



MBS butt splicer on a Gallus press. All art courtesy of Martin Automatic.

Investment/Enhancement

Automation Drives More Production from Existing Equipment

By Craig Thomson

With the world economy in a funk, and the domestic policy agenda full of new and challenging ideas, there is no lack of subject matter over which company owners and management can be anxious. To name just a few—the rising costs of materials, overseas competition, taxation and regulatory issues, obtaining credit, health insurance, environmental concerns.

Whether the economy begins to see recovery this year or next remains to be seen. But whatever conditions we face now or in the future, converters and printers need to focus on the primary questions that really do not change.

The first question is forward-looking: What else can I do to stay profitable or become more profitable? At the same time, a second question must be addressed: How can I do better what I'm already doing well?

These are not mutually exclusive approaches. Both have to be addressed, as does a third question: What tools do I need to

accomplish both of these? And in flexo printing, as with other web-fed processes, a sound answer to both questions may be automatic roll changing. Printers can use automatic roll changing to address the near-term issues (how to do better what I'm doing now) and long-term issues, such as how to get more production out of existing equipment. Roll change automation effectively extends the service life of older presses while creating opportunities for more and new business in the long term.

REDUCING COST

In a sound economy, when orders are strong and margins are easier to come by, wasteful processes and habits tend to be overlooked. If there is a silver lining to a soft economy, it is that a business slowdown causes printers to look more closely at ways to drive down costs and eliminate wasteful practices.

In web-fed presses, material waste is generated any time the press is stopped, whether for manual roll changes or other reasons. In a typical narrow web flexo press, for example, a manual roll change will waste at least a press-length of material. The amount may be substantially greater, depending on the type of press and the type of work being done. Automating those roll changes can result in significant savings. It is not uncommon for printers, having replaced their unwind stands with automatic splicers, to report immediate material waste reduction of at least 3 percent to 6 percent, sometimes more. That number is often significantly higher (but some printers will not report the actual cost savings because they are embarrassed to admit that they had been living with such high waste numbers for so long).

- Roll change automation effectively extends the service life of older presses while creating opportunities for new business in the long term.
- Printers, having replaced their unwind stands with automatic splicers, report immediate material waste reduction of at least 3 percent to 6 percent.
- Measured in throughput, improvements from automatic roll changing can be impressive, with reported increases in the 11 percent to 33 percent range not uncommon.

Savvy printers will also realize material savings through better use of their stock. This can be accomplished, for example, by using a splicer for staging rolls for quicker job changeover. And rather than scrapping leftover rolls, a splicer enables more efficient use of butt rolls on repeat or future jobs.

Another significant cost reduction that automatic splicing enables is in labor savings. We're not talking about reducing payroll by eliminating a press operator or roll tender (though that may be possible). There are many return-on-investment approaches to calculating how much labor cost is incurred during manual roll changes and how much will be saved with automation. In addition, consider the labor savings that automatic splicing can effect on subsequent processes.

For example, Franklin Nice of Gintzler Graphics, Buffalo, NY, an FTA member, observed that, in addition to reducing substrate costs, automatic splicing affords substantial savings in post-press editing. "Just one manual roll change on a print job means more than 100 feet of stock has to be edited out of the print run," he said. "That also means the loss of ink used to print that hundred feet of waste and extra post-press time required to edit that waste out of our final roll. It can all add up to serious dollars."

IMPROVING PROCESSES

Process improvement can be measured in a number of ways. In terms of net production speed, the addition of automatic roll changing typically results in increases of 10 percent or more. This is due to two primary factors. The obvious one is that the press no longer slows down, stops, and speeds up at every roll change. The other is that operators generally

are more comfortable running the press faster—marginally in some case, significantly in others—when they know that the roll changing does not require frequent monitoring or constant brake and tension adjustment.

Measured in throughput, the improvements from automatic roll changing can be impressive, with reported increases in the 11 percent to 33 percent range not uncommon. Leroy Baker, owner of Labels, Tags and Inserts, Burlington, NC, reported that, since adding a Martin Automatic butt splicer and automatic transfer rewind to his Mark Andy XP5000 servo press, "We're able to accomplish in a day what would otherwise take us a day and a half to do. It's like adding extra hours of production capacity to every shift."

