Film output & Platemaking

All of the process control elements we have discussed so far have been in "color", color scanning and color proofing. We will now enter the black and white world of film output and platemaking, no color here, or is there? The majority of newspapers are still film but some have made the transition to direct to plate, we'll cover both systems.

Let's review how metal plates evolved from film, then, we'll address Computer To Plate issues (CTP). The film generated from scans, and / or digital files should have a maximum density of 3.5 or better (D-max). They should be calibrated so that all dot percentages from 0-100% are represented faithfully. This process is called linearization, it means that when a 30% dot of cyan and 30% magenta are in the digital file for a 'purple' color, the value on the film is 30% as well. If, when the film is output, the film value is 40% instead of the requested 30% we need to 'calibrate' the film setter. This calibration procedure, usually only requires the adjustment of the LOF number (Light on Film). If we increase the LOF number the dots become smaller, if we lower the LOF number the dots become larger, this is because we are 'exposing' the black area, or 'background' of the film. In some cases it may be necessary to 'adjust this calibration curve to match a specific print condition, but it's a good idea to start from a linear position. If we have high gain numbers at press and would like to print to a standard like SNAP we may need to reduce the film dot sizes to print correctly at press. Remember, any changes made to the film output will be reflected in the film based proof.

Now that we have an accurate film output we expose it to a negative working metal plate. The exposure is made with a high intensity 6 or 8KW bulb. This high Ultra Violet content bulb has a short lifespan, generally 1,000 'on time' hours. On time hours represent the entire time the platemaker is on, not the total 'exposure time". This high UV content is what makes the exposed emulsion stick to the aluminum plate, as the bulb ages the UV content drops and the emulsion, or dots, drop off the plate. Some plate frames have integrators that measure the 'amount' of UV light exposed to the plate but don't measure the 'quality' or content of the UV spectrum. Change your bulb every 1,000 hours, in a 2 shift environment, that's every 3 months! (A lot of printers wait until it burns out!)

Each plate exposed, should be measured with a GATF Plate Control Target or a UGRA scale. These targets have a continuous tone gray wedge, micro lines, and dot percent scales in 10% increments. Place a scale in the plate bend area (non-printing area) of the plate, expose with the film negatives, or as a separate exposure. We need to measure visually (microlines) or with a plate reader, the % values of these patches. First we evaluate the 'gray scale' information, the manufacturer generally recommends a 'solid step" 4 or 5. Each gray scale step is a .15 density difference. Increasing the exposure moves the step scale higher. A finer measurement is of the microlines, these are a series of clear and black lines of equal spacing per segment. The segments vary from a 'small distance' of 2 microns to a large distance of 20 microns. The correct exposure for most plates is 6-8 microns. When I travel to printing plants this is the number one error in their process, over exposed plates! When the plates are over exposed the value of dot size changes, not very much in the 10% or 90% area - but very much in the 50% area. A correctly exposed plate, with a 6-8 micron exposure, a 50% original dot will become 54% on the plate. Many shops I visit have a 18-20 micron exposure and their 50% becomes 60% on the plate! Ever wonder why your images are 'flat' and the color is 'muddy' at

press? Check your plate exposure! I prefer to use a plate reader for evaluating these plates, but the visual check of the microlines, gray scale, and highlight / shadow patches may be sufficient.

Our process control strategy began in scanning, proofing, film output and now platemaking, this is all controlled for a consistent product delivered to press. For those of you that have made the move to Computer To Plate (CTP) the process changes a little. With CTP there isn't any film produced, the file goes directly to platemaking. Most platesetters are installed linear. This means that a 50% value in the original file will remain 50% at plate. In the film based world the plate would gain about 4% making the plate value 54%. Here is the great debate, linear or not! In my opinion, if you are trying to match SNAP or some other film based standard, you will need to add this 4% ' bump' to the midtones. Remember, it's the 'total gain' at press that were interested in, so if your gain is excessive then a linear plate may be just fine! However, adjusting plates becomes addictive, soon you may be color correcting each plate for a 'bad press condition, - not a very good idea, because your simply 'masking' the print problem. Whatever your choice, each plate should have a GATF Digital Plate Control Target in the plate bend area. Our target has 2 complete tonal scales to show if any changes or curves were applied to the plate.

How do we measure these plates? There are several plate reading devices for measuring the actual dot area of the plate. Reflection densitometers can be used but a defined N-Factor must be changed in the instrument for accurate readings. However, the densitometer can be use to check consistency from plate to plate.

By now, we realize it's all about the size of the dot and the color of the dot. The next artiicle will cover the pressroom process control. We have visited every department and discussed the tools and methods necessary for process control and quality reproduction. Each of these departments have an impact on what, and how, the press will print. We must think of this in terms of a process.

On to the pressroom. . .