Extending produce shelf life  Sustainability & efficiency  Fruit & vegetables
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Cover image: Ishida’s salad/fresh produce weigher delivers speed and accuracy to increase throughput and reduce giveaway. It is available in Australia from Heat and Control, www.heatandcontrol.com.
Wurst news: AU$488 million for sausage price fixing

In Germany, the Bundeskartellamt has imposed fines totalling approx 338 million euros (AU$488 million) on 21 sausage manufacturers as well as 33 individuals for conducting illegal price-fixing agreements.

For decades the ‘Atlantic Group’ has been colluding on sausage prices. The group, which first started meeting at the Atlantic Hotel in Hamburg - hence its name - did not fix the prices for every type of sausage as there were way too many. Instead they agreed on price ranges by product group - raw, boiled and cooked sausages, and ham.

In addition to the Atlantic Group meetings there had been actual agreements between several sausage manufacturers, in particular since 2003, to jointly implement price increases for the sale of sausage products to the retail trade. Most of the agreements were made by telephone either by reciprocal calls or organised ring-around calls.

As a direct result of this cartel agreement, manufacturers have been pocketing higher prices for decades.

The Bundeskartellamt obtained first indications of the cartel from an anonymous tip-off. During the proceedings 11 companies cooperated with the authority and made confessions. The cooperation provided by the companies was taken into account as a mitigating factor in the calculation of the fines. The fining decisions are not yet final and can be appealed within two weeks to the Düsseldorf Higher Regional Court.

The Bundeskartellamt does not give any information about individual fines, which range from a few hundred thousand euros to high amounts in millions. The high fines reflect the seriousness and duration of the infringement and the cartel-related turnover (the turnover achieved by the company with the products that were the subject of the cartel agreement) and the overall turnover of the company.

Andreas Mundt, president of the Bundeskartellamt, said, “The price-fixing agreements were practised over many years. The overall amount of fines seems high at first glance but has to be seen in perspective in view of the large number of companies involved, the duration of the cartel and the billions in turnover achieved in this market.”
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### Food traceability best practice document released

The Global Food Traceability Center (GFTC) has issued a guidance document on food traceability best practices. Providing a comprehensive framework for six food industry sectors - bakery, dairy, meat and poultry, processed foods, produce and seafood - the document summarises the similarities and differences among them in regards to traceability.

“Our guidance document helps fill in one of the most significant gaps that regulators face when developing new policies: what is the industry currently capable of doing and how much can realistically be asked of them?” said Tejas Bhatt, program director of the GFTC and one of the lead authors.

“This document can facilitate more balanced, effective, science-based and cost-conscious policies and serve as a blueprint for what is practical for the food industry to improve food safety, save money and help protect the public.”

### Detect malformed chickens on the production line non-invasively

Researchers of the Universitat Politècnica de València have developed a device that tells us the state of conservation of poultry and detects malformations by analysing its electrical properties. It is a non-invasive system that would help to guarantee the quality of the final product before it is delivered to the consumer.

The device, which has been manufactured by 3D printing techniques, incorporates an advanced sensor that quickly and easily registers the electrical properties of the product and obtains a precise diagnosis of its quality.

Researchers explain that this new sensor is intended for use before the packaging line.

### Swap steaks for cicadas

We’ve all heard it before: if we’re going to feed the world without killing the planet, we’re going to have to make some big changes to how we eat. Increasingly, it’s looking like we’re going to have to swap steaks for cicadas, if recent reports are anything to go by.

While it seems like the sensible option, how do we convince squeamish consumers that insects are a viable (and palatable) option? Research from Canadean suggests that information is key - as is tapping into insects’ association with exotic foods.

Surveying 2000 consumers in the UK, Canadean found that 65% said they would not be at all willing to try foods made from processed insects. However, consumers who are given detailed, flavour-focused product descriptions are more likely to be willing to try them. When given detailed information, 46% of consumers said they’d be willing to try insect-based products, compared with only 35% who were given minimal information about the products.
Egg stamping becomes mandatory in November

Egg stamping will become mandatory from 26 November 2014. From this date, each egg will need to be stamped with a unique identifying mark that allows it to be traced back to the farm where it was laid in the event of a food-poisoning outbreak.

The national standard commenced in November 2012, but the NSW Government gave egg producers a two-year grace period to budget for and implement stamping systems.

“I commend the many producers who have already come on board and remind those who have not yet done so that there is now less than three months before stamping is mandatory,” said Katrina Hodgkinson, Minister for Primary Industries.

“In order to reduce the burden on those smaller operators who produce less than 1000 eggs per day, the NSW Food Authority is providing a free egg stamp and ink to help them meet the requirement.”

The NSW Government will also make regulatory amendments so businesses producing fewer than 20 dozen eggs per week that sell directly from the farm gate will not be required to stamp their eggs.

AUSPACK turns 30 in 2015

2015 represents a significant milestone for AUSPACK: the exhibition celebrates its 30th anniversary as the largest biennial processing and packaging machinery and materials exhibition in Australia.

Owned and presented by the Australian Packaging and Processing Machinery Association (APPMA), AUSPACK 2015 will be held from 24 to 27 March at the Melbourne Convention and Exhibition Centre.

“It is hard to imagine what started out in 1985 as an exhibition for a dozen companies on a cement floor in the Hordern Pavilion in Sydney, showcased in 2013 over 308 exhibitors, including 112 international exhibitors from 18 countries,” said Mark Dingley, Chairman of the APPMA.

“Today AUSPACK exhibitors represent the entire spectrum of the industry - from processing, packaging and filling machinery through to packaging materials, product identification solutions, materials handling, ancillary components and more. This is a true indication of the importance of AUSPACK on the industry calendar.

“AUSPACK has undoubtedly played a significant role in the industry for the last thirty years and the APPMA are extremely proud of their flagship offering. We welcome you to exhibit at our anniversary AUSPACK and we look forward to bringing you many more exhibitions of this calibre in the next thirty years.”

For more information about AUSPACK 2015, visit www.auspack.com.au.

Forget tanning: fruit and veg is the key to a truly healthy glow

Forget sunbaking and spray tans. The secret to a healthy glow lies in eating fruit and vegetables, new research reveals.

An innovative study published for the Experimental Psychology Society sheds new light on the importance of skin colour as a determiner of facial attractiveness. It also shows that carotenoid colouration has the upper hand over melanisation when it comes to the rules of attraction.

“Skin colouration can arise as a result of two distinct processes: through tanning (melanisation) or the assimilation of fruit and vegetables (carotenoid ingestion),” explains the team leading the research.

Determined to investigate the importance of skin colour in judgements of facial attractiveness, the team set out to examine the importance of high levels of these pigments (carotenoids and melanin) in attraction choices in three separate, yet linked, internet-based studies.

This research is the first to show strong evidence for the importance of skin colouration in attractiveness judgements. What’s more, it clearly exposes “the importance of carotenoid coloration as a cue to current health and attractiveness, [a fact that] may be pivotal in mate choices”, explains the team.
Your glass of wine could give you more than a hangover

For some of us, the thought of a glass of wine on a Friday night is what keeps us going when the Wednesday afternoon slump hits. While not all of us spend our Friday nights quaffing French wine, a new study into the contamination of French wines and spirits could have consumers rethinking their end-of-week tipple.

French researchers have found that the majority of French wines contain phthalates - compounds that are considered to have potential as hormone disruptors. The use of phthalates is regulated on an international level and includes those likely to come into contact with food and drink packaging.

The researchers found that 59% of the wines analysed contained significant quantities of one particular form of phthalate, dibutyl phthalate, and only 17% did not contain any detectable quantity of at least one of the reproductive phthalates.

A more worrying finding was that 11% of the wines analysed did not comply with EU specific migration limits (SMLs) for materials in contact with foods. The results of the study were published in ‘Food Additives and Contaminants: Part A’.

The study also analysed a variety of materials often found in wineries and found that a large number of polymers often contained high quantities of phthalates. The researchers recommended the discontinuation of the use of containers coated in epoxy resin.

3D printing to feed US soldiers

The US Army is looking at novel ways to feed its troops - including 3D printing food.

NRSDEC food technologist Mary Scerra says the technology could actually reduce costs because it could be used to print on demand. “For example, you would like a sandwich, whereas I would like ravioli. You would print what you want and eliminate wasted food,” she said.

The technology could be used on the battlefield for meals on demand or for food manufacturing, where food could be 3D printed and further processed to become shelf stable for use in rations.

The team is looking at ultrasonic agglomeration, which produces compact, small snack-type items. Combining 3D printing with this process could yield a nutrient-dense, shelf-stable product.

Updated stainless steel Food Code of Practice published

The third edition of the Food Code of Practice has been published by the Australian Stainless Steel Development Association (ASSDA). The free document is a technical specification covering the requirements for the design, fabrication, inspection, transport and installation of stainless steel plant and equipment in the food and beverage industry.

The code of practice is a cooperative venture by ASSDA and members of the Australian food industry, all of whom have expertise in the design, supply and fabrication of stainless steels.

The publication has been updated after changes have come about in standards, working practices, materials and asset owners’ expectations. The 2014 edition reflects current requirements in the design and fabrication process specifically for food and beverage plants.

According to ASSDA Executive Director Richard Matheson, the Food Code of Practice is not intended to replace national and international standards; rather, it stands as a practical technical specification used in conjunction with ASSDA’s Accredited Fabricator scheme.

The free ASSDA Food Code of Practice and a list of ASSDA Accredited Fabricators can be found at www.assda.asn.au.

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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.

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Big data mining helps identify contaminated food sources

Identifying the source of foodborne disease outbreaks is not always easy. Some outbreaks have quite long incubation times and getting consumers to remember exactly what they ate some weeks ago is almost impossible. However, IBM has developed a tool that may help.

Using novel algorithms, visualisation and statistical techniques, the tool can use information on the date and location of billions of supermarket food items sold each week to quickly identify with high probability a set of potentially ‘guilty’ products within as few as 10 outbreak case reports.

Foodborne disease outbreaks of recent years demonstrate that due to increasingly interconnected supply chains, food-related crisis situations have the potential to affect thousands of people, leading to significant healthcare costs, loss of revenue for food companies and - in the worst cases - death. In the United States alone, one in six people are affected by foodborne diseases each year, resulting in 128,000 hospitalisations, 3000 deaths and a nearly $80bn economic burden.

When a foodborne disease outbreak is detected, identifying the contaminated food quickly is vital to minimise the spread of illness and limit economic losses. However, the time required to detect it may range from days to weeks, creating extensive strain on the public health system.

Perhaps surprisingly, the petabytes of retail sales data have never before been used to accelerate the identification of contaminated food. In fact, this data already exists as part of the inventory systems used by retailers and distributors today, which manage up to 30,000 food items at any given time with nearly 3000 of them being perishable.

Recognising this issue, IBM scientists built a system that automatically identifies, contextualises and displays data from multiple sources to help reduce the time to identify the mostly likely contaminated sources by a factor of days or weeks. It integrates pre-computed retail data with geocoded public health data to allow investigators to see the distribution of suspect foods and, selecting an area of the map, view public health case reports and lab reports from clinical encounters. The algorithm effectively learns from every new report and recalculates the probability of each food that might be causing the illness.

“Predictive analytics based on location, content and context are driving our ability to quickly discover hidden patterns and relationships from diverse public health and retail data,” said James Kaufman, manager of public health research for IBM Research. “We are working with our public health clients and with retailers in the US to scale this research prototype and begin focusing on the 1.7bn supermarket items sold each week in the United States.”

How it works

To demonstrate the system’s effectiveness, IBM scientists worked with the Department of Biological Safety of the German Federal Institute for Risk Assessment. In this demonstration, the scientists simulated 60,000 outbreaks of foodborne disease across 600 products using real-world food sales data from Germany.

Unfortunately, in real life, cases of foodborne disease do not show up all at once as outbreaks are reported over a period of time. Depending on the circumstances, it takes public health officials weeks or months to identify the real cause; sometimes this is even not possible at all. If the relevant data was provided by the retail companies, this could be improved significantly.

“The success of an outbreak investigation often depends on the willingness of private sector stakeholders to collaborate proactively with public health officials. This research illustrates an approach to create significant improvements without the need for any regulatory changes. This can be achieved by combining innovative software technology with already existing data and the willingness to share this information in crisis situations between private and public sector organisations,” said BfR Head of the Department Biological Safety Dr Bernd Appel.

This research has been published in the peer-reviewed journal PLOS Computational Biology together with collaborators from Johns Hopkins University, Purdue University and the German Federal Institute for Risk Assessment (BfR).
General System Pack offers innovation and many years of experience, with a range of affordable flow-wrappers all designed and manufactured in-house using Italian engineering.

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Labels ain’t labels
A label is a complex technical construction

Delivering a label is not just a matter of printing it. It involves a complex value chain that also spans the material to be printed and the machinery to apply it - whatever the technology employed.

The ‘battle of decoration technologies’ was the focus for an expert panel of suppliers who came together at the annual congress of the label industry’s international association, FINAT, to debate the challenges and opportunities. Their discussions provided valuable insights that set the context for improved communication between brand-owning end users and their label suppliers - including printers.

Representatives from key - and different - aspects of today’s industry supply chain formed the discussion panel. They were:

• Stefan Richter (Germany), Krones, leading manufacturers of advanced process, filling and packaging equipment - including different label application systems;
• Geert-Jan Kolkhuis Tanke (Netherlands), Avery Dennison, representing a leading global supplier of label materials, both paper and film, particularly for self-adhesive labels;
• Raul Matos (USA), founder of Karlville Development LLC, global leaders in shrink sleeve converting and application equipment as well as pouch converting.

The opportunity to cross-question suppliers was enthusiastically embraced by the congress delegates, who were encouraged prior to the debate to submit questions to moderator Marc Büttgenbach - himself worldwide sales director for labels and consumables for Bizerba, a worldwide provider of a wide-ranging portfolio of hardware and software products, particularly in the food arena.

Which technology?

“Why would a brand owner choose any particular labelling technology for a product?” Büttgenbach asked. For shrink sleeves, Matos said that it is the “ability to label different shapes and sizes of container. Sleeves on smaller single-serve bottles are economically-viable.”

The choice driver for self-adhesive labels, said Kolkhuis Tanke, would be “the huge selection of materials and products available to meet every price requirement - and changing with innovation, as with other technologies”.

