

Conquering edge definition

Enhancing print contrast is a challenge in flexography, but new approaches offer possible solutions

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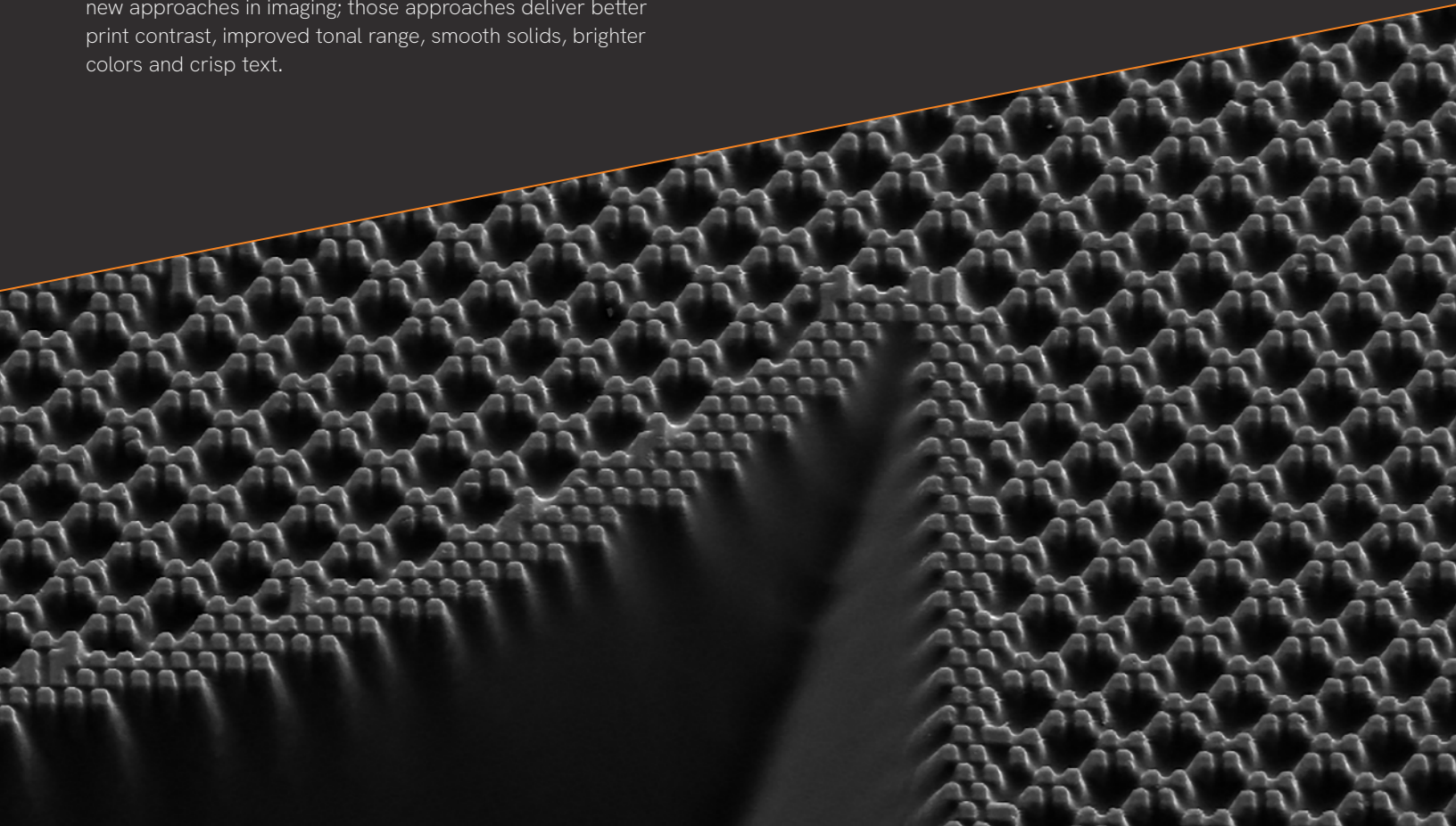
One of the most significant variables in improving the performance of flexographic printing is the enhancement of print contrast, but that has been an elusive goal for the industry for too many years. Notoriously hard to quantify and measure, print contrast is directly related to the comparison between the solid ink density and the 75 percent dot, and is an indication of print quality. But how are printers today achieving better print contrast?

Print contrast in the 40 percent to 60 percent range is ideal, with good density and stable dot gain throughout the image. The measured comparison of the solid ink density to the 75 percent tone gives the percentage value for print contrast. This functional option is available in all spectrodensitometer devices. A low percentage range—one that's below 30 percent—is an indication that, from 75 percent to 100 percent, your tone scales are plugging up and your graphic image lacks detail.

To get that enhanced print contrast and the jaw-dropping effect it has on shelf, flexo printers are exploring innovative new approaches in imaging; those approaches deliver better print contrast, improved tonal range, smooth solids, brighter colors and crisp text.

