



Prospering with Powder

A compact, high-performance powder coating spray booth has allowed a custom coater to increase quality, efficiency and profitability.

That's because A&I handles parts that most other custom coaters have trouble with. "We don't have to go head-to-head and dime-to-dime with them," says Morris.

A&I's line design allows the plant to coat larger and heavier parts than most other powder coating lines in the region.

If you drive through Lorain, OH, near Cleveland, you might pass the chained gates of a Ford assembly plant. Vast, and deserted, the plant closed in 2005, when it employed more than 2,000 workers turning out the Ford Escape, Econoline and other popular models.

But around the corner in Vermillion, OH, the prospering Architectural & Industrial Metal Finishing Co., LLC (A&I) is busy adding on to its facility, oblivious to a generally slowing local manufacturing economy.

"We are doing great," says Chris Morris the firm's owner and president. "We are even getting business sent to us by competitors."

"When Detroit hosted the Superbowl last year, the city renovated everything, including installing new light poles," explains Morris. "We got the job of coating the 22-ft-long poles and 550-lb bases because a lot of other coaters have trouble with parts that long or that heavy. Our system frequently paints parts 30 ft long and longer."

The plant's spray booth also has larger part openings — a full 6-ft high — than many other lines offer.

But capability is only part of the reason A&I has been growing. "Getting the business is important, but then we need make a reasonable profit on those parts," says Morris. "So we have tried to be smart about optimizing things. We

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spray a lot of powder and change color 12 to 15 times a day. We have had to both increase our powder coating efficiency and optimize how we do color changes, especially when you consider that a lot of the powder we spray is pretty expensive powder because it meets the AAMA 2603 and 2604 specifications.”

A&I has saved more than 5,000 lb a month in powder because of its increased efficiency, while seeing its scrap and rework drop by 90%.

A Super Solution

In the plant's effort to improve its bottom line, A&I last year decided to mothball its old powder booth and install a Wagner SuperCube.

“We heard great things about the booth, but what really impressed me was how easy it was to achieve good results,” says Morris. “I think there are a few good systems out there. But sometimes making them work takes just too much effort and finesse. The **Cube** was a system that produced good results right off the bat without lots of hand wringing and tweaking.”



Powder is supplied to the guns by an automated feed center that pumps the powder directly from the box.

The results speak for themselves — A&I has saved more than 5,000 lb a month in powder because of its increased efficiency, while seeing its scrap and rework drop by 90%.

“The new system is two to three times more efficient than our old one,” says Morris, “and the only rejects we get from painting usually come from our manually sprayed parts. The vast majority of parts are sprayed automatically, and the throughput is nearly perfect.”

“We don't have a huge engineering or technical staff,” says plant manager Colleen Black, “so a system that that doesn't tie us up is perfect. Our people need to be focused on getting parts through the shop, not on fiddling with the system. We turn customer orders around within 48 hours and so we're focused on streamlining things.”

Black notes that the plant handles a number of architectural extrusions, in which pieces and parts of larger assemblies are painted separately and then assembled. If the finish is not consistent, the aesthetic quality of the assembled product suffers. “The system gives us very reliable consistency. Film build is even, and the way the powder is applied is very repeatable. Customers tell us they have never seen their large panels look so beautiful. That's because of the film build consistency we get from the Wagner guns and controls,” says Black.

The A&I system is a fully conveyorized line that includes a seven-stage pretreatment system and a dry-off oven, followed by the Wagner SuperCube booth. The booth is equipped with two manual spray stations and 12 oscillating Wagner C4 automatic guns (six per side). A gas convection cure oven completes the line.

“The manual spray stations on the A&I system are a unique design,” says Russ Green of Wagner Powder Coating Systems. “The system allows manual touchup operators to be outside of the main cube booth itself in what resembles front and back porch vestibules. The vestibules provide manual sprayers with much greater freedom of movement for operations like custom coating while still providing the engineered airflow and containment needed for high transfer efficiency.”

Powder is supplied to the guns by an automated feed center that pumps the powder directly from the box. Feed tubes are automatically lowered down into the powder box as the powder is consumed. “This arrangement not only provides simplicity and speed but helps to maintain an even flow of powder to the guns,” notes Green.

Complete Control

According to James Awcog, the assistant plant manager at A&I, several other features of the revamped line also have increased the plant's quality and efficiency.

“Our use of automatic recipes, along with the laser part sensing capability that makes up the DigiTech control system, lets us dial in the powder application process for a

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wide range of part shapes and styles," he says. "As a custom coater, that kind of flexibility on-the-fly is perfect for us."

Control of literally hundreds of system variables is provided through a centralized computer monitor (or CCM), which provides independent programming of parameters like gun position, reciprocator speed, powder flow, airflow and electrostatics. The system also features a 1,000+ recipe capacity.

"There's one place to go to change anything on the system," says Awcog. "The CCM talks to everything else. And we can't touch the capacity of the system to store and control things."

Another important feature of the system is the ability to change colors rapidly.

"With a dozen or more color changes per shift, saving a few minutes on each color change can mean the difference between getting an extra job through the line each day or not," says Black.

The SuperCube itself is constructed of a non-metallic polymer engineered specifically to provide an easy-to-clean, powder-resistant surface. But some of the magic of the system lies hidden from the eye in the "basement" of the booth, where two parallel downdraft ducts efficiently whisk powder from the booth to the cyclone recovery system.

While the SuperCube is able to make color changes in as little as five minutes, A&I takes a few extra minutes to ensure that all color changes provide the plant with no cross contamination. "We reclaim 100% of our powder," explains quality control manager Gloria Snell. "With reclaim-to-reclaim of any two colors, we are cautious not to sabotage ourselves."

"Our customers are big on color," adds Morris, "and we stock literally every RAL color in the deck, so the quality and the simplicity of color change were key factors when we bought the new system. These days you find a lot of technology on powder systems, but often these systems are too complex. We went with an approach that allows us to do it with maximum flexibility and simplicity without sacrificing anything on performance."

Two A&I operators carry out the color change routine, one focusing on the booth and the other on the automated feed center and cyclone recovery system.

"It seems like a big task," says Black, "but the system is highly automated and designed for fast color change."

With the push of a button on the feed center LCD screen, a sequence of purging and cleaning begins automatically. The guns automatically retract and are blown off as a "CleanSweep" automatic floor cleaning system swings into operation. The ergonomic design of the cyclone makes cleanup simple with access doors that make it easy to reach the places that powder is concentrated.

"The reduction we have seen in wasted powder added to our savings in scrap and rework. These savings have lit-



The plant handles a number of architectural extrusions, in which pieces and parts of larger assemblies are painted separately and then assembled. Consistent film build is crucial.

erally paid for the system in the year that it's been operating," says Morris.

Not surprisingly, the company's success has prompted A&I to expand its facilities, adding 12,000 ft² of warehouse space and breaking ground on a second line slated for startup in April 2008. "We have tripled our business since starting four years ago," says Morris, "and we are well on our way to doubling that again." **ft**

For more information about A&I, call 440.493.0410 or e-mail aimetalfinishing@aol.com. More information about the SuperCube can be found at www.wagnersystemsinc.com.



Control of literally hundreds of system variables is provided through a centralized computer monitor.



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The world is full of color - we offer the right coating solutions!



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Wagner Systems, Inc.
300 Airport Road, Unit 1
Elgin, IL 60123

Toll Free: 800.473.2524
www.wagnersystemsinc.com