

Turnkey Revolution

Adding a new powder system to this custom coater's automated line meant its turnkey system had evolved right into the new millennium.

Custom coater Vanguard Industries in Anderson, S.C., began in 1967 as a liquid Teflon custom coating business, applying coating to rollers used in the textile industry. In the late 1970s, the DuPont-approved applicator of Teflon coatings purchased its first manual powder gun to expand its custom coating business. In the early 1980s, Vanguard purchased a used powder coating system from Black & Decker. The system, much of which is still in use today, consisted of a five-stage washer; combination gas convection dry-off/curing oven; overhead conveyor and four powder booths. Like many systems in the early 1980s, Vanguard experienced about 80 percent spray-to-waste and 20 percent recovery. The custom coater targeted customers that required long color runs with few color changes. Much of its early business was for the automotive market with a focus on quality.

Over the years, Vanguard has refurbished and upgraded aspects of its original washer and oven. Its five-stage washer starts with an alkaline cleaner to remove soils (oil, dirt and contaminants) from the surface. This is followed by a water rinse and then an iron phosphate application, which creates a good paint grip surface as well as offers extra corrosion resistance. Steps four and five are two more water rinses.

The dry-off/curing oven operates at 275°F for drying and up to 415 to 420°F for curing. Typical cure range is 10 to 15 min at 400°F.

In 1995, Vanguard replaced its four powder booths with one combination cyclone/cartridge powder booth from

Wagner. With this system, the company experienced about 20 percent spray-to-waste and 80 percent recovery. The automotive business continued to grow due to



These raw parts have been loaded and are approaching the five-stage washer.

the quality finish provided by powder coatings and as the BMW plant in Spartanburg, S.C., brought Tier 1 business. In addition, its color capability allowed Vanguard to expand into other general metal businesses. Environmental pressures also helped to reinforce the benefits of powder for Vanguard.

And to strengthen its relationship with the automotive industry, Vanguard worked with a Tier 1 company to develop the ability to perform assembly and forming capabilities. As a result, Vanguard is treated as a



Part of Vanguard's automated system is its high efficiency cyclone with combination recovery/transfer module.

Vanguard sprays up to 15 different colors and changes up to five times a day.

work cell by its customers, providing services other than finishing. Lawrence Hammett, sales manager at Vanguard, says, "We provide value by strengthening our partnerships and providing service, quality and delivery at a fair price."

Because the finisher is always looking to improve, helping to keep those strong partnerships, Buck Fulp, Vanguard's owner, thought 2004 was the right year to upgrade its quality and working conditions, increasing its color change flexibility, powder recovery efficiency and coating coverage consistency. According to Fulp, "We felt it necessary to be competitive in keeping up with the latest technology, giving our customers a better product in appearance and performance."

Fulp decided to replace the powder booth with

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Have you experienced the ultimate powder coating system?



By closely monitoring the ratio of automatic-to-manually applied powder, these finished automotive parts will have a consistent overall coverage. Notice the automatic spray guns at work along with a manual application by hand.

a new quick-change powder system from MS Powder Systems, Charlotte, N.C. The system consists of a double-wall PVC quick-change powder booth with a 36 x 78" product opening. It has a single high efficiency cyclone recovery system, 12 automatic powder guns mounted on reciprocators; two manual powder guns, vertical light bars for automatic gun triggering, 18" horizontal light bars with 3/8" resolution for gun positioning; a quick-change color center, which feeds from powder box or feed hopper; a PLC control panel for operating system, including the color-change process.

The unit is enclosed in an environmentally controlled clean room, which Hammett says improves the efficiency of the system as well as enables Vanguard to have a higher quality finish. In operation since May 2004, the unit has already achieved great results.

Vanguard sprays up to 15 different colors and changes up to five times a day. A typical color change takes less than 10 min with two operators, and Hammett says even that already impressive time is improving as operators become more familiar with the system. The double-wall PVC powder booth resists powder buildup



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Having completed most of the finishing process, these coated automotive parts are exiting the powder booth on their way to the curing oven.

on the booth walls, which reduces color change time and eliminates concerns for cross-contamination. During long production runs, operators also will blow down the booth walls and floor to minimize powder buildup.


Powder output of the automatic guns is kept to a minimum in order maximize the first-pass

By closely monitoring the ratio of automatic-to-manually applied powder, the finished product has a more consistent overall coverage.

transfer efficiency and part coverage consistency. Vanguard does not try to achieve 100 percent automatic coverage because many of the parts are very complex. By closely monitoring the ratio of automatic-to-manually applied powder, the finished product has a more consistent overall coverage. Hammett says he believes the company has improved its overall quality and consistency of the finished product due to the higher first-pass transfer efficiency and operating procedures. The improved consistency also has resulted in powder material savings.

Vanguard uses its Datapaq profiling system for weekly oven profiles, to ensure that temperatures and dwell times are just right.

Vanguard's dedication to quality is obvious. The company has achieved ISO 9000/2001 certification and currently has a reject rate of less than 1 percent. It also catches all rejected parts before shipping. As evidence to its commitment to quality, Vanguard has received the Mark IV Automotive Vendor of the Year Award two of the past three years — the only metal finisher to receive this award, which is based on no rejected parts during the year.

At its facility next door, Vanguard still performs its Teflon coating business and uses its three batch ovens to provide quality finished parts as well. 

For information on Vanguard Industries, call 864-261-8131 or visit www.vanguardindustries.com. For information on MS Powder Systems, call 704-882-3020 or visit www.ms powdersystems.com. For more information on Datapaq, call 978-988-9000 or visit www.datapaq.com.

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