Flexography has historically lagged behind gravure printing in its ability to produce those really rich, clean colors, and the contrast needed for easy-to-read text at any size. Gravure has been seen as the go-to print method for the best results, but its high cost and complexity have put it out of reach for many, making flexo the more common choice in packaging.

Emerging technology developed in the last few years has changed the way brand owners, prepress providers and package printers view flexo, making it a more powerful competitor to gravure. Flexo can now compete on a level playing field with the print contrast and results of gravure while offering a prepress simplicity gravure can't touch.



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Controlling ink flow

Modern plate technologies can do incredible things. For example: micro-surface texturization that creates a “pattern around a pattern” to control ink flow at the edge of every dot, line, text character and solid area.

Each area of plate surface patterning is bounded by an area of fine patterning that controls ink flow and guards against any risk of dirty print at high production speeds. Operating as a metaphoric “wall,” this is applied automatically to the plate surface patterns without any intervention from a prepress operator, and it can improve contrast, tonal range, reverse text and shadow detail for smooth solids and improved readability and clarity.

Package printers are reportedly already seeing the benefits of these modern plate technologies in production today, particularly in solids and reverse text. And in Miraclon's case, its Advanced Edge Definition (AED) applies even to the reversed-out areas making up the shadow tonal range, from 50 percent to 99 percent, providing a unique solution to a persistent flexo challenge.

Reverse text is a common element and an important consideration for all flexo jobs. Some plates may allow ink to flow into the reversed void, which can cause the color to be darker and patchy, which degrades contrast. It's important that, on your plates, the reversed void does not fill in, as keeping it open will increase tonal range and contrast. For brand owners, this means that images remain brighter and shadows no longer fill in or lose details.

Impact of plate patterns

Print contrast in flexo is not only impacted by edge definition. If you recall, we defined it at the start of this article as the measured comparison between the solid ink density and the 75 percent tone.

This means good solid ink density is critical—but it needs to be good solid ink density without the use of too much ink, or you run the risk of dirty print that can destroy contrast. This is where the use of sophisticated plate surface texturization to optimize ink transfer comes into play.

Your plate maker should take a unique approach to micro texturization. Here's an example of one such unique approach: creating a digitally textured plate surface during the imaging process that is customized in a predictable way for the specific print application to optimize ink transfer, rather than forcing one pattern to fit all applications or relying on multiple plate types. This is an approach that enables all components of a design to print optimally. It's not uncommon for one flexible packaging job to include process color, spot color and solid whites, all of which have very different ink transfer requirements; that's why it is so important to be able to select the most appropriate pattern for each press-ready plate. This type of approach significantly reduces pinholes in solid areas and achieves greater color density or white opacity with a lower volume of ink.

This type of approach is not haphazard, but is a scientific method, the result of intense R&D. Digitally customizable plate surface patterns, selected in a logical manner according to ink type and anilox volume, enable users to hit the “sweet spot” for ink transfer across any print condition, resulting not only in better solid ink densities but also enabling faster setup times, longer plate life, fewer press stops and faster press speeds.

It's a win-win: More impactful graphics and major side benefits in print production efficiency.

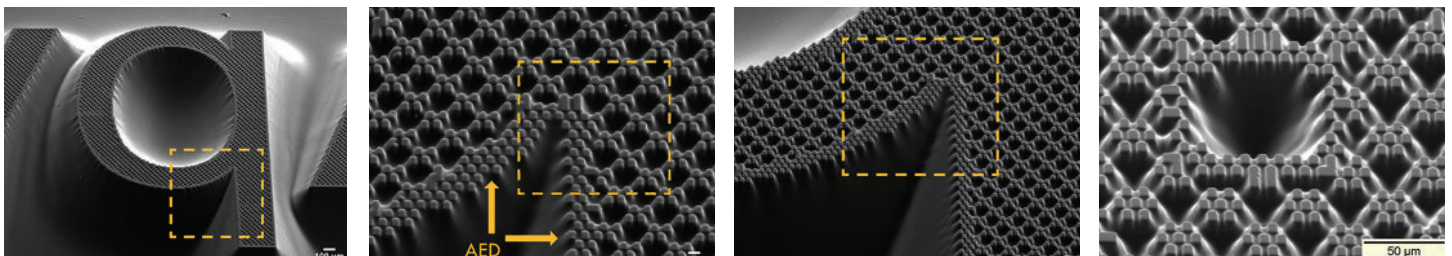


Figure 1: Miraclon's Advanced Edge Definition (AED) creates a “pattern around a pattern” to control ink flow.



