



Traditional Die Cutting Versus Digital Die Cutting

Digital cutting methods are taking charge, and that relevance is more important than ever as the specialty graphic industry advances. New developments are constantly being made to improve production speeds, quality and customer satisfaction. With increasing demand comes the rapidly growing need for better and faster technology in all sectors of the trade. This includes die cutting, a constantly evolving finishing technique that relies heavily on its relevance in the field.

It's a Material World

In the printing industry, substrates and materials are a significant factor when determining what can and cannot be done, and what tool or method is the best for the job. Die cutting is no different. For instance, when cutting thicker acrylic with traditional methods, you likely will run into the problem of splitting and fracturing unless another element is applied. Rob Weidhaas, founder of My Press Needs, LLC, said, "Thicker acrylic, such as one-quarter-inch-plus, cannot be

effectively die cut without excess fracturing leading to poor edge quality, although die cutting .09-inch styrene has proven successful with a heated platen." In this instance, traditional die cutting can't be used without sacrificing the production quality and greatly delaying the finishing process. However, some developments with analog tools could lead to new solutions for this type of problem.

"Thicker, dense materials may be better converted on a digital system today because traditional methods may have an ejection challenge not present with digital cutting. My Press Needs (MPN) is exploring new methods to die cut various substrates, and has successfully die cut .090-inch styrene cold with terrific edge quality using a new process we call 'into die cutting' which may resolve ejection issues for such materials," said Weidhaas.

While this may lead some to believe that analog methods are limited depending on the substrate, machines are being further advanced to prove that these methods are still relevant in today's industry. "MPN is developing our 'Widemouth' technology

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Renee Simpson, Associate Editor, SGIA

for the Crest Clamshell, specifically our large-format models. This technology will allow the operator to transition from a normal .937-inch steel rule die to a two- and even three-inch steel rule die for die cutting structural boards. Currently, it is not widely believed that structural board can be die cut. MPN is partnering with our customer IDL Worldwide to perfect the die cutting of structural boards, and have successfully tested and cut 5/8-inch re-board and FALCONBOARD® with edge quality similar to a router table. The Widemouth technology is helping to develop marketable structural board because it will bring ‘mass production’ capability as compared to the tables,” explained Weidhaas.

The Die Cutting Relay

The substrate is a key factor in choosing the right technology, but perhaps the speed at which it can be cut — and cut well — is more important. When one thinks of a traditional method of completing a task versus a digital method, the assumption is, generally, that digital methods are faster. Think of using an abacus when you have access to a calculator. Why use an older method that takes longer?

Die cutting is, in fact, the opposite. Though it takes time to design and create one die, that one die can complete a cut in a fraction of the time it takes the digital cutter to run a linear cut at 100 inches per minute, or less. Jeff Priest, Rocky Mountain regional sales manager at Denco Sales, said that “traditional methods that use a steel rule die can stamp out a large number of pieces in a short period of time once the die is made, compared to digital print-to-cut methods. Traditional die cutting of vinyl graphics that requires cutting the liner to the same shape at the same time as the decal is done much faster than a digital cut type method.”

Going head-to-head with similar materials, traditional methods beat out digital cutting methods. Priest went on to say, “Soft materials like PSA vinyl are pretty easy for both methods to cut; harder materials like aluminum sheeting or plastics can be traditionally die cut pretty fast after you have the die, but if a shop has access to a digital router table they can cut shapes out from most of those same materials, although probably much slower than a die cutter.”

Easy Living, Easy Cutting

While the importance of higher speed for larger jobs can never be underestimated,

other factors in digital die cutting cannot be overlooked, either. Since traditional die cutting uses multiple dies for multiple shapes and job types, there is less flexibility within each job. “Digital ‘die cutting’ is a misstated term, because there is no ‘die’ doing the cutting. I would call it ‘digital cutting’ instead,” said Priest. “The print-to-cut digital method usually requires less babysitting and human interaction during the cutting process. If you add in the time and skill it takes to make the steel rule die, you will probably find that most small- to medium-sized jobs are done digitally. The digital method also works well if there are multiple sizes required for each job. A traditional die cut method means you’d have to make a steel rule die for each size needed in the job, whereas digital files are usually very easy to adjust from one size to the next.”

