rate of 14,000 kg/h. It can run for 3 days before cleaning is required.

The system requires a footprint of 2 x 3 m and comprises a cooker and vacuum ‘flash’ for cooling. The processing levers can be adjusted to select either a physically gentle process that maintains the shape of the particles or a shear process to produce a homogeneous, smooth product. The equipment is controlled via a touch control screen and processing conditions for each recipe can be saved for automatic operation.

The system has pasteurise, UHT and aseptic configurations. It is suitable for products that can pass through a pump and cook in a single pass, such as sauces, baby food, processed cheese, fruit preparations and vegetable purees.

Gold Peg International Pty Ltd
www.goldpeg.com.au
Vacuum or inert gas packaging is today the most common method of packaging fresh meat, sausages and cold meats and convenience products in a non-perishable, hygienic way with suitable portion sizes that is attractive to the consumer.

The correct choice and optimum design of a vacuum pump is, to a large extent, the decisive factor in the quality of the packaging, and consequently in the shelf life and quality retention of the packaged product. The correct choice of vacuum pump also influences the operating safety and economic viability of the packaging machine. In order to achieve the best possible results in vacuum packaging, it is necessary to consider the entire meat processing sequence. This is the only way to incorporate all parameters from the process chain that can influence the physical packaging procedure.

After slaughter, several biological processes take place in the meat. First, the meat becomes tough and dry, which can indirectly be traced back to the formation of lactic acid in the muscle fibres. Later in the process, protein-metabolising enzymes loosen the meat tissue. This permits the meat to absorb moisture once again and to become juicy and tender. However, if this process lasts for too long, too much protein is metabolised. This leads to the production of ammonia and the meat becomes inedible. Meat maturing and spoilage are therefore processes that blend into each other.

Vacuum packaging removes oxygen from the meat, reducing the activity of bacteria that require oxygen and thereby achieving a significant increase in shelf life. The removal of oxygen slows down the meat maturing process considerably and maintains the quality of the meat over a long time period.

Physical packaging processes
Pumping air out of the packaging machine chamber reduces the pressure and residual oxygen content. During this evacuation, a pressure reduction occurs simultaneously inside the piece of meat and on its surface. This reduction in pressure allows gas inclusions from within the meat to expand and escape. If the meat has a high moisture content, the water on its surface may evaporate if the vapour pressure is too low, which will lead to a rapid increase in the gas mixture within the chamber.

Due to this increase in gas mixture, the pressure within the chamber now only decreases at a slower rate as the vacuum pump must evacuate the additional water vapour that has been created.

This water content which has been vapourised during the evacuation, along with the temperature of the meat itself, has a considerable influence on the pressure that can be reached within the packaging machine chamber.

On ‘Skin Packaging’ machines, aerating the packaging chamber presses the bag onto the surface of the meat and compresses the residual atmosphere within the bag.
Depending on the product composition (gas inclusions and moisture content), the pressure inside the packaging bag may once again rise following the vacuum packaging process, since the residual gas can leak out of the meat. The pressure, at which the best packaging results can be achieved, therefore, depends on the composition of the meat.

**Water vapour tolerance**

Water vapour tolerance is an important feature of a vacuum pump. This must be defined according to use. The following parameters influence the water vapour tolerance of a vacuum pump:

- The pressure range within which the vacuum pump operates
- The prevailing ambient and product temperatures
- The mode of operation of the vacuum pump
- The installation position of the vacuum pump within the packaging machine

**Pressure range**

The pressure range within the packaging machine depends on the performance of both the vacuum pump and the packaging machine itself. Best-in-class, modern rotary vane vacuum pumps can achieve a final pressure of 0.1 hPa.

A number of factors define the pump-down time of the machine, such as the chamber size, net volumes, vacuum cycle and vacuum port of the packaging machine, along with the suction capacity of the vacuum pump.

The triple-point (or three-phase point) of water is the point at which the three phases of water (vapour, liquid and ice) occur simultaneously, typically at approximately 6 hPa. In some cases, the rate at which the water triple-point is reached during the vacuum packaging cycle is dependent on the factors as identified above.

**Temperatures**

The ambient temperature is set at a maximum of +12°C and the product temperature at a maximum of +7°C under the Meat Hygiene Regulations. These values vary in practice. Both temperatures have a direct influence on the operating temperature of the vacuum pump.

**Installation and operation**

The way in which the vacuum pump is installed (installation space, ventilation, etc) and the mode of operation of the packaging machine (cyclic operation, intermittent operation) also have a considerable influence on the operating temperature of the vacuum pump.

As a rule of thumb it can be said that: the higher the operating temperature of the vacuum pump, the higher its water vapour tolerance.

**Optimum packaging**

In order to be able to achieve the best possible packaging results, the interaction of the individual influences must be taken into account in the vacuum pump design. A complete overview of meat processing and cooperation between vacuum pump manufacturers, packaging machine manufacturers and operators are the most important preconditions for achieving the best quality.

Thanks to a dedicated range of products developed specially for vacuum packaging and long experience built up over several decades, Busch has particular competence in this industry. After all, Busch developed the first vacuum pump to be used specially for this purpose back in 1963.

**Vacuum packing fresh meat.**

![Vacuum packing fresh meat](image)
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Stute goes green with in-house recycling system

Stute has become the first company in the beverage industry to commission a PET recycling system in-house. With its bottle-to-bottle recycling capability, the company is processing its own PET waste and in future will also use non-returnable PET containers from its customers, using the decontaminated flakes as an admixture to the preform production process on injection-moulding machines.

Founded 130 years ago and boasting an annual turnover exceeding €400 million, Stute has a long history of incorporating green concepts into its facilities, from separating recyclable waste in the 1980s to establishing an aerobic sewage treatment plant in 1997. The company worked with Krones on several projects before installing the PET recycling system.

“By installing two Krones bottling lines with Contipure modules and without a rinser in 2009, we save 240 m³ of water a day in the beverage bottling operations,” said Christoph Frankrone, head of purchasing plant engineering at Stute.

“Our paramount concern is sustainability. However, this has to be cost-efficient as well. We shall be achieving both these goals with the recycling system.”

The system is currently dimensioned for producing 3500 tons of food-grade PET flakes each year. Given a bottle weight of 20 grams, this corresponds to 175 million PET containers - roughly equal to the complete output of two bottling lines.

Supermarkets and discounters with large distribution networks are the primary customers for Stute’s beverages sold in non-returnable bottles. Stute’s own recycling system enables it to take back the non-returnable PET containers. Bottles collected in supermarkets are generally pre-sorted in central warehouses.

Stute’s recycling system means that the PET material could be accepted and processed in-house at Stute without any elaborate sorting required beforehand.

The in-house recycling system consists of a washing module and a decontamination module, both of them in rack construction. All decontamination processes have to be preceded by a washing process in order to obtain clean flakes as the material. It is here that label residues, glue, sand and other soluble soiling are washed off.

In order to achieve food-grade quality, the material must be decontaminated in accordance with international standards. In Krones’ Vacuum-Supercleaning process, the entire PET input material can theoretically be recovered. Krones is reportedly the only manufacturer offering both the washing module and the decontamination module - and thus a complete-system package - with the entire peripherals included if required.

Stute’s recycling system uses a new operator interface. In contrast to earlier versions, it provides all relevant data such as fill levels and temperatures in a single display. The display also shows easy-to-understand icons that show not only the actual value but also the prespecified setpoint value and the upper/lower tolerance window. If a measured value moves outside this range, the icon will change colour. This makes operator control much easier as operators do not require any in-depth technical knowledge.

The recycling system can also be expanded as required. In fact, the capacity can potentially be doubled in the space available at Stute. “The current output is a wonderful size for beginning with this kind of process,” said Frankrone. “How things develop from here will also depend on the market prices for plastic.

“PET recycling is a win-win situation for the retail sector and for us. The retailers provide high-quality PET material for recycling as high-quality food and beverage packaging, and avoid downgrading it (eg, for textile production in China), which means our customers can point to a closed-cycle system. This is firstly, sustainable and secondly, it’s cost-efficient, because we can also pay reasonable prices. On the other hand, Stute uses the material for producing new preforms, thus practising resource-economy as well as obtaining a financial benefit.”

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

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*Dwyer Instruments (Aust) Pty Ltd*
www.dwyer-inst.com.au

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**Meat pattie-forming machine**

NovaMax 500 is a large meat pattie-forming machine. The mould plates can be custom made to a variety of shapes specific to users’ needs. It is a high-production machine for large-scale processing facilities.

The high-speed mould plate drive powers the product to speeds up to 100 strokes/min and production rates of 2700 kg/h. A lift system raises the mould cover, allowing the mould plate and knock-out plate to be changed quickly and easily.

A pivoting hopper and servo feed screw delivers high productivity and food safety. The pivoting feed screw drives, hopper and removable feed screws allow for easy cleaning and reduced maintenance costs.

Feed screws and pump movement are controlled to reduce product overworking to optimise texture and maximise quality. Direct drive servo control means there is greater operator control over the various mould plate actions, matching the characteristics of the product being formed.

The 15” colour touch screen interface is easy to use. Operators can choose from a full range of operating and diagnostic screens and can make adjustments to key parameters on the run. The servo knock-out drive is programmable for knock-out motion profiles and offers precise product placement to downstream conveying systems.

