Nexus FLEXOCAL

Flexocal™ is a flexo specific imagesetter calibration, setting new, previously unachievable standards in flexo printing. FlexoCal is an optional module on the NexusRIP and allows the user to fade dots to zero, print white highlights and achieve saturated colors. Optimized imagesetter calibration for flexography requires precise control of not only one variable, but three interrelated variables : higher imagesetter exposures, calibration to a curve instead of a line, and curve application in screening.

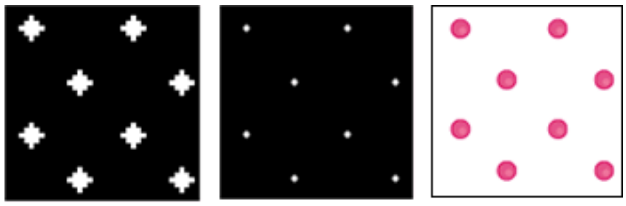
highlights

- High imagesetter exposure
- Printing smaller dots
- Calibrating to a curve
- Print brighter highlights
- Smoother vignettes
- More saturated colors

High Imagesetter Exposure

The first step for FlexoCal is to turn up exposure. Overexposing on the imagesetter will result in harder and smoother dots. The dots become smaller, since negative imaging is used for flexo. This means that to achieve a 1% dot, more laser spots are needed, which results in rounder, more uniform dots, easier to hold on plate and cleaner to print.

Conventional

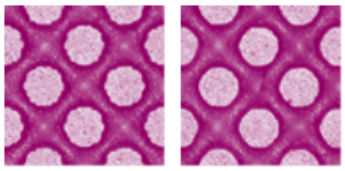


Flexocal™ uses a non-linear imagesetter calibration to achieve brighter highlights, more grey levels and more saturated colors.

Calibrating to a curve

Overexposing makes the dots smaller, resulting in a curve calibration instead of a straight line. The purpose of imagesetter calibration, however, is not to achieve linear output, but rather to achieve consistent output. An imagesetter can be calibrated to a curve in the same way as it can be calibrated to a line. With a linear calibration, grey level 5 is assigned a 2% dot, so there are just 5 grey levels between 0 and 2%. When a 2% dot gains on press to 15%, the print range from 0 to 15% is covered by 5 or fewer grey levels. With FlexoCal non-linear calibration, grey level 5 is assigned a 0.4% dot, (it is not the simple ratio 5/255, but a non-linear equation instead). As grey level 20 is

film output at "normal" imagesetter exposure (right)
film output at "high" imagesetter exposure (left)



Digital compensation (left) degrades image quality. Analogue reduction (right)

assigned to 2%, for a range from 0 to 2% on film, there are 20 grey levels available. When the 2 % gains to 15%, there are now 20 gray levels to cover this range.

opens reverses and smoothes jaggies.

Calibration curve in screening

When applying dot gain compensation in a software application, the dot shape itself is not changed, but the grey level is changed. When a 50% dot is cut back to 35%, the grey level 128 is internally changed to 89, resulting in a 35% dot. Instead of the original 128 levels in the highlight to midtone range, there are only 89 levels left. An 8% dot (grey level 20) cut back to 2% (grey level 5) means a loss of 15 out of 20 grey levels in the range between 0 and 8%. Instead of applying this curve to adjust grey levels in the unscreened data, FlexoCal will apply it during the screening process. This means a 50% dot remains grey level 128, and an 8% dot remains grey level 20, although through overexposing, they will appear as 35% and 2% dots on film. No grey levels are lost.

Printing smaller dots

As the dots are harder and rounder, it is possible to keep very small dots on the plate and press. Even though dots smaller than the anilox cell openings are, according to cell dipping mathematics, impossible to print, experience has shown that many printers are capable of printing dots smaller than their anilox cells, using FlexoCal calibration.

By keeping more grey levels in the highlights, and keeping smaller dots on plate and print, FlexoCal will result in :

- Brighter highlights
- More details in the light areas
- No highlight break
- More saturated colors
- Extreme quality on your own imagesetter, from your desktop
- Sharper linework, open reverses

Optimum print quality in flexography is achieved when linework and type are compensated for press gain. Digital compensation using strokes, chokes or pixel editing degrades image quality. Analogue reduction using FlexoCal shrinks positive type, opens reverses and smooths jaggies resulting in optimum linework quality.

FlexoCal™ Generation II

FlexoCal Generation II is a Combination of 3 technologies:
1) FlexoCalibrator 2.0 software with FlexoCal and OptiMin
2) Agfa ImPower Plus film
3) Artwork Systems "Zero Gain" platemaking procedures

By combining these 3 technologies flexo print has surpassed the original FlexoCal to levels never achieved before.

OptiMin™

OptiMin is a technology for setting the minimum dot specifically for flexography. Unlike other applications which allow a user to select the minimum dot on output, OptiMin is "2 dimensional". It allows the user not only the ability to select the minimum dot to be placed on film (dimension 1), but also the grayscale value at which the selected dot size should be placed (dimension 2). OptiMin assures the best possible highlight reproduction.

Flexo technology for a broad flexo market

FlexoCalibrator.Film™ is designed for conventional imagesetter film for solid sheet photopolymer plates. Separate curves for film and plate enable the characteristics of the plate and exposure source to be incorporated in the calibration file.
FlexoCalibrator.Digital™ is designed for Direct-to-Plate flexography. By incorporating the actual plate curve at each screen ruling in the calibration file, user created bump curves are eliminated, highlights are optimized and consistency is assured.
FlexoCalibrator.Liquid™ is designed for imagesetter film and liquid flexographic plates. This calibrator takes advantage of the natural highlight sharpening of the liquid plate to achieve optimum highlight dot reproduction. Because all FlexoCalibrator calibration products include FlexoCal, output quality to all systems is maximized and between-system-matching (e.g. conventional to digital) is as achieved as closely as possible.