

Lenticular Imaging: Another Dimension in Printing

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BY LOUIS M. BRILL

It was a not-so-standard sign poster of a new car parked in a lot. As people walked by the advertisement, the car in the sign had its front doors fly open and the trunk popped up and actually displayed an animation of the car's ease of use.

Those passing by stopped to check it out, watching the car doors open and close continuously. When a printing format has its viewers stopping once and looking twice to make sure what they see is what they saw at first glance, that's printing at its best. What they see is lenticular graphics that present either three-dimensional images floating in space or flipping back and forth revealing several different scenes in the same display.

New Business Opportunities

As graphic solutions providers continue to seek out new business opportunities and new value-added services to provide their customers, lenticular imaging periodically emerges as a candidate printing process for new market oppor-

tunities. What it does is allow printers to offer their clients a competitive difference in an advertising format that gets their messages noticed and remembered by those who see them.

The lenticular process is an optical enhancement to conventional printing that transforms a hard copy poster, sign board or direct market mailing piece into eye popping three-dimensional or animated images for point-of-purchase, trade booth, or bus shelter graphics.

Graphic solutions providers can get involved with lenticular printing in one of several ways; they are either a full service center that accepts jobs from customers and produces them as finished ready-to-go posters and advertisements. Or they can act as a value-added reseller (VAR). Working in tandem with a lenticular service center, they can offer the process, book a desired printing project and pass the work order on to the lenticular printing house that produces the job and turns it around to the VAR for delivery to their customer.



Lenticular Imaging: An Optical Process

Essentially lenticular imaging is an optical process that takes advantage of how we see in three dimensions, mimics this viewing characteristic and duplicates it as a printing process, which when combined with a proper three dimensional lens will allow the printed graphic to also be viewed in 3D.

Human vision relies on two images, a left and right image, to create a 3D image. It does this by combining both images, which is seen by the brain, and converges them into a single three-dimensional image. A similar lenticular process duplicates this viewing effect by using special software and a special lens to mimic the human process of seeing in 3D. With the lenticular software, the original art is transformed into two separate (a left and a right eye

view) images that are combined into a single image (both images “woven” together) through a software process known as interlacing. Once the interlacing is complete and correct, the image is printed as a hard copy graphic and matched with a specific lenticular lens that translates both left and right images into a single final image that the viewer sees as a 3D image.

Lenticular imaging as a printing/optical process creates a new design relationship in maximizing a sign's viewing presence. With this process, the image becomes a kinetic viewing experience where depth and motion become the dominant part of an image composition. There is also a certain intimacy of viewer involvement because as people look at lenticular signs they move around to watch its motion. If it projects into space, the temptation is to touch the

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image even though they know it isn't there. Market placement for lenticulars include trade shows, point-of-purchase displays, direct mail pieces, collateral marketing, movie posters and bus shelters. Its latest success is vehicle graphics with placements on taxi tops as promotional displays.

Requirements for Lenticular Imaging

Creating a lenticular display has four requirements:

- ▶It needs good artwork that will translate into a lenticular effect,
- ▶An optical grade, high quality lenticular lens,
- ▶A high resolution printer, and
- ▶A dimensionally stable printing material.



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Making lenticular images is very straightforward and utilizes tools already available as a significant part of any modern sign shop: including computers, software, printers, sign display cabinets and a certain amount of brain power in making it all happen. Once an interlaced image is printed and laminated to its lens, it is like any other conventional sign, where the lenticular is mounted to a sign frame or placed in a light cabinet and is ready for display.

Lenticular Imaging In Action

Lenticular Image and Tri-Tech Graphics, two established lenticular print bureaus, discussed their unique approaches to this printing format and how they work with print shops and end-users in creating lenticular advertisements and displays for their customers.

Lenticular Imaging of Lake Elsinore, California, operating since 1990, is a company that is both a lenticular service bureau and an educational center that also provides training and software and lens material for other printing companies to become lenticular providers. The company's president, Sean McDonald, became involved with the magic of three-dimensional printing with two important goals; to improve the quality of the image presence and make lenticular imaging more accessible to printers as a print service to their customers.

"Even though there's probably more lenticular displays than ever before, it's still relatively unknown in the world as to how it works or who makes them. My ultimate goal is to create a lenticular process that the

average person, using a desktop computer could interlace an image and print it from their desktop printer," McDonald commented.

McDonald succeeded by establishing high quality technical processes to make lenticular imaging a standardized printing process both with the use of good interlacing software and access to properly formatted lenticular lens. The software, which he designed, is known as Lenticular F/X and used for converting photographic imagery and computer graphic output into lenticular displays. The lenticular lens of choice is Toppan Lenticular lens of which he is also the distributor. Software and lens can be purchased through Lenticular Image and are the same materials and processes that are used by the company to create their own client projects.

