HOW USEFUL ARE PLATE SCANNERS IN PREADJUSTING INKING

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Abstract: A summary of field results of an electronic plate scanner used for presetting ink fountains of sheetfed presses. In the majority of runs, only one ink correction is needed after presetting.

Report of Field Experience

Over 200 Roland EPS plate scanners have been installed and used to preset ink keys on several sizes of sheetfed presses printing a wide range of commercial and packaging work. This scanner, described at TAGA '83, has several design features which have proven significant in improving measuring accuracy.

The first is the long distance from emitter to receiver, which combined with a special diaphragm, results in increased depth of field. It is thus not necessary to hold the plate perfectly flat by vacuum.

Second, this long distance makes it possible to place the emitter and receiver close to each other. The receiver sees only diffused reflection which increases the accuracy of measurement.

Systems with shorter distances between emitter and receiver read part of the direct reflection which reduces contrast between the printing and non-printing portions of the plate. Measurement accuracy is thus impaired.

The most important question for the user, and for us, is the question of accuracy of the press presetting.

Phrased differently: How close are the presettings made by the scanner/computer/ink fountain system to the final settings on the OK sheet?

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In the field we noticed that in more than 90 percent of the runs, the computed quantity of ink comes very close to the quantity actually needed. In most cases only one correction is made, together with the register correction, after the first inspection sheet is pulled. After that, the run can start.

Only a small portion of the runs (less than ten percent) need several corrections. These are jobs either with a widely varying ink distribution on the plate or jobs with narrow borders.

Measuring Error of the Plate Scanner

The EPS plate scanner works, even after prolonged operation, with constantly high measuring accuracy. The deviation is one to two percent. However, the use of suitable printing plates is a prerequisite.

As we have noticed, uniformly anodized printing plates with a dark, opaque light-sensitive coating are best suited and extraordinarily well-measurable. The contrast between the light-sensitive coating and the metal surface is approximately 1:4. And, the measuring error would then be one to two percent.

Plates with a shiny but uniform surface and a transparent light-sensitive coating have a contrast of approximately 1:2. The measuring error is larger and may go up to more than five percent.

Plates which are not uniformly anodized or which have variable gloss show considerable measuring errors. On some types of plates with a brushed surface, we found measuring errors up to 50 percent.

Light-sensitive coatings of varying thickness and fluctuating coloration may cause measuring errors as well.

These variations occur during the production process at the plate manufacturer. During the past two years, an active exchange of experience has taken place between printing houses, plate manufacturers and ourselves and has led to an improvement of the measurability.

Since variations of gloss or coating occur primarily along the edges, some manufacturers now trim the edges all the way around. "Scanner suitable" plates are already offered by some manufacturers. They distinguish themselves by a

particularly high degree of uniformity.

Of course, we also looked for ways to neutralize plate defects within the EPS device. On our new EPS units, we, therefore, provided means for compensation, as long as we deal with a defect which is constant throughout the whole shipment of plates. For example, if all plates of a shipment are darker toward the edge, the values measured in this area would be too high. To compensate this error, we proceed as follows:

A plate showing that type of defect is measured without coating. We call it the "zero-percent-reference-plate". At the darker edges then, instead of the zero-percent readings, the deviating values would appear.

These deviating values now are stored in the computer and used for the corrections during the following measurements. For this reason, the plates must remain in the same running direction and must not be turned.

Errors, caused by non-uniform light-sensitive coatings, may also be corrected. To this end, a plate with full coating is measured. We call it "the 100-percent-reference-plate". Deviations of the coating are stored in the same way and corrected accordingly on the following plate measurements.

Here we have a good example of how new techniques can cause problems unknown so far. But we also see, that by exchange of information and cooperation of all concerned, good solutions can be found.

What will the future development of the plate scanners be like?

Even difficult forms, which today still require several correcting adjustments by the operator, will present fewer problems in the future. This will be brought about by the use of "intelligent algorithms"; they are able to include the inking of neighboring ink zones into their computations.

Then remaining preadjustment problems in practical work which are attributable to influences of paper, ink, damping medium and environment, will be solved in the more distant future by intelligent computer systems. With these it will then be possible to obtain an almost 100-percent correct preadjustment of the inking.