

PPMA

Issue 6, Volume XVIII. November/December 2007

# Machinery

## UPDATE

The only 'machinery only' journal for processing and packaging



PALLET WRAPPING

**Higher speeds  
- lower costs**



TOILETRIES AND COSMETICS  
**Late stage  
customisation**



SHRINK-WRAPPING

**One reel or two?**

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ISSUE 6, VOLUME XVIII. NOVEMBER/DECEMBER 2007

## Machinery UPDATE

THE JOURNAL OF THE PPMA

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# All change at Update

I never expected to be editing *Machinery Update* for 18 years. But what started as a part-time job turned into a full-time fascination and now, with somewhere approaching 90 issues under my belt, it's time to step down. There will be a new editor next year. I wish her well.

Looking back over the last 30 years or so since I first edited a packaging newspaper, there's no doubt that the PPMA has transformed the face of UK packaging exhibitions for ever. At the same time, as a knowledge-based trade association, it has also contributed a massive amount to training, safety and information sources for the machinery industry – buyers and suppliers alike.

*Machinery Update* has been part of all that – almost, some say, as a bi-monthly PPMA 'Machinery Only' show – recording the developments that have shaped the machinery environment.

Back in the late 1970s a pair of hands was still considered one of the best means of loading a case while packaging exhibitions were full of materials and container manufacturers competing with each other to have the most impressive – and expensive – stand structure.

Developments in case packers and then robotics solved the first problem. Soon after, the PPMA sorted out the second with its own frill-free annual machinery-only exhibition, which very quickly began to attract a dedicated audience. How things have changed!

The past 30 years have been exciting times technically in the packaging machinery industry – some might also say commercially, given the comings and goings – but there is no doubt that the advent of servo drives with reduced changeover, improved reliability and ease of control has been the major influence on machine design.

The 1980s advert for Fuji flow-wrappers: "No product - no bag - no problem", said it all in terms of independent drives for different functions. So what happens next?

We're already well into robots that can automate tasks only previously possible by hand, modular construction, and vision systems as part of ever-improving inspection technology. But there is evidence to suggest a growing polarisation in the market for machinery, with the middle ground shrinking between the opposite poles of cheap, simple, low speed equipment and the much more advanced, highly productive yet quite costly machines.

Low cost equipment from India, China and the like can be expected to attract first time buyers – a pallet wrapper for under £2000 for example. You may have to fiddle with it a bit, but the savings in film and improved wrap quality will still be very worthwhile.

However, the only way the major food and pharmaceutical producers of the western world will be able to remain competitive is with increasingly sophisticated machinery that requires even less labour and floor space.

Trouble is, the big economies have already been made. For example, 30 years back a confectionery wrapper turning out 150 a minute would have a dedicated operator. Now machines capable of 1000 a minute share an operator with six or seven others.

Robotics and automatic feeding of packaging material such as case or carton blanks from AGV-delivered pallets could be part of the answer. But variations in packaging material quality and characteristics mean that the full "lights out" regime quite possible with pharmaceutical tablet production will be difficult to achieve universally, although the concept is still worth pursuing. After all, a robot can monitor its own performance and be taught to recognise and clear a jam.

With more automatic machine management in the physical sense – possibly via robotic devices – the reach of a human operator either vertically or horizontally is much less relevant and the way becomes open to arrange machine functions in a quite different way – maybe vertically – to reduce the footprint. It will be interesting to see.

Over the years it's been my fortune to be advised by a great number of engineers at machinery users and suppliers, helping to form some appreciation of what really matters in packaging and processing machinery. Thank you all for your guidance. I hope it showed.



*Michael Maddox*

Editor

## PEOPLE

## Michael Maddox steps down after 18 years as MU editor

After 18 years as editor of *Machinery Update*, Michael Maddox is stepping down to set up his own writing business specialising in packaging machinery. He is to be succeeded at the beginning of January 2008 by Mary Murphy, previously editor of *Packaging Week*.

Michael Maddox entered publishing from the chemical industry, joining the editorial staff of *Manufacturing Chemist* in 1967. Over the next 22 years he edited a number of business-to-business publications including *Modern Purchasing*, *British Printer*, *British Plastics & Rubber*, *The Oilman - Offshore Technology and Packaging News*.

He was appointed editor of *Machinery Update* in 1990.

"Michael has made an invaluable contribution to the world of processing and packaging machinery and his skill as both an editor and a journalist has become legendary in the industry," says PPMA chief executive Chris Buxton.

"I wish to express my great appreciation for the excellent job that he has done since the inception of this publication and wish him the very best of luck in his future activities."

Keith Marrow has joined vertical offs machine manufacturer Gainsborough Industrial Controls



as applications manager. He was previously with Sandiacre.

Martin Simpson has been appointed new business manager at Advanced Dynamics. Donna Wilde has joined as sales and marketing executive.

## TRAINING

# PPMA announces seminar programme for 2008

The latest changes to CE Marking regulations, machinery risk assessment, opportunities from climate change legislation and the new Machinery Directive – which comes into operation at the end of 2009 – have been selected as topics for the PPMA's 2009 seminar programme.

All are aimed at both suppliers and users of machinery and will be held at the Marriott Hotel Northampton.

The machinery risk assessment seminar will also be run in Manchester.

**CE Marking update** (6 February): This seminar will give delegates the opportunity to catch up on the key directives and regulations introduced over the past two years, understand how they are being implemented in the UK and see what is in store for the future.

The seminar will discuss the Machinery Directive and its supporting standards and consider the impact of the new Machinery Directive when it comes into effect in 2009, as well as covering environmental legislation such as the WEEE, ROHS and General Waste Regulations and the likely impact of changes to the Energy Using Products Directive.

Changes to both the ATEX and EMC Directives will be covered together with a look at how equipment users are coping with the differences and the new standards which have been published.

**Machinery risk assessment** (Manchester 20 March, Northampton 20 November): What is "a suitable and sufficient risk assessment" that will satisfy the Health and Safety Executive? Companies are expected to carry

out machinery risk assessments not only when new equipment is designed, but also for existing plant that is in daily use and particularly before machinery is modified.

This course is intended for both engineers who want to learn how to carry out risk assessment and safety professionals who are familiar with the concepts but need to learn how machinery risk assessment differs from other assessment techniques.

**Profiting from climate change** (22 May): This seminar, led by sector specialist Tom Serpell and a team from management consultants Obsidian, will explore methods for managers to evaluate opportunities in the environmental agenda.

Specific topics include the threats of climate change and resulting policy, both Governmental and commercial; procurement criteria; recognising and responding to customers' requirements; taking real corporate social responsibility; and assessing commercial opportunities.

**The new Machinery Directive** (11 September): The new Machinery Directive comes into operation at the end of December 2009 and, while many of its requirements are similar to the current legislation, there are some significant differences which will impact on machine manufacturers, companies that create assemblies of machines and machinery importers.

Manufacturers of partly complete machines now have to comply with specific requirements as well as issuing a Declaration of Incorporation.

Potentially the most costly change to the Directive is the requirement that the fixing systems of fixed guards must remain attached to the guards or to the machinery when the guards are removed, but there are other more subtle changes which could be equally costly.

For full details of PPMA 2008 training courses and seminars, including discounts for multiple bookings, contact John Cowdrey at the PPMA, T: 020 8773 8111, E: technical@ppma.co.uk

## PFM PACKAGING MACHINERY

## PFM celebrates 20 years in the UK market

Customers of PFM Packaging Machinery gathered at its Leeds premises in October to help celebrate the twentieth anniversary of the company's UK operations.

Annual growth of some 15 per cent has seen PFM treble its UK sales within the past seven years, says the company, with particular success in the dairy industry



where PFM has supplied a number of machines to produce reclosable packs for cheese.

## Trade balance surplus doubles for UK process machinery

Final figures for 2006 imports and exports of packaging and processing machinery show that UK manufacturers of processing equipment recorded a trade surplus over imported equipment for the second year running. In fact the surplus doubled to £31million from £15 million in 2005.

UK weighing machine manufacturers also produced a good result, with overseas sales up 20 per cent to £30 million and a surplus over imports of £17.5 million.

Overall packaging machinery exports disappointed, registering a small decline over 2005 of £2 million at £213 million. However the figures show that sales to the USA held up well in both processing and packaging categories at

£23.2 million and £27.5 million respectively, while Russia and India are climbing the table of important markets at sixth and fourteenth place respectively.

Sales to EU countries were flat but Ireland continues to be a vital source of custom with £19.5 million of packaging machines and £10 million of process technology heading over the Irish Sea.

As expected, imports from Germany (£154.5 million packaging, £27.5 million processing) and Italy (£72.5 million and £14 million) dominated. But total imports were flat at £367million (£364m 2005) for packaging equipment, while process imports registered a sharp decline from £147 million in 2005 to £125 million last year.

Imports from China in both categories reached a total of £3 million, split evenly between processing and packaging equipment.

### COMPANY NEWS

## Adelphi group acquires Masterfil

Filling and capping machinery manufacturer Masterfil has been acquired by the Adelphi group – which also specialises in filling and capping equipment – and has relocated to the Adelphi headquarters in West Sussex near Gatwick Airport.

Adelphi group chairman, Stephen Holroyd, said: "Masterfil's range of machines, handling liquids and creams in volumes of 200ml to 5 litres and the IBC drum and weigh fillers, are a perfect fit for Adelphi, extending our existing range of semi-automatic, monobloc and specialist filling machines."

**Oystar – The processing and packaging group**, is the new name for IWKA's packaging technology division acquired in March this

year by investment group Odewald. Oystar employs 2560 people and has 16 manufacturing companies.

**Bosch Packaging Technology** has licensed German manufacturer Paal to produce its CBI and CBC cartoning machines for the food industry.

**Norprint** has become UK distributor for the range of labelling and sleeving equipment made by Bopack, Belgium. The sleeveers, with speeds up to 850 a minute, are claimed to be the fastest in the world.

**Walsall Engineering** is to provide UK project and engineering management, installation and after sales service for the fish processing lines built by Spanish manufacturer Palinox

**Logopak** has announced reductions up to 25 per cent in the price of printheads for its print-apply machines when used with Logopak labels.

AUTOMATED PACKAGING SYSTEMS

## Print-and-pack bagging system set to pay back in 12-18 months

A print-and-pack bagging system installed by industrial components supplier OEM Automation, Leicester, to replace a manual system will pay for itself in 12-18 months the company reckons.

Until recently OEM Automation was using two manually operated heat sealers and hand-applied labels when bagging components, but switched to a combined Autobag AB 180 bagger and PI 412c printer from Automated Packaging Systems.

"Since installing the AB 180 we have made significant cost savings in terms of time and labour," says Adam Parkin, OEM Automation warehouse manager.

"Deadlines are much easier and more cost-effective to meet and the new bagging and printing system has had a positive impact on our productivity."

He adds: "We estimate that the machine will have paid for itself within 12 to 18 months from labour cost savings alone."

The AB 180 incorporates a sectionalised tray that allows components to slide down a slot into the funnel and then into the bag, which means loading bags with mixed and various components is quick and easy, says Automated Packaging.

Three bag sizes are used to suit the various component ranges – with runs varying from 10 to 2000 pieces – and can be changed over in less than 2 minutes.

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SCHUBERT UK

# Robotic system handles tea bag cartoning for Finlays

Private label tea packer Finlays has installed an automated packaging system from Schubert in which one of the ten two-axis TLM robots employed is specially programmed to shake out and evenly distribute tea bags in the cartons.

The system at Finlays' tea packing plant in South Elmsall, near Doncaster, is handling five different pack sizes of 80-240 bags, which are fed from a series of teabag machines at speeds up to 8000 bags a minute.

A carrier system of mini tote bins accepts the teabags in the appropriate count straight from the bagging machine and, once at the loading position, the tote bins are lifted and tilted by the robot to empty into the cartons, pre-erected on the machine from flat blanks.

As the tote bins are tilted, they are gently shaken by the robot to ensure that all the contents empty evenly into the carton.

Finlays operations director Steve



**Loading tea bags:** Schubert system employs mini tote bins as carriers

Copley says the system has not only significantly increased production capacity, but also introduced quick and accurate changeovers between different formats.

"The previous method of packing was governed by three fixed formats and the means to change from one to another did not exist, thereby constraining potential capacity. Also, crews

were required to move from line to line as demand dictated, creating difficulties in building teams and ownership of equipment.

