Finish Before You Start

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Abstract

The value of a printed piece is greatly influenced by how it is finished after it is printed. Finishing and binding can add complexity and increased production times that don't always fit well into a digital workflow.

New paper substrates from companies like Mohawk Fine Papers, Bravo, FormStore Incorporated and Convertible Solutions simplify the finishing by pre-converting the paper before it is delivered to the printer.

This talk will explain cohesives, perforations, scores and other pre-conversion techniques and how each impacts the final product. Examples of pre-converted substrates will be shown along with explanations of how they can be used to make everything from postcards to lay-flat books.

Finish Before You Start

Digital print providers can simplify their finishing operations by using substrates that have been pre-converted before printing.

Pre-converted stocks are available for a variety of applications including photo books and direct mail.

Offset printers and photographic labs have experienced significant shifts in the demand for their services over the last decade. There has been a general erosion in the perceived value of a basic printed image and a greater emphasis on finishing operations. Photographic labs have morphed into photo book printers and offset printers are becoming marketing service providers.

These transitions have been highly stressful for many companies and have led to significant consolidation within both fields. At the same time, there have been significant growth opportunities for companies that recognized the trends early and adjusted their production methods accordingly.

Some recent data from InfoTrends highlight the photo book opportunity. In 2010, 32.2% of U.S. households have purchased photo merchandise, the category which includes books. That represents a 28% increase over the year before. During the same period, the percentage of professional photographers offering photo merchandise grew 45%.

After a couple of very difficult years, the direct marketing field is looking up also. The Direct Marketing Association has reported a growth rate of 5.6% in 2011 to $163 million. However, purely digital applications such as email and search marketing are the fastest growing segment. The direct mail segment grew 4.6% to just over $50 billion.

Much of the growth in direct mail is in the digital variable data printing segment where personalized URLs, personalized QR codes and personalized landing pages are used in cross platform campaigns. This allows the marketer to maximize the strengths of each medium.

The photo book opportunities and personalized direct mail opportunities share the necessity for digital printing and the need for complex binding and finishing. Historically, in the pre-digital age, finishing was done either inline or offline after the printing was completed. The time and material waste involved in configuring an inline finishing operation on a large web press or setting up a multi-station book binding flow were offset by the size of the production run.

With digital printing, it's a different situation. Most jobs are short run, sometimes as small as one copy. Any time spent configuring a finishing operation pushes the cost of the job into an unacceptable range. Any setup waste on a variable data print job results in prospects that do not receive their personalized item.

Pre-converted substrates offer a simple solution to this dilemma. These stocks have adhesives, scores and perforations already in the correct locations on the paper. After the stock is printed, finishing is usually a simple matter of folding, pressing and shipping. These simple processes strongly influenced the selection of Fold'n Go as the trademark name for Convertible Solution's brand of pre-converted substrates.

Most pre-conversion steps fall into one of two categories: adhesives or mechanical conversions. Adhesives include cohesives, pressure sensitive adhesives with liners, and remoist glues. Mechanical conversions include scores, perforations and die cuts.

The most important adhesives used in most pre-converted stocks are pressure sensitive cohesives. Pressure sensitive cohesives are chemically formulated to bond with pressure only to another surface coated with the same cohesive. The cohesives used in pre-converted printing stocks are firm and limited in tackiness so they can pass through the printing equipment and folding equipment easily, but form a powerful seal when they contact another cohesive surface.

Three common applications for cohesives are lay-flat book binding, self mailing envelopes and double thick postcards. For lay-flat books, the back of the paper substrate is coated with a cohesive pattern that concentrates the cohesive forces in the spine area of the book. Each sheet of the stock is printed as a full two page spread which stretches seamlessly across the center of the book. After the pages are printed, they are folded with the image to the inside and stacked into a book block. The book block is then placed under pressure for a few moments to seal into a completed lay-flat book block.

For a self mailing envelope, the cohesives are positioned to seal the edges of the envelope. The envelope runs through the press flat and is subsequently folded and trimmed. The folding brings the cohesives into contact with each other to form the envelope. The clamp on the trimmer provides the pressure required to seal the edges of the envelope.

