

## CASE HISTORY

# Vacuums improve coater's process and finish

A funny thing happened to David Brown at the race-track. The former professional racecar-builder found out about powder coatings, specifically, they shine and stick to the cars. In fact, powder-coated finishes provide a lighter weight finish compared with traditional liquid coatings, Brown said. For the sake of speed, he had his cars powder coated. "That's sort of what triggered the whole thing," he said. "The car was the big part, but the little bolt-on components looked so nice and neat when they were powder coated, we got to doing our own coating on the parts we manufactured."

The introduction to this dry coating left him a changed individual. Out of the pits and into the shop, Brown opened his own custom coating operation—Unique Coatings. The racing

roots can still be seen at this High Point, N.C., shop. A portion of the shop's business caters to members of NASCAR racers from the Winston Cup and Busch Series teams. From doing the pit buggies for Bill Davis, to the cat car for Dave Blaney, to the wheels for Richard Childress, Unique handles 20 to 25 percent of the Winston Cup's coating needs. But Brown's powdered revelation, which was drawn from speed, detoured off the motorway and changed its focus to size.

Standing heads' lengths above the crowd

Currently, Unique Coatings defines itself by the parts size it can coat, which can be up to 41 feet long and weigh up to 6 tons. In addition to racecars, the company coats parts such as truck chassis, lawn and gar-

*After trying different powder cleanup equipment, which blew out as much as it sucked in, a coater of parts ranging from 30 to more than 40 feet long enlists a fleet of industrial vacuums to clean up the shop.*



*The shop made its three batch coating booths for handling parts more than 40 feet long.*



den equipment, farm equipment, and telecommunications and architectural structural pieces. The shop gears itself to the bigger parts that no one wants to handle, Brown commented. However, its focus on large parts doesn't let the small parts slip through the cracks. The shop collaborates with its sister company, Ultra Coatings, which has an automated powder coating line and specializes in coating smaller parts. For example, one of Unique's customers builds fencing products. The fencing comprises long sections containing thousands of small clips. Ultra powder coats the clips while Unique handles the larger components that take one to three workers to load onto a hook. The two shops have complementary processes and leadership. Mike Moore, president of Ultra Coatings, involved with powder coating since 1977, has an extensive background with smaller parts. Brown opened Unique 5 years ago, bringing his knowledge of mechanically preparing larger parts. "We can

powder coat anything from the size of your small fingernail to a part 41 feet in length," Brown said.

The shop backs up its processing potential with a full service package from pickup to delivery and everything in between. Its trucks can pick up customers' parts and deliver them back to the customer or to the work site. The shop offers three types of pretreatment: chemical stripping, shot blasting, and media blasting. After coating parts, workers wrap the parts for delivery within the contiguous 48 states. Recently, the shop coated 80-foot-long sailboat masts. The masts, which are imported from Sweden, go to a manufacturer who machines and welds and places all the fittings on them. Next, Unique picks up the mast, mechanically prepares it, masks it, coats it (the mast breaks down into two 40-foot sections), wraps it and places it on skids, and then delivers it to port where shop

*Powder containment and cleanup make the difference between an acceptable finish and a costly rework. "Anybody can coat a part something the size you can hold in your hand," said the shop president. "If you mess up, you can chemically strip it or burn it to get that part clean. But you screw up a 40-foot part, what do you do?"*

*Because the coater offers 70,000 colors and averages 100 color changes a week, powder containment and cleanup prove crucial to Unique Coatings' success. Workers use the shop's five vacuums to successfully execute color changeovers.*



workers stay and assist in installing the masts on the brigs.

The big parts demand big booths. The shop has two 30-foot-long booths and one 40-foot-long booth, each with its own corresponding convection oven. Getting the equipment proved challenging. "There's nobody in the industry that builds equipment to do what we do," Brown said. Therefore, the shop builds its own ovens and paint booths. The booths contain pulse air systems that can have as many as 64 filters.

Cleaning up becomes a mess

Above and beyond coating large parts, the shop offers 70,000 colors. As a result, the shop can change colors 100 times a week. All powder is sprayed to waste. To maintain coating quality, shop cleanliness represents the difference between reworks resulting in losses in production, profits, and customer satisfaction and contaminant-free finishes yielding smooth production flow, increased throughput, and repeat business. It's not so much the size of the part as it's the size of the application area and the powder particles. "If you go in there and shoot a part the size of your hand orange and go to white, you still have to clean the whole booth," Brown said. "Because the powder is so small, micron sizes of 2.0 to 3.0, if there's one speck of orange that you don't get, that speck of orange will show up in the white."