In fact, the panel agreed, we are living in a multitechnology society - and a society where the materials employed will work with both conventional and digital presses. “Kro-
Expanded label content is also a topic of focus for the very distinct production characteristics of shrink sleeve labels, according to Matos. “QR codes, for example, need to be placed on an area of low shrink,” he said, underlining the need to involve the whole supply chain, from the designer onwards, in creating a successful shrink sleeve.

Security and ‘smart’ data functionality
Barcodes and other ‘smart’ printed data also have a role to play in product authentication and track-and-trace activities - which are only one part of the opportunities to create layered overt (visible) and covert (invisible) security elements in and on a self-adhesive label, as Kolhuis Tanke pointed out. RFID labels are, of course, a good example of the successful application of this principle although, as Matos added, they are today primarily “interesting as a security device for high-priced products”.

Conversation moved on to a technology that the panel agreed is definitely on the horizon: linerless labelling, which is already achieving a strong presence on supermarket food prepacks, and to another developing pathway for label converters - printing flexible packaging.

“Our industry currently only has a tiny percentage of this market, but we could have much more!” said Matos. He reminded the audience that two different, but complementary, businesses exist within the broad packaging arena - primary and secondary packaging - both of which could be addressed by label producers. However, he added, “in our industry, this requires a mindshift... We need to embrace flexible packaging as a closely related brother industry.”

He drew attention to a good example of a practical enabler in this respect - the latest HP Indigo digital press for both paper and film webs up to 750 mm wide, which is capable of printing flexible packaging.

Price versus sustainability
The moderator directed the conversation to a major focus for FINAT members: the issue of price versus sustainability. The true definition of ‘sustainability’ needs to be established, said Kolkuhn Tanke, because “it is also about efficiency on the production line and TCO (total cost of ownership): can it bring savings?”

Matos expanded the discussion to include shrink sleeves, which, he said, are not considered a sustainable solution in some ‘green’ communities. “But new technology does now allow sleeve separation in PET recycling,” he said. He added that he believes “shrink sleeves will continue to grow as packaging continues to change: refills, pouches with closures; these are the things that will create the tipping point”.

“Sustainability is also about the trend to thinner materials,” Richter pointed out, highlighting a key factor for Krones’ business platform. However, they “require more skill at the application point, and underline the need for quality labelling materials - even though thinner materials are driven by price!”

Threats?
Two pathways to product decoration were identified as threats to the label industry. Both of these are primarily focused on the increasing capabilities of digital technologies.

“With all our currently available technologies, we still can’t decorate a three-dimensional surface!” said Richter.

3D printing’s challenges are partnered in the threats arena by direct-to-container printing, which does away with the need for an additional label substrate, as shrink sleeve expert Matos pointed out.

The future?
Currently, Krones is seeing increasing evidence that brand owners are choosing a mix of labelling technologies, Richter said. “In fact, labelling and packaging are merging together more and more.

What, then, is the likely scenario for five to 10 years’ time?” Büttgenbach asked.

For Kolkuhn Tanke and Avery Dennison, it will mean “more self-adhesive products, greater efficiency, high-speed label application and much more in the way of ‘smart’ labels and near-field Communication (NFC) - which not only influence consumer behaviour but also significantly augment label functionality”. For Karlville, Matos expects that the medium-term will see full automation in the application of shrink sleeves as the market matures, plus a larger share in flexible packaging - particularly pouches. Whatever the case, the label application machinery has a key enabling role to play, said Richter. “There will be a highly flexible ‘open system’ of application - but material suppliers need to involve the application industry earlier in their developments to facilitate change at our end.”

“Will any one technology be the ultimate winner?” was Büttgenbach’s final question. The panel agreed that there is room for everyone. “We will all be part of a growing business,” said Richter.

FINAT is actively pursuing the promotion of a broader technology base than traditionally seen in label printing companies, and the topics raised by delegate questions in this valuable panel discussion prove that the association’s membership is also enthusiastically embracing a wider definition of a label.

About FINAT
FINAT, founded in Paris in 1958 with headquarters in The Hague (The Netherlands), is the worldwide association for manufacturers of self-adhesive labels and related products and services. With 600 members in more than 50 countries around the world, FINAT offers label converters and labelling industry suppliers the opportunity to exchange information and network internationally.

For more information, visit www.finat.com.
TOP 7 TIPS TO SEAMLESS CODING, AND THE PITFALLS TO AVOID ALONG THE WAY.

Knowing what to choose is vital.
Knowing what to avoid is just as important!

Technology that’s too rigid
Your business will change. Your customers can change. Your customers’ needs can change.

Fuzzy specs
Vision cameras are not mind readers. They can only capture what they’re set up for. Not in the quality criteria? Camera didn’t capture it? Then it’s not the camera’s fault!

That ‘will do’
Athletes don’t stop training when they win. Don’t stop monitoring your processes. Finding & fixing minor issues can prevent rework and $$$ lost.

Not checking your equipment
No technology will be fine ‘forever’. Equipment needs regular maintenance. Failures lead to downtime, & downtime is not good!

Cap-ex = short run
Capital investment is important - but not everything. Don’t compromise the solution just for the upfront cost. Make sure you understand the true total cost of ownership for the entire life of the equipment.

Training
All operators need training on regular maintenance. Staff training lets you get the best out of your equipment. Mistakes are often operator error rather than a technology fault.

Think out of the box
Don’t think too rigidly (“I must have an X for that”) You can achieve the same end result with several solutions. e.g: you can check a carton has all 6 bottles with either a vision system or a checkweigher.

AVOID

Technology that’s too rigid
Assuming the camera will capture ‘everything’
Thinking your processes are the best they can ever be.
Assuming your equipment is fine.
Focusing solely on the initial cost.
Assuming all is fine after the initial training.
Thinking you’re limited to one particular technology type.

GO FOR

Technology that’s flexible & allows you to grow without needing to continually upgrade.
Setting clear quality criteria and goals in the beginning.
Monitoring for continuous improvement.
Regular preventative or planned maintenance.
Evaluating the benefits & total cost of ownership.
New staff need proper training.
Explore all technology options - be innovative!

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Marel’s OCM9500 box and crate labeller has been upgraded with a waterproof chassis and indicator to withstand full washdown to IP69K.

The labeller is suitable for automatic weighing and labelling applications in both wet and dry production environments. The unit handles crates and boxes up to 40 kg in weight, providing consistent weighing accuracy with automatic zero tracking.

Labels can be applied to the front and side of the box by a combination of up to eight label applicators, including print of barcodes, best before dates and product, as well as warehouse tracking information. Innova Integration is available to assist control of the packing and dispatch process.

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**Labelling system**

The FormSleeve+ labelling system, from Sacmi Labelling, is said to be capable of up to a 20% reduction in the cost of materials and labelling speeds of up to 50,000 bph.

The modular system creates and applies sleeves from MDO (machine direction orientation) rolls of film. The sleeve is created on a series of motorised mandrels through the use of vacuum technology and the sleeve is then bonded using either laser technology or a natural liquid substance that never comes into contact with the containers. The manufactured sleeve is then lowered and applied to the container and discharged via a steam tunnel shrinking the sleeve to the container at the outfeed of the labeller.

Using MDO rolls of film, an optimised roll count of 20,000 labels or more per roll is achieved, as opposed to 5 to 7000 for traditional shrink sleeve applicators. This means improved yields, reduced shipping and inventory costs and minimal film/label wastage for both the label printer and the bottle labeller.

The product can be configured to accept a wide range of label applications and label material types, such as PE, PET, PVC, PLA and OPS, to suit individual user requirements.

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Domino changes the game with the new V230i thermal transfer printer

*Industrial yet ergonomic, the V230i thermal transfer printer is a tried&true performer and a cost-effective coding solution for flexible packaging and labels.*

The first model not to rely on compressed air, Domino’s V230i exceeds expectations for both performance and value. Its simple and functional design guarantees quick ribbon changeovers, which will keep downtime to a minimum. The smart solution to thermal transfer coding, the V230i prints high resolution images, text and codes onto flexible films, foils and labels.

Featuring Domino’s class-leading user interface QuickStep, operational simplicity is ensured to provide customers with high levels of performance and reliability across a broad range of applications.

Domino’s innovative i-Tech Ribbon Drive offers four different ribbon saving modes for the lowest cost of ownership in its class. This technology means that there will be a saving of up to 60% less ribbon used per print and will virtually eliminate downtime related to ribbon breakage thanks to its unique dancing arm tension control. Best of all, the compact size of the V230i means that it will fit into most existing thermal transfer brackets using standard adaptors available.

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**Multi-bottle returnable beverage tray**

Loscam’s multi-bottle returnable Beverage Tray enables the implementation of one-touch solutions for the beverage and retail sectors.

The tray is designed for use in high-speed production lines and is suitable for storing, moving and displaying beverage products direct to retail floor. According to the company, it can reduce product handling and packaging, improve product quality and increase retail in-store efficiency.

The lightweight, hygienic and durable tray is designed for the Australian market, holding all variants of soft drink bottles (ie, 1.25, 1.5, 2.0 and 2.25 L).

The tray’s bottle-holding mechanism holds the bottles through the closure, rather than the base, of the bottle. The company claims this makes the unit more stable in transit and improves safety.

*Loscam Ltd*

[www.loscam.com](http://www.loscam.com)

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**Wide-width inkjet colour label printer**

The QuickLabel Systems Kiaro! 200 wide-width inkjet colour label printer is suitable for the short-run labelling needs of manufacturers of large-size products within the chemical, dietary supplement and food industries. The printer provides the ability to print colour labels on demand and in house.

The printer prints images in 1200 dpi high resolution on labels from 101.6 - 203.2 mm in width, and up to more than 431.8 mm in length. The printer consistently prints labels at 20.32 cm/s.

The printer detects when cleaning is necessary and performs automatic cleaning without wasting excess labels. It prints on an array of substrates including gloss paper and polypropylene, yielding durable labels that are ready to use as they exit the label printer.

The fully integrated design is user friendly, allowing operators to quickly load labels and inks. The print drivers are compatible with all major labelling software including QuickLabel’s own included Custom QuickLabel, as well as third-party software such as NiceLabel and Bartender.

*Metromatics Pty Ltd*


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**Robotic packaging machine**

Bosch has released improvements to its robotic packaging machine portfolio with the launch of the GD33 Delta robot.

The robot has 60% fewer components than its predecessors and the company claims it improves productivity through higher speed, larger capacity and an improved payload capability up to 3 kg. These changes allow manufacturers to increase the pick rate and extend the application range.

The device is housed in an open frame design for faster cleaning and improved hygiene. The frame gives access to the working area from both the front and rear, shortening changeover and cleaning times.

*Bosch Rexroth Pty Ltd*

Ice mats
Sirane Dri-Fresh Sea-Fresh Ice-Mats maintain a supply of fresh salt water to live seafood during transportation, enhancing their condition and presentation.

The mats are soaked in salt water and then frozen. Once frozen, they are laid over the crates containing live seafood. During the transportation process the mat will slowly release the water, helping maintain the seafood’s freshness.

Suitable for crustaceans, such as lobster and crab, the product remains chilled, and the salt water’s staggered release means that the product remains in a premium condition. Custom sizes and a range of absorbency levels are available.

CamActive
www.camactive.com

Camera-based code reader
The Lector 65x matrix camera is part of Sick’s family of image-based code readers. The product comes with 2 or 4 megapixel camera resolution and wide angle for a large working field.

The camera identifies packages at belt speeds of up to 4 m/s and can identify poorly legible codes. It has dynamic focus with flexible height and depth and is supplied with integrated memory and MicroSD memory card.

According to the company, the product is the first camera-based code reader for logistics automation and gap-free tracking in factory automation.

There are two focal variants of the code reader. The Flex version with individually selectable illumination and lenses provides efficient solutions. A Dynamic Focus version is also available.

The 4 megapixel resolution permits the reliable identification of a typical 1D code with a line width of 0.35 mm in a reading field of almost 500 x 500 mm. The product’s decoding algorithms can reliably detect and evaluate even weakly contrasting or partly destroyed codes.

The code reader is typically used for intralogistics involving automated sorting processes, but can also be used to semi-automate manual handling and sorting processes.

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www.sick.com.au

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Tabletop filling machine boosts bespoke medicine production

Established in 2008 by two pharmacists, TEMAG Pharma manufactures and supplies medicinal ‘specials’, which are essentially unlicensed medicines, albeit ones that are registered and regulated by the UK Medicines and Healthcare Products Regulatory Agency (MHRA).

“If a patient can’t swallow tablets, for example, we will make a liquid version; or if a patient is allergic to a particular medicinal ingredient, we can produce an alternative that omits the offending additive,” explained Greg Tombs, the company’s operations manager.

TEMAG Pharma has generally produced one-off batches to meet individual customers’ requirements, but more recently the company has experienced increased requests for larger batches - some up to 150 bottles.

“These were proving extremely challenging to fill accurately using a manual pipette,” said Tombs. “It was also very laborious and repetitive, so we explored the idea of introducing a little automation. We sourced a few potential suppliers and staged trials with three machines. However, we immediately liked the build quality of the Flexicon PF6 tabletop filling machine. It came across as solid, professional and precise. Also, regarding the flow of liquid, we could see it was more consistent than the competitor machines, with far fewer bubbles.”

The Flexicon PF6, available through Watson-Marlow Pumps Group, offers an accuracy of ±0.5%, which is obtained through Flexicon’s pulse-free peristaltic filling. A wide range of volumes from 0.5 to 250 mL can be filled, while changeover between batches or different liquids takes less than 60 seconds. Importantly, there is no potential for cross-contamination or requirement for cleaning validation as the liquid touches nothing but the tubing and the filling nozzle.

“We also like the fact that the system is expandable,” Tombs said. “If we desire, in the future we can easily upgrade to add bottle handling and capping and make the system fully automated.”

After installing the peristaltic filling machine in early 2013, TEMAG Pharma has used the machine on at least a weekly basis.

“The Flexicon PF6 machine has improved our large batch filling operations no end,” said Tombs. “When I think about how we were doing it before - gauging bottle fill-levels by eye, mopping up spillages and so on - this machine has really changed our strategy. It has also produced financial savings. To fill a big batch manually would previously have engaged one of our technicians for an entire day. Now we can process the entire batch in just 60 minutes.”

