

Apogee InkSave

Overview

InkSave re-separates all photos and vector images in a job by using a technique called Gray Component Replacement – GCR. GCR was first implemented in early drum scanners. Early versions of GCR did not gain wide acceptance because when applied, color's lost saturation and neutral values changed hue. Because early versions of GCR altered the visual appearance of an image when compared to conventional color separations (skeleton black), the use of GCR never caught on. Although GCR had many significant positive benefits, print buyers were not willing to trade color saturations and color accuracy in order to use it. So GCR remained on the shelf until recently.

GCR works by evaluating the CMYK build for each and every pixel in an image. Then, for those pixels that contain equal amounts of CMY (the gray component), GCR proportionally reduces CMY and increases K. The idea is to print the gray component with one ink (black) rather than three (CMY). By doing so, the more expensive CMY inks are reduced and replaced with less expensive ink.

GCR color separation was a great idea, but floundered because early versions altered the visual appearance of images relative to conventional separations. The color change occurred because scanners did not have adequate look up table data for the specific printing condition the separations were made for. So the GCR transform was applied in a generic way rather than customized for a specific press, paper, ink and screening combination (printing conditions)

With the advent of ICC profiles, a mechanism is finally in place to accurately characterize individual printing conditions. With an ICC profile, a printer has all the data required to create accurate color separations for any given printing condition. ICC profiles and automated color management within the Apogee workflow provide the platform to successfully implement GCR.

InkSave Benefits

- Significantly improve run stability

By reducing the amount of CMY and increasing the K in color separations, gray balance on press is much more stable. Lithography is inherently an unstable process, so GCR separations make it easier to maintain good gray balance over the course of the run. This is particularly nice on older presses that have difficulty maintaining consistent solid ink densities.

- Improved detail and reduced sensitivity to registration

Registration of the CMY plates is critical to achieve the best detail from conventional separations. This is because most of the detail is carried in the CMY

and very little in the K. With GCR separations, the detail is carried primarily in the black. Thus, slightly out of register plates will not cause loss of detail. Many presses have difficulty maintaining tight register across the entire sheet even under optimum conditions. GCR separations completely eliminate the color shift and detail loss that arises from this problem.

- Improved gray balance stability

Maintaining stable three color gray balance (CMY) is the most difficult challenge faced by press operators during a press run. The slightest drift in one color during the run will visually alter gray. This happens because conventional separations use very little black. Most neutral values in photos are built with CMY. GCR alters this by significantly reducing the amount of CMY in neutral gray areas and replacing it with black. Eliminating the CMY in neutrals and replacing it with black locks in gray balance since most of the color in neutrals has been removed. This is very effective with images containing lots of neutrals (e.g., silverware, glassware, bridal gowns, and anything shot against a neutral gray balance).

- Reduced drying time

Apogee InkSave helps reduce drying in two ways. First GCR reduces the amount of CMY, so there is not as much ink to dry. InkSave also gives the user the ability to normalize all color separations to a common total area coverage (TAC). TAC is the sum of the CMYK at the maximum tone value in a separation. If the maximum tone value in a set of separations is 100% in each of the four separations, the TAC is said to be 400%. Normal printing papers cannot hold 400% coverage, so separations are typically set to a TAC of 300% for SWOP, 320% for GRACoL, and 220% for SNAP (news). Because InkSave is essentially re-separating every image on the fly, the user can specify the TAC they want for their particular printing condition. Lower TACs reduce drying time and ink show through on the reverse side of the sheet. Quicker drying time requires less offset powder and yields cleaner sheets. It also allows faster cycle time for work and turn jobs. Since the front side dries quicker the back can be run with a shorter dwell time.

- Faster make ready

Once the plates are hung, the two primary make ready functions are registration and reaching uniform solid ink densities. Good register and correct/uniform SIDs are required to achieve a neutral gray balance and saleable sheets. Depending on the press, make ready with normal non-InkSave separations can take from 2-3 minutes up to 14-15 minutes. Because normal separations carry the details and neutrals in the CMY plates, the press operator needs to achieve tight register and uniform SIDs in order to produce saleable sheets. With GCR separations, detail and neutrals are carried primarily by the black plate. This significantly reduces the time required to reach saleable sheets. In the case of one sample web printer, they

reached color and saleable sheets in approximately three minutes. Contrast this with their normal make ready time of 10 to 12 minutes, then extrapolate this waste/time reduction over the course of a year of press runs and you realize significant savings as a result of this process change. The same is true for sheetfed presses – particularly multiple press plants.

- Ink savings

And yes, Apogee InkSave also saves ink.....

So while InkSave implies what it can achieve within its name, it clearly accomplishes much more in the production process. Through quality and efficiency benefits, printers can achieve a better product at a reduced cost for their customers.