An optional paper feed system papers fresh product and stacks uniformly in tight formation on the conveyor belt, stacking 1-24 portions/stack.

*CBS Foodtech*
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Since the product is machined to such exacting tolerances, it will fit between existing and any additional sections. It is suitable for everything from wood and metal shavings, to agricultural and milling waste, food waste from confectionary production, to paper waste, liquid waste, welding flux removal and even sand removal for the Australian Defence Force operating in Middle-East war zones.

As the ducting is manufactured using smooth-bore technology, it minimises the risk of waste settlement and system clogging. For applications where some clogging is unavoidable, the system’s easy access makes cleaning simple.

Eximo
www.eximo.com.au

Cheese portion cutter

The Marchant Schmidt VCS20 high-speed fixed weight cheese portion cutter maximises block yield by using 3D vision scanning software and cameras that simultaneously scan the geometry of each individual slab of cheese. The VCS also has the capability of utilising a 20 kg block cutter integrated into the line for a complete portioning system.

The scanning software minimises giveaway while maximising yield. Adding the quad cutting module will increase the throughput of the cutter. Cutting and production speeds can be increased with optional multiple cutting stations.

The portion cutter analyses each stick to create the optimum cut solution with vision scanning software. It features a slicer-style gripper for constant portion control throughout the cutting process and a single guillotine cuts both lanes. The transfer conveyor is cantilevered for sanitary purposes.

Flexibility, reduced downtime and quick product changeover capabilities are further features.

PT Associates/Marchant Schmidt Inc
www.marchantschmidt.com
If only they used HACCP
US food safety moving from reaction to prevention

In the US, the Food Safety Modernization Act (FSMA) will fundamentally change food safety for food processors as the focus will shift from reacting to contamination incidents to preventing such incidents.

Although the FSMA was signed into law in the US in 2011, it has not been fully implemented via regulations yet and many stakeholders across the food industry appear to be confused about implementation deadlines, according to a recent study from PMMI, The Association for Packaging and Processing Technologies. Compiled from 64 interviews with manufacturing professionals, the report details food manufacturers’ perceptions of FSMA and how equipment manufacturers can best help them respond to the upcoming regulations.

FSMA requirements will be performance based. That is, the FDA will not set specific standards for processing and packaging equipment; rather, regulations will focus on the performance that companies are required to achieve. This gives companies latitude in how they will meet the new requirements. For example, some companies will install new machinery, while others will attempt to squeeze acceptable performance out of legacy equipment with modifications and upgrades.

The three aspects of the FSMA that are most likely to impact both food producers and equipment manufacturers include rules governing:

- Preventive control
- Recordkeeping and traceability
- Sanitary equipment design

Preventive control rules are likely to have some of the earliest and most significant effects on food producers. These rules state that:

- Each facility in the food supply chain must implement a written food safety plan that focuses on preventing hazards in foods.
- Operators of each facility need to understand the hazards likely to occur in their operation and to have preventive controls to minimise or prevent the hazards.
Although traceability is expected to represent one of the greatest costs of FSMA compliance, the food industry generally recognises at least two benefits that will result from successful systems:

- Modern traceability systems can reduce liability. A company with proper systems can show precisely which supplier shipments it took in and where products went, potentially reducing its exposure to mandatory or widespread recalls.
- When recalls do occur, traceability systems can make these recalls ‘surgical’, with only affected products having to be pulled from shelves.

Four different technologies could greatly increase traceability capabilities among food processors and manufacturers, including:

1. Barcoding: Machinery that scans barcodes from bags of ingredients, tracks what ingredients are going into individual batches, and records and collates that data centrally.

2. 2D Matrix codes: 2D matrix codes can carry much more data than standard barcodes and will likely speed up and simplify traceability and recall efforts due to the ease of scanning versus manually reading production codes on finished product.

3. RFID tags: Tags that would provide the same sort of information advantages as barcoding, but without the need to physically scan labels. Some respondents believe that RFID may not be a good solution because too often water and metal in products and packaging interfere with the signal.

4. Integrated unit tracing options: Equipment that could automate applying lot labels and recording corresponding database entries.

The PMMI’s study identifies the industries most affected by the anticipated rules. Fresh produce manufacturers are expected to see the greatest impact. Producers of baby food, infant formula and nutraceuticals will see little impact as they have already been subject to rigorous standards for preventive controls, traceability and sanitary equipment design. Industries overseen by the USDA are less likely to be impacted and juice, low-acid canned foods and seafood manufacturers are exempt.

The report also expands on ways that manufacturers affected by FSMA can make strides towards compliance - whether they have one, two, three or four years to do so. These steps include reducing liability with greater traceability capabilities, evaluating equipment design for improved sanitary construction and easy cleaning, and training operators thoroughly and often.

“Since 2011, FSMA has been a source of anticipation and anxiety for many food and beverage manufacturers. The legislation can impact companies differently depending on their size and vertical market,” says Paula Feldman, director, business intelligence, PMMI. “Our aim with this study was to shed light on industry concerns and advise manufacturers on ways they can ensure compliance.”

Australia and New Zealand are not exempt from impact from the FSMA as future food safety laws are expected to address importing issues even more vigorously.

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21st Australian HACCP Conference 2014

Date: 26 August 2014 - 28 August 2014
Venue: Doltone House, 48 Pirrama Rd, Pyrmont, Sydney

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Aerosol range

Fuchs has introduced a range of lubricant aerosol cans which spray from any angle they are held to access all facets of machinery and eliminate product wastage.

The Rivolta range includes application-specific, semi-synthetic lubricants for cleaning, corrosion protection and maintenance, such as anti-seize products, electrical conductors and protectors, and brake and component cleaners. The lubricants can be applied quickly and efficiently.

The Rivolta SLX Rapid is a universal rapid cleaner spray for the food, feed and pharmaceutical industry, designed to clean and maintain electric and electronic installations and machines safely.

The Rivolta ACS 3 is a fast evaporating cleaner that doesn’t leave residues. The food-grade quality lubricant offers rapid and total degreasing of steel and shiny metal surfaces. Components of the product act to remove different contaminants and it is available in a 750 mL aluminium-monobloc spray can with a non-flammable propellant.

TRS Plus, a maintenance product, is a multifunctional creep and fine oil, designed to release and restart seized mechanical parts. It is fully synthetic and has a wide temperature operating range. The product is based on pure basic materials and is free of halogenated hydrocarbons, aromatics and carcinogenic compounds. It can be used to lubricate precision instruments, maintain automobiles, treat plastics and protect stainless steel from water marks.

SKS 40 and 48 are also maintenance products in the range and are fully synthetic, non-hazardous, chlorine-free and designed to extend the service life of machinery. SKS 40 is a cutting-oil for the machining of metals, while SKS 48 is a higher performance version of the cutting oil for difficult machining operations.

Fuchs Lubricants
www.fuchs.com.au

Progressing cavity pump

The EcoMoineau C stainless steel progressing cavity pump is claimed to be the shortest PCP in the market - 42% shorter and 57% lighter than previous PCP series.

Its connecting system requires three screws only to complete maintenance. The shaft line (rotor, coupling rod, driving shaft) can be removed without disconnecting the pipe, and there is easy and independent access to each wearing part.

The eco-designed pump is light (due to fewer raw materials) and said to use 10% less power than previous generation pumps. It is suitable for the food market, such as meat and animal food, sugar and starch, convenience food and beverages.

PCM Group Australia
www.gb.pcm.eu
Kingdomway Group, a provider of nutritional supplements, operates four production facilities in Xiamen and Hohhot, Mongolia.

“Fermentation is one of the most important steps in producing our key additives, including coenzyme Q10, DHA, and ARA for milk and nutritious health products. As the compressed air comes into direct contact with the fermentation process, air purity is vital. The presence of even small oil traces will kill the bacteria, contaminate the end product and put consumers’ health at risk. Therefore, absolute oil-free compressed air is our focus,” said Mr Jiang, Site Manager at Hohhot.

To meet their compressed air requirements during the fermentation process, Atlas Copco recommended ZA 6G-300 low-pressure, oil-free screw compressors to keep the Hohhot production line running smoothly.

“As there are 16 fermentation tanks connected to the production line, the pre-filter, moisture separators and other equipment may cause drops in pressure and air loss,” said Leo Yang, Senior Sales Engineer with Atlas Copco. “To maintain the incoming air pressure in the fermentation tank at 2-2.5 bar - and taking into consideration other production processes and conditions - we set the front-end input pressure at 3 bar to keep the fermentation production line running stably.”

Atlas Copco ZA compressors have received ISO 8573-1 Class 0 (2010) certification for 100% air purity. The compressors incorporate stainless steel coolers, AGMA A4/DIN 5 gears, and an integrated variable-speed electrical drive system, which the company says offers energy savings of up to 35%.

Atlas Copco Compressors Australia
www.atlascopco.com.au
Meat injection

Argus has launched its latest meat injection technology - the InjectStar Linear Injector IS300. With either crank or linear motor technologies, the range is designed to meet requirements from the smallest to the largest food processors.

