

# COSMETICS AND

*The sheer diversity of cosmetics and toiletries manufacture presents machinery makers with a challenging task. From mixing through to the warehouse, flexibility is the key attribute, as Andrew Smith reports.*

## MIXING

### Merger gives a choice of mix via one machine

**R**apid, tool-free changeover combined with ease of cleaning and a small footprint fits the bill in most areas of cosmetics and toiletries machinery, and perhaps no more so than in mixing equipment.

To this end, the FrymaKoruma division of Romaco has introduced the MaxxD vacuum processing unit which is a result of a merger between former competitors Fryma and Koruma. The MaxxD brings together two strands of development by combining the homogenising capabilities of Fryma's colloid mill-based technology and Koruma's multi-chamber rotor-stator system.

So named because it represents the "maximum from the Koruma DisHo and the Fryma Delmix", the MaxxD's key feature is said to be its interchangeable homogeniser.

Typical applications for the dual system include lotions, creams and gels. Depending on the product to be processed, the user can choose either a colloid head or a toothed rotor/stator system by exchanging the relevant machine parts, an operation which the company says can be completed in less than 20 minutes.

This choice of technologies enables the most efficient configuration to be selected for the task, so achieving "substantial reductions in process cycle times, while ensuring absolute batch-to-batch consistency". The MaxxD also has an aseptic design to reduce cleaning times and enhance productivity.

FrymaKoruma says the vacuum unit has been optimised for dosing both free-flowing dry ingredients and liquids directly into the working area of the homogeniser. This vacuum dosing technique is claimed to minimise the entrainment of unwanted air and ensure ingredients are mixed immediately, even before they reach the homogeniser head.

While the mixture is being transported, the high shear forces created in the zone make cer-

tain that particles are dispersed, with agglomerations broken down to produce a particle size as low as 1 micron. This, says the company, produces a precise degree of quality by re-circulating the product for just a short time.

The product is subsequently transferred into the main vessel via the re-circulation line. Here, mixing and heat exchange are facilitated through the application of what the company says is another "first" – a specially configured agitator with a distinctive geometry and side wall scrapers which produce a macro mixing action through vertical convection. This high shear action is said to create an extremely fine distribution, while the design of the scraper-agitator prevents caking on the vessel walls.

The MaxxD is available in three sizes with batch volumes of 40-160 litres, 80-300 litres and 150-500 litres. The units can be customised with a range of options including double or isolation jackets, temperature regulation and dispensing systems and a speed regulator for homogeniser and/or impeller.

Alan Berry, FrymaKoruma product manager at Romaco UK, says: "This new dual system approach represents a real breakthrough in versatility and provides the customer with ultimate flexibility when planning a processing task, as well as easier maintenance. With quick changeover and cleaning times, you effectively have two machines in one." ■

#### FOR FURTHER INFORMATION:

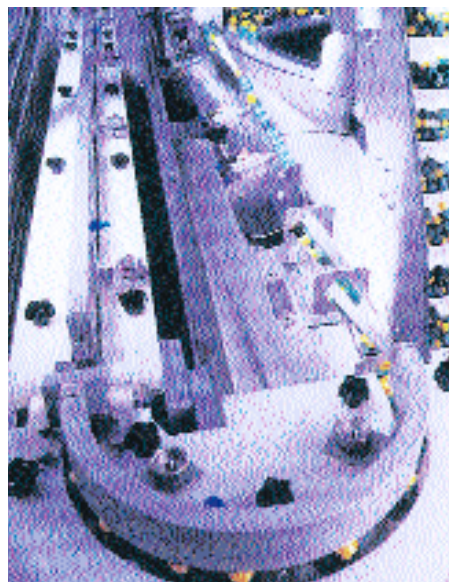
Romaco UK

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## UNSCRAMBLING

### Going gently in the right direction

**F**ast changeover, to cope with shorter runs, and gentle handling, to avoid risk of scuffing delicate printed containers, have tended to drive recent developments in plastic bottle unscrambling machinery for the C&T industries.



**Linear unscrambler:** *The Halbach HLS machine, viewed from the pre-sorting disc*

For example, a fully adjustable plastic bottle unscrambler, which can be changed over from one size to another in less than a minute, was launched on the UK market a couple of years back by Krones UK, agent for the Spanish manufacturer Posimat and, indeed, subsequently won a PPMA Award of Excellence.

In place of the usual bottle size parts, the Posimat Posiflex series of unscramblers employs bottle selectors that are adjustable in length and width, and also adjustable width and depth funnels to deliver the bottles to the outfeed. Size change is made simply via three handwheels against digital readouts, although Posimat can offer a fully automatic motorised system. Depending on model and bottle size, speed can be up to 1000 containers a minute.

Apart from the way in which adjustable parts allowed fast changeover, the judges in the PPMA Awards noted how these contributed to improved reliability compared with change parts, which could wear. "Very little can go wrong. Posimat has nailed the reliability issue," they said.

Meanwhile a plastic bottle unscrambling machine that reduces the cost of size parts compared with pocket-based systems, by using a revolving table to align bottles horizontally, before orientating them vertically in a linear

# TOILETRIES

report



**Horses for courses:** Different products require different homogenising techniques. With the MaxxD from Romaco there is a choice of interchangeable rotor-stator or colloid homogeniser heads

path, is now available in the UK from Sussex & Berkshire Machinery.

Made in the USA by Pace Packaging, the Omni-line machine accepts bulk bottles onto the revolving table and, through centrifugal force and the help of brushes, aligns them horizontally in a trough at the periphery. This trough is sized for the largest bottle in the range to be handled, typically 50ml to 2 litres, allowing the smaller bottles to be unscrambled with the use of inexpensive lightweight plastic infill rings, the only size parts, which come in two pieces and can be slid quickly into place.

## Turned over to upright

From the rotary table, bottles are brought into the vertical position between belts and their orientation sensed by a pick-up arm that detects the neck finish. Any inverted bottles are directed against a step and turned over between the belts to the upright position. No air jets are employed anywhere on the machine.

"There is the minimum of tumbling, which makes the Omni-line design particularly suitable for handling soft PET or pre-decorated bottles without risk of scuffing," points out S&B.

All the transfer belts and guides between rotary table and outfeed are adjustable for width

via a handwheel, allowing a size change to be made by the operator in 10 minutes, without tools. Depending on model, the Omni-line machine is capable of speeds up to 800 a minute.

A range of plastic bottle unscramblers, in which low internal velocities and short residence time in the orientation drum are used to prevent scuffing, was introduced on the UK market at last year's PPMA Show by Ultrapac, newly appointed agent for the Italian manufacturer Lanfranchi.

The machine on demonstration was capable of handling 1 litre bottles at speeds up to 400 a minute, although the entire Lanfranchi range covers bottle sizes from 150ml to 2.5 litre and speeds from 100 to over 800 a minute. Applications extend from PET bottles for soft drinks through to containers for cosmetics, personal care products and household chemicals.

All machines operate on the same principle which, says Ultrapac, results in no bottle being left in the orientation drum for more than three revolutions. In this way, delicate thinwall containers with labels and screen print decoration can be handled without risk of damage.

First, bottles are fed from a hopper onto the convex floor of the rotating orientation drum, and move to the periphery under a combination of gravity and centrifugal force. At the periphery,

the bottles are selected by lifter plates which raise them up, on their side, over a weir and into the upper part of the unscrambler, so avoiding much of the continual re-scrambling and risk of scuffing that can take place in traditional rotary unscramblers.

Once over the weir, each bottle is presented to a series of baffles which orientate the container to upright, allowing it to move down through a chute onto the discharge ring at the base of the machine.

## A quarter of the speed

Ultrapac points out that since each lifting plate operates up to four times within each revolution of the machine, the unscrambler is able to run at a quarter the rotational speed of conventional unscramblers, output for output, so reducing velocities and risk of damage to the minimum.

However, an unscrambling machine that operates in linear fashion, using a series of chicanes and gates through which only correctly orientated bottles can pass, so providing high speed from a small footprint, is now available from Propack Automation Machinery.

It is made in Germany by Halbach which, until the machine was adopted a couple of years back as preferred equipment by a major pan-European personal care products company, supplied machinery only in its local market.

The HLS unscrambler occupies a footprint of 3000 x 1250mm, with pre-feed and sorting system within a single frame, yet can offer speeds in excess of 200 a minute, handling either caps or small containers.

