



Maintaining Optimum Coverage

Viscosity Control Can Result in Substantial Savings in Ink Costs

By Moses Mendez

A problem with ink film that's too light is easily seen; but ink film that's too heavy cannot be detected by the eye. Once mass-tone is achieved, ink film does not change as it becomes thicker. To the unaided eye, the top of a .001-in. thick film will appear little different from a film of the same ink .0001-in. thick. Without sophisticated viscosity control, it's possible to waste a lot of expensive ink.

Automatic control systems continuously sense ink viscosity, transmitting a signal when additional solvent is required, thus preventing wasteful ink buildup. Control of the slightest change in viscosity makes all the difference to successful ink management—particularly in the low-viscosity region of the thin inks currently in use.

MOST IMPORTANT VARIABLE

Pressroom supervisors, plant managers and quality control managers of modern flexographic printing operations are increasingly responsible for saving time and ensuring proven performance on all flexographic printing jobs. Adhering inks to a wide variety of substrates with no streaks and attaining the proper color density are critical. Whether your firm produces box-board corrugate, flexible packaging, folding cartons, preprinted linerboard or labels, you require reliable viscosity and pH control to assure the uniform application of your inks.

Ink viscosity is perhaps the most significant variable on the press. Unless you control it continuously and closely, perfect color, uniform ink coverage and accurate color match cannot be achieved. Given today's higher costs for solvent- and water-based inks, large, medium and even small printing operations can save significant costs by controlling ink viscosity.

There are other variables that will affect the quality of the finished product, but none change as rapidly or are as hard to spot

as viscosity. It is the prime parameter that controls ink transfer to the substrate after all other mechanical and setup aspects of the printing press—like nip, speed, and selection of paper—have been established.

Today's very complex ink products have been formulated in response to the many requirements of modern printing. The end-use of the printed substrate determines the properties that must be built into an ink, whether it's water-resistant inks for outdoor displays, scuff-scratch-resistant inks for shipping containers or special odorless inks for food packaging. Optimum press performance, in general, results from rigorously complying with the ink manufacturers' specifications or printing problems will occur. Most readily noticeable will be the effect on print quality and color value.

INCREASED PRODUCTION PROFITS

Numerous articles have affirmed that a one-second increase in viscosity can lead up to a 25 percent increase in ink consumption. What should be kept in mind are the other aspects of the operation, which, when properly controlled, increase production profits, namely:

- Reduction of setup waste.
- Ink and solvent economy.
- Short setup times.
- Elimination of rejected product.

Also, standardizing the viscometer unit, regardless of the wide variety of inks used by the printer, has numerous built-in cost efficiencies including:

- Uniform application of ink and less ink waste.
- Less operator downtime.
- Easier cleanup.

REAL-WORLD APPLICATIONS

Recently, a printing operation specializing in lottery and gaming tickets for governments, corporations and retail stores installed process viscometers on its narrow-web flexographic press. The company currently runs 12-hour shifts and produces millions of lottery tickets annually for many international companies.

“We formerly used a Zahn cup, but there was too much inconsistency,” the lead pressman explained. “Depending on the operator conducting the readings, you’d get different measurements. Sometimes you’d get a thick film or a thin film, and the flow properties of ink wouldn’t be there. We also had pump problems and would get transparent coatings instead of opaque because the ink would be so thin. However, once the viscometers were set up, they held their viscosity well. As long as the solvent tanks are full, I can run them all day and not have to think about it.”

CHOOSING AN AUTOMATIC VISCOMETER

Print managers must select a viscometer based on their production needs, and this is dependent upon numerous factors, including operator acceptance, consistent measurement and control, fit with existing equipment, expected cost savings, and maintenance and repair. The promise of uniform viscosity measurement and control for ink reduction and cost savings will only be acceptable if the long-term excellence of the installation is also cost-effective to operate and service.

The leading viscometer manufacturers offer many warranty and service contracts that ensure smooth production should you

need to service your process viscometer. Loaner programs, fast distributor or in-factory repair-and-ship and, when appropriate, buy-back programs for newer and more efficient models are all important components of a post-sale relationship with your vendor. This can give you the assurance that your viscosity requirements are met.

ONGOING BENEFITS

In the pressroom, the prime function of viscometers is not solely to accurately measure viscosity, but to maintain ink formulations at predetermined levels to ensure the economical usage of expensive ink, consistent, of course, with the quality of the final product. In summary, as a print manager or operator, the installation of modern viscosity measurement and control equipment will move you closer to the day when you can realize:

- New print quality and consistency.
- A significant reduction in startup waste.
- The elimination of rejected jobs by customers.
- A quick purchase payback due to ink and solvent savings.
- Less washup.
- Better ink adherence. ■

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