

LASER AUTOMATION--BETTER PLANNING = BETTER EXECUTION

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With an order backlog twice what it was a year ago, Weaver Fab & Finishing owner Jim Lauer expects that the firm's new fiber-laser cutting machine will quickly become fully loaded. The machine, installed earlier this year, is slated to come online with full force through the summer months.



Weaver Fab & Finishing's new 2-kW fiber-laser cutting machine cuts aluminum and other reflective materials extremely efficiently, and it will cut mild steel four to five times faster than the firm's aging 2-kW CO₂ machine. Key to its success is the automated material-storage tower that "changes how we buy our materials," says Jim Lauer. "We can schedule more accurately and predictably and minimize or even eliminate deviations from our planned production schedules."

We visited the Akron, OH, company late-spring as Lauer and his team not only were gearing up for the new cutting machine but also putting the finishing touches on its new company location. You see, accompanying the new machine (an Amada FLCAJ 3015, with 2-kW fiber-laser resonator) is a six-shelf automated material-handling sheet-storage tower. As it requires 20 ft. of ceiling height, it wouldn't fit at the previous Weaver Fab facility (32,000 sq. ft. spread over several buildings). Lauer, so committed to the storage tower and already on the prowl for a new manufacturing facility, stepped up his search for a new location at which to hang his hat, and the hat of his wife and company co-owner Marian Lauer.

“Of course there were many reasons to look for a new location,” says Jim, “including the inefficiencies that creep in when having to move materials amongst five or six buildings to complete orders. And, as we look 12 to 18 months out and project our growth, we know that we need to become more efficient and add capacity.”

“When we decided to invest in the laser-cutting machine,” adds Marian, “including the storage tower was a no-brainer. We simply cannot allow the cutting process to be a bottleneck. So our search for a new facility (which ended late in 2014) included accommodating the tower’s requirements.”

Laser Cutting a Growth Catalyst

Since the Lauers acquired Weaver Fab & Finishing in 1997, they’ve doubled sales on average every 5 yr. A key enabler of that growth has been adding laser cutting to the equipment list—the firm acquired a 2-kW CO₂ laser-cutting machine in 2006. Jim recalls that the machine took over the work of three turret presses. It features an auto load-unload shuttle table that was a “game changer for us,” says Marian. “We ran that machine lights-out for 8-plus years.”

But now, as 16-gauge mild steel has become the company’s sweet spot, combined with a notable increase in the amount of aluminum work it’s bringing in, replacing that aging CO₂ machine with the fiber makes sense.



The strength of the automotive market and other industries investing in robotics has Weaver busy fabricating parts for Fanuc America. Shown are laser-cut aluminum blanks that Weaver forms and powder-coats.

“We’d been forced to run aluminum on a CNC punch press,” says Jim, reflecting on the inability of the CO₂ laser machine to process reflective materials such as aluminum. “The fiber cuts aluminum and other reflective

materials extremely efficiently, and will cut mild steel four to five times faster than the CO₂ machine. Now we can leverage the unique capabilities of the fiber laser to quote work on red metals.”

The new laser-cutting machine boasts a three-axis linear-motor drive system and an eight-station automatic nozzle changer. Maximum cutting area: 120.9 by 61 in.

A Push from Key Customers

The Weaver Fab & Finishing list of 30 to 35 customers stars five or six primary and long-term clients—“the 80-20 rule,” says Jim. Most notable are a few players in the packaging industry, including Automated Packaging Systems (machine frames, cabinets, brackets, etc.). Weaver also fabricates various sheetmetal parts for robotics company Fanuc America.

“These key customers have been a driving force behind our growth (15-percent revenue growth in 2014 and a likely 20-percent jump in 2015),” says Jim. “They’ve pushed us to become a better company in terms of quality and efficiency. And, they’ve moved us into aluminum fabrication in a big way. For example, some Fanuc parts are fabricated from ¼-in. Type 6061 Al. We’re also fabricating a lot of stainless steel for the appliance industry.”

The added variety in sheet materials and thicknesses adds even greater importance to the automated sheet tower, an Amada ASUL model.

“It changes how we buy our materials,” says Jim, “allowing us to completely restructure the front end of our company and change how we operate internally. We can work more to a just-in-time model, schedule more accurately and predictably, and minimize or even eliminate deviations from our planned production schedules.

“Predictability brings numerous additional benefits,” Jim continues. “In short, better planning leads to better execution.”

Technology Makes Good Operators Great



Accompanying the new fiber-laser cutting machine at Weaver is this Amada servo-hydraulic press brake. Its thickness-detection system automatically adjusts the entry depth of the forming tool based on sheet thickness.

When discussing the justification for investing in the automated material-storage tower for the laser, Jim is quick to note, “We don’t ever want to have a conversation out on the floor about a backup at the laser.” Marian adds that an additional investment was needed to prevent merely moving the potential bottleneck from cutting to bending.

“Keeping pace with the new laser’s output required a significant investment in downstream press-brake bending,” she says. “As a result we added a servo-hydraulic press brake (an Amada HG 1003 model) late in 2014. It has greatly improved angular bending accuracy compared to our older brakes.”

Improved bend-angle accuracy, according to Amada officials, is due to the thickness-detection system (TDS) designed to detect the thickness of the workpiece material. The TDS automatically adjusts the entry depth of the forming tool based on sheet thickness, guaranteeing consistent and accurate bending angles.

“Our fabrication supervisor realized significant productivity right from the start with this new brake,” says Marian. “He in fact said to me, ‘This technology makes an average operator a great operator, by taking the variability out of the process.’”

“For us,” she continues, “it means that we need less expertise from our operators. The brake is outperforming our older brakes by at least two to one, and as much as three to one on some parts. We get faster setups, and as close to zero scrap parts as possible. That machine is money.”

Efficiency is Endemic

Efficiency gains are clearly evident in every corner of Weaver’s new digs. There’s nothing like a fresh, greenfield approach to plant layout and design. So in addition to the gains created via automated material handling at the laser—“We ran a recent job for 38 hr. straight without human intervention,” Marian says—optimized material flow from the new plant-floor layout also brings significant gains.

In addition to laser cutting and press-brake forming, the company also performs roll bending, milling, saw cutting, arc and resistance welding, CNC punching, and powder coating.

“We suffered 18 years of frustration at the old location,” says Jim, recalling time wasted moving product from building to building. “I estimate that by bringing all operations under one roof and optimizing the equipment layout for an efficient flow of goods, we’ll pick up at least 1 hr. of productive time per employee per week. That alone will justify the move to the new facility.”