This is vital as TEMAG Pharma prides itself on fulfilling orders in extremely short lead times, without compromising on quality - and this has been key to its success. In just five years, the company has grown to employ 17 staff and today supplies a host of bespoke medicinal products to pharmaceutical wholesalers, pharmacies, dispensing doctors and hospitals throughout the UK.

Watson-Marlow (Pty) Ltd
www.watson-marlow.com/au-en/
**Food-grade conveyor chains**

FB Chain has developed a range of corrosion-resistant chains specifically for the food and beverage industries that do not require lubrication for optimal performance and also meet strict hygiene standards. The plastic combination (PC) chain is constructed from food-grade engineering plastic inner links, supported by 304 grade stainless steel bearing pins and outer link plates.

The PC chain matches the strength of standard stainless steel chain but has a lower friction coefficient, eliminating the need for lubrication and increasing wear life.

The chain is also said to be quieter and 50% lighter. Furthermore, the bushed design of the plastic inner link ensures that in washdown applications there is no risk of food residue becoming trapped between the chain components and resulting in contamination over time.

The chain is available in food-grade blue. A general-purpose white engineering plastic is also available, with both versions supplied in sizes 3/8” to 3/4” pitch. The chain is dimensionally interchangeable with stainless steel chain, meaning no adjustments to sprockets or other existing conveyor components are required to accommodate it.

*FB Chain*

www.lubefreechain.com

**Forklift range**

Toyota Material Handling Australia (TMHA) has launched a range of counter-balance internal combustion forklifts from 3.5 to 8-tonne payload. The 8-Series models include Toyota’s forklift safety and ergonomic features.

The range includes 3500 to 8000 kg pneumatic-tyre models with the choice of LPG, dual fuel or diesel, as well as a compact cushion-tyre range of LPG-fuel models with 3500 to 7000 kg capacities. All 8-Series models have a 65 kW electronic fuel-injection-equipped 3.7 L LPG engine which is claimed to offer fuel savings of up to 20% compared with the superseded model.

The models suit a range of indoor and outdoor applications, including the paper, timber and concrete industries, as well as large distribution centres. Toyota’s System of Active Stability helps to reduce the likelihood of lateral or longitudinal rollovers, and works in conjunction with the company’s Active Mast Controller Function, which automatically matches lift height and load weight to help prevent dropped loads or tip overs.

The range includes a vehicle travel-speed control system as standard. Three fuel-saving features have been added: a load-sensing power-steering system to reduce power demand on the engine; an economy or eco mode to optimise the performance curve of the engine to work conditions; and a programmable ‘auto engine off’ feature on the LPG dual-fuel models.

Critical controllers and relays are protected in a steel box and water-resistant connectors are used throughout. The rear combination lamps are long-life/low-power-use LED type, and mounted high on the overhead guard for protection.

*Toyota Material Handling Australia Pty Ltd*

www.toyotamaterialhandling.com.au
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Size matters

The GWF Castlemaine operation produces a wide range of small goods which are supplied to consumers through the retail food service and small distributor networks. The factory is divided into four key plants: ham, bacon, salami and continental smallgoods. Each of these production areas is serviced by a shared palletiser and distribution service.

Sixteen ABB robots serve 32 packaging lines at GWF Castlemaine, making it the biggest robotic palletising system in the country. The palletising line collects over 450 different products at the rate of about 9000 cartons/hour, coming from four different packing areas.

Some 27 lines and more than a kilometre of conveyor bring products into the palletising cell, which has 16 ABB robots serving 32 pallet stations, and another robot at the front of the station preparing the pallets. Finally, two rail systems with four shuttles deposit the finished pallets at two stretch-wraper stations, which wrap more than 100 loaded pallets an hour and feed them to the automated guided vehicles (AGVs).

“Before implementing the robots the problems we experienced were from manual handling, including occupational, health and safety (OHS) issues, downtime, not getting the products out fast enough, and labour costs,” says GWF packaging team leader Troy Thomas. “I think the defining factor was knowing that we could eliminate a lot of manual handling and remove a fair bit of the labour costs associated with the manual handling.”

Kim Martin, GWF’s supply chain manager agrees: “We had challenges with retailers in terms of making sure the consistency and quality of the pallets were what they required for their automated networks. And like everyone else, we also had increasing labour costs and concerns about our ability to reach the productivity targets we needed in order to remain competitive.” The market trend is towards smaller, more shelf-ready pack sizes. “Obviously that increases the repetitiveness of the tasks the team here needed to do, therefore increasing our OHS risk as well, which is probably the main risk that we have on site,” says Martin.

He also reveals that the company upgraded its ability to manage production speed and volume at its central distribution space, and that the installation also brought improvements to worker safety.

“Other improvements include significantly reduced levels of pallet rejections from customers, and the ability to deal smoothly with the production volume now being processed out of this site as each of the facilities has come online,” says Martin. “We have also seen a huge improvement in OHS injuries associated with palletising, because we have largely eliminated that task.”

Melbourne-based Andrew Donald Design Engineering (ADDE) designed and installed the system for GWF. Barry Hendy, ADDE General Manager, knew that ABB robots were a perfect fit for the food producer: “We chose ABB’s IRB 4600 robot because the orientation and positioning of the cartons needed a sixth axis, so we needed the extra dexterity of a 6-axis robot to ensure the stations would be able to handle all of the palletising tasks coming in from the conveyors.” Line configuration was chosen based on the speed of the individual lines. Each automated row is able to look after two lines and maintain the rates on those two lines, which dictates the line configuration of 16 robots, serving the 32 pallet stations.

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It's challenging times for Food & Beverage and FMCG manufacturers with changing consumer behavior pushing inventory back down the supply chain. This is putting pressure on the storage, handling and transport of product and is creating a supply chain dilemma that is impacting profitability. Enter Dematic’s new RapidStore pallet ASRS - a high-quality, affordable solution that secures product, reduces touches, and eliminates damage, whilst saving footprint, power, time and money. And it’s backed by Dematic’s unrivalled integration experience, local software development, and comprehensive service and support network. That's what we call a logistics result.
Palletising bulky and unstable packages
There are many options available for companies wanting to palletise bulk products like bags, bales and sacks. Conventional layer machines and robotic pick-and-place systems are commonplace in many facilities, although they’re not always suitable for handling unstable or irregularly shaped packages without some form of modification. This article looks at the pros and cons of these traditional methods in the context of handling bulky, and sometimes unpredictable, packages.

Conventional palletising

Conventional layer palletisers utilise a stripping plate arrangement combined with side squarers, which ensure that layers of product are uniformly positioned on the pallet. The ability to form precise pallet loads is an obvious strength of these palletising systems; however, they tend to be more suitable handling products that have consistent shapes and sizes, largely due to the infeed handling systems that are utilised. The systems often accumulate product against each other in rows and repeatedly push these rows to form layers. More complex patterns require packs to be rotated and spaced apart from each other, and often in multiple lanes. Devices like bump turners, line dividers, split conveyors and row spacers are added to the product infeed system to ensure product positioning. If you’re trying to palletise something like a lumpy sack of potatoes, this system may not be ideal for handling them.

Robotic palletising

Palletising systems that incorporate industrial robots are an excellent choice in palletising and offer many advantages over their conventional predecessors. The programmability of these systems permits simple introduction or modification of layer patterns, ultimately reducing upgrade costs and futureproofing the palletising function. They are also inherently low on maintenance by having fewer moving parts. With the exception of the robot arm itself, most moving parts are contained within the gripper. The handling of irregular-shaped products is possible with robotic systems - they can be designed to pick up one or multiple packages at a time and place them gently in their destination on the pallet. Designers focus on handling the product correctly and put all necessary handling considerations into the gripper design. There are few other processes in the palletising process, hence gripper design is largely the focal point. The individual pick-and-place nature of a robotic system means that influences such as accumulation and handling are no longer limiting factors.

Hybrid technology

A superior system for handling many bulky and unstable products is hybrid technology. These systems bring together the strengths of both conventional and robotic palletising. The palletiser features an industrial robot that picks product from an in-feed conveyor and places it onto a layer squaring and stripping plate assembly. A whole layer is formed robotically then deposited onto the pallet stack, much in the same fashion as a conventional layer palletiser where the stripping plate slides back placing the product onto the pallet stack. The hybrid configuration becomes an excellent solution for products which don’t easily stack on top of each other because the layer squarers lock the products against each other as they are placed on the pallet stack. The layer squaring arrangement also prevents products from sliding off uneven stack formations. The result is a very square and tightly packed pallet load which is very stable.

JMP Engineering’s K-Pal Palletiser is an example of hybrid technology.

Stacking frame option

JMP Engineering has developed a further option for handling very unstable round or balloon-like products, like bags of straw or chaff. Its Stacking Frame module can be used in conjunction with a six-axis industrial robot. The Stacking Frame features a pallet hoist and movable side walls. The hoist lifts an empty pallet to just below the opening at the top of the frame where the robot places a layer of product. The hoist repeatedly lowers as more layers are added to the stack, hence the pallet stack is secured inside the frame walls and packs are unable to fall away and move as the hoist is lowered. On completion of the palletising sequence, the hoist is lowered to its base position and the side walls are pressed inwards against the pallet stack, maintaining product positioning on the pallet footprint. A door then opens, allowing the completed pallet to be conveyed out of the stacking frame and to the next downstream process, like stretch wrapping.

Summary

While conventional and robotic palletisers are commonplace and very useful for handling many products, they may not be suitable in their basic form for handling these irregular packs. However, many of the restraints imposed by packaging formats can be overcome by the selection of appropriate new technologies.
Automated pallet storage and retrieval system

Dematic has developed RapidStore Pallet ASRS, a pallet automated storage and retrieval system for FMCG and food and beverage manufacturers handling high volumes of palletised stock.

The system’s crane provides faster cycle times than manually operated forklifts and has the ability to operate 24/7. The company claims that the system requires a much smaller building footprint to house the same number of pallets, when compared to conventional storage systems and materials handling equipment.

The system has been designed for bulk reserve storage in fast-moving pallet handling operations. The crane has a lightweight single mast and operating speeds of up to 4 m/s, and can handle pallets weighing up to 1200 kg to 30 m high, in aisles only 200 mm wider than the load.

Dematic Pty Ltd
www.dematic.com.au

Pump for viscous products

MegaPrime is a pump system suitable for evacuating viscous products from bulk containers such as mixing bowls, Euro bins, Pallecons, Goodpack bins and Tonelli bowls.

The system can be used with various pump options and can run up to six pump units on a single plate with discharge pressures up to 1000 psi and flow rates in excess of 500 kg/min. It enables viscous products to be emptied from a bulk container while wiping the sides of the container clean. According to the company, the product recovery rate is in excess of 99%.

Philiro Industries Pty Ltd
www.philiro.com.au

Productivity monitoring tool

The Red Lion ProducTVity station can collect, record and display KPIs and machine status messages on any TV, monitor or projector equipped with a DVI/HDMI interface.

The station can collect data from a range of automation components. Using a library of over 200 communications drivers, the station can communicate to PLCs, VSDs, energy meters and barcode scanners. The device can be expanded with I/O modules, allowing it to directly accept digital and analog inputs from a range of sensors.

A programmable graphical interface allows users to create high-definition visual management displays. A built-in data logger can record KPIs, as well as alarms and events for later review. It can synchronise the log files with a server for further analysis.

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CHEP has innovation all wrapped up

Australian manufacturer Cerebos produces brands such as Fountain, Saxa, Gravox and Toby’s Estate Coffee. The company recently embarked on a full-scale upgrade to its Sydney factory, which was built in 1971.

The company’s General Manager for the ANZ Supply Chain, Joseph Dalo, has a focus on continuous improvement and innovation. As part of the upgrade, he extended an innovation challenge to CHEP.

“Part of our relationship is to talk about continuous improvement. I asked ‘What can we do next?’ so the CHEP team came in and did an audit. I gave the guys fairly free rein and said, ‘What are the opportunities for us?’,” Dalo said.

CHEP recognised a clear opportunity to improve throughput by upgrading the existing stretch wrap machine, which wasn’t meeting existing requirements.

“It was like Pitt Street with everyone lining up for the wrapper,” Dalo jokes.

CHEP recommended the new Lantech SLA4000. With a capacity of 120 pallets per hour, it is claimed to be the highest-speed wrapper on the market.

The machine integrated seamlessly with the Cerebos operations and will ultimately facilitate 17 lines feeding into the single wrapper.

“It’s part of our overall strategy. Pallets will come down the line and go straight through the wrapper. It had to be quick enough to make sure it could keep pulling the pallets through. We have a stretch wrapper now that can handle our capacity. As soon as the pallets are manufactured they’re wrapped, put away and the job is done,” said Dalo.

The new arrangement reduces the number of forklift movements on the factory floor, resulting in a safer workplace. The wrapper also integrates with Cerebos’ existing warehouse management software, automatically generates labels and applies them to the exterior of the wrapped pallet load. This has improved inventory accuracy and reduced damage and ‘miss picks’ through mislabelling.

The wrapper is also more energy efficient than its predecessors, which means savings on energy costs - and from an environmental point of view, less wrap means lower carbon emissions.

“Cerebos is a signatory to the Australian Packaging Covenant and we’ve committed to reducing our packaging each year - the wrapper enables us to reduce packaging,” Dalo said.

While Cerebos could have chosen another provider or an outright purchase, the company opted to go with CHEP for a number of reasons.

“I look at a relationship in terms of value add. Everyone can do price. It’s what you can do next - it’s about the value add. This stretch wrapper is a classic example of that. There’s no capital outlay, and it’s an integrated solution. The service agreement means it’s fully maintained because it includes servicing and film. It helps us because we don’t have to worry about it - CHEP does!” Dalo said.

CHEP Australia
www.chepeurope.com

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Bidvest installs WA’s largest rooftop solar project

Bidvest Foodservice is recognised as one of the leading foodservice distribution businesses in Australia. Listed amongst Australia’s top 200 companies, Bidvest has developed over 50 business units across multiple divisions specialising in wholesale foodservice, hospitality, fresh food and food logistics.

The company has launched its most significant green initiative with the installation of Western Australia’s largest privately owned rooftop solar power array.

The solar power system, located at the newly constructed, state-of-the-art Bidvest distribution centre at Bibra Lake, Perth, will abate approximately 300 tonnes of CO₂ annually, equivalent to taking 92 cars off the road or powering a NABERS 4 star office space for more than 520 people.

