

trends in automation

Sparkling opportunities

Whether it is the high volume producers of drinks products or the micro and medium level manufacturers, all are finding that automation in different parts of the production process help to improve productivity and reduce costs, as well as meet sustainability goals.

'Drinks' is not just about carbonated soft drinks, wines, beers and spirits. The market for mineral waters, soft drinks, juices and smoothies are thriving. For beer in particular these are difficult times and while the growth in the popularity of alcopops, cider and some of the more 'funky' spirits has added some impetus, more traditional products are under pressure.

Taking costs out of production and improving efficiency are key areas of focus when volumes and margins are squeezed. Automation in all areas, but particularly in processing functions and at the tertiary packaging stage, is a necessity.

The reduced costs of robotics can now make automated packaging and handling available to smaller producers, as is demonstrated on the round-up pages which follow.

Many larger producers have invested millions in highly sophisticated handling and palletizing systems. These have the benefits of not only reducing labour costs and improving safety, they are also designed for greater flexibility, to handle different sizes and variable pallet formats quickly and without major adjustments. Additional benefits include sophisticated print and apply labelling systems for better product identification as well as tracking and dating orders.

Green credentials

The traditional battle between case packing and shrink wrapping has also been rejoined, nowhere more keenly than in drinks markets. Having been viewed as a pariah by the environmental lobby for so long shrink wrapping's green credentials are now coming to the fore.

Machines are more energy efficient and less wasteful thanks to better thermal insulation (see p15). And wrapping uses less material and saves costs compared with the equivalent corrugated packs, say its advocates. However, the cartonboard sector point to the ease of recycling and the benefits of Retail

Ready options plus the convenience of its carry home packs.

But it is not only at the end-of-line operations that automation is providing better solutions. The cost and time of processing are also under scrutiny, particularly in relation to energy and water usage issues - see Krones' investment on page 31.

For the brewers many of the same rules apply. As a more holistic approach to the production process gains ground the total cost of production has to be audited. So disposal of waste water, or its re-use are important, as is the use of heat or cold generated in processing to do a job elsewhere in the production cycle.

Aseptic fillers

Using new automation technologies to reduce complexity is also gathering pace. One example is aseptic filling. It has the advantage of eliminating the need for pasteurization of some products. While they are still expensive to purchase, the initial capital outlay can be offset by the need for less plant in the longer term, so reducing replacement and maintenance costs, as well as simplifying the manufacturing process overall. Aseptic fillers can also facilitate the introduction of new lines or pack shapes (*MU Sep/Oct 08 pp52-53*).

Versatility, even for traditional, high speed or volume fillers, is also becoming evident. One example is a new head for existing KHS machines, enabling them to fill carry home containers, as well as the casks for pubs and bars.

Overall the trend towards the 'carry home' market for wines, beers and spirits seems set to continue. Supermarket shelves are now populated with both the big brands and more specialised products, some sourced locally. As volumes for the latter increase the benefits of automating will become more affordable.

Investing in automation when markets are declining or where current production volumes are relatively modest can be a difficult decision. But the evidence seems to point to real benefits.



MARKET FACT

- The key findings of Innovation in Beverage Packaging 2008 show that pressure on margins coupled with highly volatile energy and materials costs, and increasing environmental pressures, have shifted the focus of packaging design more towards cost-driven factors. These include weight saving, material reduction, production line efficiency, cost-effectiveness and environmental performance plus functionality and retained quality. www.canadean.com

MARKET GROWTH

- Energy drinks consumption is set to grow by eight per cent in Western Europe over the next five years, according to beverage and food sector consultants Zenith International.

In 2007 sales topped €3.7bn, with the UK, Germany and Spain accounting for more than 55 per cent of the total.

France is now the fastest growing market thanks to the ban on products containing taurine, a major ingredient of most energy drinks, being lifted.

Largest consumption per head went to Ireland at 7.7 litres annually. The Red Bull brand continues to dominate the market with 60 per cent of sales, although competition is becoming stronger with the introduction of, for example, Relentless from Coca Cola.

- Zenith also says that Western Europeans are turning increasingly to smoothies, juices and nectars to get some of their recommended 'five a day' fruit intake.

Sales of these products were up by 1.6 per cent in 2007 to reach €23bn. Consumption should reach 11 billion litres by 2012.

Premium products are leading the way, with squeezed fruit juices recording sales up by 9.4 per cent in the period.

Orange-based products continue to be the favourites among consumers.