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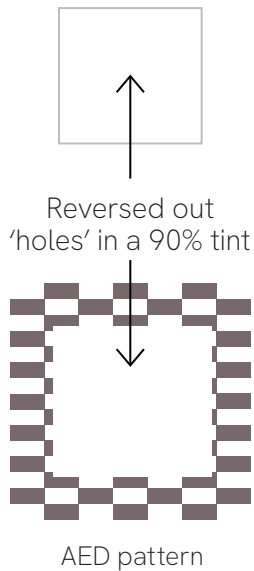


Meeting the challenge

Miraclon offers a powerful tool to flexo prepress shops and printers who utilize its technology—an easy-to-use test target that demonstrates the power of advanced patterns to improve contrast and tone by showing everything from solids and fine lines, to positive and reverse text and multiple linescreens, in a single-color press sheet. Businesses can use this tool for press optimization and pattern checking as well as to help clients see and understand the unique benefits.

The secret to achieving better print contrast and conquering edge definition is no secret at all—It is the result of companies like Miraclon working closely with customers to understand and address the fundamental challenges of flexography.

Technologies discussed in this article include FLEXCEL NX System and NX Advantage technology, with patented Advanced Edge Definition (AED). Creating this pattern is only possible with the unique capabilities of Miraclon’s software, hardware and imaging film combination. It is achieved using standard FLEXCEL NX Plates and the FLEXCEL NX Imager, without the need for additional hardware investments, or any loss in imager productivity. Customers do not need to purchase additional consumables or plate types because, through the power of imaging, a single plate meets all the needs for a wide range of applications. To learn more, visit www.miraclon.com/go/flexcelnx.

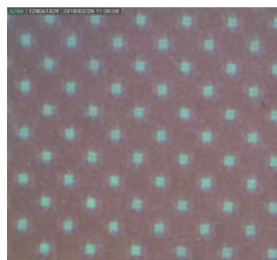


Without
AED applied →

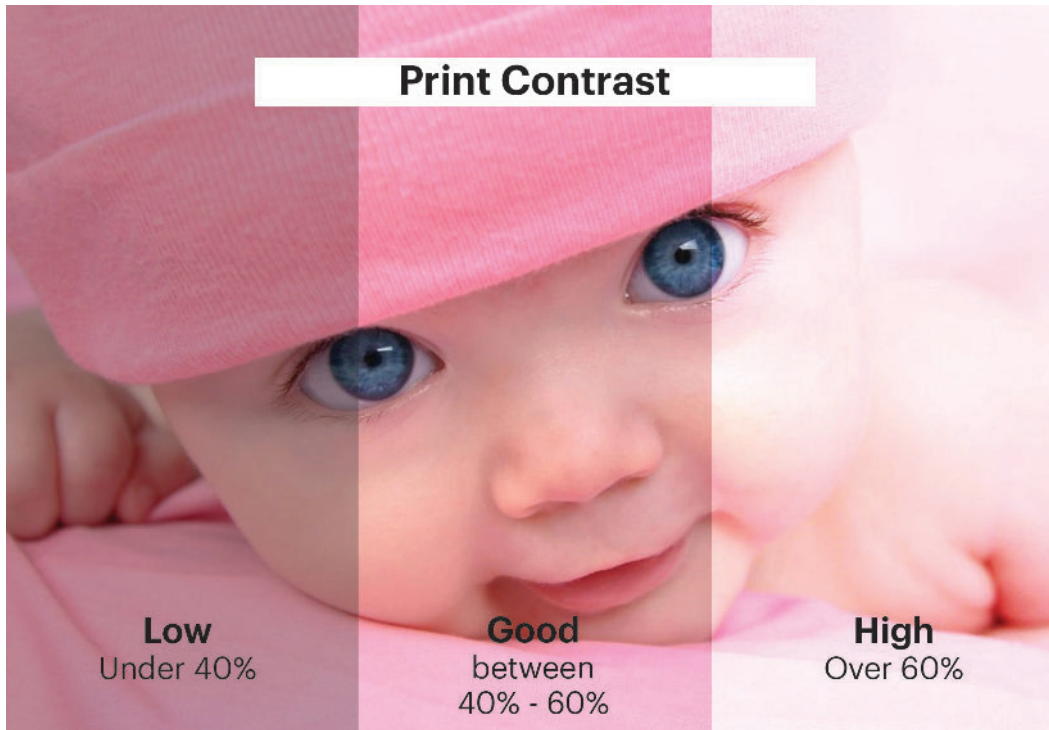


Ink flows into the reversed void, causing the color to be darker and patchy.

With
AED applied →



AED keeps the reversed void from filling in, keeping it open, increasing tonal range, and contrast.



For more information on how flexo printers are matching and exceeding gravure and offset quality, visit www.miraclon.com/go/flexcelnx.

About the Author:

Alexander James has a Bachelor of Fine Arts degree from the University of North Carolina at Asheville, NC and a Master of Science degree in graphic communications from Clemson University. Alex is currently employed at Miraclon as the sales manager - Canada, for the Flexographic Packaging Division. With more than 20 years' experience in the graphic arts industry, Alex has participated in numerous industry-related events as

committee member, guest speaker/presenter and has authored technical flexographic-related articles. His experience level ranges from fine arts, screen printing, graphics, prepress, color management and process control. Alex is a member of the FTA Board of Directors and FFTA Board of Trustees, and is also a FIRST Certified Implementation Specialist.