The system consists of 1160 solar panels covering 30% of the roof of Bidvest’s new 9000m² distribution centre roof. With the capacity to generate an average of 360 MWh of electricity per year, up to 100% of the site’s summer daytime base load will be met through solar. The system was designed and installed by national provider Energy Matters.

Peter Crowe, general manager - marketing for Bidvest Foodservice, said that Bidvest had been successfully working in partnership with Australia’s leading solar power firm. “Energy Matters has been with us all the way, from integrating a solar array into the design of our new Bibra Lake distribution centre, through to the installation of the solar array,” said Crowe. “We estimate that the array will provide around 40% of our annual electricity requirements at this site. We are also delighted to have created the opportunity to supplement our electricity requirements utilising natural resources.”

Jeremy Rich, CEO of Energy Matters, said the Bidvest installation has been an exciting project for Energy Matters to be involved with. “As one of the first truly large-scale, privately funded and owned rooftop PV solar systems, we see this as the start of something big for commercial solar in Australia and applaud Bidvest for taking the lead,” he said.

Energy Matters
www.energymatters.com.au

Sanitary bulk bag unloader with CPG container filling system

National Bulk Equipment has developed a bulk bag unloader system which conditions and discharges various semi-free-flowing, hygroscopic, contaminable powders at a rate of 3.6 t/h, while feeding the powders to the end-of-line container filling system.

This process-specific, NBE bulk bag unloader and container filling system is designed based on the particular changeover and throughput specifications of the application. According to the company, changeover times are reduced as a result of design features, such as: the elimination of internal angles, corners and dead spaces to reduce accumulation of contaminants; angled planes, rounded-radius framework, highly finished plate and stand-offs to speed moisture run-off away from product contact areas; and subassembly access, removal and replacement as single-operator, tool-less actions to reduce time and labour per event.

The enclosed bulk bag discharging, material conditioning, feeding and filling systems protect operators by preventing migrant material dusts from entering the process area as well as protecting process material from contamination.

Mercer Technologies
www.mercerstainless.com
Forklift Reach Truck

The Mitsubishi SENSIA forklift reach truck is predominantly used in warehouses with limited space. The smaller size of the truck means aisles can be smaller and operating spaces can be tighter, making it suitable for the food and manufacturing industries. The truck is available in 11 different models.

The average reach truck operator mounts and dismounts the truck up to 100 times/day. SENSIA makes that easier and more comfortable through a lower seat position, ergonomic hand bars, a wide non-slip step and an adjustable steering console that folds out of the way. The truck features 360° electric steering and good visibility through the mast, carriage, overhead guard and cabin. According to the company, the SENSIA has the strength to lift bigger loads to higher heights than most other trucks its size, allowing for accurate work at heights of up to 13 m.

MLA Holdings Pty Ltd
www.mlaholdings.com.au

Single-line palletiser

The Pal-Pack 3300 is suitable for palletising wines, spirits, soft drinks, beers, etc, in formats ranging from shrink-wrapped packs to cardboard containers.

It offers a reduced footprint for low-speed packaging lines and requires minimal training to operate.

The system is capable of handling up to 1400 packages and 100 layers per hour. It is compatible with a range of product types and formats, such as corrugated cases, shelf-ready packaging, multipacks and bags in box. It can handle any type of primary packaging and can be programmed to match all pallet formats.

Cermex’s Pal Designer pallet programming software allows users to specify the pallet layout, dimensions and operating speed, then run through the whole process using the 3D modelling function.

The machine has a servo-driven electronic spacer system for greater flexibility when changing formats. Rows then layers are formed step by step without any contact between the packs or cases, avoiding any potential damage to the product.

The system’s modular design allows users to tailor the set-up to the constraints of their working environment, picking and choosing from among the machine’s range of compatible modules, including an automatic pallet infeed system and automatic outfeed solutions using conveyors or AGVs.

It can also integrate a pallet stretch-wrapping system and cut out the need for a bulky independent pallet stretch-wrapping machine.

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The global leader in door opening solutions
Yearsley Logistics creates frozen food ‘Super Hub’ in UK with £20m expansion

Yearsley Logistics is the United Kingdom’s largest distributor of frozen foods. The company, which wholesales more than 1500 individual frozen product lines, has 13 depots across the UK, employs over 1200 staff and has an annual turnover of £156m.

In 2012, Yearsley Logistics embarked on a three-part, £20m expansion of its cold store facilities in Heywood, UK. On completion of all three phases, the new cold store will provide a further 40,000 pallet capacity, on top of the original 40,000 capacity - doubling Heywood’s capacity and enabling the company to create its northern ‘Super Hub’, where stock will be consolidated for more efficient delivery into the UK’s major retailers and food service organisations.

Harry Yearsley, managing director of Yearsley Group, said, “This expansion is in direct response to demand from new customers for whom the North West is an ideal location. Our existing Heywood store was running near to capacity. This expansion is part of our long-term plan to consolidate stock in strategically located stores, helping us to increase efficiency, reduce carbon output and better meet the storage needs of manufacturing customers and the delivery requirements of retail and food service customers across the country.”

The new building is super insulated to help reduce energy use, making it one of the most energy-efficient cold stores in the country, according to the company. It will also include rainwater harvesting to feed the cooling systems, which will save on fresh water usage. Photovoltaic solar panels and LED lighting have been fitted as Yearsley Logistics continues its focus on reducing electricity use by 8% by 2015.

Phase two of the project commenced in July 2014 and will provide an additional 4645 m² of space and 12,000 extra pallet sites, bringing the total to 60,000 pallets at Heywood.

The cold store uses a combination of PowerStor technology from Power Automation Systems (PAS) integrated with conventional mobile racking for the most economical and energy-efficient storage process to meet the throughput and storage needs of Yearsley Logistics’ frozen food customers.

“The PAS system helps to speed up the customer ordering process and improves productivity, as well as having environmental benefits in relation to fewer door openings and less lighting,” said Harry Yearsley.

Logistics director Tim Moran said, “Our commitment to offering a day one for day two service is paying dividends with increased demand for our cutting-edge services and hence increased demand for space in the cold stores. Retailers are reorganising their supply chains and we are successfully providing the responsiveness needed to service these requirements. Our continued expansion is the catalyst of this success.”

The third and final phase at the Heywood Superhub will be fitted out as and when required, according to future customer demand, said Yearsley.

Power Automation Systems
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Modular belt range for the baking industry

Ammeraal Beltech has expanded and updated its uni-chains modular belting range for the bread-baking industry.

For curved and spiral conveyors, the range includes open-surface, side-flexing belts in two sizes, providing higher airflow to promote cooling and reduce moisture-retention levels.

For straight conveyor lines used in both conveying and processing, the company has developed a nano transfer belt suitable for smaller baked goods and tight transfer points.

Ammeraal Conveyor Belting Pty Ltd
www.ammeraal.com.au

Software suite for control of material flows

The BEUMER Group has developed the BG software suite, which allows users to control their material flows from start to finish.

The suite’s modular structure allows users to adapt it to their machinery and equipment and add modules to optimise their material flows. The BG Fusion interface, which displays process data, reports and machinery statistics for all parts of the program, is fully scalable, meaning it can run on desktop PCs as well as mobile devices like tablets.

The left area of the interface displays important information in a compact form for all users. The main area is reserved for data relevant to the particular application. Users can store their individual settings and the user interface can be switched between different languages. The web-based interface runs on all current Windows operating systems. And users can export all data displayed on the screen to PDF or CSV files.

The Warehouse Control System module allows the software suite to link up with the user’s warehouse management system or ERP system via a network connection.

BEUMER Group Australia Pty Ltd
www.beumer.com
The transition from a small to a larger business is not simply a matter of producing more; it poses many challenges and requires a long-term growth strategy. Finance, storage, distribution and staffing are just some of the key barriers to expansion.

Storage and materials handling specialist Dexion has identified four key mistakes that businesses often make during this period of transition:

1. Not knowing when to expand.
2. A lack of understanding of the market.
3. Failing to accommodate a larger staff base.
4. Limited foresight when it comes to storage planning.

According to Ross Beaton, Dexion Acacia Ridge franchise owner, not knowing when to expand is the number one mistake that small businesses make.

“We see it all the time - small businesses that have experienced growth suddenly lack the space and resources to accommodate expansion. While many businesses seek financial and management advice, the issue of space and storage is often neglected until it is too late,” said Beaton.

Bill Case, Dexion Liverpool and Alexandria franchise owner, adds that the only way to overcome this challenge is to accept that what may have sufficed for a small business will not be appropriate for a business double - or even triple - the size.

“Businesses must understand how they are growing, which requires regular and extensive planning. It is the only way to avoid a situation where a business has suddenly run out of workspace,” Case said.

They must also maintain a solid understanding of their customers’ needs in the context of a fast-paced evolving market. This is particularly true for the manufacturing, logistics and FMCG industries where today’s customers are more demanding than ever.

“Ten or twenty years ago, the challenge for many manufacturing and FMCG businesses was how to get more product into their warehouses; now it is how to get more product through their warehouses,” said Case.

A growing business requires more staff - while this is a proposition that is glaringly obvious, it is one on which many businesses stumble.

During expansion, attention is often directed to the financial aspect of investing in new staff, while little or no consideration is given to how these staff members will be accommodated in the existing facility.

Transitioning businesses must accept that the storage needs of a larger organisation are very different to those of a small one. Trying to adapt the latter to the former will never work. The only way to avoid running out of space is by adequate forecasting.

Although it is difficult to predict where a business might be in five years’ time, there are steps that can be taken to avoid a situation of outgrowing a facility just 12 or 24 months after moving in.

“Again, it comes back to forward planning, which means choosing the right facility from the outset - one that has the capacity for increased storage space,” said Case.
Foam grippers

Joulin foam grippers are suitable for handling products, pallets and slip sheets. The gripper can handle uneven layers, complete or partial layers or even a single product. There is no adjustment needed when the product changes as the gripper automatically senses and closes the check valves in areas without product.

The gripper is able to pick up/release by individual zones and will not cause damage to the product. The performance is not affected by dust or debris and the product uses long-life foam to increase reliability.

The gripper is suitable for handling and palletising cartons, glass jars, bottles, cans, barrels or tubs and can handle open or closed containers.

Pneumatic Products
www.pneumatics.com.au

IBC redesigned

Schuetz has redesigned the Ecobulk MX IBC. The container has increased stacking resistance and it can withstand 30% more weight in the maximum stacking pressure test with significantly less buckling. The container can handle and distribute static and dynamic loads better than the previous model, due to the design of the steel grid, which includes 4-point welding of the horizontal and vertical tubes, a top profile with greater stability and the modified geometry of the vertical tubes.

According to the company, the container has 300% compliance with the legal requirements in vibration tests and it achieved excellent results in the drop test.

The container has a steel pallet as its base, which includes an increased entry height for forklift truck access. The design also enhances residual draining. The asymmetry of the top profile provides 30% more contact when the IBC is stacked and the bottom plate enables nesting. Centring pins on the corner blocks assist with stacking stability.

When used with the company’s recycling system, the grid and the bottom plate can be re-used. According to the company, every IBC that passes through the reconditioning process saves 100 kg of CO₂ emissions compared with a completely new container.

Schuetz Australia
www.schuetz.net

Drum motor coating for conveyor belts

The Multiprofile drum motor coating is so compatible that up to nine different positive drive solid homogenous conveyor belts can be driven with it. This provides the user with flexibility when converting to other belts.

The product largely reduces the time for converting or maintaining the conveyor system, because there is no need to replace the motor. It is resistant to abrasion and makes sure that belts run quietly.

Due to the smooth Premium Hygienic PU surface, the product is easy to clean and is resistant to oil, grease and chemicals. It has been extensively tested in use with belts of renowned manufacturers such as Habasit, Intralox, Ammeraal and Volta and is approved for applications with high hygiene requirements.

Interroll Australia
www.interroll.com

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Food pathogen testing

Bio-Rad's iQ-Check Prep liquid handling platform provides a completely integrated automated solution for food pathogen testing. The platform performs DNA extraction and PCR plate set-up and is designed for the use of the company's full range of iQ-Check food pathogen detection kits and the CFX96 Deep Well real-time PCR system.

Optimal ease of use and traceability is achieved by using the CFX ManagerTM Software IDE.

The iQ-Check Prep Solution provides increased confidence, high reproducibility and robustness to routine testing labs. It fits seamlessly in the laboratory workflow and is suitable for medium to high throughput testing laboratories.

It features fully automated DNA extraction and PCR set-up and fully automated detection and data analysis and email notification of results.

Bio-Rad Laboratories Pty Ltd
www.bio-rad.com

Food allergen detection device

Elisa Systems is releasing a rapid detection device for the detection of food allergens from equipment surfaces. Results are available in around 15 min, including the sample preparation time, so users can minimise the risk of cross contamination between products and get the product out the door faster.

The convenient format requires no specialised equipment and the product is simple to use. Disposal of the device is as simple as throwing it in the general waste.

Elisa Systems Pty Ltd
www.elisasystems.net

90° peel fixture for adhesive measurement

John Morris Scientific has released a 90° peel fixture for use with the Brookfield CT3 tester. The device measures the adhesion force between two materials. The fixture maintains a 90° angle as the tape is pulled away from a rigid surface. Typical applications include testing the strength of packaging tape.

John Morris Scientific Pty Ltd
www.johnmorris.com.au

Food pathogen/food spoilage testing

Pall provides an easy, rapid, sensitive and specific method for pathogen and microbial detection in the meat, dairy, brewing and beverage industries. The GeneDisc system helps accelerate micro testing with a reproducible test solution.

Reagents are preloaded and factory validated to reduce time and increase accuracy. A predetermined volume of dilution buffer with the preparation pack, and Mastermix, in the box of six test discs, ensures the reagents are fresh and contamination-free.

The product reduces the number of pipetting steps during preparation and an intuitive, user-friendly interface steps staff through the process to a fully interpreted final result. Algorithms are preloaded and results interpreted and reported immediately at the end of the test, without the need for further staff input to conclude a result.

The fully integrated platform has a small laboratory footprint, requiring few additional peripherals to be fully functional. The system has the ability to be bidirectional LIMS compatible for seamless integration with .csv or customisable .pdf report outputs.

