Flexible Perforating for Fast-Paced Finishing

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INTRODUCTION

More than any other value-adding finishing step, perforating makes print interactive.

When perforated sections are pulled from direct mail pieces and other kinds of printed matter, things start to happen. People pay their bills. They order products and services. They collect coupons for redemption. They request information. Perforating puts the ability to do all of these things literally into their hands.

Perforating has been a standard practice in postpress for decades, but in recent years, the characteristics of many of the jobs that require perforating have changed. They're produced in smaller quantities and, often, in multiple versions within the same run. Limited to perfing every piece in one way and one way only, conventional perforating systems were never meant to deal with the variable complexity of digital print production workflows.

Static perforating on standard diecutting equipment still has an important role to play in post-print processing. Today, however, perforating also needs the flexibility to keep up with digital printing demands. This white paper reviews two approaches to flexible perforating that provide printers and converters a full set of options for getting the job done in the most efficient way.

"TIMED" AND "DYNAMIC"

Flexible perforating produces results similar to perfing with standard diecutting equipment, but with one key difference: flexible perforating can introduce variable patterns of perfing into the workflow as the job requires. MBO offers two methods: "timed" perforating, which can be programmed to cut perfing lines in single or multiple locations on the sheet; and dynamic perforating, which resembles digital printing in being able to vary the pattern of the perfing from sheet to sheet.

Sometimes it's very helpful to perforate flexibly. At other times, static techniques work perfectly well. Flexible perforating isn't for the mass production of credit cards and coupons or for products with contoured or non-perpendicular shapes—these are best suited to perfing with a diecutter. Because diecutting systems use fixed dies and tooling, they work best in static production scenarios where perfing patterns don't change.

Flexible perforating systems are generally only capable of making patterns using straight, perpendicular lines, so they aren't for jobs needing contoured shapes. Standard dies and tools are available in almost any shape that can be imagined. The processes are complementary: flexible perforating for straight-line cuts with variable patterns and/or placement; standard perfing dies for contoured shapes and custom work.

Even though flexible perforating methods are limited to simple, straight-lined patterns, they can still respond to changes in job requirements. This is an important advantage in commercial print environments where the printing of each job may be different but where the finishing tends to follow the same patterns because of the fixed nature of diecutting and other finishing processes.

This points to how flexible perforating satisfies an unfilled need in the printing industry. In traditional printing, reproduction is static, and so is the finishing—including the perforation, which can't change while the job is in progress. In the digital world, on the other hand, content varies, and static perforation isn't sufficient. Flexible perforating lets the perfing take cues from the printing so that none of the advantages of digital production are lost.

AN OPERATIONAL NECESSITY

Printers have strong incentives to consider installing a flexible perforating solution from MBO. This is because in digital production environments, flexibility isn't just a competitive edge—it's an operational necessity.

Another benefit for customers who have perfing applications to produce but no diecutting equipment to produce them on is that they can often accomplish the same thing with flexible perforating. This doesn't imply, however, that flexible perforating is a substitute or a replacement for perfing with conventional diecutting. In a well-run print shop, the processes can play to each other's strengths.

MBO provides systems for all methods of perforating: rotary diecutting modules, timed perforator modules, and dynamic perforating modules for use in web production.

The diecutting modules generally operate as stand-alone devices, although MBO also offers specialty systems that place the diecutter in a web production line.

MBO customers frequently use the timed perforating modules as components of modular web finishing systems that can be quickly rearranged to accommodate changes in finishing specifications.

The new dynamic perforating module by MBO, described in more detail below, can be run on web presses and web-based finishing lines with minimal setup and makeready.

Flexible perforating and perforating with standard dies differ in terms of quality and paper handling capability. A standard die makes the cleanest and most precise cut, while flexible perforating can change the configuration and/or the placement of the perf as the job proceeds. Dynamic perforating, which presently is for web finishing only, isn't applicable to cut-sheet production. Timed perforating on the cutting unit and diecutting with the stand-alone module are best for sheet work.

ONE GOOD PERF DESERVES ANOTHER

Timed perforating is a simple, cost-efficient way to cut single or multiple perfing lines into

the sheet at the desired locations. After the unit's registration table detects the edge of the incoming sheet, the perforating head is timed to fall at the correct interval or intervals. This introduces parallel perfing lines running in the direction of the paper flow.

This method of flexible perforating cuts in one direction only, and, unlike dynamic perforating, is limited to cutting the same way from sheet to sheet within the run. But, what happens if the sheet also needs perfing lines that run perpendicular to the initial cuts—to form, for example, multiple-up 2" x 3" cards?

Then the solution is to feed the sheet into a second cutting unit positioned at a right angle to the first. The orientation of the sheet changes, the new perfs are cross-cut over the first perfs, and the cards are done.

Timed perforating offers shops a convenient middle ground between diecutting and dynamic perforating. It's an acceptable and highly economical substitute for diecutting when the cutting patterns are simple and the quantities are small. It's also a cost-efficient alternative to dynamic perforating in jobs where the advanced capabilities of that process aren't needed.

In fast-paced, change-driven digital production environments, however, dynamic perforating is the method of choice. The heart of a dynamic perforating system is an assembly of straight blades positioned parallel to and across the web. The blades make horizontal and vertical perforations for tear-off sections anywhere on the page that the design of the item calls for, and on any page of a multi-page item where the tear-off section is to appear.