It uses a rotary pre-sorting disc to transfer containers to the tangentially mounted sorting conveyor where only correctly orientated bottles are allowed through to the outfeed, the remainder falling back into the supply hopper. This method of sorting also pitches the containers sufficiently far apart for a single reject to be made, despite the high line speed. ■

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FILLING AND CLOSING

# World's fastest tube filler to make its debut

**T**ubes represent a sizeable proportion of the packaging options available to the C&T market and, at Interpack in April, IWK is to unveil an integrated tube filling and cartoning line claimed to be the fastest of its type in the world.

The line incorporates IWK's new TFS 80-6 six-head tube filler and new generation Cartopac SC3 HS cartoner – both capable of speeds up to 450 tubes a minute – and is shown equipped with IWK's servo controlled dosing system for mono paste and deep stripe toothpaste. This allows each tube to be dosed with two additional colours or active ingredients, co-extruded into the tube with the main paste.

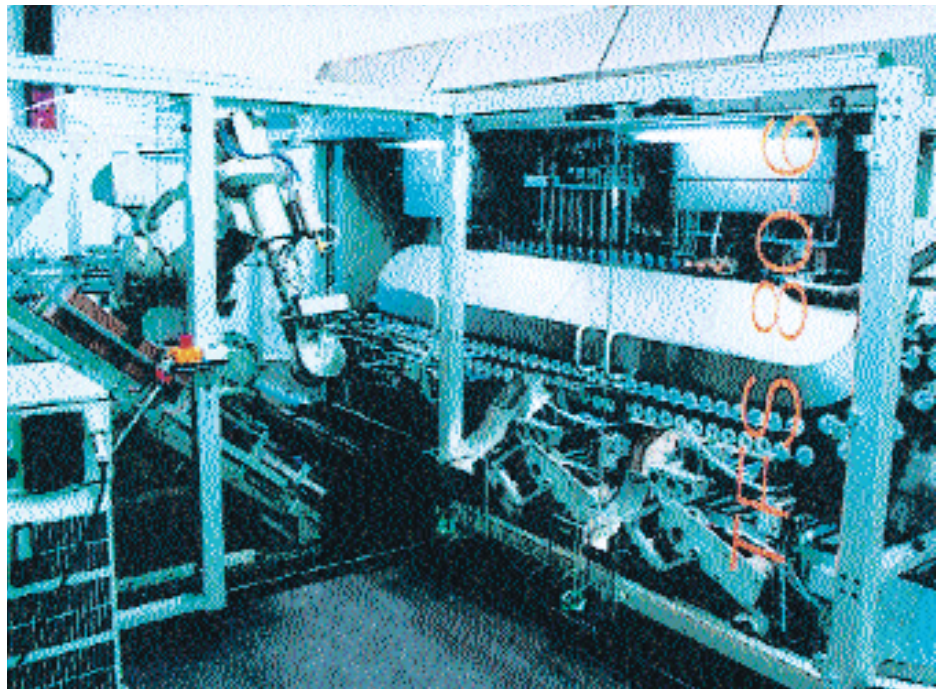
Unlike most traditional tube fillers, conventionally based on a turntable, the TFS 80-6 employs a twin diagonal orbital track to accept empty tubes horizontally, raise them to vertical for filling and closing in a 2 x 3 format, and return completed tubes to horizontal for cartoning.

This arrangement allows the TFS 80-6 to be built on a cantilevered basis for ease of cleaning to GMP standards and gives the operator clear access to all parts. In addition, closing systems to handle plastic and aluminium tubes can be readily mounted side by side, for immediate changeover, points out UK representative IWK PackSystems.

Each track carries quick-release magnetically secured holders for the tubes, which are picked automatically from trays by a robotic arm, fed in horizontally, and rotated to bring the print into register. As the tracks pass round the end of the loop, the tube holders are carried diagonally through 90deg to upright, presenting the tubes ready for filling.

Servo drives are employed for the dosing system, providing programmable changeover in the volume range 2-350ml, and to elevate the tube holders – three from each track – up to the six filling nozzles.

After filling and sealing, the tubes are picked from their holders and placed automatically in the infeed buckets of the Cartopac SC3 HS cartoner, a 75mm pitch continuous motion machine designed specifically by IWK to match the speed of the new TFS 80-6 tube filler. It employs the established five-head carton pick up



**Fastest in the world:** IWK's TFS 80-6 tube filler is to be launched at Interpack

mechanism used on high speed cartoners built by RA Jones, also part of the IWKA group.

Flexibility is a particular advantage claimed by Romaco for its Unipac U-2080 tube filler which allows "total accessibility for operators" while offering a variety of tube loading and filling technologies, along with the capability to fill up to 80 tubes a minute.

Cleaning and changeover times are facilitated by the 360deg accessibility which is achieved by integrating the electrical cabinet into the machine base frame and positioning the inclined tube loading system, incorporating the tube magazine, outside the machine's perimeter. Access to the turntable, tube rotation system, filling nozzles and closing heads is also made easier by the D-shaped footprint, while the dosing pump, which weighs just 9kg, can be removed in 20 seconds via a single, quick-release lever.

The U-2080 also offers modular tube loading

through a choice of automatic loading systems: inclined plane, single tray magazine or high capacity free-standing ergonomic tube loader. A choice of filling technologies is achieved by employing bottom-up filling via either diving or fixed injector, utilising a tube holder lifting device. For both solutions, fixed or variable stroke operation can be selected, with servo-control on request.

### Print registration device

In order to meet the most stringent GMP and FDA standards, Unipac says the tube print registration device which rotates the tube holders is now performed by electromagnets in place of toothed gears.

The U-2080 fill volume capacity ranges from 3ml to 250ml, with tube lengths from 60mm to 250mm and diameters of 10mm to 40mm with aluminium tubes, and 10mm to 50mm with PE or laminates. Aluminium tubes over 40mm in diameter can be accommodated with machine adaptation.

Unipac is also introducing a new entry level filler which is due to be launched at Interpack. The U-2060, which supersedes the U-50 model, is again said to be a compact and flexible tube filling machine and is designed for low volume outputs up to 60 a minute.

For filling and sealing plastic tubes up to 25ml Sussex & Berkshire Machinery has introduced a compact, semi-automatic, tabletop machine. Operating at speeds up to 45 tubes a minute, it has a footprint of just 710 x 730mm and has a no-tube/no fill interlock as standard.

Based on a rotary indexing turntable with twin tube holders, the MiniTube employs a peristaltic



**Compact tube filler:** MiniTube from S&B gives speeds up to 45 a minute for doses of 1-25ml

filling pump, which S&B says eases cleaning and changeover, and diving nozzles to minimise foaming. The only size parts required are push-in tube holders.

The latest tube filler from Tonazzi, represented by TMG Marchesini, is the Millennium 2002 which uses a racetrack style conveyor to carry tubes past the filling heads at speeds up to 200 a minute. It can be automatically fed with empty tubes by a two-axis robotic pick-and-place mechanism and will handle plastic, laminate or metal containers.

The Millennium 2002 can be linked up to the MA255 cartoner, with filled tubes transferred from the filler to the pockets of the cartoner by a rotary pick-and-place mechanism.

### Vertical drive elements

A series of tube fillers made in Italy by Packaging & Design is now available in the UK from agent Soudal and feature a novel design in which the drive elements are arranged vertically at the side. This provides easy access to almost all mechanical parts for maintenance and also allows the machines' working area to be built on a balcony basis.

The machines can be supplied to handle metal, plastic or laminate tubes at speeds up to 200 a minute and use a Ferguson drive to the turntable, which is said to provide smoother and more positive action than the Geneva gears often employed.

A number of companies have been developing their liquid fill technologies and again with that ever present theme of flexibility in mind, Terco Europe has introduced a compact multi-function filler and capper. The machine, which can handle containers from 20-250ml, has three different types of filling head around its indexing carousel enabling it to handle a variety of liquids.

Flexibility is further enhanced by the use of a puck container transport system which the company says eliminates most size parts and gives fast changeover. Different height pucks are used to identify containers automatically to the filling head in service at the time via the PLC control.

For shampoos, gels and more viscous products, there is a volumetric piston filler, while for fragrances and alcohol-based products packed in rigid containers a vacuum level-filling system is fitted. The third head, a pressure/level unit, is for water-based and light viscosity products being filled in plastic or glass containers.