The IS 300 Model has the linear motor technology, allowing full operator control for the depth of injection, duration of injection as well as options to provide multipurpose capability for injection of red meats, fish and whole chickens.

Argus Realcold Limited
www.argusrealcold.com

Digital flowmeters

Exair’s Digital Flowmeters provide a way to monitor compressed air consumption and waste. With the addition of six extra sizes, the company makes it easier to measure consumption and identify trends at all of the critical areas or individual legs of a compressed air system.

Digital flowmeters for schedule 40 iron pipe are ready to ship in sizes ½, ¾, 1, 1½, 2, 2½, 3 and 4”. They are CE and RoHS compliant and can also be ordered for schedule 80, 10S or Type L copper pipe. A USB data logger and included software can be preinstalled or purchased separately. Summing remote displays, which make it easy to monitor compressed air consumption from a convenient location, are also available.

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

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Real-time PCR for food testing

Real-time PCR methods are ideal for fast investigations when urgent answers are needed (e.g., contamination of a production plant). The recent *E. coli* O104:H4 German outbreak being a perfect example.

Since the discovery of the DNA structure by Watson and Crick in 1953, molecular biology has greatly evolved and played a major role in biology fundamental research. In 1983, K Mullis (Nobel Prize of Chemistry in 1993) invented the polymerase chain reaction (PCR), which quickly became one of the most used molecular biology tools. Based on the physical properties of DNA and an enzymatic activity, this method amplifies specific DNA sequences in a very short time.

How does it work? The required components are: a DNA template (target), specific forward and reverse primers (specific short DNA sequences), a thermostable DNA polymerase (to copy DNA sequences), dNTPs (deoxyribonucleotides triphosphates), a buffer and magnesium chloride.

Typically, a PCR cycle is defined by three thermal steps: denaturation of DNA (95°C), annealing of the primers (55-60°C) and extension (72°C). In theory, each cycle allows duplication of the initial quantity of targeted DNA. Therefore, in optimised conditions, there’s an exponential amplification of the signal during the repetition of those cycles.

Since the 1980s, technology has greatly evolved, at both chemistry, enzymatic and instrument levels. This evolution led to the development of real-time PCR (2nd-generation PCR) with new chemistries, based on fluorescence detection like SYBR Green (intercalating agent), TaqMan probes (lysis probes) or Double Strand probes (hybridisation probes) and newer real-time PCR detection systems.

Multiplication of DNA is observed directly in each PCR well. The application scope of PCR and now real-time PCR is extremely wide from research, cloning, medical or genetic diagnostic to forensic investigations, as well as qualitative or quantitative applications. Food pathogen routine testing, as well as meat or fish identification, is one of those possible applications. The main advantages are:

- **Specificity**: At the genus, specie, serotype or at the strain level.
- **Speed**: Detection performed in less than two hours.
- **Sensitivity**: Only one DNA molecule can be detected in a PCR well.
- **Simplicity**: Ready-to-use reagents and automated analysis.
• Stability: PCR reagents can be shipped at room temperature.

Different ISO standards provide guidelines to handle PCR methods in routine labs. For emerging pathogens, the standard method can be based on real-time PCR, like for Shiga toxin-producing *Escherichia coli* (STEC) detection. It’s also a tool of choice for meat speciation testing. Considering foodborne pathogens detection, the analytical process usually includes the following steps in order to have equivalent results to the reference method (traditional culture method):

• Microbial enrichment, to reach the limit of detection of the molecular method (from 100 to 10⁴ cells/mL)
• DNA extraction
• PCR amplification and detection
• Data analysis
• Confirmation of presumptive positive results

For meat speciation, the analysis starts directly at the DNA extraction step. Overall, to reach good analytical performances, every step has to be optimal. As an example, the enrichment broth has to be efficient to properly recover stressed cells, or to apply enough selective pressure to avoid the overgrowth of interfering flora compared to the targeted organism.

These methods based on real-time PCR, called Alternative Methods, can be validated through independent and official organisations like NF Certification or the AOAC. Expert and/or independent laboratories will perform a complete evaluation of the performances of the alternative method compared to those of the reference method. For routine laboratories, the use of validated methods is required, especially when they perform official testing in an accredited environment.

Real-time PCR methods are ideal for fast investigations when urgent answers are needed (eg, contamination of a production plant). The recent *E.coli* O104:H4 German outbreak being a perfect example. The detection protocol was released after only a few days by the European Reference Laboratory for *E. coli*. (EURL VTEC - Department of Veterinary Public Health and Food Safety - Unit of Foodborne Zoonoses - Istituto Superiore di Sanità) and every analytical laboratory was to use it.

Those methods are also recognised for GMOs detection and quantification, and, more recently, they were highlighted in the horsemeat European scandal.

This technology is suitable for the detection and quantification of cumbersome cultivating bacteria like *Legionella* - in this case, results can be obtained in a few hours instead of the days required with cultural methods. This led to the recent standard: ISO/TS 12869:2012 Water quality. Detection and quantification of *Legionella* spp. and/or *Legionella pneumophila* by concentration and genic amplification by quantitative polymerase chain reaction (qPCR).

The reverse transcriptase real-time PCR is also a suitable tool to detect Norovirus or Hepatitis A agents.

Nowadays, the 3rd-generation PCR known as Digital PCR is opening large perspectives in the diagnostic and research fields for quantitative applications or for single-cell or single-genome amplification.

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**Figure 1:** PCR schema and principle: denaturation - annealing - elongation.

**Figure 2:** Principle of double strand probe. The fluorescence is emitted when it hybridises to the targeted amplicon, on both forward and reverse strand.

**Figure 3:** Example of real-time PCR curves. The target is declared positive when the fluorescence signal crosses the threshold.
**Multisample moisture content analyser**

The AquaLab TruDry is a high-precision moisture meter designed for labs that measure the moisture content of 15 or more samples per day. The product can dry up to nine samples at once, saving more than 150 labour hours a year.

By driving off water at lower temperatures (102°C instead of the typical rapid LOD temperature of 145°C), the product delivers the repeatability of oven drying with the efficiency of a moisture balance. Heating elements above and below each sample precisely control the sample temperature, with precision said to be 10 times better than a moisture balance.

Graintec Pty Ltd
www.graintec.com.au

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**HACCP manager kit**

An important Critical Control Point (CCP) incorporated into every food safety program is the time/temperature products are cooked, cooled and refrigerated. Failure to comply with CCPs may result in the food products falling outside of acceptable microbiological safety limits, leading to expensive product recalls.

Arrow Scientific can assist manufacturers to easily monitor, record and report temperatures at every CCP in the production process with the HACCP Manager kit. The kit provides the software, hardware and PC interface for the collection, recording and reporting of temperature measurements.

The handheld 37100 water-resistant thermocouple instrument is compatible with any Type K thermocouple probe and can store up to 3000 temperature readings.

The product has a temperature range of -73 to 260°C and an accuracy of ±0.2%. It has a rechargeable lithium-ion battery that typically has an 8 h operating life and is NIST traceable.

Arrow Scientific
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Screening kit for spoilage organisms in beverages

The Hybriscan for Drinks kit screens for all major spoilage organism species in beverages. The kit can qualitatively test for the presence of organisms such as *Alicyclobacillus*, *Brettanomyces*, *Candida*, and *Lactobacillus* among others.

An assay takes around 2.5 h after pre-enrichment and can be run with only basic laboratory equipment, making it possible for drinks manufacturers to test for organisms in house.

The test is based on rNA sandwich hybridisation, which means only living cells are detected. According to the company, more specific results are yielded when compared to alternative methods.

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

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Texture analyser

The Lloyd Texture Analyser (TA1) is a cost-effective, easy-to-use solution for performing rapid, detailed texture-analysis tests on a broad range of applications up to 1 kN.

Texture analysis can highlight quality improvement opportunities throughout the supply chain and the production process. New or alternative ingredients can be compared with existing ingredients.

In production, texture analysis is used for the measurement and control of process variations such as temperature, humidity and cooking time. A texture profile analysis test replicates the effect of two bites on a sample.

Lloyd Instruments’ NexygenPlus texture analysis software captures force, distance and time during the test, allowing the calculation of texture-critical parameters, such as adhesion force, firmness modulus, adhesiveness, fracturability, resilience, chewiness, gumminess, springiness, cohesiveness, hardness, stringiness, etc.

**Bestech Australia Pty Ltd**
www.bestech.com.au

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Accredited food testing laboratory services

As Australia’s largest independent food testing laboratory offering a comprehensive range of analytical services, DTS Food Laboratories is expanding its analytical capabilities to address current and future industry needs which all contribute to the delivery of accurate and timely results - from raw materials to finished products.

DTS offers its comprehensive range of analytical and assurance services with locations in Melbourne, Sydney and Brisbane. NATA accredited since 1961, the company can assist food and beverage processors and their supply chain with behind farm gate services, laboratory analysis in chemistry, microbiology, GMO, allergens and food forensics through to audit, inspection and training with its strategic partner AsureQuality.

In 2014, DTS celebrates 60 years in business. It is the only food testing laboratory in Australia owned by members of the food industry.

**DTS Food Laboratories**
www.dtsfoodlabs.com.au

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Science services centre
Silliker’s service capabilities now include food label compliance, contract scientific research and pathogen/hygiene consulting at point of manufacturing. The Silliker Science Centre offers supporting services for food and beverage manufacturers on their non-routine food challenges.