The simplest cohesive application is a double thick postcard mailer. Postcards are one of the simplest forms of direct marketing and thicker cards are more likely to be noticed and drive a higher

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response rate than thinner cards. However, many digital presses are limited to a 12 or 16 point stock. If the back of a 12 point stock is coated with cohesives, the front and back of a postcard design can both be printed on the front of the press sheet. When the sheet is folded, the front and backs of the card come into alignment to form an impressive 24 point postcard. The pressure of the clamp on the trimmer seals front and back of the cards together.

The next type of adhesives used in pre-converted substrates are pressure sensitive adhesives with a liner. These adhesives are formulated to bond to any appropriate surface and the liner is required to allow the paper to pass through the printer and folder. After printing, the liner is removed and the sheet is positioned and sealed with pressure. Pressure sensitive sheets with liners are often used to adhere hard case covers to photo books. For example, Convertible Solution's photo book end sheets are coated on one half of the back with a cohesive to bond with the cohesive on a lay-flat photo book. The other half of the sheet has a pressure sensitive adhesive with a liner to bond to the case of the book.

A third type of adhesive often used on envelopes is a remoist glue. A remoist glue is often used on the flap of a returnable envelope so the recipient can seal the envelope with moisture. Care should be taken to select remoist glues that will not be impacted by the heat from the fusing step on the digital press.

Beyond adhesives and cohesives, pre-conversion techniques also include mechanical steps including scoring, perforating and die cutting. A score is created by compressing a sheet of paper along the line where a fold will need to occur. The compression causes an internal delamination effectively creating a paper hinge. During the final finishing, when the sheet is folded at the score, the outward force that would normally split or crack the sheet is directed inwards toward the weak, delaminated line. As the fold is completed, the sheet delaminates further internally creating a rounded bead on the inside of the fold while the outside of the fold remains smooth and unbroken.

Scoring as a pre-conversion step works best on areas that will not have ink coverage when printed. Depending upon the type of ink or toner used in the press, the score may interfere with the printing quality. The double thick postcard mailer that we considered earlier is a good application for a pre-score because the fold area is trimmed away before mailing. On the other hand, in the lay-flat book application, the scoring should be done after printing because the fold is located right in the middle of the imaging area.

Generally, scoring and folding done parallel to the grain of the paper presents less resistance, will lay flatter and creates smoother lines. In book binding applications, scoring and folding parallel to the grain also prevents and swelling of the paper from exerting stress on the binding.

When an area of a mailing piece needs to tear away easily, a perforation is a good choice. A perforation is made with a series of teeth that punch completely through the paper in a line at the point where the paper is intended to be torn. A pre-converted perforation needs to be carefully balanced so that it holds together firmly in the digital press while coming apart easily for the final recipient.

In addition to tear-off envelopes, perforations are often used for tear-out coupons, tear-off redemption cards and tear-away security seals on transactional documents. Recently, we have seen postcard mailing campaigns with a perforated portal holding a personalized quick response code.

The final mechanical pre-conversion that this paper will address is die-cutting which is used to create a continuous cut or opening in a mailer. A common die-cut application is a pair of opposing slits to allow a business card to be attached to a presentation folder.

Generally, die-cuts must be approached with great caution in pre-converted applications to avoid causing transport problems in the digital press. Most applications where die-cutting would be used in a typical post press finishing operation would be handled with a perforation in a pre-converted approach.

A return mailer sample shows how several of these processes work together to create a functional mail piece. The cohesive strips along the sides at the bottom of the piece will form the return envelope. A cohesive strip along the top will match up with another about two thirds of the way down the other side to seal the mailer so no tabs are required for mailing. Perforations are used to allow easy removal of the envelope and return form and remoist glue allows the recipient to seal the return envelope.

The return mailer runs through the digital press flat to allow personalized content to be printed on each side. After printing, the piece is folded and trimmed with the pressure from the trimmng clamp sealing the cohesives.

The direct mail and publishing industries will continue to evolve with even shorter print runs and higher levels of personalization. Pre-converted substrates can help digital printers respond to these trends and serve their customers better.

