

# Wrappers settle down to meet Universal principles

DESPITE THE WIDE VARIETY OF SOURCES, SHRINK-WRAPPING MACHINES HAVE BECOME VERY MUCH MORE SIMILAR IN CONCEPT OVER THE PAST DECADE AND THERE NOW APPEARS TO BE ALMOST UNIVERSAL CONSENSUS ON THE PRINCIPAL TYPES. BY MARTIN KEAY.

Shrink-wrapping is now such a well established packaging method that it is a surprise to be reminded that it has been in common use for only 30 years. In the early years of shrink-wrapping there was a wide variety of different machine designs available as manufacturers searched for the most efficient or most economic method of applying polyethylene film to collations of products.

Today there are more manufacturers of shrink-wrapping machines than ever, making machines in a wide variety of countries, but what is striking is how remarkably similar the machines made by these different manufacturers have become. It now seems that there is an almost universal consensus on the principal types of shrink-wrapping machine.

In sleeve-wrapping machines, which produce the classic open end shrinkwrap pack, manufacturers have settled on four basic designs; the low cost and low output two reel semi-automatic sleeve-wrapper; the two reel automatic in-line sleeve-wrapper for shrink-wrapping products in trays or on slip sheets; the two reel automatic cross fed machine for unsupported shrink-wrapping of products and the single reel sleeve wrapper for high-speed applications and for wrapping with print registered film.

In shrink-wrapping machines that use centre folded material to produce a totally enclosed pack the consensus has settled on three basic designs; the semi-automatic L-sealer for low cost low speed applications, the automatic L-sealer for higher speed tasks and the automatic side seal machine for higher speeds and applications where there are very frequent size changes.

So, if there is now so much consensus about the basic design of machines how are manufacturers developing and differentiating their equipment?

With semi-automatic sleeve-wrapping machines the main drive has been to reduce the cost of these entry level machines, while increasing their efficiency and this has encouraged some manufacturers to abandon hot wire sealing and cutting systems in favour of constantly heated jaws and cold film cutting devices.

## Manual sleeve wrappers

For example, Adpak's range of sleeve-wrapping systems starts with the Model SW50 manual sleeve wrapper coupled with the AD450 shrink tunnel and the SW70 manual sleeve wrapper coupled with the AD650 shrink tunnel. These two systems provide a low cost manual operation with speeds of six to eight packs a minute and are provided usually on an ex-stock basis allowing the customer to place the order today and be in production tomorrow.

Shrink-wrapping has become an increasingly popular packaging technique in the dairy industry and over the years manufacturers have wrestled with the design challenge of making a shrinkwrapper that can work well in a hose-down environment. Stainless steel construction is essential for the wet industries, but so too is a sealing jaw design that can cope with a soaking by either the product or by washdown water and detergents.

Kingsdown Water for instance, an independent supplier of natural mineral water located in Kingsdown, Kent, has just purchased a new Wraps UK ASI60 automatic twin reel sleeve wrapper to increase production of various sizes of transit packs.

The machine, used to wrap trays holding either 12 x 1 litre or 750ml bottles, or 24 x 330ml, is the second Wraps machine to be bought by Kingsdown and is able to wrap trayed or collated products at speeds up to 20 cycles a

minute. "The Wraps UK Sleeve wrapper is simple to operate and is extremely reliable," says Kingsdown managing director William Bomer.

Kliklok Woodman, which acquired shrink-wrapping specialist Lerner-Burgess in 1998, has worked to develop a variety of standard collators for collating cartons at different speeds and orientations including the frozen food industry where stainless steel construction and easy washdown features are particularly required.

For slow speed applications the carton collator and shrinkwrapper are integrated into one small and compact machine. At higher speeds, the collator will typically stack cartons in preparation for delivery to a tray loader or direct to the shrinkwrapper for wrapping unsupported. Carton collating speeds in excess of 250 cartons a minute can be achieved, and single or multiple stacks of cartons can be formed. At the shrink wrapper, bundling speeds up to 50 packs a minute can be achieved.

Cartons are not the only products that can be handled and shrink-wrapped. Indeed Kliklok Woodman has recently supplied several machines to two major dairy companies for wrapping trays of cream, while further machines have been supplied to collate and wrap polyethylene milk bottles. Again the machines were built in stainless steel to suit the demands of a dairy environment.

## Coated sealing blades

"Key reasons why Kliklok Woodman shrink-wrappers have been chosen include machine durability, 'armour' coated sealing blades, and low level mounting of film rolls to allow easy change," says the company.

"For side feed machines, cross pushing is achieved using a mechanical crank rather than pneumatics, which gives greater speed and pack



**Servo drives:** MAF Servo Fox stretch-shrinkwrapper gives speeds up to 50 cycles a minute

stability than might otherwise be achieved."

The speed of operation of twin reel sleeve wrapping machines has always been an issue for applications requiring outputs above 25 packs a minute, but new design techniques using servo drives and software synchronisation in preference to conventional mechanical and pneumatic mechanisms have allowed speeds to increase to as high as 35 packs a minute.

