Flexo's Renaissance Throughout the Packaging Industry

These rolls of material were flexographically printed with the latest generation plates, exposure, and screening. Image courtesy of Cyber Graphics.

By Cory Francer
When it comes to enhancing the flexographic workflow, looking for a singular “magic bullet” can be a futile endeavor, says Kevin Bourquin, VP of operations for Cyber Graphics, a Memphis, Tenn.-based premedia company specializing in design, prepress and platemaking. Instead, visualizing the process as an end-to-end manufacturing procedure where all of the various components are given equal consideration is the best way to ensure consistency and quality from job to job.

For decades, flexography has been the dominant printing process across the packaging spectrum, and even as digital platforms continue to work their way into the industry’s arsenal, technological advancements throughout the flexographic process have ensured that the conventional print platform remains on top.

“I think it’s all about having vision and partnerships to find people that can pair technology together to make things happen,” Bourquin says. “Whether it’s a plate with an exposure system with a screen set and an anilox roll, that whole package together can deliver better print quality.”

What’s Behind Flexo’s Evolution?
Across the packaging industry, the pressure being put on printers to deliver their products faster has driven technology suppliers to explore how they can make the printing process more efficient — both from a speed and waste reduction standpoint.

Increasing press speeds is of course a key component of developing a more efficient production process, but Bourquin explains that as flexo press speeds increase, the other components of the process need to be addressed as well. For example, he says that as the substrate moves more rapidly through the press, it becomes more challenging to maintain and dry comparable ink volumes used at slower print speeds.

To address this issue on press, Bourquin says printers can use a lower-volume anilox roll, applying less ink to the substrate so it dries faster. However, he says that in order to maintain the same print quality with a decreased ink quantity, the ink delivery system needs to become more efficient. Achieving this requires a multifaceted approach, Bourquin says. One of the first innovations to help drive this efficiency was HD imaging, which when combined with flat top dot plates, reduces the amount of oxygen in the process, and improves the ability to hold a pattern consistently. This combination, he says, allows printers to achieve similar quality with less consumable consumption.

“You combo HD imaging with flat top style plates and we’ve been able to develop a mechanism in which we can take low volumes of ink and deliver it more efficiently — reducing costs, increasing speeds, and still getting the same quality,” Bourquin says.

In addition to the speed-to-market demands that are driving efficiency advancements in flexography, brand owners are placing an increased emphasis on color consistency, narrowing the acceptable tolerances in color.
deviation. Steve Cooney, premedia lead at StarPak, a Houston-based provider of a variety of flexible packaging, explains that consumer behavior is a key component of brands tightening up their color demands.

With an increased understanding of the snap decisions that consumers make when assessing a product or package on shelf, Cooney says that consistent color plays an essential role in brands successfully delivering their message. As consumers begin to associate a specific color with a brand, if that color is inconsistent across its packaging, consumer trust in that brand's products can erode.

“I think people have realized that making sure you’re consistent and making sure your colors are clean is a way for people to understand who you are and what you mean,” Cooney says.

Because of this increased understanding of the impact color has on consumer purchasing decisions, Cooney says marketing departments are becoming more educated on the topic, driving further collaboration with the printer to ensure that the desired color can be achieved.

This has also led to management at printing companies placing an increased emphasis on color consistency. Beyond just utilizing a spectrophotometer to ensure color accuracy, Cooney explains that printers are now more commonly instituting technology and processes to assess and clean anilox rolls, printing plates, and other attributes on press that have a direct correlation to color.

“You're getting more of an alignment of marketing departments understanding what they want to hit, and a higher group of people at the packaging companies and printers who know what needs to be done to hit it — not only what shouldn't be done or what can't be done,” Cooney says. “I'm a big believer in alignment between the printer's expectation, what the CPG wants to see, and what the separator needs.”

**The Impact Across the Segments**

While the flexographic process relies on the same principles and components regardless of what form of packaging is being printed, advancements in flexography have had various impacts on the different packaging segments.

The corrugated segment in particular is one where brand owners and printers have several different print options to choose from. Lithographic labeling is undoubtedly one of the most common methods of corrugated printing, and the past few years have seen a significant rise in digital printing. But flexography has also maintained a very strong position in the corrugated segment and can be applied in either preprint or direct/postprint methods.