Services include shelf life, challenge study protocols and heat process trials to assist clients with correct process temperatures in the control of pathogens and expertise in probiotic analysis.

Silliker
www.silliker.com

Portable sample viscometer
The microVISC VROC is a small, portable sample viscometer designed for industries such as bio/pharmaceuticals, chemicals, electronics, food and beverage and OEM equipment manufacturers.

The viscometer takes measurements in only 90 s. It has a user-friendly interface and does not require cleaning.

VROC systems are a hybrid of microfluidic and MEMS (micro-electrical-mechanical systems) technologies. Compared to conventional viscometers and rheometers, microfluidic devices require only a small sample volume of fluid and can impose high deformation rates without entering strongly inertial flow regimes.

Crea Laboratory Technologies Pty Ltd
www.crealt.com.au

Refractometer for beverages containing pulp
The Abbemat Juice Station can perform precise Brix measurement of beverages containing pulp. The vertical set-up of the device avoids the sedimentation of particles on the prism which can occur with conventional refractometers, providing reliable and stable measuring results.

The company says the system is easy to operate and the filling funnel allows simple serial analyses. Cleaning of the measuring prism is not required because the next sample flushes out the previous one. The temperature of the sample is controlled automatically, to ensure accurate measuring conditions.

MEP Instruments Pty Limited
www.mep.net.au
At Molinos’s Rio de la Plata dried pasta factory outside Buenos Aires, Argentina, the floor is almost spotless. An automated system moves a handful of the 240,000 bags of daily produced pasta swirls and cylinder-shaped mostacciolis from a mixing station to bagging and stacking on pallets without ever touching the ground.

Argentina’s biggest dried pasta maker, with its fast-growing Lucchetti brand, is speeding up production processes and improving product quality with robotic automation. This is helping it keep up with demand and maintain a competitive edge in this pasta-loving country.

And talk about good timing: Molinos first turned to ABB robots in 2008, the same year that ABB Argentina began working with palletising applications. The latest installation at the plant is an IRB 660 floor-mounted palletising robot at the Lucchetti plant.

“We have been designing, manufacturing and commissioning cells with nearly 15 robots installed since then,” says ABB Robotics Project Manager Ulises Strangis. “During this time we have customised several kinds of mechanical and vacuum grippers.” With a reach of 3.15 m and 180 kg of payload, the robot turns, twists and lowers its large arm to scoop up bags of pasta and neatly stack them on pallets, alternating between two conveyor belts feeding it up to 240 bags/min. The gripper lays a sheet of kraft paper between each stack. A forklift driver then moves the completed pallets to a machine that secures them with a plastic film before another forklift operator hauls them to an adjacent distribution centre brimming with ready-to-ship pallets.

Molinos has installed six ABB robots at the Lucchetti plant, which has increased productivity by 10%, says production manager Robert Hagen.

“That’s a huge number for us,” he says.

Another upside is “an easier flowing process at the end of the line”, says Hagen.

Flow is vital for feeding the high demand for pasta in Argentina, the world’s ninth largest dried pasta market according to Euromonitor International.

In 2009, when Molinos came out with a catchy advertising campaign for Lucchetti, the company saw its share of the dried pasta market surge to 14.2% by 2011, up from 11.8% in 2008 according to global marketing research firm ACNielsen.

To keep up, Molinos turned to ABB to help design an automated and continuous production line. “A manual solution was out of the question,” says Molinos Process Engineer Javier Holoveski.

Loading each 7.5 to 10 kg set of pasta bags on the pallets is an expensive and strenuous job that had led to recurring injuries on older lines.

Increased automation also helps Molinos compete against smaller manufacturers that have lower cost structures, and to sustain profits even as 25% annual inflation pushes up fuel, ingredients, labour and packaging costs.

“We can compete if we are efficient in making a large production quantity,” Holoveski says.

All of these considerations went into the design of the new palletising robot.

Molinos had previously installed five such robots, with two starting on the Lucchetti spaghetti line and another on the Lucchetti swirls and mostacciolis line in June 2009.

This time, however, the company wanted a system that could do even more. What clinched the deal was the RobotStudio Palletising PowerPac simulation software, which Holoveski confides is as fun for an engineer as a video game.

Molinos and another Argentine company were the world’s first to use this powerful simulation software.

The factory managers played with the 3D program for three months, experimenting with different processes and bouncing ideas off each other and ABB’s team. “Sometimes it can be hard to explain what’s in your mind, but when you see an image you can explain it better, and this leads to more ideas,” Holoveski says. “Each idea can fix a future problem and save time and money.” After exploring five designs, they settled on one with improvements such as programming the gripper’s movements to avoid crushing the pasta when picking up the bags. The software was then downloaded to the robot in a
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few minutes and operations started, saving the company six to eight months in detecting, confirming and re-engineering glitches of new machinery.

The final design choice also allowed for other ABB products to be implemented.

“After selecting the design, we thought about including automation control systems, low-voltage products and enclosures from the ABB group,” says Ulises Strangis.

**Further improvements can be made**

Molinos is working with ABB on speeding up the end-of-line process so the pallets run automatically to the plastic wrapping machine, halving forklift duties to one operator.

Another plan is to update the robot palletising application to stack pallets higher so trucks can be filled to the brim, making better use of transport capacity.

Molinos also wants to add a sheet of paper under the first layer of bags to protect them from the rough wood of the pallet.

“The good thing is that we’re never talking about hardware, only software,” Holoveski says. “This makes it a lot easier to make changes.”

Further automation that will speed up end of-the-line processes even more is planned for the Molinos facility.

**Robot benefits**
- Increase in productivity: 10%
- Lower labour costs
- Easy-to-design automation process with RobotStudio Palletising PowerPac simulation software
- Changes made without fiddling with hardware

**Molinos Rio de la Plata**

Founded in 1902 by Ernesto Bunge and Jorge Born, Molinos Rio de la Plata has grown from a wheat miller to the biggest branded food products maker in Argentina. It operates 20 manufacturing plants and 10 distribution centres and employs 5000 people. Initially specialising in wheat processing, Molinos has expanded into animal feed, pasta, rice, chicken nuggets, coffee, frozen hamburgers, margarine, sausages and vegetable oils. Today it meets 31% of food demand in Argentina and exports to more than 50 countries. Expansion picked up pace after Argentina’s Perez Companc family bought control of the company in 1999. Under the family’s control, Molinos has expanded into the commodities business, biodiesel and wine, helping to diversify revenue streams.

The latest ventures include the purchase of a stake in an Italian gourmet food maker and the takeover of a Chilean food company.

**ABB Australia Pty Ltd**

www.au.abb.com

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**Valve action markers**

Texpen valve action markers are designed to leave permanent, sharp, bright marks on any solid surface, even underwater. The product features a specially formulated paint that will mark any non-porous surface without losing legibility or brightness. The tough aluminium body guarantees it will keep its shape, even in harsh industrial environments. The user can write at all angles, including upside down. Paint flow is controlled by a pressure bulb at the end of the barrel. The specially designed ballpoint tip eliminates wear and ensures the pen will never dry out.

The product is available in six high-impact colours - white, yellow, red, blue, green and black.

**Australian Warehouse Solutions Pty Ltd**

www.austwarehouse.com.au

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*Photo credit: Eduardo Gil*
Sanitary conveyor system
Fleming Dynamics has developed the Hydracon modular sanitary conveyor system. The system can be cleaned, sanitised and inspected without the use of tools and any items removed during cleaning are either tethered or located securely so nothing can be misplaced.

Integrated belt lifters and internal CIP ‘clean in place’ pressurised water cleaning systems can be selected at the time of order or retrofitted later. The modular design enables an existing conveyor length or angle to be modified quickly and at low cost. The conveyors are shipped flat packed, reducing transport cost. According to the company, the system is designed to be easily cleaned to prevent bacterial ingress and it will withstand the harsh chemical high-pressure washdown practices used by raw protein processors. The system is fabricated from AISI316 and is designed and manufactured in Australia.

Fleming Dynamics Pty Ltd
www.fleming.net.au

Butter unwrapper
Butter typically arrives into a processing facility boxed and wrapped in around 25 kg units. Before any reworking, melting or other downstream processes can be carried out, it needs to be de-boxed and unwrapped. Once de-boxed, the SPX Butter Unwrapper machine takes away the manual lifting associated with removing the plastic covering around the large blocks of butter.

Suitable for use with the butter bulks entering a processing line, the system can also be utilised for a multitude of other heavy packaged products. The machine is controlled using a PLC with an intuitive touchscreen operator interface. Its ergonomic design ensures easy installation without need for additional platforms or seating. Conveniently placed panels with push-buttons further enable safe and efficient operation of the system.

The de-boxed butter is received into the Butter Unwrapper on an inlet conveyor belt. A table, operated by air, turns and manipulates the block of butter to enable the operator to unwrap it without lifting. Unwrapped butter then leaves the machine on another conveyor belt, which is connected to the required downstream processes. The machine incorporates sensors to monitor the position of the butter bulks and communications to interface with upstream and downstream equipment.