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Biography

David Williams has been driving innovation in imaging for more than three decades leading projects at Bremson Data Systems, Lucht Engineering, Sienna Imaging and Gretag. He is currently the Director of Business Development at Convertible Solutions and Inter-State Studio & Publishing. You can follow his musings on creativity, the creative process and stereoscopic photography at http://CreativityParadox.blogspot.com

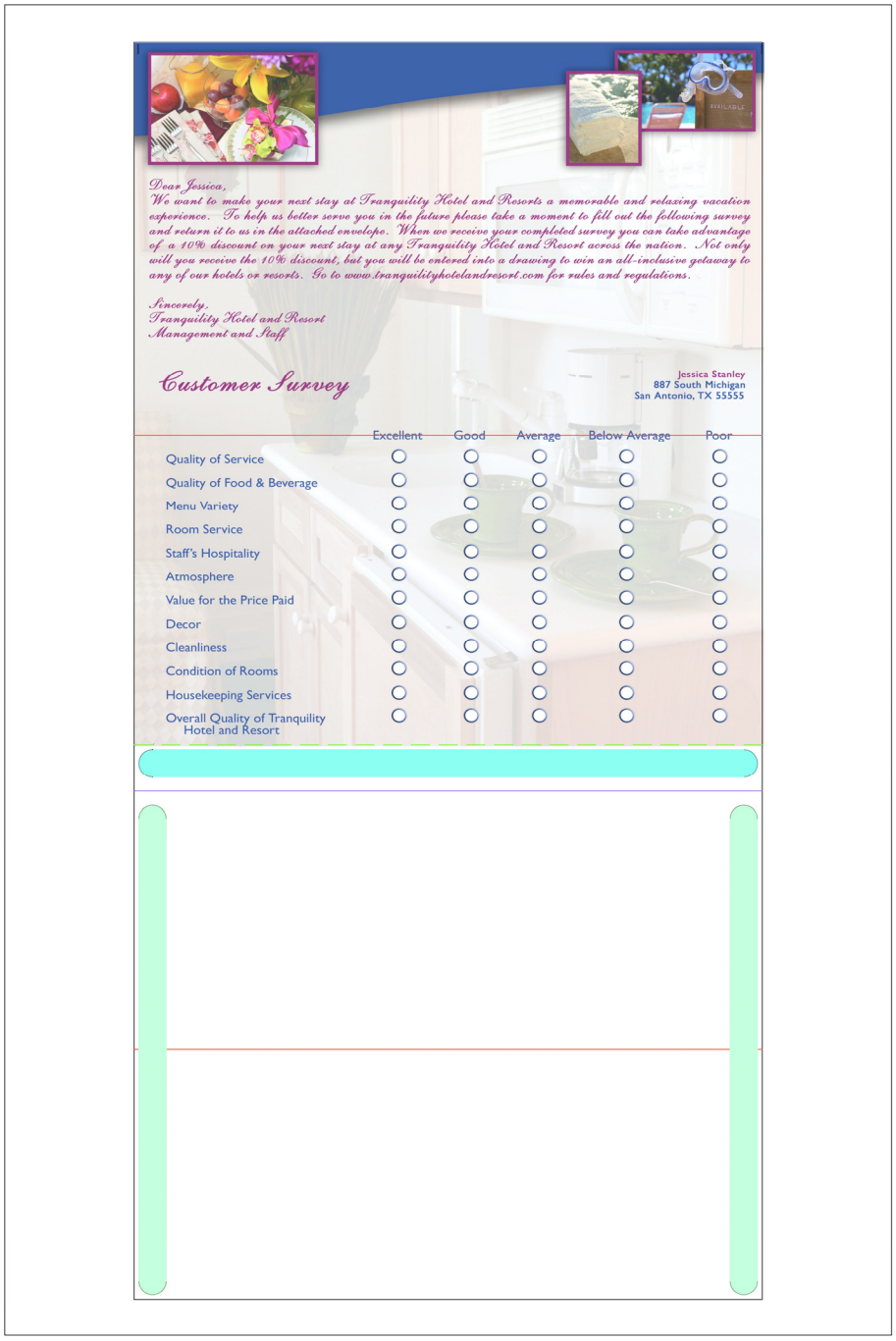

Figure 1: This return mailer sample uses cohesive areas, remoist glue, and perforations to form a detachable envelope and survey form.

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