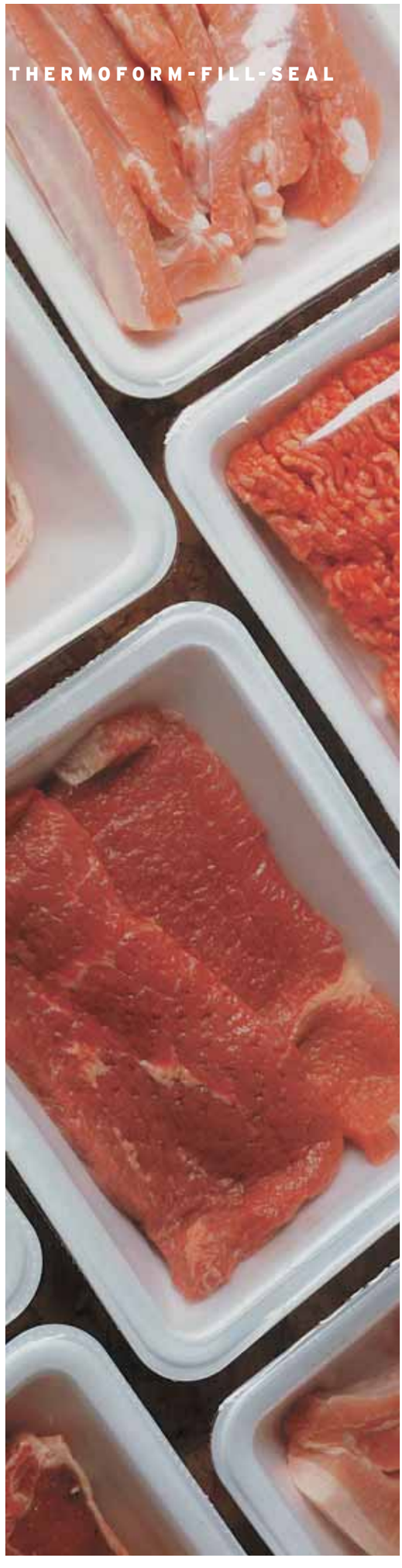

For retail hygiene

Presentation drives tray packing on

THERMOFORM-FILL-SEAL TRAY PACKING FOR BACON, FISH AND RED MEAT – ELIMINATING LEAKS FROM OVERWRAPPED EPS TRAYS – IS NOW BEING JOINED BY STIR-FRIES AND FRUIT SALADS, FOR WHICH NEW PACK FORMATS HAVE ARRIVED. MICK WHITWORTH REPORTS.

Supermarkets are regularly accused of forcing down suppliers' margins and so stifling capital investment. Ironically, however, it is retail produce buyers who are currently giving sales of tray packing machinery a shot in the arm.

Suppliers of both tray-sealers and, increasingly, full-scale thermoform-fill-seal units are benefiting from a widespread swing towards hermetically-sealed packs for fresh foods, whether it be beef, chicken, fish, salad, stir-fries or cheese.

There are several drivers for this shift. In the meat section, it is rapidly becoming unacceptable to present fresh cuts of poultry or red meat in unsealed, overwrapped trays that can allow liquid to seep out. Retailers don't want blood in their chiller cabinets or on checkout conveyors – which poses a potential cross-contamination question – and shoppers don't want any in their carrier bags or their domestic fridges.

Another driver is shelf-life. Hermetically-sealed packs can help retailers smooth out wrinkles in their distribution chains by giving an extra few days' life thanks to the option of modified atmosphere packaging.

And then there are issues related to appearance, feel and product differentiation. As consumers buy more and more foods in neat, sealed packs the over-wrapped eps tray is undoubtedly beginning to look somewhat dated.

But take-up for full-scale thermoform-fill-seal technology still varies across sectors. Cruise the fresh meat and poultry aisles in Tesco and Sainsbury and you'll find relatively few over-wraps and a lot of sealed trays, especially in red meat. Thermoform-fill-seal is well established in bacon and cooked meats and becoming more so in cheese. But there's particular progress right now in prepared fruit, salad and stir-fries.

Answer for salad packs

One of the latest innovations here comes from Multivac, which has found an ingenious solution – initially developed for Asda – to a problem that arises in modified atmosphere packs of salads and sliced vegetable mixes. The springy, unruly nature of these products means that when deposited into a thermoformed container they can easily spill out onto the flange.