The system is not fully automated, meaning an operator can ensure that no remnants of plastic remain when unwrapping the butter and enabling initial visual inspection of the butter entering the overall process to ensure there are no obvious quality issues.

SPX Flow Technology Australia Pty Ltd
www.spx.com.au
Container for viscous filling goods

Ecobulk HX is a container for highly viscous filling goods. The container has a sloping base, a specially shaped outlet area and a low-lying discharge tap. A further inner tank inside the steel grid acts as a support cushion for the slanted base. According to the company, the IBC provides almost 100% residual draining.

The use of conventional stirring systems is compatible with the large DN 225 filling opening. The shape of the silicone and lubricant-free inner bottle enables good stirring results even with small residual quantities of 50 L.

The company says the IBC offers advantages compared with steel containers, which include low purchase cost and no other expenses for cleaning, repairs, collection logistics or inspections. They say the single-use container does not have a risk of contamination from previous goods and will not heat up rapidly like a steel container.

A new inner bottle is inserted for every multi-trip use and the product weighs 88 kg, compared with the 270 kg of a stainless steel IBC.

The transparent plastic inner bottle enables monitoring of the filling level and the company claims that bottle exchange and recycling during reconditioning is environmentally preferable to chemical cleaning.

The container includes an acid protector shield, which protects the discharge area from contact with corrosive filling goods and product residues.

Schuetz Australia
www.schuetz.net

Tubular cable conveyors for fragile materials

Flexicon is offering its Flexi-Disc line of tubular cable conveyors for fragile materials, integrated with upstream and/or downstream equipment that sources material from single or multiple locations and delivers it selectively to storage vessels, filling machines or other processing equipment.

The conveyor moves material using high-strength polymer discs in 10 and 15 cm diameters that are affixed to a stainless steel or galvanised cable. The discs glide within smooth stainless steel tubing, moving fragile products gently, quietly and dust free, horizontally, vertically or at any angle, through small holes in walls or ceilings. The system can have single or multiple inlets and outlets, and convey over short distances or hundreds of metres.

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, beans, peas, pet foods, seeds, snack foods and spices.

Modular system components of 304 or 316 stainless steel include tubing, drive-wheel housings, tension wheel housings, metered and non-metered inlets, and discharges with and without valves, as well as accessories for wet or dry cleaning, including CIP sanitising.

Free testing is offered at Flexicon test laboratories on full-scale tubular cable conveyors and upstream equipment that simulate customer processes.

Flexicon Corporation (Australia) Pty Limited
www.flexicon.com.au

Re-usable plastic crates for fresh produce merchandising

CHEP has introduced re-usable plastic crates (RPCs) for fresh produce merchandising at the Produce Marketing Association Fresh Connections conference in Auckland.

The crates, developed by IFCO North America, provide a transport packaging solution that integrates with in-store merchandising. According to the company, the crates are easy to use, clean, ship and store, and offer good quality at a low supply chain cost.

The company is seeking customer feedback on the crates and is looking to conduct market trials with interested growers.

CHEP Australia
www.chep.com
Wiley commissioned to deliver Huon Aquaculture’s $12m value-added seafood processing facility

The Huon Aquaculture Group, which produces around 15,000 tonnes of fresh salmon per year, has started construction on a new $12 million value-added seafood processing facility at Parramatta Creek in northern Tasmania.

The value-added products to be processed at the new facility include hot and cold-smoked salmon, gravlax and other premium gourmet products. The new facility is expected to employ around 100 people when it opens its doors at the end of the year.

Specialist food processing design and construction firm Wiley has been commissioned to deliver the new facility, and plans to employ an estimated 100 local tradespeople during the construction phase. Wiley Managing Director Tom Wiley said the new facility will be the most advanced of its kind in Australia.

At 2500 m² the new facility will be about double the size it is today. It has been designed to maximise linear flow and provide complete segregation between hot and cold smoked processing. A suspended walkway across existing and new processing facilities will provide access to staff entry areas, as well as viewing facilities for customers and visitors. Visitors will get to see firsthand Huon’s clean, efficient and transparent fish processing facility.

Additional works will include an upgrade to the existing fresh salmon processing facility, a new office and staff amenities building, extended car-parking facilities and other associated civil works.

Huon Aquaculture Managing Director Peter Bender said, “The new smokehouse and new product centre is part of a four-year, $100 million controlled growth strategy for the company which consolidates our operations to Tasmania, delivers increased production capacity and efficiency whilst reducing our environmental footprint.”

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

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www.assaabloyentrance.com.au
**Splice press for monolithic belts**

Flexco has launched the Novotool Amigo splice press for monolithic belts, which is suitable for the joining of solid polyester and polyurethane conveyor belts.

Custom templates secure the belt when cut to ensure accurate pitch control, while the contactless heating process allows splicing in less than one minute and finishes with a controlled and even join.

Pinholes across the join are avoided through functions such as preheating to remove moisture from the belt ends, a shielded heat zone for consistent heating in various environmental conditions, and the contactless heating method.

*Flexco (Aust) Pty Ltd*


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**Drum unloading technology for viscous products**

The Articulated PowerPrime pumping system is suitable for drum unloading of viscous products.

The device can be used with various pumps with discharge pressures up to 1000 psi and flow rates up to 90 kg/min. It enables all four drums to be emptied while they are still on the pallet, while wiping the sides of the drum clean to maximise product recovery.

*Philiro Industries Pty Ltd*


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**Stainless steel press-fit piping system**

MEI’s no weld, stainless Chibro press fit piping system can be used in the food industry for service lines such as hot water, cold water, compressed air, steam up to 200°C caustic and many chemical cleaning (CIP) lines.

The installation involves the use of a handheld pressing tool, which presses the fitting onto the stainless pipework.

The clever stainless piping system can be installed many times faster than welded stainless piping, significantly reducing installation costs without compromising quality. It is claimed that the cost savings make the system competitive with HDPE piping installation.

As the piping is not subjected to the heat of welding there are no heat-affected zones. Being stainless steel, corrosion issues are minimised and the system is impervious to aggressive chemicals.

*MEI Australia*

Lineshaft conveyor
Dematic ANZ has launched a lineshaft conveyor, completing its MCS family of modular, integrated package handling conveyor systems.

Delivering fast, quiet performance, the entry-level conveyor can be easily swapped out for other conveyor technology within the MCS family as business needs change.

Offering operational versatility across a range of conveying applications, the product is suitable for handling products such as cases, totes, trays and parcels in distribution, manufacturing and 3PL operations with varying throughput and product handling requirements.

The system uses a universal side channel and standard components for all modules to provide the ability to change the function of a conveyor without having to replace entire sections.

The use of modular components provides standardisation with the same carrier rollers, motor-driven rollers, segmented belts, side frames, electronic sensors, motor controls, zone control logic assemblies, drive belts and other components used throughout all modules.

The conveyor also offers more drive options, using AC drive motors, DC low-voltage, motor-driven rollers or a combination of both. With this dual offering, the most appropriate drive system can be applied to any conveyor system layout.

The system can be easily integrated with other devices such as scanners, sorters, label printing and application devices, case sealers, inline weigh scales, palletisers and robotic picking and packing systems.

Dematic Pty Ltd
www.dematic.com.au

Profile for conveyor belts
Interroll has developed the Multi-profile for asynchronous drum motors and synchronous drum motors that feature frequency inverters, which can be used to drive various conveyor belts from different manufacturers using only one profile. Users of the profile can replace belts without having to replace the drum motor. This reduces the time needed to retrofit and perform maintenance work on the conveyors. The profile also contributes to lower storage requirements.

The profile is manufactured using ‘premium hygienic’ polyurethane (PU), a hygiene-friendly material for rubber coating drum motors which is suitable for positively driven belts and has a smooth surface that prevents bacteria from forming on the material. The PU features low noise and a high resistance to oil, grease and chemicals, as well as lower friction.

Interroll Australia
www.interroll.com
Enmin shakes things up for meat processor

A large meat processor looking for a solution for its frozen meat handling process approached Enmin Vibratory Equipment’s engineers to design a system that would meet its particular needs. The processor wanted a system that would weigh the frozen meat pieces individually before they were transferred to the packaging process.

Bulk meat was put through a dicing machine at a rate of 1000 kg/h, then conveyed to a spiral freezer. Enmin’s engineers were challenged to design a system that would accumulate the product, then separate the frozen pieces into four lanes that would discharge at a constant rate to the special conveying process for weighing.

Several issues needed to be taken into account, including: the irregular size and shape of the meat pieces; the potential for defrosting if the process took too long; and the fact that the new vibratory handling system needed to accommodate the existing installation.

Enmin undertook trials of the product to first establish the best form of vibratory feeders to use. An electromechanical design was selected after testing. The engineering model also showed that the overall concept could be installed with a minor adjustment to the existing installation.

The system selected for the project is also demountable and engineered for maximum flexibility to assist the installation.

To deliver a constant supply of individual pieces of frozen meat, the Vibratory Handling System is divided into three stages.

Stage one accepts the frozen meat from the spiral conveyor. Since the supply is not constant, this stage needs to have some accumulation. Through a specially developed gate, the accumulated product is converted to a more constant supply where the pieces are processed via a series of diverters to stage two.

