

Monitoring ΔE is not enough!

FLEX³PRO-new control features for the printing process

The ΔE measurement is a key parameter when controlling the printing process.

Measuring the ΔE with a Spectrophotometer gives a unique number for the visual colour difference between similar colours, the reference colour (ie the colour required) and the actual colour printed.

To match the reference colour we change the dot curves to obtain the proper colour profile.

The dot and its characteristics are therefore a key component of the printing process.

If the ΔE is out of tolerance then a densitometer (especially with 4 colour process) will help to correct the errors in the colour match, density, dot gain and trapping supplying information about the ink transfer, and if you do not have a spectrophotometer you can get some information about YMCK ink using Greyness and Hue error.

However not all problems are due to ink or ink transfer.

The mechanical dot size, the contour (shape of the flexo dot) and the ink coverage across the dot itself will often lead to changes in the printed colour (see fig. 1).

The FLEX³PRO is a precision device designed to measure and monitor the changes in colour due to mechanical problems of plate, press or ink.

THIS IS SOMETHING THAT A DENSITOMETER OR A SPECTROPHOTOMETER CANNOT DO.

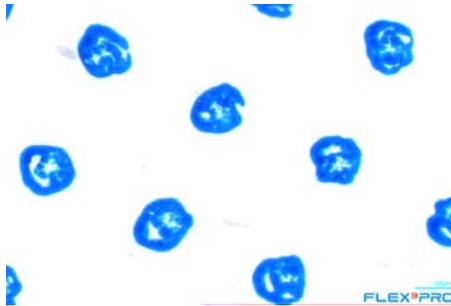


Fig. 1

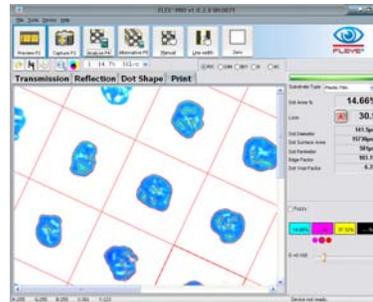


Fig. 2

The FLEX³PRO measures the geometrical dot size, dot shape and the dot void of a printed dot (Fig 2).

The solid single colour control patch may print correctly but there might still be a printing problem in dot overprint (this again would change the colour)

The printing characteristics of the dots are different when printing on plain substrate than when overprinted, a densitometer can be used to check some aspects, however in order to really understand the reason for the problem and be able to rectify it you need to see and measure the dots performance, thus the measurement and viewing of the geometrical dot sizes is vital.

At the exhibition PROFLEX 2010 in Stuttgart, Germany, PERET has presented a superb new colour separation function for the FLEX³PRO device.

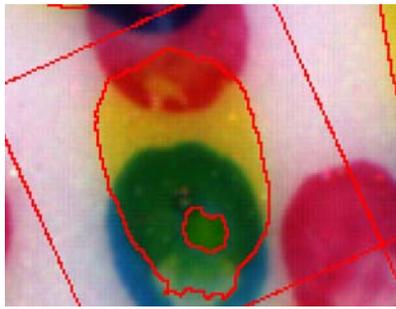


Fig. 3

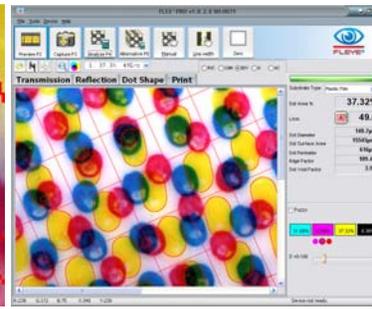


Fig. 4

The FLEX³PRO extracts the precise area of the yellow dot (see Fig. 3) from the overprinted image.

The software then calculates and displays the characteristics of both the area and shape of the extracted dot.

The dot now can be compared to another dot of a yellow taken from an area which has been printed directly onto the paper (or other substrate).

Differences between the two show immediately the mechanical problems with the overprinted dot.

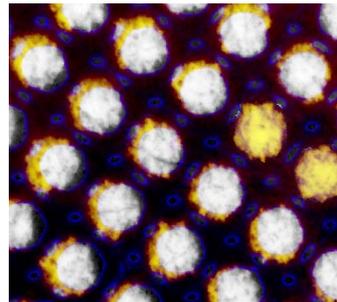


Fig. 5

What happens between plate and print?

The FLEX³PRO offers a similar simple to use function to compare native images. The images are automatically scaled to 12540DPI, rotated and overlaid. The source images can be captured with any FLEX³PRO device and exchanged between devices on different sites.

All printing processes have some mechanical dot gain, and as expected the overlay image in Fig. 5 shows larger printing dots than dots on plate (yellow areas), also additionally the image shows a small difference in screen ruling. When we examine this screen ruling on plate is measured to be 153.7L/Inch, while the screen ruling of the print sample is measured to be 151.9L/Inch.

This apparently small difference results in a mid tone dot with 120 μ m diameter in a dot area % of 41.4% on plate and a 40.4% on print. Although only a 1% change this can result in a difference in ΔE of 1 to 3 | (depending on colour) and could mean failure in colour matching.

Possible reasons for the difference in screen ruling could be poor plate mounting or in material transport (stretching, slur etc.)

When measuring it is good practice to compare the actual measurement with previously stored references so when investigating problems the actual images and measurement data can be compared to the reference, interpreting the differences often leads to the solution of the printing problem.

Sharing information between the trade house and printing company using FLEX³PRO is the perfect tool to guarantee a final high quality printing product.