

New challenge to board from Aseptic sachets

WHILE STICK-PACKING MAY HAVE HOGGED MUCH OF THE LIMELIGHT IN THE SACHET-FILLING MARKET OVER THE PAST FEW YEARS THE NEXT DEVELOPMENT – ASEPTIC PACKAGING FOR LARGER SACHETS AND POUCHES – LOOKS SET TO BE EQUALLY, IF NOT MORE SIGNIFICANT.

In just the same way that stick-packing has challenged traditional four-side-seal sachets by offering lower materials costs and new branding opportunities, so the arrival of aseptic form-fill-seal sachet filling machines over the next few years could confront sections of the aseptic board packaging market with a lower cost competitor.

For example, Spanish manufacturer Volpak is known currently to be developing an aseptic machine, following up on its Ultraclean machines already in production and providing 28 days shelf life in the cold chill chain.

Similar applications are anticipated for fully aseptic sachets, including dairy products such as milk shakes, fruit drinks, soups and sports/energy drinks. Indeed, further opportunities could also lie in products such as shelf-stable pie fillings.

In the meantime, Volpak has delivered three of its Ultraclean 999 horizontal sachet form-fill-seal machines in continental Europe to handle 'smoothies' and yogurt drinks – complete with end-of-line case-packing equipment – while a fourth is on order for fruit juice. All apply a drinking spout with a screw top closure.

The machines are fully enclosed, with laminar air flow, and employ ultra-violet to sterilise the film on-line which, points out UK agent Integra-

pak, is a major hygiene advantage of the form-fill-seal approach to ultra-clean packaging, compared with using pre-made bags. Within the enclosure all components of the machine can be hosed down while internal cleaning is carried out by a CIP/SIP system.

The machines installed so far are also able to make contoured sachets for distinctive branding, using shaped sealing bars and a die-cutting station to trim off excess film.

Crossing the Channel

Generally, with the use of flexible packaging increasing on the UK market at anything between 12 and 20 per cent, depending on varying trade estimates, form-fill-seal sachet packaging appears to be riding on the back of product innovation and consumer convenience. In many cases, ideas already accepted in continental Europe are crossing the Channel.

For example, Volpak has just made its first

UK sale of a sachet machine equipped with a straw applicator that loads the straw inside the pouch, maintaining sterility and preventing straws becoming detached from the pouches, which in this case will be filled with sports/energy drinks. When the corner of the pouch is torn off, the top of the straw is revealed for use.

Volpak designed and patented the system in the early 1990s and has now sold a number of units, mostly for pouches of 200 and 250ml capacity using a standard format of 105mm wide and 60mm deep and 160 or 190mm high, although other pouch sizes are also possible.

The straw applicator module sits after the forming plough, where the film is folded, and uses two small tack seals to secure the straw at the correct angle on the inside of the pouch.

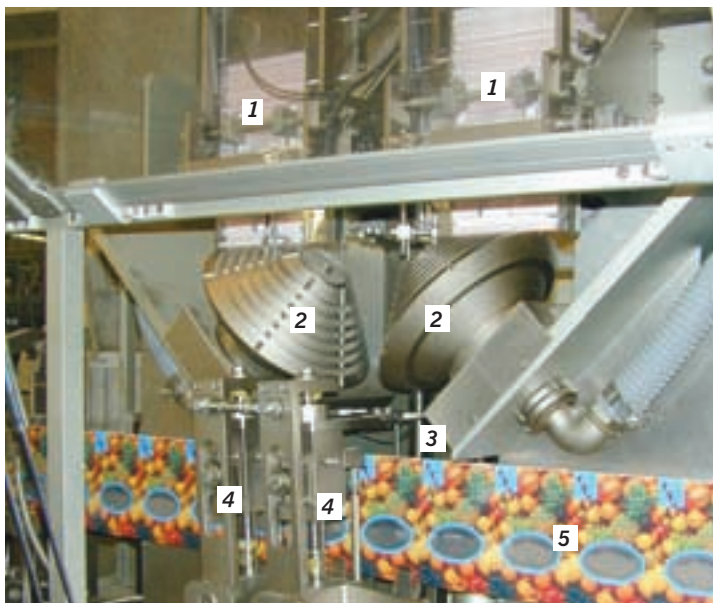
After the straw is fed down onto the seals through a guide funnel, the bottom, side and part of the sachet's top seal are made. In this way the straw is held firmly in place during hot filling – which also sterilises the straw – and the subsequent completion of the top seal.