Indeed, in the case of MAF's new Servo Fox servo driven stretch sleeve wrapper speeds up to 50 cycles a minute are now possible, a 30 per cent increase on the previous model explains UK representative Partners in Packaging.

The machine employs a film stretch mechanism which produces a tight sleeve to reduce the amount of film required for each pack by up to 10 per cent and can be equipped with shrink systems to handle the entire pack or, where sufficient tension can be used on the bundle, with a shrink unit just for the side film overhang. A longitudinal sealing unit or an envelope fold attachment can also be added to produce a completely enclosed pack.

Shrink systems are also getting larger. For example, Yorkshire Packaging Systems (YPS) has recently installed its second wide Rochman automatic inline sleeve wrapper at bathroom equipment manufacturer American Standard, in Hull.

The 2.6 metre wide sleeve sealer and shrink tunnel supplied in 2004 to wrap shower enclosures and doors has now been followed by a 1.5 metre wide machine to handle a variety of shower bases. This equipment was upgraded in

a number of key areas to accommodate packs up to a maximum weight of 80kg.

Due to the width of film required, the weight of each roll is still relatively high and so the same hoist system for ensuring the top roll of film is easily loaded onto the machine was provided, along with a new and double roll holding system.

### **Furniture and bathrooms**

Burnley Packaging Machinery has also supplied a number of very large systems for furniture and bathroom equipment, able to handle large and heavy items such as shower trays and bathroom cabinets, fully automatically with four-side seals and waste film take off. One of the latest systems has been supplied to Acorn Bathrooms.

Meanwhile the price of single reel sleeve wrapping machines, which until recently have been too expensive to consider for anything lower in output than 30 packs a minute, have been falling to the point where, according to Aetna UK which supplies the Dimac range of single reel machines, they can compete with twin reel sleeve wrappers at speeds as low as 15 packs a minute. This means that more users can benefit from these continuous motion machines' lower linear speeds and ability to handle print registered film.

The cost comparison between a single reel and a twin reel sleeve wrapper can be even more attractive when the cost of a separate tray erector or slip sheet dispenser is taken into account, because most designs of single reel sleeve-

wrappers can be supplied with a tray erector or slip sheet dispenser as a standard attachment rather than a separate machine.

The Dimac range of single roll shrinkwrappers includes models giving speeds up to 20, 30, 45 and 60 packs a minute and can be extended for future changes in demand. For example, an initial installation may be for unsupported wrapping but if at a future date a tray is required, a new tray section can be added.

Indeed, Aetna says it is receiving many more enquiries these days from traditional users of twin roll machines who are looking to replace old systems. Advantages cited for the Dimac single roll systems include quick size changes, use of print registered film, reduced film costs, speed, and use of a wraparound tray or flat pad.

"Aetna has installed many Dimac shrinkwrapping systems in the UK over the past two years and about half were with contract packers, who chose Dimac equipment for its flexibility, ease of changeover, and registration ability," says the company.



**Continuous side-seal:** Robopac Athena 550CS from Aetna UK

CAM's single reel machine, marketed in the UK by Campak, is the ASB 38 shrinkwrapper/stretch bundler, said to offer a compact cost effective solution for transit wrapping and bundling applications. In combination with the CAM TRM hot air gun shrink unit the machine is suited to automatic collation and wrapping of cartons, bottles, cans and so forth either in trays, on base boards or unsupported.

### Even film tension

Products are received, and then collated by means of side or elevator transfer systems, 90deg or in-line, before the finished collation is pushed through the single film web. Campak

says the single reel ensures even film tension and consistent seal position and appearance which, combined with the control afforded by the TRM shrink unit, means it is possible to achieve a consistently high standard of pack appearance and integrity.

The latest single reel machine from US manufacturer Douglas Machine is the Contour SPS-30, which can be equipped to pack unsupported, on a pad, or in a U-board or tray.

Supplied in the UK by DS Smith Packaging Systems, the machine employs a servo-driven wrapping arm said to maximise film control and film placement accuracy. Speed is up to 30 packs a minute.

### Reducing costs

In semi-automatic L-sealing and with semi-automatic sleeve-wrapping the drive has been to reduce costs for what is frequently a manufacturer's first investment in packaging machinery. For example, Adpak's semi-automatic AD712 series wrapper runs at speeds of

10-12 packs a minute and can handle collations of bottles without base boards or trays.

The operator simply places the bottles into an adjustable product pusher unit which supports the collation during transport into the film web. The shrink tunnel is close coupled to the sealer, creating a smooth transfer directly onto the tunnel belt. The

AD712 can handle glass and petaloid-foot bottles from 250ml to 3 litres with minimum adjustment.

Adpak managing director John Farrow comments: "Our customers are demanding ever more flexible shrinkwrappers to meet increasing market pressures for widely varying bottle pack formations and reduced packaging costs."