Capping is via a single spindle screw-capping unit which has its own pick-and-place mechanism to save space. Further stations to insert and

crimp spray valves and add a press-fit overcap can also be fitted around the carousel. Indeed, a maximum of eight stations can be accommodated, operating at speeds up to 35 containers a minute.

To improve the cleaning down time and make size changes easier, the Italian liquid filling machine manufacturer, Vasquali, represented in the UK by Skerman Promac, has made a number of modifications to its high speed automatic filler designed for the C&T sector.

The fully integrated monobloc machine now has a new plastic rotary disc unscrambler and filling and capping stations. The company says the star wheel is now a "skeleton-type turret designed for good GMP and excellent laminar air-flow", which reduces spillage to a minimum by reducing the points of contact and also makes washdown easier.

The rotary drive system, cap pick-and-place movement, screw tightening motors and pumps are mounted below the mainframe and sealed against the base plate, which also aids cleaning and extends motor life.

Three standard pumps are available. A mechanical dosage system driven from the main machine drive, pneumatic systems for more viscous products and multi-lane peristaltic pumps for ease of cleaning or where zero contamination is required. For free flowing liquids, flowmeters can also be used to control the fill.

The capping section now feeds caps directly from the cap unscrambler to a pick and place device which Vasquali says minimises the time the bottle is open before the cap is tightened by an electromagnetic head. Push, snap-on and ROPP caps can also be accommodated.

Sensors are fitted to provide no-bottle/no-fill and no-fill/no-cap inhibition and also to detect missing caps. Automatic insertion of wads, bungs or barrier materials before cap fitting is a standard option.

### Latest touchscreen controls

A modular, in-line liquid filling system designed for speed and versatility has been developed by Swiftpack-King, a division of DT Industries Packaging Systems. Capable of handling a wide range of containers, the company says the King Technofil Premier represents a "revolution in liquid filling", by combining King filling technology with the latest PLC and touch-screen controls

Higher output speeds are facilitated by positive shut-off valves on each filling nozzle which prevents stringing or dripping. Smooth motion is achieved by a motorised nozzle bar lift mecha-



**Easy access:** Puma 100 tube filler from Packaging & Design has drive elements arranged vertically

nism which can be programmed to allow variable speed and a stepped diving action, according to product and bottle characteristics. This is particularly important where foaming is a problem.

### Product library for instant recall

The company says the total control of the filling cycle allowed by the touch-screen system enables a wide range of standard and irregular-shaped containers to be handled, while the product library permits instant recall of fill parameters, further enhancing line efficiency.

Most liquids can be handled by the Technofil, including emulsions and suspensions, and plastic, glass or metal containers ranging from 10ml to 5 litres can be filled.

Meanwhile, a compact monobloc liquid filler and capper for small containers has been introduced by Adelphi Manufacturing. The Cerberus is PLC-controlled and free-standing, with a 900 x 1300mm footprint and can handle doses of 0.2 to 245ml at speeds up to 80 a minute. Three filling systems are again available: peristaltic for liquids and light oils, a displacement pump for lotions, creams and viscous products and a vacuum system for filling to a level.

Containers up to 150mm high and 50mm in diameter can be handled and an adjustable star-wheel ensures varying container shapes and sizes can be filled. Closing stations are available to handle screw and push-on caps, plugs and stoppers and two can be incorporated at any one time, each supplied by a vibratory bowl feeder.

A compact filler which uses a gear pump to provide the power to handle high viscosity gels, creams and pastes has been developed by Nupol



**Latest touchscreen controls:** King Technofil Premier will handle a wide range of liquids and containers



**Rubber fingers:** The Cap Coder CC550 starwheel-based capping machine

Machinery, the new machinery division of Packaging Overhaul.

Housed in a compact stainless steel case, the Nufil runs from a single-phase supply and uses a Siemens controlled inverter to allow two-speed filling. Contact parts are made in stainless steel or PTFE and the use of O rings, carbon face seals and sanitary fittings between the pumps, nozzle and inlet is said to make it ideally suited to sensitive products which need hygienic conditions.

It can be automated, used as a standalone, or integrated into existing lines. Different nozzles are available depending on the product being filled and three pump sizes allow it to fill up to 17 litres a minute with individual fill sizes from a few millilitres to 5 litres at an accuracy of  $\pm 0.5$  per cent.

The Robo filler by PKB of France, available in the UK through Propack Automation, fills 40-60 containers a minute and is said to be particularly suited to the C&T market as it can be fitted with a variety of dosing systems and plugging and capping devices to suit a wide range of products.

Rather than employ lifting systems to raise the filling and closing heads on each cycle, the Robo has an upper rotary table supported by a rising/falling central column on which all the heads are carried. In this way they rise and fall in unison while the dipping motion can be used for bottom-up filling. Adjustable pucks reduce size parts and changeover times and in one instance the pucks have carried 19 different shapes of container.

Propack and Italian manufacturer Ronchi have also continued to develop their flexible filling line philosophy based around the Exacta flowmeter filling system which is now available as a monobloc with a servo capping system. Two small machines of 12 filling head and five capping head configuration have been installed in the UK over the past year and, despite their size, are capable of outputs up to 120 bottles a minute on a 300ml shampoo fill.

#### Range of products including oils

The first installation was a full puck line, including unscrambler and puck loader, delivered to a "major brand name company" for a range of products including oils, lotions and shower gels. The line caters for both screw and push-on caps and uses a vision system to detect cap orientation. The second line went to a contract packer

and has a specially developed conveyor, handling hooked shower gel bottles in pucks as well as standard bottles.

Universal Filling supplies liquid fillers ranging from small, bench-top units for first time users or customers with a need for particularly flexible equipment, to fully automatic multihead machines. Indeed, the adaptability of the equipment is well suited to the frequent size and product changes of contract packaging, which Hampshire Cosmetics, for one, has discovered.

Hampshire Cosmetics fills a wide range of products including shampoo, conditioner, gels, foam baths, oils, creams, perfumes and acetone based cleaners, which are automatically filled, capped, labelled and shrink-wrapped at up to 80 bottles a minute on six lines equipped with filling and handling systems supplied by Universal.

The flexibility of the Universal machines is illustrated on three of the lines featuring Universal VH volumetric filling units. These are capable of filling 250ml gels at 60bpm on six heads, although it is a simple matter to change the units to eight head vacuum fillers capable of producing up to 80bpm.

Filling heads on Universal machines are easily interchangeable which means that by having spare cylinders ready cleaned and sanitised, a quick changeover can be accomplished when switching production, for example from creams to gels.

IMA's latest liquid filler for the C&T markets is the Electrofill, a compact, continuous motion rotary machine which can be supplied with net weight or flow control filling heads as well as capping stations. Models are available with 16, 20, 24, 32 or 36 filling heads and operating speeds are up to 300 bottles a minute.

The machine is said to provide high levels of fill accuracy, with feedback software to make filling volume corrections. The design also eliminates the need for an overhead or secondary product tank and the self-draining manifold allows direct distribution of the product to all the filling heads.

Cap Coder says its torque heads are specifically designed to avoid surface damage on the decorative caps often used on personal care products and that its CC550 starwheel-based capping machine, designed for use with an existing conveyor, provides a flexible solution in terms of the range of caps it can handle.

French cosmetics major, Yves Rocher, has taken delivery of a Packaging Automation Starwheel machine for foil lidding 45mm and 70mm containers for a new face rejuvenating

cream being made at its Cork, Ireland, plant.

Running at speeds in excess of 60 packs a minute, it operates as part of an integrated line. Two starwheels either side of the conveyor pick up the pots and rotate to carry them into the body of the machine. The first station in the machine takes a foil lid, places it on the pot and applies a spot seal, which prevents it falling off as it is carried to the heat seal station where it is firmly sealed to the pot.

The machine for Yves Rocher was designed to a particular specification although Packaging Automation says it can be built with additional items such as fillers and an over-capping station. It can also come with one or two starwheels, requires only single-phase supply and can cope with pot diameters ranging from 20 to 102mm and depths of 20 to 90mm.

A sachet form-fill-seal machine that can create shaped sachets – and also be equipped to produce wet wipes – has been announced by Clan Packaging, UK agent for the Italian manufacturer Universal-Pack.

