

Market trends are leading pallet wrapping machinery developments in two principal directions.

On the one hand there are new and less expensive fully-automatic solutions to cope with high throughput – up to 170 pallets an hour – while on the other hand, mobility, low cost and flexibility is allowing machine-wrapping to be extended to more warehousing operations where manual wrapping of hand-assembled pallets may once have been the preferred option.

Up to now, high speed has generally been a requirement for what suppliers mostly agree is an annual UK market for some 100 installations of fully automatic systems, which represents probably less than 10 per cent of the entire UK pallet wrapping machine market, numerically.

But, as the retail ready concept in transit packaging gathers momentum – broadening out from shelf-ready transit packs – so manufacturers of a whole range of grocery products, beverages and supermarket lines can probably expect accelerating demand for larger display packs in the form of half pallets and dollies. And this means higher pallet wrapping speeds.

At the same time, the growth in logistics operations serving retailers such as office equipment stores, chemists and some DIY outlets with mixed pallets loads, assembled by hand on a just-in-time basis, has enlarged the market for simple wrapping systems, including robots, that can be moved around the warehouse floor, from one pallet load to the next.

High speed developments are now taking place with the rotary arm variety of machine, and also with the ring style wrapper – up to now the fastest of them all. Indeed, the development of both types of machines over the years provides an interesting point in terms of one technology leapfrogging another.

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 40-50rpm, 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

Higher speeds - lower costs

PALLET WRAPPING DEVELOPMENTS ARE POLARISING INTO HIGHER SPEEDS – FOR SMALLER PALLETS AND DOLLIES – AND LOWER COST EQUIPMENT FOR FIRST TIME USERS.



Double head ring: Twin head version of ITW Mima's Octopus wrapper handles 150 pallets an hour

manual pallet wrapping still survives in many organisations, if only for 15-20 pallets a day.

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 £4000. More advanced models with film pre-stretching to 200-300 per cent can be had for around £7000.

Going for machine wrapping

"From ten 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."

He estimates that a move from hand-wrapping to a simple machine without pre-stretch will save 50 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, the fully automatic ring-style wrappers capable of speeds in excess of 100 pallets an hour are facing a new challenge as the first rotary arm machine capable of speeds up to 170 pallets an hour makes its debut.

First shown at the Fachpack exhibition in Nuremberg in September the new Robopac Helix HS40/2 has two arms rotating at speeds up to 37 rpm, each with a film carriage that employs the established Helix pre-stretch units allowing film pre-stretch ratios up to 300 per cent. There are also two separate film clamping, cutting and sealing units.

As a result, the machine is able to complete typically 12 wraps in a cycle time of 24 seconds (150 pallets an hour) or nine wraps in 21.2 seconds to give 170 pallets an hour. A 16-wrap cycle still only takes 26 seconds and allows 135 pallets an hour to be completed.



Double arm: Robopac Helix HS40/2 is capable of up to 170 pallets an hour using two rotating arms

The irony of an ultra high speed rotary arm wrapper – based in this case on a well-established design that has sold in the hundreds for more than ten years – taking the lead in terms of speed may not be lost on users who have remained steadfastly loyal to the ring-style machine for over 20 years.

Performance improvement

Indeed, 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 style machines at a time when rotary arm machines had still to convince everyone of their reliability.

Faced with rising throughputs – at least 60 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 the early rotary arm machines – which suffered from poor reliability – and the considerably more reliable but faster and more expensive ring-style machines.

As one current supplier of both types of machine recalls: “In the early days the ring systems took a good chunk of the market. People could see that the rotary arm systems were pretty flakey, with a film carriage flying around on the end of an arm and the whole machine in

some cases wobbling all over the place. So they naturally went the ring-style machine route.”

However, come the early 1990s, rotary arm machines giving speeds up to 70 or even 80 pallets an hour began to offer a convincingly reliable alternative for high volume work. So today rotary arm machines are operating in the throughput domain that was once occupied solely by ring style machines, but at lower complexity and cost.

But the past ten years have seen ring style machines become available for much higher speeds than originally offered, with speeds in some cases up to 120 an hour.

Now, although that speed has been eclipsed by the Robopac twin rotary arm machine capable of some 170 pallets an hour, ITW Mima has announced a twin head version of the Octopus ring-style pallet wrapper capable of 150 pallets an hour.

Developed for high speed lines such as those found in bottling, construction materials and paper tissues, the Octopus Twin is equipped with a double film carriage and a seaming unit which operate on two pallets simultaneously. In addition there is an optional “fast cycle” conveyor system that reduces traditional conveying time by half.

Although high speed could well be of greater importance to a growing number of manufac-

turers, developments in the mid speed range of both rotary arm and ring style machines tend to suggest that each type has its adherents for a number of reasons, familiarity being one of the most powerful.

As one supplier of both types puts it: “A number of larger companies are wedded to rings because they have ten or 20 of them. They have the spares and they know all about them and can fix them if something goes wrong. So why change? Why try a different type of machine? Turning to rotary arm could nevertheless save money when a replacement is required.”