Burnley Packaging Machinery is now marketing a range of competitively priced machines built in Poland with, for example, a complete line including semi-automatic sleeve sealer and tunnel available at under £12,000. Fully automatic lines, producing 14 packs a minute, are also available.

### EUROPACK

## Wrapper handles 27,000 cartoned ice lollies an hour



**Easy changeover:** Europack Starwheel machine

Richmond Ice Cream has installed a Europack Starwheel shrinkwrapper to collate and wrap cartons of ice lollies in its new £7 million factory extension at Leeds. Seven different formats are handled at speeds up to 450 lollies a minute, providing end of line packaging for 27,000 lollies an hour.

Versatility was a prime requirement, as Richmond Ice Cream's technical project manager Graham Royle explains.

"As well as being able to handle the entire output of the production line, the equipment has to accept cartons containing 3, 4, 6, 8 and 24 ice lollies and pack them into 6 x 1, 6 x 2 and 3 x 2 formats," he explains. "This may still be increased to meet new retailers' demands. It requires ability to make rapid changeovers with minimum downtime."

The Europack Starwheel machine is a right angle shrinkwrapper which was custom-built for Richmond in stainless steel. Cartons enter in single file, lying flat, and are brought upright and counted as they pass 90deg over a starwheel and into the side feed belts of the machine.

The required collation is moved forward, raised and held to make a two or three layer format if necessary, then fed through the film curtain and into the shrink tunnel.

Only one change part, the starwheel, is needed for different pack formats while all other adjustments are achieved via handwheels with digital readouts. Changeovers are made in 15-30 minutes.

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## SHRINK-WRAPPING FOR TRANSIT

In automatic L-sealing machines there has been a steady move away from the L-shaped sealing bar to designs which seal the side of the pack with a continuous motion mechanism and use a separate reciprocating cross sealing device. This style of design not only allows machines to work at higher speeds, but also makes it easier to change size to suit different products.

One of the latest examples is the new Robopac Athena 550CS, a continuous side-seal machine, which runs at speeds up to 30 metres a minute to give, typically, 60 packs a minute. Size range is up to 450mm wide and 200mm high using centre folded film on reels up to 800mm wide. Product length is detected automatically.

### Demand for higher speeds

Supplier Aetna UK says that the 550CS has been developed specifically as a result of increasing customer demand for wrapping at higher speeds. Standard features include: easy machine adjustments from the touch screen control panel, powered adjustment of product dimensions and automatic seal centring with respect to product height. Optional features include: conveyors for small products, print register and a powered system for film loading.

"Over recent months we have seen a marked increase in enquiries for this type of machinery," says Aetna UK managing director Mark Tucker. "The Athena 550CS is ideal for wrapping a range of smaller cartons, boxes or packages, and has received a good deal of interest from a range of different customers, particularly those involved in printing and publishing."

Some shrink-wrapping machinery, such as that built by Burnley Packaging Machinery, remains largely tailor made to meet a specific need and can involve complex pack presentations. Recent contracts include high specification lines for a number of major toiletry, food and confectionery companies, involving automatic orientation of product prior to wrapping as a standard feature on most machines.

A recent addition to the standard range has however been the UK built all-electronic ESW sleeve wrapper, which requires no compressed air. This has been introduced to provide complete flexibility and mobility within a factory by eliminating the need for an air supply, replacing pneumatic cylinders with motors.

Finally, Engsol UK has recently supplied a British bottling company with an American built Polypack machine to handle 6 x 1 collations of unsupported hip flask bottles of spirits at speeds up to 120 bottles a minute.



**Unsupported bottles:** Polypack machine is loaded with a pick-and-place device

The machine is able to achieve this throughput by placing the bottles directly onto the film using an ROKH pick-and-place unit, indexing the packs through the film curtain and sealing and shrinking at speeds up to 20 cycles a minute. Bottles can also be packed in trays. ■

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

MARDEN EDWARDS

## Tight wrap gives more secure transit pack

Imperial Tobacco, Nottingham, has improved the integrity and security of transit packs holding either 3000 or 5000 cigarettes following the installation of several PSB1000 collating and stretch-wrapping machines from Marden Edwards.

According to Marden Edwards, this approach provides considerable cost advantages over case-packing when the price of polyethylene film is compared with corrugated cases and the resulting transit pack takes up less space than either the casepacked or shrinkwrapped equivalent.

The machines at Imperial are being used to collate and wrap overwrapped packs holding 100 cigarettes at speeds up to 100 a minute. They are grouped into collations of 5 x 5 x 2, measuring 600 x 300 x 200mm overall and wrapped using 1 metre wide film.



**Tight wrapper:** Marden Edwards PSB1000

Once the collation has been wrapped, focussed heat guns are used to shrink the overlapping film onto the sides of the collation, fully enclosing the bundle. This keeps out dirt and dust while making it difficult for an individual pack to be removed without cutting or tearing the film, so also providing tamper evidence.

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