Applications include unique branding for single serve hotel and catering packs, as well as miniature facsimiles of larger packs, such as bottles, for promotions and distribution of samples. Indeed, in Italy, sachets printed and cut to create the image of a lemon are now being used to pack lemon scented wet wipes.

Shaped sachets can also be made on the Mertz range of vertically operating platen type form-fill-seal machines marketed in the UK by Soudal. Models can be supplied with up to six lanes for creams, gels and towelettes while there is also a machine to produce a three-side seal sachet, offering materials savings of about 20 per cent over a conventional four-side seal pack. ■

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**High speed line:** One of the two filling lines supplied to Axxis by Masterfil

#### CASE STUDY: AXXIS INTERNATIONAL

## Cosmetics plant with a pharma specification

**W**iltshire-based Axxis International recently invested over £7 million in a new greenfield manufacturing site at Trowbridge, which was built and ready for production within 48 weeks. Plant manager Jeremy Evans is not sure if that is a record, but thinks it must be “pretty close”.

Moreover, Axxis says the site has now set the standard for the cosmetics industry. “Basically,” says Mr Evans, “it’s a cosmetics manufacturing site with a pharmaceutical specification.” This includes a graded air system, air locks on each door leading to the production area, strict pharma-standard hygiene controls and a CIP process that some in the pharmaceuticals sector might find hard to match.

Indeed the entire building – which also houses the administration part of Axxis – looks as though it would not be out of place in a Sunday glossy magazine feature.

“We were adamant that we wanted to create a democratic working environment, where line operators and admin staff felt they were all part of the same effort,” continues Jeremy Evans. “To that end we have windows throughout the factory so that everyone can see what is happening on the manufacturing floor and, in turn, those on the factory floor can see their colleagues in the offices.”

Attention to detail also extends to the lighting

in the building which is designed to replicate that of a retail outlet so that staff can see the product exactly as the customer will see it later on the store shelf.

The company, which reckons to be the UK’s leading contract manufacturer of toiletries and cosmetics and counts among its customers all of the UK’s leading players at the quality end of the sector, adopts an “open partnership” approach to both employees and suppliers.

This involves a lot of research before Axxis decides upon what it terms a “chosen partner”. This partner will then work alongside the company almost as if it was part of Axxis itself.

The “chosen one” for filling is Aylesbury-based manufacturer of liquid filling and capping equipment, Masterfil, which has supplied, fitted and designed the two major, but relatively compact lines responsible for most of Axxis’ output.

#### Frequent product change

The first is a high flexibility line. As Axxis manufactures a wide range of products from pots and jars through to 500ml bottles, it was vital that one of its lines should be able to cope quickly and efficiently with frequent product change. This line is designed to operate at up to 60 containers a minute using a combination of automatic machines and manual labour.

Product containers are loaded into plastic pucks which are then carried by conveyor to a Masterfil six-head S500-AS servo drive filler. These fillers have been specifically designed to cope with varying viscosities of liquid which is a key attribute in the cosmetics industry where foaming is a constant threat to line speed and production.

Over eight different filling speeds, according to product and shape of bottle, are automatically set using Masterfil designed software. The filled container is then capped using a single head insert applicator – when required – and a Mastercap single head capping machine. The container then heads for the depuck unit where it is removed from the puck and the puck is returned to the conveyor where it starts the process again. Meanwhile the container is labelled and sent to the packing table.

However, Masterfil says it is probably the high speed, fully-automated line that best demonstrates the technology that can be applied to cosmetics filling. This line is designed to operate at speeds of over 120 containers a minute and, although similar to the first line, operates using fewer operators and incorporates a number of advances.

For example, at the outset of production the containers are unscrambled using an Omega 3D-PRP2-8 rotary plastic bottle unscrambler and instead of the six-head filler, Masterfil has installed a 12-head S500 filler.

**Capped and depucked**

The containers are then capped using a Mastercap three-head rotary capping machine and depucked and returned via the conveyor before being automatically labelled, packed – using an automatic tray erector and container tray packer – shrink-wrapped and passed by conveyor to the distribution centre.

Axxis believes that it is only by instigating a thorough training procedure for line operators that product efficiency and quality of product can be achieved. “Too many line operators in the manufacturing sector have not been thoroughly trained and are therefore lacking in confidence,” says Jeremy Evans. “This lack of confidence leads to a reluctance of operators to operate their equipment at maximum capacity. We wanted to get away from that and allow our operators to trust their judgement.”

Accordingly, Masterfil set up a thorough training package both at the Axxis site and its own manufacturing site in Aylesbury.

Masterfil also had to design a line that would fit Axxis’ “robust and thorough CIP procedures”. This means that the CIP process for the filling lines is exactly the same specification as that on the manufacturing plant.

Here a fully automated system delivers a CIP process which is said to be more common in the food industry than the cosmetics sector. ■

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**LABELLING AND CODING**

**Coping with a range of shapes and sizes**

**L**abelling and coding cosmetics can be a straightforward business, but unfortunately that is often not the case. A common problem is size. Many cosmetic items are small with little secondary packaging and products such as lipsticks, eyeliner and nail polish can be challenging.

Another consideration is shelf appeal since half the battle – if not more – is won or lost by how the product appears at the point of sale. Top end products need to be particularly glamorous and, although often fragile, absolutely unmarked. Toiletries labelling and coding also commonly has to be waterproof and production speeds can often demand a high capacity labelling system.

For example, Harland Machine Systems latest high-speed, heavy duty linear pressure-sensitive labelling system, the four-station Titan, is able to apply front and back labels to regular and irregular glass and plastic containers at speeds up to 450 a minute. Easy label reel change/splicing and the Harland Comet retractable labelling heads are said to allow quick and easy changeover between different products.

All the modules of the Harland Titan – from product infeed to label finishing – are individually servo driven, reducing maintenance and changeover costs. These are configured and monitored by an integrated motion control system, said to provide an increase of 50 per cent in performance over other linear pressure-sensitive labelling systems.

**Smoothed to pack contours**

The walking beam wipe-down module is designed in such a way to ensure labels are efficiently smoothed to match the contours of the containers, while an integrated vision system checks label presence and establishes that it is the correct one, accurately placed and aligned, as well as verifying the bar code.

As mentioned, smaller containers can present a problem, particularly when print-apply labels need to be attached. However, one company which has approached the proportion problem is Weyfringe. Its Apollo IS has been specifically designed to offer a solution to printing labels as small as 5 x 12mm and applying them to an accu-

racy of 0.02mm on difficult to access areas.

Labels are printed at 300dpi, ensuring small text and barcodes are clear, and applied by a very compact, pneumatically driven labelling head. The Apollo IS also tackles the fragility question by featuring a pressure sensitive “application complete” detector which makes sure the labels are securely attached without excessive force.

Martek Industries has introduced a desktop label printer designed for use in sterile conditions. The covers of the Sato-400 bar coder are manufactured from inorganic anti-microbial material that the company says has been independently tested to be effective against micro-organisms, including bacteria, moulds and yeasts. Ion exchange technology is used to achieve these properties which is also said to ensure the process is safe, long lasting and thermally stable.

The compact CT-400 prints at speeds up to 150mm/sec, has a range of interfaces, including IEEE 1284, parallel, serial, USB and LAN, and comes in 203 and 305dpi models, thermal transfer and direct thermal.

A balcony construction pressure sensitive labeller, for round bottles in the cosmetics and toiletries industries, has been developed by Key Packaging, Italy, and is now available in the UK

**Automatic line for**

Constance Carroll’s Collection 2000 is one of IWP Personal Care’s best-known brands and the cosmetic appearance of the final product is a prime consideration to the company. So when the time came to automate the powder compact line – which previously tied-up eight to ten employees – IWP needed to make sure that each component would continue to be handled gently and accurately.

In fact, the assembly of compacts is particularly challenging with six components – lid, foam puff, paper shive, powder block, case and label – having to be brought together with care.

The result was a complete line supplied by Adelphi Manufacturing with the MRT16 Assembly Monobloc at its heart and other equipment, such as feeders, conveyors and labeller, arranged around a central hub. All component transfers are made smoothly, avoiding abrupt movement, and mechanical contact parts have a soft-touch finish.

The installation has greatly reduced the staffing required and boosted output to some 60 cases a minute. ■

**More information - enter 164**

via newly appointed agent Ultrapac. Patch or 360deg wraparound labels can be applied.