High speed rotary arm

Certainly new high speed rotary arm machines are coming onto the market with one of the latest being the 95-pallets-a-minute Lorenz Pan S500 machine now available in the UK from CC Automation, which is also supplying the V300 turntable wrapper.

Standard equipment includes automatic handling and film sealing, frequency controlled film lift, and frequency controlled rotating turntable or rotating arm. Film pre-stretch is controlled by two motors, said to ensure minimum film consumption.

Various options are available including: press plate, pre stretch up to 300 per cent, cold store option working at -35deg C, top sheet applicator integrated or in front of the machine, over size machines, single wrap and top wrap and pallet conveyor handling systems.

In the mid speed range the choice of pallet wrappers is also broadening. For example Strapex has just announced a new range of machines that includes both rotary arm and ring style models.

Semi-automatic wrappers

The new SWA range of semi-automatic rotary arm wrappers can be pillar or wall mounted, and offers four programmable wrapping programmes with eight functions. Optional power pre-stretch up to 300 per cent is available to ensure maximum film economy while speed is up to 35 pallets an hour.

Strapex points out that the SWA machines are particularly suited to production plants under hygiene regulation, as the floor is left clear. They can accommodate pallets up to 2900mm high, with a maximum pallet area of 1250 x 1250mm. An optional pull-out rotating arm allows this to be extended to 1400 x 1400mm.

Meanwhile, the new SWR range of ring style

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wrappers features automatic film insertion, wrapping, 'cording up' at the film end and film cutting. There is power pre-stretch while pallet positioning is monitored by photocell.

The SWR30 is aimed at applications where space is at premium and no top sheet is required, and can wrap up to 30 pallets an hour. The SWR40 and 45 can each wrap 50 pallets an hour without a top sheet, while the SWR50 is designed for applications where a top sheet is required and can again handle 50 pallets per hour. Pallets up to 1700 x 2050mm can be accommodated, with a maximum wrapping height of 2400mm.



Rotary arm: New Strapex SW 20 semi-automatic pallet wrapper

Recent introductions from Aetna include the Robopac Sistemi Genesis Futura, which runs at a speed of 25-35rpm compared with the 50-55rpm of the top-of-range Genesis machine, to give typically 50-60 pallets an hour and allow users a choice between ring and rotary arm systems in the mid-speed range.

Like its higher speed counterpart, the Futura uses the ring itself to generate power for the film pre-stretch system, eliminating slip rings with brushes and their associated maintenance needs. The machine is shipped in one container and is self-erecting.

Further recently introduced stretch-wrappers from the company are a range of semi-automatic turntable machines with automatic film cut and wipe down and an entry-level rotary arm machine capable of 10-20 pallets an hour. This, too, is delivered in one piece and can therefore be installed within a day.

Low cost machinery is now available to help mechanise much of the wrapping task for low to

Lower cost stretch-hooder for Euro pallets

The range of Rainbow pallet stretch-hood machines built by Dutch manufacturer BTH has just been extended with a new model for handling Euro and similar size pallets at speeds up to 100 an hour.

The machine offers the same, fully sealed pallet as larger, 120-pallet-an-hour models used for complete protection of empty and filled drinks containers, as well as more traditional markets such as chemicals and building materials where weather proofing for outside storage can be a particular benefit.

However, explains BTH, the price is lower, substantially closing the gap with stretch-wrapping machines.

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Lower cost: New Rainbow pallet hood machine



Robot wrapper: Robopac machine can be driven up to the pallet for the wrapping operation

medium pallet volumes. For example, Adpak Machinery Systems' best seller is the Ronda 3000 semi automatic pallet wrapper offering a turntable speed of 6-14rpm and able to handle a maximum load of 2000kg. Prices start at £4200.

Watershed Packaging has some 30 pallet wrapping machines in its range, starting with a basic machine that sells for just under £2000. Machines with motorised pre-stretch start at about £4000 while further models include a pneumatically powered unit for hazardous areas, machines with top hold down platens for

handling lightweight goods, fully automatic wrappers and machines to work in temperatures down to -30deg C.

Watershed also supplies a robot wrapper for handling pallets anywhere within a warehouse.

Indeed, while pallet stretchwrapping by machine can be had for under £2000 to replace a manual operation, one problem of course remains. The pallet has generally 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 several suppliers offer robot wrappers that are mobile and can be driven up to the pallet to complete the wrapping operation in around 2 minutes.

In fact, Aetna has recently supplied a major UK stationer and office equipment supplier with ten of its Robopack robot pallet wrappers 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.

Pallet wrapping is, of course, sometimes part of an integrated system such as a complete wrapping and strapping system being supplied by Adpal to handle empty steel drums at one of the UK's principal manufacturers.