The overall test time, from sample through preparation to final result, can be 2 h for some test categories. Up to 96 results can be reported in 1 h, and the user can process multiple applications simultaneously when the thermo-cycler sub-units are optioned.

Pall (Australia) Pty Ltd
www.pall.com

Food pathogen testing

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It features fully automated DNA extraction and PCR set-up and fully automated detection and data analysis and email notification of results.

Bio-Rad Laboratories Pty Ltd
www.bio-rad.com
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TESTING

Particle size and shape analyser
The Retsch Camsizer P4 is an upgraded version of the Camsizer system for the determination of particle size and particle shape with dynamic image analysis.

Compared to the previous model, the analyser has faster cameras with higher resolution, a stronger light source and new software features, resulting in faster measurements and an extended measuring range (20 µm - 30 mm). The improved resolution allows for more precise particle characterisation, particularly of small particles.

Both hardware and software have been revised. The software offers additional evaluation possibilities, such as separate storage of all particle images in a database or three-dimensional display of measurement results as scatter plots (3D cloud). New shape parameters for roundness and sphericity allow for optimised shape characterisation.

Functions like the certified calibration standard, automated air flow in the measurement zone and the motorised funnel height adjustment have been preserved. The obtained measurement results are accurate and reliable, even if operated 24/7, and can exactly reproduce existing sieving results.

MEP Instruments Pty Limited
www.mep.net.au

Torque tester
The Mecmesin Helixa Torque Tester is suitable for measuring low and medium torque variations with high accuracy and control on a variety of delicate or finely engineered products.

Its sensitivity and precise alignment make it useful for testing high-quality assemblies such as those found in the cosmetics, medical, pharmaceutical and jewellery industries.

The product is designed for precision design applications where torque values may be very small and where accuracy is paramount. Its counterbalancing mechanism allows the removal of axial force while also enabling the application of precise top-load or tensile force when required. The drive spindle can be user aligned for precise concentricity with the intelligent torque cell.

The device accepts interchangeable intelligent torque cells for measurement from just a few Nmm up to 6 Nm, with a resolution of 1:6500 and an accuracy of ±0.5% of full scale. Controlled by the company’s Emperor software, the Helixa-i is connected to a PC or is also available as a touch-screen model, the Helixa-xt, with all the same features in the convenience of a self-contained unit.

SI Instruments
www.si-instruments.com
**Food analysis equipment**

The PerkinElmer DairyGuard Milk Powder Analyzer applies advanced algorithms to screen for both known and unknown adulterants in milk powder, as well as performing the more routine monitoring of protein, moisture and fat. No sample preparation and no scientific background is required to use the equipment. This non-targeted screening decreases the risk to brand reputation.

The AxION iQT GC/MS/MS brings together triple quadrupole quantitation and Q-TOF identification in a single mass spectrometer for labs performing complex sample. The system can thoroughly characterise and easily quantify compounds for a variety of applications, including the analysis of pesticides in food samples, quantitation of non-derivatised steroids, cholesterol and therapeutic drug monitoring in research applications, analysis of drugs in forensic toxicology and thorough analysis of chemical compositions.

The AxION 2 Time of Flight (TOF) Mass Spectrometer hardware and software platform has been specifically designed to bring speed and confidence to quantitation, target analysis and compound identification.

The AxION Direct Sample Analysis (DSA) system eliminates sample preparation, challenging method development and front-end gas or liquid chromatography separation. Liquid, solid and gas samples can be directly introduced into a mass spectrometer. This allows for rapid and greatly simplified analysis.

**PerkinElmer Pty Ltd**
www.perkinelmer.com

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**Non-alcoholic beverage testing guide**

Mettler Toledo has released a free guide to best practices for chemical analyses applied to non-alcoholic beverages such as specialised waters, juices and soft/functional drinks.

The guide showcases selected analyses for quality and production control tests such as pH and conductivity, hardness, alkalinity, Brix, acidity, sodium and chloride content, which are used to ensure the palatability, consistency and shelf life of alcohol-free products.

Examples in the guide range from correct pipetting to multiparameter systems covering analytical concerns that help maintain product reputation, taste and safety. Automation is emphasised as a way to streamline testing while meeting stringent food and beverage regulatory requirements.

The guide can be downloaded at www.mt.com.

**Mettler Toledo**
www.mt.com

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**HACCP and hygiene monitoring**

The BioControl Lightning MVP ICON instrument and software platform combines HACCP and hygiene monitoring with program management capabilities. The system measures ATP, which is an indicator of hygiene as it is present in most food residues and microorganisms.

Other key HACCP parameters measured by MVP ICON include pH, temperature, conductivity and chemical concentration.

The instrument’s dashboard software provides key program analytics, updated in real time, that provide essential performance data critical to managing a quality program. The software serves as a control panel, providing quality assurance professionals a quick overview of key control metrics, assuring their HACCP plans and sanitation protocols are being followed and properly executed.

The dashboard provides insight into vital criteria for a sanitation program, such as: the number of ATP swabs used in comparison to a set target, whether failed results have been adequately re-cleaned and re-tested, and even when the instrument’s next calibration is due.

The software also features original print-and-present HACCP reports to reduce the amount of time quality managers spend analysing HACCP trending data and preparing for audits.

The MVP ICON instrument features a sleek, lightweight design and touch screen. Test points can be organised into sample plans to efficiently conduct testing throughout a facility and re-test tracking ensures testing complies with standard operating procedures. The ability to randomise test points eliminates testing bias and adds another management tool for ensuring program compliance.

Data integrity is assured by password protection for altering or deleting results.

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

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**The density meter DMA 35 provides unparalleled ease of use.**

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✔ Robust: Rugged, leakproof housing design

✔ Efficient: Storage of up to 100 sample IDs for easy sample identification

The DMA 35 is an economic solution for general industrial and laboratory applications with constant or only occasionally changing measurement settings.

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**Mettler Toledo**
www.mt.com

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**Anton Paar**

**Brix and Baume in Seconds**

DMA 35

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**September/October 2014**
www.foodprocessing.com.au
JBS Australia, Australia’s largest meat processing company, processes 1675 beef cattle per shift and employs 1950 staff at its Dinmore processing facility.

Processing such a large volume of meat and by-products requires a significant amount of energy. There were four natural gas-fired boilers on site producing steam for hot water production and rendering operations. Wastewater from the site was treated on-site through a biological wastewater treatment plant (WWTP) to a high level, enabling 30% to be re-used within the plant. The WWTP comprised four anaerobic lagoons (ALs) whose primary function was the removal of organic material suspended in the wastewater. These lagoons emitted odorous and environmentally harmful gas.

Wiley was contracted to design, install and commission a more efficient effluent treatment system to capture and use biogas released by the anaerobic digestion from the new covered anaerobic lagoon (CAL) system as an on-site renewable energy source.

The project included:
• covering of two ALs with high density polyethylene (HDPE) to capture biogas, then burn the gas through the boiler to provide energy for the plant;
• construction of a new 20 ML CAL. The remaining two uncovered ALs were then decommissioned;
• upgrade of the WWTP with a new dissolved air flotation (DAF) unit, which removes organic solids (waste fats, oils and greases known as FOGs). The DAF unit regulates the inclusion of FOGs in the wastewater that passes into the new CALs, which is essential to optimising biogas generation from the CALs;
• installation of a biogas train to pipe biogas from the CALs to a central flare and then to the existing 10 MW boiler for co-combustion with natural gas. This required a new burner and control system for the boiler that would automatically prioritise the use of biogas over natural gas.

The project has led to an 89% reduction in the facility’s annual greenhouse gas emissions and a saving of more than $1 million a year on natural gas costs. The technology and processes deployed as part of this project will provide additional learnings that will be applied across other JBS meat processing facilities in Australia of similar scale and nature.

This project was the first of its kind in the Australian Red Meat Processing Industry and it has been recognised by the Queensland Master Builders Association (QMBA) with an award for Innovation in Environmental Management Construction. In accepting the award, Wiley Project Director Graham Harvey said: “This is an industry benchmark demonstrating the reality of environmental processing solutions for heavy emission producers.”
The FUCHS CASSIDA food grade lubricants range meets or exceeds the stringent requirements of the food and beverage industry. Make sure you’re protected.

The performance of CASSIDA lubricants, coupled with FUCHS’ expert knowledge and service support, allows plant efficiency to be increased, maintenance costs to be reduced and the level of food safety to be improved.

Get to know the CASSIDA food grade lubricants at fuchs.com.au or Free Call Australia 1800 1800 13.
**General-purpose freeze dry equipment**

Cuddon Freeze Dry has available the FD80 general-purpose freeze dry equipment. The machinery has an 80 kg ice capacity and 9 m² shelf area and is capable of drying a variety of biological, pharmaceutical, nutritional and general food products.

The chamber, door, hinges, shelf modules, trays and vapour condenser are constructed from AISI 304 stainless steel. The chamber is fitted with stainless steel pneumatically operated valves that isolate the vacuum line connection, drain, water defrost and vacuum release.

The shelf module contains 10 heat plates (shelves) fabricated from T304 stainless steel, which are removable for maintenance or cleaning.

The heating system is a thyristor controlled electric boiler, using glycol-based heating fluid. A cooling heat exchanger is provided in the circuit for reducing the temperature of the plates.

The refrigeration condensing unit is built with capacity control to allow economical use of the low-temperature R507 refrigerant and includes a water-cooled condenser. The vapour condenser is comprised of a T304 stainless steel tube in parallel circuits to form a direct expansion refrigerated coil.

A lower temperature option can be manufactured if required, giving -55°C vapour condenser temperature, and -35/+70°C shelf freezing/heating.

The control system is an Omron PLC interfaced with an Omron touch-screen control panel. The automated system will ramp/reduce energy to govern sublimation pressure to preset parameters. The equipment has a 15 x 15-step recipe programming capacity, 250 batch storage and software for data retrieval and analysis. The in-built modern allows remote access for monitoring and service.

**Hammer mills**

Dinnissen Process Technology has developed a range of hammer mills suitable for grinding soft to medium-hard products such as grains, herbs, spices, protein-rich ingredients, nutrients, premixes and minerals.

The hammer mills can screen output particles ranging in size from 3 mm down to 150 microns. Single hammers or double hammers are used depending upon the specific ingredients to be ground.

The easy-to-clean DinnoX Mill is a compact hammer mill with a minimum capacity of 30 kg/h. The mill is fitted with exchangeable grinding rotors, providing it with a variety of breaking, cutting, and grinding functionalities, as well as exchangeable screening panels and adjustable RPMs. The mill is fitted with completely detachable grinding rotors and extra-large inspection hatches, making it easy to access all the components, including the screening panels, for cleaning. The mill is available in stainless steel 304, RVS 316L and polished or electrolytically polished RVS. It can be fitted with an automatic cleaning system based on compressed air, CIP, or hot steam/air for extra hygienic applications.

The D-Topline Hamex Hammer mill with automatic screen changer can handle grinding capacities of up to 45,000 kg/h and the screen changer has space for 4 to 6 different sets of screening panels. The mechatronic screen-changing system automatically selects and places the appropriate set of screening panels in the hammer mill. After the production process has been completed, it also removes and stores the screening panels in less than 40 s. The mill features an increased surface area inside the hammer mill, to provide greater grinding and ringing capacity. The screen storage facility is fitted with an extra-wide chamber that can be automatically opened for maintenance. The mill has a maximum speed of 1500 rpm.

**Energy-efficient open fryers with fast recovery**

JL Lennard has available induced draft technology gas and electric open fryers from Henny Penny that offer energy savings while producing fast recovery to save time and reduce shortening use.

The fryers achieve over 60% energy efficiency in gas models while electric models use just over 0.5 kW/kg of shortening.

According to the company, their efficient heating and fast recovery keeps shortening from breaking down and being absorbed by food.

The fryers have a built-in filtration system that allows operators to filter in 3-5 min without the use of portable filter pumps or pans.

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Without proper lubrication, most machinery will break down over time, which is not only true of food manufacturing equipment but across all other sectors too. The difference within the food industry is that the lubricants used not only have to provide good technical performance but also to address the issues of cleanliness, contamination prevention and health and safety.

What are the risks?
All food producers are keen to avoid any contamination incidents, which can lead to product recalls, bad press and costly court cases. The correct choice and application of lubricants can make a significant contribution to ensuring that harmful contamination is avoided during the manufacturing process.

Components such as line lubricators, slide and roller bearings, chains, compressors, vacuum pumps, gearing, heat transfer systems, hydraulics and pumps are commonplace in food production plants. Many of these are found in close proximity to the foodstuffs, often with a high potential for any leaked lubricant to make incidental food contact. For example, high-pressure hydraulic hoses often run alongside production lines, while motors and gearboxes are frequently located above the lines.

More demanding legislation and higher hygiene standards, such as the Hazard Analysis and Critical Control Points (HACCP) concept, allow users to clearly identify lubrication points where there is a possibility of foodstuffs becoming contaminated. In the event of a contamination issue, regional legislation states that a food manufacturer is liable unless able to demonstrate that every possible step has been taken to prevent the contamination.

A well-reputed lubricants supplier can assist with HACCP surveys, making it possible to identify lubrication points where there is a risk of contamination, leaving manufacturers with action points on how to minimise the risks as well as advice on the correct lubricant to use.

International Standards for food-grade lubricants
By using food-grade lubricants, food processors can avoid having to discard whole batches of product in the event of incidental food/lubricant contact.

However, despite regulations governing food hygiene being implemented in December 1995, there is still no detailed global or European standard for food-grade lubricants. It is therefore normal practice to rely on the US standards issued by the Food and Drug Administration (FDA) and the US Department of Agriculture (USDA). When the USDA ceased registration of lubricants in 1998, the function was taken over by NSF International, a not-for-profit independent organisation, previously known as the National Sanitation Foundation. Registration with NSF allows the use of the highly recognised and credible NSF registration mark on products.

Around five years ago, a second registration body was introduced in Europe (UK) called InS Services. The main intention was to counter the product registration market dominance held by NSF International. This may be confusing for food manufacturers, as they now have to search two different product listings to ensure their lubricants are food safe.

However, well-reputed lubricant manufacturers still rely on NSF International for product registration purposes, although this route may be slightly more intense and costly. The reason is the reputation of NSF, its global recognition and the fact that they are experts in other food and beverage safety areas as well, such as HACCP.