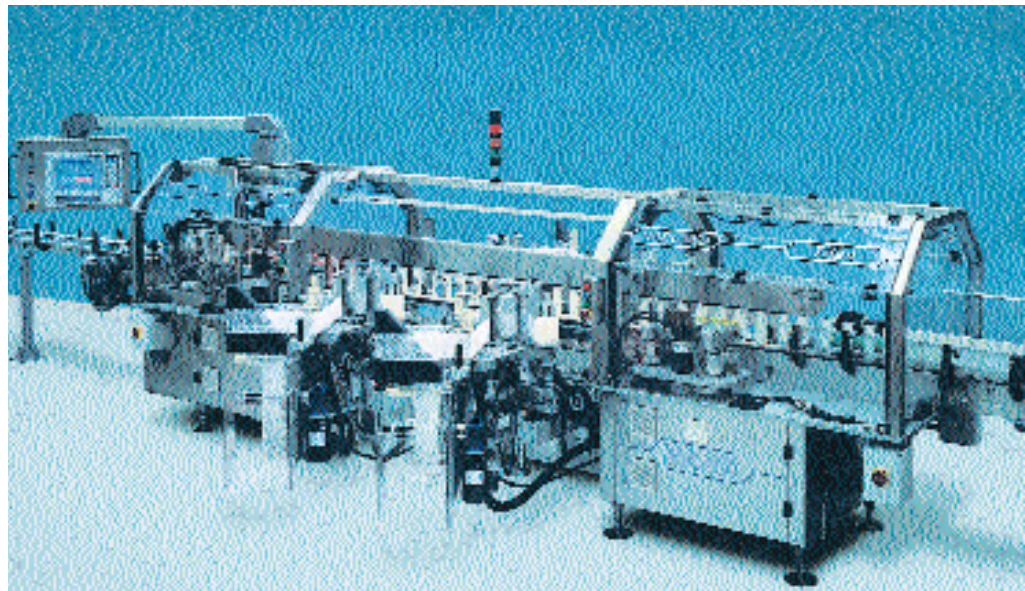
The RB 300 is able to operate at speeds up to 350 bottles a minute and employs a photocell and stepper motor driven wheel to control container pitch on the conveyor, eliminating size parts. Bottle diameters of 20-100mm can be accommodated by adjusting the infeed guides. In addition, the conveyor belt is supported on cantilevered rollers, allowing it to be easily and quickly removed for cleaning.

#### Dispose of backing web

The machine also uses a cutting system to dispose of the backing web. This allows the labelling head to be smaller, and easier to set up, by eliminating the conventional rewind unit and using cutters to chop up the waste, which is carried by suction to a bin.

Overall, the RB 300 occupies the relatively small footprint of 1000 x 1500mm, with the balcony construction allowing label reels and an automatic splicer to be mounted vertically in the space below the conveyor. The web is then taken to the applicator head via a 90deg turner bar.

Two similar machines are also available from Key Packaging, the OC 400 for oval containers and the ROC 200 for round and oval containers.



**High speed decoration:** Harland Titan carries out front and back labelling at 450 containers a minute

Picking up on the requirement for quality and the gentle-handling of C&T products, Kronos has developed the Autocol self-adhesive labeller which it says combines quick changeover with precise container guidance thus guaranteeing wrinkle-free labels without air pockets that are wet-proof and in correct alignment.

The company can also supply the Stretchmatic for stretch sleeves and the Sleeveomatic for sleeves. Both allow complete or partial sleeving and can include tamper-evidence in the neck area.

Sleeving has steadily gained popularity as an

option in the C&T industries and Littlehampton-based contract services specialist, COSi – Creative Outsourcing Solutions International – recently increased its capability with the installation of a horizontal Sleeveit SV 22 from Turpins Packaging Systems. This, says COSi project development manager, Lee Harris, has resulted in a “significant reduction in labour”.

The machine applies PET tamper-evident sleeves to mascaras of differing sizes and shapes, round and square. It runs at some 50 units a minute and size parts are minimal. Moreover, Turpins says there is no need to change the walking beam for each product as simple adjustment is built into the design.

A vital element is said to be the integral rotary shrinking system employing a purpose-built tunnel with rollers that spin to ensure even shrinking of the sleeves without appreciably heating the products.

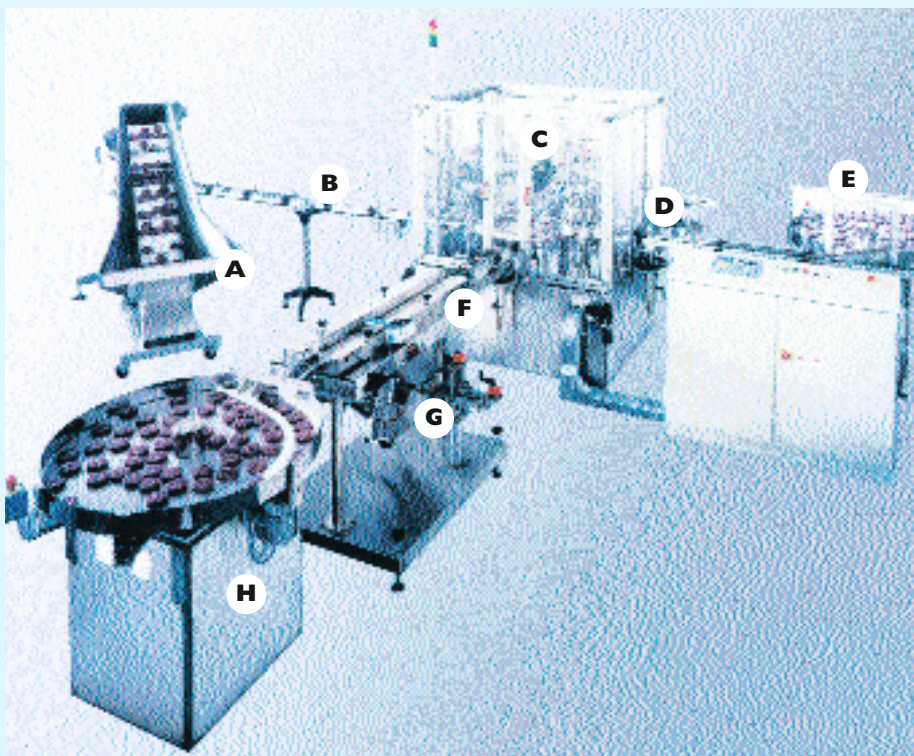
The range of horizontal shrink sleeving machines made in Germany by LogicPak is now marketed in the UK by Soudal.

Able to apply tamper evident bands, decorative sleeves, or a combination of the two, the LPK machines are aimed at small diameter or cross-section products such as lipsticks and mascaras that cannot usually be handled on vertical machines. Items of 7-50mm diameter and 40-150mm long can be shrink sleeved at speeds up to 180 a minute, with the option of part or full length coverage. A complete top and bottom seal can also be made.

Soudal says that the way in which the LPK machines handle the sleeve material allows smaller sleeves to be used for a given product size than competitive equipment, leading to a material saving of 10 per cent or more.

In a recent installation at a French cosmetics house LogicPak has supplied a machine

## Constance Carroll powder compacts



**Powder compact assembly:** A: Plastic cases feeder; B: Plastic cases conveyor; C: MRT 16 Monobloc; D: Conveyor for manual application of foam puff; E: Feeding turntable for plastic lids; F: Lateral belts for transfer and application of bottom label; G: M200 labelling head; H: Completed product accumulation



**Balcony style labeller:** *The RB 300 machine from Key Packaging, Italy*

equipped with a thermal transfer printer to add an EAN bar code and ingredients information onto the sleeving material as it unwinds. After application and shrinking, the bar code's legibility is checked by a scanner.

Down in Devon, Broadoak Toiletries has turned to a custom-built labelling machine for automating a process which until recently was carried out by hand. Although basically rectangular, the 50 and 100ml glass bottles of Floris toiletry and skin care products have an inward "V" profile on the front into which a clear label has to be applied with minimum air entrapment. Other Floris bottles have conventional, but tapered surfaces.

The company struggled to find a labeller that provided sufficient accuracy until Atwell Self-Adhesive labellers customised a multi-station A-L120S front/back applicator.