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Built in Italy by Tosa and CMR the system comprises a fully automatic empty pallet feed system to the palletising area, vertical strapping, horizontal strapping and high speed rotating ring wrapping using two high speed ring machines running at 50rpm each. Any combination of wrap or strap formats can be selected by the user and, says Adpal, line speeds can reach in excess of 180 pallets an hour.

At the end of the line, full pallets are double stacked ready for vehicle loading by fork truck.

Pallet wrap and strap review saves £200,000 a year

Pallet strapping and stretch-wrapping techniques may have been around for 30 years or so but there are still opportunities for users to make substantial savings, as a manufacturer of rolled aluminium products discovered from a survey by machinery supplier M J Maillis.

After taking up the recommendations of the survey, the manufacturer is now enjoying annual savings in the region of £200,000.

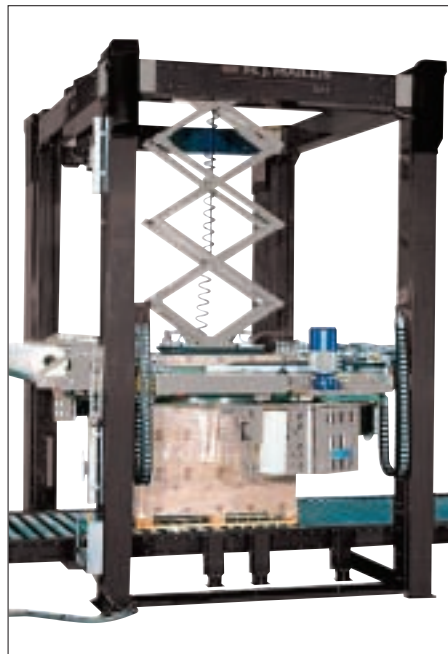
"Since introducing our packaging review only a short while ago, we have received considerable interest from all facets of business," says M J Maillis group marketing manager, Stefanos Sargologos.

"Our packaging review offers larger organisations a complete audit of the packaging process. This includes a complete study of machine performance and operating efficiency, an investigation into downtime and its probable causes and a full understanding of the end user's packaging requirements. A measure of load security, a detailed study of consumables used and a 'cost versus performance' comparison also forms part of the review."

At the aluminium processor six-man, eight-hour shifts were operated daily just to complete the packaging cycle. In this wholly manual operation, aluminium product was first palletised, secured using steel strapping then covered with considerable quantities of film.

Initial investigations indicated that complete conveyor fed wrapping and strapping systems could reduce manual input to just one machine operator per shift on the sheets line and two machine operators per shift for the coils line, with other personnel being more effectively deployed in other areas of the factory.

However, such was the complexity of the



Ring wrapper for coils: Mancon 2800 machine

task that a custom solution was required.

For the proposed aluminium coils strapping and wrapping line, a primary consideration was the high number of different coil sizes produced – some 70 coil types with diameters from 700mm to 1950mm and heights from 500mm to 2300mm. As an additional complication, 14 different pallet types were also used.

So, for a start, it was decided to include both height and diameter scanning facilities at the start of the packing line.

Pre-approved strapping pattern

A control panel, offering some 18 potential strapping values, was also included to allow for the numerous coil sizes involved and to enable individual pallets to be selected by category and pre-approved strapping pattern. The various coil strapping programmes created by MJ Maillis offered multiple packaging methods, protective top sheet application, wrap and strap or strap-only cycles.

Packaging of aluminium coils of up to 1950mm diameter weighing up to 8 tonnes starts by conveyor presentation to a Mancon 2800 ring type stretch wrapper for the application of film, pre-stretched by 250 per cent.

Because of the considerable variation in coil sizes that would have to be accommodated during the strapping process, the Mancon 2800 model also featured a double top sheet dispenser in order to allow coils up to 1.3 metres diameter (1.7 metre top sheet) and up to 2 metres diameter (2.4 metre top sheet) to be covered with sufficient overlap.

Additional features incorporated into the Mancon 2800 included a pressing action to minimise air trapped inside the coil and prevent

the top sheet bubbling. To ensure each coil leaves the plant in a totally waterproof condition, and that stretch film is used efficiently, film overlap can also be accurately controlled.

Wrapped coils are then taken by conveyor to a Vario Master 9460 strapping machine for the application of polyester strap along with protective top edgeboards.

As a result of the new wrapping and strapping process film usage for coils has been reduced by 45 per cent and coil packaging time cut to less than two two-man shifts a day. In addition polyester strapping costs much less than steel.

Stefanos Sargologos at MJ Maillis says that annual savings of about £40,000 have been made in strapping consumables and around £100,000 in strapping and wrapping line personnel costs each year. "Offset against the cost of installing the solution in the first place, payback will take less than five years," he explains.

The remainder of the savings have been made in automating the aluminium sheet strapping line with two conveyor-fed VarioMaster polyester strapping machines. ■

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For full details of all PPMA members able to supply pallet wrapping equipment, consult the PPMA machinery finder service, tel: 020 8773 8111, or visit www.ppma.co.uk