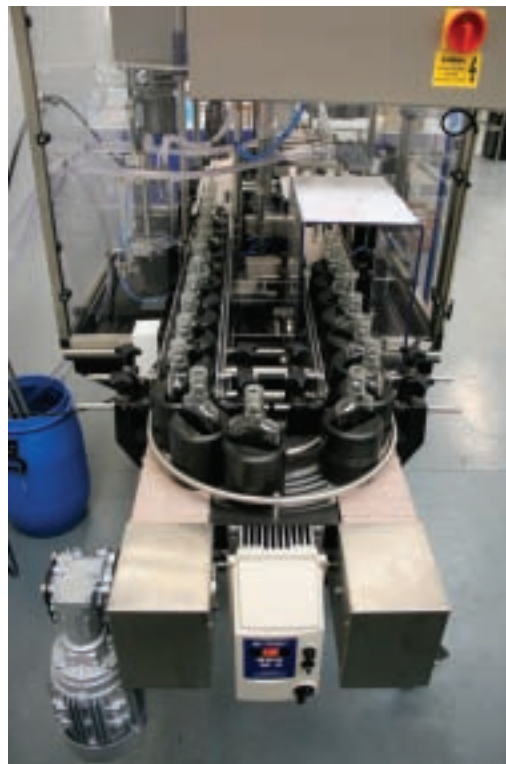
Sixty seven per cent of all these products are sold in cartons. But Zenith noted an increase in popularity for PET bottles.

www.zenithinternational.com

drinks - round-up

Four head functional filler for the Friary

Such has been the success of Frome-based Friary Vintners' range of liqueurs that the company needed to increase its filling capacity without taking on extra staff. The company asked Universal Filling Machine Company to design a



system which could be operated by one person, but undertake all the functions required.

Ernie Jeffery of Friary Vintners explains, "We needed a packaging line which could fill four different sizes and shapes of bottle with the ability to cap with three different types of ROPP and, for good measure, with only one person to operate the entire process, including changeovers."

Universal's answer was to configure a four head POSIVAC filling machine combined with a single head ROPP capper. The company designed a compact racetrack system consisting of two parallel conveyors with the filling machine on the outfeed section and the capper on the infeed section.

Space was provided for automatic placement of caps which means a single operator standing in position can load empty bottles ready for filling and unload the filled and closed bottles. The system is now successfully handling containers between 50cl and 750cl.

Jeffery commented, "The packaging line has now revolutionised the production capacity of this small family business. The most practical aspect of this equipment is the ability to do very short runs and change over to another size of bottle and cap very quickly. The team has now got this process down to 10 minutes and are still improving!"

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Sensing out temperature change

The new suite of inductive and optical sensors from SICK UK, aimed at the beverage and food sectors, meet the demands of wide temperature changes and harsh cleaning regimes.

The SICK V18V photoelectric switches, MH15V photoelectric sensors and IMF inductive sensors are protected from the processing environment and washdown to IP67K rating. They feature food and drink compliant stainless steel housings with FDA certified plastic watertight plug cap and cabling. Additional protection from corrosion is provided by gold plated connections.

The V18V features the company's patented Touch-Teach sensitivity adjustment which allows fine tuning of each sensor in situ without

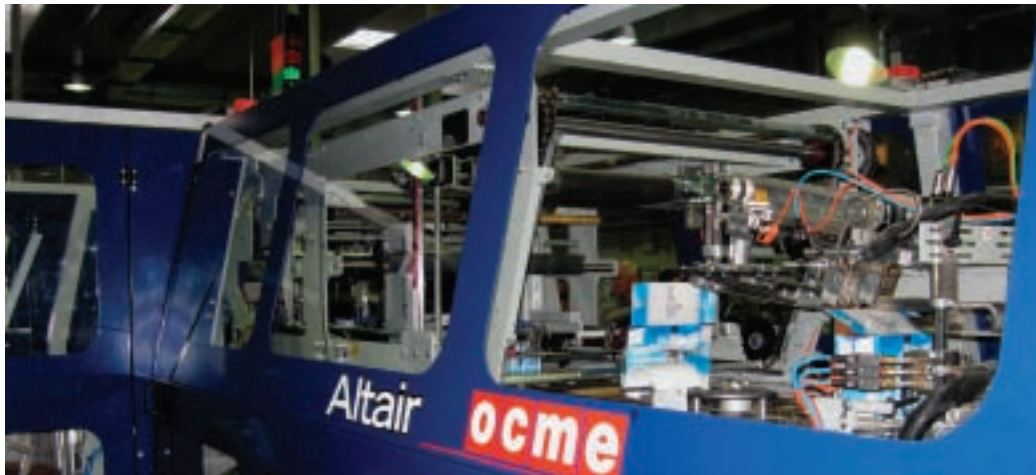
mechanical intervention. It can withstand temperatures between -40°C and +85°C and has a new capability to detect glass or transparent objects, according to SICK.

