PPMA
Machinery UPDATE
Issue 1, Volume XIX. January/February 2008
The only 'machinery only' journal for processing and packaging

ROBOTICS

Mixed pallet loads are next

TUBE-FILLING

In-line approach gives higher speed

FLOW-WRAPPING

Opening up the reclosure options

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Machinery UPDATE

THE JOURNAL OF THE PPMA

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ISSN 0969-4145
A PPMA Publication. PPMA Ltd,
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Applications for free copies of *Machinery Update* are considered from specifiers, managers and purchasers of processing and packaging machinery in the UK. Annual subscription £35 (UK), £50 (Continental Europe), £65 (rest of world).

Typeset and printed by: Manor Creative,
7-8 Edison Road, Highfield Industrial Estate,
Hampden Park, Eastbourne BN23 6PT.
Tel: 01323 514400.

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CLASSIFIED

BUYERS' GUIDES

The media choice

Welcome to the first issue of *Machinery Update* for 2008.

Just prior to the Christmas break I was a guest at a reception given by a well known publishing house where the various topics discussed included the vexed question of whether electronic or e-journals would ever replace hard copy publications completely.

In fact, those taking part –and I include myself – demonstrated a curious form of schizophrenia when it came to choosing a clear position.

As business people we could all recognise the crucial role now played by the PC in the modern workplace, whether as a means of communication, a design tool or management of our company accounts.

Given that this is the case, it would not be unreasonable to assume that we would also embrace the emergence of electronic journals with similar enthusiasm and yet, strangely, this is not so. As we go into 2008, the market for hard copy publications is as strong as ever despite significant efforts by various electronic publishers to persuade us otherwise.

So why are we apparently so fickle? The main reason – and there are many others – I would suggest, is that as readers, we still desire the choice to consume information in a variety of environments at a time of our choosing, without being encumbered by the need for a PC or some other electronic display device.

Yes, we all use ever smaller lap-top computers, but few of us would claim that they were ideally suited to use on a crowded and cramped commuter train or that we are really prepared to wait for our virus checkers to take us through the seemingly endless boot-up routine just to catch-up on the day's news or read that snappy article on the newest electronic gadgets!

Even the latest software designed to make the appearance and manipulation of the 'e-mag' 'just like the real thing', still requires the all important computer or display electronics.

Another important reason is the durability of the hard copy publication – in both senses of the word. Dropping a magazine three feet onto a concrete floor is somewhat less expensive than doing the same with most economically viable electronic devices. Equally, hard copy publications are not subject to hardware failure, software 'glitches', or operator error.

Now, I am not suggesting that there is no future for e-journals - far from it. Indeed, 2008 will see the PPMA introduce a new range of e-based advertising products. Rather, I believe that until a new, cheap, highly durable and probably near-disposable display device is developed, there will be a market for both media to co-exist happily.

Even when such a device is developed, I suspect that its success will be based on the fact that it will emulate all of the characteristics of a hard copy publication and won't cost any more.

So, as readers, are we really schizophrenic? No, I don't think so. It is simply a fact of life that the hard copy publication is going to be here for many years and will continue to co-exist with the growing list of e-journals.

Like all of us, I look to the internet for sourcing and searching the world's vast reservoir of information, but I still want a well produced, visually interesting, hard copy magazine to read on the plane, on the train, and anywhere else I choose.

In the meantime, whether on-line or in hard copy , may I wish our readers a very successful and profitable New Year.

Chris Buxton

Chief Executive, PPMA

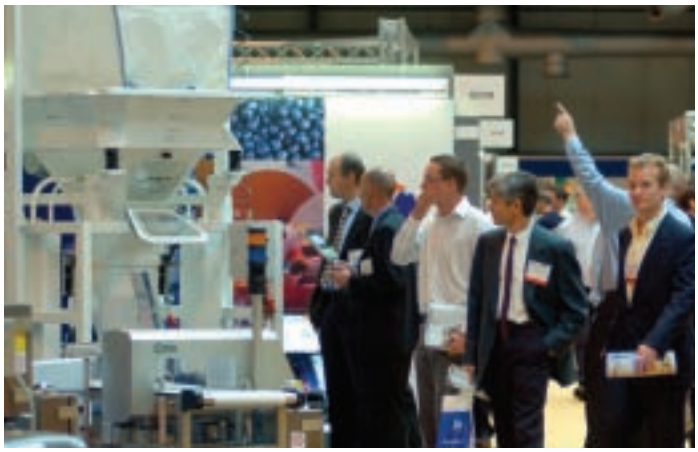
THE PPMA SHOW

PPMA Show to support Starpack Awards 2008

The PPMA Show, the UK's annual showcase for processing and packaging machinery, is to support Starpack 2008, where machinery companies will have the opportunity of competing for awards in the technical innovation categories.

Announcing the support, the PPMA Show organisers explained that the 2008 Starpack Awards had moved away from the traditional reliance on material sectors to create a more open approach to the awards categories, basing them on market-led categories to improve their relevance.

In addition, Starpack organiser IOP: The Packaging Society is launching the Starpack Summit, a major strategic business conference that will take place on the day of the Starpack Awards. The Starpack Summit builds on the success of the agenda-setting conference organised by IOP: The Packaging Society at the Total Processing & Packaging Exhibition 2007.



The PPMA Show: *Processing and packaging machinery on demonstration*

The inaugural Summit in May 2008, "The Packaging Dilemma – The Consumer Challenge", will concentrate on the role of packaging in society through the eyes of major brand owners and retailers, designers and packaging experts, and also environmental organisations and consumer groups.

"We are delighted to be supporting the Starpack Awards 2008, particularly given the many exciting new initiatives that are being introduced around the event," comments Liz Finlay, PPMA Show exhibition director.

"Starpack is about celebrating excellence but equally important, it is about relating this to the issues, trends and developments that affect and drive the industry as a whole. And this ideally complements the aims and objectives of the PPMA Show."

The PPMA Show 2008 takes place at the NEC Birmingham from 30 September - 2 October. Further details from www.ppmashow.co.uk

COMPANY NEWS

Coding firms combine to create largest in product ID

Coding and marking specialists Markem and Imaje are being combined into a single organisation, Markem.Imaje, which parent company Dover Corporation says is now the world's largest provider of product identification systems. Imaje has been owned by Dover since 1995 while Markem was acquired in 2006.

Herbert Industrial, the weigh-price labelling specialist, has bought Pals Precision Labelling, Oldham, which supplies labelling systems principally to the food, pharmaceuticals and drinks industries.

PFM Group, the Italian form-fill-seal, wrapping, and weighing machinery supplier, has established its own mechanical components manufacturing plant, PFMeccanica in Vicenza.

Charity belles: *Staff at Yamato Scale donned St Trinian's gear in December for a day of fund raising on behalf of Children in Need. Some £2100 was donated in sponsorship by customers, suppliers and staff, bringing the total raised over the past three years to more than £6000.*

PPMA PUBLISHING

PPMA names Mary Murphy as new editor for MU

Mary Murphy has been appointed editor of *Machinery Update* in succession to Michael Maddox who has left after 18 years to set up his own business.

Mary Murphy has worked in the packaging industry as a journalist, editor, publisher, PR and conference organiser for 20 years.

New editor for MU: *Mary Murphy*

She has extensive journalistic, marketing, commercial and business experience stemming from her roles as editor, managing editor and publisher of the Packaging Magazine Group (formerly *Packaging Week*) within CMP Information.

Mary Murphy formed her own company MAJIC in 2002 and now works as an independent publisher, PR consultant and conference organiser.

During her period at CMP Information she was responsible for introducing the Packaging Industry Awards, www.dotpackaging.com, the newsletters *Packaging Business*, *Packaging Innovation* and *Packaging Environment*, as well as a series of 500 page reports on The Global Drinks Market, Food Europe and the World Packaging Companies Report.

GUTTRIDGE

Mobile bin feeder improves powder handling at Premier

Premier Foods has installed a Guttridge bin feeder system to improve process efficiency in handling bags of powdered ingredients at its Knighton factory, where Bird's Custard and other principal dessert products are now produced.

Ten 25kg bags at a time are raised by a vacuum lifter onto the first part of the Guttridge system: a flat bed belt conveyor which takes the bags to a work station where operators slit them open and tip the powder into a sieve unit.

This can handle two 25kg bags a minute and prevents any foreign objects and oversize particles from passing through, while a dust hood over the tipping station protects the working environment.

The sieve-screened powder is then moved by screw elevator to a height of 2.7 metres and discharged into a tote bin. Once full, the bin is wheeled to the next stage in the process.

Guttridge points out that the equipment can be stripped down quickly and easily thanks to its quick-release clamps and slip-fit joints. It is then moved to a designated wet-cleaning area, while a replacement unit is quickly wheeled in to minimise changeover time.

Raising powders: *Guttridge system lifts ingredients to a height of 2.7 metres*

"Despite its length of 2.7 metres and heavy duty 150mm diameter construction, the inclined screw can be dismantled safely," explains Premier Foods' project manager Peter Appleton.

"This is possible because the screw feed system is hinged and can be safely lowered to floor level to avoid working at height."

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PACKAGING AUTOMATION

Seal strength key to leak-free MAP dome pack for poultry

Packaging Automation has helped develop a heat sealed dome-style pack for chicken, devised by Rovipack Packaging Solutions to provide a completely leak-free solution capable also of modified atmosphere packaging.

"Currently the pack is being presented to a leading retailer and has generated significant interest," says Packaging Automation.

Once the chicken is placed inside the cavity of the thermoformed and profiled dome, film is sealed across the dome using Packaging Automation equipment. The whole pack is then inverted so the poultry sits upright on the film, which forms the base of the pack.

Lidded dome: *Leak-free packaging for poultry*

Packaging Automation points out that key factors in the development process were the choice of film for the base and the strength of the seal, which has to support poultry weighing up to 2kg.

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STRAPEX

Pallet strapping automated for enhanced security

Discount retailer TK Maxx has automated pallet strapping at its Walsall distribution centre with a Strapex VSS.30 machine, installed as part of an automation project to handle returnable tote boxes – 800 x 600mm for apparel and 600 x 400mm for shoes.

These boxes are palletised into loads of either eight larger or 20 smaller boxes, with the new system automatically keeping heavier tote boxes towards the bottom of each load.

Security strapping: *TK Maxx has installed a Strapex machine*

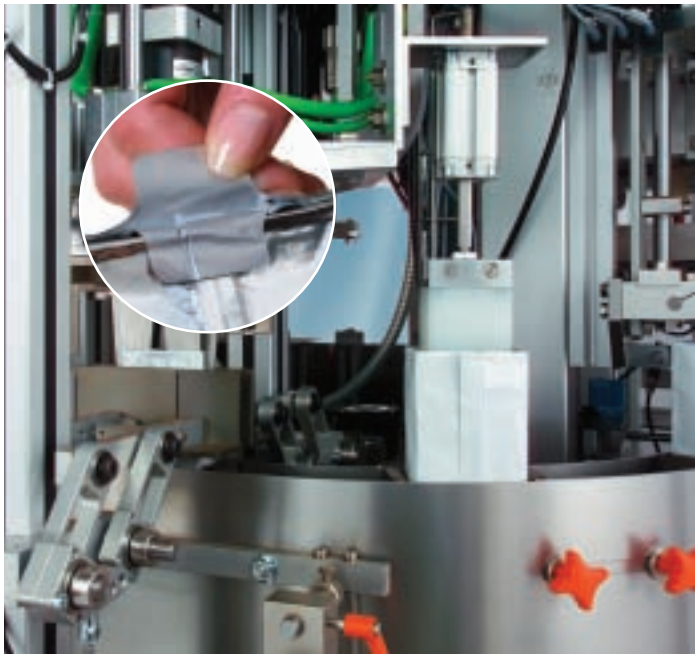
The pallets are conveyed to the Strapex unit which applies two lengths of 12mm polypropylene strap vertically around the loads, automatically tensioned to hold the boxes in place without damage to box or contents.

