

# More labour savings come into view

**P**allet wrapping developments appear to be running largely along three parallel lines, all in the direction of taking more labour out of the job.

There is now automatic film loading for high speed spiral stretchwrapping machinery, more press-button-walkaway equipment in the medium speed range, and a steady influx of low-priced basic level stretchwrappers aimed at jobs which are often still tackled by hand.

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

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

But what is surprising, in an industrial climate that increasingly seeks to eliminate hand work and potential sources of strain, is that manual pallet wrapping still survives in many organisations, if only for 15-20 pallets or so a day.

## Starting at under £2000

After all, operator controlled equipment to wrap a 2 metre high pallet in around 2 minutes can be had for under £2000, while semi-automatic equipment that requires manual film attachment and film tail sealing starts at about £3500. More advanced models with film pre-stretching to 200-300 per cent can be had for around £6500.

"From 20 pallets a day upwards there is every reason to go for machine wrapping," points out Barry Tucker, chairman of Aetna UK which supplies the Robopac range of pallet wrappers in the UK. "Not only is there a labour saving, but the wrap quality is better, the load is more stable and less film is required."

*All lines of development in pallet wrapping appear to be leading towards reduced labour cost. That includes high speed and starter level machines.*

He estimates that a move from hand-wrapping to a simple machine without pre-stretch will save 30 per cent of the film cost, while a move to wrapping with power pre-stretch will save 70 per cent.

At the high speed end of the market, where fully automatic ring-style wrappers employ a film carriage on a rotating ring to circle the load and give speeds over 100 pallets an hour, recent refinements include a new type of ring assembly and corner post applicator on Mancon machines, and an automatic method of loading film rolls onto the Robopac Genesis.

The Mancon 2200 ring style wrapper, from United Packaging, now uses a carbon composite ring to provide a lighter assembly which is nevertheless stronger and more rigid than its predecessor, allowing it to rotate at higher speed to reduce cycle times.

In addition, the Mancon 2200 can be equipped with an automatic corner post applicator which gives pallet loads of very soft or easily punctured goods extra protection and stability, by adding strips of board to the four corners of the load before wrapping commences.

## Two layers of film

The wrapping cycle starts from the top of the load, with two layers of film being applied. Once the pallet load has received two turns at the top, the corner post applicators retreat and the wrap is completed, with a top sheet added in mid cycle.

Robopac's film loading system for the



**Extra corner strength:** Automatic corner post applicator on the Mancon 2200 ring wrapper

Genesis was developed to give the machine at least eight hours continuous production, eliminating stoppages awaiting the arrival of an operator or fork truck driver from other duties.

Fully automatic and capable of carrying three full reels, the system removes the empty reel core, inserts a fresh reel and threads the film through the pre-stretch and lay-on rollers of the wrapper's film carriage. It can be retrofitted to existing machine and, should it fail, film can still be loaded onto the Genesis in the traditional fashion.

The equipment won a Certificate of Merit in the PPMA Awards of Excellence 2000, with the judges pointing out that "a lot of manual handling and urgency has been eliminated, which must bring safety and operating benefits."

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

Faced with high throughputs – at least 50



**Pull for service:** Lanyard switch allows fork truck driver to start the Lantech Q300XT from his seat



**Auto reel change:** The Genesis ring wrapper can be equipped with an automatic film reel magazine

pallets an hour – for loads that needed to be kept stationary or were too fragile to accept sufficient top clamping pressure, users were forced to choose between early rotary arm machines – which by all accounts were less than perfectly reliable – and the considerably more reliable but faster and more expensive ring-style machines.

#### Convincingly reliable alternative

Ring style machines won the day and it was not until the early 1990s that rotary arm machines, giving speeds up to 70 pallets an hour, began to offer a convincingly reliable alternative for higher volume work. So nowadays, rotary arm machines are operating in the throughput

domain that was once occupied solely by ring style machines, but at lower complexity and cost.

Most of the principal wrapper manufacturers build them. However, one of the latest machines departs from the traditional design by supporting the rotary arm that carries the film carriage from ground level, rather than using an overhead frame. This means that the new Robopac Special Superwrap occupies very little more space than a turntable machine, and can operate within a headroom only 500mm higher than the pallet.

#### Carried at ground level

Instead of being supported from above, the arm is carried on a ring track at ground level, while the pallet remains stationary on a circular section of roller conveyor. An automatic film attachment and welding system is standard to allow unattended operation.

More established is the Robopac rotary arm Helix machine which, during the past year, has been installed by companies including Coca-Cola, Kimberley Clark and HL Foods. Indeed the capacity to work largely unsupervised was a particular factor in the machine's choice by Charles Wells Brewery, as the site's packaging engineer Colin Stewart explains.

