Running a banded roll trial can help identify the limitations of your equipment and optimize all components in your printing process. If well thought through, documented and analyzed, a banded roll trial can be extremely effective. In this article, we will explore the process leading up to a banded roll trial, the elements to include in the design of the artwork for the trial, and the analysis of each element.

What is a banded roll?

A banded roll is a single anilox roller that is engraved in sections with different line screens and volumes. This scientific method of process improvement allows multiple component testing to determine the thinnest ink films. A banded roll test can logically specify rolls for new presses or graphics improvement projects, and the results from the trial can also be an excellent educational tool.

Identify a clear objective

Prior to running a banded roll trial, it is important to ask yourself, “Why do I want to run a trial?” The most common reason for running a banded roll trial is to determine the thinnest ink film to run while still obtaining adequate solid ink density. However, there are other objectives. Maybe you are trying to improve graphic quality of print by optimizing all the components of the printing process. Proper line screen and volumes can be determined, along with the most effective sticky back for a particular job, the best substrate, plate, anilox, line screens, inks and printing plates. Identifying the reason for running a banded roll trial will determine the line screens and volumes that will be engraved on the anilox roll. If you are looking at solids and type or halftone screens and vignettes, this needs to be identified in the preliminary meetings. Keep in mind, the more component/elements you include in the trial, the longer it will take to analyze the results.

Planning

In the initial stages of the banded roll trial, it is extremely important to meet with all the suppliers involved along with your internal team. Set up a meeting so everyone involved will know what the goal of the trial will be. The earlier you have involvement from your suppliers and internal team members, the greater chance you will optimize the time and data from the trial.

Allow adequate time on press for the trial. It is important to realize that running a banded roll trial will take time. Schedule for this. Do not expect to rush through this process and get usable data from the trial.

Run under production conditions. If this is not done, the data you get from the trial will not be valid. Make sure the press operators use the same impression settings, run speeds and other settings as they would during a normal production run.

It is very important to have the pressman and assistant involved in the planning process. A pressman can make or break a trial and not involving him is the best way for a trial to be a failure and time and money wasted.
What to include in the targets and how to analyze.

When designing the layout for the trial, it is important to include some key elements. We will now take a closer look at what needs to be included in the artwork and briefly discuss how to properly use each element.

**Slur & Impression Targets:**

These gauges are used to precisely set impression for anilox and plate. Paralleling of these settings is accomplished by comparing the targets on the left and right edges of the web.

At optimum anilox and print impression, the target should appear in a uniform color. If this result cannot be achieved, a slur condition (speed differential between substrate and plate surfaces) is indicated.

The targets are composed of parallel micro-lines. Their uneven growth in different segments will create lighter and darker visual effects to indicate improper settings.

**Thick and Thin Rules**

Thick and thin rules in positive and reverse are included in both the press and cross web directions. These lines are used to allow the designer to specify rule widths based on how they will appear when printed rather than as they may appear on screen. Lines in one direction may appear differently than lines in the other.

The positive and reverse lines are broken in the centers to observe the effects of gain. Ideally, the lines should appear of similar width when printed correctly.

Many times, designers may include hairlines in a
design which will totally close up with press gain. This target is intended to prevent this occurrence. The lines in the digital target file are the following weights, starting from the center in points: 0.25, 0.50, 1.0, 1.5, 2.5, 3.5, 5. A microscope with measuring capability can be used to provide a measurement of line image gain.

**Positive and Reverse Type**

These elements are used to define the minimum positive and reverse type sizes which can be reproduced on your press. They also allow a designer to visualize the effect of size and weight on appearance and legibility.

These elements define the appearance of type combined with your process images. Much more gain in anticipated under conventional line work or solid printing set-ups. For these reasons, be cautious.

**Grey Scales**

Non-overprinting grey scales are used for all four process colors. The scale percentages start at 2% and go up to 5% in increments of 1%, then they increase by 10% increases up to a solid 100%. The scales will show how much dot gain is obtained during the printing process. They can also be used to check the print contrast.

**UPC Symbols**

UPC Symbols should be placed in both the machine and cross machine directions to determine optimum bar width reduction for symbols printed with the process color roll being characterized. This also shows how well UPC's will scan in the web direction and cross web direction.

Once all the images have been output to film and plates generated it is time to mount the plates using the most appropriate sticky back for the results needed. Consult with your sticky back supplier for recommendations.

Your ink supplier should have appropriate inks at correct specifications for the press trial. The pH and viscosity should be at optimum levels. To check these, use a pH meter and zahn cup or other viscosity-measuring device. Your ink supplier will know what is best for this.

The day of the banded roll trial, all members of the team should be in attendance to handle any issue that may arise during the trial. They will also be able to give advice and assist in the analysis process of the printed samples.

**Evaluation of Samples**

Once the samples are printed, it is important to evaluate and react on the data generated. All of the suppliers can assist in the evaluation of the data so the most accurate information can be passed to the pre-press department or your separator.

Remember, a banded roll trial can be a very effective tool for determining the thinnest ink film while maintaining enough density. This scientific test can also be used to test sticky back, plate material, substrates, anilox and inks. All the variables can be optimized for the best quality. Keep in mind, if any of the variables change over time, another banded roll test will need to be run. All the data generated will no longer be valid.

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