

FINAL CUT TO AUTOMATION

While digital die cutters complement flatbed printers, they can easily benefit any shop.

By DAVE KING



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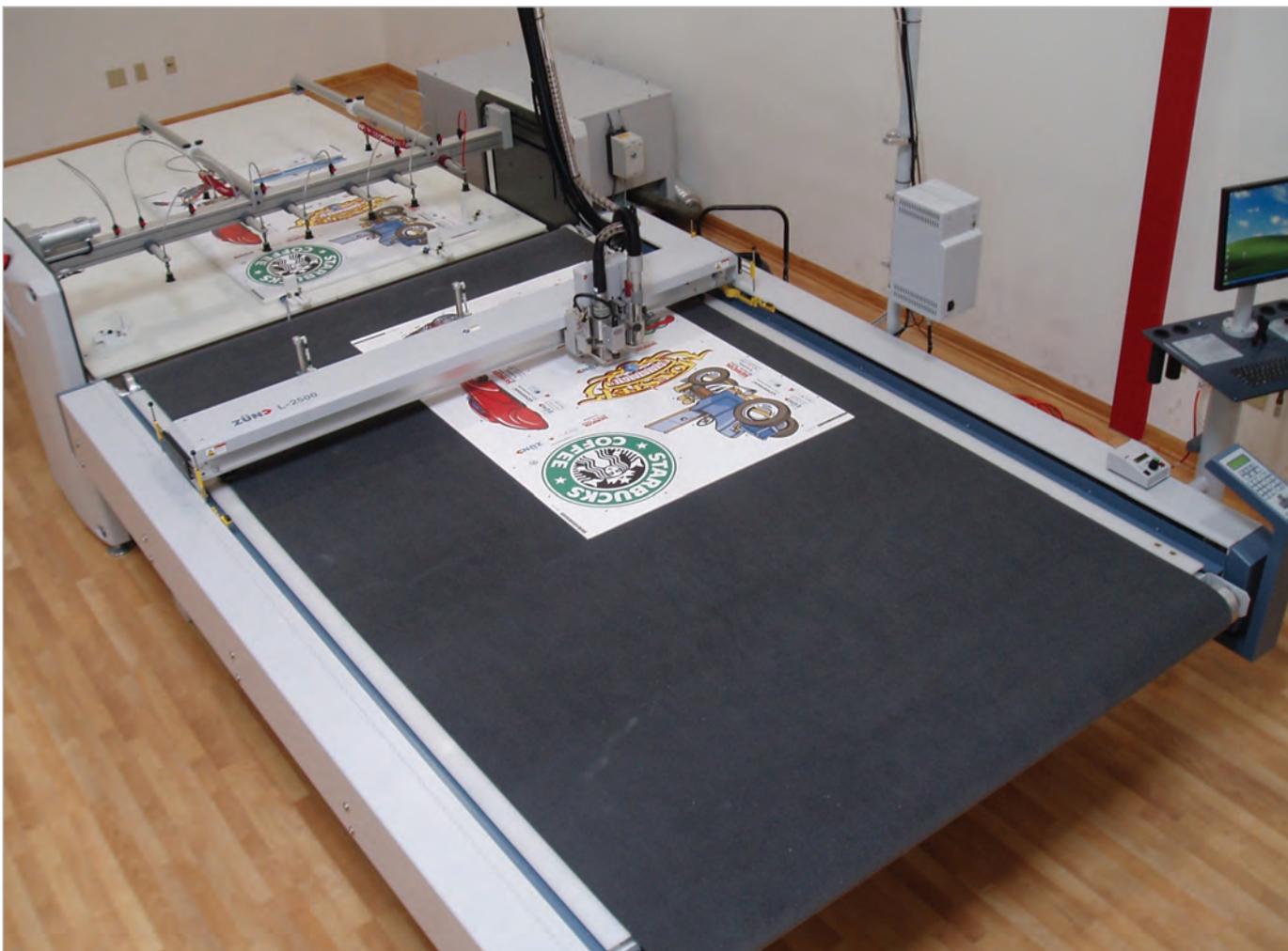
If you own or are planning to own a flatbed printer, there are a number of compelling reasons to also own a flatbed digital die cutter (DDC). There are two ways to make money in the large-format graphics industry: cut overhead costs, and sell more product. A good DDC can help you do both.

The digital die cutter is the ultimate workhorse. Oh, and to be clear, unlike a standard CNC table router, which offers an

X,Y and Z cutting axis, DDC systems only cut on the X and Y axes. Today there are three main manufactures of DDC systems: Zünd, Kongsberg and Gerber. The thing I really love about DDC systems is that they actually help increase the *value* of a graphic.

TAKE THE ADVANTAGE

As an example, take a typical 22" x 28" bank graphic that fits into a stand. As a



DDC systems with bed sizes that can accommodate a full 5' x 10' sheet are recommended. They can still easily handle smaller sheets efficiently. (Photo courtesy Zünd)

simple paper-board graphic, they're pretty boring and earn maybe \$15 per square foot. But with a little creativity on the front end you can sell your clients an interesting graphic — say with their logo cut out of the center, or with a car popping out of the top of the stand — that will sell for about \$25 per square foot.