As already highlighted, the specification for food-industry lubricants is not governed exclusively by technical considerations. Performance and FDA restrictions are not the only criteria significantly influencing formulation chemists in their daily work. More and more food manufacturers are asking for proof of many other things and to provide:
lubricant needs to be food grade or not, and the most suitable lubricant for the application.

**Certification of production and plants**

Although the same production facilities can be used for food grade lubricants as well as standard products, more stringent rules are applied in order to achieve the highest purity levels and avoid the possibility of cross contamination. Production facilities such as conduits, mixing vessels and bottling plants must be certified to ISO 9001/14001, as a minimum, for the manufacture of food-compatible lubricants. Some lubricant manufacturers have even carried out their own lubricant critical control points (LCCP) analysis, and use food grade lubricants in their manufacturing plant.

About 10 years ago, the National Lubricating Grease Institute (NLGI), the European Lubricating Grease Institute (ELGI), the European Hygienic Engineering and Design Group (EHEDG), and NSF have coordinated a project to enable lubricant manufacturers to undergo independently audited HACCP exercises. The final result was the launch of a new standard called “Safety of Machinery – Lubricants with incidental product contact – Hygiene requirements”. The final standard was published in 2006 under ISO 21469.

There is a significant difference between product registration only and ISO 21469 certification. The ISO 21469 consists, on top of the product registration, of a full risk assessment for the entire lubricant manufacturing plant and a physical yearly audit, which includes formulation review, process review and sample taking and testing. Therefore, ISO 21469 represents today the highest standard for food safety, specifically dedicated to manufacturing and handling of food grade lubricants.

The final certification links products and manufacturing plants together in all cases. There are currently nine companies (including subsidiaries) with 11 different lubricant manufacturing plants certified against this standard by NSF.

**Comparative performance of food-grade lubricants**

Food manufacturers, OEMs and lubricant producers continue to work towards improving the performance of food-compatible lubricants. Although there has tended to be a degree of geographical variation, the historic opinion was that lubricants for the food industry did not match the performance levels of standard lubricants. However, there have been significant developments over recent years, with the leading lubricant manufacturers working closely with OEMs and the food industry to provide high-performance lubricants.

Manufacturing processes and equipment are designed and developed with hygiene as a key consideration. The lubricants need to be designed as part of the overall specification, and the constraints in specifying lubrication systems are likely to be more restrictive than in other industrial sectors. Until recent years, the formulation chemist was severely restricted by the limited number of permitted additives and base oils, and as a result it had not always been possible to achieve high levels of lubricant performance.

Synthetic base oils like polyalphaolefins, esters, glycols, silicon oils and polyethers are being increasingly used, and considerable progress has been made in refining white oils – practically the only base oils used in food applications for decades. Additive technology has also progressed significantly giving formulation
Food-grade lubricants "generations" | H1 Lubricants 20 years ago | H1 Lubricants today
--- | --- | ---
Oxidation Stability | ♦ | ‡
Lubrication Properties | ‡ | ♦
Low Temperature Performance | ♦ | ♦
High Temperature Performance | ♦ | ♦
Seal Compatibility | ‡ | ‡
Multigrade Properties | ♦ | ♦
Antiwear Properties | ‡ | ‡
Filterability | ‡ | ‡
Cleanliness | ♦ | ‡
Corrosion Protection | ‡ | ‡
Non Foaming Properties | ♦ | ♦
Compliance with Standards | ♦ | ‡
Price | ‡ | ‡

| Table 1: Generations of food-grade lubricants |

chemists much greater scope to improve performance whilst working within the stringent guidelines governing food-compatible lubricants.

As a result, modern lubricants for the food industry now achieve performance profiles at least as high as those of conventional synthetic lubricants.

**Food-grade lubricants in action**

As it is used, a food-compatible lubricant is exposed to a number of influences, such as oxidation, heat, humidity and a decline in its lubricating properties. Ongoing monitoring of lubricant condition is important in any industry, but it has particular significance in the food sector.

It is important to remember that the analyses and information regarding the toxicity of lubricants, and the additives they contain, relate to new lubricants before they have been used.

The equipment in food manufacturing plants does not differ significantly from that used in other industries, but the environment in which it operates presents a number of unique and complex challenges. The necessary daily washing of machinery with aggressive cleaning products under high pressure increases the chance of lubricant contamination, and highly reactive substances such as fruit juice can degrade oils and greases. The industrial processes often operate at extremes of temperature, ranging from freezer systems to high-temperature ovens.

Even under these conditions, manufacturers must ensure that the lubricants used continue to fulfil their primary functions, including lubricating machinery and components, heat dissipation, wear protection, friction reduction and corrosion protection. In the food industry, oil-change intervals depend more on the contamination of the lubricant than on the reduction of its lubrication properties through the degradation of additives, or oxidation of the lubricant.

In addition, it is possible that lubricant can become contaminated by external influences such as water, dust and cleaning products, which can cause reactions. Not only do these reaction products pose potential contamination hazards, but they can also have a damaging effect on the production plant. The useful life of the oil is reduced and premature wear must be avoided through more frequent oil changes. Taking and analysing oil samples can only accurately assess the level of lubricant degradation.

Regular analysis of samples from transmissions, compressors and hydraulic power units reveals the wear patterns in key machinery components and allows an examination of the chemical and physical condition of the lubricant, including any impurities and contamination. It is important that personnel responsible for administering lubrication management systems are trained, and customers are usually keen for lubricant suppliers to organise seminars for their plant operating teams.

Today’s superior lubrication products carry all of the necessary certifications and registrations required for the food and beverage manufacturing industry. Combined with carefully planned and implemented lubrication maintenance schedules, plus expert technical support and training direct from the lubricant manufacturer, well-reputed suppliers provide food manufacturers with the ultimate peace of mind, knowing that they have minimised the risk of product contamination.

Fuchs Lubricants
www.fuchs.com.au

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In situ flue gas O₂ analyser

Emerson Process Management has enhanced the Rosemount Analytical 6888 in situ flue gas O₂ analyser with diagnostics that help maintain optimum oxygen levels in flue gases, thereby optimising the combustion efficiency of large boilers and industrial furnaces.

The analyser incorporates a ‘calibration recommended’ diagnostic with gas-switching solenoids embedded within the probe electronics, which reduces the cost of providing and installing a separate solenoid box and also reduces the effort to wire and pipe between the probe and electronics. The diagnostic removes the need to conduct calibrations on a schedule, eliminating many validations (calibrations checks) or actual calibrations. The analyser also includes a ‘plugged diffuser/filter’ diagnostic for applications that have fly ash or other particulate entrained in the flue gases.

The analyser incorporates a variable insertion option, which permits ideal placement of the probe into the flue gas duct. With standard length probes from 0.5 to 3.65 m in horizontal or vertical installation, the probe can be adjusted online to characterise stratification across large ducts.

The improved accuracy of the analyser can also minimise the production of greenhouse gases such as CO₂ and of thermal NOₓ.

All active components can be replaced, including the diffuser/filter, sensing cell, heater and thermocouple, and all electronics cards. The analyser offers HART and FOUNDATION fieldbus digital communications and can also be configured with the optional Smart Wireless THUM adapter for wireless operation.

Emerson Process Management
www.emersonprocess.com.au

Photoelectric sensor

The Sick G10 photoelectric sensor requires minimal effort for setting and offers a high level of detection reliability and flexible 360° alignment.

The sensor has a maximum optical window surface combined with small sensor housing. It has a sensing range up to 1200 mm with background suppression performance.

Sensor alignment is aided by the small yet highly visible PinPoint LED light spot. The sensor is insensitive to dust and dirt on the front lens or reflector.

The G10 sensors are available with a 10 to 30 V DC and PNP-switching transistor output or an NPN-switching transistor output for applications such as logistics automation and machine building. The sensors have a universal voltage version featuring 24 to 240 V AC/V DC, which is available with a relay output suitable for use in automatic car parks and elevators, as well as door and gate installations.

Using Sick’s optional Q-Lock fastening system, the sensor can be mounted on round bars in 10 to 15 seconds. Alternatively, the Q-Lock system can be fastened to a metal sheet up to 3 mm in thickness.

The sensors include through-beam photoelectric sensors with a sensing range up to 40 m, photoelectric retro-reflective sensors with sensing ranges up to 16 m, energetic photoelectric sensors with a sensing range of 1400 mm as well as photoelectric proximity sensors with background suppression that reliably detect bright objects at a range of 950 mm and jet-black surfaces at a range of 520 mm.

In operation, the sensors are immune to ambient light and reliably detect even depolarising objects.

Sick Pty Ltd
www.sick.com.au
Non-heat pasteurisation technology

With a lot of talk in the beverage industry about non-heat pasteurisation, FB*PROPAPK announces a method said to be more efficient, more beneficial and more compact than other alternatives on the market. The company offers non-invasive alternatives to heat-based pasteurisation, preserving 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, isotonic drinks, milk, bottled water and RTDs.

The Beverage Food Group Pty Ltd
www.fbpropak.com

Fully sealed stainless steel panel PC

The APC-3991AT is a stainless steel, all-in-one computer from Aplex. The product is housed in an IP65 fanless fully sealed 304 or optional 316L stainless steel case with waterproof I/O connectors. It is supplied with a 19” SXGA 1280 x 1024 resolution LCD and a resistive USB touch screen, making it suitable for operator panel and HMI control applications.

The product features a built-in, energy-efficient Intel Core 2 Duo P8400 2.26 GHz processor with up to 4 GB of DDR3 memory. A 2.5” hard drive bay and an internal CompactFlash slot are provided for system and data storage.

Rear waterproof I/O connections include two COM ports, two USB 2.0 ports, one Gigabit Ethernet port and DC Power. The unit can operate from an 11-32 VDC power source, and VESA 100 x 100 rear-mounting holes allow the panel PC to be securely wall or arm mounted.

The device is compatible with Windows XP Pro, XP Embedded and Windows Embedded 7 operating systems, allowing it to support a wide range of off-the-shelf and custom-developed industrial applications.

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**Rotary cereal cooker range**

Baker Perkins has relaunched its Cook Master rotary cereal cooker range. The high-output batch machines process milled or wholegrain cereals including wheat, corn, bran and rice. They are used for traditional flaked and shredded products.

The relaunch includes an enhanced control system for all Cook Master machines. This provides full process visualisation, allowing operators to see every working parameter at a glance. It features multiphase recipe editing for up to 16 separate process steps including charging, mixing, purging, cooking and discharge; several steps can be allocated for each phase.

The flexible system allows all operating parameters to be defined for every stage of the process cycle; setting ranges are restricted to ensure safe and viable operation. The control system enables recipe recall for absolute repeatability, as well as alarm management and history, historical trending functions and connection to a plant-wide SCADA or ERP system. Another development is the introduction of a cooker with a through shaft, for users who prefer this process option.

The machine allows any cooking or extrusion system to be expanded at any time. Systems comprise standard process modules combined in different ways to make different products, which can be extended with the addition of extra modules to change or widen a product range as the user’s business expands.

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**Biogas plants without capital expenditure**

Biogas projects enable food processors and other agribusinesses to turn on-site waste streams into a valuable energy resource. Quantum Power has developed a ‘build-own-operate’ model that makes biogas plants available without the need for upfront capital from the processor.

Under the model, Quantum Power builds plants that convert the business’s organic waste to a bioenergy supply that is used to power its operations. The company agrees to purchase the generated power at a discount to grid-supplied electricity for a specified time. This reduces the business’s power bills and reduces costs associated with organic waste disposal.

Generating on-site energy using renewable sources also reduces network upgrades to satisfy electricity demand and provides significant opportunities for waste management and a reduction in greenhouse gas emissions.

According to the company, the advantage of biogas-fuelled generation over wind and solar is that it’s not reliant on weather conditions for performance, and it is therefore able to produce a consistent power output, 24 hours a day, seven days a week.

Quantum BioEnergy Limited

www.bioenergy.net.au
Meat processing optimisation technology

Meat Processing Optimiser (MPO) is cloud-based software to optimise production, reduce waste and boost revenue in the meat processing industry. The technology, developed by Australian IT company Biarri, uses complex mathematical algorithms to improve decision-making.

The technology has been customised for use within the Australian meat processing industry and can be modified to accommodate a diverse range of requirements including both beef and lamb. The software enables meat processors to make important operational decisions quickly, ensuring all critical variables are considered for each production run.

The MPO software determines the best cut strategy that maximises carcass yield according to the meat processor’s inputs. According to the company, decisions are more likely to be correct and the process has more rigour due to the application of the scientific method.

Biarri Optimisation
www.biarri.com

Pressure sensor

The PN series of pressure sensors from ifm has been updated.

Although the housing size has remained unchanged, the display size has been increased and the two switching status LEDs on the sensor head are also clearly visible. The display can be switched from the indication of ‘red’ to an alternating indication of ‘red - green’. Therefore, switching states can be highlighted or an independent colour window can be created. The sensor is set using three push-buttons.

The fitted sensor can be rotated in every direction. An additional 6.35 mm male thread is added to the standard female version.

With high overload protection of IP67 and captive laser labelling, the sensors are suitable for harsh environments.

ifm efector pty ltd
www.ifmefector.com

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Milk processor seeks energy savings through innovation

Compagnie des Fromages is part of the Bongrain Group, the world’s fifth-largest milk-processing company and an employer of 18,870 people. Compagnie des Fromages was seeking to reduce its energy usage and CO₂ emissions by investing in a facility designed by Cofely Axima. Energy savings were achieved via a process that heats and cools within a single cycle, and also through the use of key components - a Vilter single-screw compressor from Emerson Climate Technologies and a Leroy-Somer variable-speed drive from Emerson Industrial Automation.

“We conducted an energy audit with the Compagnie des Fromages’ plant in the town of Vire,” says Jean-Yves Druillennec, Sustainable Development Manager for Cofely Axima-GDF Suez. The audit, which was based on a series of measurements, provided a snapshot of the Vire plant’s consumption levels and suggested replacing its four piston compressors, which provided only cooling, with a thermorefrigerating pump, a thermodynamic heat-transfer system that can cool and heat at the same time.

The refrigeration system makes it possible to provide cooling capacity to the evaporator and heating capacity to the condenser. When 1000 kW of chilled water is produced at Vire, 1500 kW of energy is recovered at the same time and combined with just 100 kW of electricity to heat water to 62°C. All the energy produced and used is fully recovered. A 150 m³ buffer storage unit allows energy to be used to produce hot water as needed by the process (particularly during cleaning operations). With the previous system, this water was heated by gas, which has a much higher carbon footprint. In addition, the heat produced was rejected to the atmosphere by a cooling tower, which, with its plumes of steam, was viewed negatively by local residents.