"The Schubert system ensures lines are now very flexible and have the ability to change between sizes as well as allow the development of multiple formats."

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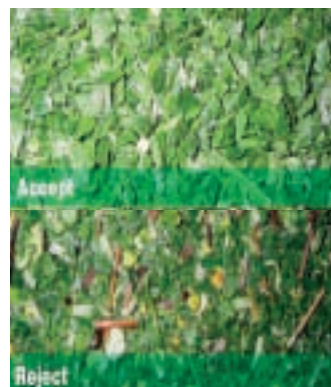
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RADIX SYSTEMS

## Contaminant sorter modified to monitor frozen herbs

Belgian frozen herb processor HerbaFrost has bought an opto-electronic sorter specially modified by manufacturer Radix to work reliably at temperatures of -20deg C while removing insects and discoloured pieces from products such as frozen parsley, dill, coriander and leek.

The Radix Autosort MC-A722 was specially adapted to operate in low temperatures at an additional cost of less than 10 per cent and,



**Removing contaminants:** Autosort machine cleans up frozen herbs

says Radix managing director Milan Fuchs, will be of interest to many frozen fruit, vegetable and herb processors, who will be able to keep sensitive products in cold store while sorting is carried out.

HerbaFrost managing director Peter van Asten says the machine meets his company's expectations completely.

"It is able to remove insects such as ladybirds which settle in the product, and it can also improve the quality of our herbs by removing discoloured parts of the plant such as brown garlic chive or yellow parsley leaf."

The MC-A722 is capable of processing frozen herbs at 1500 kg/hour when sorting for foreign bodies only, or at more than 500 kg/hour when sorting for discolourations.

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**Improved productivity:** *Ishida weighers reduce staffing levels for Mack Service*

ISHIDA EUROPE

## In-line multihead weighers cut fresh fruit giveaway

Fresh fruit supplier Mack Service, Southampton, has seen product giveaway reduced from around 7 per cent to 1 per cent and productivity doubled, following the installation of two Ishida Fresh Food Weighers (FFWs) to replace hand weighing.

As a result, Mack Service expects these linear multi-head combination machines to pay for themselves within 18 months.

"As well as the vast improvements in accuracy, the increased level of automation means we have halved the number of people required on this line, freeing up personnel for other duties," explains Mack Service operations manager Gary Kennedy.

The FFWs form part of a mini convenience packing line at Mack Service's factory, which also includes an Ishida QX-775 tray sealer and DACS-W checkweigher. The line is being used to pack a variety of mixed and single fresh fruits for retailers into tray sizes of 160-460g.

The Ishida FFW was specifically developed to enable fresh, sticky and difficult to handle products, which previously could only be weighed and packed manually, to benefit from the combination weighing principle for improved accuracy.

Operators deliver the product along linear belt feeders that distribute it evenly to the weighing units, where hoppers with anti-stick scraper gates ensure a consistent product flow through the weigher.

For the installation at Mack Service, each of the FFWs is divided into two sections, enabling up to four types of fruit to be handled at different weights for discharge by the machine into the same pack.

The specified line speed is 25 packs a minute but speeds over 30 a minute are regularly being achieved, says Ishida Europe, while single fruit can be handled at 40 trays a minute.

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# For mid-speed wrapping, is it One reel or two?

AS UK DEMAND FOR SHRINK-WRAPPERS EXPANDS AROUND THE MID-SPEED SECTOR OF THE MARKET AND SHRINKS AT THE TOP, TWIN-REEL MACHINES APPEAR TO HAVE RE-ASSERTED THEIR DOMINANCE OVER THE SINGLE REEL VARIETY.

In a market as mature as shrink-wrapping, there are few surprises, according to Barry Tucker, chairman of Aetna UK. And he should know, having been involved in shrink-wrapping since the mid-1960s, when he completed a survey for Thames Board Mills on the likely impact of the advent of shrink-wrapping on the corrugated board industry.

He does, however, admit that in the last few years demand for intermittent twin-roll shrink-wrappers in the mid-range has taken him by surprise.

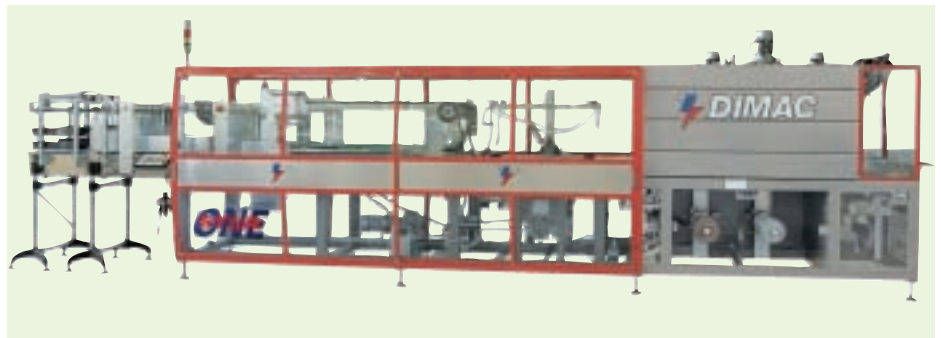
"Five years ago I would have said that anyone running 20 packs a minute or more would automatically go to a high-speed, continuous, single-reel machine, but that hasn't actually happened and a great chunk of the market – that is companies doing up to 30 packs a minute – is using twin-roll equipment.

"I doubt more than 40 single-reel machines are sold every year in the UK and there are at least 15 companies vying for that market. If we sell six high speed shrink-wrappers in a year we're happy. But go to the twin-reel systems and there's a middle market that's much more robust."

These observations are backed up by Glyn Johnson, sales director with Yorkshire Packaging Systems (YPS), who estimates that twin-reel machines account for at least 80 per cent of the UK market. YPS alone sells more than 60 twin-reel units a year.

In the past, it was easy to see why smaller companies with lower production speeds might have opted for twin-reel units. Single-reel machines were large and expensive, making their purchase for anything other than ultra high speed canning or bottling operations difficult to justify. However, with time, single-reel shrink-wrappers have come down in price as well as size.

"Today, if you want a quality twin-reel



**Continuous motion:** Aetna single reel Dimac Star machine is built on a modular basis

machine, it's about the same price as a cheaper single-reel machine," says Barry Tucker. "You could install a 30-pack-a-minute, single-reel system including tray erector for about £60,000. A decent twin-reel wrapper with tunnel, tray erector and all the other equipment, apart from costing more to maintain, wouldn't cost any less than that."

## Price gap not closed

Not all machinery suppliers agree that the price gap has closed altogether. Tony Roberts, sales manager with Adpak, says: "I don't believe you can get a decent single-reel wrapper for the same price as a twin-reel wrapper." Adpak sells both in-line twin-reel sleeve-wrappers, which start from about £35,000, and single-reel shrink-wrappers, which cost upwards of £100,000, as well as lower cost manual and semi-automatic wrappers.

At YPS Glyn Johnson also estimates the cost of single-reel wrappers at £100,000 plus and up to four times the price of twin-reel machines.

Price aside, several other factors are conspiring to drive sales of twin-reel wrappers at the expense of single-reel wrappers in the UK.

While the UK market for all types of packaging and processing machinery has not escaped the impact of a declining manufacturing sector, the single-reel shrink-wrapper market has been

hit particularly hard, as its customer base consists almost exclusively of large blue-chip manufacturers, many of whom have moved their manufacturing overseas.

Those blue-chip companies who still produce in the UK tend to "stick with what they know", according to Barry Tucker. "If a company has been buying particular machines for 20 years they seem to go on buying them – it's a case of better the devil you know rather than taking the risk on something new."

For manufacturers and packers supplying the major retailers, the ability to regularly refresh

## Double wrap gives low cost alternative to board

German manufacturer MAF has devised a shrink-wrapping system that provides a totally enclosed pack – with two wraps at 90deg to each other – as a low cost alternative to corrugated board.

The system comprises two MAF Straff-packer servo controlled stretch banding machines with a low energy shrink system using shrink guns or a low energy shrink tunnel and is available in the UK from representative Partners in Packaging.

First the product is collated and stacked as



**Sidefeed twin reel machine:** Adpak 712 series can be equipped with automatic bottle collation

ranges with new products and packaging formats has become key to retaining listings, and it's a trend that plays into the hands of the more flexible twin-reel machine.

Efforts have been made to improve the flexibility of single-reel machines. Aetna, for example, has modularised its Dimac Star machine, so the system can be expanded or simplified on the user's premises.

"The entire line is made up of blocks, so if a customer decides they want to run without a tray they can buy a machine without the tray erecting block, then if they change their mind

two years down the line, we simply unbolt the line and drop a tray erector in," explains Mr Tucker.

He says Aetna has also made it easier to change between different pack sizes by eliminating the need for change parts, making its Dimac range ideal for those companies who run non-dedicated lines or where regular pack and size changes take place.

At the same time, twin-reel wrapper designers have been working to increase speeds. Adpak, for example, claims the German-built BVM Brunner range of German twin-reel



required and taken into the first Straffpacker, where it is wrapped in a band of polyethylene stretch film. The collation is then wrapped at 90 degrees by the second Straffpacker with any

loose film on the side being shrunk down by optional low energy hot air guns.

The Straffpacker uses a servo rewind system which, explains Partners in Packaging, eliminates waste film and ensures a fully stretched band of film round the product to hold it stable.

In this way, two quite thin layers of film are said to provide good product protection with no need for a base board or corrugated case or tray while maximum protection is given on the edges and corners, without wasting film.

"Because the product can be seen, it is also treated with more respect when handled than is often the case with a corrugated pack," points out Duncan Macintyre at Partners in Packaging.

wrappers can wrap in excess of 40 packs a minute. And Shrinkwrap Machinery says it has offered a high speed twin-reel for many years – its machine is able to wrap up to 35 packs a minute thanks to the use of a moving seal head facility which moves with the pack and seals behind it in continuous motion.

While these speeds represent a marked improvement on the 15-20 packs a minute that are the norm for twin-reel systems, they are still a long way off the 100 a minute achieved by many single-reel machines. The fundamental design of a twin-reel system – with a sealing beam – clearly precludes high speed.

### Incremental developments

Whatever the reasons, twin-reel systems look likely to dominate the volume market in the UK for the foreseeable future, which means, as Adpak's Tony Roberts puts it: "The days of companies placing orders for over a quarter of a million pounds are fast disappearing."

As is to be expected in a mature market, technological developments in shrink-wrapping equipment tend to be incremental rather than radical.

"The equipment itself hasn't changed that much in ten years," says YPS' Glyn Johnson, "although it is being continuously improved, for example, by making it modular or adding 'whistles and bells'." One such 'whistle and bell' is the inclusion of a pack counter as standard on every YPS machine. "It's a very simple device, but customers find it very useful and it works just like a milometer in a car," he says.

YPS has also made an SNB belt standard on all of its systems. "A lot of our competitors use a polyurethane belt, which is fine for light products but, with heavy packs, the weight of the pack as it enters the machine puts sideways pressure on the bearings. The SNB is a heavy duty, plastic modular mesh belt with bigger bearings, and while we didn't have many failures with polyurethane belts, we've had none since we went over to SNB."

In single-reel equipment, Aetna's Barry Tucker says the biggest change in recent years has been the move by some companies to rotary knives rather than vacuum belts.

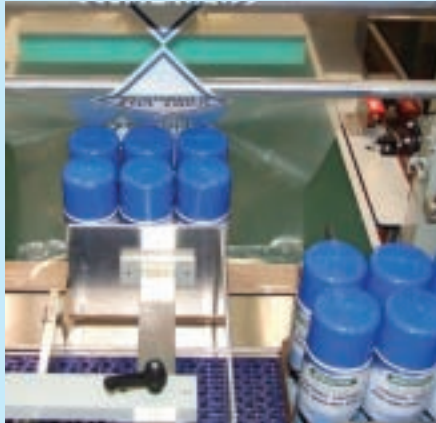
The Dimac Star series employs a rotary cutting knife and servo controlled drive rollers set immediately beneath the transport level. This means that the cut sheet of film is driven positively onto the product conveyor and accelerated to the speed of the flight bar, providing optimum print register accuracy. In addition,

## Shrink-wrapper ready for power cuts

Yorkshire Packaging Systems has just installed its third system at Oldham-based James Briggs Consumer Chemical and Aerosol Specialists, a supplier of aerosol based paints and speciality chemicals to various industries.