Stage two further channels the meat into a specific area on the unit, which is designed to eliminate any overriding of pieces. Through an adjustable gating system, the pieces are delivered to the third and final stage of the conveying process.

The third vibratory feeding unit has a series of contoured v-sections that form the four meat streams into constant end-for-end lines before discharging to a directional chute for delivery to the special conveying process handling trays.

The three stages of vibratory feeders are positioned in a cascading arrangement and since each stage is provided with its own control station, the system can be tuned to suit the material flow. The design is also flexible in that the drive angles are adjustable, as well as having the facility to be inclined or declined should the meat parameters or upstream processes change in the future.

With the exception of the drive motors, the entire Vibratory Handling System is constructed in 304 grade stainless steel and engineered to meet HACCP requirements. Cleaning the system is simple as all surfaces are easily accessible and, where necessary, parts can be quickly dismantled. The system does not present any noise issues as motors are totally enclosed and other moving parts have no nip points or rotating components.

Prior to shipment, full-scale tests were performed to fully satisfy the processor of the equipment’s performance and to demonstrate the ease of installing the equipment through the demountable design.
Upgraded stretch hood pallet packaging system

Beumer has upgraded its stretch hood pallet packaging system. The stretch hood A includes an intuitive menu system on the machine control via a soft-touch panel, an ergonomically designed workplace for the operator and material-friendly transporting of the film in the machine. The company says the system also features improved system performance and needs less floor space.

The hood is accessible without a platform and steps, so maintenance work, such as changing the blades or the sealing bars, is handled at floor level. The operator opens a drawer, providing access to blades and sealing bars, and the machine is automatically brought to a standstill to protect the operator. This removes the need to move subassemblies to a maintenance position.

The operator can feed in the film without tools, which the company says will mean reductions to tooling and conversion times.

A film transport system feeds the previously created film hood into the system. On its way to the crimping and stretching unit, the sealing seam on the film hood cools down so that it can be crimped without losing time. This removes the need for a cooling unit and saves energy.

The operator panel uses pictograms to guide the user through the machine control menus. The panel also gives the operator access to all required training programs. The system is controlled by a Siemens SIMATIC S7-300.

The hood, which can be connected to existing conveying systems, uses energy-saving motors and has low compressed air requirements.

BEUMER Group Australia Pty Ltd
www.beumer.com

High throw vibratory conveyor

TNA has launched the roflo™ 3 high throw vibratory conveyor. The high throw design achieves the gentle transfer of sticky confectionery and difficult products, such as loose leaf fresh produce, through increased vertical motion to improve product throughput and line efficiency.

The conveyor incorporates a reaction base design, combined with an intelligent microprocessor, which achieves a greater stroke length at a lower frequency. This allows greater distance to be travelled, both linear and in elevation, per cycle, and fewer times per second relative to standard vibratory motion conveyors, to achieve smooth transfer of challenging products.

The conveyor is a full stainless steel washdown construction and operates at natural frequency in order to reduce power consumption. The pan material can be supplied in a dimpled finish to reduce surface area contact with the product.

TNA Australia Pty Ltd
www.tnasolutions.com

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For more information call 1800 300 877
First introduced to Australia in 1850, Schweppes is now a well-established beverage producer, with 1800 staff, 11 manufacturing sites and 12 distribution centres across the country. Besides the iconic Schweppes brand, the company also produces well-known brands such as SOLO, Cottee’s, Spring Valley, Pepsi and Gatorade.

Schweppes Australia distributes and delivers its products to more than 30,000 customers nationally. Its Archerfield site in Queensland services the majority of the state’s market. Up to 16,000 cases are picked daily by the site’s 40 employees and delivered to more than 5000 customers.

The site’s paper-based picking system meant that the process of planning each load could take the picker up to 15 minutes. Pickers had to identify 400 different products in the warehouse—some of which have similar packaging, such as Pepsi and Pepsi Max—which caused delivery errors. Stock tracking was also difficult due to multiple SKUs and pallets being stocked at each picking location.

To improve efficiency and accuracy, Schweppes decided to implement a fully integrated voice-operated system to deliver a comprehensive picking solution. The company wanted a solution that would eliminate the double-handling of pallets, equip managers and supervisors with workflow visibility and provide a safer work environment for pickers.

“Our goal was to build a fully integrated system that would eliminate the double-handling of pallets and non-value-add repetitive tasks, as well as provide our managers and supervisors with visibility in the workplace, which creates a safer place to work for our pickers,” said Danny Murphy, Schweppes Australia’s national logistics execution manager.

Schweppes engaged Dexion to implement a multifunctional paperless solution that would control the physical and operational aspects of Archerfield’s distribution centre. Dexion partnered with Vocollect by Honeywell to deliver a paperless picking solution to meet the needs of the beverage company.

A key consideration was to establish how the pallets would be built according to order size. In contrast to the old model, in which all work was completed on paper with numerous SAP transactions, Dexion’s RDS provided a single real-time interface to Schweppes Australia’s existing systems, aggregating multiple features for the varying functions within the distribution centre.

“We’ve seen a significant improvement in the allocation of resources, productivity and accuracy since introducing Dexion’s RDS. Within the first week of using the paperless voice system, our carton picking errors were reduced by 90%,” said Mike Heide, Schweppes Australia’s Queensland distribution manager.

“The implementation of Dexion’s RDS was seamless, particularly due to the help of Dexion’s expert team who were on-site for six weeks prior to the cut-over, providing training and assistance wherever needed.

“One of the key benefits of the automated voice solution is that pickers can be trained in a much shorter time frame. We can now set up voice templates for new operators in 10 minutes and a picker can be trained on the product range within 20 minutes. This contrasts to the old system where it would take up to two weeks before an operator could be fully confident to pick unsupervised.”
Under the new voice system, a picker is provided with a pallet label. They are then directed to the correct picking located via the Vocollect SRX2 Wireless Headset. The location is confirmed by the use of a check digit upon arrival, removing any manual direction or confusion about location. The voice system advises the picker how many cartons they need to pick and the picker repeats the quantity back to the system.

The Archerfield team says the voice-controlled system is simple to use. “The new system has made my job much easier because I’m no longer using any paperwork,” said Archerfield picker Mitchell Henwood. “All I need to think about is pulling up at the location given to me, repeating the check digit and verbally confirming the quantity picked.

“I pick a lot faster and the process of invoicing is much smoother. It’s also more accurate because I’m allocated a specific pallet and a specific number of products that need to be picked.” Heide says the pick rate has increased by around 20%.

According to Archerfield’s distribution centre manager Nathan Lucinsky, the new system has resulted in greater accuracy in order completions.

“We can gauge the workload at the beginning of the day and flex our casual labour force based on this information, rather than waiting for the end of the day to determine how much work is still required. The new system has allowed us greater accuracy for our customer deliveries,” Lucinsky said.

Management can now clearly identify what each picker is picking, what their pick rate is and how much work they’ve completed. Where managers used to manually review each picker’s paperwork daily, they now simply press a button to access a comprehensive productivity report for each picker.

Since pickers no longer have their hands full of paper, scanners and labels, safety has improved. Drivers no longer need to refer to their pick sheet while driving as they now receive all instructions via a wireless headset.

“Safety in the workplace is a big priority - we want to make sure our workers go home safe. Under the old system, forklift operators would drive around the warehouse with their heads down looking at their pick sheet. Under the new system, there’s no paper so their heads are up and they are visually checking to make sure everything is safe as they drive around,” said Lucinsky.

Given the success of Archerfield’s new system, Schweppes Australia’s general manager of logistics and customer service operations, Ian Gatenby, plans to roll out the new technology nationally.

“We would like to leverage the benefits we’re seeing at Archerfield right across our network. Ideally, Archerfield will set the picking standard in Australia,” said Gatenby.

“We have already seen a range of productivity, quality and safety improvements. Most importantly, we have seen the benefits to our customers. We’ve had a terrific experience at Archerfield, and I strongly recommend using this technology across all our distribution centres. I see it as another milestone step in our journey to becoming a best practice workplace.”
I recently participated in a training day at Woolworths Minchinbury DC, facilitated by IDG, the Australian Institute of Packaging (AIP) and Woolworths. The previous day, most of the trainees had attended one of Woolworths’ supermarkets to see how shelf friendly packaging (SFP) was being used in their storeroom and with shelf loading. I was told there were many questions raised during the day about which board grade is best to use for outer boxes.

The paradox for Woolworths and other retailers is that the stores want stable outer packaging that is easy to handle, open and load to shelves, with waste outers/trays that are easy to deal with, while the DC wants a more robust, tough and durable pack that can withstand rough manual handling and automatic order picking as well as the rigours of the carousel that delivers the outers to the store roller conveyors, plus the variable pallet load stacking that can add all sorts of dynamic loads to the pack.

It is also not my intention to touch on the additional costs for suppliers to the grocery industry. These have been well explained previously. So, back to the question about the best board grade.

Ultimately, every packing exercise is unique and requires considerable understanding of pack configuration and packing method. Every point in the supply chain, from the box maker to the transport company delivering finished product to the DC, has the potential to cause the SFP to fail, particularly with outers that are perforated for easy opening.