The system works seven days a week and can handle one pallet every minute at peak times.

Alan Porte, senior vice-president, distribution services, at TK Maxx, commented: "Manual preparation of the pallets was simply no longer an option as it was highly labour-intensive and was not able to offer the levels of safety and security we required.

"Losses from loads en route are now virtually nil."

T: 01922 742500
E: info@strapex.com



Choice of reclosure: *Bosch filler with (inset) easy peel-open system*

BOSCH PACKAGING SERVICES

Coffee bagger employs variety of reclosure systems

The installation of a Bosch vertical form-fill-seal machine by Austrian coffee packer Meinl shows how a wide variety of closure and size options can be efficiently handled by stations set on a 360deg conveyor around the bag forming section.

The Bosch PME 4261 bagging machine is used to handle three pack sizes with a number of different reclosure devices including adhesive tape, labels, clips and tin ties, as well as an easy-open peelable closure featuring tabs that can be readily gripped by the consumer.

As a result, says Bosch, the machine is particularly compact and saves a considerable amount of floor space. Packs can also be produced with fin seals at each corner to improve their appearance and rigidity.

Meinl has chosen two aroma protection systems. One is an evacuation system called Neutravac, which combines inert gas flushing with evacuating the package from the head, while the other is Neutrafill, in which the oxygen is purged using inert gas.

Aroma protection valves are attached to the packs by a Bosch CVA 2000 V45 valve applicator.

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KLIKLOK-WOODMAN INTERNATIONAL

Sleever handles four-packs of Heinz' new Snap Pots

Heinz' new Snap Pot pack style for baked beans and spaghetti hoops – a microwavable breakaway from traditional cans – is now being multipacked in a 2x 2 format on a Certiwrap C150 board sleever from Kliklok.

This wraparound machine has been customised to Heinz' mechanical and electrical specification and a barcode scanner added for packaging security. Speed is up to 150 sleeves a minute.

Kliklok says the C150 provides easy size-change and high visibility and accessibility for operators as a result of its open design.

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Robotics in packaging

Mixed pallet loads: the next frontier

ASSEMBLY OF MIXED PALLET LOADS FOR RETAIL DISTRIBUTION – HELPING RESHAPE THE SUPPLY CHAIN – IS FAST BECOMING THE NEXT AREA FOR ROBOTICS TO MAKE THEIR MARK IN PACKAGING.

Warehousing and distribution packaging – particularly the assembly of mixed pallet loads for delivery to retail outlets – is now turning increasingly to robotics, reflecting demand from retailers for custom pallet loads that suit the store, rather than the shipper.

"Robotic-based material handling in distribution systems is among the fastest growing applications in flexible automation, alongside packaging," says Frank-Peter Kirgis, segment manager for consumer industries at ABB Robotics.

"This is due to manufacturers and distributors responding to the demands of their retail customers – particularly large, influential ones – who require that products come to their facilities palletised in a structure that suits them. The configuration of each pallet is customised to meet their specific needs, a task that has been difficult to execute in the past."

In turn this means that mixed load pallets are emerging as one of the most efficient technologies currently available for the supply chain – and robots, maintains Mr Kirgis, are the only viable and flexible option for creating mixed load pallets.

In justifying the capital investment, the most obvious benefits associated with the installation of robots are those of displacing tasks that are monotonous or present strain risks to human labour, the overcoming of potential and existing labour shortages, better package quality, and improved working conditions.

However, as Mr Kirgis explains, less obvious are the savings linked to a reduced head count such as a reduction in cafeteria facilities, staff recruitment and training costs, tax and health contributions and even the number of parking spaces required. In many cases a work area reduction alone offers cost savings in real estate.

Placing boxes, trays, bags, bottles or other items on a pallet seems a straightforward task. But the demands of mixed-load palletising are much more complex.

For example, in Canada ABB Robotics has worked with Axium Industrial Automation which specialises in complex robotic palletising/depalletising solutions for warehouses and has developed a system for mixed-load palletising. This involves the use of the Cube-IQ load planning programme from MagicLogic Optimisation in the USA.

Creating mixed pallet loads: *ABB Robotics in Canada is developing the concept*

It has a complete graphical user interface, with point-and-click and drag-and-drop facilities to build up the pallet load, and with on screen and printed graphics.

Marc Ducharme of Axium explains: "The concept of Cube-IQ is very simple, but the software is very powerful. It uses the same concept as configuring lorry combinations, but just builds pallets. We have demonstrated this with potential customers using their real-life scenarios, and results have shown that the cost savings can be substantial, especially when order errors, inaccurate shipment, improper stock rotation and double deliveries are eliminated."

The fast handling speeds are due, in part, to the fact that today's generation of robots have high speed, low inertia motors and fast processors within the controllers. PC-based controller solutions, with their open architecture, have really made their mark.

Some applications use machine vision systems and image processing and, for more reliable operation, this can be directly integrated into the software and motion controller of the robot.

Frank-Peter Kirgis at ABB Robotics points out that users are now able to control robots via user-friendly programming interfaces.

"These have been simplified so that engineers familiar with programmable logic controllers are also able to program robots. The user interface for every robot is an intuitive screen. The user can easily implement parameter changes during operation, which significantly increases the quality and efficiency of the system. Simple machine programming can also be used for new

product shapes and sizes as well as the possibility of viewing production statistics."

Meanwhile, one of Norway's principal meat processors, Gilde, is using a Kuka KR 180PA robot to handle a daily 10 tonnes of the fastest moving lines at its plant in Tonsberg, placing crates of various meat products on the correct conveyor for despatch.

The nature of the goods varies according to the season, with packed mince, steaks and sausages, for example, the most popular in the summer barbeque season while goose liver and similar more highly processed goods are in greater favour at Christmas.

Unmixed product

"In order to be able to order-pick these large quantities of goods as quickly as possible, we need the robot. It works 24 hours a day, seven days a week," explains Jon Brekke, project manager for the order-picking robot installed at Gilde.

The system operates from pallets of crates – each containing large quantities of unmixed product – delivered by fork truck. Customer orders and the products to pick are downloaded from the warehouse's central computer to the robot, which then checks for itself whether it is holding the correct product by presenting the crate's bar code to a scanner.

A new bar code is then applied to the crate, identifying the customer and destination. The robot then sets it down on a conveyor which transfers it to the next storeroom where it is scanned again and transferred to the loading ramp of the appropriate lorry.

"The most challenging task in the implementation of the system was unquestionably designing the gripper in such a way that it recognizes and can grip the plastic boxes in all their different positions," explains Frode Grimsbo, service engineer at Kuka.

For this reason, the gripper was fitted with an ultrasound sensor system for checking distances. This allows the robot to be guided at the fastest possible speed to the first pick position. Once it has reached the crate, the clamping gripper initially remains loosely closed until it has found the ideal gripping position. Only then does it tighten its hold.

Once a pallet has been emptied, the clamping elements on the gripper are raised and the pallet is moved aside by vacuum grippers.

Although robots are often seen as simply cost-cutting installations, greater flexibility is just one of the additional benefits, as David Bradford, managing director of RTS Flexible Systems points out.

"Clearly every project needs to have a robust justification for return on investment, but more and more we are seeing people who are experiencing additional benefits and unexpected returns. These are the areas that will drive automation forward in the future.

"What drives them? In our experience, they tend to have an entrepreneurial vision of the impact of robotics on their business and we encourage them to take a holistic view of their processes.

"Successful automators ask the question: 'What else can we achieve with automation?' They think outside the box, rather than looking at automation as a bolt-on or straightforward replacement for labour."

Increasingly, he adds, packaging operations are using robotic technology to achieve greater complexity and flexibility in production processes. High-speed pick and place robots with throughputs of up to 120 picks a minute, advanced vision-guided technology, line-balancing software and innovative robotic gripper designs all make a contribution.

However, more than the technology, it is the ways in which robotics can be used which is really yielding rewards. Robots are turning out to be able to improve the flexibility of production, and even have an influence on product quality.

For example, RTS Flexible Systems developed a solution to pack multiple product variants into mixed trays. Originally developed for a chocolate biscuit manufacturer, the system has wide applications for confectionery, dairy or bakery products.

Adapt to changes

Replacing a complex and repetitive manual operation, the system is able to adapt quickly to cope with changes in pack configuration due to the introduction of new flavours or 'limited edition' offers. Typically the application achieves under two years' investment return, but there are other advantages, says RTS. The system significantly increases throughput and improves quality control, and there are benefits for hygiene and personnel health too, because of the reduction in human intervention.

A robotic system can now pick up products as delicate as poppadums. What's more it can pick up four in succession and put them down together at 100 picks a minute, 24 hours per day, seven days per week with a very low breakage rate. RTS says it has proved this can be done reliably and repeatably – and pay for itself in two years by significantly reducing labour costs.

The RTS system is able to collect four poppadums one by one from a conveyor and place them for packaging in the vacuum forming machine. It is also capable of handling multiple product variants for variety packs while the vision system instructs the robot to avoid any that are damaged or overlapped with another.

Indeed, an installation by RTS Flexible Systems at the Ilchester Cheese Co demonstrates how the justification for robotics can stretch beyond simply reducing manual labour costs.

RTS installed its Pixcell pick-and-place unit on one of the company's cheese portioning lines. While the primary reason for investing in the unit was to save labour costs on a line manned by two operators, Ilchester Cheese also wanted to reduce costly product giveaway that arises as a result of portioning.

Slipping through the net

Prior to installing the Pixcell pick-and-place unit, line operators were expected to identify overweight cheese portions. However, as it was difficult to differentiate between the thicknesses of 20g portions at production speeds, oversized portions were slipping through the net.

Now, individual cheese portions are conveyed to the picking unit, where a sensor measures the height of each portion. The information is communicated electronically to the Pixcell controller, which estimates the weight of the portion and combines it with information about the product's position, determined by a vision system. Products within the manufacturer's height and weight parameters are picked and placed into a vacuum-forming machine, while over and underweight portions are let through the Pixcell unpicked, and collected for recycling. The line operates at speeds up to 150 portions a minute.

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Order assembly: *Kuka robot at Norwegian meat processor Gilde directs containers to lorry loading bays*

Reducing giveaway: *RTS system at Ilchester Cheese measures portions as they are picked*

PARTNERS IN PACKAGING

Case packer top loads yoghurt for Russia

German manufacturer Dienst-Vepatec has supplied a top load case-packing system to handle pots of children's yoghurts and baby food for distribution throughout the Russian market.

Built to a full washdown dairy industry specification the line consists of a stainless steel Dienst ZAMS servo-controlled case erector, a Unigrabber 2 robot to pick and load the preformed 3 x 4 collation of pots at speeds up to 16 a minute and a stainless steel Vepatec DSV 200 case closer, operating with adhesive.

Partners in Packaging says that significant savings in packaging material are being achieved using a top-load style case which is erected from a blank using the ZAMS servo erector, together with increased speeds and labour savings from the integration of the Unigrabber robotic collating and loading station.

The Unigrabber 2 twin axis robot is part of a family of newly developed robots available with either Elau Packdrive or Allen Bradley servo drives.

"With its parallel kinematics, the Unigrabber 2 is clean, fast, silent and maintenance free," says Duncan Macintyre at UK representative Partners in Packaging. "Specifically designed to perform light to medium weight pick-and-place tasks, the versatile control system makes it the ideal starting point for top loading projects.

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IMA UK

Palletiser can be integrated with case packer

Four or six axis Fanuc robots are employed in the compact Flex Palletiser developed by IMA, which is able to take cases through ink jet printing, labelling or weighing operations before placing them on the pallet.

The machine can be equipped with a large capacity empty pallet magazine and, as a result of its modular design, the pallet handling section can be customised to suit any particular needs of the user.