The first YPS system was supplied to James Briggs in 2001. This was followed by the purchase of two further lines, which were installed late last year and earlier this year, to replace existing systems and boost capacity. The lines consist of two Rochman side feed sleeve sealers and shrink tunnels.

The shrink tunnels differ to the one supplied in 2001 in that they are fitted with an emergency air evacuation system to ensure no product can get left inside the shrink tunnel in the event of a power failure. This works by holding a reservoir of air which is automatically released and used to drive the shrink tunnel



conveyor motor in the event of loss of power.

In addition, because one of the lines was optimised to cope with an increased line speed it had to be supplied with a double chamber shrink tunnel. This line runs in excess of 20 packs of aerosols a minute, particularly quick for a side feed wrapper.

the mechanism is simpler than vacuum belts, and can simply be slid out from the machine for maintenance.

With environmental concerns attracting more attention and energy prices on an upwards trajectory, designers of shrink-wrapping machinery – one of the highest energy users of all processing and packaging machines – have also been working on making their equipment more energy efficient.

“Most machinery suppliers now have low energy shrink tunnels which operate at a far lower kW rating than a few years ago,” says Adpak’s Tony Roberts. “Advances in insulation materials have also led to lower operating temperatures and less waste heat into the production atmosphere.”

### Low energy shrink tunnels

Although the amount of energy they consume depends on film thickness, the size of the item being wrapped and the machine speed, most shrink-wrappers today require somewhere between 4 and 10kW – a massive improvement on the machines of a decade ago that typically required at least 15kW. These energy savings have been achieved by a number of means.

YPS has gone for the dual-pronged approach of better insulation and two sets of shrink tunnel curtains at the front and back of its machines to create a ‘double glazing effect’. “You’ll never get away from the basic fact that when packs enter and leave the shrink tunnel a bit of cool

improvements in both the film and the tunnel.

“We’ve got a new generation of shrink tunnels – the AD 450T and the 650T – that has halved energy use to just under 7kW. They are very compact and are also ‘cool wall’, which means that when you touch the outer casing, the metal shroud around the tunnel is cool to the touch so the heat is kept in the tunnel rather than escaping through the walls.”

### Tunnels match product size

Shrinkwrap Machinery has delivered five bespoke shrink-wrapping machines to Huhtamaki (Lurgan) in Northern Ireland, which have allowed the speciality packaging company to reduce the size of its shrink tunnels.

“Tunnels work most efficiently when matched to a product’s size and with only small gaps between the products ie 75mm,” explains managing director Peter Frith. The machines completed the re-engineering of nine lines for wrapping moulded fibre egg cartons.

Four 1100mm wide dual side entry machines and one 900mm wide single side entry machine were commissioned by Huhtamaki. The dual entry machines allow product from two lines to enter the machine. Different width films – small on the bottom and wider on the top reel – are used. The excess film at the sides of the packs is lifted from the bottom and lowered from the top before side sealing. This enabled the shrink tunnel to be reduced in size to cater for packs up to one metre long, 600mm wide and 350mm high

air enters and warm air escapes, but this helps minimise it,” says Glyn Johnson. “Certainly this has influenced one or two machine sales where customers have looked at the power consumption of a tunnel compared to a competitor’s machine – I’m thinking of one in particular whose energy efficiency was about half.”

At Adpak, Tony Roberts says they are “turning the temperature down” by 20-30deg C compared with ten years ago as a result of

## Side seal for better protection

Shrinkwrap Machinery Co has built a number of machines for customers with a specific requirement to side seal their product for better protection.

Stelrad of Mexborough, South Yorkshire, recently took delivery of an automatic shrink-wrapper with a bespoke side sealing system.

The machine (right) sleeve-wraps the company’s radiators, which range in length from 400mm to 3 metres. The moving seal head facility allows random length radiators to be handled, with the seal bar chasing the pack, sealing just behind for maximum shrink film efficiency.

The twin-reel sleeve-wrapper has a 1100mm wide cross sealing blade and a fully

adjustable hot air gun side sealing unit.

The shrink tunnel is an energy efficient design, insulated to minimise heat loss and maximise performance. Turbo style fans in the base of the tunnel re-circulate air over the heaters and distribute it evenly around the interior of the heat chamber.



Tim Wells, project manager at Stelrad, says: “We are delighted with the performance of our new machine; it has increased our productivity and improved our pack edge protection.”



**Air curtain:** KHS system allows the shrink process to be monitored by a camera

using a film thickness of 25 micron. The shrink tunnels use thermal transfer barriers with bottom air recycle and thick insulation.

Aetna UK says it has made its equipment more energy efficient via a number of means. These include higher thermal insulation to reduce heat loss from the tunnel, better air circulation inside the tunnel to increase the efficiency of the shrinking process, the ability to run lighter and thinner films, and automatic start-up and shutdown of the tunnel to prevent it being left on when it is not in use – but at the same time ensuring it remains switched on ready for production.

Finally, by using air curtains at the infeed and outfeed of a shrink tunnel, rather than the more usual hanging curtains, KHS has come up with a system that can also be remotely monitored by a camera. In addition, points out the company, there is no physical contact with packs being shrunk, eliminating any risk of damage.

A camera can now monitor the shrink tunnel continuously although, says KHS the system is intended primarily for checking the process after a format change. Images are displayed on a monitor and can be linked into a factory-wide communication system. ■

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For full details of all PPMA members able to supply shrink-wrapping equipment, consult the PPMA machinery finder service, tel: 020 8773 8111, or visit [www.ppma.co.uk](http://www.ppma.co.uk)

Market trends are leading pallet wrapping machinery developments in two principal directions.

On the one hand there are new and less expensive fully-automatic solutions to cope with high throughput – up to 170 pallets an hour – while on the other hand, mobility, low cost and flexibility is allowing machine-wrapping to be extended to more warehousing operations where manual wrapping of hand-assembled pallets may once have been the preferred option.

Up to now, high speed has generally been a requirement for what suppliers mostly agree is an annual UK market for some 100 installations of fully automatic systems, which represents probably less than 10 per cent of the entire UK pallet wrapping machine market, numerically.

But, as the retail ready concept in transit packaging gathers momentum – broadening out from shelf-ready transit packs – so manufacturers of a whole range of grocery products, beverages and supermarket lines can probably expect accelerating demand for larger display packs in the form of half pallets and dollies. And this means higher pallet wrapping speeds.

At the same time, the growth in logistics operations serving retailers such as office equipment stores, chemists and some DIY outlets with mixed pallets loads, assembled by hand on a just-in-time basis, has enlarged the market for simple wrapping systems, including robots, that can be moved around the warehouse floor, from one pallet load to the next.

High speed developments are now taking place with the rotary arm variety of machine, and also with the ring style wrapper – up to now the fastest of them all. Indeed, the development of both types of machines over the years provides an interesting point in terms of one technology leapfrogging another.

Much of the development in pallet wrapping over the past few years has, of course, been directed at machines that wrap film around a stationary pallet as opposed to the original method of rotating the pallet on a turntable.

This is hardly surprising, bearing in mind the need for outputs approaching or in some cases exceeding 100 pallets an hour, and the effects of centrifugal force. Even under the pressure of a top platen, few pallet loads can be relied on to stay put at 40-50rpm, the speed required to wrap pallets at this rate.

But what is surprising, in an industrial climate that increasingly seeks to eliminate hand work and potential sources of strain, is that

# Higher speeds - lower costs

PALLET WRAPPING DEVELOPMENTS ARE POLARISING INTO HIGHER SPEEDS – FOR SMALLER PALLETS AND DOLLIES – AND LOWER COST EQUIPMENT FOR FIRST TIME USERS.



**Double head ring:** Twin head version of ITW Mima's Octopus wrapper handles 150 pallets an hour

manual pallet wrapping still survives in many organisations, if only for 15-20 pallets a day.

After all, operator controlled equipment to wrap a 2 metre high pallet in around 2 minutes can be had for under £2000, while semi-automatic equipment that requires manual film attachment and film tail sealing starts at about £4000. More advanced models with film pre-stretching to 200-300 per cent can be had for around £7000.

## Going for machine wrapping

"From ten pallets a day upwards there is every reason to go for machine wrapping," points out Barry Tucker, chairman of Aetna UK which supplies the Robopac range of pallet wrappers in the UK. "Not only is there a labour saving, but the wrap quality is better, the load is more stable and less film is required."

He estimates that a move from hand-wrapping to a simple machine without pre-stretch will save 50 per cent of the film cost, while a

move to wrapping with power pre-stretch will save 70 per cent.

At the high speed end of the market, the fully automatic ring-style wrappers capable of speeds in excess of 100 pallets an hour are facing a new challenge as the first rotary arm machine capable of speeds up to 170 pallets an hour makes its debut.

First shown at the Fachpack exhibition in Nuremberg in September the new Robopac Helix HS40/2 has two arms rotating at speeds up to 37 rpm, each with a film carriage that employs the established Helix pre-stretch units allowing film pre-stretch ratios up to 300 per cent. There are also two separate film clamping, cutting and sealing units.

As a result, the machine is able to complete typically 12 wraps in a cycle time of 24 seconds (150 pallets an hour) or nine wraps in 21.2 seconds to give 170 pallets an hour. A 16-wrap cycle still only takes 26 seconds and allows 135 pallets an hour to be completed.



**Double arm:** Robopac Helix HS40/2 is capable of up to 170 pallets an hour using two rotating arms

The irony of an ultra high speed rotary arm wrapper – based in this case on a well-established design that has sold in the hundreds for more than ten years – taking the lead in terms of speed may not be lost on users who have remained steadfastly loyal to the ring-style machine for over 20 years.

### Performance improvement

Indeed, one of the reasons that ring style pallet wrappers enjoyed particularly quick growth following their arrival in the mid-1980s was the substantial performance improvement over turntable style machines at a time when rotary arm machines had still to convince everyone of their reliability.

Faced with rising throughputs – at least 60 pallets an hour – for loads that needed to be kept stationary or were too fragile to accept sufficient top clamping pressure, users were forced to choose between the early rotary arm machines – which suffered from poor reliability – and the considerably more reliable but faster and more expensive ring-style machines.

As one current supplier of both types of machine recalls: “In the early days the ring systems took a good chunk of the market. People could see that the rotary arm systems were pretty flakey, with a film carriage flying around on the end of an arm and the whole machine in

some cases wobbling all over the place. So they naturally went the ring-style machine route.”

However, come the early 1990s, rotary arm machines giving speeds up to 70 or even 80 pallets an hour began to offer a convincingly reliable alternative for high volume work. So today rotary arm machines are operating in the throughput domain that was once occupied solely by ring style machines, but at lower complexity and cost.

But the past ten years have seen ring style machines become available for much higher speeds than originally offered, with speeds in some cases up to 120 an hour.

Now, although that speed has been eclipsed by the Robopac twin rotary arm machine capable of some 170 pallets an hour, ITW Mima has announced a twin head version of the Octopus ring-style pallet wrapper capable of 150 pallets an hour.

Developed for high speed lines such as those found in bottling, construction materials and paper tissues, the Octopus Twin is equipped with a double film carriage and a seaming unit which operate on two pallets simultaneously. In addition there is an optional “fast cycle” conveyor system that reduces traditional conveying time by half.

Although high speed could well be of greater importance to a growing number of manufac-

turers, developments in the mid speed range of both rotary arm and ring style machines tend to suggest that each type has its adherents for a number of reasons, familiarity being one of the most powerful.

As one supplier of both types puts it: “A number of larger companies are wedded to rings because they have ten or 20 of them. They have the spares and they know all about them and can fix them if something goes wrong. So why change? Why try a different type of machine? Turning to rotary arm could nevertheless save money when a replacement is required.”

### High speed rotary arm

Certainly new high speed rotary arm machines are coming onto the market with one of the latest being the 95-pallets-a-minute Lorenz Pan S500 machine now available in the UK from CC Automation, which is also supplying the V300 turntable wrapper.

Standard equipment includes automatic handling and film sealing, frequency controlled film lift, and frequency controlled rotating turntable or rotating arm. Film pre-stretch is controlled by two motors, said to ensure minimum film consumption.

Various options are available including: press plate, pre stretch up to 300 per cent, cold store option working at -35deg C, top sheet applicator integrated or in front of the machine, over size machines, single wrap and top wrap and pallet conveyor handling systems.

In the mid speed range the choice of pallet wrappers is also broadening. For example Strapex has just announced a new range of machines that includes both rotary arm and ring style models.