"You can't seal through a bit of lettuce," points out Multivac sales manager John Hutchen, and the result can be leakage and a rejected pack.

Up to now, the common solution has been to use oversized trays with extra headspace. The problem is, these don't appear properly filled in the eyes of the consumer. But Multivac has developed a bottom tray format incorporating a dome in the middle of the base.

The dome is concave during filling, lowering the fill level, but then pops upwards just before the lid is sealed, pushing the product up to

give the appearance of a completely full pack.

This apparently simple solution was worked out between Multivac and Asda's supplier. "Our customer now has a good, fast line that fills automatically, gasses, lids and checkweighs – and does so at the lowest pack cost you can get," says John Hutchen.

For those who have the volume to justify thermoforming and, importantly, have the space for the bigger machinery, the sums definitely add up. John Hutchen says that, like for like, it costs 40-50 per cent more to use pre-formed trays. "If the volume is there, people would do best to look at switching to reel-fed," he suggests. "Most machines justify themselves in 12 to 18 months."

Move into preformed trays

He points out it is now six or seven years since Tesco led the move into pre-formed trays for fresh red meat, when it shifted cutting and packing from the backs of stores into centralised pack-houses. Since that time, he explains, all supermarket mince has switched to thermoformed trays "purely for the benefit in pack cost" on this cost-sensitive product.

However, he says the poultry industry, which is the latest to be driven to fully-sealed trays, is still quite heavily committed to pre-made trays, with space constraints a major factor. "At this stage, thermoforming has been found to be impractical," he says, "not least because it means a bigger machine. Putting in thermoforming would mean a major bit of reorganisation, so the poultry industry has decided to go for trays at this stage because it's an easier transition."

But the cost arguments could ultimately prove persuasive. At thermoform-fill-seal machinery supplier Ulma Packaging, managing director Derek Paterson says: "One of the changes we have seen this year is that people are looking to get the cost out of either the product or the product packaging, so we're seeing a lot of manufacturers coming over from tray-sealing."

Users are also insisting on more versatility from any machines they install, he says. "In the past year we've put machines into a large cheese company and also into a large sandwich manufacturer, and they've put quite strenuous requirements on us in terms of flexibility, to the extent that one of them has asked for autochange on the die heads.

"So rather than having to change all the forming dies, they've actually got two different stations. It's on a flick switch, and they can just move one out and another one in." It sounds an expensive way of achieving flexibility, but Derek Paterson says it can make sense provided it is incorporated at the build stage.

Full and properly sealed: *Multivac has developed a method of avoiding excess headspace for salads*

Smaller footprint: *Bosch TFA 4800 series occupies 30 per cent less space than its predecessors*

Two dies in one machine

Like Ulma, Multivac is now able to incorporate two dies in one machine – it calls this in-line arrangement a tandem die – which the food manufacturer can switch over "in a matter of a few minutes".

Space permitting, replacement of tray-sealers with form-fill-seal seems to come down to a relatively simple financial equation. But packers can also achieve savings by using thermoform-fill-seal for less expected applications. According to Integrapak, the UK agent for CIMI of Milan, several mineral water bottlers have recently chosen a plastic PET cup to replace the traditional 25cl bottle. This is said to have given a considerable cost saving, plus the advantage of producing packaging at the point of filling – doing away with unscrambling and storage of bottles.

More unusually, CIMI recently delivered a machine for packing tomato paste in plastic cups in place of metal cans. Italian rigid film producer Gorlex is supplying CIMI's customer with a specialist PVC that can be filled at 93deg C. "This machine will be able to produce different container sizes from 70g up to 425g, thereby replacing the client's entire range of presentation for their tomato products," reports Integrapak.

The same CIMI machine and container dimensions will also be used for jams and other fruit-based products by changing the lidding foil. And different base materials can be used to give an alternative colour.

Manufacturers of dairy products and drinks are also among the target users for the new Servac TFA series of aseptic form-fill-seal machines from German supplier Robert Bosch. The filling systems are designed for "customers that require high quality, flexibility and easy

operator control at a low overall cost,'' says the compnay.