Bottles are held in place at each labelling station by individually shaped jigs and labels are lifted from the backing paper by vacuum units which then slide and traverse through 90 degrees onto each surface to be labelled. Labels applied into the "V" are positioned on purpose-built, V-shaped vacuum pads which match the angles and curves on the bottles. Accuracy of  $\pm 0.5\text{mm}$  is claimed. ■

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CASE STUDY: WELLA (SHAMPOO)

## Vision system keeps bottles well groomed

**W**ella at Huenfeld in Germany is now using a vision system from Cognex to provide 100 per cent quality control on the appearance of shampoo bottles, replacing random inspections that were considered inconsistent with the introduction of ISO 9002 certification.

The Cognex Checkpoint vision system checks bottles and labels, differing in colour and shape, for seven characteristics at speeds of up to 180 a minute. CCD cameras inspect the containers on the front, back and from above as they pass on the conveyor.

This, says Cognex is where the PatMax vision software tools come into effect. Rather than rely on binary and grey-scale correlation for image analysis, as used in other systems, the PatMax software instead converts the object to a geometric representation.

"By doing this, it is able to locate an object regardless of its position, orientation or changes in its dimensions," explains Cognex. "By simultaneously inspecting the outline and pattern of the object, lighting and contrast variations are eliminated. By comparing the object with a reference image, a defect classifier enables robust object detection even when images show severe non-linear distortions."

This makes it possible, for example, to check the colour and shape of "fancy" lettering for errors while the edge detection tool makes it possible to locate bottles accurately on a running conveyor, including bottles with an oval shape. A slight rotation of the bottle is not a problem, as even rotations of less than 1deg about the main axis are detected. Similarly, the position of the label on the bottle can be accurately located.



**Front, back and cap:** *Station one inspects both the labels and the closure*

At the first station, the Checkpoint vision system inspects the label on both sides evaluating two images from two cameras, one mounted in front of the bottle looking at the front label and one in the back looking at the back label. At the same time the bottle cap is inspected for proper fit. Additional tasks such as label inspection for wrinkles will be implemented in the future.

At the second station, three CCD cameras using the same vision system inspect the packaging of bottles in six or 12-packs. In the final stages of quality control a statistical evaluation is taken.

Frank Groeger, head of the Centre for Engineering, Development and Process Technology at Wella AG, says: "Integrating the vision system has been an extensive and valuable experience. We now plan to install additional systems in this plant as well as in others. In a sense we have become our own system integrators as the vision application knowledge is all held within the organisation.

"Checkpoint has shown that it is easy to use. Its greatest advantage however is its flexibility and accuracy. As a result, Wella has already installed a second vision system and plan to integrate up to six more in the near future." ■

**More information - enter 174**



**Transit pack inspection:** *At the second station, the system monitors bottles in six or 12-packs*

CARTONING

# Flexibility to handle the mix of styles

Cartoning is a common task in the C&T sector, especially for upmarket creams and fragrances, as is the requirement for inserts due to the weight of information that must be supplied, often in as many as ten languages. As with more upstream equipment, the ability to handle a variety of configurations and sizes is also a necessity, as is gentle handling.

New to the UK market this month is the CV1/060 cartoner from Romaco's Siebler division. This machine is said to allow great flexibility in combining different carton styles and formats, with easy synchronisation to a range of ancillary options.

Siebler says the full benefit of the CV1/060 becomes apparent in packing premium cosmetics products. "Here, its modular concept can be adapted for anything from straightforward semi-automatic packing through to fully automated, complex operations, with gentle handling of product and pack throughout."

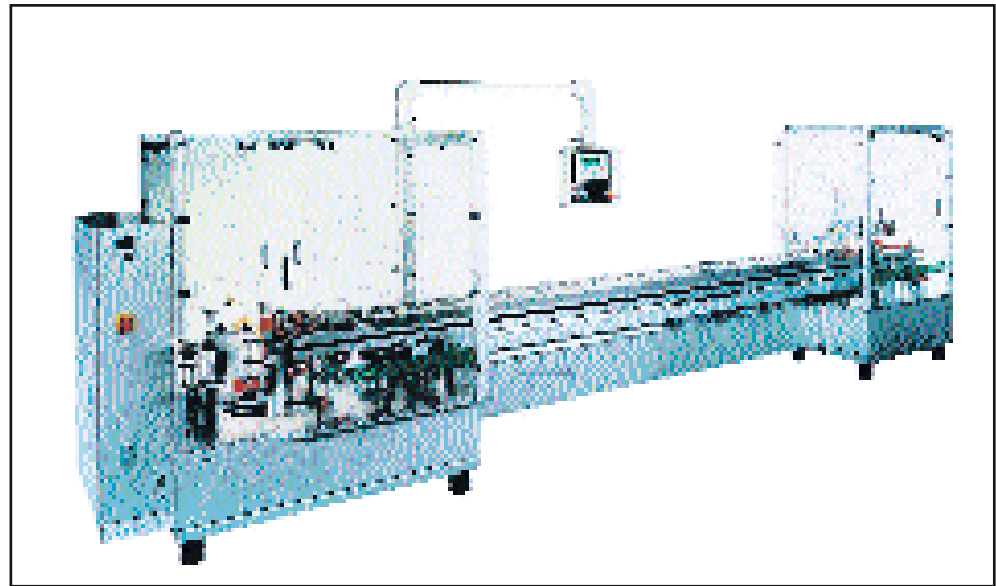
The machine is available in three different executions – with pitches of 140, 210 and 280mm respectively – to accommodate cartons of different sizes. Maximum output for all three models is 60 cartons a minute. This UK launch follows its introduction last autumn to the French cosmetics market where, the company says, three leading cosmetics houses have already placed orders for the CV1.

### Batch sizes getting smaller

According to Siebler, niche marketing in the cosmetics sector means that batch sizes are getting smaller. As a result, one manufacturer was facing a situation where four carton format changes were required in a 14-hour working day and downtime for changeovers was having a serious effect on profitability.

Although more expensive than competing machines, Siebler says the CV1 was easy to justify, thanks to its changeover time of 10-30 minutes compared to a typical time of 3 hours.

The CV1 is, claims Siebler, "a truly vertical machine, designed in every detail to allow vertical operation". It says that some cartoners, for example, while claiming to be vertical, actually feature horizontal magazines, necessitating a significant amount of handling during carton erection



**Ergonomic machine :** *The Siebler CV1 cartoner in its basic execution for semi-automatic operation*

tion to change the orientation to vertical, as well as adding to the complexity of format changes.

The vertical magazine on the CV1 means that the machine can handle cartons with large 'A' dimensions (maximum 220mm), such as those used for perfumes.

Moreover, unlike many competing machines, Siebler points out, the CV1 does not have a single frame. This modularity allows separate carton opening and closing stations to be incorporated, with a variable length product feeding area between the two, which is adjustable in the range 840-3200mm, to accommodate a variety of feeding options.

The CV1 machines due for installation in France are being configured to handle complex cartoning operations. Additions to the basic machine include buffer conveyors for jars to prevent surface damage, automatic insertion of carton liners and automatic duplex and triplex jar insertion. One machine is also configured for automatic orientation of jars in cartons with windows, with a glue spot fixing system.

German manufacturer Wüste, represented in the UK by Soudal, has also introduced an in-line medium output vertical cartoner with separate erection and closing stations. Again, these are joined by a product infeed station of variable length to suit the space required for either automatic feeding equipment and/or manual feeding by one or more operators.

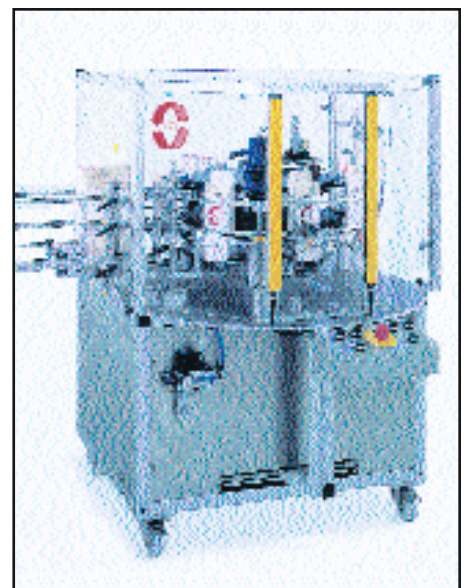
Special stainless steel reinforced plastic belts are used to transport the cartons and, apart from making the machine quiet in operation, are said to ensure gentle handling, particularly for high quality cosmetics and fine fragrances cartons. As an option for these products the machine can be

equipped with an inner liner insertion station.