### Semi-automatic wrappers

The new SWA range of semi-automatic rotary arm wrappers can be pillar or wall mounted, and offers four programmable wrapping programmes with eight functions. Optional power pre-stretch up to 300 per cent is available to ensure maximum film economy while speed is up to 35 pallets an hour.

Strapex points out that the SWA machines are particularly suited to production plants under hygiene regulation, as the floor is left clear. They can accommodate pallets up to 2900mm high, with a maximum pallet area of 1250 x 1250mm. An optional pull-out rotating arm allows this to be extended to 1400 x 1400mm.

Meanwhile, the new SWR range of ring style

## PALLET WRAPPING

wrappers features automatic film insertion, wrapping, 'cording up' at the film end and film cutting. There is power pre-stretch while pallet positioning is monitored by photocell.

The SWR30 is aimed at applications where space is at premium and no top sheet is required, and can wrap up to 30 pallets an hour. The SWR40 and 45 can each wrap 50 pallets an hour without a top sheet, while the SWR50 is designed for applications where a top sheet is required and can again handle 50 pallets per hour. Pallets up to 1700 x 2050mm can be accommodated, with a maximum wrapping height of 2400mm.



**Rotary arm:** New Strapex SW 20 semi-automatic pallet wrapper

Recent introductions from Aetna include the Robopac Sistemi Genesis Futura, which runs at a speed of 25-35rpm compared with the 50-55rpm of the top-of-range Genesis machine, to give typically 50-60 pallets an hour and allow users a choice between ring and rotary arm systems in the mid-speed range.

Like its higher speed counterpart, the Futura uses the ring itself to generate power for the film pre-stretch system, eliminating slip rings with brushes and their associated maintenance needs. The machine is shipped in one container and is self-erecting.

Further recently introduced stretch-wrappers from the company are a range of semi-automatic turntable machines with automatic film cut and wipe down and an entry-level rotary arm machine capable of 10-20 pallets an hour. This, too, is delivered in one piece and can therefore be installed within a day.

Low cost machinery is now available to help mechanise much of the wrapping task for low to

## Lower cost stretch-hooder for Euro pallets

The range of Rainbow pallet stretch-hood machines built by Dutch manufacturer BTH has just been extended with a new model for handling Euro and similar size pallets at speeds up to 100 an hour.

The machine offers the same, fully sealed pallet as larger, 120-pallet-an-hour models used for complete protection of empty and filled drinks containers, as well as more traditional markets such as chemicals and building materials where weather proofing for outside storage can be a particular benefit.

However, explains BTH, the price is lower, substantially closing the gap with stretch-wrapping machines.

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**Lower cost:** New Rainbow pallet hood machine



**Robot wrapper:** Robopac machine can be driven up to the pallet for the wrapping operation

medium pallet volumes. For example, Adpak Machinery Systems' best seller is the Ronda 3000 semi automatic pallet wrapper offering a turntable speed of 6-14rpm and able to handle a maximum load of 2000kg. Prices start at £4200.

Watershed Packaging has some 30 pallet wrapping machines in its range, starting with a basic machine that sells for just under £2000. Machines with motorised pre-stretch start at about £4000 while further models include a pneumatically powered unit for hazardous areas, machines with top hold down platens for

handling lightweight goods, fully automatic wrappers and machines to work in temperatures down to -30deg C.

Watershed also supplies a robot wrapper for handling pallets anywhere within a warehouse.

Indeed, while pallet stretchwrapping by machine can be had for under £2000 to replace a manual operation, one problem of course remains. The pallet has generally still to be taken to the wrapper.

In some labour intensive warehousing operations, where orders are picked and palletised manually over a large floor area, this may mean an unwelcome amount of fork truck movement or a level of conveyor-based automation that simply cannot be justified economically. So hand wrapping by the person that loads the pallet may still seem the simplest solution.

One answer is to take the wrapping machine to the pallet, which is why several suppliers offer robot wrappers that are mobile and can be driven up to the pallet to complete the wrapping operation in around 2 minutes.

In fact, Aetna has recently supplied a major UK stationer and office equipment supplier with ten of its Robopack robot pallet wrappers which, with their operators, are free to roam an extensive warehouse allowing pallet loads to be machine wrapped where they are created, avoiding the extra toil of doing it by hand.

Pallet wrapping is, of course, sometimes part of an integrated system such as a complete wrapping and strapping system being supplied by Adpal to handle empty steel drums at one of the UK's principal manufacturers.

## PALLET WRAPPING

Built in Italy by Tosa and CMR the system comprises a fully automatic empty pallet feed system to the palletising area, vertical strapping, horizontal strapping and high speed rotating ring wrapping using two high speed ring machines running at 50rpm each. Any combination of wrap or strap formats can be selected by the user and, says Adpal, line speeds can reach in excess of 180 pallets an hour.

At the end of the line, full pallets are double stacked ready for vehicle loading by fork truck.

# Pallet wrap and strap review saves £200,000 a year

Pallet strapping and stretch-wrapping techniques may have been around for 30 years or so but there are still opportunities for users to make substantial savings, as a manufacturer of rolled aluminium products discovered from a survey by machinery supplier M J Maillis.

After taking up the recommendations of the survey, the manufacturer is now enjoying annual savings in the region of £200,000.

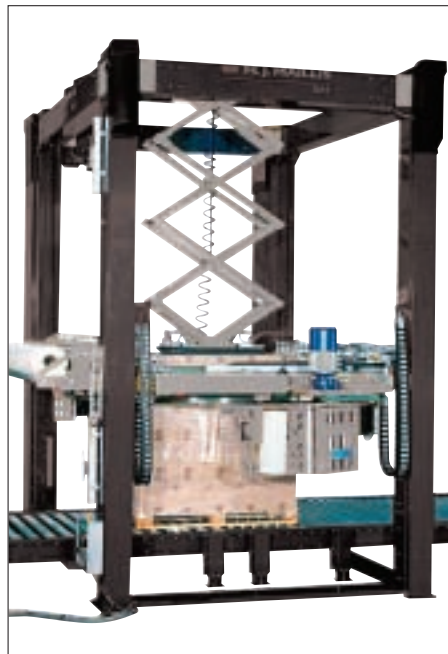
"Since introducing our packaging review only a short while ago, we have received considerable interest from all facets of business," says M J Maillis group marketing manager, Stefanos Sargologos.

"Our packaging review offers larger organisations a complete audit of the packaging process. This includes a complete study of machine performance and operating efficiency, an investigation into downtime and its probable causes and a full understanding of the end user's packaging requirements. A measure of load security, a detailed study of consumables used and a 'cost versus performance' comparison also forms part of the review."

At the aluminium processor six-man, eight-hour shifts were operated daily just to complete the packaging cycle. In this wholly manual operation, aluminium product was first palletised, secured using steel strapping then covered with considerable quantities of film.

Initial investigations indicated that complete conveyor fed wrapping and strapping systems could reduce manual input to just one machine operator per shift on the sheets line and two machine operators per shift for the coils line, with other personnel being more effectively deployed in other areas of the factory.

However, such was the complexity of the



Ring wrapper for coils: Mancon 2800 machine

task that a custom solution was required.

For the proposed aluminium coils strapping and wrapping line, a primary consideration was the high number of different coil sizes produced – some 70 coil types with diameters from 700mm to 1950mm and heights from 500mm to 2300mm. As an additional complication, 14 different pallet types were also used.

So, for a start, it was decided to include both height and diameter scanning facilities at the start of the packing line.

### Pre-approved strapping pattern

A control panel, offering some 18 potential strapping values, was also included to allow for the numerous coil sizes involved and to enable individual pallets to be selected by category and pre-approved strapping pattern. The various coil strapping programmes created by MJ Maillis offered multiple packaging methods, protective top sheet application, wrap and strap or strap-only cycles.

Packaging of aluminium coils of up to 1950mm diameter weighing up to 8 tonnes starts by conveyor presentation to a Mancon 2800 ring type stretch wrapper for the application of film, pre-stretched by 250 per cent.

Because of the considerable variation in coil sizes that would have to be accommodated during the strapping process, the Mancon 2800 model also featured a double top sheet dispenser in order to allow coils up to 1.3 metres diameter (1.7 metre top sheet) and up to 2 metres diameter (2.4 metre top sheet) to be covered with sufficient overlap.

Additional features incorporated into the Mancon 2800 included a pressing action to minimise air trapped inside the coil and prevent

the top sheet bubbling. To ensure each coil leaves the plant in a totally waterproof condition, and that stretch film is used efficiently, film overlap can also be accurately controlled.

Wrapped coils are then taken by conveyor to a Vario Master 9460 strapping machine for the application of polyester strap along with protective top edgeboards.

As a result of the new wrapping and strapping process film usage for coils has been reduced by 45 per cent and coil packaging time cut to less than two two-man shifts a day. In addition polyester strapping costs much less than steel.

Stefanos Sargologos at MJ Maillis says that annual savings of about £40,000 have been made in strapping consumables and around £100,000 in strapping and wrapping line personnel costs each year. "Offset against the cost of installing the solution in the first place, payback will take less than five years," he explains.

The remainder of the savings have been made in automating the aluminium sheet strapping line with two conveyor-fed VarioMaster polyester strapping machines. ■

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For full details of all PPMA members able to supply pallet wrapping equipment, consult the PPMA machinery finder service, tel: 020 8773 8111, or visit [www.ppma.co.uk](http://www.ppma.co.uk)

# TOILETRIES AND COSMETICS

FROM PROCESSING TO CARTONING AND ROBOTIC END-OF-LINE OPERATIONS, VERSATILITY SEEMS TO BE FRAGRANCE OF THE MONTH FOR BRAND-OWNERS AND CONTRACT MANUFACTURERS IN THIS INDUSTRY.

MIXING AND PROCESSING

## Reducing stock with late stage customisation

As a concept, 'late stage customisation' or 'late stage particularisation' is more familiar in the pharmaceutical industry, and more specifically to variations in packaging and print rather than product. So can the idea be extended to toiletries and cosmetics, and can it work with product variants as well as with the pack and branding around them?

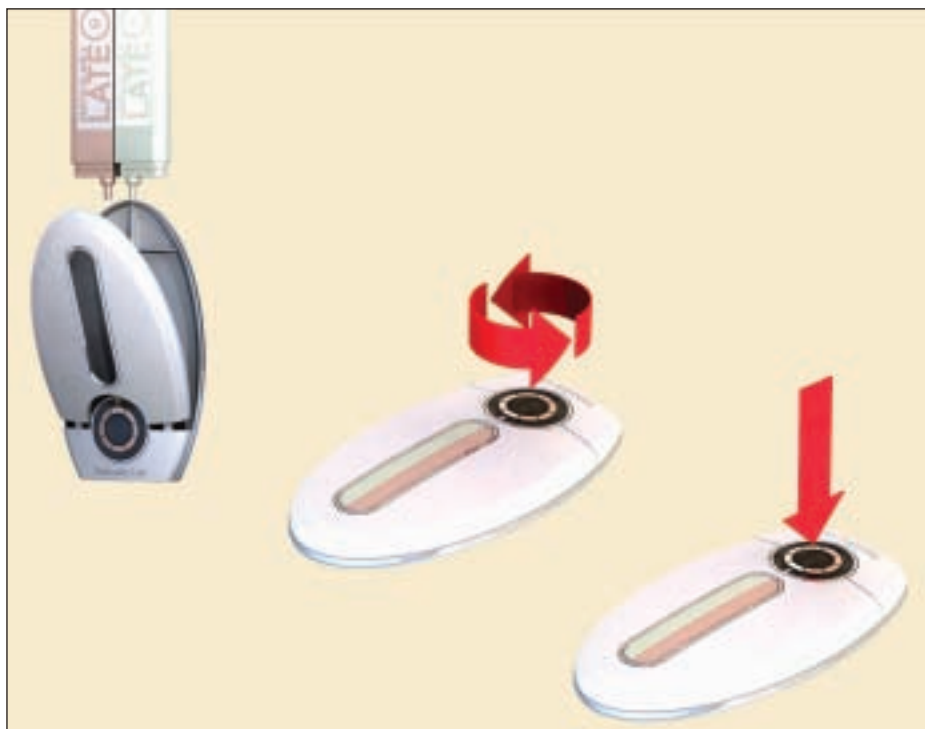
Molins company ITCM says it can. According to new business development director Simon Strothers, the concept is a simple one: "Do as much as possible without having to change the process. Then introduce any changes only at the final stage."

