

CASE HISTORY

At this Wisconsin company, four powder coating lines provide the flexibility that spells s-u-c-c-e-s-s

When a custom coater installs application equipment with fast color change capability, digital controls, and highly efficient gun movers, it not only increases its finishing capabilities, but also decreases its powder use and labor. Its goal? To be among the best.

Paul Mills

Wagner Systems

When author Tom Robbins said “stay committed to your decisions, but flexible in your approach,” Mark Mortensen must have been listening. For nearly 15 years, Mortensen’s company, All-Color Powder Coating, has consistently proved that his “if they want it—we will figure out how to do it” approach is good business. The All-Color name spells flexibility, and the walls of the offices outside the company’s 61,360-square-foot plant are decorated with colored plaques of every shade and texture you can imagine.

All-Color’s flexibility isn’t limited to appearance alone, however. With four powder lines, the company can powder coat nearly any substrate—from zinc and aluminum die castings to plastic or wood—in volumes ranging from small batches to large runs and on parts as large as 10 feet long.

Powder coating line replacement leads to improved efficiency

While All-Color’s capabilities attract a wide range of customers to its Oregon, Wis., plant for powder coating, it’s Mortensen’s strong commitment to quality and efficiency that has

kept the company’s business growing even in tough times. “We have continued to grow by being innovative,” he said. “But innovation is only possible by running the business efficiently. As custom coaters, we always need to be searching for new ways to improve our costs and effi-



The powder application system was so efficient, the company installed another system on its second line.

ciency to stay competitive in this business.”

In 2002, the company took a giant step forward in efficiency when it replaced its existing powder line with a new Super Cube plastic booth system, made by Wagner Systems, Elgin, Ill. The system offered both the flexibility and efficiency the company sought. “When I talk to metal stampers and fabricators, I keep hearing that they are getting stuck in a tough spot,” said Mortensen. “Their delivery times are getting shorter and shorter, and since we are on the back end of the whole process, we get pressed even harder for fast turnaround.”

Before the company installed the Super Cube, it struggled with color changes that were taking nearly an hour and a half for two operators. “We were even running spray-to-waste back then because we just couldn’t change colors fast enough,” said Dan Anderson, plant manager. “When pressed, we could pull in more guys from outside the paint department, but then we would have three or four guys doing 45-minute color changes three or four times a day. It just wasn’t a good long-term solution.”

As business increased, so did the company’s need for fast color change application equipment, Mortensen

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said. “We were getting busier, and we needed to create more time,” he said. “After we installed the Super Cube reclaim booth, we could do a complete color change in well under 15 minutes with two people even faster. And that’s for the toughest reclaim-to-reclaim color combinations.”

Now All-Color averages six to eight color changes per line in an 8-hour shift, and the finishing line is no longer the manpower bottleneck that it once was. “Our goal is to turn customer orders around in 3 to 5 days or less, Mortensen said. “Without our Wagner fast color change booth, we would not be able to achieve that.”

New equipment leads to savings in transfer efficiency and labor

After installing the new application equipment, the company realized an immediate and dramatic improvement in transfer efficiency, according to Anderson. “Even the difference in the way the spray guns affect our

coating process is impressive,” he said. “The painters get the same coverage in less time and with half as many passes as before. The transfer efficiency is great. They love the ergonomics of the gun, and our labor savings has added up.”

In fact, the financial impact of the Super Cube booth was so positive that All-Color decided to purchase a second booth as soon as business picked up. With its second line, the company decided to try something a little different, Anderson said. Instead of traditional short-stroke oscillators with vertically arranged guns, which the first line had, the company installed long-stroke vertical reciprocators with horizontally mounted spray guns. “We heard good reports that horizontal guns and longer stroke machines might be more efficient,” Anderson said.

It was true. Said Mortensen: “After we started up the second line, the guys came to me and said ‘it’s pretty amazing, we’ve got to switch line number one over to horizontal guns.’ Side by side, same people, same powder, same everything—we saw better results. We couldn’t believe it until we saw it for ourselves.”

