

Synchronous Processing of Vacuum Metalized and HMDSO Coatings with Press-Side® Rapid Cycle Coating Systems

J. Grover, Vergason Technology, Inc., Van Etten, NY

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ABSTRACT

Cell manufacturing production requirements for vacuum metalizing have moved both metalizing and topcoating process to the production floor, near the molding presses. For the last ten years, Vergason Technology, Inc. has provided solutions to metalizing on the production floors with our Press-Side Rapid Cycle Metalizers. Due to their short cycle times, Press-Side Rapid Cycle Metalizers are capable of running in-line with molding and assembly operations.

Over the past two years, VTI has been developing a new rapid cycle product to respond to the overwhelming need for producing non-painted topcoats over aluminum metalized coatings. In the next year, VTI anticipates delivery of our first Press-Side Rapid Cycle Topcoat System. Using a monomer conversion process, the new Press-Side will utilize hexamethyldisiloxane (HMDSO) to create clear, barrier coatings in a vacuum environment. These small batch topcoating systems will be designed to work in-line with the Press-Side Rapid Cycle Metalizers.

PRESS-SIDE 3000 RAPID CYCLE METALIZER

The Press-Side 3000 offers an exciting new option for the application of thin metal coating on injected molded parts for reflectivity, EMI/RFI shielding and decoration. The compact 30-inch diameter chamber is suitable for depositing coatings on multiple units during a typical 45-90 second cycle time.

Molded parts are placed into coating fixtures and loaded into the coating chamber. From this point, the process is completely automated. Dual sputtering sources mounted inside the coating chamber offer the flexibility and constancy required to be successful in changing production environments.

PRESS-SIDE RAPID CYCLE TOPCOAT SYSTEM

The Press-Side Rapid Cycle Topcoat System will eliminate the need for painted topcoats for barrier protection. The monomer conversion process is much more environmentally acceptable than painting, which produces harmful VOC's. This extremely repeatable process will also reduce the amount of scrap typically associated with painting. Like the Press-

Side Metalizer, the Rapid Cycle Topcoat System will be designed to run reliably and be maintenance friendly.



Figure 1. Press-Side 3000 Rapid Cycle Metalizer

SYNCHRONOUS PROCESSING

The need for an in-chamber topcoat system to work synchronously with the Press-Side Rapid Cycle Metalizers has driven our development at VTI. The new Press-Side Topcoat Systems will cycle as efficiently as the Press-Side Rapid Cycle Metalizers. Once the systems are set in place, plastic parts to be coated will be loaded into the coating fixture. The coating fixture will be automatically loaded into the metalizer. The metalizer will complete its coating cycle, the chamber will vent and the loaded coating fixture will be automatically indexed to the topcoat system where it will be loaded into its vacuum chamber. Once the topcoating cycle is complete, the fixture will be removed and indexed back to the operator load/unload station, where the process is repeated.