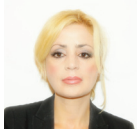
The secret of matching flexo to offset



Nick Coombes questions Sonia Arcos, sales director at UK-based Cheshire Anilox Technology, on the development of laser engraved ceramic anilox rolls, and the part they have played in changing the long-held perception that flexo is not a quality print process.

NICK COOMBES (NC): What are the problems facing flexo converters and how can the latest anilox technology help them?

SONIA ARCOS (SA): I believe there are four key challenges facing package printers today: a highly competitive consumer environment; an increasing requirement for creativity in package design; high petroleum costs that are forcing converters to focus on alternative material sources; and the impact this has on the resolution and image quality achievable by the flexo process. If they want to match the print quality of offset, then a laser engraved ceramic anilox roll is the tool they need to lead the way.

Only a few years ago, no one would have even considered the possibility of flexo presses running anilox rolls with 1,200lpi, but today it is very common. A new generation of improvements is on the horizon for flexo printers, with no boundaries on the technical advancements. Understanding these new developments in anilox technology will allow today's designers to improve the quality of their products and create more innovative packaging.

NC: What part does the anilox play in the new high-definition flexo printing?

SA: Innovations in all press components continue to raise the bar in flexo printing, allowing converters to match or exceed the print quality of offset. For example, HD plates are used with high pigment, fast-drying inks, and high-release ultra fine anilox rollers. HD flexo needs very fine plates to be used in conjunction with extremely fine anilox rollers to avoid dot bridging.

New advancements in coating technology are helping with this, along with the new generation of lasers that make it possible to manufacture such ultra-fine engravings consistently, where porosity is reduced to less than one percent.

At high line-counts the volumetric capacity of the anilox is considerably reduced, making it more difficult to achieve the desired color density. To deliver the required amount of ink, and eliminate the chance of dot dipping when using dot sizes of 8-10 microns, we need to produce a fine cell structure that offers a greater ink release than the standard 60-degree configuration.

At Cheshire, we have developed a new engraving called Proflo specifically for ultra-fine screen specifications. It has an improved cell profile that provides a more consistent ink lay-down, and eliminates the risk of uncontrolled dot gain. This high-release cell offers as much as 15 percent additional ink, compared with conventional engravings, enabling an anilox manufacturer to produce finer rolls that will deliver the required color densities at extremely fine line counts.

This unique cell profile now allows printers to work with the expanded tonal range of offset and gravure printing techniques to produce vibrant colors and high contrast images for greater shelf impact.

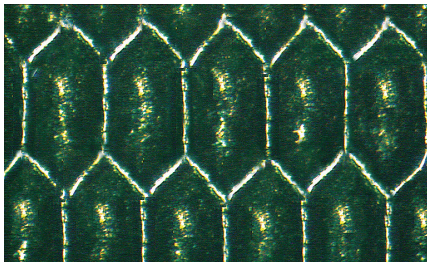
NC: So, what are the main advantages of the new type of anilox rolls – what can they do that a conventional anilox cannot?

SA: For many years, the industry standard cell configuration has been 60 degrees, but new developments in laser technology allow today's anilox manufacturers to produce improved cell shapes that offer more efficient ink-to-plate transfer.

The standard 60-degree engraving pattern has a honeycombed structure that offers good uniformity, but, owing to its conical profile, releases only 60 percent of its total volume. Problems occur when the unused ink congeals or dries, causing plugging in the anilox cells. To combat this, we have developed a cell structure that lends itself to better ink release. We call it Maxflo.

By stretching the cell shape, the laser no longer focuses at its base creating a conical effect. Now, we have a boat-like cell with a wider bottom that retains only 10 percent of its volume. This means we have 20-30 percent more coat weight, which allows us to deliver the color density of a conventional anilox, but using one with a much higher line count and that, in turn, increases print resolution.

But what makes this engraving so special is its ability to print solids and screen with one single anilox. This fine, high-release engraving, offers better ink distribution to the plate by delivering the correct amount of ink to each area, and achieving denser



and richer solids, and clean vignettes.

