

Pros and Cons of Inline Slitting

Producing quality, shippable rolls directly off your production line can increase productivity, lower manufacturing costs, decrease scrap and shorten production cycles. By eliminating an off-line slitting and rewinding operation, between \$0.05 and \$0.10 per pound in production costs may be saved.

Scrap costs can also be significantly decreased. By slitting and winding high quality rolls with proper density control on your process, production quality deviations such as caliper variations across the sheet are more easily identified and corrected. Each time a roll of material is handled, the chance of damage is increased. In addition, there is always additional scrap generated when processing your finished material through an off-line unwinding, slitting and rewinding process. Eliminating extra process steps reduces the total production cycle, resulting in high quality products that get to your customers faster.

Taking advantage of the Pros (Productivity and Profitability) of in-line slitting requires the right mix of products and equipment. The industry trend of wider and faster production lines makes this more challenging. Extensible films wound to smaller diameters such as stretch wrap and food wrap films have traditionally been slit in-line. However, as the widths and speeds of these lines have increased, the consistent achievement of scrapless roll changes as well as the finished roll removal and re-coring processes places unique demands on equipment. See “New Development in Stretch Film Winders” on our website www.bc-egan.com under Converting Systems - Company Information and Publications and Technical Articles. Other process and equipment challenges must be addressed for In-line slitting of non-extensible materials, especially when wound to finished diameters of greater than four times their core OD (outside diameter).

The requirements for a successful in-line slitting production line include:

1. **Consistent quality on the process:** For an in-line slitting operation, the process quality of the material being produced must be consistent. Cutting off-quality material from twelve slit rolls instead of one parent roll can significantly drive up production costs. Automated process control systems have substantially reduced off-quality process problems.
2. **Changeover time for slit-width changes for roll removal and shaft re-coring:** Automated slitter positioning systems and roll/re-coring systems make it possible to achieve fast and efficient set-width changes, roll changes and re-coring. However, downtime and/or scrap can be a Con when making product width changes or when slitter blade maintenance is required.
NOTE- Even with the automated systems mentioned above, long production runs of products and widths are required for the Pros of in-line slitting to be realized.
3. **Ability to consistently spread and wind shippable quality rolls:** The winder must have a properly designed slit web spreading system and the ability to use all three of the TNT (Tension/Nip/Torque) winding principles to consistently produce properly wound rolls. The ability to wind on differential shafts is needed for materials with cross machine thickness variations, which need to be wound to larger diameters.
4. **High quality, high-speed transfers and good starts on new cores with 100 percent consistency:** New transfer systems produce straight-line cuts and transfer the slit web directly to the new cores. Stationary knife transfer concepts provide roll change consistency approaching 100%, regardless of web width or operation speed. These provide the important clean web starts on the new cores.
5. **Scrap generation during the roll change operation:** Quality rolls call for the first and last wraps to be as good as those in-between. Controlled tension, nip and torque must be maintained throughout the entire winding cycle, including the roll change.
6. **Core Size Consideration:** As production lines increase in width and speed, the core shaft critical speed and deflection criteria determine the minimum core ID (inside diameter) that your material can be wound on. Just by taking a single center slit, the stiffness of the roll no longer contributes to the stiffness of the shaft. Off-line slitting and rewinding is still needed for customers with small core sizes.

If any of these requirements are not met, the Cons for in-line slitting result in lost production on your process line, increased production cost, increased scrap and even lost customers! Be sure to consider all of the above when evaluating if in-line slitting can make you a Pro in your markets.

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