McDonald emphasized that the secrets of good lenticular displays are using consistent, highly repeatable (guaranteed standards) lenticular lens and high quality printers for clear, crisp graphic output. For his print shop, he uses as his work horse an HP 5000 with 1200 by 600 dpi with UV inks. The HP is used for large-format graphics with any job project from 11 inches by 14 inches to 48 inches by 120 inches. For smaller projects or something needing high resolution (like video animation), he uses a LVT film recorder by Durst Dice America. This system has a resolution of 2,032 dpi and can print up to 16 inches by 20 inches in sign area.

For any printing shop or service bureau just beginning to become familiar with lenticular printing, a good way to start out is as a subcontractor working in tandem with a lenticular service bureau. McDonald says a lot of print shops do this, "They can sell the process, but don't have the expertise in-house to create the actual product, or to calibrate their printer for a lenticular project or to mass produce the cutting of their lenticular lenses to size for each job."

Often times a VAR decides to "graduate" from a consulting capacity to full lenticular production service, allowing them to produce the lenticular displays themselves. This now involves being trained in the art of creating interlaced graphics, printing them and mounting interlaced prints to lenticular lenses. Although many of his students are potential competitors, McDonald sees it more as a way of establishing partners, who in turn create a wider circle of available lenticular services to advertisers and more customers for his company as he also sells the lentic-

ular lens material and software (Lenticular F/X) for creating the final displays.

Just about every application of lenticular displays becomes a showstopper. “Lenticular displays in trade booths are a sure bet for increasing booth traffic by at least 50 percent,” says McDonald.

In competing with 2D graphic images, McDonald noted that size doesn't always count, “We've seen that an 11-inch by 14-inch lenticular display has usually had more of an effect on an audience than a 30-inch by 40-inch 2D print. Why? Because people like to see motion or depth—it engages their attention and bingo! They're remembering your advertisement.

Tri-Tech Graphics of Fresno, California, is a large format screen printer that also incorporates lenticular imaging as described by company president, Loy Gould. “We have been providing lenticular imaging to our customer base for over ten years and it's now occupying about 5 percent to 10 percent of our total printing output.”

As advertisers use conventional outdoor printing processes to reach their customers, there's always a need to break through all the “message clutter” on the streets; and as Gould points out, “Lenticular printing allows our clients to have ‘a new look’ in how they show off their products. Typically the business base for lenticular advertising is movie studios, food companies, cosmetic companies and large retail companies all looking to maximize their contact with their customers.”

“We work in large format and on a lenticular level; our smallest large-format size is about 28 inches by 40 inches in lens size and from there we've produced images as large as 48 inches by 72 inches. Our lenticular production runs are a full range from a release of as few as 50 units for one customer to as high as 4,000 units of a single image for another client.”

Although Tri-Tech screen prints its big jobs, they also have a digital print set-up using a Roland CJ500 printer which they use for some of their small run lenticular jobs for both small- and large-format projects. As for which is better in terms of digital vs. screen-printing, Gould says, “It's an issue of scale of economies. In large lenticular jobs, we've found that most projects up to 100 copies can be adequately served by digital printing, but after that volume screen printing is preferred, because it's faster and cheaper than digital.”

One aspect of Tri-Tech's approach to lenticular printing is that they utilize a “direct-to-lens” approach

in creating their images. This is as opposed to the more traditional lenticular production process of first printing to a translucent material that is then registered to a specific lenticular lens and then laminated to that lens as a final display piece.

They prefer this approach because first, there is the convenience of eliminating the preliminary step of transferring the interlaced image to coated stock for registration with the lens. Second, Gould pointed out that in doing large production runs (in excess of 100 or more units), they prefer screen printing, again because it's faster than an equivalent digital print process. For printed output, their preferred system is a Svecia Jumbo Screen printing press.

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Lenticular animation is successful because it's an easy way for viewers to ascertain a visual difference in advertising and Gould cites some recent lenticular projects Tri-Tech did, “For the Dr. Pepper/7-Up beverage company we created a three-image flip showing off three brands (7-Up, Sunkist and A & W Root Beer). This sign was done for a soft drink vending machine company and for this, we printed the sign direct to lens, of which we did several thousand. This project was somewhat complicated because the sign display had a built in curve, which we had to take into account in finalizing the interlacing of the images. In the end, it worked out and was a great advertisement for the vending machine.”

In another client job, Gould chuckled over one of his favorite projects as he noted how international cultural differences often allow for images that provide great exposure for the clients. “For the Stockholm Zoo, we did a bus shelter display which was a three-image flip. The image presented a very young Swedish couple standing under a garden arbor. As you walked by the sign, the scene changed from spring to summer to winter. As it changed from season to season the Swedish couple's fashion adornments went from fully clothed to completely naked.” 