So, let’s just deal with perforated boxes, which generally come in RSC or wraparound variants. The supermarket industry wants a single facing of the product on the shelf. This means that in most cases, the box design will end up with perforations across the narrow front of the box, then the perforations will continue at an angle towards the back of the box in one form or another, then across the back.

Typically, in a compression stack, column stacked boxes with perforations as described above with no other dynamic forces applied (side or end shock typically from conveyor stops or movement on the truck when braking, to name but a very few of the risks) will reduce the top to bottom compression strength by around 40% from the original pack.

Allowing for other issues such as too much die cutting pressure by the box maker, damage occurring when erecting and packing, poor palletising and rough handling in the DC, where does the packaging technologist set the safety factor?

To illustrate this, I have run an exercise on a soft pouch 12 pack where each pouch weighs 500 g and the box weighs 200 g.

Figure 1: This pack weighs 6.2 kg, stacked five high so the weight on the bottom box is 25 kg (no safety factors allocated).

Figure 2: The safety factor when this job was an unperforated RSC was fairly high because the pouches that are packed are non-supporting in the pack. Let’s say a safety factor of 4.5 for one pallet high and 6.8 for two pallets high is chosen, which...
Vegetables, salads, meat, dairy, deli, seafood, bakery or non-food application, we package it all. Wet or dry, whether it’s headed for the refrigerator, freezer, microwave or conventional oven, Jet Technologies can offer the perfect packaging solutions that will have your product on the shelves at its freshest and looking its very best.

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in strength is still required to compensate for the direct loss in top-to-bottom compression strength. The top-to-bottom compression strength now required for one pallet high is 218 kg and for two pallets high is 652 kg.

Now the packaging technologist can go to their box maker and have them determine the best board grade for the pack. This should then be a process of determining the most suitable flute type, then board combination to achieve the required top-to-bottom compression strength.

Then through trialling and assessing, a measure of confidence can be established, allowing for all of the potentials that have been built into the safety factor.

For more information, contact educate@aipack.com.au

Ron Mines FAIP, known as the Boxologist, is a consultant to the box and packaging industry. He has 40+ plus years of experience and close involvement in the industry. He runs specialised training programs for box makers and box users, as well as providing technical and other support throughout the industry.
Packetto is a pack design technology that reduces the width and gauge of film used to produce shrink-wrap packs for bottles and cans, saving up to a claimed 35% of the film used.

Using the integrated carry-pack handle, no additional packaging is required and companies are able to directly brand onto the shrink wrap to enhance the pack’s shelf image to the consumer. The technology also allows for marketing opportunities such as ‘party tray packs’ that can be used as a cooler when ice is added.

According to the company, the technology can be installed on new OCME machines and retrofitted to existing OCME machinery which involves some minor adjustments between the loose bottle area and the film-wrapping section.

**Automatic double clipper**
The Polyclip FCA80 fully automatic double clipper combines simplicity with speed and versatility to produce chub packs of all sizes. This was previously only possible with complex, larger, costly equipment.

The FCA80 quickly produces diameter from 36-160 mm with clean tails and flat ends for reduced wastage and increased food safety.

The company says simplicity and economy are the focal points of efficient production and of their product offerings.

**Globus Group Pty Ltd**
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We do more.
**Smart laser sorter**

Python is a smart laser sorter that removes foreign material (FM), extraneous vegetative matter (EVM) and defects based on size, shape, colour and structure to improve product quality while increasing yield.

The product combines laser sorter features with complex shape recognition via its transparent, backlit chute. This design, combined with the latest image processing technologies and intelligent software and algorithms, allows for crisp analysis of complex contours as well as any combination of length, width, ratio and area to fine-tune product quality.

The unit’s backlit chute embodies all features of Key Technology’s Chycane chute, which feeds product in a monolayer with a consistent trajectory to the laser optics and ejection valves. This optimised product control maximises sorting and ejection efficiency, which increases overall yield.

The chute-fed sorter offers a small footprint, low maintenance with no moving parts, a sanitary design, full stainless steel/IP65 and an easy-to-use graphical user interface (GUI). It is suitable for fresh, dried and frozen fruits and vegetables as well as nuts and confections.

*Key Technology Australia Pty Ltd*

www.keyww.com

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**Dry package integrity tester**

The SealTick TSE6066B Package Integrity Tester can detect leaks as small as 10 microns in delicate packages such as pillow packs without stressing, damaging, wetting or marking them.

The package is placed into a flexible chamber and a vacuum decay test is performed. The chamber shrinks itself around the package without applying any force to the package itself. The vacuum then pulls air from inside the package through any holes.

The shrunken chamber means the smallest volume surrounds the package, allowing great sensitivity to measure small leaks. This is combined with simple repeatable operation, quantitative programmable leak limits that trigger pass/fail lamps, data logging, web-page monitoring and low-maintenance, easy-changeover parts.

Product quality and shelf life can be assured by using SealTick leak detectors, the company says. Typical applications include leak testing package seals for biscuits, chips, animal food, milk powder, blood bags, yoghurt, dips, etc.

The testing is non-destructive and fast - quantitative results are received in 5-15 seconds on a standard package. Twenty user-programmable testing methods are available. The tester has unlimited logging memory and online monitoring via a web browser.

*Bestech Australia Pty Ltd*

www.bestech.com.au

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**Checkweighers for upstream filling and casepacking**

Ishida DACS checkweighers reliably inspect the accuracy of upstream filling and casepacking.

The DACS-G multirange weighing capacity allows one checkweigher to satisfy a wide variety of product sizes and speed requirements with optimal accuracy. The machines are suitable for both filling and inspecting a product count.

Waterproof and corrosion-resistant models with IP69K rating are available for use in meat, dairy and seafood processing plants, and other demanding production environments. The all stainless steel construction and open frame design with circular pipe legs prevent dust and product build-up, and provide convenient access for cleaning.

Weighing data from the DACS-G can be saved and managed in digital format on a PC. This not only allows production status to be checked in a timely manner from a location remote from the production site, but also means that acquired weighing data can be collected and analysed to improve the productivity of the entire line.

Ishida DACS-G series checkweighers can be custom designed to suit many applications.

*Heat and Control Pty Ltd*

www.heatandcontrol.com
Caprolactone biopolymer food contact approved in Europe

Capa caprolactones, a biopolymer suitable for use in manufacturing bioplastics, has been food contact approved in Europe. The biopolymer is biodegradable and stable in both processing and end-use properties.

The approval for food contact could enable the development of many bioplastic products including shopping bags, drinking bottles, disposable and re-usable cutlery and plates, and food packaging.

Biopolymers represent an opportunity to significantly reduce the environmental impact of many fossil-based polyethylene and polystyrene products by replacing them with bioplastic ones. However, biopolymers are sensitive to processing temperatures, which can weaken the polymer structure, change the colour and even burn them. The mechanical properties of bioplastics, such as polylactic acid (PLA), starch-based plastics and polyhydroxyalkanoates (PHAs), also suffer from brittleness, stiffness and moisture sensitivity.

According to the company, the caprolactone biopolymer is suitable for PLA, PHAs and starch blends in both durable applications, to improve mechanical properties, and in disposable or one-time-use packaging applications where fast biodegradation is sought. The company says that external tests have been performed to certify the compostability of the caprolactone biopolymer.

Era Polymers
www.erapol.com.au

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www.multipac.com.au

Air blast chilling tunnel for dairy products

The automated air blast chilling tunnel designed, manufactured, installed and commissioned by Milmeq provides a reliable solution for dairy processors looking to efficiently chill or freeze their product. Milmeq developed this tunnel design suited to the dairy industry to provide a first in, first out chilling regime that also ensures uniform conditioning across all product entering the tunnel.

The technology is suitable for processing 20 kg blocks of cheese and the system has accommodated up to 15,000 cartons. The Milmeq Dairy Tunnel for cheese block chilling has typically chilled product from 35 to 15°C within 24 h. The Milmeq Dairy Tunnel has also been designed for other dairy product including butter, cream cheese and mozzarella. For these dairy items, the tunnel refrigeration is configured to deliver larger temperature reductions or heat removal rates from the product.

Delivering a total automated chilling system, the Milmeq tunnel operates independently and does not require a full-time operator. This reduces the reliance on manual labour, reduces the manual handling of the food product and prevents personnel from having to operate in cold temperature enclosures.

Installations of the Milmeq Dairy Tunnel have been completed for existing food processing sites and greenfield sites. The system is designed and configured to allow for easy expansion should companies require increased capacity due to increased demand for their product.

Milmeq Pty Ltd
www.milmeq.com
Low-cost and eco-friendly packaging for confectionery and baked goods

As energy and raw materials become more expensive and consumers become more environmentally conscious, confectionery and snack manufacturers have to adjust. Their products now have to stand out from the crowd without extravagant packaging that drives up costs. Luckily, packaging producers and machine manufacturers can help with material-saving packaging solutions and more efficient production lines.

A nyone wishing to survive on the market for confectionery and snacks against the likes of Nestlé and Kraft Foods has to present their goods well at the point of sale. The range of sweets and snacks has become enormous: nougat with salted butter, saffron butter biscuits and marshmallow sticks with orange blossom flavouring and chocolate coating are just some of the new products that manufacturers are flooding the shelves with. “In a highly competitive environment, companies want to win market shares with a constant stream of new products,” says Torben Erbrath, spokesman of the Association of the German Confectionery Industry. The package is the key to the purchase. It not only has to protect the product’s delicate contents, but also catch the eye. This calls for exceptional creativity from packaging designers: showy colours and shapes are just as important as effective consumer marketing.