This with little-to-no extra production cost. With the advanced features in many of today's RIPs, images as complicated as a baseball glove can be sent to the RIP, where die cut lines are automatically created around the glove, and the file sent to the cutter. It doesn't get much easier than that.

Now does this mean that to make money with a DDC system you *need* to own a flatbed printer? No! But you do need to

understand how digital die cutters work and what blade and tool options are available for practical applications.

KNOW YOUR DIE CUTTER

DDC systems are available in different sizes. In most cases, I recommend that large-format graphics shops purchase a DDC that will cut a full 5' x 10' sheet. A smaller DDC can still cut a 4' x 8' sheet, but to do anything larger would require cutting part of the sheet, then turning it to cut the rest.

Most cutters feature a vacuum table. This holds the media in place while it's being cut. The vacuum is powerful enough to hold just about anything in place. When cutting objects smaller than 6" x 6" out of a sheet,

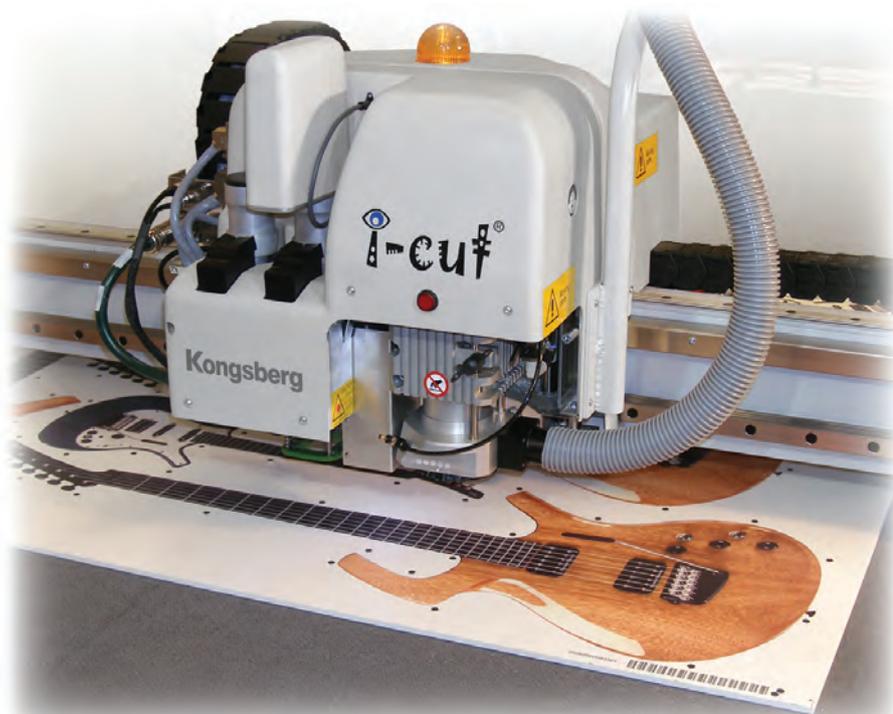
the product might move as they are being cut out. Special tape can be used to hold jobs like this in place, but be sure to charge a little more for the extra step. Some cutters offer a belt-feed option.

The cut-head that holds the blades is attached to a bar that's connected to each side of the table and runs along a track from front to back. The head moves left and right across the bar (like a printhead), and the bar moves along the tracks. The movement is similar to that of a vinyl cutter, but the head moves and the media stays in one place. Depending on the unit, the head can support either one or two cutting tools at a time. The cutting tool head also has an on-board camera that's used to read the cut-marks that surround the graphic to be cut out.

The cut-marks are like little bulls-eyes — black printed circles about .25" in diameter. In most cases, cut-marks are placed around the graphics by the RIP, but can also be placed using a vector program like Adobe Illustrator. The cutter's on-board camera (with its sophisticated software) reads the cut-marks and guides the cutting head around each graphic.

The operator places the graphics (print-side up) on the vacuum table with the corner of the substrate in the corner of the unit where the tool starts. The operator then loads the cut-file for the job and the DDC head scans the table for the cut-marks. The cut-marks tell the cutter where the graphics are on the table relative to the cutting head. Once the camera has seen all the cutting marks, the cutting blade goes to work. The software is so smart that even if the graphic is not square to the table the cutter can cut the graphics correctly. It only takes a few seconds for the cutter to find all the marks and begin to cut.

Following is a rundown of some of the



The small black dots around the graphics are cut marks arranged by the RIP for the printer. The cutter's on-board i-cut camera system reads the cut marks and tells the blade where to cut. (Photo courtesy Kongsberg and MGE)

best cutting tool choices for a DDC.

