

Printing and cutting

Next-Generation Digital Cutters

Expand your capabilities with new print-and-cut digital technology

BY BILL WHITLEY

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It never fails. A customer—often one of your most loyal and profitable customers, one who you can't turn away—brings you an order that he absolutely must have . . . but it only amounts to a few shirts and caps. Oh, and he'd like the same photographic design on a single bumper sticker . . . in full color . . . by tomorrow. A painful scenario, no doubt. But turning him down presents even more painful consequences.

Enter the printer/cutter, an ideal solution for short runs, substrate flexibility, and limitation-free artwork. While this technology has been used in the sign industry for years, it's still relatively new to the decorated-apparel world, where screen printers and embroiderers are discovering the flexibility and profit potential of this relatively low-cost decorating option.

Unlike traditional CAD cutters with which you can produce only designs with a few spot colors because you're cutting and stacking pieces, a digital printer/cutter offers a limitless color palette. That's because you can print an image on one layer of film—just as you would with a stand-alone digital printer—then cut it. For example, rather than cutting out two or three pieces of film for a multicolor crest, and assembling it on the garment, you could print a



Gilbert's Pro Hardware—a local chain that orders *big* once a year for its fundraising shirts—hands you a rush job for only six shirts . . . and a bumper sticker with its logo. Ugh! But you don't *really* want to turn them down and risk that other business, do you? Read on!

full-color crest and then cut out the single piece. And because it's a single piece, you don't have to spend time and energy physically lining up individual color elements or doing multiple heat applications.

How much additional flexibility does this give you? It's the difference between a stack of construction paper and full-color photographs from a state-of-the-art digital camera. Further, with a printer/cutter there is no limit to the detail of the artwork, as printers are capable of printing up to 1440-dpi.

How it works

Performing a print/cut job is similar to traditional digital cutting; the main difference is in the masking. Traditionally, a non-print-and-cut design is done in a mirror image. After cutting the film, which is on a plastic carrier sheet, you weed away the unwanted matrix. Then you flip it over, heat apply it, and peel away the carrier sheet.

With most printer/cutter materials, you don't print a mirror image. Instead, the printed side is up, and the hot-melt adhesive side faces the paper carrier. Once the design is printed and cut, the matrix is again weeded away. Because the material is so thin—which contributes to the soft hand—it would be difficult to handle. So you use a clear, sticky transfer mask that is specially designed for this purpose.

The transfer mask is placed over the image. Using a squeegee, all air bubbles are removed to get a good seal between mask and image. When the mask is pulled up, it takes the images with it. The image is then positioned on the garment and heat sealed with the mask still in place. Once heat sealed, the transfer mask is removed and you're done.

Artwork note: As with any type of decoration, you need to make sure you use high-quality artwork. Even the best printer/



printer-cutter and new-generation transfer materials, it couldn't be much easier to gang as many—or as few—images as your short-run/quick-turn job requires.

Once the design is printed and cut, the matrix—unwanted transfer material that surrounds the actual design—is weeded away prior to application.



With soft-hand materials being thin and difficult to handle, a clear, sticky transfer mask is applied with a squeegee, to be removed after heat pressing.



Given variations you're already used to when switching from one type of heat transfer to another, there's really nothing different about applying print/cut materials.

The vast array of available materials—from print/cutable transfer materials to sign vinyls, and everything in between—allows embellishers to say “yes” much more often.



cutter can't make a fuzzy image look great. As far as matching output to what you see on screen, the equipment's supplier should provide a color profile that helps ensure consistent colors. The color profile dictates the speed at which the unit prints and allows you to get consistent results when you switch media; all you have to do is make sure you've selected the correct profile setting for your particular substrate.

Equipment details

At this writing, there is only one manufacturer that offers a unit that both prints and cuts; other suppliers offer separate printer and cutter units that work in tandem. These printers offer eco-solvent inks, which are environmentally friendly and do not require ventilation or pollute the shop atmosphere in the way of certain true-solvent printers used in the sign industry. Eco-solvent is the more popular process used for decorated apparel.

A combined printer/cutter unit makes life simple by printing a job, then rolling the substrate back in automatically and cutting around the outlines. If you go with a separate printer and cutter, the printer outputs crop markers on all four corners of the job. After it prints, you remove it from the printer, load the substrate into the cutter using the crop marks for positioning, and the unit's traction feeders pull it in to be cut. Whether you are using a print-and-cut combo unit or separate units, you input data into the software that tells the unit where to cut.

If the majority of your work consists of extremely detailed art that will take considerable time to cut—and you are technically savvy—you may want to consider separate devices. This way, you'll be able to multi-task by printing on one unit while you're cutting with the other. If you decide to go this route, your best bet is to purchase the pair from a single supplier rather than mixing and matching from different companies. Imagine the headaches that would arise



The folks at Gilbert's Pro Hardware will be delighted . . . along with all the rest of your customers asking for the kinds of jobs you just can't tackle with traditional screen printing.

trying to get technical issues resolved when something doesn't work right; each supplier may point a finger at the other, leaving you without a resolution.

Here are some specs to consider when evaluating equipment:

- **Speed**—Print speed for printer/cutters varies by unit, but it ranges from about 30 square feet an hour to 75 square feet or more per hour, allowing for a high production rate.
- **Size**—While sign shops typically have larger machines, apparel decorators don't really need units any larger than about 30 inches, given that a T-shirt's traditional imprint area is only 12 to 14 inches. Today, 30-inch machines are the smallest eco-solvent printers available.
- **Take-up system**—Some units offer a material take-up system, which is very helpful when using your printer for sign or banner applications. The take-up system winds the printed job onto a core so nothing spills to the floor. Without a take-up reel, after about four feet of printing your work will be hitting the floor.

Staying supplied

Every supplier provides the necessary software RIP, which sends a job from the computer to the machine. While third-party suppliers offer RIPs, these can cost thousands of dollars, and are really not necessary unless you have multiple printers and multiple cutters.

You will need some type of design software with vector capability, such as CorelDraw or Adobe Illustrator. Keep in mind that, while you can print raster images, your cut file must be in vector format. One nice feature is that you can print raster and cut vector in the same file. For example, if you print a photographic image, you could draw a simple vector border around it.

As for ink, each supplier offers its own ink set. You can get ink from third-party manufacturers, but using it will void your equipment's warranty. It's probably not worth doing, given that ink costs only about 22 cents per square foot. For a four-inch X four-inch design, you're talking about three cents worth of ink. Even if a third-party ink supplier saved you two of those cents, would it be worth voiding a warranty on a \$10,000 printer?

You'll also need specialty heat-transfer print-and-cut materials for printing, which differ from traditional vinyl. Unlike single-color films, print and cut material is specially designed to capture ink so that it doesn't wash away. Printable media are available in choices such as white, clear, and metallic silver, allowing you to print any color you desire.

When choosing material, ask for samples from suppliers. Print and heat seal it to see how it feels. Also look at the color vibrancy, especially after a few washes. Look especially at which types of fabrics the material will adhere to. Some materials apply to cotton and polyester only, while others are universal, applying to everything from cotton, polyester and nylon to Spandex, silk and leather.

Best of all, with your digital printer and cutter you can also load your equipment with sign vinyl. This means the same unit that prints and cuts great-looking designs for T-shirts, caps and placket shirts can also crank out everything from decals to bumper stickers, providing extraordinary flexibility. And *that's* what printer/cutters are all about. PW

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