Robert Morse, president and CEO of Form-X, Inc., agrees that digital cutting, while it has its own challenges, solves problems that the analog process faces, such as production costs and design potential. “The benefits of digital die cutting are numerous. One is the control factor. You have the ability to manipulate intricate designs during the production process without loss of downtime, which occurs when making a new metal die using traditional methods. Other benefits include reduced labor, production and waste costs, plus it offers unlimited design capabilities,” he said. “The turnaround time is also roughly 80 percent faster, and customers enjoy more flexibility to change their art, eliminate die charges, reduce maintenance charges, etc. Some businesses even offer special sheet fed and hybrid lasers that have capabilities to cut roll-to-roll stock and sheet fed stock.”

Money Talks

Additionally, cost can be a deciding factor when choosing whether analog machines are right for your company versus the digital tools that continue to develop. Digital machines will run at a higher cost, potentially forcing a company that doesn’t yet produce enough sales volume to continue to use analog dies. Conversely, now that digital printers are improving their overall printing capability, some of those costs can be offset. “The kind and variety of material that can be handled effectively by large-format digital printers is growing by leaps and bounds,” said Steve Aranoff, vice president of business strategy at Mikkelsen Converting Technologies, Inc. “The more functions that your

digital die cutters can perform, the more likelihood you won’t have to turn down a job. When I ask a customer what they think their next job is going to look like, the answer is usually ‘I don’t know.’ People start off buying a traditional woodworking router, but can’t do vinyl and fabric, so they need a cutter. But now they need a laser, and soon they need to cut acrylic. It’s more beneficial to buy one machine that does more.”

Furthermore, digital cutters allow for one operator to control multiple machines; this does, however, present challenges. More machines mean a higher sales volume needed to afford them, and also the floor space needed to support them. But if an operator can run multiple machines, shouldn’t that increase the output? Rob Weidhaas argued that “advancements in digital systems tend to be automation — feeding and delivery systems, but that doesn’t change the production rate.” While a single operator can facilitate multiple machines, those same digital machines are producing at a slower rate than the traditional methods. Essentially, one traditional die cutter, once the die is made, can produce at the same speed as multiple digital cutters. Weidhaas used Batman as an example. Cutting along Batman’s back will go relatively quickly, but the table will slow down to accommodate the turns and curves associated with his head and ears, whereas analog dies can cut the shape all at once without the need to adjust speed.

Room for Two

The real question is this — will digital cutting eventually mean that traditional die cutting is obsolete? The answer throughout the industry is a resounding “no,” though the enthusiasm for new digital methods continues to grow. Traditional methods can complete jobs like business cards, emblems, address labels and packaging in high volumes with faster speed; they will always have their place in the industry, though newcomers to the field may be eager to dive directly into the digital marketplace.

Said Weidhaas, “Those who have no die cutting experience will enter the finishing market with digital. As their experience and markets grow, and they have high-speed digital printers, some of which have the ability to break the 200 sph barrier, they will have to move into analog die cutting to eliminate a bottleneck in finishing.”

He went on to admit that analog die cutting can sometimes be the “ugly

stepsister" of the cutting industry. "We know it isn't sexy, but we're striving to change that, and we don't view it as a battle [between analog and digital]. We view it as matter of educating the customer because, as we pointed out, there is indeed a place for both technologies."

Morse, while admitting that traditional methods are "old school" and that the industry would love to be entirely digital, he also knows that "traditional methods will always have a place in the industry. Just like photographic imagery has grown leaps and bounds in the digital world, sometimes you just want to look at the old-school negative format shot by Ansel Adams. Sometimes machines still aren't a match for the human brain. There is still an art and craftsmanship in this business even though new technology is constantly pushing us."

What's Next?

Looking toward the future, it appears that the best way to adapt to the evolving industry is to master both technologies

when possible. That is to say that the most successful shop and company in the die cutting industry will utilize the analog methods for jobs of a certain size and requirement with a particular substrate, while also being able to accommodate clients' needs where a digital cutter is best suited for the job. Though this is perhaps obvious, it is not yet probable for most. In addition, the evolving digital technology is still seen as the competition by some.

Aranoff asked, "I don't understand why so many traditional firms never went into the digital die cutting as an extension, but rather saw it as a competitor. Is it the fear that digital printers wouldn't give them work? Is it a fear of a field they don't understand? I would have thought they would have used it more to expand their business." Looking toward the future, whether you're playing for team analog or digital, there is no sign of either going anywhere.

Digital methods have consolidated production, yet still have not forced traditional methods off the playing field. Traditional die cutters are holding fast

to their relevance in the industry, and doing it well. Digital technologies are constantly advancing and even becoming less expensive, yet analog dies are keeping stride with each new development. As both sides of the industry advance, they will complement each other to improve the die cutting industry as a whole.

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