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drinks - round-up



OCME re-design will wrap bottles faster

OCME has made improvements to its Altair N70 wrap-around case packer to enable it to achieve speeds of up to 100 cases/minute.

The first change is to double the blank feeding unit, so decreasing the relative speed of blank introduction. This helps to reduce the risk of blanks mis-feeding causing jamming or falling bottles, as the machine is able to stop its cycle within two or three steps. Next a retractable plate has been added where the bottles and cartonboard blanks combine. The plate reduces the shock or jolt during this process to ensure a smooth operation.

Finally two sets of electronically controlled fingers are used for bottle selection, the first set working counter to the second set to ensure top

speed for the machine is reached gradually, which again helps reduce falling bottles and is particularly useful when handling unstable containers. An optional pick and place unit can be added to replace the standard blank feeder to further improve capacity.

A recent installation of the Altair N70 at Icelandic Water Holdings is achieving speeds up to 70 cases/minute handling square PET bottles of mineral water.

OCME also supplied a VEGA S50 shrinkwrapper to the company, Iceland's leading bottler of mineral water, to provide a complete end of line solution.

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Black Sheep goes automatic

The Black Sheep Brewery in North Yorkshire has successfully automated its entire cask handling operations using robots, according to CenFRA, the centre for new automation and robotics opened recently in Doncaster (*MU Jul/Aug 08 p7*).

The company's traditional brewing and processing methods have been combined with automated cask handling, filling, re-bunging, weighing and re-stacking tasks. This has greatly improved the factory floor environment and reduced the risks of repetitive strain injuries caused by manual handling, says CenFRA.

The centre is targeting the brewing and soft

drinks sectors as it believes there is enormous potential for automation of drinks production in these areas. The organisation will undertake free audits at production plants and offer help and guidance on the benefits of innovative automation solutions, it says.

As part of the package it will be running special seminars and training days for the beverage industry, as well as providing information about the latest technologies, production processes and methods related to automation available to drinks' manufacturers.

www.cenfra.co.uk

DRINK FACTS

- The soft drinks industry is losing confidence in its future prospects according to a report from Canadean.

Reporting on 3rd quarter results for 2008, it finds that two major European markets, France and the UK, have slipped into decline.

The French soft drinks market shrank by 1 per cent while the UK saw sales drop by 2 per cent.

Denmark was the first market to officially go into recession at -6 per cent.

Across much of Western Europe, Canadean's consultant feedback points to a surge in hard discounter footfall, rising private label share and half empty bars and restaurants.

In neighbouring Eastern Europe there is more optimism. Bulgaria, Serbia and Slovenia report a mild improvement in confidence levels.

East European third quarter soft drinks sales jumped by nearly 2 per cent and Canadean anticipate end of year results to register around +3 per cent. www.canadean.com

■ Job cuts

Anheuser-Busch InBev is to close the Mortlake Brewery in 2010 as part of the £690m cost savings programme.

Heineken is closing the Beamish & Crawford brewery in Cork, with the loss of 120 jobs.

Bulmers (part of Scottish & Newcastle) has axed 50 jobs as has Constellation Brands across its UK operations.

And Abbey Well looks set to lose 49 jobs after its recent acquisition by Coca-Cola Enterprises.

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special feature

drinks - round-up

Flexible pallet patterns

Manex has introduced parametric programming on its P310 series of palletisers so that customers can create new layers and pallet patterns without the need to order supplementary program formats from the manufacturer. This, says Manex, gives the equipment greater flexibility to accommodate new product ranges.

A high level P310 series machine recently

installed at the Aldaris Brewery in Latvia, is one of several installations in the Baltic states.

The palletiser is part of a complete system for loading beer multipacks and unloading empty bottles from crates. The de-crafter was specially developed to automatically unload bottles, added Manex.

The company has also made further

advances in its transfer plate technology to enable it to handle irregular layer formats and allows less stripper plate movement, so reducing the disturbance of the layer formation.

The twin or half plates, a feature of the P310, can be supplied with automatic adjustment to the spacer and pusher plates to create internal gaps in the pallet layer when required.

