Controlling Press Bounce

(Rich Emmerling, Flint Group Flexographic Products)

Causes of Press Bounce
Press bounce can be the controlling element in setting the press speed on a particular job. Today’s presses are designed to print at high speeds, but sometimes cause print defects that will not allow the press to run at the desired speed. There are many factors that influence press bounce, such as graphics, condition of the press, repeat length and plate/cushion tape construction. Lowering the press speed to reduce the effect of bounce can play a major roll in the deprivation of productivity goals and profits. In many cases, the printer knows the root cause or contributing factor to the bounce issue but does not have the time or resources to find a resolution that will allow him to meet the shipping deadline. So, a quick fix is needed, which is usually lowering the press speed.

Evaluation of the variables
Flint Group Flexographic Products, with assistance from Flint Group Print Media/Day Offset Blanket team, put together a project to obtain an understanding of the contributors to press bounce and to determine ways of reducing this effect with various sleeve construction modifications. The variables included print sleeve construction, press speed, graphics layout, cushion tape type and plate type. The testing was performed on a customized printing simulator designed and used by the offset blanket team. The construction of an offset blanket with the rubber and compressible layers forms some resemblance to a typical flexo plate construction. Many offset web presses run at speeds that exceed the speeds of modern flexo presses. This printing simulator is designed in a way to focus on interaction at the printing nip to reduce vibrations. On this device, speed and impression are controlled while the amount of vibration is measured. This work was performed by Max Thate, Technical Service Plates, and reported at the FTA Forum by Bob Adler, Product Manager rotec® sleeves, both of Flint Group Flexographic Products division. From this evaluation, the validity of the device for use with flexo plate construction was confirmed, and known causes of press bounce, as well as a great deal of background information on the optimization of sleeve construction was obtained in order to better deal with the many influences of press bounce.

Results of lab testing
From the lab test results, several sleeves were manufactured and used for initial field trials on a wide web central impression press. Only the sleeve type was varied with the other press conditions remaining constant. Lower cost mounting tapes were used on the compressible sleeves versus the hard non-compressible sleeves. The tapes used on the compressible sleeves were thin 0.005” transfer tapes designed specifically for this sleeve. The cushion tape
used on the hard non-compressible sleeves was determined by the graphics. With this in mind, tape was not considered as a variable. The graph shows some of the early results of the field trials. The data collected was the density of a 60% tint mounted across the web. Density measurements were taken every inch across the test tint pattern. The flatness of the line in these cases determined the ability of each plate and sleeve construction to dampen or reduce the amount of vibration by printing a smoother consistent tint. The two lines displayed in the graph represent the hard rotec® Blue Light Sleeve mounted with a 0.020” soft cushion tape and the rotec® High Speed Compressible Sleeve. The results show significantly less density variation when using the experimental rotec® High Speed Sleeve as compared to the other constructions. The chart displays the printed results used for these density measurements.

Live press runs
The results from live press runs have also shown several benefits. Joe Kostecki, the Graphics Manager at Little Rapids, a wide web printer located in Green Bay Wisconsin, converted a line of jobs that was notorious for bounce. These four spot color design, polyethylene bundle wrapper jobs were normally mounted one up on a hard sleeve using 0.020” cushion tape. Using this plate, tape and sleeve construction, Little Rapids was only able to achieve 500 feet per minute press speed without showing signs of plate bounce. Remounting of the plates on a rotec® High Speed Sleeve allowed the press operator to increase the speed to 800 feet per minute without showing signs of bounce.

At another flexible packaging printer test site, the standard press speed needed to be set at 1000 feet per minute, which was below the 1,220 feet per minute target, due to the layout of the graphics. Once the plates were mounted on the rotec® High Speed Sleeve they were able to run the job at the maximum allowable speed of this particular press, which is 1,500 feet per minute. This flexible packaging printer also commented that the minimized bounce resulted in less downtime required for normal plate cleaning.
Another long time user of compressible sleeves tested the rotec® High Speed Sleeves on one of his jobs that normally shows a tendency to bounce. Two of the line colors on this small repeat job have always had bounce related issues. The job was first mounted on his standard compressible sleeve, which resulted in bounce issues that would not allow the press speed to run above 500 feet per minute. Once these sleeves were replaced with the rotec® High Speed Sleeve, the job ran throughout the entire run at 800 feet per minute.

**Conclusions**

Besides the benefit of being able to increase press speed, cushion sleeves also reduce costs by eliminating the need for expensive cushion tapes. Cushion sleeves improve consistency by using a more rugged cushion layer (as compared to cushion tapes) and this cushion layer is less likely to break down during long press runs, ensuring consistent print quality from the beginning to the end of long runs. The cushion layer on the compressible sleeve is considerably thicker than standard cushion mounting tapes. This added thickness allows for wider impression latitude on press, providing less influence on altering the print quality when slight impression settings are made. The relatively hard, yet highly compressible, surface of the rotec® High Speed Sleeve enables the printing of half tone images and solids on the same print deck. In addition, customers using compressible sleeves can expect to see a longer life from their photopolymer plates.

23 September 2014

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