Waste of space
However, some manufacturers of confectionery and baked goods tend to overdo it. Companies misleading customers with fraudulently oversized packages have come in for repeated criticism. A survey by the North Rhine-Westphalian (NRW) Consumers Association revealed that biscuit and snack packages contained an average of 40% empty space. Such deception is not only illegal, but also pointless. Many consumers feel cheated by the purchased products, says Klaus Müller, board member of the NRW Consumers Association. There are also environmental arguments against XXL packages. Wasting resources has a negative impact on the environment and damages our climate - something that consumers are well aware of.

Inflated packages are also counterproductive for economic reasons. Confectionery and baked goods manufacturers are facing massive pressure on costs as energy and packaging materials on the one hand and raw materials like milk, cocoa and sugar on the other are becoming dearer. For instance, the spot price for cocoa butter, which is used in the production of bars of chocolate, shot up by 80% to USD8000 per tonne in 2013 - and this puts a squeeze on profit margins.

To avoid putting off environmentally aware consumers and to offset cost increases, companies have only one choice: they have to restrain themselves with the packaging and manufacture of their products more efficiently.

Halloren Kugeln chocolates, a longstanding favourite on German confectionery shelves, subjected its products to an all-round facelift including uniform corporate design elements. In addition, the company’s own snack brand Choc’n Snack is now being sold in stand-up pouches - this way they are more conspicuous in the shops and are also resealable.

Halloren is leading by example, as the chocolate maker’s new packages make their mark without elaborate design and extra frills. Other manufacturers also seem to be rethinking their strategies. Some are resorting to material downsizing,
giving preference to packaging materials that are easier to recycle and that conserve resources by being thinner.

“On the packaging market a number of overarching trends can be identified. Sustainability is one of these megatrends,” says Ralf Weidenhammer, head of the eponymous packaging company. Among other things, Weidenhammer produces readily recyclable composite cans for confectionery and savoury snacks. With its cardboard cans, the company has helped brands like Knack & Back and Pringles to achieve greater popularity, enabling them to find the right balance between extravagance and efficiency. A resource-conserving lightweight, the Pringles can promises freshness and fun.

Scientists are meanwhile searching for alternative methods that are even greener and cheaper. A sustainable alternative to transparent multilayer films, as also employed in Weidenhammer’s composite can, has recently been developed by the Fraunhofer Institute for Process Engineering and Packaging - in the form of a film coating made of whey. In the ‘Wheylayer’ project funded by the European Union, the researchers make use of whey protein instead of oil-based plastics. The practical thing about it is that the substances naturally occurring in whey extend foods’ shelf life. What is more, unlike oil, whey is available in unlimited quantities and is also biodegradable.

Making production more efficient
There is still plenty of potential for boosting efficiency in confectionery production, according to Beatrix Fraese of the Food Processing and Packaging Machinery Association in the German Engineering Federation (VDMA). “A significant proportion of the machine park is outdated.” This view is endorsed by a current survey by Swiss plant manufacturer Bühler. According to this, the chocolate industry spends EUR200 million per year worldwide on the cleaning, roasting, sterilising, cracking and grinding of cocoa beans. With its energy audit and its novel shell burning technology, Bühler promises savings of up to 65%. During the free energy audit, Bühler engineers track down energy leaks in the cocoa production process. The new combustion system makes use of the energy derived from the shells for the roasting and sterilisation operations, instead of treating the shells as waste - so no expensive energy has to be bought in for heating. “The combination of the audit and new technology heralds a new energy drive that will dramatically change the future,” says Bühler Product Manager Thomas Bischof.

For its part, Bühler’s Danish rival Aasted has developed a new temperature control system for chocolate by the name of SupaNova Quick Shift. To achieve a smooth melt-in-the-mouth consistency, each chocolate has to be carefully heated several times so that the crystals in the mixture dissolve. In the new Quick Shift, a special warm water system makes it possible to control crystallisation with greater precision - thus accelerating production. In addition, the stirrer in the Aasted unit is detachable. The machine is thus easier to maintain, which improves its availability.

Cutting labour costs and extending machine operating times - these are also the goals of Walterwerk, a manufacturer of industrial baking ovens in Kiel. The company’s Jupiter IC is a new generation of sweet wafer and snack production lines that produce wafers faster than existing systems, says Markus Bartels, head of technical marketing. Jupiter IC produces more than five wafers per second, while its predecessors managed only four. Furthermore, the company has designed the new production line so that it requires less maintenance - another way of reducing costs.

Sorting wizard: packaging swiftly and precisely - large assortments of biscuits, for example, are a technical challenge. (Photo: Bosch Packaging Technology.)

The next generation of machines is already in the development pipeline at Walterwerk. “We’re working on making our systems even more user-friendly and versatile,” Bartels explains. This is necessary because growing product diversity is imposing tougher requirements on production systems. “With today’s frequent product changes and shorter product life cycles, they have to be more flexible and easier to modify,” says Bartels.

With their numerous innovations, packaging producers and machine manufacturers have adjusted to the new requirements in the confectionery and baked goods sector. Manufacturers willing to invest will have plenty to choose from among all the new packaging and more efficient machine solutions.
Rapid changeover system for packaging machines

RapCo is a complete plug-and-play rapid changeover system for automated format adjustment in packaging machines, consisting of positioning drives, sensors, a control unit, software, a display and wiring.

The system permits the efficient operation of complex packaging machines with numerous adjustment points and format variants, even with small batch numbers or frequent product or packaging changes. The system can be integrated regardless of the machine type or its producer.

The system supports up to 500 different formats and makes it possible to adjust all axes simultaneously at the press of a button. Up to 100 adjustment points can simultaneously be very precisely altered and, if necessary, readjusted. The adjustments made are checked and documented - cutting out operating errors and incorrect adjustments. Forty digital I/Os are available with each system - these can be used to control, for example, warning lights, valves, horns or other signaling equipment.

The system can be used wherever it has previously been necessary to manually operate adjustment wheels, mechanical guides, valves or pneumatic cylinders to carry out a format change on a packaging machine. Users can configure automatic format adjustment via the graphic user interface without the need for any special programming knowledge. Formats can be detected using a handheld scanner and checked for their plausibility, so that an incorrect selection can be detected immediately.

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Choose the chicken not the egg
if you want to make money

While egg farmers face fluctuating input costs and low margins, the profit received by poultry meat farmers is claimed to be higher and more stable according to a recent IBISWorld report.

Egg consumption is on the increase in Australia partly driven by the successful change in consumer perception about the relationship between egg consumption and high cholesterol. IBISWorld estimates that revenue for the egg farming industry will grow at an annualised 3.5% over the five years through 2013-14, to reach $375.6 million. This growth figure is inflated by rapid growth following the global financial crisis.

This growth is good news for egg farmers but the process farmers receive is under considerable downward pressure.

The lack of legally binding standards for egg certification is limiting the prices that free-range eggs can command and at the same time private-label eggs dominate supermarket sales further limiting profits to egg farmers.

The poultry meat market is dominated just two processors - Baiada Poultry and Inghams Enterprises. Even though the poultry meat farming industry is characterised by a large number of small farms, most of these enterprises are contracted to supply their poultry to the two major processors. Under the terms of these contracts, processors generally pay for the majority of input costs such as feed and veterinary services. This means that profit margins are somewhat protected from rising input costs.

These two major poultry processors process over half of all chicken meat produced and consumed in Australia, which helps to stabilise the prices poultry meat farmers receive. A circumstance not enjoyed by the egg producers.

Last month, the Australian Competition and Consumer Commission (ACCC) started proceedings in the Federal Court against the Australian Egg Corporation Limited (AECL) and a number of its directors, and two egg-producing companies. The consumer watchdog alleges that the organisations attempted to convince AECL-member egg producers to cull breeding hens and dispose of eggs to reduce the supply in the market.

The IBISWorld report forecasts that revenue for both the egg farming and poultry meat farming industries will grow modestly over the next five years, with poultry meat farming growing at a slightly faster pace. Profit margins for egg farmers are expected to remain low as growth in revenue is outstripped by growth in feed prices. In contrast, as poultry meat farmers become more efficient, their profit margins are forecast to increase.
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With a lot of talk in the beverage industry about non-heat pasteurisation, we are pleased to announce that there is another effective method available that is more economic, more efficient, more beneficial and more compact than other alternatives on the market. With increasing desires to process and consume beverages/food with all the nutritional components still intact, we have some improved and realistic solutions relevant to products such as fruit juices, protein drinks, isotonic drinks, milk, bottled water and RTD’s. We offer proven, non-invasive alternatives to heat-based pasteurisation, preserving the organoleptic integrity of the raw materials and the finished product. This is certainly one of the significant growth areas of innovation in the beverage industry.

For more info please contact Paul Baggio at info@fbpropak.com.au or call +61 3 9924-4050. You’ll also see more of our food/beverage technology range on Stand 2049 at Foodtech Packtech in Auckland from 23-25 September 2014.