BY LYNN STANLEY, SENIOR EDITOR

NO LIMITS

Using servo technology, contract manufacturer improves part accuracy, boosts throughput and reduces tooling wear

Tooled, stamped, painted and assembled parts have been the bedrock of Weber Specialties Co. for more than 80 years. Based in Michigan's Kalamazoo County, the job shop has kept pace with the changing needs of its customers through its unique combination of skills and services.

"We offer our customers a one-stop shopping experience from design to finished parts," says Brien Stewart, vice-president of engineering for Weber Specialties. "And we're engineering strong—from the president to quality and sales." Over the last two decades, he says, revenues grew from $6 million to $20 million.

An AIDA 165-ton single-point gap-frame servo press allows Weber Specialties to pierce, form and draw parts from material as thin as 0.010 in.

Reverse engineering, tool-and-die design, CNC machining and fabrication, powder coating and assembly—alongside a continuous improvement program and ongoing technology acquisitions—help the company thrive in volatile market conditions. A diverse customer base (appliance, automotive, furniture, medical, electrical and industrial hardware) dictates a flexible approach.

"We're able to find the most cost-effective method for manufacturing a customer's parts, even if that means purchasing a piece of equipment to do it," says Stewart.

In the early 2000s, Weber Specialties' singular focus led it to consider making some changes in the press room. With a press capacity of 5 tons to 400 tons, close to 50 percent of the contract manufacturer's stamping operations are automated. For secondary processes, personnel used presses equipped with mechanical guarding versus newer technologies such as safety light curtains integrated with the press control.

"We decided to upgrade these older presses, but we had always purchased used machines," says Stewart. "We found an electronically protected 165-ton AIDA gap-frame press at an auction. After we installed it, one of the things that impressed us was how quiet it was. When we decided to replace other machines, I reached out to AIDA-America Corp. in Dayton, Ohio. That conversation led to the purchase of our first new stamping presses—two 45-ton AIDA gap-frames."

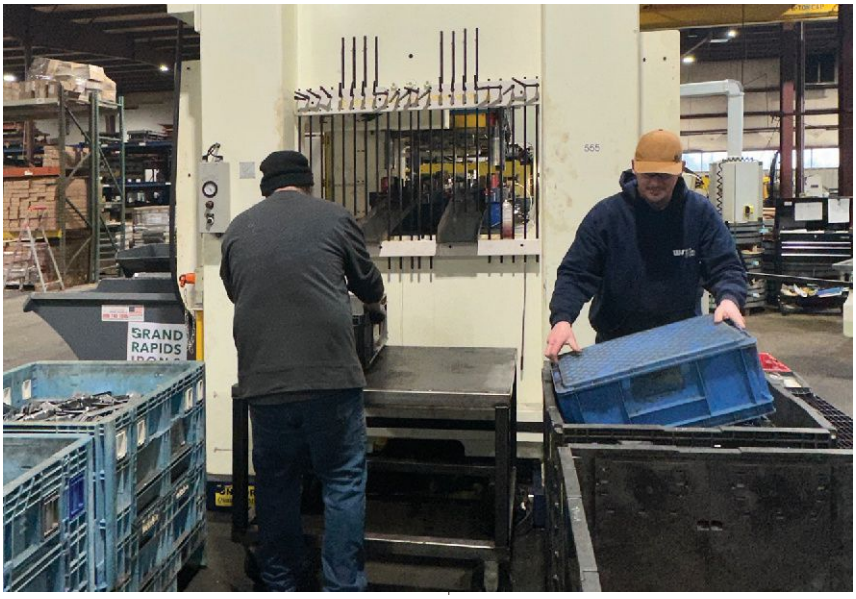
An AIDA 330-ton straight-side servo press helped Weber Specialties replace an older machine and gain a more versatile forming solution.

FASTER SPEEDS

Weber Specialties installed these machines in 2018 and 2019. The job shop used its AIDA gap-frame presses for secondary, hand-fed operations. When a straight-side press experienced a major failure, Weber Specialties' search for a replacement led it back to AIDA.

"We considered used mechanical clutch straight-side equipment, but I had read a lot of articles about throughput improvements with servo technology," Stewart says. The company performed a cost/benefit ROI, after which AIDA technicians were invited to come in and talk about Weber's requirements. Instead of a conventional straight-side

AIDA's servo presses have expanded the stamper's scope of work, above. Weber Specialties operators are able to run precise parts at faster speeds, below.



press, "they helped us determine that a 165-ton single-point gap-frame servo press could handle most of our tooling."

The AIDA gap frame servo press, equipped with a Dallas Industries servo feed, was installed in 2022. Weber Specialties runs carbon steel, some stainless for hardware applications and aluminum components for the motorsports industry. Part sizes range from ⅜ in. wide by 1 in. long to 1½ in. by 2 in., stamped from material as thin as 0.010 in. Weber Specialties primarily uses the servo press to pierce and form with some shallow draw work.

"Precision is critical when you are stamping parts from 0.010-in.-thick material," Stewart says. "We haven't had any problems running these parts at faster speeds. Throughput has increased, allowing us to recoup production time that we've been able to use to run more jobs."

In addition to boosting part accuracy, the ability to control press strokes "has reduced stresses on our tooling, allowing us to extend the length of time between sharpening and preventive maintenance. The silent blanking feature has also helped us reduce the noise in our press room. It's amazing how much quieter it is. Once we put this servo press into production, it didn't take long to see the

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Brien Stewart, Weber Specialties Co.

impact it made."

When an older mechanical 250-ton press began racking up costs for downtime and repairs, Weber Specialties replaced the machine with a second servo press. "We purchased an AIDA 330-ton straight-side servo press with almost the same footprint as the 250-ton mechanical press we replaced," he says. "The larger size gave us some overlap with a 400-ton mechanical press we had so that we weren't pigeonholed in terms of what we could run."

MOTION PROFILE

The addition of a second AIDA servo press in 2023 has boosted morale. "Everyone was excited to see these presses hit the floor," adds Stewart. "Our engineering team did a good job of prepping operators about ease of use. We also sent personnel to servo applications training on site at AIDA."

"Operators were able to build on the experience they had with AIDA's Allen-Bradley servo controls," says AIDA Project Manager Kevin Ho. "They got a better understanding of the control features and its in-depth motion profile capabilities."

The training allowed Weber Specialties to operate their servo presses at AIDA prior to shipment and included some motion profile programming. "The complete programmability of a servo press at any point of the stroke allows for optimizing each slide motion profile to work best with each die. This means improved part quality, minimized reverse tonnage and maximized productivity," Ho says.

Stewart agrees. "Servo programming is a bit different than mechanical controls, where you are working in degrees of crank angle versus linear inches of ram travel," he says. "Particularly pendulum actions—understanding what you gain in terms of throughput. Servo technology allows you to program press strokes and minimize wasted motion."

But the company's operators and engineers aren't the only ones excited about the new servo press technology. For Jim Weber, owner of the family-owned business, it's a dream come true. "Jim didn't think the addition of servo technology would come to fruition before he retired," says Stewart. "He visits those presses every day to see what they are running."

The servo presses also extend the reach of what the company can offer. "We are stampers," Stewart says. "But we are also much more than that. We've added press brake lines, fiber laser cutting and assembly operations to support fabrication work. It has made us more competitive. We can make parts for customers but we can also perform processes or produce the components they need for their customers. As a specialty manufacturer we can make anything, from one piece to millions of pieces. And we have the equipment and talent to back that up." FFJ

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