

Recycling takes the driving seat

Pallet stretch-wrapping continues to gain ground as a result of packaging waste legislation, writes Martin Keay. The weight of materials is just as important as their cost.

One of the outcomes of the Packaging and Packaging Waste Directive is that filling and packing companies, and the major retailers, are now trying to minimise the weight of packaging materials used for their products, not just the cost of these materials.

This is because the recycling obligations and therefore the costs imposed by the legislation are based on the weight of packaging materials used, rather than their value.

The effects of this new driving force in packaging are becoming particularly apparent in the area of pallet load securing, which is a sector where packaging materials can be changed quickly without risk to sales, because in most cases the ultimate consumer of the product has little or no knowledge or interest in the materials employed.

Consequently, when considering both the cost and weight of packaging materials used to secure pallets, manufacturers have been able to see benefits in changing both materials and packaging machinery.

For instance, metal strapping was once the preferred material for securing heavy loads, but in the last two years demand for metal strapping has declined sharply as a result of filling and packing companies switching from metal to heavy duty grades of polypropylene strapping, which have a higher strength to weight ratio.

A similar trend can be observed in applica-



Pallet shrinkwrap: Ripack Shrinkpal turntable machine can produce a fully enclosed wrap

tions where pallet loads have to be weather-proofed. Hoods of ldpe, which can be shrunk to fit the load using heat, used to be the preferred method of protecting a pallet load from the elements, but the use of shrink hoods for this purpose alone is now in decline with manufacturers often preferring to use spiral stretch-wrapping combined with a thin gauge top sheet made from ldpe.

Shrink hood applications

Shrink hoods do however remain popular in many bulk materials industries, particularly where packs such as paper sacks of chemicals require a high level of protection against moisture in the atmosphere. There are also plenty of applications in the plastics and glass industries where empty containers must be protected against airborne contamination.

For example, a turntable machine with a gas-fired heating tower to shrink pallet hoods auto-

matically and consistently within about 60 seconds is now available from Ballinger Rawlings, UK agent for the French manufacturer Ripack.

The Shrinkpal can operate in conjunction with an automatic hood applicator and will provide a tight, waterproof enclosure suitable for pallet loads of mixed goods, difficult or irregular shaped products, or items that cannot withstand a crushing force.

In addition, Ripack supplies a system giving total enclosure for sterile products, such as empty bottles, and complete tamper evidence. This involves applying a bottom sheet, which is taken up into the shrink hood and air extracted as the shrinking process proceeds, providing a close, air and moisture tight enclosure.

Materials savings

Nevertheless, spiral stretch-wrapping has benefited in most applications, where special precautions are not necessary, on the basis of materials costs. This is because different wrapping patterns can be programmed on a stretch-wraper, allowing users to set the number and location of the wraps of film needed to best secure the load, but at the same time keep materials usage to the absolute minimum.

However, the costs of pallet securing are not confined to materials consumption. Labour costs, the purchase price of the machinery and the cost of ownership must also be taken into account. But here too spiral pallet stretch-wrapping can score over automatic strapping machines and automatic shrink hood applicators, because of the relatively lower cost of fully automatic spiral stretch-wrapping machines.

Even so, Ambassador Packaging reports steady sales of its DBA-130 semi-automatic pallet strapper, a mobile machine said to remove many of the health and safety issues associated with hand strapping, such as feeding the strap through the pallet base.

The welded seal is some 40 per cent stronger than metal buckles or seals which, Ambassador

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points out, gives users the option of either greater load security or reducing strap size.

Stretch banding is also making its presence felt. Interpack saw Aetna group company Robopac launch the Roboband machine, aimed at securing bottle crates, RTPs, dollies or half dollies that interlock in a single stack, but need to be stabilised when several stacks are carried on pallets. The machine can apply one or more bands of film to stabilise the load and also be equipped with a print-apply labelling system that identifies the load with a label attached to the band, rather than an individual container.

To allow film to be matched to the style of pallet load – particularly weight and layer height – the Roboband is capable of applying bands of 50-500mm in width, using 30-250 micron film.

Stretch-wrappers that rotate the pallet while applying the film to the pallet load continue to be the favourite choice for low volume applications, where an operator is required to attach the film to each pallet.