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Non-stop conveying at Chivas

Excel Automation has now completed the third part of a four stage £3m upgrade to Chivas Brothers palletisation and automatic despatch facility at Kilmalid near Dumbarton.

The latest stage required eight new production line conveying systems to be installed without interrupting production. Excel used the higher speed of the conveyors and high level palletisers to compensate while old equipment was dismantled.

The eight palletisers were designed to accommodate the maximum production of two lines using a combination of hinge belts and diverters. The software automatically prioritises the next available batch. The conveying systems transport different size cases containing a variety of bottle sizes from the existing bottling plant to the new palletising area where they are automatically sorted into pallet profiles. At the higher speeds stability was a major issue so prior to entry into the palletiser cases are secured using a LOCK n' POP system, which sprays

them with cold glue to secure each layer.

When completed the palletising operation should increase output by 50 per cent, says Excel. Phase four, which will be completed by April 2009, will upgrade the despatch area where loads are transferred to customer pallets. The contract entailed the refurbishment of eight, narrow-aisle stacker cranes and the installation of new infeed pallet conveyor systems in addition to the latest production line conveyor project.

www.excel-automation.co.uk



drinks - round-up



Automating soft drink and juice processing

Krones AG sees changing attitudes towards process technology for non-alcoholic beverages. The company says paramount considerations in all steps of production - such as product quality, cost effectiveness and flexibility of the equipment - is leading to higher levels of automation.

There are several examples of this, says Krones. The mixing technology, where the production step of blending the final syrup immediately prior to filling can now be dispensed with. The company's ContiFlow system can blend the product components, plus any ingredients, such as aromas or acidifiers, inline.

This technique also facilitates the trend towards larger batches of syrup which, it says, helps reduce analytical procedures and improve quality. The mixers can also incorporate the de-gassing and carbonation modules.

Additionally modern flash pasteurisation systems are now usually pre-assembled on a base frame to make installation and commissioning easier. Its own VarioFlash unit can also be fitted with a degassing system which includes an aroma recovery feature to minimise oxidation processes

during heat up. Better control systems enable the pasteuriser to keep the temperature at specified levels, even if the filler speed fluctuates.

Krones has also identified advantages in three stage designs for some pasteurisers, which incorporate a cooling stage. While the initial cost of production is greater the cooling stage enables the water in the system to be maintained at the desired level more efficiently and it can also be used to re-circulate the product if production is interrupted for any reason. Alternatively a hot fill process can be used to render beverages, such as juices, biologically stable.

Despite the fact these systems use more energy for cooling and heating the advantages are that they use considerably less space, require less capital investment than a pasteuriser and the thermal stress on the product is lower.

Finally the company believes the benefits of aseptic filling as an alternative to bottle pasteurisation is now becoming more widely recognised gaining popularity with non-alcoholic beverage producers.

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special feature

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Gloomy prospects for UK beer sales...

Rob Hayward, chief executive, British Beer and Pub Association, predicts tough times ahead in the UK for beer sales of both the packaged and unpackaged variety.

Recent figures for total sales in the third quarter of 2008 showed a drop of 7 per cent. Pubs bore the brunt of the downturn, equivalent to 160 million fewer pints being sold compared with the same period in 2007.

Retail outlets for packaged beers fared little better with a decline of 6 per cent.

However the UK is not alone in seeing sales of alcohol decline. French sources

report champagne sales flat with a decline of 2.6 per cent while consumption of 'presson' or tap beer has fallen by 12 per cent since January 2008. Factors affecting sales are cited as poor weather conditions and the smoking ban. Germany paints a similar picture.

The one ray of light is in the USA where beer deliveries increased in the year to the end of September, although by a modest 1.6 per cent. Sales of imported beer, however, have fallen.

www.beerandpub.com

This little piggy ... just fell out of the sky

The idea for the Orchard Pig range of apple juices and cider literally fell out of the sky when Andrew Quinlan and Neil MacDonald wanted to find a use for surplus fallen apples from the orchards where they reared their herd of Gloucester Old Spot pigs.

The success of the range over just 18 months has led them to invest in an ES60 manual shrinkwrap sleeving machine from Wraps UK, part of the Marden Edwards Group. The equipment is now wrapping collations of 75 and 25cl bottles of apple juice and 75 and 50cl bottles of cider on trays. The company was previously using cases to pack the products.

Currently the Orchard Pig brand is sold mainly through farm shops and other exclusive outlets. Production is currently at around 100,000 bottles of apple juice and 70,000 bottles of cider/year. Already Fortnum & Mason and Jamie Oliver's restaurant chain stock the Orchard Pig range.