IMA's Vertima vertical cartoner has been specifically designed to provide a flexible, fully automatic means of cartoning high quality cosmetic and toiletry items where both the product and the carton must be handled gently to prevent marking or damage.

### Speed without damage

During the development stage IMA worked closely with a major international customer in the cosmetics industry for whom cartoning products at speed without causing damage had always presented a problem. The Vertima employs belts, instead of chains and fingers, to transport the carton blanks and this system, already proven on IMA's horizontal cartoners, is said not only to eliminate the possibility of car-



**Space saving:** *Compact 4/M rotary cartoner from U-E-T fits in a 1500 x 1500mm floor space*

tons becoming scratched or scuffed during transport and opening, but also enables size changes to be achieved very quickly.

The first machine was designed for packing creams filled into high quality jars and IMA used a pick-and-place system to lift the jars from a conveyor and lower them into the open cartons. The flaps are then folded and the lid tucked in. Once the machine was installed, further development work was undertaken to allow leaflets of different kinds to be loaded into the cartons before they were closed.

Having proved that the technology worked, a second-generation machine was built that could handle a much wider range of container and carton sizes including fragrance bottles. According to IMA, this single machine could handle over 80 different variations of cartons and containers, providing speeds up to 60 cartons a minute and allowing a full size-change to be achieved in less than 30 minutes.

Meanwhile, Lerner Burgess has tackled the problem of limited floor space at a major soap company by incorporating a carton closing station in the pick-and-place loading machine on a top load cartoning line, which is loading 12 small soap cartons into an outer carton in two layers of six.

The line starts with an ECT 500 carton erector which has a diverter station to split the incoming stream of small cartons into two lanes, which are then conveyed through the machine to exit parallel with newly erected outer cartons. The latter are also created on the ECT 500, an arrangement which further minimises the floor space requirements.

### **Tamper-evident label applied**

After loading by two cycles of the pick-and-place mechanism, filled outers progress via a precrease station to the lidding station where the lid is folded down and the flap tucked into the carton. Filled and closed cartons then receive a tamper-evident label, although a glue closure can also be accommodated by the machine. The outer carton is erected, loaded and closed at the rate of over 13 a minute, allowing the machine to handle a total of 160 small soap cartons a minute.

U-E-T, Germany, builds an extremely compact rotary type of vertical cartoning machine which takes up a floor area of only about 1500 x 1500mm and can therefore be moved easily from one line to another if required. UK agent Soudal says the machine is easy to use and size change, particularly if fitted with UET's centrally adjust-

able carton carrying disc for the width and depth dimensions of the carton.

The machine is aimed primarily at low to medium output applications using manual product loading although automatic feed equipment can be fitted if required.

Soudal also represents Planer Pharma of Germany which produces a range of horizontal end load cartoners. Based on a balcony design they are available in intermittent or continuous motion with outputs up to 300 cartons a minute for continuous motion models.

### **Cartons for eyeliner pencils**

A recent installation in a German cosmetics company has involved handling cartons as small as 10 x 10mm cross section for eyeliner pencils. On the same machine lipsticks are also being cartoned with an automatic take over from the lipstick production machine which includes an integrated pressure-sensitive labeller that applies a colour code label onto one end of the lipsticks.

Bologna-based Cam has a long association with the C&T sector and the company has a range of vertical and horizontal cartoners for handling a variety of container and carton styles.

Supplied by Campak in the UK, the range starts with the AV low-cost, entry level vertical cartoner, while for higher speeds and automation, the AVC continuous motion vertical machine automatically places the product directly into the erected carton while keeping the product upright. For a horizontal configuration, the HV/HG continuous horizontal machine offers the same positive mechanical carton skillet opening devices of the AVC and comes with a range of automatic feeding systems.

Finally, Sollas UK has recently installed a Sollas 20 overwrapping machine at a leading UK perfumery and cosmetics company where it is now used to overwrap high quality perfumery cartons in acrylic coated polypropylene film.

Some of the cartons are individually wrapped but there is also strong demand for wrapping them in triple packs with a tear-tape applied for easy opening. Single packs often feature a spot or strip seal on the end seals to enhance the presentation of the product. ■

#### **FOR FURTHER INFORMATION:**

<b>Campak</b>	<b>enter 175</b>
<b>IMA UK</b>	<b>enter 176</b>
<b>Lerner Burgess</b>	<b>enter 177</b>
<b>Romaco</b>	<b>enter 178</b>
<b>Sollas UK</b>	<b>enter 179</b>
<b>Soudal</b>	<b>enter 180</b>

END OF LINE

## Gentle handling for precious products

**M**aintaining the visual appeal of cosmetics products is, of course, paramount and to this end Italy's Vortex Systems developed and patented the Individual Carrier System (ICS) for grouping delicate products ready for case packing by a robotic pick-and-place arm.

Available in the UK and Ireland through Notem Packaging Technology, the ICS accepts wrapped products into its series of individual pockets or carriers which are initially held stationary at the infeed. Once a product is received, the carrier is released from the infeed area to travel down the line to join the previous carriers already positioned under the robot arm which then picks products from the carriers in groups, loading them directly into the cases.

The robots can be supplied with vacuum grippers or dedicated mechanical grippers and individual pack speeds of up to 1000 a minute can be handled by a single machine. A key attribute of the machine is its flexibility, which in a recent application coped with 20 different case configurations.

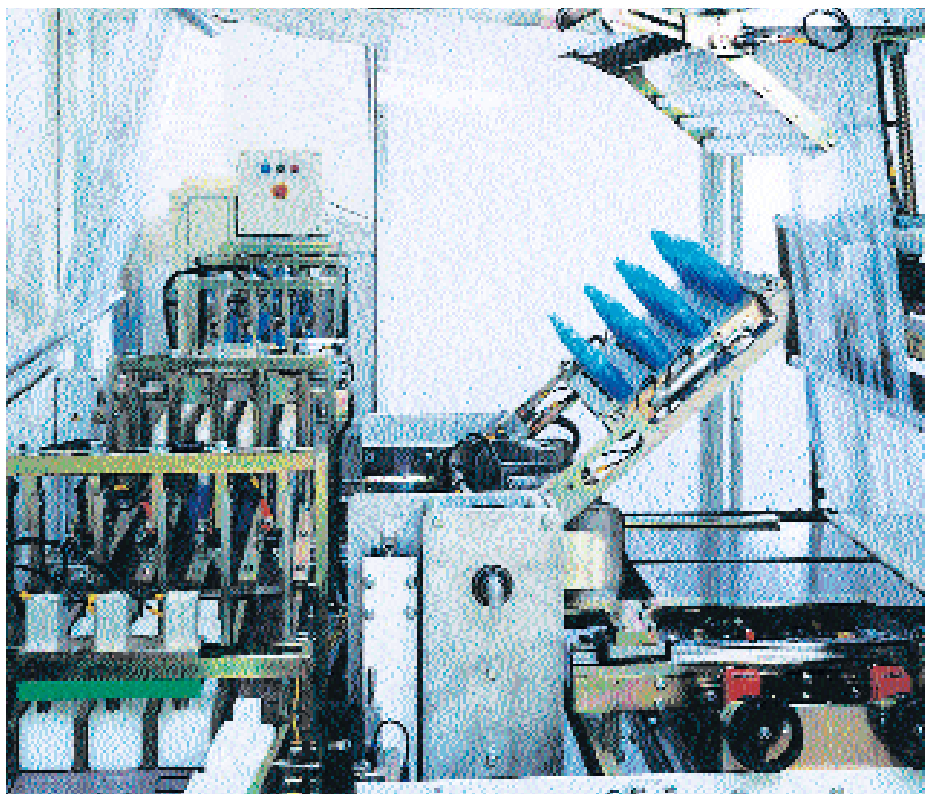
One of the more tricky handling operations with toiletries is dealing with "hook handle" shower gels which are commonly hand packed from loaded pucks. Now, however, Europack has introduced a high speed machine which automates the process.

