

SPTF Updates Multi-Coat Test Screen

By Dawn Hohl, Technical Training Manager, SPTF
 October 2006

SPTF recently recreated a multi-coat test screen for direct emulsion to demonstrate how print quality is related to stencil thickness and smoothness. In the new project, two screens were created, each with 6 distinct direct emulsion coating combinations. The new screens were coated using an automatic coating machine in the SPTF lab (Figure 1). The initial coats were done with a 1.0 mm radius coating trough, and the face coats were accomplished with a 0.25 mm radius edge. The emulsion was a high quality and resolution dual-cure with 34% solids content.

Correct exposure times were tested and the screen was exposed using a new SPTF test film containing fine lines, text and three different line halftones. Before printing, the screens were measured for EOM (Emulsion Over Mesh) and Rz in each distinct coating area. The results, shown in Chart 1 and 2, confirm our base knowledge of how stencil thickness and Rz react to different coating combinations. Chart 1 shows a progressive increase in EOM with additional squeegee side coats, while the face coats added little to no stencil thickness. The Rz results in Chart 2 show a progressive decrease in Rz with additional squeegee side coats, with the face coats improving the Rz by approximately 2 microns across the board.

One striking result from the new test screens was the significant increase in emulsion quality seen with today's advanced stencil technology. The same coating combinations from the original test screen in 1995 had much lower EOM build-up from additional base coats, and also had very high Rz values, even with the face coats. In fact, the highest Rz value in the new test screens, 11.4 for the 1-1-0F coating, is lower than any of the Rz values measured on the old test screen – which had several areas with two face coats. The original test screen results can be found in SPTF's Practical Application Bulletin entitled "How to Optimize Print Quality Through Stencil Testing."

The prints from these test screens are now used in SPTF workshops to show the benefit of face coating and the effects of various stencil thicknesses. In our next installment, we will take a microscopic look at the print results from the various coating options.

Previous update stories and SPTF research reports can be downloaded from the SPTF website at www.sgia.org/sptf. For more information, contact Dawn Hohl at SPTF, 703.359.1318 or dawn@sgia.org.