In addition to pushing more work through the press faster, automatic splicing can improve process quality. Running at a consistent speed has a positive effect, for example, on curing quality, as speed reductions on UV presses can often result in changes in UV power output and curing intensity.

EXTENDING PRESS LIFE

The evolution of materials toward lighter film stocks has posed a challenge to printers. For some, whose presses may still be relatively young in terms of hours, it is painful recognition that these presses may have exceeded their marketable life. New press technology may be the only way forward. And in tight credit markets and uncertain economic futures, this means an investment that many simply don't feel comfortable making.

However, for printers whose jobs still run well on an existing press, an investment in automatic roll changing is both affordable and productive—an easy alternative to

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purchasing a new press for expanded capacity. But such an investment also breathes new life into an existing press, as Nice learned when he fitted a butt splicer to an older Gallus press. "Adding a splicer substantially improved productivity, and it has effectively extended the useful service life." Nice adds that, if or when that press is retired, he will simply pair the splicer with another press.

Also on older presses, there is a greater tendency to move out of register during deceleration from and acceleration to production speed. This results in additional material waste beyond the expected makeready waste. With automatic roll change, particularly with a splicer that incorporates excellent inertia compensated tension control, that additional waste is reduced by the simple fact that, once up to speed, the press will operate at a stable speed and tension throughout the full run. This problem is less prevalent with newer servo-driven presses, but this increase in quality may be enough to extend the life of an older press and enable the printer to stay profitable.

Retrofitting splicing equipment to older or marginal presses, then, may be a sound investment for both the short- and the long-term. When evaluating this option, printers should



LRD automatic transfer rewind on a Gallus press.

consider where their future growth may lie, as well as the materials, speeds, widths and other factors associated with that future. By addressing these questions on a retrofit splicer or rewinder, for example, and by building flexibility and versatility into the purchase, printers will position themselves and their equipment for future opportunities.

PRESENT AND FUTURE GROWTH

The ability to complete jobs more efficiently and quickly allows printers to take on business they might otherwise not be able, for reasons of capacity or profitability, to accept. Automating the roll changes enables printers to increase their turnover and their opportunity for more business.

Consider the example in Figure 1, based on a label press running 4000 rolls per year and a sales value of \$5 per 1000 labels. In economic language, the downtime on this press for manual roll changes carries an opportunity cost of 467 hours and \$252,000 in unrealized turnover. Automating the roll changes on this press, then, is like selling another \$250,000 worth of business.

Figure 1. Loss on turnover for typical label press (from manual roll changes)

Sales value per 1000 labels	\$5
Labels per linear foot	12
Average press speed	150 fpm
Manual roll change	7 minutes
Roll changes per year	4000
Labels produced per minute (12 labels per foot x 150 fpm)	1800
Turnover per minute (1800 labels x \$5 per 1000 labels)	\$9
Loss on turnover per roll change (\$9 per minute x 7 minutes per stop)	\$63
Loss on turnover per year (\$63 per stop x 4000 rolls per year)	\$252,000
Loss on production time per year (7 minutes per stop x 4000 rolls per year / 60 minutes)	467 hours

Jim Baker, facilities manager for Labels, Tags and Inserts, put it this way: "We wouldn't be able to take the business we have without the splicer and rewinder. While other converters are struggling, [these units] have enabled us to grow our business."

Alex Maree of Novakon, a narrow web label converter in Harsleben, Germany, believes that automatic splicing has prepared his company to weather the present conditions while positioning it for future growth. With the global financial crisis forecast to continue into 2010 and maybe beyond, Maree sees a period of consolidation ahead. "We are growing rapidly through our contracts, which offer stability in terms of volume and profit, and our part of the market has been less badly hit than the high end 'added value' sector—but we have to be realistic in our expectations. That is why improving the efficiency of our existing operation right now is so important and why another splicer is high on our priority list."

Suggesting that automatic splicing and rewinding will relieve you of the responsibility of answering all the other tough questions would be overstating the case. But examining your process and calculating a sound ROI will tell you what you can expect from automating a press. And you may find that the combination of cutting waste now, while extending the effective press life, is a solid path toward future success. Certainly any solution, that brings short-term and long-term benefits while reducing waste at many different levels, is worthy of careful consideration. ■

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