

Measuring flexo plates and sleeves in transmission.

Flexo has become a high quality printing technology. New technologies, higher resolution, higher screen rulings and new screening types have pushed the quality of flexo printing products close to and sometimes even beyond the quality achieved in offset or gravure. In order to guarantee your product quality the use of high end measurement equipment is essential.

The FLEX³PRO Flexo plate analyzer from FAG and PERET is such a device implementing state of the art technologies to measure all Flexo plates (Figure 1).



Figure 1

Many Flexo plates in use today are transparent and 10 years of experience in measuring flexo plates have shown that the most precise and repeatable approach is to measure using the transmission method. There must be no disturbing light spots hiding the real position of the printing dot surface edge, and the captured images must show in extremely high contrast.

But there are occasions when the transmission measurement is not always equal to the true dot size. Here some principle rules have to be respected: the quality of the transmission light source and the exact positioning of the sensor over the light source is a prerequisite for a precise measurement. It is vital that the real plateau is measured, i.e. the flat portion at the top of the flexo dot, this is because only the plateau size is a true constant and this is the only way to keep the process stable.

In some cases the shoulder portion will also print depending on other printing process parameters like pressures, speed, substrate and ink, so the shoulder portion of the dot has to be controlled using the 3D Mode of the FLEX³PRO. A top view here cannot supply the proper information (Figure 2).

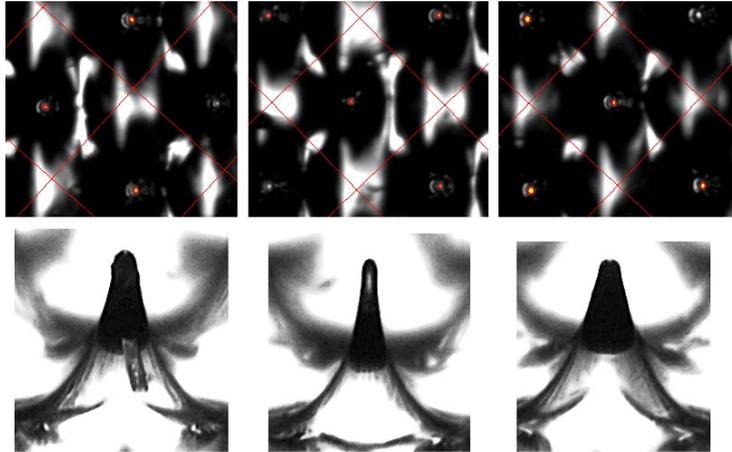


Figure 2

Figure 3 shows three different optical approaches for transmission measurements.

These three approaches have been simulated with the FLEX³PRO on a 1% patch of a flexo plate. As can be seen in figure 3 there are significant differences in measurement results although the sensor and the analyses algorithms have been identical.

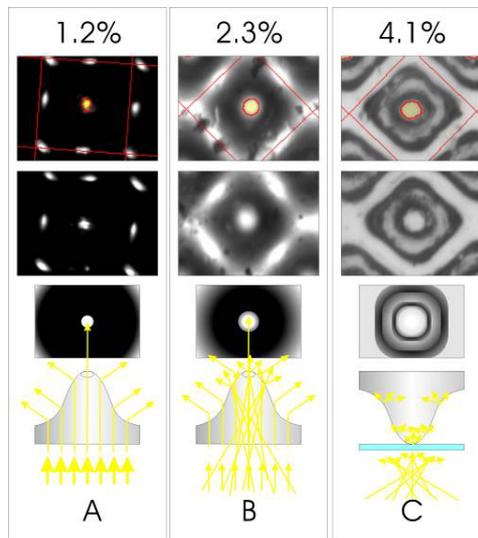


Figure 3

Approach A: directed light is send through the flexo plate. When the light exits the polymer on shoulder it strays and does not reach the camera, therefore the pixels are black. If the light exits the polymer on a flat area, the light does not stray and reaches directly the camera pixel, now the pixel is white. Figure 3A shows sharp edges and high contrast. The dot percentage measured is 1.2%. The correct

positioning over the light source is guaranteed by the measurement control lever of the FLEX³PRO device.

Approach B: the transmission light source of the FLEX³PRO has been artificially strayed by means of a stray filter. Figure 3B shows reduction in contrast and lower sharpness of the edges. The reason for that is that the principle explained above is not true any more. Approach B measures a dot area of 2.3% - almost double of approach A. The effect of dot enlargement depends from plate material and other process parameters having an impact on the dot structure. A comparison across plate materials is impossible.

Approach C: The flexo plate is positioned with the printing side down on a standard light table. The image is captured from the back side of the plate. This approach is well known as the measurement of the dot diameter with a Lupe. The two dark circles around the center of the dot do not show the edge of the plateau. The dark circles are showing the area of the largest change in steepness of the dot shoulder and dot base. The measurement value achieved is 4.1% - almost 4 times bigger than the real printing dot surface. This approach can not be used to control digital plates.

As sleeves are becoming more and more popular and In order to offer the same accuracy for the control of transparent sleeves, FAG and PERET has developed for the FLEX³PRO a sleeve station accessory called " ROUNT" : (see figure 4). The ROUNT is equipped with two transmission light sources compatible to the transmission light source of the standard device. The Sensor head of the standard device is mounted onto ROUNT and positioned over one of the two light sources. The software of FLEX³PRO is used to capture and analyze images. ROUNT works for all sleeve formats.



Figure 4