The Flex Palletiser can also be integrated

Mascara line: *Robotics pick and orientate components on Kugler's machine*

Pick and place: *Herbert Matrix 80i cell*

with the IMA CP28 automatic case-packing machine to provide a compact monobloc machine able to load and palletise up to ten cases a minute

For lower throughput, up to five cases a minute, IMA's CP18 case-packer is combined with the Miniflex palletiser.

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OPTIMA PACKAGING MACHINERY

Mascara line requires just one operator

A filling and capping line to handle lip gloss and mascara, using robots to orientate and feed containers, wands, brushes and caps into pucks for handling at the filler-capper has been built for a European cosmetics manufacturer by Optima group company Kugler.

It runs at 60 products a minute and needs just one operator, who also loads containers and closures.

The machine will eventually produce ten different formats of product, with regular changeovers during the day which, points out Kugler, was far too complex an operation to be trusted entirely to manual work.

Instead, all containers and components are delivered to the robot which sits between the filling and capping machine. The two-arm machine takes the bottles from the tray and places them in the pucks of the first conveyor loop. In parallel, the second picker of the robot takes up the wands, brushes or caps and places them in the pucks of the second conveyor loop.

During picking from polystyrene trays the robot, which is equipped with a vision system, rotates the bottles to the correct orientation. Any identified by the vision system as faulty are left on the trays.

At the filling station, the mascara or lip gloss bottles are filled with product followed by insertion of a wiper. Next, the capper places and closes the wands, brushes or caps. Finished products then progress to the secondary packaging process.

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SCHUBERT UK

Tray loading line eliminates double handling

Ginsters the Cornish pasty manufacturer has installed a fully automatic display tray loading system from Schubert, replacing a manual operation in which double handling of the product sapped efficiency. A second line is now on order for the company's Callington factory.

The system was purpose designed by IPS, Schubert's specialist automated packaging division, to pack a wide variety of Ginsters' chilled savoury products including Cornish pasties, bakes, slices and sausage rolls, at speeds up to 400 a minute.

Empty display trays are loaded onto a conveyor by a Schubert TLM-F2 robot which removes them from a storage station with a special rotating tool. Simultaneously, products are fed into the system from an upstream machine and scanned to check for correct shape and surface decoration. Any faulty goods are rejected at the end of the product conveyor.

A Schubert TLM-F44 robot equipped with a vacuum gripper tool picks and places products into the display trays, which are then conveyed to the next packing stage.

Ginsters' production director Ray Hanly says the business has not only been able to improve efficiency, but has also eliminated the costly double handling made necessary by manual packing.

One of the hidden benefits of the new line, he adds, is that automation "insists on process excellence".

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HERBERT INDUSTRIAL

Case packer gives flexibility on food

Herbert Industrial says its latest Matrix 80i pick and place cell is designed for food industry case packing operations where system flexibility is a key criteria. The system incorporates a Fanuc M6i robot, which is capable of picking and placing up to 80 packs a minute.

Juice merchandising: *Kuka robot at Arla Foods in Sweden handles brik and gable top cartons*

Variable position marshalling and low friction conveyors enable the cell to be programmed to collate different sized packs prior to picking by the robot. Zoned picking hands use vacuum cups, enabling partial drops which, when combined with the Fanuc's rotational axes, are said to create particularly flexible pick-and-place operations.

The cell can be controlled via Herbert's Gemini Lightening weigh labeller or, for standalone systems, through the robot's interface.

T: 01440 711439

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TMG Marchesini

Vision system helps feed at 100 a minute

Robotic systems from pharmaceutical and cosmetics packaging machinery specialist Marchesini include the Robovision, a four-axis machine with carbon limbs and an integrated vision system.

Developed to pick up loose items arriving on a conveyor belt and feed them to a continuous motion cartoner, the machine can perform 90-100 pick-ups a minute, using the vision system to recognise and adjust product orientation for loading the cartoner buckets.

Marchesini also builds the Robocombi, which is available in various formats to transfer items such as blister packs, tubes and flow-wraps from an infeed belt to the buckets of a continuous motion cartoner. Models are available to handle products singly, or in multiples and to adjust orientation.

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Kuka Automation + Robotics

Palletising line handles cartons of juice

A palletising system that allows 2-litre Tetra Pak cartons and 1 litre gable-top Elopak containers of juice to be palletised as merchandising units, at speeds up to 5000 an hour, using a polystyrene tray between each layer and stretchwrap to secure the load, has been devised by Kuka for Arla Foods in Sweden.

Cartons are conveyed directly from the filling line to a collation point where a complete layer of 48 x 2 litre or 80 x 1 litre containers is assembled, and the content and position of each individual carton checked using a bar code.

The layer is picked up by a Kuka KR 360 robot with a clamping gripper and set down on a half Europallet delivered from a magazine. The robot then picks and places a polystyrene tray – which is specially shaped to provide support when gable-top cartons are loaded – on top of the layer.

Stretchwrapping and labelling then follows and the pallet is transferred to a turning device. This allows the pallet to be rotated either left or right so that when two are finally placed on a

full size Europallet, their labels face outwards on opposite sides.

"The robot works round the clock in three-shift operation," explains Thore Bengtsson, product co-ordination manager at Arla Foods. "We need less than one person to operate the entire system, which means that the operator also has time to carry out further tasks."

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AEW Delford Systems

Batching for fixed weight packs

The new AEW Delford IPL Batcher automatically loads pre-formed trays or thermoformers with individual product portions to produce fixed weight packs of products, reducing labour costs considerably and raising hygiene.

More than one nominal pack weight in different tray sizes can be produced at the same time depending on production needs and incoming product size.

The IPL (Intelligent Portion Loading) Batcher weighs incoming portions and decides which tray or pack to load. A vision system determines product position and orientation, then, at the appropriate point, the relevant robot head makes the transfer into the final pack in the required style and orientation.

A wide variety of products can be handled, says AEW Delford, thanks to the range of grippers available.

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E: norwich@aewdelford.com

AMJ Maters

Linear drive robot aimed at food industry

The four-axis T-robot now available from AMJ Maters has been developed by Dutch specialist Roboxis specifically for the food industry.

Built in stainless steel and sealed for hose-down, the machine employs servo controlled linear drives said to provide high speed – up to 120 cycles a minute – and high accuracy over a large working area.

The design of the machine is such that different size working areas can be readily accommodated while the integrated vision system can also be optionally equipped to perform a quality control check on product prior to picking.

Linear drive: *Roboxis T-robot uses linear drive and is aimed at the food industry*

The linear drive also means that extra vertical movement, to load deep cases, is also easily achieved. In addition, deep cases can be loaded in layers of product dependent patterns, all being set up or changed rapidly via the touch screen control.

Equally, the T-robot can be employed to orientate and load products onto belts or lugs for feeding a packaging machine. Single or multiple products – naked or packed – can be handled by a variety of gripper systems, including both vacuum and mechanical devices.

Recent installations include loading frozen pastry, frozen sausage rolls, tomatoes and bags of bread rolls.

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Bosch packaging Services

Quick change grippers load 18 types of biscuit

Sigpack Systems has provided Swiss baker Midor – part of the Migros retail group – with a robotic tray-packing line capable of handling 18 different products, many of them quite fragile and difficult to handle, at speeds in excess of 800 biscuits a minute.

The line employs eight XR31 Delta robots on which three diffferent picking tools can be fixed to suit the characteristics of the product – vacuum suction cups, the Sigpack Airflow tool for crumbly items, and the Sigpack Finger gripper.

Sigpack explains that the flexible vacuum suction cup is crucial for packing Midor's Edelweiss' wafer thin biscuits since, if one of the 32 biscuits in each tray is damaged, it can make the pack unsealable.

To handle Midor's Linzer biscuits, which are covered with jam that is still liquid immediately after baking, the Airflow tool is used, avoiding damage caused by suction from vacuum cups or constant cleaning of gripper systems.

Instead, explains Sigpack, the Airflow tool uses the same principle of pressure differential that gives aircraft wings lift, using variable air speeds to create lift that carries the product without contact.

Several fragile products can be picked individually or, to increase picking performance, a stack of several biscuits can be held within the gripper.

The third tool used on the Midor line – to handle icing sugar coated products – is the Finger gripper. This uses small rubber fingers mounted on a membrane which, depending on the internal pressure applied, arches inward or outward, causing the fingers to open or close accordingly.

At the same time the design allows the force of the grip to be distributed evenly across the product.

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HANSEL UK

Vision control suits tray and case-packing

Italian packaging machinery group OPM, represented by Hansel UK, has developed a new generation of modular frame-mounted heavy duty robots with vision-controlled robotic arms. One recent installation is a line for loading plastic trays or display cases, lidding and palletising.

The system receives product in vacuum formed trays from eight independent lanes and merges them into two lanes where the trays are first scanned by a vision system. Acceptable product is then picked individually by the robots and placed into either a display case or a plastic tray. The display cases are held on a special servo-driven step chain that tilts the case to receive the product standing upright, while the plastic trays are loaded flat.

Plastic trays are then sent directly to the palletiser, while display cases are delivered to a robotic lidding module, which forms the lids from flat blanks and folds and glues them around the open top cases.

The system has a capacity of 12 to 37 display cases a minute and six plastic trays a minute. It can accommodate tray sizes of 144 x 232mm up to 400 x 600mm and changeovers are said to take just a few minutes.

The OPM Samas palletiser has a single infeed lane, single pallet station and single pick-up tool. The unit incorporates paper interlayer positioning as well as de-nesting and feeding of empty pallets, with height detection of each pallet load.

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SPRINGVALE EQUIPMENT

Automatic line provides safe enzyme filling

German liquid filling specialist Feige – represented in the UK by Springvale Equipment – has opted for robots in its latest drum filling system, an automatic line developed for a Danish manufacturer to handle enzymes within an isolated filling cabin that protects operators from the products and their vapours.

Five products are filled by two Feige type 91 RobotFiller systems, which employ ABB IRB660 four-axis industrial robots as the central component. Fully automated product changes, which include cleaning the exchangeable filling valves, can be carried out via a portable touch screen control that avoids any need for operator intervention in the filling cabin.

Drums enter the filling cabin on pallets via airlocks. The IRB660 robot traverses the calculated co-ordinates and calculates the positions of the bungholes. It then establishes the height of the pallet and picks up the filling valve to fill the containers one after another.

Once all drums on the pallet are filled, the robot exchanges the filling valve for a bung screwing unit, closes the drums and adds metal sealing caps as a sign of authenticity.

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For full details of all PPMA members able to supply robots for packaging, consult the PPMA machinery finder service, tel: 020 8773 8111, or visit www.ppma.co.uk

Flow-wrapping looks to the Reclosure options

TECHNIQUES FOR INCLUDING RECLOSABLE FEATURES IN PACKS PRODUCED ON HORIZONTAL FORM-FILL-SEAL MACHINES ARE NOW BECOMING MORE COMMON, SOME 20 YEARS AFTER THE CONCEPT WAS FIRST INTRODUCED ON VERTICAL MACHINES.

When it comes to incorporating reclosable features, horizontal flow-wrapping has traditionally had to play catch-up with vertical bagging. Now, many technologies – such as zippers and Amcor's EasyPack – are available in both horizontal and vertical formats. And increasingly, additional reclose options are being developed which are only suitable for use on flow-wrapping machinery.

Despite the tendency for many in the industry to talk about "resealable" rather than "reclosable" packs, few systems, if any, genuinely recreate the quality of the original seal.

But for the best quality closure, and therefore the optimum product protection, zipper systems have established a significant presence over recent years, particularly in the food industry. Overall pack and machine developments have been helped by improvements – and a broadening range – in the zipper profiles themselves.

Sigpack Systems, part of the Bosch Group, underlines the rapid quality improvements since the company first integrated a zipper into one of its flow-wrapping lines for the North American market some seven years ago.

According to materials specialist Norbert Hoechst, Sigpack has tended to work with Zip-Pak profiles. These are among the softest and most flexible profiles on the market, and so easier to run through a machine, he says.

