

# Printing and Graphics for Tubes

Innovations increase label quality and cost-effectiveness for tube manufacturers.

By David Gaines

As tube printing techniques become more sophisticated these days, graphic design for pharmaceutical tubes is following suit. Designers are now able to splash more colors, use more screen tints and halftone photographs, and even use holographic images and hot foil stamping.

Much of this sophistication comes from digital platemaking and printing, which has come into its own recently, offering several new alternatives to old-style film-negative platemaking and traditional press printing. While print quality was lacking a decade ago with digital laser printers, the quality now matches that of some printing processes. Digital platemaking also brings high levels of quality to photopolymer printing plates at cost-effective prices for short production runs.

## Prepress Innovations

SS Studios of Union, NJ, specializes in performing prepress work for letterpress printers for metal and plastic squeeze tubes, seamless aerosol cans, and other containers. "The correct technical term for this type of printing is letterpress, not dry offset, although people in the industry often refer to it as dry offset," according to Bob Burslem, president of SS Studios. Both plastic and metal tubes are usually printed by the letterpress process. He says dry offset is a different type of process that does not use a letterpress type of plate. Letterpress is a combination of letterpress

and offset printing. "Registration is more critical with letterpress because the tube only gets one pass past the blanket where it picks up all of the colors at once," Burslem insists. "We have to approach the color separations with this in mind, so the colors don't contaminate each other, which will cause color changes to occur. Also, it's more difficult to use process colors, but some tube printers do use process colors—meaning four colors, cyan, magenta, yellow, and black—which are overlaid to form full-color images. But tube work is generally more successful using color matches with premixed PMS colors."

Dixie Graphics (Nashville, TN) is another prepress company that handles graphics for the tube-manufacturing industry. "Everything we do, including the printing plates, is done specifically for dry offset, meaning no water is used with the ink, as in regular offset lithographic printing," according to Jim Meadows, president of Dixie Graphics.

Dixie Graphics's new color separation software allows the company to convert process colors to PMS colors with much better accuracy. For full-color printing, the firm converts process



Among its diversified tube product range, Alcan Packaging offers hot stamp decoration on tubes and closures.

colors to solid PMS colors. "With a new customer, we always let them know how specialized this type of printing is," says Meadows. "Usually we'll have to make artwork or color separation changes to fit the process. We let them know that all typefaces and line work must meet minimum sizes, so that they are sharp and clear after printing. Running the proper ink densities and controlling the dot gain on the tube are also critical for good quality."

One of the biggest things in our field right now, Meadows affirms, is digital plate making, which he says his company has helped to pioneer. "With digital plates, we can completely eliminate the negatives and go directly from our Macintosh computers to a digital imaging machine that puts the image on the plate."

Sharpness and resolution are much better with the digital plates," says Meadows.

Burslem says using digital plates is a fairly new innovation in the industry. He says that it's the same kind of photopolymer plate typically used, but the processing is different. The old way uses a film negative; the digital way uses a laser machine to expose the plate.

"Direct laser ablation is the latest method of digital processing, where the laser is not imaging the plate, but is actually doing the final cutting of the plate," Burslem explains. "This new process has only been commercially viable for about one year. We've been experimenting with it. Eventually, customers can expect to see higher-quality printing from this process. With the ablation method, there is improved imaging to the plate. You can hold smaller dots on the plate for halftones, which makes for better sharpness and resolution for photos and illustrations. It also allows for sharper, deeper reverse printing areas."

## Tube Manufacturer Innovations

Montebello Packaging (Hawkesbury, ON, Canada) is a tube-manufacturing company that handles its own printing and graphics because the company has found it to be more cost-effective. Although Montebello often uses dry offset printing presses for customers that require high-end graphics, it also uses an HP Indigo digital press. "We've been using the digital press more and more for other applications, like for launches into test markets, where they only want a small number of tubes," says Meghann Bennett, marketing and sales coordinator for Montebello Packaging. "Traditionally, we won't set up our offset press production lines for anything less than 15,000 pieces."

For aluminum tubes, the company will sometimes print on transparent polyethylene film with its HP digital press. It will then apply the film to the tube with a heat-sensitive application process. "The five-color offset process on our high-speed aluminum production line is somewhat limited since it can't offer photo-quality graphics," Bennett explains. "With the transparent film process, we print graphics on them and you'd swear it was a photo."

Montebello doesn't use digital platemaking yet, but it has been experimenting with thermochromic inks. With these

high-tech inks, the firm can print on tubes for the food market that change color with temperature changes. For example, when it's cold, the ink looks clear, or it turns into another color. It has also been experimenting with UV-reactive inks that change color in the sun. "We did a launch for a recycling program in the schools where we did a tube mockup for kids. It was actually a cartoon tube with a character surfing on a wave that

Certain elaborate graphics might need more contrast, which might not be possible with dry offset inks.

changed colors. The kids thought it was really cool. This especially appeals to the young adult crowd; we even call this 'Cool Water.' Montebello has developed samples using these UV-sensitive inks that change color in bright sunlight to remind people to put on their sunscreen."

Alcan Packaging (Washington, NJ) optimizes its tube-manufacturing operation with digital, computer-to-plate printing technology. "We use UV inks, so after we apply the image onto the tube, we then pass the tube through a UV oven to dry and cure the ink," says Doug Jackson, plastic-tube marketing and product development manager at Alcan Packaging. "We then apply a barrier coating, which is a clear varnish that also goes through the UV-oven. We also print on flat, laminated materials and multilayer structures we call coextrusions, where you can insert a high-barrier structure inside the plastic, like EVOH [ethylene vinyl alcohol], which provides an oxygen barrier for the product."

Jackson explains that certain elaborate graphics might need more contrast, which might not be possible with dry offset inks. He says the base ink might be a green pigment with a white color added to it. White offset colors are very transparent,

so this is where they use silk screen printing. "We can apply a silk screen ink that is much more dense, using a silk screen press," says Jackson.

"The third process we use in our plant is hot stamping," Jackson continues. "We can apply a shiny gold or silver foil to the tube for a very decorative look. It's a thermal process that allows the foil to stick to the plastic. This is a brighter, cleaner look than using metallic inks."

When manufacturing laminated tubes, the company brings together specialty films or aluminum foils with a flat sheet of extruded plastic to form multiple layers. "We can also extrude different resins that aren't normally processable through customary extrusion processes," says Richard Brodhead, technical marketing manager at Alcan. "Laminated tubes come into play when there is a need for higher performance, and they give us other options. This relates a lot to pharmaceutical and medical products because they usually have critical uses." Brodhead says products like toothpaste and antiseptic creams, or most pharmaceutical products, are packaged in a laminated material with a foil barrier inside. The laminates create a better shelf life by keeping oxygen away from the products, and they also stop critical product ingredients from migrating away from the product.

Flash Coat—a relatively new process for Alcan—is something that the firm applies after the tube body is printed and formed. "Flash Coat is a process that we designed that uses a specialty film that is applied over a decoration that imparts a cured hologram onto it," Brodhead maintains. "We have a certain number of stock hologram patterns, or we can use custom patterns."

Optical Imaging is Alcan's trade name for digital printing with an HP Indigo laser printer. It provides the company with the ability to service the small-volume markets of about 30,000 production units. The only limitation is that printing speeds are greatly reduced from traditional printing presses. Setup times, however, are very quick, in just minutes, whereas with a press it takes an average of about three to four hours to set up. And the quality is reported to be very good.

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