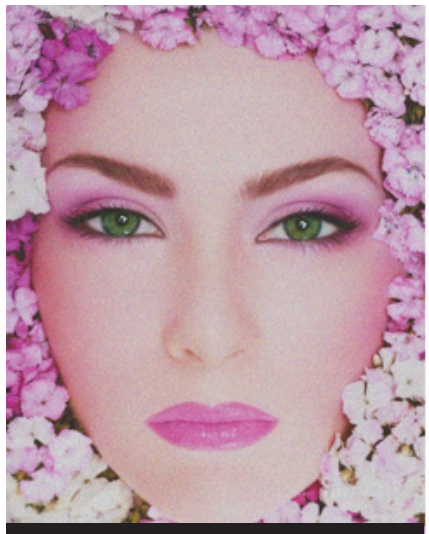
With Maxflo, it's no longer necessary to use two or more stations to print solids, halftones and line work. This means you need fewer anilox rolls to print a wider variety of jobs, which reduces your make-ready and maintenance downtime, and lowers ink consumption.

The cleaning characteristics of Maxflo are also superior to conventional engravings as there are no deep or narrow cell bottoms to trap ink or coatings, which makes cleaning easier and faster, and extends the lifespan of the anilox.

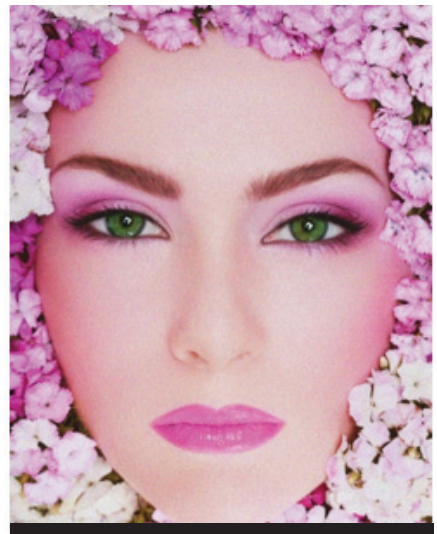
NC: What other useful techniques do these new anilox rolls offer?
SA: Printing a high opaque white is a common challenge facing today's flexo converters. But recent developments in narrow web ink, plate and anilox technology allow flexo to achieve the opacity of rotary screen whites.

Easyflo HD is designed to mimic the opacity of screen whites on film in one single pass. To achieve opacity levels above 80 percent, you need a high volume of ink, and this is what unique engraving technology offers – improved ink flow. Because it distributes high volumes of ink efficiently, you get an outstanding uniformity of coverage, which increases the opacity, and eliminates mottling and pin holing.

If you combine this with low viscous, fast curing, highly pigmented inks, and hard capped plates, Easyflo HD can hit opacity levels of 85 percent in one single pass at speeds of 50-60m/min.



Standard Flexo



HD Flexo

NC: UV spitting is a problem frequently faced by narrow web printers – how does your new type of anilox cope with this?
SA: UV inks transfer differently on the press because they have a higher viscosity of around five to seven times that of water- and solvent-based inks. Because UV ink is thicker, it creates a build up of pressure behind the doctor blade, and with conventional 60-degree screens the only way to release this pressure is an involuntary lift of the blade, which results in spitting.

Easyflo is a channeled 30-degree engraving, which improves the ink flow by allowing it to move from cell to cell as the roller is spinning. This reduces the pressure build-up and eliminates the spitting. We have been using this screen to eliminate UV spitting for more than 12 years and it works really well.

NC: Where do you see anilox technology going from here?
SA: Wear and tear is an issue that needs to be addressed. Further technical developments in laser technology will allow us to make use of highly durable carbide coatings. These will offer extreme ink release properties and lasting color consistency.

New developments in construction design will allow us to adjust the coat weight or ink transferability of the anilox, without changing screen parameters, and this will reduce downtimes considerably. Ultra-fine line count aniloxes of, say, 2,000lpi or more, with outstanding ink release properties will keep pushing the boundaries of flexo printing. New chemicals that instantly remove dried ink from cells and prevent its formation will allow for quick maintenance and longer print runs.

There are so many things that will move the game on. Our technicians are constantly working to develop unique engravings that will help our customers expand their businesses by creating innovative and striking packaging solutions. It's an ongoing process.