Evidently, the strategy is not going to work for every product when applied to the formulation itself, as Mr Strothers explains: "It comes into its own where there is a critical mass of common ingredients, but where the distinctive features come from one or two elements."

He adds: "Clearly, the science has to stack up, too." The quality and shelf life of the formulation must also be unaffected by late rather than early introduction of key ingredients into the mix.

Conventionally, with aerosol-filled anti-perspirant deoderants, for instance, the fragrance is often premixed with the bulk carrier. Changeover between brands or variants incurs a potentially large amount of downtime, given the persistent taint of many fragrances, Simon Strothers argues. To minimise these unproductive periods, the tendency is to mix and fill larger batches. This in turn means the operation is less agile and less responsive to the demands of own-label customers and supermarkets.

Says Mr Strothers: "In terms of the business,



**Late stage customisation:** Particularly Late foundation cream pack concept from ITCM and designers Smallfry allows users themselves to customise the product tone immediately before use

the major benefit is working capital reduction. With a two or three day call-off, it costs a lot of money to have that sort of finished goods stock tied up. But using this approach, stock can be reduced for the same level of service." Changeover times can also be dramatically reduced, says ITCM, so overall production volumes increase.

### Final colour for lipstick

ITCM specialises in customised equipment in the dosing, filling and packing of personal care and healthcare products, as well as food and drink. Other cosmetics operations which might advantageously adopt the late stage particularisation model include lipstick lines, says the company, where colour may be the final element added to differentiate products which otherwise use the same base ingredients.

Recently, ITCM worked with design agency

Smallfry on the Particularly Late blending and dispensing pack for foundation. This took the concept of late particularisation even further, putting it literally into the hands of the consumer.

Not everyone is sure that 'late' is necessarily going to be better. Nick Ruecroft, sales manager at Romaco UK, argues quite rightly that only a formulator can judge whether specific combinations of ingredients can be made later rather than earlier in the process. But up to now, he says, late stage customisation of product is not a concept he has encountered in toiletries and cosmetics. Then again, while Romaco works extensively with liquids and creams, it is not so active in the aerosols market, which ITCM cites as a prime contender for this approach.

Romaco, which supplies the FrymaKoruma range of conical vacuum processors for liquids and semi-liquids, has installed a Dinex system

at the new factory of Swiss contract manufacturer ASM. The Dinex has a vessel capacity of 5200 litres – giving a maximum batch size of 4000 litres – and is installed over two floor levels, separating technical and production areas.

Its advanced homogenisation system makes the Dinex particularly suitable for complex formulations, says Romaco. It combines the proven toothed rotor-stator homogeniser with axial adjustment of the stator, allowing regulation of the shear force exerted on the product. The shear generated is said to deliver optimal dispersion, with droplet and particle size reduced to less than one micron.

Batch size flexibility is improved by the option of recirculating product either via an internal or external route. As Romaco points out, overall flexibility and fast cleardown are clear requirements of contract manufacturing.

Among the mixing systems available in the UK for cosmetics and toiletries formulations, Adelphi Coldstream designs and manufactures vessels up to 1000 litres capacity. They can be mobile, jacketed for heating or cooling, and fitted with air-powered or electric mixers. Electronic controls for temperature and mixer speed can be incorporated.

As well as customised mixing vessels, Adelphi has a range of stock equipment including the 316L and 304 stainless vessels, with volumes up to 240 litres. These can be supplied with lids and frames on castors, as well as toggle clamps for the recessed lids, inlets and taps.

Stainless steel or plastic break tanks can be manufactured to meet customer requirements, says Adelphi. These can act as a buffer between the bulk tank and the filling machine to ensure constant product height within the tank. Removable spray balls are available for clean-in-place (CIP) in both the break tanks and mixing vessels.

FILLING

## Pharma standard machinery suits industry needs

French supplier PKB has applied servo drive technology to the particular needs of the cosmetics and toiletries industries in the design of its Virtuo volumetric in-line filler. Along with the balcony-type construction, redesign of the filling and cleaning circuits now means that these products can be filled to the exacting



**Vacuum processing:** Lower floor section of the FrymaKoruma Dinex system at ASM, Switzerland

standards of the pharmaceuticals industry, says PKB.

The machine can be equipped with between five and 12 filling heads, each pump controlled by its own servo drive, so it can be adjusted on the run. This means that a standard model can easily handle two or even three-phase products, says PKB, making it the most versatile volumetric in-line filler on the market, the company claims. Output is typically in the 40-120bpm range, says export manager Pascal Renaudin.

### Optimising speed

The drives control the movement of the dipping nozzles, optimising the speed of their up-down action in accordance with bottle geometry and product properties while an industrial computer allows easy changeover between formats and products. Applications include shampoos and conditioners, soap and shower gel, hair dye and suntan lotion.

As much as accuracy, the use of servo drives is also aimed at providing ease of use to customers. "There are no armies of on-site technicians any more to maintain machines and adjust them for product changeover," says Mr Renaudin. "By incorporating servo drives into the Virtuo, we have reduced the time for changeover, excluding cleaning, to around five minutes." This is of vital importance when brand owners will expect to fill scores of different products on the same machine.

PKB, which supplies all the major French perfumery and cosmetics houses, has also made CIP standard on the Virtuo.

But as PKB notes, different customers take different approaches to cleardown. So L'Oréal

is happy to use the CIP system, while a brand owner such as Clarins prefers to take a more traditional approach to cleaning. "The Virtuo offers different options, and these include dismantling all the key wet parts, the pistons and nozzles, and taking them off on a trolley for a thorough washdown," says Mr Renaudin.

He highlights another machine in the PKB range, the Synchro, which was shown at last year's Emballage exhibition in Paris. "This is a completely servo-driven monobloc filler and capper, offering the quality of an in-line filler but with the control of intermittent motion," he explains. Designed to fill perfumes and lotions at speeds of 50-90bpm, it can be specified as a modular system with options including flow meter and level filling.

Meanwhile, the debate about the merits and shortcomings of turnkey installation rumbles on. A company such as PKB can project manage the specification and purchase of a new line, arguing that it is able to choose the best supplier and optimum machine for each operation. A larger company offering complete lines of its own will not have the same freedom to cherry-pick the best systems, the French company maintains.

Many of the arguments for and against the turnkey approach in cosmetics and toiletries are familiar from other sectors such as food and drink. But IMA UK, one of the key providers of full line installations, says that the time taken for validation and Factory Acceptance Tests for individually-sourced machines continues to be a particularly thorny issue for cosmetics and personal care operations.

"Customers want to be able to validate the



**Servo driven:** APKB Virtuo in-line liquid filler



**Diagonal loop:** IWK's latest tube filler, the TFS 80-1, uses the company's established system

line in one go," says sales manager Barry Chadwick. "Otherwise the whole thing can be a nightmare. You have to integrate the controls and machine interfaces, and if one machine is delayed it can put the entire project out."

Mr Chadwick quotes the example of a turnkey tube-filling line, where the CO.MA.DI.S CP240 filler with robotic feeding can be linked to an IMA cartoner. This line will run at speeds up to 220 tubes a minute he says, suitable for some toiletries and cosmetics. For lower-speed tube lines, IMA has the C960, capable of filling up to 60 aluminium, polyethylene or laminate tubes a minute, with fold, hot

air or hot jaw sealing as appropriate. Electronics on the machine have been brought up to date, says IMA, with touch-screen control and servo control on the filling nozzle. The dosing pump can be dismantled without tools.

Oystar-IWK's latest tube filler is the TFS 80-1 for speeds up to 100 containers a minute, both plastic and metal. This machine is based on the same principle as the servo driven IWK TFS 80-2, TFS 80-4 and TFS80-6 tube filling machines, able to reach speeds of 180, 340 and 510 tubes a minute respectively.

The TFS 80-1 is similarly servo driven and employs the same orbital track to accept empty

tubes horizontally, raise them to vertical for filling and return completed tubes to horizontal for cartoning.

In addition, Oystar-IWK continues to manufacture conventional rotary turret machines, offering economic, mechanically driven alternatives in the speed range 50-160 tubes a minute, both plastic and metal.

For bottle filling, IMA is actively marketing the King range of filling equipment which it acquired with the Swiftpack business. Says Barry Chadwick: "We have a fantastic, broad range of fillers now, including the Kingfisher modular machines which can be expanded to match requirements. Every customer filling shampoos, for instance, knows the King machines." A great many customers use the gear-pump, clutch-brake type of technology found in the King Technofill range. Swiftpack's addition of servo controls has further enhanced the performance of the King range, he says.

Servo controls also make a massive difference to IMA's F840 rotary filler, says Mr Chadwick. This volumetric machine offers dynamic adjustment of height and volume while, for product changeovers, a full CIP regime can be completed in 25 minutes. In fact, even for a medium-speed line, the lack of CIP represents a real hidden cost which end users need to be aware of, he argues.

Excel Packaging Machinery supplies turnkey lines from its principals BCM for bottle unscrambling and orientation, Omas for filling and capping machines, Omag for stick-packing and Axomatic for tube-filling machinery.

Omas has recently added a new range of semi-automatic machines to its existing range

## A compact case for robot assembly

International Packaging Systems, the specialist automated packaging subsidiary of Schubert, has produced a robotic assembly and packing line for make-up compacts produced at cosmetics manufacturer Noiro's factory in Finland.

It has five stations which are capable of handling a wide variety of formats and at speeds up to 33 compacts a minute.

Closed, empty compacts are fed into the Schubert TLM-F44 machine where they are opened, scanned and placed on a central conveyor belt by a TLM-F4 robot. At subsequent stations, the pressed powder trays are inserted into the cases along with make-up applicators which are supplied from a storage hopper and multi-track vibratory conveyor.

The compacts are then checked by an optical quality control scanner before they are closed and transported to the labelling station.



IPS says switching between different packaging configurations can be completed in a matter of minutes thanks to the system's user-friendly software programming facility and quick-change tooling capabilities.

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of filling and capping machines, including a new semi-automatic vacuum filler aimed at perfumes, fragrances and essential oils. With no moving parts and a small footprint this machine is said to be well suited to small production runs and where a level fill is essential for cosmetic appearances.

Earlier this year Excel supplied L'Oreal UK with a BCM bottle unscrambling machine to handle 200ml and 250ml containers and load them automatically into pucks at speeds up to 170 a minute.

As part of the turnkey contract, the company also supplied a de-pucker that transfers the bottles from the pucks to the conveyor for labelling, as well as all the puck return conveyors and cross overs.

Recent installations of Adelphi Manufacturing filling equipment include a semi-automatic Response system for Eve Taylor (London), producer of aromatherapy and essential oil-based skin and bodycare ranges. The machine was originally for filling creams, lotions and liquids into bottles, jars and tottles but is now also being used for filling carrier oils for Taylor's range of aromatherapy products.

According to Adelphi, the company is so pleased with the versatility of this first filler that it is planning to invest in the Response automation system, where up to four Response machines are housed in a single array, essentially forming a four-head inline filler.

Eve Taylor is also using a TGM E250 plastic tube filler from Adelphi, dosing creams into a range of tube sizes. The Italian TGM range can fill metal or plastic tubes at speeds of 1500 to 24,000 tubes an hour and be complemented with a cartoner and leaflet inserter.

Adelphi has supplied Potter & Moore Innovations with two dual-system Response fillers, including automatic hopper-filling systems fitted over its conveyors. Adelphi quotes Potter & Moore director of engineering Steve Williams as saying that these are the most efficient lines in the factory. They have increased output and reduced downtime, he says.

Adelphi claims that the "revolutionary" filling head on the Response means that, unlike most fully automatic systems, it is able to dispense anything from free-flowing liquids to thick pastes.

An operator can run a single-head machine at speeds of 50-70 units a minute, says the company, when filling lotions and creams into jars and bottles. When filling smaller jars, dispensing speeds for creams can be up to 80 a minute.



**Starwheel capper:** Cap Coder machine solves a contract packing problem for Cosmetica

CAPPING AND SEALING

## Starwheel capper solves orientation problem

**C**ontract fillers sometimes face tricky calculations when new business opportunities bring with them the likelihood of new equipment requirements. When Eastbourne contract packer Cosmetica won new business from Germany, it found that the spinning head on its existing capper caused the trigger spray on the new pack to foul the machine. If it was going to avoid recurrent stoppages, Cosmetica had to find an alternative capping solution.