With a horizontal-gun arrangement, the company had better consistency and coverage with less powder and fewer spray guns used compared with a vertical-gun arrangement, Anderson said. As a result, the company and Wagner Systems’ technicians retrofitted the first line with



Long-stroke vertical reciprocators with horizontally mounted spray guns dramatically improved transfer efficiency, lowering material use.



Besides its batch line, the company powder coats MDF on a fourth line, adding to its finishing capabilities.

long-stroke reciprocators and horizontal guns as well.

Another reason for improved application consistency and coverage is the Wagner Digitech control system. The company installed the system to allow operators to program recipes for flow control and gun triggering to economize on powder use. "You don't see a giant cloud of powder anymore," Anderson said. "You see guns trigger when the part passes and then shut off."

An electronic light curtain installed just ahead of the powder booth measures the height and width of products on each rack, allowing the Digitech controls to adjust the spray guns for the size of each rack and any gap in product spacing. Two opposing reciprocators, each equipped with three Wagner C4 automatic guns, can uniformly coat virtually any part the company chooses to run.

Each reciprocator is mounted on a motorized in/out positioner that provides company technicians with complete electronic control over the position of their spray guns to tackle difficult parts like recessed boxes or contoured surfaces. When manual reinforcement is needed, two manual touch-up stations at each end of the booth are equipped with Wagner manual C4 guns for added capability.

"We can run three different size parts in a row, and the automatic controls will handle everything with no need for us to manually adjust any guns," Anderson said. "We developed a library of 'baseline' recipes that can be tweaked quickly for different jobs. It doesn't take much extra time, and it saves time and money in the end."

Each Super Cube system is designed with efficiency and color change in mind, from the well-illu-

minated ceiling, quiet zones, and well-controlled airflow in the spray zone to blow out devices in the booth floor that channel powder to extraction ducts. Each system also is outfitted with a high-efficiency cyclone collector and an automated feed center, making fast color changes easier and reducing the opportunity for powder contamination.

Additional lines complement existing systems

Each powder line is self-contained with its own power wash pretreatment system, dry-off and cure ovens, and climate controlled powder application room. Complementing the two automatic lines, a separate batch system with chemical pretreatment allows the company to manually powder coat parts as long as 20 feet.

In 2008, a time when the industry slowed, the company invested again in flexibility, this time installing a 500-foot automated line for powder coating heat-sensitive substrates like medium-density fiberboard (MDF) and plastic. "We are one of the few facilities in the country powder coating wood," said Andy Lawry, MDF coatings manager at All-Color.

The company can coat boards as large as 5 feet by 8 feet and as thick as 1¼ inch. The MDF line uses gas-catalytic infrared (IR) ovens to preheat the boards before Wagner C4 electrostatic guns apply powder. The powder is then melted and cured in a gas-catalytic IR oven. The entire process takes just over 10 minutes.

Lawry said the MDF business is every bit as diverse as the metal business: "We have powder-coated everything from giant Lego ballot boxes to green wooden crocodiles...though most of our business is in store fixtures and children's furniture." Although there was a learning curve involved in spraying MDF and plastic, the knowledge the company gained positioned it as a leader in this growing area of powder coating, he said.

Test lab adds to company commitment

All-Color has also taken the initiative to install a fully equipped quality assurance (QA) laboratory, with capabilities to test color, gloss, adhesion, and cure. It can also do mandrel bend, impact resistance, and other physical performance tests, which are important to customers.

"The market is more sophisticated and demanding than ever," Mortensen said. "All-Color can't be satisfied with just being good powder coaters. Our investment in the best powder equipment, a fleet of trucks, in-house rack design and stripping, and our new QA lab are part of demonstrating our commitment to being among the best." **PC**

Editor's note

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Application equipment: **Wagner Systems, Elgin, Ill. 630/503-2400.**
www.wagnersystemsinc.com

Powder coating shop: **All-Color Powder Coating, Oregon, Wis. 608/835-9118.**
www.allcolorpowdercoating.com