The blades can produce different types of perforations: for example, a micro-perforated cut-and-tie pattern for remittance slips. Operating inline with the press, the dynamic perforating module enables a continuous sequence of unwind-print-perforate-rewind. With dynamic perforating as a part of a finishing line, the workflow can be unwind-perforate-sheet-fold-glue.

TOUCHES, TIME, AND TURNAROUNDS

Consolidating the process steps in this way minimizes touches and saves time—a precious commodity for shops that often get only hours to complete jobs they once could take days to print and finish. Dynamic perforating also lets finishing departments share the defining characteristic of digital print production: variability.

Think of an 8.5" x 14" letter with a tear-off remittance slip. Recipient A's letter consists of four pages, but recipient B's page count is different. Without a dynamic system to place the perfed slip on the correct page, the letters would have to be finished separately. Dynamic perforating finishes both of them as parts of the same run.

Coupon-bearing envelopes remain a staple of direct mail marketing, but many mailings now consist of an assortment of coupon offers so that some households receive more or fewer coupons than others. Reading bar codes, a dynamic perforating system sets up lateral and longitudinal perfing patterns to create the correct selection of coupons for each addressee.

Similar applications include convenience checks, transpromo mailers, and paper "credit cards" sent as samples of the real thing. Dynamic perforating also can be added to folding lines to

improve the quality of that process. For example, in self-contained check mailers that tear off on three sides, perforating prior to the fold makes the strips easier to tear and remove.

Producers of inserts for direct mail packages will find the widest range of uses for dynamic perforating, but it also can be helpful in other environments as an adjunct to folding on lighter-weight stocks. The module can pre-perf a sheet for easier folding downstream—more efficient than scoring on an offline diecutter. Perfing for both single-sheet and signature folding can be done in this way.

Dynamic perforating works well with standard offset stocks and book papers up to 10-pt or 12-pt. With thicker stocks, the preferable approach is diecutting, which can also handle scoring and embossing.

MEET MBO'S DYNAMIC PERFORATOR

MBO has combined all the advantages of dynamic perforating in a new device designed expressly for the purpose. MBO's Dynamic Perforating solution is a module for digital web finishing. It is installed on the web side of the finishing line, upstream of the sheeter, so that the variable perforating takes place before any other finishing step is applied. It can variably perforate single- and multiple-page statements, certificates, coupons, vouchers, and other types of promotional media.

MBO's dynamic perforation solution is capable of parallel and perpendicular perforation at variable locations.

With a web width of 22" and an operating speed of up to 500 feet per minute, MBO's Dynamic Perforator can apply scalable cross and linear perforations to any digital web application. Because the machine is easily expandable with additional perfing cassettes, its capacity can grow to meet future requirements.

The Dynamic Perforator has numerous features for precise, dependable operation. It accommodates up to six full width, hardened anvil cylinders (the surfaces between which and the perfing blades the web passes). Each of its lanes supports either cross or linear perforation cassettes.

Cross perfing cassettes are available as 11" or 20" wide mandrel and blade assemblies; cross perf spacing can be from .5 to 20". The linear perfing cassettes can support two linear perfing heads. Perfing and anvil cylinders are servo motor driven for dynamic accuracy at all times. Perfing blades and discs are easily changed and do not require specialized tooling.

Machine controls are designed for high-efficiency processing and output. All perforations are automatically initiated and registered by reading either a bar code or an OMR (optical mark recognition) image. The color touchscreen of the operator station makes it easy to store and recall perfing patterns for repeat applications.

The small footprint of this free-standing, self-contained unit lets it function either as a component of an existing finishing system or as an add-on to a press. Entirely designed and built by MBO, the Dynamic Perforator module will be available for commercial shipment by the first quarter of 2018. Lettershops and other plants with a concentration in direct mail should take a serious look at what MBO's Dynamic Perforator can add to the efficiency of their digital print-and-finish workflows.

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SUMMARY

Perforating is one of the simplest yet most value-enhancing finishing techniques that can be applied to a sheet of paper. It's a time-honored technique that now has the flexibility to cope with the challenges that digital print production are setting before it. As a leading developer of finishing technologies, MBO offers solutions for every perforating requirement. For further information, please contact Lance Martin, Vice President, National Accounts, MBO America: 609-267-2900; lance.martin@mboamerica.com

ABOUT MBO AMERICA

MBO America was established in 1984 in order to bring MBO (Maschinenbau Binder Oppenweiler of Germany) to the growing US market. Through the acquisition of specialty finishing provider Herzog + Heymann in 2000, the MBO Group became a comprehensive single-source provider of postpress finishing solutions.

Strategically located in Marlton, NJ, just outside of Philadelphia, MBO America fulfills specialized needs upon request for cut sheet and web digital finishing applications, commercial finishing, pharmaceutical folding, packaging, and die cutting throughout the Americas. MBO and MBO America are internationally renowned for superior customer service and technical support, as well as for top-notch business consultation programs.

ABOUT THE AUTHOR

Patrick Henry is a Senior Editor in the Printing and Packaging, Publishing division of NAPCO Media, the publisher of *Printing Impressions*, *packagePRINTING*, and *In-Plant Graphics*. Henry has covered the graphic communications industry for more than 30 years and is the holder of numerous awards for editorial excellence and industry service.