Manual pallet wrapping

Indeed, what is often surprising in an industrial climate that increasingly seeks to eliminate hand work and potential sources of physical strain, is that manual pallet wrapping still survives in many organisations, if only for some 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 just under £4000.

However, an interesting new development of these machines is a low cost fully automatic machine manufactured by Lantech, the Q300XT. This is equipped with a patented film cut and clamping mechanism that automatically applies film to each pallet load placed on the pallet turntable, avoiding the need for the fork truck driver to climb down from the cab and attach film to each pallet.

Instead, the fork truck driver can deposit the load, back off and then simply initiate the wrapping cycle via an overhead lanyard switch with no need to leave his vehicle. The machine is distributed in the UK by Ambassador Packaging which also recently introduced the new Lantech Flexer, a metal bodied machine which is sold "at a very competitive price", especially for users with a throughput up to 50 pallets a day.

At Interpack, Robopac launched its new semi-automatic Rotoplat 705 with a 'cut and grab'



Automation: Above: the automatic film reel magazine for the Robopac high speed Genesis ring wrapper. Right: United Packaging automated this MR20 wrapper for bottlers Waters & Robson

film attachment and film cut-off device which, in effect, provides fully automatic operation, with the fork truck driver able to initiate the cycle from his seat using a switch or remote radio control.

In this way, stretch-wrapper manufacturers are responding to the greater degree of automation being sought by users, but without the high cost usually associated with existing high speed, fully-automatic machines.

Another example is provided by United Packaging, which has converted one of its medium speed semi-automatic pallet stretch-wrappers to fully automatic, giving mineral water bottler Waters & Robson labour savings without the need to buy a higher output machine than needed.

"Pallet wrapper machine development has centred largely on reducing the human element," points out United Packaging. "But total labour free automation remains confined to high throughput, high speed operation of usually corresponding cost."

Machine capable of 40 an hour

Waters & Robson, which bottles the Abbey Well brand water, needed a machine capable of 40 pallets an hour. So United Packaging has adapted a Millennium MR20 semi-automatic wrapper, supplied as part of a contract which also included three Lorenz Pan automatic palletisers.

These feed directly onto the MR20's turntable which now includes three chain drives to carry the pallets on and off. A pop-up gripper attaches



the film to the load. No operator is required.

Automatic transfer of the pallets has saved one fork truck and, compared with a fork truck loaded MR20, gives nearly five extra pallets an hour. "It means we are raising our throughput without going faster," notes David Charlesworth, technical manager at Waters & Robson.

However, pallet stretch-wrappers in which the

New standard to

A new European standard that will apply to all types of pallet wrapping machines is currently being drafted. When finally agreed this standard, to be called EN 415-6 *Safety of packaging machinery – pallet wrapping machines*, will supersede current HSE guidance on pallet wrapping equipment.

At issue in particular will be the safety requirements for rotating turntable pallet stretch-wrappers.

Will pallets be allowed to overhang the turntable, as currently allowed in some EU countries, or will machines be restricted to



Handling ten lines: Adpal has supplied Anglia Oils in Hull with a Pieri AVR 400 ring style wrapper capable of handling 90 pallets an hour

film reel is rotated about the pallet are now the preferred machine for high volume applications and for light and unstable pallet loads.

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, not every pallet load can be relied on to stay put at 40rpm, the speed required to wrap pallets at this rate.

Up to now speed of throughput has relied on ever increasing rotation speed with, for example, one of the fastest ring-style wrappers now capable of some 55rpm and 120 pallets an hour.

However, for applications

in which the pallet load can be held stable by a platen at fairly high rotation speeds, Italian manufacturer FIS Impianti has set out to raise output further by using two film dispensers at opposite sides of the turntable. Each is carried on a column with its own film cutting and sealing unit and a motor-driven pre-stretch unit.

The film tail clamping unit consists of two pneumatic clamps, the upper being fastened to the platen and the lower to the turntable.

The two film dispensers operate simultaneously, one starting from the upper edge of the pallet, while the other starts from the bottom, so raising speed to 150 pallets an hour. Computer control gives the usual choice of wrapping programme, such as the number of wraps, wrap-



Twin film dispensers: FIS wrapper from Planet Flowline gives speeds up to 150 pallets an hour

trigger wrapper safety rethink

handling loads that fit the turntable, as required in the UK?