Typically combining either nylon or polyester and polyethylene, they are most commonly used on cheese-wrapping applications. This seems to be one of the key categories internationally where consumers appreciate the benefits of reclosability.

Mr Hoechst goes on: "We run the zipper in down the long seal. We have projected how this could be done across the web and could offer this, but it would be an inefficient way of applying reclosability."

Product manager for flow-wrapping Urs Schweizer adds: "Application length-wise can be carried out as a continuous motion operation, while application across the web would be intermittent motion. That's an important distinction when you're operating to high production targets." The installation cost of the equipment would be higher, he predicts, for a less efficient line.

Short edge zipper: *Fuji has introduced an applicator for its latest Alpha 6 machines*

Speeds up to 200 a minute

For example, the zippers on packs of Dairy Crest Cathedral City cheese are applied on a Sigpack HSF machine running at speeds up to 200ppm, applying a three-side seal, including a fin-seal. This is the speed that the same machine would achieve without a zipper, says Mr Schweizer.

Mr Hoechst emphasises that in this type of application Sigpack machines do not seal through or across the zipper. "We cut the zipper so it is shorter than the pack, and we seal around it. This makes the handling more complex, but the final quality is better."

However, a cross-web zipper applicator that allows flow-wraps to be produced with the zipper across the short edge of the bag, rather than the long edge as usual, has been announced by Paramount Packaging, which represents Japanese flow-wrapper manufacturer Fuji.

Reduce zipper cost

Available for certain models in Fuji's latest Alpha 6 range of machines, the new applicator is said to reduce the zipper material cost for a whole variety of goods that can only be packed horizontally, usually in trays – such as cakes and some meat and dairy products – and require a reclosable bag for additional larder life.

In addition, Paramount points out the system also keeps the nylon zipper material completely within the bag, avoiding excess material in the transverse seal area and any consequent risk of poor seal quality.

"The hardness of nylon zipper profile and its thickness makes it a difficult material to include reliably in a transverse seal, and packs may be liable to leakage," points out John Roberts at Paramount Packaging.

Instead, the Fuji applicator system takes zipper material from a reel, cuts it to a length just slightly less than pack width, and tack welds the profile at 90 deg to the centre of the film web, immediately after the unwind.

This puts the zipper across the width of the pack once the goods are loaded and the web formed and sealed longitudinally. As the transverse seal is made, the zipper profiles are simply sealed to the inner faces of the bag, just below the permanent seal.

Barry-Wehmiller company Hayssen Europe has owned Sandiacre in the UK for over a year now. When it comes to flow-wrapping, the newly-created HayssenSandiacre business

brings together the US manufacturer's RT range and the Rose Forgrove range previously acquired by Sandiacre. And when it comes to zipper systems, it has its own views about how best to guarantee quality.

HayssenSandiacre new machinery sales manager Shaun Toms was formerly with Zip-Pak and has a firm grasp of current – and future – applications of zipper technology. He agrees that a profile can be fed in and sealed across the web, but adds that this has never been done on an RT machine. In any case, he says, the long side seal in the C-fold pack formed on the Hayssen machines actually becomes the 'top' of the pack.

Like Sigpack, Mr Toms has his doubts about cross-web zipper application. In the cross-web module offered by Zip-Pak, he says, the operation is made more complex by the fact that the profile is first tacked in place at both ends and only subsequently sealed to the base web by the jaws. On a single-die sealing head, dwell-time would be very limited, he says, while on a rotary multi-die system a customer would be unlikely to want to mount special dies on each face of the assembly.

Running continuously

But unlike Sigpack, HayssenSandiacre's RT machine runs the zipper continuously through the length of the pack and seals through it rather than around it. "It's less problematic because there is less chance of it going out of register, and it's also easier to set up," Mr Toms argues. He goes on to explain that consumers are more likely to have trouble marrying the two sides of a zipper applied intermittently, since there will be a slight gap at each end.

When it comes to this type of reclose technology, HayssenSandiacre has seen rapid improvements in the last few years, not only in machine reliability, but also in materials performance.

"The zipper itself can be specified with different sealant layers which require shorter dwell times, and the substrate can incorporate metallocene-based films for a better or faster seal," Mr Toms reports. Softer polymer blends in the zipper can also make them easier to seal through.

The use of 'floating' sealing heads will usually provide better results, he adds. This way, they find their own position and more readily even out pressure along the seal.

HayssenSandiacre has RT machines incorporating a zipper running at speeds up to 200 packs a minute on small items. On average sized packs of cheese, speeds would be up to around 160 a minute, although this depends more on peripheral operations such as product cutting, says the company.

PFM picks up HayssenSandiacre's distinction between single-jaw and multi-jaw machines. Its BG2800 machines equipped with multi-die sealing have sufficient dwell time to seal through the zipper, which is applied in a continuous format, says sales and operations director Chris Bolton. This is not the case with a single-jaw machine.

Shorter than the bag

Zippers can be applied intermittently, cut shorter than the length of the bag, with the seals then applied around them, says PFM. There may be aesthetic reasons why a customer would prefer to seal around rather than through the zipper. And Mr Bolton argues: "A continuous zip can create more creases, which in turn can create greater potential for leakers." But current technology means that intermittent application of the zip will result in machine speed reductions of between 5 and 10 per cent.

Mr Bolton explains: "We are running tests on a 400g cheese portion which we can wrap with a continuous zipper at speeds of 150 a minute in workshop conditions. We are trying to see if we can raise intermittent application to the same speed."

PFM does offer one example of cross-web zipper application. Incorporated into its Mistral machine, it is aimed at bigger products such as breads and ethnic breads. Speeds are lower than on standard, smaller-unit zipper application, reaching 60 or 80 packs a minute, says the company.

Slider, rather than press-to-close zippers may have been around for several years, without making a breakthrough in in-line application, but Shaun Toms at HayssenSandiacre believes their time will come. "I'm pretty convinced this is the way forward," he says, while admitting that application is more complex.

Improve performance

The zipper profile itself is bulkier, and the sliders have to be fed in, typically from a bowl feeder, at regular intervals and applied on-line. So speeds are currently lower than for standard zipper application, but machinery and materials suppliers are working to improve performance.

Mr Toms says: "In the UK, you can see slider packs on some petfood products, but these are generally on pre-made bags. To do this more economically, you need to do it in-line. There are people in the US doing this, and there was an early system used in France on cheese. Once one person goes for it here, the others will follow."

Slider bags: *Zip-Pak bags from Hayssen equipment*

Adhesive-based systems are the other commonly-used method of providing reclosability. Amcor's EasyPack technology combines easy opening along a flap with a peelable tape higher inside the same flap. This tape reveals an adhesive strip for reclosing the pack. Amcor acquired the system from Danisco, and holds

Italian range caters for 1000 plus packs a minute

A range of servo-controlled flow-wrappers and product handling systems – built on a balcony basis – to cater for speeds up to 1000 items a minute is now available from Hansel UK, representative of the Italian manufacturer OPM.

Principal machines in the OPM-Jointech range are the J-200 capable of speeds up to 300 packs a minute, the J-350 capable of up to 500 a minute and the J-600 for speeds in excess of 1000 a minute. These can be coupled to OPM up-stream product handling, buffer storage and distribution, to downstream multi-pack collation and secondary wrapping.

Rotary long dwell or box motion sealing jaw arrangements are available depending on the wrapping material and speeds required.

Reclose for cheese: *Zipper packs for Cathedral City brand run at 200 a minute on a Sigpack HSF machine*

the patent on wrapping materials.

Although better-known in the UK as a vertical system, EasyPack was originally applied on flow-wrapping lines, as Chris Bolton at PFM points out. In mainland Europe, horizontal systems include those at Lactalis, France (Président cheeses). Speed is a limitation, says PFM, which puts output on typical cheese packs at up to 100 a minute. The same BG2800 machine which can apply zippers inline can be used to run EasyPack.

For Sigpack Systems, reclosability and easy-opening are two aspects of convenience which cannot really be talked about in isolation. From its perspective, this means that an existing easy-open system such as its Pull Pack technology also becomes an opportunity for incorporating a reclose facility.

Adding a fold

Pull Pack operates as an additional module on the flow-wrapping machine, perforating the tubular wrapping film, and then adding a fold to protect that perforation. On a typical coldseal line, says Sigpack, this can operate at speeds up to 80 metres a minute. Pull Pack is seen as being especially suitable for potentially messy products such as chocolate and ice cream.

Clearly, with portion packs of this sort, reclosability is not a priority. But Sigpack's Norbert Hoecshst explains: "It can be used with multiple items such as feminine hygiene products or dishwasher detergent tablets. In this case, there is no reason why more than one coldseal adhesive couldn't be applied with differing grades of tackiness."

Sigpack stresses that, for now, this reclose option on Pull Pack is only a theoretical capability, but one that could probably be offered at the same line speeds as standard Pull Pack.

Peel-seal adhesive

The use of 'peel-seal' adhesives is becoming common in some sectors. At least one major European confectionery brand is now using advertising to highlight this fairly simple type of reclose option on 100g and 300g chocolate tablets. The adhesive applied to the long and short seals allows them to be stuck down again when only a part of the tablet has been consumed. The same system is being run by the same multinational brand-owner in both Central Europe and Scandinavia on Sigpack machines, says the equipment company.

Of course, several of the simplest approaches to reclosability use a straightforward pressure-sensitive label. PFM has its own patented system, Pocket Bag, which runs on the company's

OPM-Jointech range: *The J-200, capable of 300 packs a minute is one of the models now available in the UK*

Recent installations of OPM-Jointech units include a J-350 biscuit-on-edge system to wrap small slugs of mini-biscuits at 300 a minute.

The machine employs a twin track, flight bar infeed to convey the slugs of biscuits to a servo driven, twin head transfer station that positions biscuits between the flights of the wrapper's infeed.

The transfer is driven by two separate servos allowing the transfer to move sideways at the same speed as the infeed flights, while pushing the slug between them, minimising product damage and allowing elevated speed.

During the wrapping process the biscuits are supported through the wrapping material by flighted side belts, to prevent them toppling over. Further systems to maintain product stability include flexible, flightless side support belts or flighted side chains passing through the jaws.

Another version of this machine is being used to flow wrap sliced loaves of bread, rather than using traditional pre-made bags.

OPM has also recently supplied a three leg high speed wrapping system based on J-600 machines for wrapping chocolate pralines. These are wrapped individually at 1000 pieces a minute or in twos and threes on a U-card at 500 pieces a minute.

The card is fed automatically from a reel, cut to length, placed under the product as it passes down the infeed of the wrapper and the sides folded up just prior to wrapping.

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Scirocco flow-wrapper and combines use of standard peelable laminate along the long seal with envelope-style reclosure via a label.

"It's a cheaper method than many others, but it still provides a point of difference," says Chris Bolton. "And when you're not tied to a specific film supplier, that usually means the cost of the material is going to be lower."

The options for retro-fitting reclosability are usually quite limited, but PFM says that its relatively simple Peel-o-Bag system is popular in some cheese markets – especially in Ireland. End users simply have to change the jaws on their standard single-jaw flow-wrapper and then apply the reclose label.

Sigpack Systems offers similar label-based retrofit options. As the company's Urs Schweizer explains, such labels can either be pre-applied to the film or applied in-line with the flow-wrapper.

The thicker, typically opaque laminates used to flow-wrap baby wipes and other wet wipes and tissues are frequently combined with an aperture in the top of the film and either a reclosable label or a hinged rigid plastic lid. PFM supplies this market with its Mistral and Scirocco machines, cutting the hole and applying either the label or lid in-line.

On packs of 80 wipes, says Mr Bolton, these machines would typically wrap at speeds of 100 packs a minute.