Operating at eight cycles a minute, it features a servo-controlled gripper platen which swings through 180deg. Filled bottles enter the configuration hook side down in pucks which pass through lane dividers to form typically three or four lanes. Collations are gripped, removed from the pucks and swung through 180 degrees onto their caps, where they are nudged together prior to shrink-wrapping.

"It works on the same principle as a big wheel and because it is servo-controlled it is very accurate and safe," points out Europack sales director, Ivan Reeve.

A range of sizes and formats offers flexibility and Europack says the machine would be suitable for a number of different types of unstable products.

Cermex has launched a new-generation, side-loading case packer following growing demand



**Coping with hook handles:** Europack transfer system inverts and groups shower gels for shrink-wrapping

for more compact machines, offering easy access and which are suitable for hygienic conditions.

The structure of the frame of the SB27 allows direct access at the same level into the heart of the machine. The cantilever design of the product transfer system and the casing of the machine parts limit product retention zones and allow clear access to the operating part of the machine. Finally, simplified size changeovers, easy access to the loading height of the case magazine and the design of the guards add up to a compact and ergonomic machine.

### Choice of closure method

Existing collation technology from the present Cermex range is used and once products have been collated layer by layer, they are transferred sideways into the case. The case flaps are pre-opened prior to this by a retractable funnel. A set of folding guides is then activated and the case is sealed using hot melt glue and/or adhesive tape.

The generic requirement of adaptability makes the Polypack ROKH pick-and-place shrinkwrap bundler, which can handle square, round, oval and specially shaped containers, particularly suited to the C&T environment.

On the dual lane ILB-332-DL-P model, containers enter the machine in a single lane and are then grouped into two lanes by the robotic pick-and-place action, for wrapping, six to a bundle. Following this they are placed directly onto a

bucket conveyor which positively transports them without further transfers through the shrink station. Typical running speeds are said to be up to 220 containers a minute.

The company's latest development is the "all in one" shrinkwrap case packer. This utilises the ROKH system to collate, load and shrinkwrap, and then uses a gantry robot to automatically place the bundles into an erected tray, RSC case or a blank to form a wraparound tray or case.

The world's leading direct sales seller of beauty products, Avon, has seen increased productivity when secondary packing sachets of creams and lotions following the installation of an integrated pneumatic product handling and packaging system at its Northampton factory.

Custom-built to Avon's requirements in terms of speed, operation and pack quality, the line was designed and installed by Ilapak and is being used to flow-wrap multiple sachets used as samples and "giveaways" by Avon's 160,000 representatives throughout the UK.

### PC controlled machine

At the heart of the line is Ilapak's Carrera 1000 PC electronic flow-wrapper, a multi-axis, PC controlled machine that can store up to 64 production programmes and is said to have a variety of standard features to improve efficiency, including a no-product/no-bag facility.

The integral product handling system feeds

sachet cartridges into magazines above the machine which are automatically phased via a pneumatic arm into the Carrera's infeed, eliminating the requirement for an operator to control product flow manually. This enables the machine to achieve throughputs of up to 80 packs a minute.

At the end of the packing line, a two-lane batch counting system automatically places batches of 150 packs into boxes.

Avon Cosmetics has also been supplied by Advanced Labelling Systems with eight ALX 720 print-apply labellers and more than 30 ALS Puma desktop label printers for identifying outer cases and other containers with a bar code which is scanned in the warehouse to route the package to its storage point.

**Printers in a network**

Each of the ALS printers used at Avon Cosmetics resides on an RS485 communication loop, that is connected to a network server. The printers each have a dedicated ID number, with the printers being connected to each other in a daisy-chain.

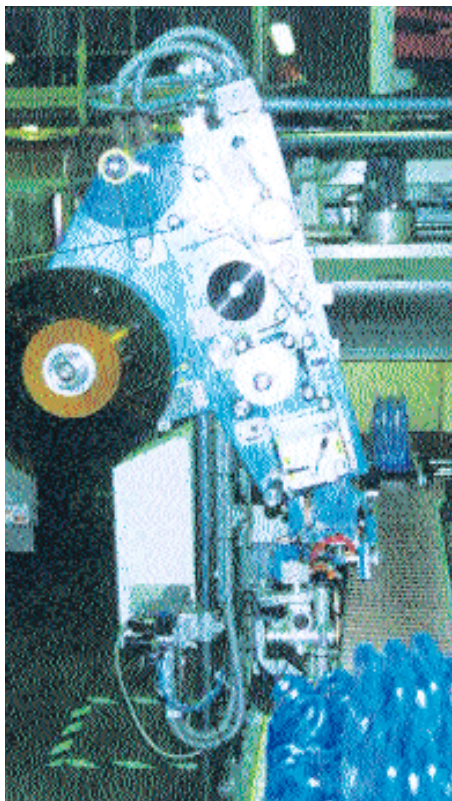
A custom software package for label creation and production control is installed on several strategically located PCs throughout the plant, which use a dedicated manufacturing order number as a unique reference to draw label data from the mainframe over the network. Typically, an outer case label generated by the ALS systems can contain up to 15 different fields, including four bar codes.

The ALS Puma desktop label printers are located at strategic points throughout the plant, to provide additional labelling capacity as required.

Having supplied two print-apply labelling systems for Sara Lee production lines over the past few years, Logopak has now installed a third, consisting of 906B90/400 tray labellers, for lines running at 60 packs a minute.

The lines carry shrink wrapped multi-packs of deodorant, shower gel, bubble bath and other toiletries and due to regular product changeover, label data changes have to match the line variability which is why an integrated hand-held scanner is a vital part of the unit.

The scanner, connected to the Logopak Leap controls, allows the company to maintain a common product database onboard each machine. When product changes occur, the operator uses the scanner to scan either the 8 or 13 digit EAN codes on the individual product labels. The data string from the scan is then used to automatically recall and load the traded unit container label from the database and into the printer.



**Third system:** Logopak print-apply machine identifies shrink-wrapped trays at Sara Lee

Apart from allowing any line to label any product, the common database and use of the scanner also removes the need for a PC on the factory floor and avoids manual keying thus "dramatically reducing" data entry errors. Data loading is also instantaneous and the labelling information can also be exported to calculate both plant and line efficiencies.

Each of the systems utilises a blow-on, non contact method of label application and Logopak claims the longest label (800 metres) and ribbon (1200 metres) reels in the market, giving the units the capability to print over 12,000 labels and 18,000 prints on a 65mm long label.

Every product made at one of the world's largest oral care manufacturing centres in the world, GlaxoSmithKline's European oral care centre at Maidenhead, which makes toothpaste and mouthwash for 37 countries, passes through a Dan Palletiser system.

**Only five operators**

The decision to concentrate oral care production under one roof was made when the company was known as SmithKline Beecham and took three years to complete. Now the site works 24 hours a day, seven days a week but only five operators are required to supervise the entire palletising and labelling operation.

The system comprises Dan elevators and con-

veyors delivering product to an array of 14 palletiser units arranged in parallel. These are connected by a trolley car shuttle system on the input side for feeding empty pallets and a shuttle on the output side for transporting loaded pallets to the pallet wrapping machines. The entire system is PLC controlled and has over 100 different pallet configuration patterns.

**Turned by gripper heads**

Each palletiser knows the pack and layer configuration required for each product and the packages are delivered direct to the loading plate or seized and turned by gripper heads or turning pegs to ensure correct orientation into an interlocked pallet pattern for stability during transportation. Flexibility is also an essential part of the operation as one packaging line may produce small, individual packs, while another is turning out fully sealed, large cases.

Finally, Transnorm System has supplied Colgate Palmolive with conveyors to provide controlled flow from two box sealing machines to a relocated automatic palletiser at the company's Manchester factory.

Cartons of hair spray and deodorant cans are discharged from two machines on to close pitched powered accumulating roller conveyors with lanes that incorporate pneumatic blade stops, operated by photoelectric cells.

Cartons track around 90 and 180deg tapered roller bends with accumulation taking place only on straight sections of the system and also at optional manual palletising stations and just prior to the automatic palletiser. The hand palletising stations are controlled by a push button and provide system flexibility, enabling either of the two feeder lanes to be operated independently of the automatic palletiser.

To facilitate passage of fork trucks and personnel, a hinged section of gravity conveyor can easily be removed to allow clear access. If this section is removed, flow is inhibited and the conveyor automatically commences accumulation just prior to the access way. ■

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