Should there be a 500mm gap between the pallet load and the mast to prevent someone being crushed, or is a smaller dimension acceptable? And does the reel unwind mechanism need to be fully enclosed or can it be allowed to operate unprotected, provided forces are below agreed limits?

Another issue that affects rotating turntable machines is their location in a factory. Can they be put anywhere in a factory, or should they be positioned away from pedestrian walkways and

working stations? And what about the speed of pallet rotation? Is any speed acceptable or should unguarded turntables be restricted to certain speeds?

These and probably many other critical questions will be discussed during the next few months as the document is developed.

The German machinery trade association, the VDMA, is responsible for progressing the new standard, but UK delegates from the HSE, the Scotch Whisky Association and the PPMA will also be taking a close interest as the new rules begin to take shape. ■

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ping at the top and wrapping at the bottom of the pallet, up and down speed of the wrapping reels and film pre-stretch adjustment.

UK representative Planet Flowline explains that principal applications include the high volume end of the drinks industry but also installations where pallets to be wrapped are channelled into one single wrapping line from two or more palletising systems.

In fact, capacity to handle the throughput from several lines can often be a customer requirement. For example, earlier this year Anglia Oils installed a Pieri AVR400 rotating ring pallet wrapper as part of a major investment at its factory in St George Dock, Hull. Products range from tape sealed cases through to varying size pails of edible oil and the wrapper, supplied by UK distributor Adpak, handles the output of ten production lines at random.

Speeds up to 90 pallets an hour

The AVR400 is Pieri's flagship model and will operate at speeds up to 90 pallets an hour, employing a touch screen from which the operator can select 15 wrapping programmes, vary the film overlap and carry out all manual functions. Film changeover is carried out with the film carriage moving automatically, pre-set to the operator's height.

Pieri has also developed and patented a method of securing the film tail end. This tucks the film tail neatly behind the last wrap which, as Adpak points out, is ideal if pallets are to be profile checked prior to going into high bay warehouse storage.

Speed of film reel changing, but particularly the availability of an operator can, of course, affect overall throughput. Indeed Robopac's film loading system for its Genesis high speed ring style wrapper was developed to give the machine a minimum of 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 machines 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



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

must bring safety and operating benefits."

Although ring style wrapping machines are able to handle pallets of lightweight goods at high speed, there is often a need for extra protection. For example, an automatic corner post applicator is now available for the Haloila Octopus ring-style pallet stretch-wrapper, giving soft goods extra protection and stability by adding strips of corrugated board to the four corners of the load before wrapping commences.

UK agent ITW Mima points out that the system also gives material savings in transit packaging by allowing goods such as milk or juice cartons, confectionery products, and paper sheets to be palletised in trays, rather than cases. Less wrapping film is also required. In addition, says the company, corner posts improve pallet stability for increased safety during transport.

Machine wrapping for the first time

Meanwhile, the low-price end of the stretch-wrapper market continues to provide an answer to users looking at wrapping pallets by machine for the first time.

One of the lowest cost turntable machines 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 simple 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.

Then there is the WM983 semi-automatic pal-

let wrapper from Adpak Machinery, which is available ex-stock for £3800 and offers a maximum loading of 1500kg, as well as a hinged mast for ease of transport.

So there it is. Pallet stretchwrapping by machine can be had for under £2000, which should mean that hand wrapping is a thing of the past. But one problem of course remains. The pallet has 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 traffic 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 less than a minute.

The latest version of the machine, the Robot 2002, was shown for the first time at Interpack 2002, was shown for the first time at Interpack with a new control system that includes self-learning programmes and the capacity to count pallet corners as it moves round the load. This ensures that the overlap of the film spiral is correct without relying on a timer, which could prove less accurate.

United Packaging has also introduced a mobile pallet stretchwrapper, capable of handling up to 220 pallets from a single charge of its battery. The Pal Rapper 150 multi-area wrapper can wrap pallets up to 2 metres high as standard and, equipped with a soft start facility, operates at speeds of 4-10rpm. Height detection is also automatic.

Optional equipment includes power pre-stretch for film economy and the capacity to handle load heights up to 2800mm. ■

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