



Mike Smoot, Xymid LLC.

Bridge and Sleeve Options

Make the Right Choices for Your Business

Sleeves have been used in flexographic printing for more than 30 years. The early versions, typically less than one-eighth of one inch thick, were made of thermoset fiberglass, thermoplastic polyester, or nickel. These early sleeves were used as a base for vulcanized rubber and, eventually, as a way to mount plates.

Today, the majority of new presses sold in the mid- to wide-web markets require the use of sleeves. In addition, the introduction of the gearless press has revolutionized the industry and taken productivity and efficiency to new levels. Most new presses have a fixed-base mandrel that can be cantilevered for rapid mounting or demounting of sleeves and bridge mandrels. This has greatly reduced changeover times and enabled the printer to respond more effectively to an increasingly diverse and dynamic market.

The question often faced by many printers is whether to use bridges or thick sleeves in their operations. **FLEXO** discussed the matter with Mike Smoot, print sleeves business manager for Xymid LLC and a 15-year veteran of the industry, for his perspectives on the issue of bridges versus sleeves.

FLEXO: Let's start with the basics. Can you explain the difference between sleeves and bridge mandrels?

Smoot: Sleeves are generally associated with plates. Plates are typically mounted to sleeves using double-sided tape or other means of securing a plate to the sleeve. Sleeves can be thin or thick, depending on the repeat required and whether they're used in conjunction with a bridge mandrel.

Bridge mandrels are typically associated with sleeves and are basically a repeat builder; a means for achieving a larger print diameter and a way to support a sleeve during printing. The bridge basically carries the sleeve. Hence, it is often referred to as a bridge carrier. In many respects, a bridge mandrel serves the same role as a traditional cylinder used on the older style presses.

FLEXO: How does a printer decide whether to outfit a new press for bridges and sleeves or sleeves alone?

Smoot: It really boils down to the specific needs of the business. The first thing to consider is what repeats the printer needs to hit and how they are going to be reached. Once those questions are answered, other considerations would include the number of jobs at each repeat, the distance between repeats, whether or not the printer plans to keep some jobs mounted, the mix of short runs versus long runs, and finally, anticipated near-term changes to the business. Decisions around using bridges and thin sleeves versus thick sleeves

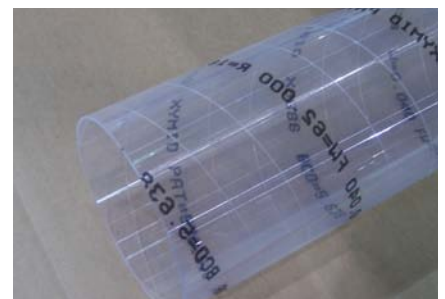
alone should be made in light of the answers to these questions.

FLEXO: What should be the primary goal when deciding between sleeves and bridge mandrels?

Smoot: Fundamentally, the goals come down to two things. First, printers should minimize their capital investment. While that may seem obvious, I've witnessed too many situations where a printer's approach was not optimal for the needs of the business. In one case, the printer purchased 50 sleeves for the same repeat and they were all about 1 in. thick. These were large sleeves costing about \$500 each—so the total bill was \$25,000. Had this printer purchased one set of bridge mandrels and 50 sleeves .040 in. thick, he would have saved more than \$10,000, which is more than 40 percent.

This is only one specific example and the actual savings will depend on the sleeve supplier and his specific prices. However, the basic principles are the same for all sleeve suppliers. That is, thin sleeves cost less than thick sleeves and thick sleeves cost less than bridge mandrels. You simply need to be aware of the differences and run the numbers to be sure you're not spending more than necessary.

The second goal should be to optimize your ability to respond quickly to customer needs. This translates into how fast a job can be turned around. A printer's response time will be affected by the time it takes to order and receive product. It typically takes less time to make thin sleeves than it does thick sleeves.



Thin sleeves cost a fraction of that of thicker sleeves. All photos courtesy Xymid LLC.

FLEXO: How about planning for the future. What advice can you give to printers thinking of purchasing sleeves or bridges down the road? What should be considered?

Smoot: One of the hardest things for a printer to do is to predict future business. I'm referring specifically to what repeats will be needed and how many jobs will there be at those repeats. The answer to these questions can have a major impact on the decisions printers make today regarding how to fill their current repeat needs.