With an output of 43,000 cups an hour, the Servac TFA 4830 can handle a wide range of sizes, producing individual and multi-unit sets in 2/4, 3/6 and 8-unit packs. Most machines are supplied with servo technology to give push-button changeovers.

For applications that don't require such a large output, the TFA 4818 model produces just under 22,000 cups an hour.

Like Multivac, Bosch has recognised that space constraints can be an issue. It says the footprint of its most recent machines has been reduced by 30 per cent while still providing easy access to all stations for CIP purposes.

The filling operation is achieved with ''just a small number of parts'' in the sterile zone – a refinement that is said to improve hygiene and reduce machine size as well as helping to speed up size changeovers. It uses Bosch's established piston pump technology, which can handle liquids or viscous products with particles up to 25mm diameter. For products in layers or with toppings – for example, a layer of cream with fruit on top – several filling machines can be integrated into one line.

Computer-aided cup forming

Computer-aided cup-forming technology is designed to handle a wide range of cup materials and allow complex shapes to be manufactured with a high degree of cup stability. Cup quality is retained even with extremely thin wall thicknesses, Bosch claims, which can mean ''considerable material cost savings''.

Applications for thermoform-fill-seal go way beyond food and drink, of course, with widespread applications in the medical supplies market where the hygienic filling and a hermetic seal are equally as valuable.

One specialist machinery supplier, UK-based Doyen Medipharm, has reflected these pressures by patenting its tool-less changeover MT2500 machine. This unit is designed for automated packing of medical devices ranging from syringes and catheters to gowns, and according to Doyen is the first such machine in this sector to allow production of different pack sizes without any changeover of seal tooling.

The MT2500 is said to benefit companies with multiple products that would previously have needed to buy dedicated tooling sets for each product. It is also suitable for multiple packs where products are combined in one main pack but segregated within it. Changeovers to new products or to multipacks can apparently be achieved in minutes on a pre-programmed, touchscreen system.

Extra product sizes are accommodated by incorporating an independent cross-seal bar and longitudinal bars in combination with the platen seal station, says Doyen. The main package size provided by the platen can be broken down into any multiple of its length, providing a tool-less changeover of the sealing area for multipacks. Courtesy flaps are produced by changing the machine's index length or, if the packs are running sideways, its slitting width.

Maximum 15 lanes across

The servo-controlled machine provides a maximum pack format of 15 lanes across the web by 10 up. It has an adjustable web width of 280-635mm, an index length of up to 610mm and draw depths down to 150mm, and it can run at up to 30 cycles a minute.

Similar speeds can be achieved on a new model from Doyen designed for companies needing thermoform and/or pouch packs. The IPM30 uses Doyen's high speed four-side-seal head technology to produce either pack format in one machine – a flexible alternative for companies producing moderate volumes. Maximum pack size is 300m x 300mm, with a draw depth up to 50mm for thermoformed packs.

For packing dressings and medical devices, the German-built WM 230 in-line thermoforming and sealing machine is now available from UK agent Soudal.

Capable of handling either PVC or PET up to 330mm wide in multi-lane formats, the WM 230 is capable of working at speeds up to 25 cycles a minute, producing blisters up to 300 x 275 x 70mm. Lidding material such as aluminium foil or Tyvek is taken from the reel and sealed onto the blister form prior to the final blister shape being punched out. ■

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Robert Bosch	**enter 148**
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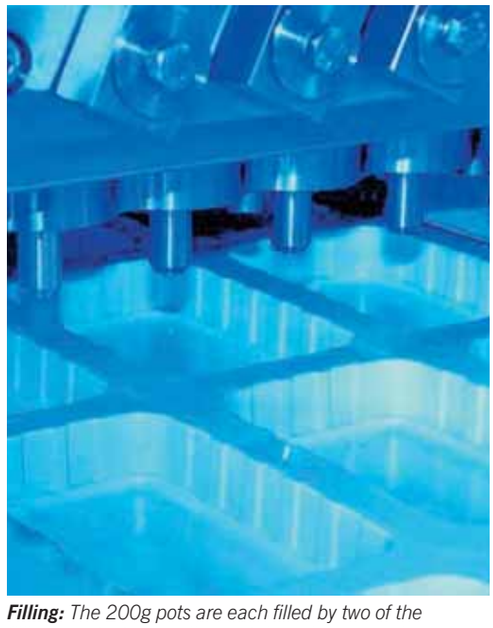
Quick change moulds score a treble for dairy

ILLIG HAS BUILT A THERMOFORMER THAT ALLOWS DIFFERENT PRODUCTS AND THREE PACK SIZES TO BE HANDLED EFFICIENTLY ON ONE MACHINE

How do you pack entirely different products, such as melting cheese, honey or yoghurt as attractively as possible using a single machine?