Prior to filling, each pouch is monitored for the presence of a straw and a no-straw/no-fill interlock ensures faulty pouches are rejected unfilled.

Another technique expected shortly to find its way to Britain after successful applications in continental Europe is the two part pouch.

In fact, horizontal sachet machinery from Volpak to produce two compartment packs – for food and some personal care products – was also announced at the Total exhibition by UK agent Integrapak.

These membrane pouches allow products such as fresh moist pasta or rice and powdered cook-in sauces to be held separately prior to opening – avoiding risk of deterioration – and have already been taken up by some of the major food manufacturers on the Continent.



Straw in a pouch: General view of the Volpak straw positioning system. (1) Straw magazines (2) Straw feeding and positioning drums (3) Straw guide funnel (4) Straw positioners (to align straw inside the pouch) (5) Film with straw inside, ready for the pouch to be formed and then filled

SACHET FILLING

Further applications are seen in personal care products where, for example, the two components of a foaming wash or scrub can be kept separate until the point of use, and in two component adhesives. Another idea is for salad dressings, using oil and vinegar or oil and herbs in separate compartments.

The membrane machines operate in the same way as Volpak's conventional horizontal sachet fillers, first forming the web of film into a V shape for passage through bottom and vertical sealing, filling and top closing operations. However, as the film is formed into the V, a second web of film is introduced vertically and secured in the bottom and vertical seals to provide the two compartment pack. Both flat and gusseted formats can be produced.

After one side of the pouch is filled the membrane is pressed to one side and the second side receives its contents. The filled pouch is then stretched at the top to eliminate wrinkling and sealed in the conventional way, but with an extra trimming operation to remove the excess divider material. Opening the pack allows the contents of both compartments to be poured or squeezed out simultaneously.

Chewing gum pack

Volpak has also launched a new concept for a chewing gum pack similar in style to the 'roll-your-own' tobacco pouches – with a reclosable zipper and compartment for rolling papers – currently produced on one of its machines by a US tobacco company.

Meanwhile, Spanish sachet machine manufacturer Mespac has tended to specialise in equipment to produce shaped and contoured pouches which have become increasingly popular as a means of product differentiation or brand recognition. Installations have been made at several multinational manufacturers.

The company, represented in the UK by Clan Packaging, has a product range of more than 12 models to produce three and four sided sealed pouches and stand-up pouches with a range of options including shapes, zippers, straws, and cap fitments.

Generally speaking, larger pouches and stand-up pouches are traditionally made on horizontal machines, which offer flexibility for format change, while smaller sachets, particularly for portion control products, are made on vertical machines. These can be readily built as multi-lane units for extremely high throughput but tend to be less flexible when format changes are required.



Shaped to aid brand recognition: Stand up pouches produced on Mespac machinery

However, the Total exhibition earlier this year saw Rovema launch a new approach to sachet filling in the form of a vertical form-fill-seal machine that will produce three and four side sealed and free-standing pouches from flat film.

The VVI system is said to combine the advantages of traditional horizontal sachet machines with those of vertical form-fill-seal machines and is a closed system, which allows dust free packaging and gas flushing to give residual oxygen of less than 1 per cent.

In particular, says Rovema, the machine provides flexibility in terms of size range without complicated tooling, and is able to produce sachets 50-200mm wide and 80-260mm high with volumes of 15ml to 1.25 litres at speeds up to 600 a minute.

The vertical form-fill-seal machine approach, with vacuum draw-down belts for the film, eliminates tension in the material transport system and allows film gauges as low as 20 micron to be employed. A vertical format also reduces floor space to less than half that required for a horizontal machine.

However, the more traditional vertical machines still tend to offer some of the highest outputs, using multiple lanes, and have continued to benefit from advances in controls and drives.

Servo drives aid speed

For example, servo drives are now employed on the range of Italian built Universal Pack continuous motion machines supplied in the UK by Clan Packaging, raising speeds on typical single serve white sugar packs to 250 per lane. The machines can be built with up to 20 lanes, giving a total output up to 5000 sachets of powder a minute.