At the heart of the system are a 390 kW motor and a variable-speed drive, that power a single-screw compressor with 1000 kW of cooling capacity. The refrigerant circulated in the system is ammonia (NH₃), a natural heat-transfer medium. The compressor is designed to balance the single screw both radially and axially. This balance ensures that very low loads are placed on the bearings, thus achieving a high level of reliability with considerably reduced vibration and noise levels. The key to the single-screw compressor’s high energy efficiency is its Parallex slide system, which allows the compressor to run at optimum efficiency throughout its capacity range. The capacity and volume slides (with an expanded volume ratio of 1.2 - 7.0) move independently of each other under all operating conditions, eliminating over or under compression and saving motor horsepower.

“During the remaining time, chilled water is produced conventionally with a COP of 5.75. Ultimately, the system will recover all the heat extracted during the production of chilled water. Chilled water at 1-7°C and 200 m³ of hot water at 60°C are produced daily at the Vire plant. To do this, the old system consumed an average of 820 kW of energy per ton of production per year. With the new system, this level is now only 560 kW.

“The process for producing heat with less grid electricity is not the only source of energy savings,” says Jean-Yves Druillennec. “The use of much more energy-efficient components is the other source.”

One of these components is the Dyneo LSRPM, a permanent-magnet synchronous motor which significantly increases efficiency to levels approaching 98%. The low losses of the magnet-rotor technology considerably reduce heating of the bearings. As a result, they need to be lubricated much less often and the life of the motor is increased.

Another component is the Vilter single-screw compressor, which uses a single screw and two star-shaped gaterotors. The compressor is designed to balance the single screw both radially and axially. This balance ensures that very low loads are placed on the bearings, thus achieving a high level of reliability with considerably reduced vibration and noise levels. The key to the single-screw compressor’s high energy efficiency is its Parallex slide system, which allows the compressor to run at optimum efficiency throughout its capacity range. The capacity and volume slides (with an expanded volume ratio of 1.2 - 7.0) move independently of each other under all operating conditions, eliminating over or under compression and saving motor horsepower.

“What makes these compressors stand out is their ability to independently adjust their capacity and volume ratio. That makes a real difference under partial load conditions. Depending on the application, they can be as much as 10% more efficient,” says Jean-Yves Druillennec.

**Emerson Industrial Automation**

www.emersonindustrial.com
Wastewater treatment system

Dr Stainless has developed a Dissolved Forced Air Flotation Waste Water Treatment System (D-FAF) for use by farmers, abattoirs and processors.

The system dissolves air and ozone into the wastewater stream. The wastewater then passes through the Zeta Cell where the micron-sized particles that are in suspension are coagulated and bind together. This allows separation of particles that are now much larger in size using simple filtration techniques.

The company claims that the improved quality of the wastewater output will lead to reductions in industrial sewerage disposal charges, as well as reductions in chemical and energy use and reduced odour emissions. The company says that the system also provides the capability to re-use treated water.

Dr Stainless
www.drstainless.net.au

Safety gate system

Pilz has released the latest revision of its safety gate system PSENsgate. The safety gate system comes with a range of system types, selectable control elements for greater flexibility and some redesigned elements to simplify operation.

The safety gate system can be used for secure safety gate monitoring with safe guard locking. As a result it is possible to achieve personal and plant protection up to the highest category Cat 4, PL e and SIL3. The range of control elements that can be optionally integrated, such as pushbuttons, key switches, illuminated pushbuttons, emergency or area stop functions or escape release has been expanded.

The system also has the potential to reduce costs, as all the safety functions and control elements are integrated into the one unit. This saves time and costs when it comes to project configuration, design and installation. Due to its robust design and mechanical load capacity, the safety gate system offers a long product service life.

Pilz Australia Industrial Automation LP
www.pilz.com.au

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The new generation PN sensors have a new modern design. Newly improved with an increased display size and the two switching status LED’s on the sensor head which can be clearly seen from all sides.

The new PN sensors now incorporate a two colour display that can be utilized to display condition ie; green is good, red is in alarm.

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Ferguson Plarre Bakehouses operates over 50 franchised stores across Victoria. The company is located in a groundbreaking food manufacturing plant in Melbourne’s North West growth corridor, which was designed with energy minimisation and environmental stewardship clearly in mind.

Ferguson Plarre approached Chemsearch for assistance with its grease trap, which was accumulating a heavy layer of fats, oils and greases (FOG) within a few days of pumpout. The water authority had directed a monthly pumpout of the main grease trap and bimonthly pumpout of the secondary trap. These pumpouts were costing the company $60,000 per year. In addition, infrastructure damage was starting to occur as acidic conditions attacked the concrete grease trap.

Chemsearch’s solution was to install the BioAMP biological drain network treatment system that provides just-in-time delivery of active FreeFlow bacteria, which contains five different types of bacteria that attack food sources and turn them into water and CO₂ and in turn, generate more bacteria. FreeFlow eats up FOG so that they will not resolidify. The Ferguson Plarre facility began BioAMP daily dosing one hour after the final washdown for the day.

The result of the new system included odour reduction, reduced FOG build-up and reduced infrastructure damage. Grease trap pumpout frequency was then able to be extended from once per month to every three months, saving $32,800 per year.

Chemsearch Australia
www.chemsearch.net.au

Hygiene monitoring system
The 3M Clean-Trace ATP System offers rapid, simple and reliable solutions for monitoring biological contamination on surfaces in real time, helping users to minimise training time and costs while protecting their customers, brand and reputation.

The easy-to-use handheld device is suitable for any industry seeking to deliver a safe, high-quality product. The lightweight system indicates overall biological contamination, including microbiological and product residues.

When combined with the 3M Clean-Trace Data Trending Software, the user can track and identify trends with equipment, work crews and processes. The software allows the user to pinpoint where a sanitation problem occurred and address the issue at the source, reducing re-cleaning and downtime for faster production.

The high sensitivity and repeatability of the system gives users the confidence that results provide a factual picture of cleaning performance, allowing them to implement immediate solutions that protect their brand.

3M Food Safety
www.3m.com

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**Fish filleting machine**
The MS 2730 Filleting Machine from Marel can process up to 25 fish/min and offers an increased yield, which is achieved by an extra cut made from anal vent to tail.

Programs can be stored and used for specific fish sizes, or the machine can operate using the automatic size adjustment feature. It is suitable for use with both pre-rigor and post-rigor fish.

The machine adjusts automatically to accommodate fish within a range of 2-8 kg of standard fish sizes. The unit has a user-friendly multilingual touch screen that enables easy and safe operation.

Ergonomically designed for safety and hygiene, the machine offers a fast and easy cleaning process. The current model has an additional set of knives compared to the previous model, which the company says improves yield.

*Marel*
www.marel.com

**Plate heat exchanger**
Matrix Process has announced the Alfa Laval Widegap Plate Heat Exchanger, which is suitable for media with particles, fibrous inclusions and other suspended solids.

The company says that the counter-current flow design makes it possible to achieve closer temperature approaches between the hot and cold media, which reduces the overall energy requirement for the same duty by a tube and shell heat exchanger by as much as 35% in some applications. They claim that the herringbone design means heat transfer is improved due to the turbulence generated within the heat exchanger unit.

The plates are made in stainless steel, with other corrosion-resistant materials also available for difficult applications. Gaskets are available in a variety of compounds such as EPDM, nitrile and other elastomers to provide the maximum service interval.

The unit has a 5-point alignment system which provides consistent sealing throughout the plate pack by providing exact positioning in the horizontal and vertical axis. When filled with process media, the heat exchanger weighs up to 80% less than a comparable tube and shell unit.

*Matrix Process Solutions Pty Ltd*
www.matrixps.com

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All-in-one weighing and blending system

The FastBack all-in-one blending system from Heat and Control accurately weighs and blends multiple ingredients while they are on their way to packaging. The system is suitable for simple or complex mixes of fruit, vegetables, frozen foods, cereal, nuts or other products.

Due to the gentle slow-forward, fast-back conveying motion, blend consistency is maintained as it moves toward packaging, ensuring no separation or layering of ingredients, as well as following the first-in-first-out rule of thumb.

Suitable for delicate products, the conveyor reduces product breakage and coating loss and is a sanitary choice as coatings do not build up in the conveyor pans.

The conveyor ensures a quieter working environment, creating 70 dB noise pollution during operation with most products.

After blending or mixing, product is conveyed down to the packaging line to be weighed and bagged. The Ishida fresh-cut produce/salad weighers increase throughput and reduce giveaway for the weighing of sugar snaps, and other fruit and vegetables.

Feeders gently move leaf spinach, spring mixes and other hard-to-handle products across the top of the weigher, while feeder vibration automatically adjusts for optimal product flow under all conditions.

Hoppers, feeders and chutes are removed by hand for cleaning and changeovers. Digital signal filtering and weight calculation methods prevent missed cycles and increase weighing accuracy.

Product is placed on a screening conveyor for checking and then carried to the top of the weigher via an inclined conveyor. After weighing and bagging, the packed product passes out directly under the infeed conveyors for subsequent checkweighing and packing into cases.

Heat and Control Pty Ltd
www.heatandcontrol.com

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- MRSA, C. DIFF(SPORE FORM) AND NOROVIRUS
HACCP-certified indoor vegetable farm for Singaporean restaurant

In land-scarce Singapore, only 8% of vegetables consumed are grown on local farms - but this is set to change as Panasonic Factory Solutions Asia Pacific partners with Ootoya Japanese Restaurant for the commercial supply of locally harvested vegetables from its indoor farm.

A range of premium Japanese leafy and root vegetables are being cultivated in Singapore’s first licensed indoor vegetable farm with controlled and optimised conditions.

Panasonic aims to contribute to the Agri-Food and Veterinary Authority’s (AVA) vision of raising self-sufficiency level for leafy vegetables through its technology and harvest. The company aims to increase its contribution to local production from the current 0.015% to 5% by FY2016, the fiscal year ending March 2017.

Hideki Baba, Managing Director, Panasonic Factory Solutions Asia Pacific, said, “Combining Panasonic’s technological and manufacturing expertise, these premium Japanese crops are grown in optimum conditions where temperature, humidity and CO₂ levels are monitored and controlled, ensuring stable, high-quality production throughout the year. The soil-based cultivation is pesticide-free and complies with AVA’s stringent food safety standards. Our indoor vegetable farm is also HACCP-certified. With over 90% of the food consumed in Singapore being imported, Panasonic hopes the indoor vegetable farm can contribute to the nation’s food self-sufficiency levels and, at the same time, provide a better life and a better world through improved food quality.”

The 248 m² indoor agriculture facility currently produces 10 types of vegetables - green and red leafy lettuce, mizuna (potherb mustard), mini red and white radish, rocket lettuce, basil, ooba (mint herb), mitsuba (wild parsley) and baby spinach. Both leafy and root vegetables are cultivated in the controlled soil-based environment with LED lighting. At present, total production capacity is at 3.6 tonnes annually. Through this local indoor cultivation, customers can potentially gain significant savings compared to purchasing similar premium Japanese produce that are imported.

The company is strengthening its research and development efforts to accelerate harvest, such as increasing shelf capacity (vertical farming), shortening cultivation lead time from 35 days to 28 days, improving area productivity and expanding crop variety. By FY2016, Panasonic is looking to grow more than 30 crop varieties.

Panasonic will assess market demand for commercial expansion to restaurants and supermarkets within this fiscal year. Currently it supplies, on average, 0.3 tonnes of vegetables to all three Ootoya outlets in the country per month - Changi City Point, Clementi Mall and Orchard Central. The company aims to double this amount in the next two years and supply wider varieties of premium Japanese crops that are not cultivated locally to Ootoya restaurants.

Hisami Mitsumori, Chairman, Ootoya Holdings, commented, “Ootoya prides ourselves in offering authentic and healthy home-cooked Japanese food to our customers. Being a restaurant, food safety and quality are top priority, especially in overseas markets where we do not have our own agriculture facility to grow crops like we do in Japan. The commercial partnership with Panasonic is a natural fit as the facility adopts an eco, sustainable and cost-efficient method of farming. We are also able to get fresh, crunchy and pesticide-free Japanese produce, allowing customers to enjoy healthy and delicious meals.”

Vegetables are delivered fresh from Panasonic’s indoor agriculture farm to Ootoya restaurants daily, ensuring that quality of harvest is maintained.

Panasonic Factory Solutions Asia Pacific
www.pfsap.panasonic.com.sg
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The benefits of automating produce production lines

T here are a number of influential factors which manufacturers must consider when packaging fresh produce. The characteristics of products, such as fresh vegetables and salad leaves, mean that gentle handling is essential to prevent damage and costly waste. Equally important is the need to retain product freshness.

Speed is key when moving product from delivery to shelf-ready packaged goods. This is particularly relevant for produce grown out of season to meet consumers’ year-round demand, which may have a shorter lifespan - and makes maximising freshness a priority.

Variation in pack sizes also has an impact. The rise of single-person households, together with the drive to reduce food waste, has seen an increase in convenient, single-serve formats, while the economic squeeze has created demand for family-size value packs. Both target consumer groups want to see the quality of the product before purchase and be confident of its shelf-life.

Retailers can also add to the complexity of the production line by choosing to run seasonal or competitive promotional offers, such as 25% extra free, which must be accommodated quickly and efficiently.

All this must be achieved while ensuring high operational efficiency effectiveness (OEE) and compliance with strict food safety regulations set by industry bodies and major retailers. Such is the pace and pressure of modern-day processing that fresh-produce manufacturers need to ensure production lines deliver on every level - quality, flexibility and productivity. These issues are driving innovative developments in packaging automation, where technology is being integrated into operations to improve performance.

Packaging fresh produce presents challenges in terms of handling, food safety and shelf-life, so how can manufacturers deliver a high-quality product efficiently?

Quality and quantity

Processors can maximise product quality by selecting the right distribution technology to gently move products down the packaging line, thus removing the risks and potential errors associated with human contact. Innovations such as horizontal motion distribution systems can be used to transport dry fresh produce smoothly.

