



OffPress

SLITTER/REWINDERS

Choosing the Right Equipment: A Hair-Slitting Ordeal

Focusing on your customers' application parameters—while keeping cost, safety, and simplicity in mind—are important factors in choosing the right slitter for the job.

ACCORDING TO “Slitting Techniques, Choosing the Best Method,” produced by Tidland Corporation, it may be safe to say there are not many manufacturing industries that handle such a wide array of processed materials as package printing. Most of these materials need to be slit—cleanly, easily, and safely—in most converters' operations. There are three main slitting methods in use and Tidland has come up with a formula to best match the correct slitting method to the application.

Easy as 1, 2, 3

The 3-step procedure used by Tidland is: 1) Identify the important characteristics of each slitting method; 2) Identify the characteristics of the material to be slit; and 3) Match the material to the best slitting method.

These three slitting methods include shear slitting, crush or score slitting, and razor slitting. Each has its own set of pros and cons.

Shear slitting, according to Brian Ivens, sales and marketing manager, Arpeco, can run at or faster than web speed, with the two blades acting in a scissor action to cut the web. This method generates minimal amounts of slitting dust. “This system is most effective for paper products,” he added.

The second method—score or crush slitting—is a more complex method of separating the web, and although it is common, it involves the installation of a hardened anvil roll and wrapping the web over the roll, says Reiny Schable, application technology manager for Tidland. The slit occurs in the crushing nip between the anvil and the slitting wheel, and while changing widths is not hard, crush slitting has

some downfalls.

“Changing slit widths is relatively easy, since only the slitter is

repositioned over the fixed anvil roll,” Schable said. One of its downfalls, however, is it is the most dusty of the slitting methods, delivering the poorest edge quality,” he says.

Ivens agrees and added score slitting systems are not as clean as shear slitting when slitting paper products, but it does “work well for the removal of thin edge trim or when frequent knife cleaning is required as when cutting through adhesives.”

A third slitting method is razor slitting, which is the simplest and usually the least expensive method. Razor slitters are mounted in a holder with either single or multiple blades, and are positioned over grooves that support the web, which is pulled over the blades. It's the best procedure when slitting film products.

Other slitting methods include lineal die slitting, which uses a rotary die with blades located at specific positions. When pressure is applied between the die and the hardened anvil cylinder, the material is cut. “This system is used primarily when very accurate slit-to-slit tolerances are required or when the slit width is less than the width of the knives of the other slitting systems,” said Ivens. The downside to this system is dust and the higher cost of the tooling.

One last method employs “ultrasonic” slitters. It is used in the production of laminates because it can be configured to slit and seal all in one pass. High-frequency ultrasonic energy produces a vibration against a rotary blade which creates the heat to cut or seal. This equipment is sometimes expensive and isn't suitable for all materials, but does work extremely well in the right applications.

Save money and headaches

As everyone knows, to save money on the bottomline, the overall converting operation needs to be studied, and the slitting and rewinding procedure is just the place for con-

by **Megan Wolf**

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verters to look.

“Having the right machine for the job is the biggest savings a converter can have. Top-end slitter/rewinders that can do everything are good in the long run, but in many cases, simpler machines can do a given job or range of jobs at a fraction of the labor cost due to the simplicity of set up and running,” said Bob Hillebrand, Pinnacle Converting Equipment Inc. “This is especially true for short-run jobs. For example, a \$20,000 slitter/rewinder that can perform a range of tasks productively and relieve demand from a \$150,000 machine is well worth the investment.”

Wayne Kikos, design engineer, Delta Industrial Services Inc. said a good cost-saving measure is to add an automatic set-up feature to the slitter blade carriers. The process of changing blade positions was formerly performed by a technician using a set of wrenches and a rule. “Depending on the number of blades and the frequency of changeovers, this can be a very time-consuming process,” he said. “Slitter manufacturers usually can offer a motorized system to reposition the blades from a stored program, or a built-in digital scale system to aid the technician while manually positioning the blades.”

Ivens also emphasized the importance of reducing production line downtime. “Sometimes cost savings are about minimizing the time when a machine is not running. Features such as roll lift mechanisms, slitter set-up fixtures, auto count and fault detection set up, rewind cutoff, and auto-feeds are all ways to minimize downtime and reduce costs,” he said.

Schable said a significant cost-saver can be replacing primitive, mechanical shear type knifeholders with modern, operator-friendly pneumatic units. Understandably, older machines were fitted with score slitters based on the low initial costs, but they were incapable of producing a quality slit. He said replacing them with shear slitters can have a major beneficial impact, and he offers some characteristics to look for to ensure productivity:

- The quick-change knife holder blade cartridge is one of the most significant advances in knife holder design, and makes it possible to exchange a worn blade without any downtime (the switching process is accomplished within seconds, between roll sets);
- Sequential air valving in a knife holder is vital, since it makes it impossible for the upper blade to “crash down” upon the lower blade;
- A predictable shear angle will ensure consistent cut quality and productivity. Keeping the angle at or below 1/2° is important;
- Predictable and controllable side load pressure is also important—too weak pressure will produce a rough edge. Too high, and it will cause excessive blade wear, or worse, blade fracture.

New and better designs

The need for easy set ups, better machine controls, and more automated systems is what is driving the design and construction of today’s slitter/rewinders, but that’s not all. Customer service is also top on the list of new innovations.

Hillebrand said his company is currently focused on giving their customers exactly what they are looking for in a slitter/rewinder.

“With the advent of CAD-designed machines and flexi-

ble manufacturing, a customer can expect to be able to buy a machine specified exactly as needed. Gone are the days of buying a Model XYZ machine that does everything because this is what the manufacturer offers. This reduces the customer’s investment and length of time to pay back the investment,” he said.

It’s difficult to talk about slitters without also talking about rewinders, because usually they go hand-in-hand during the off-press process. Mark Andy Inc. has produced a new line of equipment, the VSR300 that verifies, slits, and rewinds material for the label and flexible packaging markets.

“In their simplest form, slitter/rewinders are used to convert one roll of material into several narrower and/or smaller rolls. The inspection slitter/rewinder is used in the label industry and combines the slitting and rewinding capability with a special web path that makes it suitable for inspection. This variant of the slitter/rewinder allows taking web directly off of a printing press, inspecting it, and removing labels while slitting and rewinding the finished product,” said Ken Daming, director of product management, Mark Andy.

Rotoflex International also offers a line of inspection slitting and rewinding machines. These machines are designed so an operator can maintain a full view of the process with total control of the inspection, slitting, and rewinding functions with easy-to-use controls.

CTC International manufactures rewinders, specifically turret rewinders. The CTC turrets can wind difficult jobs, and feature the latest AC drive technology, touch-screen controls, and flexible programmable controllers.

Elsner Engineering offers the Shultz Model SA-20 that features a core or coreless semi-automatic rewriter for paper, film, or foil. Features include a programmable counter set in inches or centimeters for product length, and surface winding that ensures tight, dense finished rolls.

Another new product is the Titan CT610 from The Bobst Group’s Flexible Materials Division, which incorporates some of the latest ideas in automation to increase the productivity of material processing. This fully automatic turret slitter rewriter enables high speed changeover times between sets and is a major step forward in automatic slitting and rewinding technology. With a 2,500 fpm run speed, the Titan CT610’s features include automatic slit reel unloading, laser automatic core and knife positioning, and more rapid set-up procedures.

“To a great extent, our machines have to adapt to the ever-changing specifications of the packaging materials being produced, to meet the market and consumer-driven demand for more sophisticated packaging,” explained Alan Johnson, business manager, Titan Slitter Rewinders. p[®]

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