The German customer also needed the trigger spray caps to be tightened to the unusually high torque of 600N/cm, and aligned with the flask, neither of which could be achieved with the installed capper.

Simon Harding, technical manager at Cosmetica, explains: "We needed someone to supply in a few weeks a new capping machine to a tricky specification. We approached one potential supplier who could meet the specification, but found that their machine was far too expensive for our budget."

When Cosmetica went to Cap Coder, a quotation was supplied within a week, and once the sale had been confirmed, the CC560 was delivered in just eight weeks.

The starwheel-based machine has twin Tri-Torque capping heads, and is designed to operate in conjunction with an existing slat conveyor. The system can apply screw or push-on

caps to bottles in the 100ml to 5 litre range at speeds up to 40 containers a minute.

Cosmetica is placing the polypropylene trigger-spray caps onto its PET flasks of hair-care product by hand although the CC560 can be fed from bowl feeders or rotary tables. The machine is controlled by a PLC with servo indexing and either electronic or pneumatic capping.

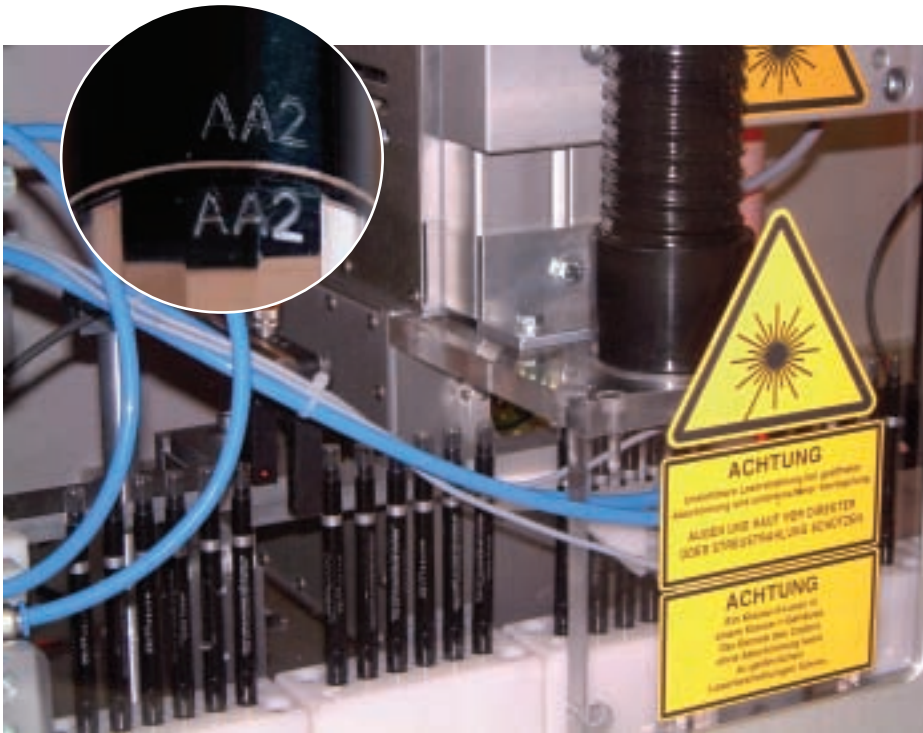
For Cosmetica, the machine has also been customised so that the starwheel indexes twice before tightening the caps two at a time. The second head then orientates the trigger spray within the cap.

### Spray cap orientation

Orientation is also important with spray caps, and this can be challenging especially where floorspace is at a premium. RNA Automation's ZE Feeding Unit can handle a wide range of components, including caps and closures, feeding items such as spray caps at speeds of up to 2000 a minute in eight lanes from a low-level bulk hopper. The lanes then merge to one via a centrifugal disc. As RNA explains, the number of lanes can be scaled down to suit lower volume operations.

According to RNA, there is no need for compressed air for orientation, and the system takes up much less floorspace than a conventional multiple bowl feeder installation.

A growing number of cosmetic and personal care products now require a membrane seal before the capping stage, principally for reasons of tamper evidence. However, suppliers of induction heat sealing equipment are now adding Climate Change Levy minimisation to their list of reasons for users to prefer this



**Laser coding:** Faber-Castell in Germany is using a Domino system to code its cosmetic crayons

system over conduction-based alternatives.

As Paul Rollason, sales manager at Relco UK explains, induction heat sealing uses around 10-15 per cent of the total power required by an equivalent conduction system, and so also generates lower operating costs. Supply of energy to the sealing head is intermittent rather than constant and is directed at the weld rather than being lost through conduction, he points out.

Relco machines cut and seal the foil laminate from the reel, in some cases running single reels for more than an entire day's production. This is cheaper and incurs shorter changeover times than the use of magazine-fed pre-cut discs, says the company. A PLC is said to guarantee precise consistency in terms of the amount of energy applied to the seal and dwell time in the induction field, allowing reliable control of seal quality and strength.

Relco has supplied the system to many cosmetics companies, including L'Oréal, and is currently completing two fully automatic machines for another customer.

## Pharmaceutical checkweigher monitors tube line

Personal care and pharmaceuticals contract packer Universal Products (Lytham) Manufacturing (UPL) is now using an S2 Pharma checkweigher from Mettler Toledo to monitor output from its new tube filler.

Tubes exiting the Norden 'design-a-seal' machine can be of any weight between 4.5g

### CODING AND LABELLING

## Variable coding faces more complex demands

Increasingly centralised production in international cosmetics has placed more complex demands on variable information coding and labelling in this industry.

Markem reports that its longstanding relationship with L'Oréal's Productos Capilares (haircare products) business in Burgos, Spain, first took off when multilingual labelling requirements were implemented. SmartDate coders were initially installed on tube labelling machines, replacing slower units and improving print quality.

Later, L'Oréal also installed Markem SmartLase coders on its carton lines, and specified Cimjet print-apply labellers for the shipping unit line. Production manager Gonzalo Sedano

and 400g and from 45mm to 225mm in length. Other stipulations were an ability to provide confirmation of reject for incorrect weight, and mean value monitoring to allow for the effects of humidity on product density.

Primary reasons for UPL's choice of the S2 were its precision and high-speed operation. Full statistics and production records are logged for each individual batch and product, allowing a reduction in giveaway to be achieved, says Mettler Toledo.

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says: "Again, we needed to meet the needs of an international market. Instead of just a simple product code, we now print a customised design for each sector, in various languages, complete with a barcode and the appropriate L'Oréal logo."

All Markem print systems across three production units are linked via Ethernet to the supplier's image design and networking software, which in turn is linked to the plant's central database.

As at the cartoning and overwrapping stages, coding equipment can sometimes damage the high-quality cartons used in the cosmetics and fragrance sectors. Rotech has tackled this problem with hot foil overprinting at one multinational cosmetics customer using its Feeder 150. The machine uses a PTFE-impregnated, hardened top-plate and Tufnol feeder plate, which ensures that cartons remain unmarked as they are fed through the machine. As a major bonus, says Rotech, the feeder generated a six-fold increase in output.

Sauven Marking says its 6000Plus ink jet coder is a "smart alternative" to CIJ, and can generate six different character heights between 2 and 17mm over up to eight lines of print. It can also include bar codes and logos specific to the cosmetics industry. It is low-cost, and without the maintenance and shutdown procedures of CIJ, the company argues.

Both the 6000 and 6000Plus offer the option of an additional remote printhead for marking small surfaces. Both use fast-drying non-MEK inks, says Sauven.

Not all products for this sector are produced in a typically 'cosmetic' environment. German pencil manufacturer Faber-Castell has supplied a range of cosmetic crayons since the late 1970s and, since 2004, has been coding every crayon with a Domino DSL high-speed laser scribing coder for traceability. This replaced a stamping process using dies, which were subject to wear and required frequent replacement.

Being laser, the alpha-numeric code is indelible. But at the same time, the code is low-contrast and discreet. A Domino DPX extraction unit removes fumes and dust particles during coding.

Given the wide variety of pack types used for toiletries and cosmetics, it is hardly surprising that customised coding and labelling systems are often required.

Sovereign Labelling Systems recently installed a combined labelling and sleeving line designed to run at speeds of over 80 packs a

minute on a range of lip balm containers. Top and base labels are first applied using Sovereign 140 servo-driven labelling heads and an Aegis applicator then fits the full-body sleeve, which is shrunk in a compact radiant heat tunnel. The system includes overprinting and sleeve-on-product detection.

CARTONING AND DISPLAY OVERWRAPPING

## Adaptability in cartoning scores for Laleham

**A**daptability at the cartoning stage is just as vital as upstream flexibility, especially for contract packers in the cosmetics and toiletries sectors. One such co-packer, Laleham Healthcare, bought the UET cartoning machine which Springvale Equipment exhibited on its stand at the Total Exhibition in May. As Laleham production and engineering manager Don Johnson put it: "It is perfect, as the core of our business is flexibility."

As an example of this versatility, Laleham says that with some minor adjustments to the carton infeed and outfeed it has been able to run five-sided cartons. No change parts were required for this.

Springvale describes the 50-a-minute UET machine as "compact, adaptable and priced right". With a footprint of just 1sq metre, it features an adjustable starwheel, automatic leaflet inserting, embossing, hot-foil or inkjet coding and hot-melt closing. Infeed systems for bottles, jars, tubes and other formats are also supplied.

Keeping pace with low to medium-speed jar and small bottle filling, the Vertima in-line vertical cartoner from IMA will run at speeds up to 60cpm. The company says it is especially suitable for cream jars, lotions and perfume bottles. It includes a feeding system for liners, sachets, spatulas and protection rings. Sales manager Barry Chadwick says: "Handling liners can be a problem for many machines, but not for the Vertima." In fact, standard and irregular liners can be inserted on the machine.

### Order for 20 change part sets

Over 15 Vertima machines have been installed globally during the past year, he says, and one cosmetics customer ordered 20 sets of change parts. In this case, the intention was to operate short runs with fast changeover.

Bottles can be fed into the Vertima either in

pucks – which are automatically recirculated – or without them. Options for integrated coding include ink jet, hot foil or embossing.

Feeding flexible packs such as sachets and pouches to secondary packing operations such as cartoning can be particularly challenging. Intellifeed, represented in the UK by RNA Automation, offers conveyor systems which separate and orientate using what is termed Intelligent Roller Module Technology.

Bulk components are loaded into a storage hopper, from which they are elevated and fed onto a system of self-adjusting rollers at speeds up to 500 a minute. The pre-determined gap achievable with this system makes it especially suitable as an infeed to robot pick-and-place type packing stations, says RNA.

For end-fold overwrapping of cartons, Marden Edwards has the TM range of machines, specifically designed with the perfume and cosmetics industry in mind. Where so much importance is given to flawless appearance at point-of-sale, the ability to place the back seal out of sight is a distinct advantage, says Marden Edwards.

### Integral slitter

But the flexibility of the machine is also said to make it an especially valuable piece of equipment for contract packers. The majority of TM machines supplied to this sector have gone to the demanding French market, according to the company. Indeed, the latest version of the TM100 will handle cartons up to 120mm high and an integral slitter means that the machine can be fed with a single reel of film for different pack sizes. Waste is automatically wound up on another reel.

Current models require cartons to be fed from either the left or right, but Marden Edwards says it will soon launch an in-line variant. This allows for even more gentle handling of the carton as it approaches the wrapping station, says the company.

When it comes to overwrapping, IMA has the AC60, which will run at speeds of up to 60ppm. One of these machines was installed at Boots, Nottingham, earlier this year. Key features include the adjustable folding box, allowing different carton sizes to be run with only minimal adjustment and quick changeover times. This design also means that change part costs are less than they would otherwise be. As with current IMA cartoning systems, handling is designed to avoid marks and scuffing on the pack.

Adpak's range of L-sealers, operating at

speeds of up to 35 packs a minute, has been used for display and gift presentations in the cosmetics industry. Customers include Estee Lauder, which uses the system to obtain a quality finish on perfume and cosmetics gift packs, and Tommy Hilfiger, where the wrapper is used for a range of cosmetics.

END-OF-LINE

## Robotic systems play increasingly important role

**F**rom shrink-wrapping to case-packing and palletising, robotic systems are playing an increasingly important role in end-of-line operations for toiletries and cosmetics.