Potentially wet or sticky non-fragile products can be moved confidently using a high throw conveyor, perfect for vegetables or loose lettuce which may otherwise stick to the pan. Conveyors which keep product contact to a minimum are essential in this type of application too. Gateless designs dispense with the traditional mechanical gate at the end of the tray and allow product to move freely and reduce cleaning time.

Streamlining can also be enhanced by integrating electromagnetic drives into the system, which eliminate moving or wearing parts such as shafts, gears, links and belts - benefiting costs as well as product integrity.

Of course, this focus on gentle handling is not at the expense of speed. Conveyors are designed to transport product both carefully and rapidly in order to retain its freshness.

Increased productivity

Bagged fresh produce is firmly established as a popular packaging format for consumers. Not only does it offer convenience, but the use of transparent film also enables the quality of the
product inside to be assessed. As an exceptionally cost-effective and lightweight material, polyethylene is emerging as a reliable option to protect less-heavy applications. Automation technology has responded with a number of developments designed to enable processors to remain competitive.

Rotary impulse sealing systems now enable vertical form fill and seal (VFFS) polyethylene (PE) packaging machines to be used for a range of fresh produce. Product waste is reduced due to the optimised product transfer from the multihead scale through to the jaws. Standard single-jaw packaging systems have recently been superseded by innovative, rotary, double flat-jaw configurations which achieve twice the throughput rate.

Processors can also benefit from the huge strides that have been made in bagging speeds. The latest VFFS PE packaging systems, such as the tna robag FXIS 3ci, can achieve optimal speeds of 150 bags per minute (bpm) compared to the average 70-80 bpm of traditional PE machines.

Versatility of bag size and format is also key. So too is the ability to adapt to a range of different products which are often processed in the same plant. This level of flexibility can easily be achieved with automated systems which do not require any mechanical adjustments when changing product or film.

Increasingly sophisticated software underpins the packaging line and allows adjustments to be made from one central control point. Manufacturers can store a number of pre-programmed settings or make real-time changes electronically rather than having to manually take out a machine or line. This integrated technology also flags breakdowns or errors immediately; operators can address and resolve any issues quickly and avoid bigger problems backing up on the line. Downtime is kept to a minimum and manufacturers are able to respond even faster to changing market demands.

Safety first

The 2011 E-coli outbreak in Europe hit the headlines and the fresh produce sector hard. It highlights the very real need for processors to have robust traceability systems in place to help protect both consumer safety and the reputation of the business. This is where automation is invaluable.

By installing control systems that can be easily validated and incorporated into existing processing and packaging lines, manufacturers can gather essential tracking information throughout the entire process. Not only does this meet regulatory requirements, it brings added benefits in terms of better stock control and shelf-life planning; waste and costs are reduced, and product quality is maintained.

Data collection equipment, such as barcode scanning systems, can accurately verify that the correct batch is being processed by scanning the product and cross-checking it with available data. Data-code assurance systems ensure that the date code is printed, complete and legible, while stale product monitoring keeps output within specification.

Metal detection technology is one of the most sensitive and reliable in-line checking systems. Installed at key risk points in the line before packaging, this equipment operates effectively at high speeds to maintain productivity levels. Early detection also ensures foreign bodies can be removed without spoiling numerous batches and so helps to keep costs down.

The bottom line

Packaging fresh produce presents manufacturers with specific challenges and pressures. Retailer and consumer expectations for consistent quality can now be met more easily with greater investment in automation. Issues with raising productivity levels, reducing product and packaging material waste, as well as adapting to complex variations in pack size, format and content can all be addressed effectively with the right system in place. Crucially, by delivering measurable improvements in key areas, manufacturers can evaluate a tangible return.

In fact, the latest developments in automation technology and design go even further to address wider inefficiencies. Sustainability in terms of reducing energy consumption is an ongoing concern. New machines are designed to run using minimal air and power consumption, and also increasingly feature standby options within the software. Additional information on usage can be gathered by integrating sensing equipment, such as flow meters, motion sensors and kWh meters, into existing PLC-controlled systems; steps can then be taken to reduce unnecessary waste when data for a complete line is centralised and reported. Consideration is also given to getting the most out of plant floor space, with processing and packaging equipment now designed to be both compact and powerful.

By reviewing the performance of existing production lines and systems, plant managers can identify priority areas for improvement and make the move towards greater automation and efficiency.

TNA Australia Pty Ltd
www.tnasolutions.com
Prepacking produce pays

More and more, supermarkets are realising the benefits of having fresh produce packaged before it reaches them. There is a significant reduction in waste and transit damage and consumers can’t graze while shopping. Another benefit is labelling accuracy - with prepackaged produce checkout staff do not have to be able to recognise the product and at self-checkouts clients cannotadvertently or inadvertently claim that the product is a cheaper alternative.

Modern contact packers like AAA Packers offer a safe and cost-effective service for retailers wanting the benefits of prepackaged produce as it carries HACCP and quality system certification.

AAA Packers is an expanding fruit and vegetable packer, supplying the major supermarket chains. It also does fresh-produce contract packing. Needing another weigh labeller to cope with increased business, AAA installed a Bizerba GML-E 40 on advice from Matthews Australasia.

It’s a decision they haven’t thought twice about, says warehouse manager Jannelle Harris.

“Firstly, the speed is fabulous, and it’s non-stop; there’s no stopping to weigh, then label, it just goes straight through.

“One of the biggest things for me is its user-friendliness. It’s simple, so anyone can use it, but because it is password protected, they can’t muck up any programming. So if someone’s pressed something and got it wrong, I can quickly fix it, I don’t need to get a tech here to fix the program.

“The other thing about that is because it is all touch screen, it’s very easy to teach workers who don’t speak English how to use it. A lot of workers in the prepack industry have limited English, so that, along with the embossed diagram of how it works on the front of it, are really handy features - you just can’t go wrong. I don’t even need my glasses on to have a look at that.”

AAA Packers uses the weigh labeller to print the vendor number and date onto labels on a variety of prepacked fresh produce, and then either a per kilogram or individual price according to the product.

“For example, if it has to be check-weighed, like broccoli where consumers pay by weight, or if it’s a price per item such as lettuce, Matthews programmed all that into the Bizerba.”

“Labels are preprinted with each supermarket’s art requirements. Set up is also fast and cost effective.

“You know that the label is set to go, because it will shoot out two labels when you set up, so you don’t waste any packaging. It’s a big cost if you have to run 20 or 30 labels on a line if they’re not printing properly. That’s just waste. This? No waste; so it saves money on packaging because of that, it’s fantastic.”

And, Harris says, while machine throughput is fast, printing on the labels is clear and easy to read, meaning no rejection by retailers.

A stop button on the machine’s front is also an excellent safety and time-saving feature.

“The best part is the stop-and-go button. If I need to stop it, I just press that button on the front, I don’t have to go and turn the power off and on. So it’s a safety issue, but also, it doesn’t hold the whole line up; I may stop it, but it can still be actually flow-wrapping product. Time-wise, it’s brilliant.

“The Bizerba sits just behind my desk, and it’s quiet; not only that, there are no ribbons, so I don’t get my hands dirty - I love that! It’s so clean.

“If you look at most weigh-labellers, there are stickers all over them and the conveyor. But this one, there may be the odd sticker, and we stop it from the front of the machine, peel that label off and get going again. They’re very easy to clean.”

Dealing with produce-pricing changes is straightforward. A price change can also mean a per-piece weight change.

“Say when butternut pumpkin changes from $1.99 to $1.59, other machines I’ve used can be a bit precious here, even to remove the printer, because as the label comes through, printing has to be on a separate part of the label. With this one, you actually move the printing head over slightly - left or right, wherever you need - it’s so flexible; there’s no unscrewing this or that.”

Harris is also impressed with Matthews’ service.

“When Matthews installed and commissioned it for us, they did it properly. I’ve had quite a few machines put in over my time, and the technician will stay for a couple of hours. Matthews stayed all day. And then came back the next day to make sure it was working 100% before they left.

“They asked me, ‘What would you like to know? Do you want us to train anyone else?’ They came to me, I didn’t have to chase them. They asked things like, ‘Do you feel your people are confident? Are you confident?’ And yes, I am! I can ring service any time I need. I can’t fault this machine one little bit. And I cannot fault Matthews’ service.

“I’ve been 30 years in this industry, running warehouses and packing, and I’ve come across a lot of packing machines. This is seriously one of the best things in fresh produce weigh labelling that I have seen and used in the whole time I’ve been doing prepacking.”

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Cider brand looks to glass for an image upgrade

Founded in 1972, Indiana-based Oliver Winery is one of the largest winemakers in the Eastern United States. They began making cider in the mid-1980s and, until recently, distributed their BeanBlossom Hard Cider in single-serve aluminium containers. When looking to differentiate the cider in an increasingly competitive category, the winery approached Owens-Illinois (O-I) to assist with relaunching the cider in a shareable 750 ml glass bottle.

According to owner Bill Oliver, the large glass format gives the BeanBlossom brand a premium image and enables consumers to fully appreciate its flavour. The glass bottle helps BeanBlossom stand out from other mainstream hard ciders sold in single-serve multi-packs, by creating a shareable, sensory experience similar to wine.

“When you sit down with a friend and pour a glass of cider from our 750 ml bottle, you’re able to enjoy the product in a way that you don’t necessarily get when you drink directly from a single-serve container,” said Oliver. “The experience is more like drinking wine - you get to appreciate the colour and aroma of the cider, which enriches the taste.”

The new glass packaging also gave Oliver Winery a chance to enhance BeanBlossom’s branding and artwork, created through a longstanding partnership with artist Kevin Pope. Pope’s work on the brand features fictional characters evoking the culture of nearby Beanblossom, Indiana. The many decoration and label options possible with glass freed Pope to add depth and texture to the artwork in ways that he couldn’t achieve on aluminium.

“The relaunch of BeanBlossom Hard Cider in glass afforded me the opportunity to give the iconic imagery and unique characters new life in a way that reflects the nostalgic feel of the cider’s labels, the bottles and, of course, the product itself,” Pope said.
Field potato sorter

TOMRA Sorting Solutions has developed a Field Potato Sorter (FPS), a high throughput optical sorting solution for unwashed potatoes. According to the company, the system enables growers, processors and packer companies to lower labour and potato storage costs while raising product quality and yield.

Utilising unique biometric signature identification technology, the FPS provides a representation of the visible and near infrared spectral zones, which allows it to analyse and identify organic characteristics and compositions of all objects. It can therefore distinguish clumps of dirt, stones, foreign material and rot from potatoes, even those with substantial soil covering.

The machine can be used for different varieties and sizes of unwashed potato, while process and packer customers can use the data the machine produces for predictive analysis, to achieve purposes such as optimising production lines.

The system is compact and available in various widths to fit capacities up to 70,000 kg/h. The sorting machine is compatible with other potato grading equipment, but can also be used on its own to sort harvested potatoes, before or after storage.

TOMRA Sorting Solutions Pty Ltd
www.tomra.com

Cherry-based antioxidants and curing enhancers

Naturex has expanded its portfolio of natural solutions for shelf-life extension with a range of cherry-based antioxidants and curing enhancers for meat and poultry products.

Acerola Cherry 17 offers natural oxygen-scavenging properties that protect meat pigments from oxidation, which means it can be used in all types of raw and cooked meat products to improve colour stability. The ingredient can also be used as a curing accelerator in cured meats.

The company has also developed XtraBlend RA, an antioxidant that combines acerola with rosemary extract to create a blend that protects both colour and flavour in meat products.

The third ingredient in the range is Acerola Cherry 36, which contains more naturally occurring vitamin C - 36-38% - than any other acerola powder available. It is also free from carrier compounds.

Naturex
www.naturex.com
Extending produce shelf-life

Fruit and vegetable spoilage is a major industry problem but new technology may be providing a solution.

Designed initially for the United States Army, Primaira’s Bluezone Fresh Preservation is a patented technology that strips microbes, ethylene, hydrocarbons, odours and other contaminants from the atmosphere. It is claimed that, when placed in coolrooms at pack sheds, wholesaler agent’s premises or even in retail stores or restaurants, Bluezone technology has the ability to reduce fresh produce spoilage by half.

The technology can be used to extend shelf life, slow ripening, reduce mould and russet spotting, eliminate odours and minimise excessive softening or toughness. Its positive effect on produce quality and storage life has been demonstrated for use in transport containers, cold-storage rooms, walk-in refrigerators, reach-in refrigerators and general food storage areas. It is a self-contained, rugged, low-cost, low-power, air cleaning technology.

The Bluezone technology has already demonstrated its value in stationary cold storage. Kiwifruit across Australia now benefit from Bluezone’s ethylene-scrubbing and microbial-reduction ability. “The science is now ‘in’ on the effectiveness of this technology to extend the shelf life and reduce shrinkage in the supply chain for kiwi,” says Keith Maggs, director of Environmental Technologies Australia, the local distributor for Primaira.

The antimicrobial effectiveness of Bluezone has been established in pack-house and cold-storage trials. “We have witnessed significant reduction in airborne mould and mould growth in tomato pack houses. In pineapple trials, Bluezone technology reduced bacteria, yeast and mould counts on surfaces in just 13 days,” said Maggs.

Going mobile with the technology

Primaira has recently licensed its Bluezone fresh preservation technology to Maersk Container Industry (MCI). The two companies are partnering to integrate the Bluezone air-cleaning system into Star Cool Integrated refrigerated containers.

“We see the Bluezone technology in the Star Cool reefer as a ‘game changer’ for refrigerated transport,” says Soren Leth Johannsen, chief commercial officer of MCI. “Just consider the economic and environmental upsides of converting today’s airfreight of fresh-cut flowers into reefer containers.”

“We are still working on the final design, but we are convinced that the Bluezone and Star Cool combination represents economic and environmental upsides so far unseen in container transportation. Bluezone will complement MCI’s CA and AV+ systems, increasing the geographical reach of containerised transport and preserving the quality of fruit and produce.”

Primaira has extensive experience developing technologies that enhance food quality culminating in its Bluezone technology for ethylene and mould removal which has the potential to extend the shelf life of fresh produce.

Reefер container owners are enthusiastic as the systems that are currently available, for example using ozone, are often only temporary and installed per shipment. Also, from a container-owner’s perspective it is also a major concern that ozone by nature is aggressive when exposed on rubber, aluminium and copper.

Environmental Technologies Australia
www.bluezone-technology.com
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