The retail display hooks it manufactures are small in size, but they’re big business for Trion Industries. This leading store fixture and point-of-purchase fixture manufacturer employs more than 300 and produced nearly 17 million metal hooks in the past year. That’s in addition to manufacturing hundreds of thousands of shelf label systems, sign frames, merchandising fixtures and more for such retailers as Wal-Mart, CVS, Home Depot and Walgreens.

From its facility in Wilkes Barre, Penn., Trion has become the world’s leading manufacturer of display and scan hooks, from the industry standard hook to more unique hooks. Trion distinguishes itself from the competition with in-house tooling for faster turnaround, as well as in-house engineering and research and development to continually add innovative products to its mix. It also relies on a heavily automated production line so it can be price competitive with companies who have manufacturing facilities inside and outside the U.S.

Trion’s reliance on automation on its production line extends to almost all areas, including its coating operation. Trion has been powder coating for nearly 20 years. Its most recent upgrade to its coating line had been in the mid 1990s. As volume kept increasing, Trion kept adding shifts on its coating line to try to keep up. It added a second shift and then a third shift, but it still wasn’t enough. The existing powder coating guns, reclaim booth, system controls and ovens were quickly becoming overwhelmed.

“Our powder coating operation had become a bottleneck. Even with running three shifts around-the-clock, we still could not keep up with demand,” says Tom Nagel, chief engineer, Trion Industries.

On top of that, Trion could only afford to do one color change for an entire day because it took several hours to change colors. Downtime and a lack of flexibility to cost effectively accommodate smaller jobs were causing the bottleneck. After nearly 14 years of using the same powder coating system, Trion decided it was time to evaluate some new systems. It considered systems from several suppliers, narrowing it down to two suppliers. Trion visited one customer of each of the suppliers to see their equipment in use.

Put to the Test

According to Nagel, the site visits made the decision easy. “Both suppliers claimed they could do the same thing. We wanted to see if that was true. One job shop using a Nordson system showed us five flawless color changes with reclaim in an afternoon. The other job shop was powder coating high-end toolboxes using another supplier’s system. It took almost an hour to do a color change. We saw what we needed to see,” adds Nagel.

Trion chose to install an automated powder system that included the Nordson ColorMax® powder coating system with Nordson Sure Coat® powder coating guns. Trion also replaced its existing ovens with gas-operated IR ovens from Amiberica for more efficient curing.
The coating process starts with a five-stage non-phosphate pretreatment that consists of an alkaline wash, rinse, mild acid wash, rinse and application of a rust inhibitor.

Parts then go through a gas-powered IR dry-off oven at 350 degrees Fahrenheit for 15 minutes before entering the heart of the coating operation. There, two vertical stacks of six Sure Coat® guns provide automated coating followed by two operators at the back of the booth who provide touch up using Sure Coat manual guns. Finally, parts are cured for approximately 30 minutes at 350 degrees Fahrenheit. Parts typically travel down the 800 ft. line at 3 to 6 fpm.

The ColorMax® booth and recovery system and Sure Coat® guns are designed for quick color changes. With it, Trion has doubled production volume in its first full year of operation, while dropping from three shifts to two shifts, and still having extra coating capacity.

“Leaner and Greener”

Order sizes can run up to one million hooks to be coated at a time, with thousands or even hundreds of thousands of hooks per job the norm. With the faster color changes, Trion changes colors three to four times per day with reclaim. That capability allows Trion to accommodate smaller orders with faster turnaround time.

“The customer doesn’t care what color we’re running, they want their order when they need it,” says Bryan Fauver, powder coating supervisor at Trion. “We can now do short and large runs very efficiently.”

Faster color changes are just part of the story. Trion has significantly increased first-pass transfer efficiency and consistency, which allowed the company to increase line density by 100 percent.

Trion uses Nordson’s iControl® integrated control system for better control and transfer efficiency. Trion now has a goal of each part having 3 to 4 mils where actual mil thickness used to range from 6 to 8 mils.
Trion uses Nordson’s iControl® integrated control system. Photo eyes for part identification ensure the appropriate guns are triggered based on preset part recipes. The iControl system accepts input from the part identification sensors for gun triggering, and in/out positioning, and can accommodate up to 255 presets. This allows operators to adjust various gun control parameters such as flow rate, atomizing, KV and current for various part styles.

The new system allowed Trion to double production volume in its first full year of operation, while dropping from three shifts to two shifts and still having extra coating capacity. It also allowed the fixture manufacturer to accommodate two very large orders right away. Together, the orders totaled nearly 2 million hooks.

"Without the new system, we would have turned the business away. The customer probably would have outsourced it to China, but at a higher cost than we could give them," says Nagel.

The new powder coating line is helping Trion bring in new business with faster turnaround, reduced pricing and greater flexibility to handle any size job. Production volume has been steadily increasing and is expected to have doubled again in the near future.

While increasing throughput, the new powder coating line has also helped Trion make its coating operations more environmentally friendly. It's reclaiming more powder and reduced the film on parts. Moving from manual controls to automated part identification with preset part recipes means Trion is painting parts and not wasting energy or materials spraying air when there are no parts in front of the guns. The gas-powered IR ovens from Amiberica are also much more energy efficient than its previous ovens.

The pretreatment uses UniPrep® technology as an environmentally-friendlier and cleaner option than the traditional iron phosphate step. The UniPrep technology functions as a bioremediation agent. The cleaning solution provides an environment that is well suited for the growth of microbes. Those microbes consume the oils and greases in the system, decreasing the sludge buildup and treating the solution for easier maintenance and less waste. Trion was also able to reduce the pretreatment temperature from 150 degrees Fahrenheit to 120 degrees using the UniPrep system, which provides substantial energy savings.

"We’ve got an environmentally friendlier coating operation that’s helped us dramatically increase production volume," says Nagel. "We’re not the bottleneck anymore. Now, we can paint more than we can manufacture."