Drumming-Up a Better Paint Line

The switch to a vertical line orientation, gun and pump upgrades, and the integration of a new automated control package gives this drum manufacturer the capacity to double productivity and achieve significant material savings.

Mauser, a German-based company with 4,000 employees globally, specializes in the manufacture and delivery of steel drums, with special attention paid to the need for the holding and handling of dangerous products. The company recently acquired four new manufacturing plants in North America, including a 66,000-square-foot facility in Columbus, Ohio.

“Our expertise provides the chemical and mineral oil industries with packaging solutions that offer safety and durability,” says Brad Strawser, plant manager of Mauser’s Columbus facility. “Many customers also have very specific drum decoration needs – color combinations, screen printed logos or stripes – that must be addressed.”

In 2011, Strawser began researching ways to improve his finishing operation. At the time, the Mauser Columbus liquid paint line ran with the drums in a horizontal orientation, where they were hand-loaded into the paint booth. The drums lay sideways and spun during the painting process, causing paint rub-off that required constant touch-ups. In addition, the paint operators used shields to create any stripes, which needed frequent cleaning.

“It was a very manual system that gave us day-to-day headaches,” explains Strawser. “We wanted someone to eliminate the hassles, and help us to improve efficiency, productivity and paint transfer efficiency.”
A Vertical Solution

For an integrated, turnkey solution, Strawser turned to Nordson Corporation (Amherst, Ohio), a leader in the manufacture of liquid application equipment for 60 years. Nordson developed an automated system to alleviate many of the issues that Strawser and his team faced.

With the new system, the drums are run vertically through an automated paint line on a conveyor after machining and fabrication. In the paint booth, the drums are painted using 13 Nordson A7A airless spray guns at two separate stations for complete drum coverage. The first station positions the guns to paint the drum sides, while the second station reinforces coverage to the drum lid and bottom. After painting, the drums are conveyed to the drying ovens, then to final assembly, after which they are loaded directly onto delivery trucks.

“The old booth was pretty archaic, with guns positioned all over the place and a lot of paint being wasted,” says Sean Davis, Nordson customer service representative. “With the Nordson system, Mauser has improved their transfer efficiency from 45 percent to almost 75 percent and has virtually eliminated waste material.”

“We used to collect waste material in a drum and reuse it for certain customers,” agrees Strawser. “Since we installed the Nordson system, we haven’t had a single drum of waste.”

The system also incorporates Nordson Perma-Flo® pumps, NH-4 fluid heaters and an innovative drum control package. It is designed to keep the drum handler and paint in close proximity, eliminating a separate paint kitchen.

Automated, Touchscreen Controls Improve Efficiency

The Nordson drum control package is a newer product for Nordson, building on the capabilities of gun controls used in powder applications. It is something completely new to Mauser Columbus and the paint line operators, but it is an integral component of the system’s success.

The PLC-based control system is designed specifically for the drum coating industry. In a single closed-loop system, it monitors temperature, pressure and pump operation to provide consistent viscosity and accurate film builds. The controller is recipe-based and can hold up to 100 pre-programmed recipes. According to Strawser, Mauser currently has 18 recipes, all of which were easily programmed as orders came in once the system was installed. The touchscreen, graphics-based interface makes operation simple.

“The operator just has to hit the right button for the job. Any guesswork is completely eliminated because everything is preset,” says Strawser. “Eventually, we will be moving toward a bar code version of the controller, where we just scan the right bar code and the correct customer recipe is in play.”
Big Changes Bring Big Results

Mauser has been running the new Nordson system since December 2013, and is already reaping huge rewards. In addition to the increased transfer efficiency, Mauser has increased its production capacity by more than 70 percent. Where the old system was capable of running 350 drums per hour, the new system can accommodate 600 per hour.

Mauser is also experiencing significant paint savings, stretching its use of paint from 21 drums per gallon to about 32 drums per gallon with the new system. Paint changes can also be done on-the-fly, saving production time and material.

In addition, the Nordson system has improved overall operational efficiency at the Mauser Columbus facility. Stripes can be painted automatically via the pre-programmed recipes, eliminating the use of messy shields. There is no longer touch-up work required on the chime, since the horizontal rotation was eliminated.

“Nordson gave us everything we needed – better transfer efficiency, lower material costs, increased throughput, smoother operation,” says Strawser. “And I don’t think we incurred more than five hours of downtime during the entire changeover. They brought a lot of knowledge to the table.”

For more information on container coating technologies from Nordson, call 1.800.433.9319 or e-mail container@nordson.com