

It's in the spray

Technology transfer yields benefits

By Nancy M. Davis

rom the medical-device, electronics and industrial-coatings industries comes an ultrasonic nozzle that efficiently sprays coatings on glass, and early experiments at a PPG Industries Inc.'s plant in Carlisle, Pa., show that it "works well" in lieu of atomizer nozzles. "We know for sure that we're saving a lot of material compared to the atomizer system," says Robert M. Bonaddi, senior staff engineer with PPG's Flat Glass Group in Harmar, Pa. "It has no overspray [that] we have to collect. The vast majority of the material goes on the glass." Previous spray systems required exhausts to clean the air.

Carlisle plant workers came up with the idea of using the ultrasonic nozzles in their plant and developed the specific application for their float-glass lines as part of a company-wide Lean engineering project. Lean engineering numbers among several quality-improvement programs that call for worker participation and teamwork (see Glass Magazine, January 2004, p. 76). The workers use the ultrasonic nozzles to apply a temporary protective overcoat that prevents stains on glass. Bonaddi says company officials plan to use the nozzles on all future glass lines, including six lines undergoing installation in China.

The ultrasonic nozzle, part of the WideTrack system, is manufactured by Sono-Tek Corp. of Milton, N.Y. "People come to us looking for a way of applying extremely uniform, thin coatings on substrates where people typically have problems, such as overspray, clogged nozzles or material bouncing back off the substrate," says Steve Harshbarger, vice president of sales and marketing, Sono-Tek. "Major reasons why people switch to ultrasonic nozzles include cost savings from less material use, reduced maintenance and less stringent exhaust requirements."



Company officials say the WideTrack system efficiently sprays coatings on glass without any overspray.



Sono-Tek WideTrack over float glass

Electric power at an ultrasonic frequency drives 3-by-1.5-inch devices with liquid coming in one end and an atomizing surface at the other end. The nozzle vibrates at a high frequency as the liquid comes out and is literally broken apart in a spray of drops by ultrasonic energy.

Each spray assembly contains a pair of air jets that alternately pulse to drive the spray downward. The timing and force of the pulses produce a spray pattern that oscillates back and forth across the substrate, according to the product documentation. Ultrasonic sensors detect the presence of the float glass on the line. Spray heads turn on and off automatically as required for different glass width. Flow rates and ultrasonic nozzle power can be configured to automatically adjust for changing line speed.



Sono-Tek WideTrack over panel glass

"This is not a pressure spray," explains Harvey L. Berger, Sono-Tek's chief technology officer. The spray comes out at one-tenth of the velocity, thereby reducing overspray. He says other manufacturers experiment with the technology for antireflective coatings and those that go on self-cleaning glass.

The system features a Windows-based control center with easy access to electronic modules, real-time monitoring of functions and no heat build up. Costs range from \$100,000 to \$130,000 for a system that can coat a standard 13-footwide float-glass line.

Company officials say the system contributes to manufacturers' compliance with the International Organization for Standardization's ISO 14001.

For more information, visit www.sono-tek.com or call 845/795-2020.