"The machine is used to wrap pallets of a wide range of glass bottles all the way from 250 to 660ml. We needed equipment that would fit into the line and get on with the job, without

the need for constant user intervention. And we have a further benefit with the Helix that we previously lacked, in that it can apply a top sheet as part of the whole wrapping process."

Indeed, it was to reduce the labour involved in everyday pallet wrapping applications that the American manufacturer Lantech developed its Q300XT which, says the company offers all the benefits of an automatic stretch wrapper, with the compactness, convenience and price of a semi-automatic wrapper. It is distributed in the UK by Ambassador Packaging.

The machine allows the fork truck driver to deposit the pallet, back off and then simply initiate the wrapping cycle via an overhead lanyard switch with no need to leave his vehicle. Film is automatically attached and then cut at the end of the cycle.

Throughputs of 30-40 pallets an hour can be handled by the Q300XT, which occupies the small footprint of 1700 x 2770mm. Its steel frame mast houses and protects all electronics, drive motors and sub assemblies and is clad with ABS, the same material used in automotive bumpers. Turntable height is just 70mm for ease of loading, even with pallet trucks.

In 1999, the year of its launch, the Q300XT was given a Certificate of Merit in the PPMA Awards of Excellence, the judges noting that "complexity and cost have been taken out of automation, bringing increased efficiency."

Another way of reducing labour is to arrange machines so that operators can supervise more than one.

This was the case recently when Orion Packaging Systems supplied two of its mirror image L55 stretchwrappers to T&S Stores, in the West Midlands. One person can operate both machines, which are pit mounted to avoid the need for a ramp.

#### Twin turntable rejected

Initially, T&S had contemplated a twin turntable machine as a means of reducing operator involvement, but faced the risk of losing its entire wrapping facility if the machine was damaged or required routine servicing. By purchasing the mirror image machines the number of operators has been halved to one, yet the flexibility of two machines retained.

Indeed, a further labour saving method, where pallet weight needs to be established or finally checked, is to incorporate a weighscale in the wrapper. Henkel Loctite's Welwyn Garden City operation has done just this, with a Robopac Rotoplat 105 from Aetna UK.

## PALLET WRAPPING

"We wanted to improve and streamline this part of the operation, so we needed some kit that had the scales built in," says the site's warehouse controller Paul Garwood. "The 105 was competitively priced, easy to use and robust. What really swung the decision was the simplicity of the warranty. We have one warranty covering the scales and the wrapper, rather than separate warranties as with the other machines we were considering."

### Range of wrappers

Other suppliers with a full range of pallet wrappers to suit a variety of applications include Sussex & Berkshire Machinery, with the Italian-built Mimi range. However, although the Mimi series covers all types, with speeds from 15 to 120 pallets an hour, the main distinguishing feature of the range is strength of build says S&B.

"Mimi machines have been designed in particular for dusty and wet environments in a variety of industries, including food and beverage," explains Jack Ralston at S&B.

"The first machine to be installed in the UK was at a brewery in 1989 where it is still operating perfectly, 12 years on, despite the difficult working conditions."

At the beginning of the Mimi range is the starter level 021 series semi-automatic turntable machine which can be optionally equipped with a top platen and power pre-stretch unit. Speed is up to 15 pallets a minute, depending on wrap style and pallet size.

The lower cost end of the Mimi range also includes a simple semi-automatic rotating arm wrapper, the 041, which is gantry mounted. This allows pallets of light goods that cannot be handled safely on a turntable machine to be positioned by fork truck or pallet truck and wrapped while still on the floor.

Higher up the Mimi range come fully automatic turntable machines capable of speeds up to 60 pallets an hour and rotating arm units giving up to 100 an hour. All are programmable with wrap format, number of turns and so forth while power film pre-stretch gives elongation up to 300 per cent.

### Retro fit top sheet dispenser

Top sheet dispensers, to produce a water-proof wrap, can be supplied with the machines or added at a later date should the need arise.

The top-of-range Mimi machine is the 125 ring-style wrapper able to run at speeds up to 120 pallets an hour. It has power pre-stretch and, as well as a conventional double helix



**Rotary arm:** Automatic Robopac Helix can handle 70 pallets an hour

wrap, can provide a single wrap, either upwards or downwards, and be programmed to wrap only the bottom or top of the pallet.

Meanwhile, the semi-automatic and low-price end of the stretchwrapper market has seen a fair bit of activity over the past year as more and more suppliers increase the scope of their offer to users looking at stretchwrapping by machine for the first time.