HayssenSandiacre claims to have developed a variant on its zipper system which could potentially replace many of these dispensing and reclose systems for wipes and tissues. Shown at Chicago's PMMI Show in 2006, the machine runs a zipper into the fin seal down the back of the flow-wrap.

As Shaun Toms explains, attempts to do the same thing using a side-seal have come to nothing in the past, since compacted, moist towels cannot easily be pulled apart in that direction. "But the plastic lids currently used must be expensive and relatively slow to apply," he speculates. "A zipper down the mid seal must be more cost-effective."

Whatever the application, there will clearly be some customers that will continue to look for lower-cost adhesive-based and label systems. As film suppliers find enterprising routes to bypass competitors' patents, cheaper alternatives to proprietary systems will also be found. But the sustained effort put into zipper technology by both profile suppliers and machinery designers means that these systems will almost certainly take a larger slice of the reclosable flow-wrap market in the future. ■

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For full details of all PPMA members able to supply flow-wrapping machinery, consult the PPMA machinery finder service, tel: 020 8773 8111, or visit www.ppma.co.uk

Packing in the field: *Belca compact BF50 machine*

XACT PACKAGING

Compact unit is aimed at vegetables

The Spanish built Belca BF50 flow-wrapper introduced in the UK by Xact Prepack is a compact machine originally designed specifically for packing vegetables in the field, on trailers and rigs, so contributing to increased shelf life.

Measuring just 1860mm long, the basic model can produce packs from 30 to 420mm long and up to 150mm wide at speeds up to 65 a minute. Trays of lettuce have been a particularly popular application says Xact.

The BF50 is available with a range of sealing bar widths, a multiple sealing bar option, and a number of different feed systems to suit different applications.

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In-line approach means Raising the limit on tube filler performance

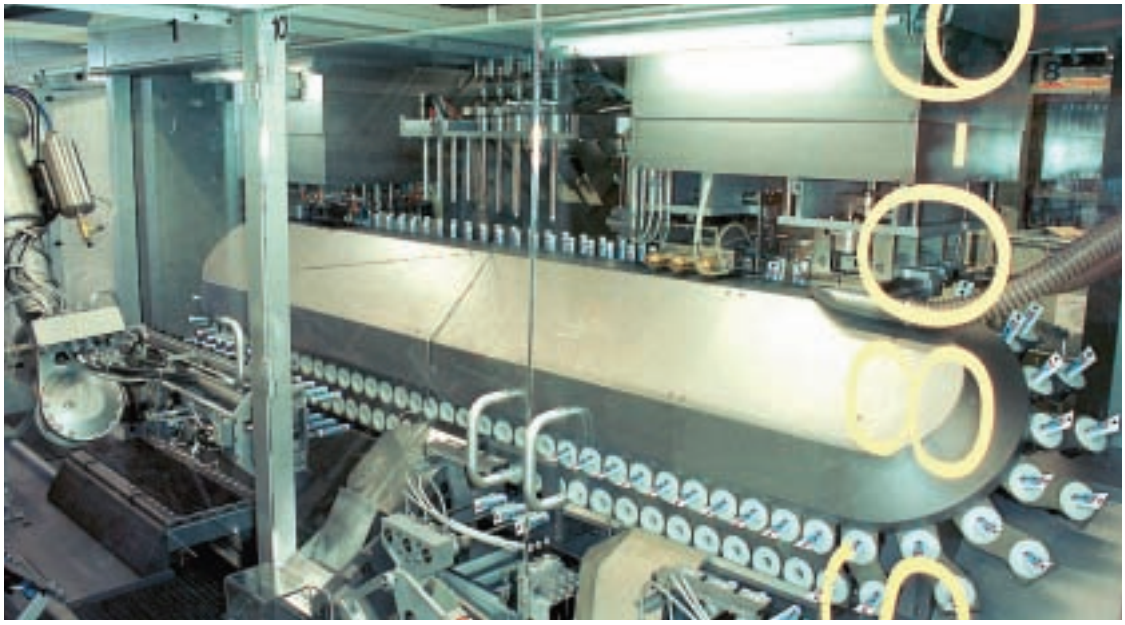
MOVING AWAY FROM THE RESTRICTIONS OF AN INDEXING TURNTABLE HAS SEEN TUBE FILLER SPEEDS INCREASE DRAMATICALLY FOR HIGH VOLUME PRODUCTS.

For decades tube filler design never changed. The indexing turntable, with its limitations on speed, was the basis of every design.

Then, at Interpack 1999 came fresh thinking from German manufacturer IWK-VPT – part of the Oystar group – in the form of the TFS 80 range of tube-fillers that leapfrogged the shortcomings of the turntable machine to create a radically new approach.

Gone was the conventional turntable, with diameter and indexing speed limitations imposed by its mass, to be replaced by an orbital track which accepts empty tubes horizontally, raises them to vertical for filling and closing, and returns completed tubes to horizontal for cartoning.

In effect, this means an in-line layout which, as UK representative IWK Pac-Systems points out, allows the new machines to be built on a cantilevered basis for ease of cleaning to GMP standards, and gives the operator clear access to all parts. Also, closing systems to handle plastic and aluminium tubes can be readily mounted side by side, for immediate changeover.



Twin track: *Oystar-IWK TFS 80-6 tube filler showing robot loading and unloading of the containers*

That original design, in which a single track indexed two tubes at a time for filling, has now been extended with the addition of twin track models, creating a range of TFS 80 machines that fill one, two, four or six tubes on each cycle to give speeds of 100-510 a minute.

The orbital track, in single or duplex versions, carries quick-release, magnetically secured holders for the tubes, which are fed in horizontally and rotated to bring print into register. Following this, there is a tube-cleaning station employing a vacuum suck-blow system.

As the track passes round the end of the loop, the tube holders are carried diagonally through 90deg to upright, presenting the tubes ready for filling.

Servo drives are employed for the dosing system, providing programmable changeover in the volume range 2-350ml, and to elevate the tube holders up to the filling nozzles, one, two, four or six at a time depending on the model. Servo drive also allows on-the-run adjustment from the control panel should humidity, temperature, viscosity or other variables cause changes in product flow.

The dosing system, together with a hot air sealing station for plastic or laminate tubes and/or folding tools for aluminium tubes, is supported on an upper frame, which is simply raised or lowered via handwheel to cater for different length tubes. Below the filling and sealing stations, the machine surface is inclined for ease of cleaning.

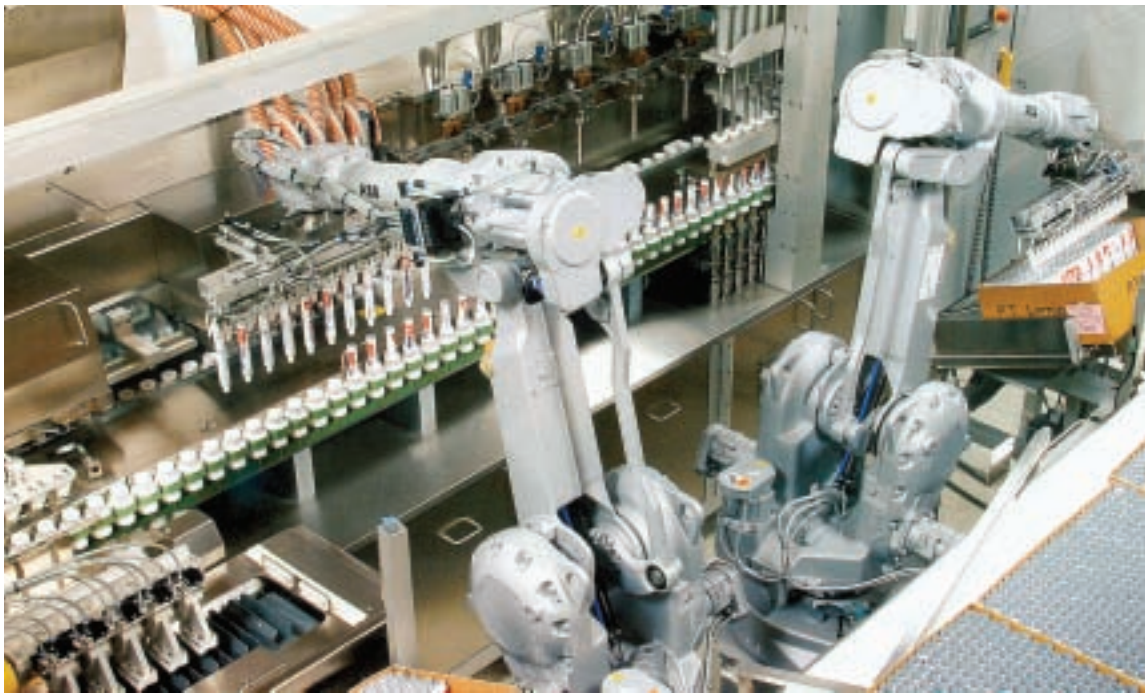
Filled and sealed tubes then pass along the track, down the other diagonal and, in the case of single lane machines, are discharged horizontally for cartoning via drop gates directly into the cartoner's product buckets. No chutes or conveyors are required, eliminating size dependent adjustments and providing gentle transfer.

On twin lane machines – the TFS 80-4 and TFS 80-6 – the tubes are picked from their holders and placed automatically in the infeed buckets of the cartoner. This pick-and-place arrangement prevents risk of scuffing and ensures that the tubes lie in the correct orientation for the side-load cartoner.

Servo drives are used throughout the TFS 80

range to provide electronic adjustment via the touchscreen control panel for size changeover of most machine functions via the PC control system within 15 minutes.

This consistent use of servo drives makes virtually all cams in conventional tube fillers obsolete, points out Derek Moore at IWK PacSystems. "Product dependent cam adjustments such as stroke settings, timing adjustments or even filling cam settings now lie in the past, since movement characteristics can be set and adjusted by programming the servo motors. Movement profiles can now be optimised, which could not previously be achieved by cams."



Top of range: *Norden's high speed tube filling machine is the NM 5002S-HA capable of speeds up to 500 a minute*

High speed machine

Oystar-IWK launched its high speed TFS 80-6 machine at Interpack 2002 and has since installed many lines world-wide. Capable of speeds up to 510 tubes a minute the machine is equipped with a total of six dosing pumps which have a total of 18 servo drives to allow each tube to be dosed with two additional colours or active ingredients, co-extruded into the tube with the main paste. This involves no reduction in speed.

The latest Oystar-IWK machine to be launched is the TFS 80-1 tube filler. Capable of 100 tubes a minute and based on the same operating principles as its larger stablemates, the TFS 80-1 is similarly servo driven.

This servo drive allows the TFS 80-1 to be programmable for settings such as transport speed, diving nozzle movement and closure dwell time, which means that optimum settings established during R&D or short runs can be employed immediately when production is scaled up to much higher speed TFS 80 models.

Oystar-IWK also builds a range of traditional rotary tube fillers giving speeds from 40 to 200 tubes a minute upwards.

Norden's high speed tube filling machine is the NM 5002S-HA capable of running 1-200ml tubes at speeds up to 500 a minute. The machine operates in single lane, with five filling heads, and can handle plastic and laminate tubes which are loaded from trays into the transport system by two robots synchronised with each other.

In-line approach: *The Millennium 120 from Tonazzi features a readily removable dosing unit*

Several functions in the tube filler are servo driven including the main drive, the tube transport system, the filling pumps and the tube lift, while two or three colour co-extrusion filling is possible. Filled tubes are transferred from the pockets of the transport system into the infeed of the Norden 5002S cartoner by a servo driven pick-and-place unit that lifts five tubes at a time. At the other end of the scale, Norden builds machinery for speeds down to 25 tubes a minute.

Indeed, the company's most recent machine is the 80-a-minute Nordenmatic 702 tube filler. Like other machines in the Norden range this can be equipped to produce Design-a-Seal shaped tube seals and with Norden's Store Magazine, increasing the tube infeed capacity and overall efficiency of the line.

