

COATING MACHINES FOR CONSISTENT RESULTS

Even the most masterful hand coaters cannot match the consistency of an automatic coating machine. Kevin Kauth explains how using automation to control and reduce the variables involved in coating ensures better screen printing results

The single greatest focus of any screen room should be the reduction of variables. In the screen-printing process there are many variables and without control over every single one of them you cannot expect consistent, repeatable results.

Most screen rooms are not set up with the hand coating process in mind. This forces the screen maker to coat one-handed, bent over, with the screen on the floor. It can lead to fatigue and in some cases, rushing to get the job finished faster. In all honesty, it takes years of hand coating screens to master the skill and even the most masterful hand coaters cannot match the consistency of an automatic coating machine. Automatic coaters can create a very uniform coating with minimal variation of emulsion over mesh (EOM) and overall stencil thickness within an individual screen as well as consistent measurements from screen to screen. Coating machines turn unpredictable variables into constant results that can be replicated repeatedly, such as pressure, speed, and the angle of the coating trough.

Consistent screen coating allows for consistent stencil thickness, consistent exposure times and ultimately, consistent print results.

EFFECTS ON EXPOSURE

Disproportionate screen stencil thickness, from hand coating, can have a major impact on exposure. These variations from screen-to-screen can cause a percentage of those to be exposed improperly and can lead to development issues, as well as premature breakdown. This is especially true for water-based and discharge inks, which are typically very aggressive towards the stencil. A thinner than average coating on a screen can lead to overexposure, pinholes, poor imaging (sawtoothing), or difficult washout. Whereas thicker than averagely coated screens can lead to a weak stencil. Typically, this can be caused by underexposure, incomplete washout (scumming), breakdown during washout, or even the loss of stencil adhesion.

When discussing screen problems, regardless of what the problem is, the first question I always ask is: "Have you performed an exposure test?". An exposure test can be performed with an exposure calculator, step test, or step wedge, but regardless which



Reclaiming and degreasing a screen



Chromaline's automatic double screen coater, the ChromaCoat 100

method is used, it is extremely important to have the times dialled in and correct. Keep in mind that the determined exposure time is for that one specific stencil combination, which includes, but is not limited to, mesh specifications and you guessed it... the emulsion thickness! Now imagine if every screen has a different coated thickness. Every screen would technically need a different exposure time. At that point, you are just trying to hit a moving target which is impossible to pinpoint.

Solving this dilemma, emulsion manufacturers have built in exposure latitude, but that only goes so far and the faster exposing an emulsion is, the narrower that exposure latitude becomes, making it less forgiving. This is one of the main reasons I typically lean towards slower exposing products, like dual-cure emulsions for instance. Dual-cure emulsions are easier to use for printers just starting out in screen-printing.

Overall, most of these variables can be eliminated by implementing automation. By having consistently coated screens, the exposure times that have been defined can be trusted. Again, consistency is key and by controlling the variables: coating, exposure and development by implementing automated equipment, you are sure to achieve optimal results every time.

EFFECTS ON DIRECT TO SCREEN SYSTEMS

Variations in stencil thickness will play into the surface dynamics of a coated screen and thicker stencils will retain moisture longer. This can factor into how well the ink will lay down when using inkjet direct-to-screen systems. Therefore, when using these types of systems, it is even more important to reduce variables in the coating process.

EFFECTS ON RECLAIM

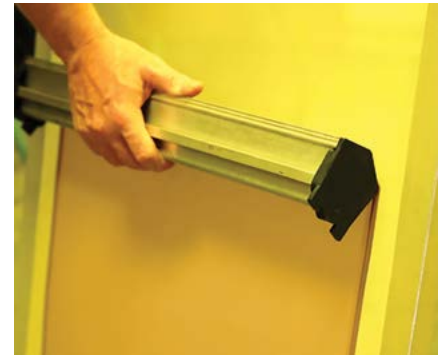
An uneven emulsion thickness can also have a negative impact on the reclaim process. Thicker screens that lead to underexposure will inherently be much more difficult to reclaim, creating opportunities for mesh staining as well. Dialling in the correct ratios of the reclaim chemistry can be nearly impossible with a mixture of properly exposed stencils and underexposed stencils.

EFFECTS ON PERSONNEL

Employee training can easily be the most time-consuming part of owning a business but can ultimately make or break your success in the screen room. Retaining employees in this area can be a difficult task. We all know screen room positions can be a dirty job (I'm still waiting for Mike Rowe of [American TV series] *Dirty Jobs* to do an episode on screen reclaim). Sometimes employees, after putting in their time and proving they are good at those positions, want to get out of the screen room for an opportunity on the press floor, or in other areas of the business. This leaves owners in a difficult situation because they need to re-start the training cycle for one of the most important positions in a screen shop, or potentially risk losing that employee.

"Coating machines turn unpredictable variables into constant results"

By automating the screen room, not only does it increase screen quality and consistency, it also makes it a cleaner, more enjoyable environment. In turn, automation will help in keeping employees happier and less likely to want to leave. An added benefit



Traditional hand coating process

to automation is that these high-level results can be achieved by someone with little to no experience. If new employee training is required, that training process will be less time-consuming and beginners will get up to speed much faster. When utilising an automated process, you do not need to be the Jedi Master of hand coating screens to achieve perfectly consistent stencils.

EXPECTED RESULTS

The single most important factor in screen printing is indeed the screen itself! By reducing variables in the screen room, you'll have much more consistent screens and in turn, better results. By implementing these screen-making procedures, you may notice less waste and better forecasting when it comes to screens per bucket of emulsion. When you have a better understanding of the number of screens per gallon, you can have a better grasp on your bottom line, ultimately maximising your profits.

Who wouldn't want better quality screens, less waste, and less headaches? There are too many other things to worry about when it comes to running your business; the screen room doesn't have to be one of them. ■

Kevin Kauth is Technical Sales Rep – Midwest at Chromaline



A typical way to wash out screens. Photo: Printed Threads

Chromaline's LED Exposure Unit, the Quick Image 2631



Further information:

Chromaline Screen Print Products, Minnesota, USA
tel: +1 800 328 4261
email: sales@chromaline.com
web: www.chromaline.com