That was the challenge facing the German thermoformer manufacturer Illig in trying to match the requirements of Latvian dairy processor Rigas Piensaimnieks. None of the client's products would, on its own, have used

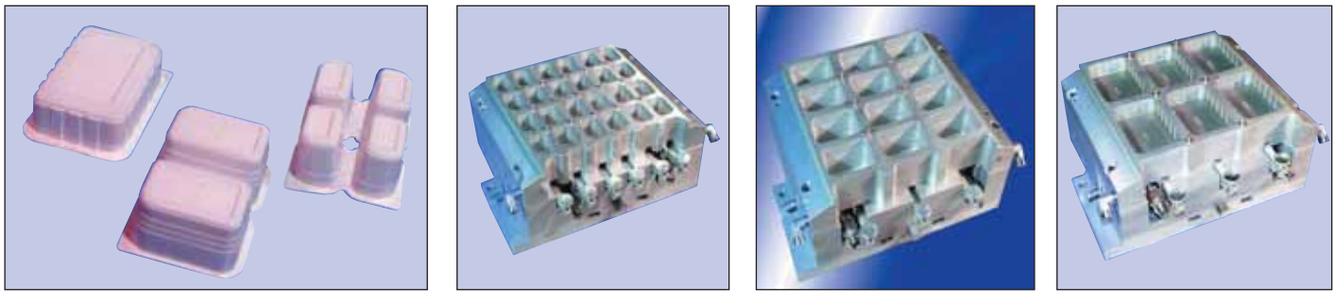


Filling: *The 200g pots are each filled by two of the filling spouts, the smaller containers by one each*

Illig's FS31 form-fill-seal line to its full capacity. So the answer was to devise three different toolsets that could be switched over in no more than the time taken for a product changeover.

The design solution had to balance the demands of smooth tool production with ease of handling for the customer. And the basis of the concept was that only one format – index length x material width – should be set for all the tools used.

Different container sizes were developed on a CAD system, allowing 3D images to be presented to the customer for assessment. This helped Illig get a quick decision on the three



Packs and tools: *The Latvian dairy now produces three pack sizes on one Illig machine: 20-40g, 90-125g, and the 200g cup for melting cheese*

pack sizes and, therefore, three tool sets: a 100-200g cup for melting cheese, a 90-125g double cup for yoghurt, and a 20-40g cup in four-up tray format for honey, melting cheese and other products.

The resulting machine's layout is six-up for the large cup, 12-up for the yoghurt cup and 24-up for the portion packs. The different cup heights are achieved by an infinitely variable cup height adjustment that does not require any part changes. Tool change of the larger forming tools is facilitated by a moveable table and there is also a quick-change system for date stamps.

The next question was how to fill three different pack formats. One option might have been to use three different fillers, each with a different number of nozzles. But this was considered too expensive and too complicated for the customer. So Illig selected a 24-head filler with a dosing range of 10-100g per filling spout. A large 200g pack is filled by four filling spouts a pack; the medium 125g by two spouts and the 40g packs by one spout each. "This way, the position of the dosing unit remains unchanged and all packs can be filled smoothly and cleanly," points out Illig UK.

Flexible final packaging

Foil or film lidding forms an integral part of the Illig machine, but Rigas Piensaimnieks turned to another German firm, A&F (Automation und Fördertechnik) of Kirchlengern, for a flexible final packaging system. A&F developed a case-packer which can place all the different pack sizes in one standard case, formed conventionally from a corrugated blank, filled and closed.

The height of the case is such that all cup sizes can be accommodated by varying the number of layers.

Illig expects this kind of thermoform-fill-seal solution to be attractive to other companies producing limited batch quantities of various sizes. Rigas Piensaimnieks is now able to produce anything from 6600 packs an hour of 200g melting cheese to as many as 26,400 packs an hour of 40g honey, all on one unit.

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