At Advance Packaging, a corrugated packaging provider based in Grand Rapids, Mich., litho, digital, and flexographic printing is utilized, and David Straten, director of graphic packaging, says that cost and quality requirements are what typically drives a job toward a specific printing format.
In recent years however, Straten says that direct print flexography has experienced some significant advancements in both prepress and on press, and the key stakeholders in the supply chain are becoming more educated about its advancements.

For example, Straten says that in prepress, there is better understanding of how inks lay down, trap, register, and print. Improvements have also been made in laser imaging, dot configuration, plate materials, and plate mounting.

“The prepress people have had to embrace it,” Straten says. “They’re not just platemakers anymore. They’re not just taking an image and making a printing plate. They have become flexo educated, sophisticated prepress experts, and education is key to everything.”

On the presses themselves, Straten says the quantity of color stations that can now be implemented is among the top advancements in direct print flexo. At Advance Packaging, Straten says that the nine presses range from one-color all the way up to eight colors — something he says he never would have dreamed would be feasible when he started in the industry nearly 40 years ago.

Other on-press advancements Straten highlights include 100% inspection systems that check every sheet that passes through the press, computerized controls, very tight registration, and the increased line screens printers can now achieve on corrugated, which can range between 110 and 150 on the high-end printing Advance Packaging runs, Straten says. While the added features have taken print to new heights, Straten says the latest technology combined with the increased knowledge of flexo’s intricacies are what is driving the process forward.

“Keep in mind, not all presses have the same capabilities,” Straten says. “But that education, including better preventative maintenance — measuring and collecting data and having processes in place — is helping everybody. It helps your whole plant.”

Polymer plates undergo cutting and labeling with specific information. Image courtesy of Cyber Graphics.
The Flexographic Renaissance

In the flexible packaging segment, the print quality that can be achieved with flexography has advanced to a degree where it can compete with that of gravure printing, Cooney says. Though gravure is less commonly seen in North America than it is in Europe and Asia, it has a strong reputation for superb print quality. But the combination of technology advancements, such as expanded gamut, and the establishment of flexographic rules and standards, has brought higher quality and increased consistency to flexible packaging.

“When you move into most of our stuff — which is expanded gamut — the color solution software is out there ... that really does help printers, separators, and brands wrangle that world into something consistent,” Cooney says.

Driven by Data

Technological advancements that have enhanced the speed and print quality in flexography have given package printers better tools to manufacture their products. But in order to maximize what these tools are capable of, Bourquin says it is imperative to not overlook data collection and analysis.

Particularly when it comes to color, Bourquin says software and equipment from platforms such as Techkon, SpotOn, MeasureColor, and X-Rite's ColorCert, can provide operators with precise color measurements and the exact adjustments they may need to make. But beyond the immediate information that software offers, Bourquin says the story this data can tell over time can help package printers and converters maintain a more consistent and precise operation.

“That data gives you so much information that currently — in the majority of places you see in the marketplace — is just thrown away,” he says. “It’s all about that job right now. We need to worry about what’s happening on our press long term and in our plant long term.”

Cooney explains that at StarPak, data collection spans prepress and on-press functions. For example, he says that for a color benchmark, StarPak will develop a curve, run a characterization, and then validate the data to ensure the color is repeatable. While these steps may be considered to be typical color management assurances, ensuring they are done consistently helps with repeatability, and monitoring for maintenance.

“A lot of it is basic management of color information and making sure it's available on press and available in the plate room to make sure the plates are hitting the same target over and over again,” he says.

Like any manufacturing process, flexographic printing is at its best when all of its components are connected, and the people at the helm of the various steps are working together with strong communication. While there isn't one right answer for every company, Bourquin says finding the right combination of technological advancements is the strategy printers should seek to keep their customers satisfied.
“I don’t think anyone is ever going to find the magic bullet,” he says. “If you’re out there, evaluating technology to find the magic bullet, I think you’re wasting time. I think it’s all about having vision and partnerships to find people that can pair technology together to make things happen.”

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Cory Francer is the editor-in-chief of Packaging Impressions.

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