"We switched to the sleeve wrapping option largely to save costs on our packaging," says Andrew Quinlan. "Cost savings per pack are already substantial and can be more than 200 per cent," he explained.

"Another advantage is the film we

use to wrap takes up far less storage than the cases we used previously, which is a big help in a small factory. We are also doing our bit for the environment by using less packaging, for example we no longer need the divider inserts used previously," added Quinlan.

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drinks - round-up

...but Russians tap into draught beer

A Russian supplier of beverage and bottling equipment has tapped into the country's enthusiasm for draught beer by producing a tap dispensing unit which enables small neighbourhood retail outlets to sell the product direct to thirsty Russians for consumption at home.

Novosibirskprod mash introduced a fledgling version of the PEGAS as long ago as 2004. But it has recently introduced a new and improved tap dispenser, the Novotap which, it says, could have global appeal. So it is looking for partners in a number of other countries.

The Novotap has chrome plated components

made from brass and stainless steel and the parts have been re-designed for easy assembly and dismantling for cleaning. The pipes are now also concealed within the shank. The major benefit of the tap is that it produces a foam free fill by using the 'backpress' method, says the manufacturer. This enables much faster filling than with a normal beer tap and almost any sort of container can be used to carry home the liquid.

The retailers are happy too as profits on draught beer are 50 per cent higher than on pre packed products.

www.beerinnovations.com

Why metrics matter

Greater competition, consolidation and consumer demand for variety, plus interest in imports and micro brews is causing the brewing sector to search for new ways to be more competitive and drive out costs, says Rockwell Automation's consultant Raymond Zimmerman.

Breweries are increasingly turning to technology to improve speeds, efficiency and utilisation of manufacturing assets, he says. A quality metrics programme can help monitor and adjust each step of the production process and enable companies to react quickly and link the data, suggests Zimmerman.

A key factor is process control and reliability with most efforts directed towards the technical aspects of production to achieve consistency and

repeatability. But the speed and scope of technology adoption is directly related to the 'maturity level' of a brewery's manufacturing systems, he believes.

A report by MESA International discovered that companies which integrated rigorous metrics through their production saw a greater utilisation of automation and better linked operations.

When choosing a metrics supplier Zimmerman says it must be able to integrate architecture and applications seamlessly with existing systems and apply minimum customisation of code and interfaces. This requires a comprehensive suite of products, including process and advanced control.

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Kosme upgrades drinks labelling

Britvic has turned to Kosme UK to enable it to upgrade labelling performance at its Huddersfield production facility which produces both the Pennine Spring and Drench brands.

The urgent upgrade was needed to cope with increased output targets and, Kosme was able to deliver the new machine in just 10 weeks.

The Top Hot Melt labeller was specially constructed to meet Britvic Works Standard specifications and make it easier to integrate into the existing production lines. It is able to process 28,000 bottles/hour and is equipped with a parallel infeed/outfeed configuration plus servo motorised

adjustment for all the labelling stations. This allows fully automated changeover from one bottle format to another.

Britvic project manager Max Collingwood said the labeller has helped meet the increased production targets, adding: "Due to the urgent need and high profile of the product line we had to be sure that the new machine could be delivered on time. Also the security of having an on-site engineer during the commissioning of the labeller gave us the peace-of-mind we needed during a vital upgrade."

www.kosme.co.uk

DRINK SHORTS

- **KHS** has designed a filling system, in collaboration with Lightweight Containers BV, to take advantage of the growing variety of large size beverage containers for the take home draught beer and cider market.

KeyKeg® is a non-refillable container using the bag-in-ball concept. KHS's combo-treatment filling head is capable of filling both conventional stainless steel kegs as well as the new disposable container at high speeds, it claims.

The new head can also be retrofitted onto existing lines.

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- **Krones AG** will fail to meet its overall targets for 2008 according to chief finance officer Hans-Juergen Thaus. The final quarter saw order intake drop in "double digits". Orders to September climbed 12.5 per cent to more than €1.7bn, but the final three months will be well below the €537m achieved last time, he predicted.

- **Consumption of Sports Drinks** is continuing to grow strongly, according to Zenith International. Growth in 2007 rose by almost 6 per cent to 11.5 billion litres and is expected to be above 12 billion in 2008.

America continues to dominate with 48 per cent by volume, but the most dramatic growth is in Eastern Europe and the Middle East, says the latest report.

Latest innovations include low calorie variants, dairy based products and those made from all natural products, such as coconut water - a natural isotonic.

www.zenithinternational.com