Around a year ago, production began on a new end-of-line installation at Swedish healthcare and toiletries company Cederroth International. The line, installed by Skinetta Pac-Systeme – represented in the UK by Logic TPS – had to be able to handle 14 different cosmetics bottle formats, 12 in trays and two trayless. Robots proved to be essential in providing this flexibility.

As ABB Robotics UK explains, the line relies on an IRB 1600 robot to pick up the various bottles from different positions. The vacuum gripper then places the collation either into trays or straight onto the infeed of the film-wrapping machine, with the robot synchronised to the speed of the belt. The belt is able to move continuously rather than intermittently, so increasing productivity.

### Pallet labels face outwards

On the far side of the shrink tunnel and after labelling, an IRB 6600 robot from ABB places each transit pack onto a pallet. As it does so, it ensures that the labels are all facing outwards.

The long reach of the IRB 6600 means that it can also stretch to lift and position layer pads. By tilting the layer pad through 15deg after lifting, it ensures that if more than one pad has been picked up, any extra ones drop back onto the magazine. This small but important motion is where a six-axis robot comes into its own, points out ABB.

Product protection for transit takes many different guises in this sector, and has to cater for a wide range of pack sizes.

One cosmetics company recently ordered 15 Pester Pewo-pack stretchwrappers, each of



**Top-load case-packer:** Elematic 6000 EFC from Paal Packaging Machinery

them wrapping small jars, compacts, pencil and brush products in collations of twos and threes. The cantilevered Pewo-pack 250 Compacts have replaced older machines, and wrap the items in polyethylene film, says UK company Pester Pac Automation. They are capable of wrapping 60 collations a minute, but are currently running at lower speeds to allow for potential future increases in demand.

The Pewo-pack250 Compact is better-known in the pharmaceutical industry, where it is typically used to handle small, delicate items gently but at relatively high speeds. With its footprint of just 1.5sq metres, it is well-suited to applications where space is at a premium. Each unit is equipped with film-splicing, automatically switching to a fresh reel of film when the previous one finishes. Pester says it has introduced a mirror version of the 250, so that it can fit in with any line configuration.

On a larger scale, a new generation of Pewo-pack 450 collation shrinkwrap machines has been launched by Pester. Cosmetics and personal care bottles and tipples can be collated and wrapped in polyethylene film at speeds up to 300 bottles, or 30 collations, a minute.

Bottles are turned through 90deg by a screw mechanism, before a multi-axis robot picks up as many as 12 bottles at a time and places them at the machine infeed. Collations move on a knife-edge conveyor through the film curtain, and then on to the shrink tunnel. A window in the tunnel wall means that product can be monitored at every stage of the process.

Pester Pac Automation also supplies the Pewo-Form top load casepacker, which again uses a robot picking head, this time to load either cartons or tubes into cases on the same unit. Changeover is said to take 15 minutes, and the machine can load 180 cartons, or 30 cases, a minute.

In case-packing, Cermex has identified a particular challenge in the trend towards smaller consumer packs for cosmetics and toiletries. The rationale behind this trend may be anything from portability to in-flight security restrictions, but it means that bottle shapes that were already difficult to handle are now being replicated in much smaller versions.

### Handling unstable bottles

Cermex has supplied a customer with an adapted SD69 numerical axis case-packer, capable of loading unstable oval-profile 50ml and 100ml bottles into standard RSC cases. Each collation had to be of 85 products, as opposed to the normal six or 12 in cosmetics. The speed required was 200 products a minute.

Products arrive on a single-lane conveyor with a scroll infeed, spacing them and turning them through 90deg. Each row is put in a collating rack and separated by a guide. Then a lift extracts the complete collation from the rack. Cermex met the challenge of lifting a collation of 85 products through the specific design of the gripping head.

In side-load case-packing, Cermex says that the cosmetics and personal care sector is one of those being targeted by its SW machine, for both RSC and wraparound cases. Systems installed to date load cartons into RSC cases. But these customers have the option in future of switching to wraparound blanks or even handling both types of case. The servo-driven side-loading, and sealing using either hot-melt or tape, can achieve an output of 12 cases a minute.

CC Automation, which represents Paal Packaging Machinery in the UK, says it has seen growing interest in robotic end-of-line solutions for toiletries and cosmetics. A number of Elematic 6000 EFC top-loading case-packers have been supplied to a leading UK personal care product manufacturer. The continuous-motion pick-and-place system is believed to be the first of its kind, says CC, placing collations of four or six bottles of different shapes and sizes into RSC cases.

The case erector and pick-and-place unit are synchronised to allow loading at speeds up to 45 cases a minute. Depending on product, says CC, that output could be more than doubled.

The Elematic 6000 F-6 is another Paal top-loader, this time for tubes of hair gel and similar products. Tubes can be loaded standing or laid flat into cases or thermoformed trays. ■

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For full details of all machinery available from PPMA members visit the PPMA web site: [www.ppma.co.uk](http://www.ppma.co.uk)

PAGO

## Labeller adds neckhangers to cordial bottles

Drinks company Bottlegreen has installed a free standing Pago label applicator, set next to an existing conveyor, for applying promotional neckhangers or "wobblers" to bottles of cordials and sparkling pressés.

The Pagomat 3 labelling unit is mounted on a support with vertical and horizontal adjustment via a handwheel.

The system also includes a product sensor, complete electronics and controls with a fault relay for applicator head error.

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LOGOPAK INTERNATIONAL

# Starter kit for pallet RFID offers three working levels

An RFID starter kit devised by Logopak in conjunction with German supermarket chain Metro gives the retailer's European suppliers a choice of three levels of automation – depending on throughput – for identifying pallets with tags and labels.

The first level is for smaller or low volume producers and consists of a Logopak VLP 210 off-line printer with a directly connected hand held bar code scanner.

As pallets arrive at the printer, their SSCC code is scanned and written into an RFID tag embedded in a small label, which is also printed to show the tag is present. This label is then hand applied to the pallet.

The second level is identical, but with the addition of a Sick RFID 'gate' which reads the data and



**RFID kit:** Level one (left) with off-line printer and level three automatic system



sends it on for storage within the warehouse management system.

In the third level the process is automated with a Logopak 920 PF pallet labeller. Here the RFID tag is contained in the full EAN 128 pallet label – created with data from a host factory management

system – and is applied on one or adjacent faces of the pallet.

After label application, the pallet is passed through the Sick RFID gate and the data read for subsequent storage.

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ADVANCED DYNAMICS

## Linerless labels for patch or wraparound

A linerless pressure sensitive labelling system based on bopp film with a solventless adhesive coating is now available from Advanced Dynamics, UK representative of the Italian labelling specialist Irplast.

A range of applicators is available to cut the pre-printed label stock to register and apply the individual labels using a blow or blow-tamp arrangement. Wraparound decoration can also be achieved.

Advanced Dynamics points out that the absence of backing paper reduces label cost by some 40 per cent and doubles the length of labelling media that can be accommodated on a reel of any given diameter.

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DOMINO UK

## Ink jet replaces labels to identify flatpack furniture

Flatpack furniture manufacturer Gower Furniture has switched from labelling to ink jet coding with the installation of eight Domino C3000 plus printers to identify pack contents with information drawn from a central database and provide traceability.

The machines are used to print product descriptions, customer codes and barcodes along the edges of completed board packs, which are then checked for code quality via on-line validation units.

As Gower's packing cases vary quite substantially in size, the print definition and 35mm overall print height of the C3000 plus provides

an ideal solution, says Domino.

During a typical job a Gower operator enters the works order number into the system control software at the start of a production run. The software then selects the appropriate information from a central database and downloads it to the printers, eliminating the possibility of incorrect coding due to operator error.

At the same time, the production run length is entered into a product counter, which alerts the operator when this is complete.

This function is particularly important for Gower, explains Domino, since production runs might be for identical products in different colours, so the accurate product count ensures that cases are always correctly coded.

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**Replacing labels:** One of the Domino C series printers at Gower Furniture

CLARICOM

## Photo Standards included in code management system for food

Photo Standards that give operators a picture of the product and packaging at the beginning of a run can now be incorporated in Claricom's CLARiFY system of code planning for food products, based on origin, day of cook or kill and so forth.

This code planning approach allows variables such as in-store promotions, bank holidays and other events that can affect the coding data required on any given day to be taken into account and the results given to operators, either via a network or as hard copy.

Best before dates and other dates can then be set without individual calculation of offsets.

The new facility allows the Photo Standard information to be held in a database, and managed



**Pack image:** Claricom coding software can include a photo to check the pack

and supplied alongside the coding data for a particular batch, avoiding the need for large hard-copy folders. Any promotional labels or flashes can also be shown.

"Rather than just providing the most basic information to safeguard against errors, the enhanced Photo Standard created by CLARiFY delivers a single source of information," points out Claricom managing director James Butcher.

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XACT PACKAGING

## Ink jet coder from US offers enhanced ease of use

The US-built Matthews C84 continuous ink jet now available from Xact employs what is said to be a particularly user friendly operator interface using a 10.4in colour touch screen with drag and drop facilities, an icon-based graphic display for time, date and so forth, and a message preview facility.

Up to four lines of text can be printed while maximum speed is 320 metres a minute and character height 1.25-15.6mm.

For coding on more than one production line, messages can be created on one ink jet printing unit and transferred to other units

using a 32Mb flash card.

Electronics within the self-cleaning print head are protected by an hermetically-sealed enclosure and, points out Xact, no components such as wires and tubes are exposed, so making the system less susceptible to damage during cleaning and maintenance.

The unit is equipped with automatic ink viscosity control for consistent print quality while automatic on-screen diagnostics continuously measure temperature, ink drop speed and ink pressure. Auto shutdown cleans the printhead before the power shuts off.

Xact says this means the C84 only needs servicing every 2500 operational hours, about every six months.

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# Motion control for high-speed Precision movement

COMPLEX HIGH-SPEED PRECISION MOVEMENTS OF CRITICAL PARTS FORM THE HEART OF MORE AND MORE INDUSTRIAL MACHINES. BOB DOBSON LOOKS AT RECENT APPLICATIONS USING THE LATEST IN MOTION CONTROL TO ADVANCE THE STATE OF THE ART IN MACHINE DESIGN.

Supreme Plastics' new zip applicator for continuous motion vertical form-fill-seal and flow-wrapping equipment is based on an advanced linear motor system from Baldor. Two zip attachment heads running along the same magnet track allow the new Reseal 460X machine to achieve throughputs up to 120 packs a minute.

Reseal 460X applies 7mm zips across the web – typically the shortest edge of the pouch – saving material and allowing a higher fill ratio. The technique also eliminates risk of leakage at critical points because the zipper closure does not form part of a side weld.

To support continuous manufacturing, the machine uses a zip feed mechanism driven by a rotary servo motor, which is mounted on a fast-accelerating linear motor axis that tracks the speed of the film web. It then seals the zip into place using a heating element. For high throughput, two of these attachment heads travel – a pouch length apart – on the same linear magnet track.

In operation, the linear drive, which is based on a cog-free brushless motor for smooth operation, carries two forcers – each with a zip feeder and heating element.

The forcers sit on a home position until the controller senses the next registration mark. They then accelerate rapidly, and when synchronised with the web, the heating element is switched on to seal the zips in place. The forcers then accelerate back to the home position at over 1G, ready for the next cycle.

The machine's four axes of motion – two rotary BSM servomotors and two forcers on the LSS linear motor – are controlled by a Baldor NextMove BX motion controller and four Flex-Drive servo drives.

This controller also incorporates the I/O required for the various sensing and actuation functions associated with the process, such as registration mark detection and zip position

sensor. Using CANopen fieldbus communications, the motion control system links to a Baldor operator panel which allows the operator to define zip length, pouch size and so forth.

Baldor provides all motion, I/O and human-machine interface system components required for the new machine, and wrote the application software using the Mint motion language to divide the major control functions of the machine – controlling the zip feed, linear motor and man-machine interface as separate tasks.

## Pressure sensitive stamps

Bristol's Stephen Mayer International specialises in application-specific machines for the philatelic and food industries.

The company's latest machine, the PAC-24, is a highly flexible system that has been designed and developed specifically for the United States Postal Service (USPS) in Kansas City.

It is the first machine of its kind that is capa-

ble of handling pressure sensitive self-adhesive stamps and accommodates a wide variety of stamp sheets – including booklets – and an even wider range of target materials, such as first day cover envelopes and presentation sheets. The machine automatically peels the stamps from their backing sheets and fixes them to the target material individually, in a line or in a grid, depending on the customer's particular requirements.