Meanwhile, TMG Marchesini has announced the Millennium 120 tube-filling machine from Tonazzi, a single channel unit which abandons the traditional turntable in favour of a more linear approach using tube holders on a conveyor.

In particular, the machine's entire dosing

Semi-automatic: *CO.MA.DI.S C630 model*

unit can be removed in a single movement, making size and product changeovers much faster, while closing heads for plastic or aluminium tubes, including a hot air system, are kept in place on the machine as a further aid to reduced changeover times. Speed is up to 120 tubes a minute.

Adelphi Manufacturing represents TGM of Italy for automatic tube fillers but manufacture its own range of hand and semi-automatic machines that will handle both plastic/laminate and aluminium tubes.

Small scale production

For small scale or laboratory production the Centrac hand operated or Response semi-automatic machines fill the tubes with liquids, gels or creams. Filled tubes are then transferred to either a bench top Vesta single or multi head tube sealing, cutting and coding unit or the bench top metal tube double fold and coding machine. The equipment is simple, cost effective and gives a professional finish, says Adelphi

TGM offers a range of machines to fill metal, plastic or laminate tubes at speeds from 1500 to 24,000 an hour, able to fill three full depth colours into one tube and handle products from liquids to the heavy pastes used in the building trade. A range of TGM horizontal cartoners integrates with the tube fillers, complete with leaflet insertion and embossed coding.

Italian manufacturer CO.MA.DI.S, part of the IMA group, builds tube filling and closing machines to pack cosmetics, pharmaceuticals, chemicals and food into aluminium, polyethylene or laminate tubes at speeds up to 250 a minute.

Among its latest machines is a medium range model, the C1090, capable of speeds up to 90 a minute for pharmaceuticals, cosmetics, food and chemical products. The machine can be equipped with a new type of ergonomic tube feeder – capacity up to 2000 tubes – and features a dosing pump that can be removed without tools. Hot air sealing is available for for polyethylene, laminate or polyfoil tubes and the aluminium tube sealing unit is available in standard, double or saddle fold versions.

For semi-automatic operation at smaller cosmetics manufacturers and R&D work the CO.MA.DI.S. C630 is capable of 30 tubes a minute. Empty tubes are fed and orientated by hand with dosing, sealing and/or closing, coding and ejection of the filled tubes carried out automatically. The machine is compact and can be relocated on castors.

Finally, Excel Packaging Machinery, which represents Italian manufacturer Axomatic in the UK, has recently added a new budget priced modular eight-station machine to its range. The Axomatic Optima 780 is a semi automatic filler for handling metal, plastic, laminate and polyfoil tubes at speeds up to 20 a minute although it can be upgraded at a later stage into a fully automatic machine, with automatic tube loading and print registration, capable of handling 36 tubes a minute. ■

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TMG Marchesini UK
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The meaning of cleaning

WHILE MORE RIGOROUS CLEANING IS CONSTANTLY BEING DEMANDED IN MOST INDUSTRIES, THE ENVIRONMENTAL LOBBY IS CALLING FOR REDUCED USE OF ENERGY, CHEMICALS AND, PARTICULARLY, WATER IN ALL MANUFACTURING PROCESSES.

The relentless increase in the number and scope of safety regulations has brought renewed pressure on the food, beverage, pharmaceutical and biopharmaceutical industries for more rigorous clean-in-place (CIP) regimes and effective monitoring and recording of the cleaning processes used.

At the same time, however, the environmental lobby is demanding reduced use of energy, chemicals and, particularly, water in all manufacturing processes. All of these are primary components of traditional CIP systems and it would be reasonable to assume that better, safer cleaning might require more, rather than less, of all three.

Add to these factors the demands placed on food processors for shorter runs – and so more cleaning – to meet retailer demand, plus the enormous increases in quality standards from those same supermarkets, and effective CIP appears under pressure from several different directions.

In fact, CIP specialists have risen to the challenge, not only by introducing new technologies but also by re-engineering and redesigning traditional systems to meet the different demands now placed upon them.

Some sectors, notably biopharma and pharmaceutical producers, have clear and established guidelines, such as GAMP, which enable machinery companies and CIP installers to understand what is expected.

Rules for biopharma

For example, biopharma manufacturers can follow the ASME-BPE 2005 guideline, issued by the American Society of Mechanical Engineers which lays down strict rules on the types of materials to be used, surface finishes, tanks and even welding specifications. Most end users and their suppliers accept these as targets for compliance purposes.

In the food sector, standards can be much more varied, although in the UK most food manufacturers tend to work to retailer guidelines for hygiene and cleaning practices. However food processors who export their products must be aware also of local regulations which vary from country to country.

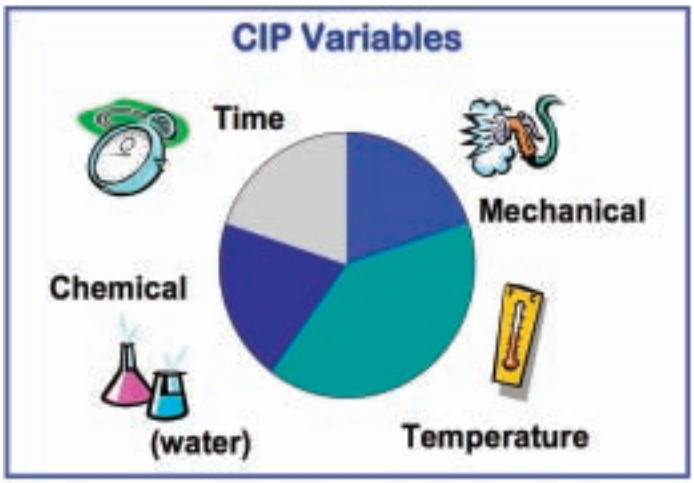
In an attempt to foster better understanding and greater uniformity in the food industry the World Trade Organisation has recently opened its Food Safety Database to general use. Listing food safety and export requirements from global sources, as well as other important inter-governmental and contact details, the WTO's aim in allowing greater access is to break down barriers to trade which these numerous and complex requirements can bring about. (http://spsims.wto.org).

CIP where it's needed: *Typical mobile Suncombe CIP unit can be moved from line to line*

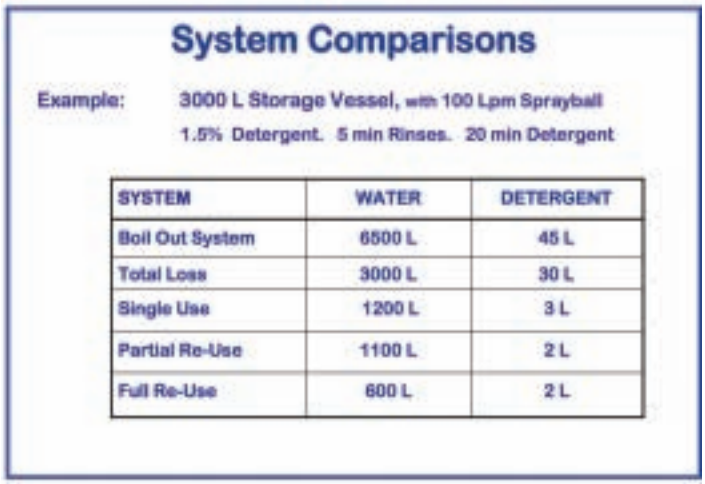
However the reality is that many small food processors still use basic methods of cleaning machinery, such as wash-in-place (WIP), which have no specific standards to follow and involve a degree of manual intervention, along with basic CIP systems.

Dave Adams, senior technical manager at CIP design and manufacturing specialist Suncombe has seen a steady improvement in CIP use and practice in his 25 years in the industry. In particular he believes the almost daily increase in documentation and validation

GRAPHICS COURTESY OF SUNCOMBE



Modern CIP tries to balance cost, efficiency and environmental impact



SYSTEM	WATER	DETERGENT
Boil Out System	6500 L	45 L
Total Loss	3000 L	30 L
Single Use	1200 L	3 L
Partial Re-Use	1100 L	2 L
Full Re-Use	600 L	2 L

Use of water and detergent is high in some CIP systems

requirements is a good thing and sees these practices from the pharmaceutical sector pushing more into the dairy, beverage and general food sectors.

"The use of sensors, probes and transmitters to feed back information during the CIP process can greatly enhance the control the operator has over the 'recipe' to ensure no phase in the cleaning cycle is completed until pre-determined parameters, (temperature, solvent concentration, detergent levels, etc), have been met. Some systems even have turbidity meters to check the water is flowing in the right pattern," says Mr Adams.

Environmental credentials

Which system of CIP to choose is now being decided by its environmental credentials as much as for its efficiency and cost.

In Europe the Integrated Pollution Prevention Control Directive, (IPPC 96/61/EC) came into effect in October 2007 with the aim of improving environmental protection standards in manufacturing. In response, the CIAA, Confederation of Food & Drink Industries in the EU has launched a dedicated website and published a 64 page booklet to help its members reduce their environmental impact and share best practice, particularly among the smaller processors, (http://envi.ciaa.eu).

Meanwhile in the UK the Food and Drink Federation has committed its members to using 20 per cent less water by 2020 than they do today. A typical dairy plant uses 65 per cent of its total water consumption in CIP (40 per cent) and manual (25 per cent) cleaning. So the need to act is urgent and the forces being lined up against some current CIP systems are formidable.

All CIP systems have their advantages and disadvantages:

- Boil Out systems are cheap to install and good at cleaning complex mixers and other difficult shapes. However they use a lot of detergent, water and energy and have a long cleaning cycle. They are also difficult to monitor.
- Total Loss systems again suffer from high water and detergent use and a long clean time. However, they are simple to operate and offer a better health and safety regime, while still being hard to monitor.
- Single Use systems offer better flexibility, good economy and a low risk of cross contamination. However they are not suitable for large, centralised systems.
- Re-use systems are notable for their lower water and detergent consumption and centralised controls and structure. But they tend to be inflexible and cost more to install. There is also a higher risk of cross contamination.
- Mobile units, such as the MP3 Mobile CIP System offered by Multiplicity, are ideal for small cleaning jobs and reduce the amount of pipework necessary. However there are usually heating problems and limits to the size and capacity plant they can service.

Overall, Dave Adams at Suncombe suggests a clear evaluation of the cleaning risk before any decision is made on the type of CIP installation required. Also important is the degree of flexibility built into the system, often by customisation and use of modern components. For example traditional 'pepper pot' spray heads are now being superseded by rotating or jet sprays which are both more efficient and more effective.

Again, while variable speed pumps are more costly, they allow greater control of the flow rate and turbidity which can reduce water consumption and cycle times considerably.

The future direction of CIP technology may not be about the equation between water, detergents, solvents and energy as several new cleaning methods have been developed:

Ozone gas is an emerging tool in the food industry and is 50 times more powerful than chlorine, which is the normal oxidising agent. The advantages are that ozone is an effective disinfectant at low concentrations and leaves no toxic by-products. It also eliminates the need for the standard Five Step cleaning cycle – hot water rinse/foam/rinse foam/chlorine/water rinse – so reduces man hours needed and water requirements substantially.

Laser cleaning improves the water factor even more, as none is required at all. A concentrated laser beam strikes the surface to be cleaned for as little as a thousandth of a second. The radiation energy turns to thermal energy and simply vaporises any contaminant. The larger the absorption of the surface, the easier it is to remove the contaminant.

This CIP method has found a particular niche

Vacuum CIP for beverage tanks

KHS has developed a vacuum CIP system for cleaning beverage tanks which eliminates the need for return pumps in the tank area and reduces loss of cleaning fluid in the process cycle, says the company.

The vacuum system, which is installed on the CIP frame, uses the negative pressure created to return all the cleaning fluid from the pipelines and tanks to the CIP tank. Traditionally a certain amount of fluid had to remain in these areas to avoid damage to the pumps in the storage tank area.