For example, let's say a printer decides to go with two sets of 1-in. thick sleeves—a total of 20 sleeves for a 10-color press—to satisfy current needs for a 19-in. repeat. Six months later, there's an opportunity for some new business at that same 19-in. repeat. However, there's a problem. The new business has four different designs at that repeat, they will be relatively short runs, the customer will re-order every month, and it doesn't make sense to inventory product. Ideally, the printer would like to mount each job separately and run a single campaign to complete them all at the same time, month after month. However, the cost of four more sets of thick sleeves is too high, making the quote non-competitive.

Conversely, had the printer purchased bridge mandrels with thin sleeves for that initial set of 20 sleeves, he would be in position to purchase four more sets of thin, lower cost sleeves, thus reducing costs and allowing for a lower price quote to the customer.

FLE XO: Are there other cases where bridges can reduce future expenditures?

Smoot: Sure. Using the previous example, let's say the new business the printer is trying to win is at a 19.5-in. repeat, a few gear-teeth higher than the current repeat. Further, let's say only one set of sleeves is needed for this new business. If thick sleeves had been purchased initially, the printer will be buying more thick sleeves—they will simply be thicker by .080 in., making them 1.080 in. thick. However, had bridges been initially purchased, the printer would be buying sleeves that are only .120 in. thick. Not only will they cost less than the thick sleeves, the printer will likely get them faster.

FLE XO: In general, what are some indicators that bridges and thin sleeves are the better way to go?

Smoot: Bridges and thin sleeves make sense when you expect to have several jobs at the same repeat, plan to keep jobs mounted, have a lot of short runs, or have several repeats close to one another—within several gear teeth.

FLE XO: When would you advise that thick sleeves be used?

Smoot: Thick sleeves alone make sense when you tend to have few jobs at the same repeat, don't keep jobs mounted, have a lot of longer runs, or your repeats tend to be far apart.

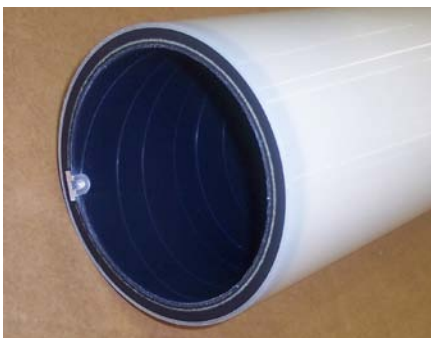
FLE XO: Is it always that simple?

Smoot: Unfortunately, it's not always that simple because of competing needs across the full breadth of a printer's business. That's why printers often have a mix of bridges and thin sleeves along with thick sleeves across their repeat range.

It comes down to printers identifying their specific needs and managing the workflow to fit their particular businesses as much as possible. The biggest thing is for printers to be aware of their options in order to make the best decisions in terms of both cost and productivity.

FLE XO: Is there a rule of thumb that suggests one approach over the other?

Smoot: I find that when you need at least two sets of sleeves for a given repeat or if you need one set of sleeves for at least two repeats that are close together, meaning a few gear-teeth apart, then it's worth considering bridges and thin sleeves rather than thick sleeves alone.



Bridges can be very cost-effective when a printer produces a lot of small runs.

I would again add the caveat that it will depend on the sleeve supplier and his prices. Also, this statement doesn't apply to carbon-based bridge mandrels. Either way, one needs only compare the cost of bridges and sleeves to sleeves alone to determine the best approach.

FLE XO: Are there cases where a printer has no choice but to go with bridge mandrels?

Smoot: Yes. When press widths are wide, press speeds are fast, and the print graphics are such that a harmonic condition is reached that creates a bounce when printing, a printer will need to increase the system stiffness at the point of impression. Traditional sleeves do not have sufficient stiffness to address this issue. However, the problem can be addressed by increasing the diameter of the fixed-base mandrel or by using a carbon-based composite bridge mandrel.

It should be noted that all carbon composite bridge mandrels do not perform equally. Performance depends on the type of carbon fiber used—specifically, the modulus or stiffness of the fiber, the orientation of the fibers, and the thickness of the composite shell. Carbon bridge mandrels are typically much more costly than non-carbon bridge mandrels. However, they can significantly increase press speeds, thus providing an attractive return on investment. ■



Most printers should have a mix of thick and thin sleeves across a repeat range.



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