In an attempt to contain and clean up the oversprayed powder, Brown initially bought shop vacs at a department store. However, these units couldn't contain the powder. The shop vacs blew out as much as

they sucked in. The workload proved too demanding for the store-bought units and the shop vacuums eventually burned out. Next, workers used a drum pump, consisting of an air hose attached to a pump placed on a 55-gallon drum on top of casters. In theory, the pump should pick up the refuse and leave it in the drum. But reality proved different, as the drum pump didn't pick up the powder very well. Powder containment problems translated into parts receiving contaminated finishes.

*"You get paid to do something once," said the shop president. "If I were starting this business tomorrow, the first piece of equipment I'd buy would be a vacuum cleaner because it keeps the plant clean and reduces the chance of contamination."*

Normally, parts receiving a contaminated powder finish can be reworked. But because Unique coats such large parts, reworks can greatly hinder business. "Anybody can coat a part something the size you can hold in your hand," Brown said. "If you mess up, you can chemically strip it or burn it to get that part clean. But you screw up a 40 foot part, what do you do?" Because the shop delivers parts all over the country, the cost to pick up parts to be recoated would gouge the job's profitability. To this end, Unique implements rigorous quality checks and practices. Despite this, the shop needed a way to contain the powder and eliminate cross contamination on the finishes.



*In addition to cleaning powder from the booth, workers use the vacuums to keep the entire 47,000-square-foot plant clean.*

Finding the right equipment for the job

Ultimately, Unique found the answer to its powder containment and collection problem from Ultra Coating. Its sister shop had been using a portable industrial-strength filtration vacuum with great success. Brown decided to follow suit and buy a unit. The portable high-filtration vacuum collects large amounts of powder, keeps the shop dust free, and allows quicker color changes than the previous units the shop used. With a filter efficiency that is 99.9 percent at 0.5 micron, the machine handles fine powders without clogging. The cast composite housing mounted on heavy-duty double casters make the unit portable and hard to tip over. The single-phase vacuum is powered by 110 volts and uses dual two-stage bypass motors.

Since opening its doors 5 years ago, Unique grew from a 3- to a 25-person operation. The rapid growth keeps powder flying in the three booths for as long as 15 hours a day. As a result, powder collection outgrew the one vacuum. The shop now has five vacuums working nonstop to keep the shop clean, and one person cleans with one of them all day

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long. Aside from routine maintenance, the vacuums are low maintenance, and the shop hasn't had to change the filter on any of the units despite the intensive use.

#### Sucking up leads to success

Since switching to these vacuums, the shop has cut color change times in half. Booth cleaning takes 2 to 2½ hours with two vacuum cleaners running wide open. During the process, one worker vacuums the floor, another blows down the booth walls, and another cleans the filters. To further facilitate color changes, the shop gradually transitions through different colors. For instance, the shop won't go directly from black to white. From black, powder applicators move through a gray to a brown or a bronze to an off-white or charcoal and then go into a white. The orders occasionally don't allow a smooth color transition and

demand a jump from black directly to white. "That's where the vacuum cleaners come in," Brown said. "You have to go in there and make sure everything is spic and span."

In addition to reducing powder color changeover times, the vacuums also contain the powder, dropping reworks down to almost nothing. Eliminating reworks improves product flow and cost efficiency. "You get paid to do something once," Brown said. "If I was starting this business tomorrow, the first piece of equipment I'd buy would be a vacuum cleaner because it keeps the plant clean and reduces the chance of contamination."

The vacuums offer durable long-winded cleaning power. The vacuums' containment capability makes them the sole powder and dust cleanup equipment tools that Unique

uses. Workers don't use brooms to sweep the shop floors because of the risk of kicking up dust, which can be sucked into the powder booths. In addition, the shop uses the vacuums to clean its 47,000-square-foot plant, including the blast booths. "It'll pick up steel shot like it's nothing," Brown said.

With powder containment under control, Unique continues to expand its capabilities. The shop recently installed a new blast operation and plans on installing a booth that can handle parts up to 53 feet long. Brown said that's the magic number because it's the maximum size you can carry over the road. He sees it as a way of putting distance between him and any competitors he might have in the big-part market. "I don't care how big your dog is," he said. "Somebody around the next corner has got a bigger dog. We're trying to stay ahead of the game a little bit."

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