Manufacturer makes large gains by switching to smaller powder system

A lawnmower-blade maker goes lean and installs a powder cell system that plows a wide swath of efficiencies.

Steve Foley *Senior Editor*

Whirltronics might not currently register any images or associations in your mind. But after reading this, the next time you're mowing your lawn and go over a rock, toad, or other foreign object that contacts the mower's underbelly of working parts, but leaves the unit unscathed and cutting the grass, you might hear the word Whirltronics whistling in the windmills of your mind.

Of course, in lawnmower lingo, the blade whirls as it cuts. And Buffalo-Minnesota-based Whirltronics manufactures 4 million original equipment manufacturer (OEM) lawnmower blades per year, powder coating 1.5 million of those. This manufacturer is an expert in austempering, an isothermal heat-treatment that imparts stronger metallurgical properties than other heat-treat processes. Austempering imparts a ductile microstructure that's very impact-resistant. "It's very tough," said Lee Schultz, manager, metallurgical services. "For something spinning around and contacting foreign objects it's a very good structure to have."

Slicing away operational overgrowth

Leaving a lawn untended leads to weeds that will resist removal, turning a once luscious canopy of Kentucky bluegrass into ever-expanding clumps of Creeping Charlie. A business also needs to be tended to grow properly and profitably. In 2004, the company implemented lean manufacturing to combat encroaching price pressures. Furthermore, lean manufacturing aligned Whirltronics with its customers and gave it an edge on its competitors. "The only way to compete in the global market was to become lean and try to reduce our costs and reduce prices to OEMs because all of our big customers are OEMs and they were doing lean manufacturing," Schultz said. "We were following suit. A lot of our competitors continue to make large batch sizes of blades, storing them on site for a long time. Or they want to ship in large quantities." By

The overhead powder cell system includes a powder booth equipped with automatic guns on oscillators.

contrast, Whirltronics operates on a daily ship program (DSP), shipping small quantities of blades off-site. Instead of storing and eventually shipping large orders of 5,000 to 20,000 blades at a time, the manufacturer ships smaller quantities of 200 to 300 units on a daily basis, if needed.

By adopting lean manufacturing, it became apparent that the company's coating capabilities also needed streamlining. The company began powder coating in-house in 1997. Before that, it outsourced its coating to a custom coater right across the street. Whirltronics installed a used line, which adequately coated the blades, but the system also proved problematic. The powder line wasted powder and didn't contain the powder within the booth.

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Furthermore, Whirltronics wanted to improve how it used the space within its 40,000-square-foot plant.

The powder system's features and efficiencies have reduced powder use by 30 percent.

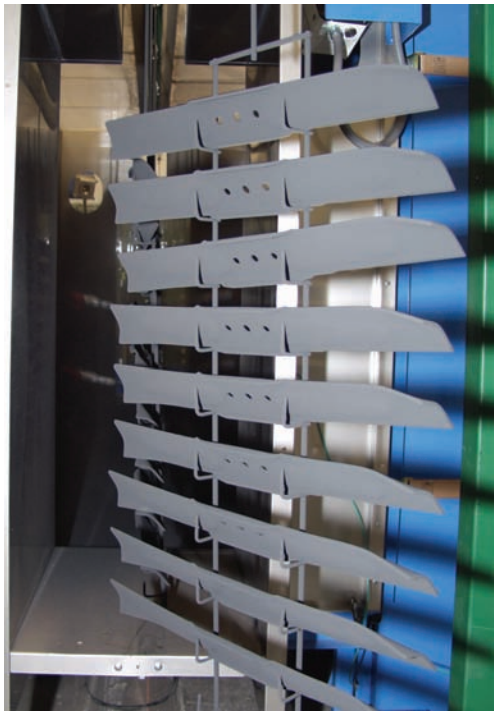
The used line sat in the middle of the plant, surrounded by walls and occupying 1,375 square feet. "The old line was right in the middle of our shop," Schultz said. "They plopped it there, put it on a wall, and built another wall around it."

The company wanted to fit a more efficient line in a smaller area in the southeastern corner of the building. To that end, it invited three suppliers to come and offer quotes for a new powder system. One of the suppliers said they couldn't fit a system in the designated space. Another said maybe, but couldn't guarantee that the line would fit at installation. The third said it could. As a result, Whirltronics selected Deimco Finishing Equipment, Tama, Iowa, to supply and install the new powder coating system. "The new line is shoehorned into an 950-square-foot area that wasn't being used," Schultz said. "Everyone thought it was too small for everything. They were able to get the line in there and make everything operational."

Adding new contours to the finishing landscape

The new line sits adjacent to the austempering line. The blades receive surface treatment on the heat-treating line. As a result, the powder system doesn't need to have a pretreatment stage. After a blade comes off the heat-treating line, it can be coated immediately.

An order will come in. Some of the blades will get coated while others will be oiled. After heat-treatment, workers place blades in baskets. Operators then take the blades out of



Whirltronics powder coats 1.5 million lawnmower blades per year.

a basket and hang ten blades on each rack. The line accommodates 63 racks at a time. Line speed averages 4 1/2 feet per minute. This turnkey overhead powder cell system consists of an MD 2700 booth housing four automatic Sames guns stationed upon radial Y oscillators. The booth has a lot more airflow, recovery, and suction than the old line's booth. The application system also features zoned gun controls. "If we're coating short blades or skipping racks, we can shut the guns off in between and turn them on again," Schultz said. "So we don't waste paint blowing into thin air."

Currently, the company exclusively applies Hinged Black supplied by DuPont Powder Coatings, Houston. In this application, powder serves both cosmetic and functional purposes. The coating keeps the blades from rusting if they sit on the shelf for a long time. In addition, the company has applied powder for a customer who was encountering corrosion issues. By performing salt-spray tests, the company demonstrated that powder provided the needed corrosion resistance. As a result, Whirltronics will be powder coating all of this customer's blades instead of just oiling them.

After exiting the powder booth, the blades turn the corner on the line and go through the infrared (IR) oven. This oven has panels, which have proved to be more efficient than the old line's oven that used tubes. Finally, the cured and coated blades leaves the oven and snake around until reaching the unload area.

Pinching a large powder line for a compact system yields efficiencies boon

By installing the cell system, Whirltronics dramatically improved powder containment by 95 percent compared with the old line, according to Schultz. In addition, the company has reduced powder use by 30 percent and realized energy savings by a 15 to 20 percent reduction in electricity consumption. Despite being designed with the same throughput capacity as the old line, the new system has increased throughput capabilities by 10 to 12 percent. Furthermore, the new line has cut reject rates. The old line's inefficiencies sometimes made it necessary to run the blades two times through the powder line. This is no longer needed. Who would imagine that a smaller system would essentially provide more capacity. . .and greater breathing room? Whirltronics did. "Now there is less dust in the air—better atmosphere and air quality for all the employees," Schultz said. "We're using less paint now and considerably less energy with this new line." **PC**

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Editor's note

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Powder overhead cell system: ***Deimco Finishing Equipment, Tama, Iowa. 641/484-8806. www.deimco.com***

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