The PAC-24 makes extensive use of electrical and pneumatic actuation technology, and Stephen Mayer chose to use Festo components throughout.

In use, the machine picks up each sheet of stamps using an array of 60 vacuum cups. The backing sheet is peeled off and the stamps transported to the incoming envelopes or presentation sheet using X-Y tables driven by Festo electrical servo drives.

To ensure accurate and highly flexible place-



**Applying stamps:** PAC-24 machine uses Festo drives to provide high accuracy positioning

ment, the stamps are individually set – any stamp from any position on the sheet can be directed to any position on the envelope. A tamping cylinder then individually presses each placed stamp onto the envelope to attach it securely.

Finished envelopes are transferred via a camera checking station to a collating conveyor, and any unused stamps are placed on a recovery strip for stock control and auditing purposes.

In all, the PAC-24 is equipped with ten electrical servo drives forming a sophisticated motion control system. All of these, together with the system's four CPX valve terminals, are under Profibus co-ordination and control.

The machine has a throughput of 2400 stamps an hour and, although faster machines are available, their accuracy is lower and cannot adapt to applying single stamps, strips and blocks of stamps.

With this equipment, the accuracy of 'constant position' fixing will become standard, and lends itself to both single and multiple stamps attached to an envelope in the same position. This accuracy will also allow stamps to be cancelled much more quickly and efficiently.

The PAC-24 has been installed and beta tested at the USPS in Kansas City, and is now being rolled out to customers. It is anticipated that further machine orders will come from around the world.

### High speed scribing

In another application that combines electric servos with pneumatics to create a motion system, Robotix in Rugby has developed a high speed production line for scribing traceability serial numbers onto wheel rims for earthmoving equipment. This uses a single Hoerbiger-Origa rodless pneumatic cylinder in the dual critical roles of positioning the scribing head and holding the rim steady in the workstation.

In operation, the wheel rims, which can vary in size from 24in diameter and 15in wide to 40in by 40in, are delivered by a conveyor to the scribing workstation, where V-shaped guides position them accurately.

A large and powerful rodless cylinder mounted above the workstation descends, positioning the scribing head just above the top surface of the rim to an accuracy of 0.01mm. Mounted on the cylinder and protruding beneath it is a pair of Hoerbiger-Origa's linear shock absorbers – these contact the rim with sufficient force to hold it steady during scribing.

The actions of the cylinder and other parts of



*Drive for screen print: Mitsubishi Electric servos are being used by Thieme*

the machine are controlled by a Mitsubishi PLC, the LCD display of which provides the operator with process and production messages.

The scribing head is a proprietary system from Technifor in Germany that uses a micro-percussion scribing drive and x-y configured servos for letter/numeral forming.

The scribing is fairly deep so that it can be easily read even in muddy working conditions, which means there are high forces being transmitted through the rims during scribing and hence the decision to use larger bore cylinders.

### Virtual transmission

With the help of an advanced motion control system from Mitsubishi Electric, German screen-printing machine builder, Thieme, was able to develop a completely new generation of screen printing machines, the Thieme 5000 XL, which achieve continuous availability of 95 per cent and – even more importantly – cut setup times to less than 5 minutes per print station.

Thieme's engineers set out to design a new generation of screen-printing machines with a large-scale printing format of up to 2000 x 3050mm, with high production throughput combined with economy.

However, they soon realised that with this format many of the components used in previous systems, such as the central drive system and the mechanical line shaft, would simply be too big. After analysing a number of alternatives, it became clear that the combination of a

motion controller with servo drives was by far the best solution.

One of the biggest challenges for their new Thieme 5000 XL screen printing machine was that it should be possible to translate the existing mechanical solution as precisely as possible to the new system – both to keep development overheads low and to avoid losing the years of development invested in the tried-and-tested movement sequences.

To solve the problem, Thieme chose a Melsec System Q motion controller from Mitsubishi Electric. System Q's programming language has the capability to implement existing mechanical solutions with graphical representations. In addition to this, it combines motion control, PLC and IPC modules on a single platform, which means that it can also handle the other machine control requirements as well as the motion control.

This concept eliminates the need for duplicate system racks and the operators have complete and easy access to all the PLC and motion controller data. Every CPU in the system has access to all data via the common backplane bus, which means that there is no longer any need for time-consuming additional communications programming.

In the new system, the former main drive is programmed as a virtual servo motor connected to a virtual line shaft. The 30 axes (for a six-colour machine) are also placed in their proper positions with a simple drag-and-drop operation.

In addition to simple axes, the system can also program virtual equivalents of other mechanical components, including transmissions, roller feeders, linear axes and cam discs. This makes it possible to program the drives to perform complex movements that are precisely synchronised with one another. ■

### For further information:

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**Festo**  
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**Hoerbiger-Origa**  
T: 0870 060 0655  
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**Mitsubishi Electric**  
T: 01707 276100  
E: automation@meuk.mee.com

INTEGRAPAK

## Erector can handle shallow cases with 'soft opening'

Italian case-packer manufacturer Apsol has introduced a new case-erector in which, for hygiene and ease of cleaning, most mechanical parts operate from above, leaving the floor beneath the machine readily accessible.

The ACE 30EL also boasts a particularly broad size range, including the unusual ability to handle cases down to 55mm in height for goods such as ready meals packed in a single layer.

As standard the machine will handle cases 88-350mm wide, 180-450mm in length and 55-500mm high, although a maxi version will handle cases with a base measuring up to 600 x 400mm.

Servo drive is employed which means that once case dimensions are entered on the control panel, the "electronic cams" on which the opening mechanism operates are automatically calculated, including a soft start routine for



**Clear floor:** Apsol ACE 30EL case-erector operates mostly from above

the case opening process.

This, says Apsol, is particularly valuable when handling shelf-ready cases that may otherwise be at risk of tearing along perforation lines and similar points of

weakness built into the case for ease of opening as a display tray.

Speed of the ACE 30EL is up to 25 cases a minute.

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BAKER PERKINS

## Gums and jellies process allows addition of fruit juice and pieces

The ServoGel process for gums and jellies, announced by Baker Perkins, is said to offer an economical means of entering the market for these products, both in terms of capital and running costs.

A complete cooking, depositing and finishing process, it allows real fruit pieces to be included within the jelly or gum, along with real fruit juice added as a centre filling or in the syrup. Jellies and gums can be produced in low sugar/sugar free formats, with no more



**Real fruit inclusion:** Gums and jellies made via the ServoGel process

than 1 per cent fat content.

The ability to validate the ServoGel process, with a high level of control over product traceability provides many competitive advantages, says Baker Perkins.

"Functional ingredients such as

vitamins and calcium can be added as well as medicated ingredients to relieve the symptoms of coughs and colds. Gelatine-free products can also be made."

T: 01733 283000

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KOERBER MEDIPAK

## Compact stick-packer is aimed at pharmaceutical industry

The LA560SP stick-pack machine from Mediseal is said to be the first of its type aimed specifically at pharmaceutical applications and, with up to 14 lanes, can produce 1000 packs a minute from a floor area of less than 2sq metres.

Able to handle a range of product types including granules, powders, liquids and gels, the machine employs Mediseal's servo-controlled dosing modules already established on the company's sachet machines.



**Stick-packing:** Mediseal LA560SP is designed for pharmaceuticals

Pack diameters of 12-25mm and lengths of 45-200mm can be handled, while there is the option also to create a tear-open feature on each stick. The control system is fully validatable and based on MediSeal's KIVI internet protocol platform.

To create a complete line, the LA560SP can be connected to the Mediseal P1600 cartoner.

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**New Machinery continues on page 50**

YTRON-QUADRO (UK)

# Pre-screening for powders reduces contamination risk

The Quadro Sifter from Ytron-Quadro (UK) segregates impurities and other foreign material from powders and granules, providing a pre-screening process to reduce risk of contamination in the final product and prevent damage to equipment and possible injury to personnel.

Based on Quadro's established powder processing technology, the in-line design of the Quadro Sifter is said to reduce the amount of airborne fine particles compared



**Sifting powders:** Quadro Sifter pre-screening unit removes impurities

with traditional vibratory sifters, reducing product waste, potential for dust explosions and operator exposure.

Designed and built to cGMP standards the machine employs an easy clean, sanitary design. Quick screen changes are made possible by a minimal number of parts while the low profile design allows the unit to fit below most bulk bag unloader and mixer discharges.

T: 01494 792898

E: sales@ytron-quadro.co.uk

ADVANCED DYNAMICS

# Auto feeder loads sachets into a variety of pack styles

An automatic feeder that eliminates manual work in adding sachets of salt and pepper, sauce, desiccants, plastic cutlery, promotional items or product samples to flow-wraps, cartons, bags and trays has been introduced by Advanced Dynamics.

The PC-300 pouch cutter operates with a reel of sachets, which are connected as a bandoleer. Each sachet is cut from the reel and placed into the pack or onto the product below at speeds up to 350 a minute.

As standard, the machine will handle sachets from 50 x 30mm up to 150 x 55mm.

T: 01274 220300

E: info@advanceddynamics.co.uk

PFM PACKAGING MACHINERY

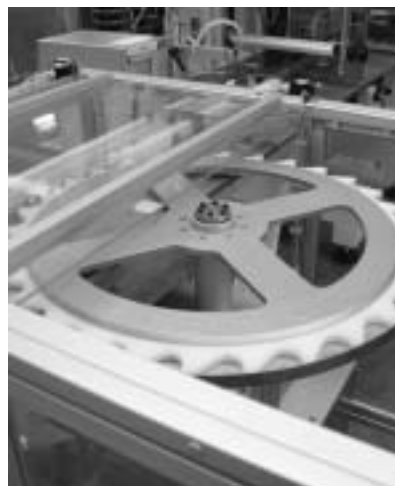
# Feed system caters for flow-wrapped coffee capsules

A feeding system to load coffee capsules into the flights of a flow-wrapper has been announced by PFM to cater for growing demand for this type of coffee presentation.

Capsules arrive from filling on a conveyor at 90deg to the flow-wrapper and are picked up on a starwheel, which pitches and counts the required number into the flights of the machine. Speed is up to 280 a minute for individual capsules and 140 for twin packs.

"With these speeds we are confident a single line will be able to wrap all the production of most modern rigid capsule assembly lines," says PFM sales and operations director Chris Bolton.

T: 0113 239 3401 E: sales@pfm-ltd.co.uk



**Capsule infeed:** Starwheel pitches and counts product into the flow-wrapper

MECAPLASTIC UK

# Tooling allows rapid changeover on tray sealers

Tooling on Mecaplastic tray sealing machines can now be changed over in less than 5 minutes with the Partial Tooling system.

This uses tools made up of lightweight, easily manageable pieces and allows some 80 per cent of the tooling to remain in place, with only four key elements to change, using a screwdriver.

A quarter turn, quick release locking system secures the seal plate and blade cutters to the heated platen, which remains in place on the machine, while a special lift plate is employed to remove hot tools safely.

Overall cost for a number of tools is lower, since there is only one heater.

T: 02476 351300

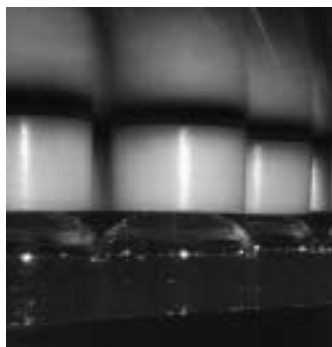
E: administration@nutripack.co.uk

FJ PISTOL MACHINE SERVICES

# Freeze dryer for lyophilised drugs can also close vials

Freeze dryers for lyophilised drugs from German manufacturer Klee – part of the Optima group – can now be optionally equipped to close Biocorp Lyoseal caps, which allows the vials to be closed within the freeze dryer itself with no need for extra product transport and a separate capper.

This has been achieved by



**Closing vials:** Klee freeze driers can now close Lyoseal caps

increasing the closing pressure available at the cooling shelves for the conventional stoppering process by some 15 per cent, also

giving some additional reserve if required.

The upgrade can be retrofitted and is said to have already proved itself in tests conducted with Klee freeze driers under actual production conditions.

Optima points out that the process requires a particularly flat surface over the entire area of the cooling shelves to avoid excess or insufficient pressure and that in the Klee freeze dryers this is just  $\pm 0.2\text{mm}$  over a metre.

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