Pneumatically operated: Adco MMLP is aimed at spirits as well as fruit juice

The servo drive, which replaces the previous direct mechanical drive, provides higher speeds by allowing the revolving cup dosing system to be driven at different speeds throughout its 360deg cycle. In this way optimum time can be devoted to filling the cups, accelerating to the delivery point and then returning to the point of filling.

In purely mechanically driven machines, any extra time required for filling more difficult materials into the dosing cups will reduce output proportionately.

Although vertical machines are usually associated with smaller sachets, Universal Pack is in fact able to provide vertical machines capable of handling packs up to 200 x 260mm.

The company also produces an intermittent vertical machine, the Beta S, aimed at wet wipes, cosmetics, creams and, in particular, the production of shaped sachets. These provide unique branding on single serve hotel and cater-



Vertical option: New Rovema VVI sachet machine gives format flexibility and speed



Entry level: Low cost German built AS stick-packing machine from Soudal

ing packs, as well as miniature facsimiles of larger packs, such as bottles, for promotions and distribution of samples.

Because the Universal-Pack Beta S machine is intermittent motion, relatively low cost flat-bed die-cutting and stripping tools can be employed to make shaped sachets. At the same time, the peripheral seals can be created without the usual cross-hatch crimping patterns created by most rotary tools, allowing graphics to be

carried right up to the edge without distortion.

Size range on single lane is 40-160mm wide (40-80mm wide on twin lanes) and 40-170mm long. Speed is up to 10,000 sachets an hour, depending on size.

However, a higher output Beta machine with ten lanes is also now available from Universal Pack to produce in excess of 40,000 shaped sachets an hour.

The range of vertical balcony style sachet machines made in Germany by MediSeal, particularly for pharmaceutical applications, is now available in the UK from FJ Pistol. There are three models, giving speeds up to 900 a minute with maximum working widths up to 300mm, and dosing equipment to handle virtually any product including liquids, granules, tissues, plasters and tablets.

Up to four lanes

The smallest machine, the LA 160, is PLC controlled and able to produce sachets up to 160 x 140mm – 50ml maximum – at speeds of 250 a minute, using up to four lanes. The LA 300 can run sachets up to 300mm x 250mm – 250ml maximum – at speeds up to 500 a minute while the top-of-range LA 500 is capable of running sachets up to 125 x 160mm – 120ml maximum – at speeds up to 900 a minute.

When the machine stops, both sides of the sealing station are automatically turned open 90deg improving access for cleaning, adjusting and cleaning the tools and character mounts for code embossing. This also minimises exposure

of the product and film to heat.

Back in Britain, Adco Manufacturing has taken on the manufacture of the vertical sachet machines previously produced by Weston White.

The MMLS machines, originally developed for sauce portion packs, are able to handle low and high viscosity products and can be equipped with up to six lanes to give outputs of 300 a minute.

Pack widths are adjustable from 30 to 265mm while length can be varied between 30 and 255mm. Dosing volume is 0.5-350ml via a choice of pump units

The MMAP series for powders, spices, detergents and so forth produces the same size range but uses an auger in place of the pump unit. For wipes and towelettes there is the TS series machine equipped with a folding unit and liquid dose pump, while the MMLP is pneumatically operated and aimed at handling free flowing liquids for lollies, spirits, and fruit juices. Capacity is up to 90ml.

Stick-packing machinery

Stickpacks first made their appearance in Japan during the mid-1970s for sugar and by the late 1980s machines were finding their way onto the UK market. But it was not until the mid to late 1990s that the market in the UK began to flourish, and more and more manufacturers began to offer equipment.

The advantages of a 40 per cent reduction in material costs over conventional four-side seal sachets, ease of use by the consumer, and branding opportunities for both liquids and powders all helped create an expanding market.

One of the latest machines to be offered in the UK is the US-built Wipak LD-32, shown in Europe for the first time at the Total exhibition earlier this year by UK agent Integrapak.

The Wipak machine can produce stick packs 20mm wide in a 12 lane format and also a 50mm wide pack in six lanes. Traditional four side seal flat sachets can be made on the same machine as well, using simple change parts.

“This will allow existing manufacturers of sachets to experiment with new products in a stick format, with all the inherent material savings, while still servicing existing customers,” says Integrapak.