The CIP system virtually eliminates mixing

Typical CIP Programme

Step	Operation	Cleaning Agent	Temp. (°C)	Time (Min.)	Usage
1	Pre-Rinse	Fresh* water	20 – 30	2 – 5	To drain
2	Alkali Clean	2% Caustic	70 – 90	5 – 15	Re-circulated
3	Intermediate rinse	Fresh* Water	20 – 30	1 – 5	To drain
4	Acid clean	1% Phosphoric	50 – 70	3 – 10	Re-circulated
5	Final Rinse	Fresh Water	20 – 30	4 – 6	To drain**
6	Drying	Sterile Air	20 - 50	20 - 30	Drain outlet

Notes: * *May be possible to re-use final rinse of previous wash*
** *Final rinse may be sent to re-use tank*

CIP cleaning cycles normally take 40-60 minutes

Monitoring Systems

Conductivity	To Monitor Strength To Separate Phases
Temperature	In Feed Line to Control In Return Line to Monitor
Flow	In Feed & Return to Confirm Rate
Pressure	In Feed Line for Spray Device In Return for Integrity Testing
Conductivity	In Return Line to Route Effluent
Time	From the Control System

Effective monitoring is essential to validate the CIP process

in cleaning conveyor baking ovens, where the laser is placed between the removal of the patty and the introduction of the new dough. There is no interruption to the baking process and no need for water or chemicals, so downtime is virtually eliminated. Indeed new applications for laser clean-in-place are emerging constantly.

Vigorous cleaning with ice

Water Ice Blast is used where more vigorous cleaning is required and has traditionally relied on high pressure water for the purpose. By turning the water to ice particles, both the pressure and flow rate are minimised. Each ice particle acts as a scrubber which dislodges particles and then turns to water, when it can be easily flushed away. This method requires no abrasives, chemicals or detergents and creates no dust.

A typical comparison between water blast and ice blast shows that the former uses 10-50 litres/min at 10-100 bar, while the latter uses 1 litre/min at 4-16 bar. Dry ice can be used

of the cleaning solutions which can happen during changeovers in the cleaning cycle, claims KHS. As a result there is potential saving in the use of caustic and acid as well as in total water consumption.

The flushing cycle has been reduced drastically while the need to keep the system filled with water is eliminated completely.

With reduced use of cleaning agents and water the CIP tanks can now be designed for smaller capacities than has been possible, by as much as 50 per cent for some applications, says the company.

The KHS CIP vacuum system operates at fluid temperatures up to 50 deg C which can result in lower energy requirements for the cleaning cycle and, according to the company, making the whole process much faster.

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when moisture in the atmosphere is not acceptable.

The last word goes to Suncombe's Dave Adams: 'We work with machinery suppliers, systems integrators and end users in about equal proportion. The message is the same to all of them. Design your installation or equipment with CIP in mind, so ensure there are no 'dead legs' in the pipe work, surface finishes are the correct standard, CIP circuits are balanced and welding techniques leave a crevice free finish.

"In addition the complete line should be drainable, contain no pockets or ledges, gaskets and seals should be crevice free and made of approved materials, fittings such as valves should be easy to clean and hose and pipework kept to a minimum with as few connections as possible. Finally confine cleaning solutions in a particular area to avoid leaks and contamination."

Of course this may be seen as an 'ideal world' scenario to some manufacturers. The truth is that the costs associated with product recalls, contamination risks where highly active ingredients are used and the potential loss of large contracts from major retailers places CIP at the heart of the production process, not as a necessary but inconvenient 'add on'.

This is not a lesson which needs to be learnt by the vast majority of pharmaceutical, biopharma, dairy and major food producers for whom CIP and, when used, SIP (Sterilise In Place) is common practice and of the highest standard.

The challenge comes at the small to medium processor level and where retailers are now sourcing more and more products from manufacturing plants in emerging economies, such as Vietnam or Eastern Europe.

Finally, Baldor has added a range of IEC-frame models to its range of stainless-steel AC motors. These units are designed for maximum corrosion resistance in cleaning environments where equipment is exposed to high pressure water jets and significant levels of caustic chemicals, says the company.

The motors, which are available initially in IEC D80, 90, 100 and 112 frame sizes and spanning a power range of 0.37 to 4kW, are particularly suitable for food, dairy, beverage and pharmaceutical applications, says Baldor. ■

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MARKEM SYSTEMS

Thermal transfer coder runs faster with less ribbon

A new version of Markem's SmartDate thermal transfer printer offers colour touchscreen controls as standard and a 25 per cent increase in speed.

At the same time a new ribbon save device has reduced the gap between prints to 0.5mm giving up to 10 per cent more coding from each ribbon.

The SmartDate 5 Advance can operate as a standalone device or be connected to the controls of a host packaging line via web browser technology, allowing the line to be controlled from a single point with images and data sourced from a PC or the factory's ERP system. Alternatively, coding data can be downloaded and uploaded via a USB device.

Touchscreen controls: *Markem's new SmartDate 5 Advance coder*

Intermittent or continuous motion operation is possible, with speeds up to 1000mm/sec.

"Trials have shown that the coder will consistently deliver high quality prints at this speed', says Markem product manager Andy Gray. "For even faster applications, the SmartDate 5S Advance, with its shuttle mechanism, will keep pace with substrate speeds up to 1800mm/sec."

However, for applications involving short periods of slow speed – often the cause of missing prints – the new coder is said to have proved capable of printing consistently at speeds as low as 5mm/sec.

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HERMA UK

Slimline head converts rotaries to pressure-sensitive labels

The 400 Slim Line label applicator now available from Herma allows existing rotary machines to be quickly converted to handle pressure-sensitive labels. Up to eight labelling stations can be accommodated on one rotary machine to apply front, rear and neck labels as well as stamps or similar marks.

Herma points out that such a multi head installation means that for each active labelling head there can be a second applicator available in standby mode ready to take over automatically once the end of a reel is reached. Depending on the type of take up and unwind method employed, the 400 Slim Line can run at 120 metres a minute, allowing typical 120mm long labels to be applied at around 1000 a minute. Accuracy is said to be ±0.3mm.

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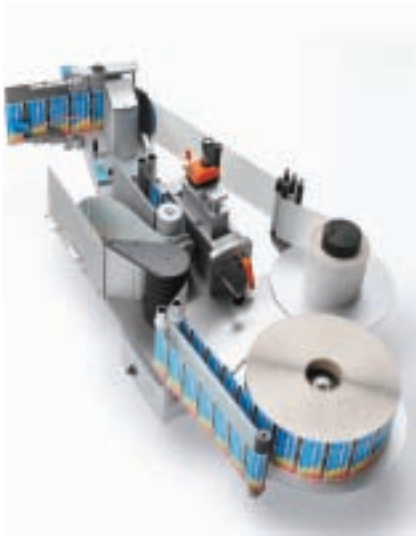

Labelling station: *The Herma 400 Slim Line*

THE NEEDHAM GROUP

Ink jet printers uprated for high speed coding

The Citronix ciSeries of ink jet printers available from UK distributor Needham has been uprated to give higher speeds – up to 470 metres a minute in standard systems for a single line of 7x5 text and up to 196 metres a minute for a dual line of 7x5 text.

The specialty ciSeries Micro and HS50 systems are faster – up to 493 metres a minute for the Micro and 513 metres a minute for the HS50.

Four different speed/quality software settings provide the optimum mix of speed and print quality for the particular application while three different drop sizes are available to fine tune the size of the character being printed.

Up to five lines of text, graphics and bar codes can be printed in heights of 1.5-12mm.

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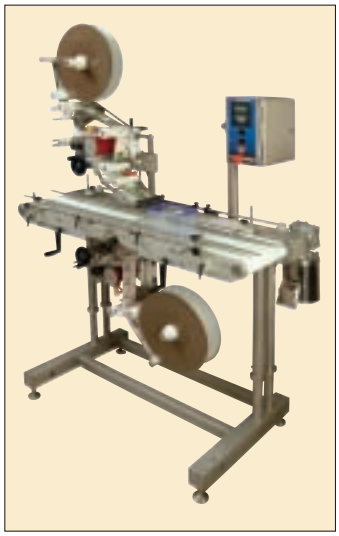
ATWELL LABELLERS

Washdown IP65 labeller suits food and meat industries

A pressure-sensitive labeller built to IP65 standards for washdown, particularly in the food and meat processing industries has been announced by Atwell.

The machine uses a 150mm Atwell Matrix Express labelling head as standard but can also be equipped with wider versions, up to 300mm.



Sealed for washdown: *Atwell labeller for food and meat industries*

Built from corrosion resistant materials including stainless steel, Delrin and PTFE, the machine incorporates perforated rollers and the minimum of flat surfaces to prevent pools of water forming.

The conveyor belt can be readily removed for cleaning without tools and is powered by a stainless steel motor and gearbox.

Further equipment includes large diameter reel holders to extend the interval between label changeover, height adjustable floor stands and an untrasonic label detector for use with paper or plastic labels. Thermal transfer and hot foil overprinters are also available.

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Push on energy efficiency puts The drive on drives

A TECHNOLOGY THAT TOOK OFF IN THE 1980S SHOULD NOT STILL BE DEVELOPING RAPIDLY, NOR REGULARLY GAINING NEW MARKETS. BUT THAT IS PRECISELY WHAT VARIABLE SPEED DRIVES OR INVERTERS ARE DOING. BOB DOBSON REPORTS.

Drives have been growing in popularity for 20 years or more and have really become flavour of the month with the big push on energy efficiency and carbon reduction. And if that were not enough, there are a couple of technical developments that are extending their reach into whole new areas.

Let's looks first at the topical energy questions. If you want to reduce the energy bills and carbon footprint associated with a particular machine, chances are that fitting variable speed drives to some or all axes of motion is going to be the most effective option.

Drives allow you to slow a motor down or speed it up. This can be useful in very many different ways, for example speed matching of adjacent conveyors, positioning the various components on an assembly or packaging line, increasing a pump's output or speeding up a fan to aid cooling.

Increasingly, drives are being used to reduce motors' energy consumption, by slowing them down. The energy saved is equal to the cube of the speed reduction, so savings can be significant.

Indeed, more and more machine users are asking their machine builders to guarantee energy performance before they will place an order. Conversely, machine builders can use energy saving guarantees to win orders from customers, or can generate steady revenue with a programme to retrofit drives to existing plant and machines.

But doesn't reducing the speed of a machine impact its productivity?

The short answer is: no. Most machines operate cyclically with the motor, or motors, idling or working under part load much of the time. These periods are ideal for energy saving, while full power can be called up when needed. Drives are intelligent and can be programmed to follow a time-based cycle or to react to sensor readings to vary speed in perfect synchronisation with the needs of the machine.

Motors driving pumps and fans in particular are good candidates for energy savings. Many of these run at full speed all the time, with the excess flow being dissipated through a valve or vanes. Matching speed to flow requirements is an obvious route to savings.

Further, motors are often oversized so that they can cope easily with maximum loads, which occur only vary rarely. This increases wasteful energy consumption further, another case where a drive will pay for itself in a short period of time.

In summary, drives are an excellent way to reduce energy consumption, carbon emissions and machine running costs. This makes them highly appropriate for inclusion in machine designs, while end-users' new focus on energy efficiency means the market is keen to realise their potential.

Expanding universe

The use of drives is also set to expand on a performance front. Several manufacturers are now claiming that their latest offerings provide such high performance that they compete with servo drives.

Servo drives are typically far more expensive to buy and more complicated to install than conventional industrial motors. But their ability to run at incredible speed, accelerate and decelerate in an instant, position axes with incredible accuracy, follow complex operating cycles and react to sensor inputs have made them a firm favourite in applications such as packaging machines and assembly robots.

Now, it seems, similar performance is available at far lower cost through the use of a standard industrial motor and a top-end drive. This would pull considerable costs out of machine building and machine ownership.

