FABRICATING & METALWORKING

MARCH 2013

HOW TO BEAT OFFSHORE COMPETITION IN THE RETAIL FIXTURE MARKET

This Chicago manufacturer combines advanced machine tool technology with lean operations and attention to detail in high-velocity manufacturing to easily accommodate last-minute design changes that cannot be matched by its foreign competitors.

Midland Metal Products (Chicago, IL) demonstrated the competitive advantage of high-velocity domestic manufacturing by delivering 10,000 point-of-purchase displays to nationwide stores in just four months, a feat that could not be matched by the offshore competitors who now dominate this industry.

Midland Metal Products was founded in 1923 as a wire shop. The company now occupies a 110,000 sq ft facility in Chicago.

The company used a combination of 3D CAD/CAM, advanced machine-tool technology, lean operations and attention to detail to design, produce, pack and distribute the time-critical fixtures without a single mistake – even taking last-minute changes from the ad agency in stride.

The fixtures hold pre-paid phone cards and phones, a big revenue generator for the retailer, and the customer was eager to get them into stores.

"This is a prime example of how time is money in retailing," said Marc McDonald, co-owner of Midland. "Certain products and promotions have a limited window of opportunity, and the customer made clear we had to hit this window."

The project also made use of green material – steel from recycled retail fixtures. "Our Illinois metal supplier is very active in this trend," added McDonald. "In fact, the new displays replaced old units made in 2007 that were already earmarked for recycling."

The project began last year when Midland was approached by a Georgia ad agency about producing 9,555 end caps and 1,700 in-line displays composed chiefly of wire, sheet metal and tubing.

Midland uses a combination of 3D CAD/CAM systems and machine tool technology to fabricate retail displays and fixtures from wire, sheet and tube metals.

The schedule called for production of 750 end caps and 150 in-line displays per week. The project put the company's efficiency to the test, requiring the shop's 2,200 hour production week to increase more than twofold, to 5,000 hours per week.

"We ran 24/7 and brought in temporary help for the assembly and packaging, but felt the investment would pay off. If you can deliver for customers in this industry, you earn long-term business partners," noted McDonald.

Midland laid the foundation for success on this project long before it began with a program in 2003 to build up its manufacturing infrastructure with new technology aimed at reducing delivery times.

The company is a fourth-generation family-owned manufacturer of retail fixtures occupying 110,000 sq ft on Chicago's south side, and is also one of only a handful of woman-owned metal fabrication businesses.


A 3500 watts laser cutting system was one of Midland's first CNC machine tool purchases. It was quickly followed by CNC wire formers, press brakes, robots, mesh welders and tube lasers as the company adopted lean manufacturing principles to meet customer needs.

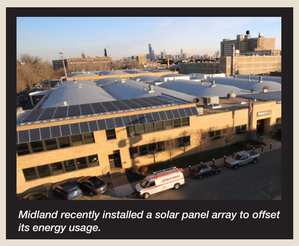
The investment in new technology has allowed the company to carve a niche delivering top-quality fixtures with quick turnaround times. Its first new machine was a CNC turret press, followed by a 3500 watt laser cutting system.

The shop quickly moved down the path to complete CNC automation, adding wire formers, press brakes, robots, mesh welders, a tube laser and another 4000 watt laser cutting system.

The company then looked to lean manufacturing models to optimize its newly acquired automation on the shop floor.


Midland Metal Products co-owner Marc McDonald on the shop floor. The company has invested heavily in automation to meet the delivery times and provide complex retail fixture designs for its customers.

"We realized that the key to automated equipment is using it efficiently, and lean principles like the Five S's and the Rule of Adjacency are important to efficient production," stated McDonald. "We recently received our ISO 9001 certification, and the certification audit reminded us just how efficient our operations are."


Midland recently installed a solar panel array to offset its energy usage.

With an eye toward constant improvement, the shop installed a state-of-the-art powder coating line with quick color-change capability last October. This allows the shop to switch from one color to the next in less than one minute, further improving lead times and quality, and reducing costs.

For this project, the agency presented conceptual designs for the end cap and in-line display, which were then made "manufacturable" by Midland through the use of SolidWorks design software. The software allows the shop to go from design to production seamlessly through direct communication with the CNC machines on the shop floor.

"We prepared for production in the engineering phase," recalled McDonald. "And once the designs were approved, we were able to immediately start fabrication."

Domestic production also played a huge role in ensuring the project did not get sidetracked when a security risk was identified in the original design, after production had begun.

"We had to make a fairly major modification in the design of the fixture's lock bar, which we were able to make on the fly," said McDonald. "If these pieces were produced overseas, the delays would have been significant."

Production delays in projects of this magnitude have ripple effects across the supply chain. Having completed units ready to ship is critical as shipment is tied to transportation, which is tied to distribution, which is tied to installation, which ultimately is tied to sales.

Once production started, delivery trucks were scheduled to arrive at a rate of two per day.

"These trucks are scheduled weeks in advance and they show up like clockwork to pick up the load and keep to the schedule," explained McDonald. "We had to be on top of our game, everyday for four months, because if you miss a delivery, you'll hear about it."

The injection-molded and acrylic parts, along with fixture hardware, were shipped to Midland for assembly and packaging.

"We pre-screened our temporary help to ensure they had manufacturing experience because the second requirement after 'be on time' was 'no mistakes,'" explained McDonald.

The shop implemented a packing system that included completion of quality control checklists at the end of each line, and digital photographs taken of each unit before it was packed and loaded.

"After all the deliveries were made we only received one field call out of 10,000 stores," said McDonald.

Midland designed, produced and delivered more than 9,500 end cap displays for a large national retailer in just four months.