The machine has six forming shoulders, each with a pair of forming tubes and a pair of liquid dosing lances. For 12 lane operation, film is initially slit into six and two stickpacks made side-by-side, joined by the vertical seal. The two are

then slit apart and discharged. This approach provides the pitch for the wider packs to be created with minimum adjustment of the machine and also creates sticks able to carry uninterrupted wraparound graphics on both faces – giving ample room for ingredients information – with the vertical seal to the side. Opening is also easier since there is no need to tear through the vertical seal.

Also launched in the UK at the Total show was Toyo Machine Manufacturing's new liquid stick-packing machine, which joins the company's existing equipment for handling powders. The Japanese company's UK agent Selo-Bollans says both machines are able to provide standards of seal integrity and accuracy suitable for pharmaceutical RX or OTC single dose applications.

Toyo Machine has also developed individual lane checkweighing systems which offer feedback to the filling system to ensure dose control and minimise product giveaway.

Stick packs over 16mm wide made on Toyo machines can now also be produced with rounded corners, eliminating risk of marking or even puncturing other stick packs while being handled in bulk. The R-corner style also improves appearance and has already attracted considerable interest from food, pharmaceutical and cosmetics industries following its launch in Japan, says Selo-Bollans.

Punch and die system

Toyo's invention, the R-cut unit, consists of a moving punch and a fixed die with a stick positioning system to centre the formed sachet and so make sure the rounded corners are symmetrical. Trim is 2mm wide and is removed through an enclosed vacuum system.

Stick-packing machines from Italian manufacturer Universal Pack extend from four to 20 lanes, all of which are designed for ease of intervention by operators for the regular cleaning that sticky products such as sugar usually demand.

For example, the carriage carrying the film slitting blades is hinged and can be swung out for access while the forming shoulders and dosing tubes can be lifted off simply as a group, or singly for attention. The fin-sealing group is also hinged and can be easily swung to one side.

In just the same way, the sealing bar, rotary knife assembly and outfeed conveyor are also hinged to provide immediate access to the lower part of the machine.

The sealing bar carries a series of individu-

Smaller version of four-side-seal pouch machine

Doyen Medipharm has launched the 4SS Model 100 rotary pouch form-fill-seal machine, a smaller version of its established four-side-seal packaging system aimed, says the company, at medical and pharmaceutical companies needing a flexible, validatable machine at an affordable price.

It has the same patented sealing stations and servo controls as Doyen Medipharm's other quick changeover four-side-seal packaging machines, which give the machine self-monitoring facilities to eliminate packs with critical defects.

Capable of 100 packs or 15 metres a minute, the machine is able to pack a wide range of medical products, such as wound care, diagnostic devices, catheters and surgical gloves. The high speed version, the 4SS

ally adjustable sealing cylinders, to compensate for deflection in the sealing bars of the wider multi-lane machines while, for cut-off, Universal Pack has chosen a rotary knife system in preference to a static blade.

This, explains UK representative Clan Packaging, is not only to give longer life but also to allow length adjustment to be made quickly via the controls rather than involve physically adjusting the position of the cutting mechanism every time product length changes.

The outfeed conveyor is controlled through a counting system, allowing cases to be filled automatically via, for example, an elevating bucket conveyor.

Universal Pack stick-packing machines are able to produce sticks of 15-45mm flat width by 40-160mm long, for doses of 1-40ml, and operate at speeds of 40-100 cycles a minute depending on length and dose. Dosing systems are available for free-flowing or non-free-flowing powders and granules, as well as liquids.

Finally, Soudal has announced a series of simple low cost machines for companies starting up in stickpack production or who need modest production volumes. Built by the German company AS Verpackungsmaschinen, the machines are available with up to four lanes and capable of producing up to 240 packs a minute. Free flowing granules and powders can be handled, as well as liquids. ■



Flexible and 'affordable': Doyen 4SS 100 four-side-seal pouch machine

Model 400, can produce up to 400 packs a minute at speeds up to 50 metres a minute.

Doyen Medipharm has also announced an improved version of its surgical glove packing machine, the GPM, now fitted with individual servo drives to the knife and printer units.

As a result, cutting accuracy has been improved, knife maintenance reduced and print position is now electronically adjustable.

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