- **Kiss-cut blade** – The kiss-cut blade functions just like the tangential blade in a vinyl cutter. The kiss cut-blade is ideal for cutting adhesive-backed vinyl.

- **Drop blade** – The drop blade is used for cutting or scoring soft material like polystyrene (up to .060), Lexan (up to .030), banners 13 oz. and heavier, foam board and Coroplast (up to 6 mil), and many other materials that are soft enough to cut with a knife. Polystyrene is a perfect

application for scoring the boards, as you only need to bend the score a little and the graphics just pull away.

- **Oscillating blade** – This blade moves up and down very fast and is ideal for cutting foam-based boards like Gator and Sign Foam. This tool will allow you to cut material up to 2" thick.

- **Router** – This tool is used for just about all hard boards and some soft boards. It requires a good understanding of the boards being cut, and to distinguish

between cutting a flatbed-printed graphic or a hand-mounted graphic. The cutting bits are numerous for this tool and the chart is extensive. When cutting a board with a mounted print on it, use a *downward spiral bit* as it will not lift or fray the graphic. Router bits are expensive, so understand that each material can be cut at a speed only relative to the hardness and thickness of the material. The harder and thicker the material, the slower the cutter. For example, Plexiglas or Dibond may take longer to cut than PVC (Sintra). Be careful.

- **Creasing tool** – This tool is ideal for creasing boxes for folding. It works great in conjunction with the drop blade to cut and crease a printed graphic for later assembly.

Look for a cutter that incorporates the router and the drop blade in one head tool, as these are the most common tools used in shops.

WORKFLOW

Now let's talk a little about workflow. Enjoy these tips on making the DDC save the shop money. First, arrange the shop so that graphics can be printed in sets that fit onto a 4' x 8' sheet. A good RIP can easily do this with its "nesting" function. If your RIP can't do this, use a program like InDesign/Quark/Illustrator to make files.

If you don't have a flatbed printer, arrange to print graphics in sets of 4' x 8' panels and then mount the whole set of graphics to a single board. After the graphics are printed (or mounted) to the 4' x 8' sheet, take the whole sheet to the DDC and start cutting. For example, if a job calls for a bunch of 22" x 28" rigid graphics, gang six prints onto a 4' x 8' sheet, print it direct (or mount it), move it to the DDC, and in about 90 seconds you'll have six perfectly cutout graphics.

When mounting graphics to the board, the total time to produce 24 22" x 28" prints using this method is about 15 minutes (less time with a flatbed printer). To do this same



The kiss-cut blade tool allows a cutter to cut rolled substrates such as adhesive-backed vinyl. (Photo courtesy Zünd)



DDC systems allow for custom-cut graphics to be created quickly, efficiently and profitably. (Photo courtesy MGE and Kongsberg.)

job the way most shops do — one at a time using a saw — would take an hour or longer.

So now we consider the cost. *Ouch!* Okay, but first let's talk a little bit about return on investment (ROI).

Each employee good enough to laminate, mount and cut graphics, in most shops, earns about \$15 per hour or more. So this 40-hours-a-week person costs the company about \$35,000 per year (including FICA and other benefits required by law).

Put this together with the fact that the DDC can work three times faster than any person — that's a future growth savings of \$70,000 per year.

Keep in mind, someone does need to perform the mounting and run the cutter. The cutter is so easy to operate, just about anyone can be trained to run the unit. The cutter will now allow the shop to offer graphics with shapes: ovals, circles, monsters, cars, boats, and just about any shape imaginable. Increasing sales by 10 percent a year because of the ability to cut shapes, should add about \$30,000 to annual sales.

The profit on \$30,000 should be about \$20,000. Finally, this machine does not take vacation, does not call in sick, and does not have a bad day. Waste and re-dos should also be reduced by 10 percent, again saving about \$10,000 per year in material costs.

Additionally, getting work done faster means being able to offer more rush jobs. This can add another \$5,000 of profit to the bottom line by doing one more rush job a month.

Lets review the savings in the chart below:

Not hiring an extra person (to mount and cut)	\$35,000 per year
Profit due to increased custom-cut sales	\$20,000 per year
Savings on re-dos (10%)	\$10,000 per year
Profit from additional rush jobs	\$5,000 per year
Total Savings PER YEAR	\$70,000
Three-year savings	\$210,000



The AKI-2 Tool Manager system available on Zünd cutters allows for easy switching of cutter tools. (Photo courtesy Zünd)

The cost of a fully-loaded DDC (with a \$12,000 belt-feed system) and all the tools I talked about (and large enough to cut a 5'x10' sheet in one pass) is about \$150,000. Investment into a DDC will save \$20,000 per year. I think the numbers speak for themselves.

If you're going to purchase a flatbed printer for your shop, get a DDC. Even for shops mounting graphics to hard boards, a DDC unit is still a very good money maker. This could be the most exciting purchase for a large-format business, and customers and employees will just love to watch it work. DDCs are truly amazing!

Good luck. Be smart with your money, and I will see you on the show floor! ☺

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