

Streamlining Automated Shrink Wrapping of Oversized, Very Long Products

One of the latest designs of automated shrink wrappers permits oversized, very long products – such as door panels, shutters and fabric rolls – to be fed into the wrapper sideways contrary to conventional lengthwise feeding, resulting in simplified throughput and smaller system footprint requirements.

Shrink wrapping of products has seen significant improvements in automation over the past decade, commensurate with increases in computing capability of PLC controls, improved performance of servo-driven motors, and streamlined high-speed camera technology. Combined, these have enabled precise product and film control, which allows high-speed wrapping with precision print registration. The result is fast, reliable and flexible shrink wrapping, with minimal moving parts, reduced maintenance, and maximum uptime performance, while using the least amount of film possible. But as significant as these advances have been, improvements in shrink wrapping continue to unfold. One of the latest advances is with automated shrink wrapping of oversized, very long products.

Challenges with Automated Shrink Wrapping of Oversized, Very Long Products

Large and very long products such as door panels, shutters, molding and fabric rolls have long presented challenges in automated shrink wrapping. Frequently, the need is for a functional package to protect or contain the product, rather than one meant primarily to display it. These applications are often wrapped in heavy polyolefin or polyethylene film for strength or puncture resistance, and call for heavy-duty or very-flexible equipment, with special guiding or custom infeed conveyors, which can be quickly adapted to wrap a variety of products.

Many of these long-length products cannot be efficiently shrink wrapped because of wrapper speed and/or space limitations. Wrapping such products is typically done using conventional shrink wrapping systems, where the long edge of the product is run in the machine-flow direction. To manage these oversized products, shrink wrapping systems must take up enormous amounts of floor space because of the need for accumulation, if these very long products are to be run at an acceptable throughput rate. If faster production rates are required, but space will not allow for adequate accumulation, then it will simply not be feasible to shrink wrap these oversized, very long products within that facility.

Sideways-Feeding Shrink Wrappers for Very Long Products

These issues with shrink wrapping oversized, very-long products could now be solved, with the recent introduction of a new generation of intermittent-motion, dual-side-seal wrappers, which are designed to feed products into the wrapper sideways, contrary to conventional lengthwise feeding.

Side-seal wrappers are generally considered the most flexible of the various wrapper styles, able to handle a variety of packages. These wrappers encapsulate products in a continuous tube of

film, sealing along one side of the package and then separating them into individual units downstream using a cross seal. Side-seal machines can run random products of infinite length.

With an intermittent motion side-sealer, the end-seal carriage remains stationary and does not move with the product. This necessitates stopping the product stream momentarily as each seal is made. In a dual side-seal design, the end seal is made prior to the side seal. This design allows the system to fit in a smaller space but also requires the product to be spaced apart prior to entering the infeed conveyor.

By feeding products into the wrapper sideways, where the long edge of the product is run perpendicular to the machine-flow direction, several critical advantages are realized compared to conventional systems: a) a much shorter line length, since product is being fed sideways the accumulation footprint required is greatly reduced; b) a much simpler wrapper design eliminates reciprocal seal-head movement; c) full enclosure, no open ends or bullseyes; and d) a 60 percent reduction in system speed while maintaining comparable throughput.

“To run a door panel 18" wide x 80" long x 2" high on a conventional continuous motion wrapper, for example, would need a conveyor speed of 135 fpm to wrap 20 per minute,” said Tom Dickman, with Texwrap Packaging Systems (www.texwrap.com), a leading manufacturer of fully-automatic shrink wrapping systems. “On a new large-format, intermittent-motion wrapper, with the product running in the 18" direction, you could achieve the same throughput rate at 50 fpm. In addition, for ten seconds of running, only 8 feet of accumulation would be needed, compared to 23 feet on a conventional oversized wrapper.”

“Maintaining comparable throughput levels at 60 percent less machine speed is a considerable benefit in machine longevity, maintenance, parts replacement and energy draw,” added Dickman. “The cost-efficiency, coupled with a 66 percent reduction in accumulation space needed, makes these new sideways-feeding shrink wrappers a significant improvement over conventional continuous motion wrappers for oversized, very long products.”

Film Efficiency

Film selection flexibility and film usage economy are two additional benefits of this new generation of shrink wrappers. Heavy polyolefin or polyethylene film – used for strength or puncture resistance – are typically employed for shrink wrapping oversized products, but they are generally less than appealing in looks. Some of these new shrink wrapping systems also permit using film for attractive clear packages with great shelf appeal. One system incorporates a component called Versa Seal, developed by Texwrap, which ensures consistent, high-quality seals across a wide range of film types and gauges. It provides exceptional control of the three elements necessary for a good seal – pressure, temperature and time. Such capabilities enable fewer film roll changes, and less scrap or trim per package.

Giant Step Forward for Oversized Shrink Wrapping

Shrink wrapping of oversized, very long products has taken a giant step forward with the introduction of sideways-feeding shrink wrappers, and their simplified throughput and smaller system footprints. The result is efficient, reliable and flexible wrappers with minimal moving parts and maximum performance, while using a minimum amount of film.