Traditionally, there has been a clear divide between applications for drives and applications for servos, but this is increasingly becoming blurred – a trend that is predicted to continue, with as much as 25 per cent of servo applications likely to switch to drives. This will mainly be on axes of above 7.5kW, on machines used in converting, packaging, textiles, printing, guillotines and flying shears.

Cool display: *Lenze froze an smc drive into a block of ice to demonstate its working capabilities*

Other technical developments clearly underway see drives with extra capabilities built into them, notably a programmable logic controller (PLC) for general control or a motion controller for synchronising multiple axes into complex process cycles and for positioning duties.

With so many new uses being found for drives, Mitsubishi thought it sensible to bring out a new heavy duty version of its most popular drive, the

F700. Designated the A700 it is aimed squarely at energy centred installations likely to experience frequent shock loads. Such current spike-inducing events tend to trip out normal drives, bringing production to a standstill.

The A700 has a high speed algorithm in its control circuits that responds quickly and effectively to sudden increases in load experienced via the motor and gently rides through them. The drive and motor remain operating and production continues. By contrast, in conventional drives, shock loads push a high current through the drives, which then trip to protect their internal electronics.

Energy savings of 35 per cent

The new drive is already finding favour in the aggregate industries, which previously has had to balance the benefits of installing drives with increased possibility of interruption to production. An early application is reporting 35 percent energy savings following the installation of A700s.

The drive is available with a range of overload settings from light to super heavy duty and for motors from 0.25kW to 450kW.

Another new offering from Mitsubishi is the E700. This uses the popular variable frequency operating principle and is packaged so that it can be a direct replacement for the earlier E500. However it is packed with new features and improvements compared with its predecessor. Its dynamic performance includes 200 per cent torque at 0.5Hz, a speed range of 120:1, multiple communications options and RoHS compliance.

Significantly, its control unit can be autotuned to match the exact dynamic characteristics of machines that have previously been fitted with an E500, so that in retrofit applications, replacing the drive is a plug-and-go operation.

A feature packed general machinery drive has also been introduced by ABB with ratings of 0.37 to 7.5kW. The range is aimed at machine builders, panel builders, system integrators and end users and is ideal for a wide range of machinery applications in applications such as food processing and materials handling.

The drives are claimed to be much smaller than comparative drives in this segment, up to 60 per cent smaller than units from some competitors. This makes it easier to design compact control panels or increase packing density in existing panels.

Significantly, all the drives in the range from the smallest 0.37kW to the largest 7.5 kW are the same height and depth, with only the width varying between sizes, enabling easy side-by-side mounting. No additional space is needed for air circulation and DIN rail mounting is possible. When cabinet depth is extremely limited, the drives can even be mounted with one side to the back of the cabinet.

Latest range: *Baldor's H2 AC motor drives now include higher powers, washdown-duty variants, and expansion cards*

Size is also reduced by using a new generation of power semiconductors which gives lower power losses and reduces the need for cooling, enabling the use of smaller heat sinks.

The drives are available as single-phase 200-240V, 0.37-2.2 kW; three-phase, 200-240V, 0.37-4kW; and three-phase, 380-480V, 0.37-7.5kW.

Baldor has extended its H2 family of drives with new higher power options, washdown-duty variants, and more plug-in expansion cards. The 26 new models extend the range up to 93kW.

H2 drives are available in open or closed-loop variants, plus units for servo motor control applications up to 18.5kW. The closed-loop variant features a fourth-generation space-vector control algorithm for fast and steady motor control as temperature and loading conditions fluctuate. Positioning software and an on-board mini PLC are available within the range.

To illustrate how tough its new IP65 smv AC vector drive is, Lenze-ACTech International had a 0.75kW unit frozen in ice before demonstrating its working abilities. The drive remained fully functioning at the launch, running demos while encased in ice throughout a two-day international conference.

The smv drive is intended for use in outdoor or washdown conditions where moisture is present, such as food processing and packaging applications. The smv delivers fast dynamic torque response, sophisticated auto-tuning and impressive low speed operation from a compact, low cost and simple to use package.

The smv range is also designed specifically for use in small motor applications where dynamic speed and torque control are required, such as conveyors, food production and packaging lines.

Omron-Yaskawa has taken a different tack with its new V1000. Rather than highlighting an array of new features, it has focussed on improved product quality and reliability.

The innovative design together with modern manufacturing techniques means that the V1000 is said to be good for 10 years maintenance free operation. Beyond this, a field-failure rate of less than 1 in 10,000 is being claimed. One reason for the improved reliability is a 50 per cent reduction in mechanical components which, in turn, has lead to a reduction of almost as much in the size of the unit. ■

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Omron Electronics
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NIRO PHARMA SYSTEMS

Camera system monitors spray dryer nozzle performance

Spray nozzles in drying systems produced by Niro for the food industry can now be monitored by a camera system. This allows operators to observe any abnormalities, ensure there are no leaks or any build-up of solids and that spray dispersal within the drying chamber remains at the optimum level.

The cameras also monitor if the high pressure shut-off valves are leaking. This, says Niro, all helps avoid unnecessary shut downs, improves product quality and reduces the risk of heat build up within the chamber.

Gerhardt Jacobsen, safety and environmental resource manager for Niro's food and dairy division explains that the new system is particularly useful for detecting leaks from nozzle gaskets during production and from the nozzle itself during start up and shut down.

Cameras on spray nozzles: *Niro's monitoring system in action*

"By watching the way the nozzle behaves during every stage of the process we can minimise fouling of the drying chamber and help avoid safety issues, such as fire and explosions," he adds.

The camera also allows operators to monitor the fines in the spray zone to ensure optimum product quality.

Niro is working on further developments that will provide automatic monitoring of the camera image. This will allow the spray dryer to be shut down automatically if there is an explosion risk.

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OCME UK

Wraround case-packer will run at 100 a minute

A range of wraparound case-packers capable of reaching speeds up to 100 cases a minute – particularly for the high output end of the beverage industry – has been announced by the Italian manufacturer Ocme.

The first, designed to pack glass bottles at speeds in excess of 70 cases a minute, has been installed at CR Breweries, China, a joint venture between CR Enterprises and SAB Miller.

Based on Ocme's existing Altair series of case-packers, the new machines are capable of speeds up to 70, 80, 90 or 100 cases a minute and incorporate a number of new features.

These include a second case blank feeding unit in order to decrease the relative speed of the blanks being introduced into the machine and two independent electronic adjustable bottle selection groups which allow a gradual flow of collated bottles to the case blanks.

High speed case-packing: *New machines from Ocme can reach speeds of 100 cases a minute*

The blanks are introduced at the same speed as the bottles to ensure an extremely smooth operation even at high production speeds, says Ocme. There is also an easily accessible blank magazine for the operator, with the option to increase the capacity and also to feed blanks automatically from a pallet using a robot.

Simple format changes are achieved through the PC-based operator interface via the extensive use of servo motors.

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CAP CODER

Peristaltic filler uses digital control for high accuracy

Cap Coder has introduced the Alphafill stand alone peristaltic filling machine for finely controlled dosing of liquids in the manufacture of cosmetics, pharmaceuticals, diagnostic products and other high-value products.

Powered by a variable speed brushless dc motor, the machine has a touch-screen control panel which allows the operator to program an exact dose for any given size of delivery tube, and to save up to four different programs for immediate recall.

Programmed dosing: *Alphafill for finely controlled dosing of liquids*

Cap Coder points out that delivery of the programmed dose is digitally controlled using a pulse sensor, rather than a timer. This eliminates unreliable dosing as a result of changes in motor speed.

For products likely to drip, the pump motor is equipped with a reverse suck-back feature that prevents drips after each dose is complete, while maintaining consistent filling volumes.

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New Machinery continues on page 56

ISHIDA EUROPE

Multiheads aimed at low target weights

Two versions of Ishida's R Series multihead weighers specifically designed for handling small target weights – one circular, the other linear – have been announced by the company.

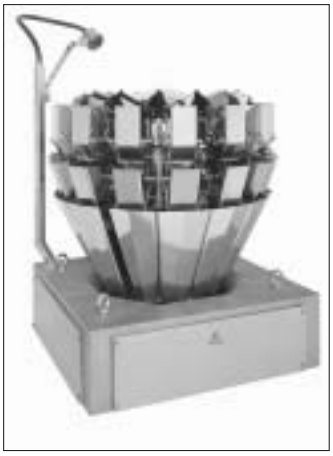
The Small Hopper weighers – the CCW-R-210, 214 and 220 – employ the traditional circular multihead weigher design and can handle target weights of 5-500g, while the largest of the models, the CCW-R-220, can also mix-weigh two products up to 1kg.

The CCW-R-214 is capable of speeds up to 210 drops a minute, depending on the application, while the CCW-R-220 can mix-weigh at up to 70 drops a minute.

The new linear multihead weighers, available in four different variants, are particularly suitable for ultra-low target weights – as little as 3g.

The linear range also features short drop heights, particularly appropriate for handling fragile products such as sugar coated confectionery or chocolate coated mini biscuits.

In addition, points out Ishida, the linear arrangement of the product transfer allows precise product flow control. This makes the range ideal for applications where weigh counting is required to achieve a specific number of pieces in the pack.



Small target weights: *Ishida has introduced new R Series machines*

Top speeds are 130 drops a minute for the CCW-R-107, while the CCW-R-108 and CCW-R-112 can mix-weigh two products at up to 65 drops a minute.

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PARTNERS IN PACKAGING

Erectors for difficult top load cartons

A range of servo driven top load carton erectors particularly suited to difficult styles and shapes has been launched by Partners in Packaging, UK representative of the German manufacturer Dienst-Vepatec.

"The use of servo drives enables more challenging carton shapes and forms to be handled through greater accuracy and control of the female forming head, when forming the carton blank around the male forming tools," explains Duncan Macintyre at Partners in Packaging.

Handling difficult shapes: *These include 'rose' style cartons*

Typical examples of new styles of carton being handled are the rose style or "springbox" which have been supplied to German confectionery manufacturer Storck, the manufacturer of Werthers Originals.

This octagonal carton, which is erected and filled at 60 cartons/minute, employs a non glued base, which opens "like a rose" when the lid is removed to reveal its contents.

Further difficult carton styles handled by the Dienst-Vepatec machinery include negative-tapered shapes, triangular and frame and double wall cartons.

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PROSEAL UK

Compact line packs sandwiches at 30 a minute

Proseal has announced a compact version of its sandwich packing system in which board skillets are de-nested, erected, loaded and sealed.

Speed is up to 30 packs a minute and a variety of widths can be handled, with changeover by the operator in 5 minutes.

"With an increasing number of retailers showing interest in cardboard skillets, many more sandwich manufacturers will need to offer this type of pack," explains Proseal director, Steve Malone.

"This new model has been developed with the flexibility to handle smaller production runs and frequent pack changeovers, while still offering a high level of automation."

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OMRON ELECTRONICS

Vision system offers simple set-up via touch screen

Touch-screen control and an intuitive interactive menu system in Omron's new ZFX vision system is said to allow fast, simple set-up without specialist expertise.

The menu system guides users through the set up process in three simple steps – selecting the inspection tools, defining the inspection regions, and finally setting the required inspection parameters simply by pressing the 'auto' button.

To confirm that the correct settings have been selected, the ZFX provides instant feedback, with live images and system messages to guide the user.

In most applications, the entire set up procedure can be completed in just a few minutes, says the manufacturer. No external PC or other equipment is required for setting up, maintenance or operation of the ZFX, as all functions are accessed via the integral touch screen.

To ensure maximum flexibility, the ZFX allows multiple inspection tasks to be carried out on the same image. Powerful tools are also provided for image pre-processing, position compensation, calibration and data logging, allowing the system to handle even complex inspection tasks with ease.

Omron ZFX vision sensors are available in single camera versions that offer all essential functions for a wide range of applications, and two camera versions that have enhanced processing power and additional inspection tools.

Both versions support colour and monochrome cameras with integrated lighting and adjustable focus.

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