### Loads up to 2500kg

For example, there is the WS3 range from Limpet Tapes which is capable of handling uniform or random sized pallets up to 3 metres high with loads up to 2500kg.

The machines feature variable wrapping programmes with automatic pallet height sensing while operators can designate the number of wraps at the top and bottom of the pallet, choose single or double spiral wrap, and control the degree of overlap for precise control of the amount of film applied to each pallet.

There is also an option to pause at the top of the wrap to allow the inclusion of a top sheet, along with variable lay-on force and an optional powered pre-stretch unit.

One of the lowest cost turntable machines now available is the Siat WS112M available from main distributor Holmes Mann for under £2000. This machine uses a film carriage that is controlled by the operator via a lever and a sim-



**Wrapping at floor level:** The Mimi 041 semi-automatic rotary arm machine from S&B

ple mechanical brake to adjust the lay-on force of the film. It takes about 2 minutes to wrap a 2 metre high pallet.

There are two versions for pallets up to 1200kg or 2000kg and the machine has a folding mast which allows it to be readily moved around a factory by fork truck if required.

Strapex has just introduced a new upgraded version of its Delta semi-automatic stretchwrapper which, as standard, now includes photocell height detection, soft start turntable, adjustable starting height and pre-programmable top and bottom layers. It weighs 350kg and has a swing-down tower for ease of transport.

## PALLET WRAPPING

Then there is the WM983 semi-automatic pallet wrapper from Adpak Machinery, which is available ex-stock for £3547 and offers a maximum loading of 1500kg, as well as a hinged mast for ease of transport.

Watershed Packaging also has a low cost semi-automatic, the FP30E which, says the company, "offers the possibility of mechanical stretch to users who may otherwise feel the cost of automation is prohibitive." Three systems were recently installed at Charmwood



**Loads up to 1500kg:** WM983 semi-automatic turntable machine from Adpak

Furniture, Leicester, specifically designed to wrap desks and chairs.

In addition, last September's PPMA Show saw Clan Packaging introduce equipment from the Slovenian pallet wrapper manufacturer Zlatorog.

The Zlatorog semi-automatic Wrap-Eco machine shown by Clan is said to be particularly competitive on price and can handle up to 30 pallets an hour. Maximum pallet height is 2.2 metres, the turntable will accept loads up to 2 tonnes and there is a pre-stretch system to give 400 per cent film elongation.

Also new at the PPMA Show was Orion's L78, available with either a brake to tension the film or a power pre-stretch option. Built in the UK, the machine is priced from just under £4000.

So there it is. Pallet stretchwrapping by machine can be had for under £2000, which should mean that hand wrapping is on its way to being a thing of the past.

But one problem of course remains. The pal-



**Photocell height sensing:** Upgraded Strapex Delta has additional features as standard

let has still to be taken to the wrapper.

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

One answer is to take the wrapping machine to the pallet, which is why Robopac devised its Robot wrapper which is mobile and can be driven up to the pallet to complete the wrapping operation in around 2 minutes.

In one US application Robopac has delivered ten of these machines which, with their operators, are free to roam an extensive warehouse allowing pallet loads to be machine wrapped where they are created, avoiding the extra toil of doing it by hand. ■

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# Spiral wrap ousts board for furniture

*Pallet wrappers are not only for pallets, as a leading office furniture manufacturer has shown in reducing the environmental impact and cost of its packaging.*

**B**isley Office Furniture has switched to spirally wound stretchwrap in place of the corrugated board once used to protect its range of steel filing cabinets, lockers and cupboards for delivery within the UK, reducing considerably the environmental impact and cost of the packaging.

At the same time, surprising as it may seem at first glance, the company has found that handling damage during transit has fallen too.

"We are committed to cutting back on corrugated board on the basis of environmental concern, service to customers, and cost," explains Bisley's manufacturing director Chris Stapleton.

He points out that the considerably reduced weight and bulk of outer packaging brings benefits in disposal costs and handling by customers, particularly in terms of baling and then shipping waste board by road. Similarly, at Bisley's two factories, far less warehouse space and time now needs to be devoted to the logistics of maintaining stocks of corrugated packs, in a variety of shapes and sizes. Materials cost savings are, of course, substantial.

Before installing the Robopac spiral stretchwrapping equipment supplied by Aetna UK, Bisley conducted a number of transit trials with stretchwrapped office furniture, to gain customer approval and also to gauge the effects of a wrap that, overall, provides less cushioning than a full corrugated cover.

For although corrugated end caps have been retained to protect corners, the stretchwrap provides only dust protection over most of the

surface of the furniture. In both cases the results were positive.

"We established that when the product can be seen through the stretchwrap there is, ironically, less damage than when it is covered in board," explains Chris Stapleton. "And customers generally felt that stretchwrap gave a superior appearance, as well as cutting back their involvement in disposing of waste packaging."

## Majority travels in stretchwrap

Nevertheless, full corrugated wrapping has been retained for export sales, and for a few UK customers who continue to specify this form of packaging. But the vast majority of Bisley's output now travels in stretchwrap.

The company operates from two factories: its



**Horizontal wrap:** Small filing cabinets are handled on a Robopac Spiror machine



**Single wrap for lockers:** Rotoplat 505 semi-automatic wrapper can handle 30 a minute

original plant at Bisley in Surrey and the much newer premises at Newport, South Wales, where around 1000 items of steel office furniture are produced each day. Here, four Robopac spiral stretchwrapping machines have already been installed with a fifth to be commissioned during January 2001.

Each machine meets a slightly different need in terms of the product itself, the wrap style and speed of operation.

However, all items of furniture are protected top and bottom with two or four-sided corrugated end caps, held in position by one or two polyester straps applied after the wrapping process.

For although the end caps could be secured within the stretchwrap, Bisley prefers to use strapping, which improves the ease with which items of furniture can be gripped and manhandled at their final destination, again helping to ensure damage free delivery.

The simplest of the stretchwrappers is a Rotoplat 505 semi-automatic machine with power film pre-stretch of 250 per cent, used to wrap clothes lockers measuring about 1700mm high by 300 x 300mm. Since only a single helix wrap is provided – first cabinet wrapped

upwards, next one wrapped downwards – the machine is able to handle up to 30 an hour.

Lay-on force is adjustable and, because the fully-assembled lockers are rigid, can be set on the high side to produce a little extra stretch in the film, without risk of damaging the furniture.

However, large roller-door cupboards which are shipped with open fronts present a different case in terms of lay-on force and are handled by a Rotoplat 15/15 on which the lay-on force is adjustable within the wrapping cycle.

**Avoid risk of crushing**

These cupboards can measure up to 2.2 metres high and, in the semi-assembled open-front condition adopted for shipping, are less rigid than a locker or filing cabinet between the top and base. Therefore, to avoid any risk of crushing the weaker centre section, the Rotoplat 15/15 is programmed to apply a standard lay-on force at the base and top of the cupboard – so ensuring slip-free wraps – but apply minimum force in-between.

This variation is pre-programmed into the machine, along with the different change points above floor-level for different models and sizes of cupboard or cabinet, and selected by the appropriate press button. Power pre-stretch of 300 per cent takes the film virtually to its elastic limit, providing maximum film economy and avoiding any elasticity that might possibly cause crushing.

A double helix wrap is applied by the Rotoplat 15/15, which can run at speeds up to about 20 cupboards an hour.

Meanwhile, by virtue of their relatively small dimensions and weight, the personal A4 size twin-drawer filing cabinets made by Bisley lend themselves more readily to horizontal wrapping than conventional turntable machines.

**Additional support rollers**

So a Robopac Spiror is employed, fed by conveyor and specially modified with additional support rollers to handle the short length of an A4 two drawer filing cabinet laid on its side. Speed is approximately three cabinets a minute, which is adequate for the smaller numbers produced, compared with full-size units.

These are handled by the largest machine at Bisley, a Robopac Genesis ring style machine which handles two, three and four-drawer cabinets, taking just 40 seconds on a four-drawer version. Once the cabinet has been placed in its bottom corrugated cap, the entire cycle is automatic with film attached, wrapped round and



**Higher speed:** *Robopac Genesis ring wrapper handles a filing cabinet in less than 40 seconds*

the film tail welded in place.

A lifting system is installed within the conveyor, immediately under the rotating wrapping ring, to raise each filing cabinet some 75mm and allow the wrap to be taken almost down to, but not quite underneath, the edge of the bottom corrugated cap. This was considered neater in terms of appearance and can be readily achieved by the Genesis, on which the wrap start position is adjustable to within 2-3mm.

The Genesis provides powered film pre-stretch of 200 per cent and the robust nature of the filing cabinets allows a reasonably strong lay-on force to be employed to give a tight wrap, still with some elasticity left in the film.

Bisley is soon to install a further high-speed stretchwrapper to handle its open-fronted cupboards at speeds up to 70 an hour but, rather than another ring style machine, will be using a Robopac Helix HS40 rotary arm wrapper.

This was recommended by Aetna on the basis of the machine's finer control over the lay-on force compared with a ring style machine, allowing the rectangular footprint cupboards to be wrapped at consistent optimum tension without risk of crushing.

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