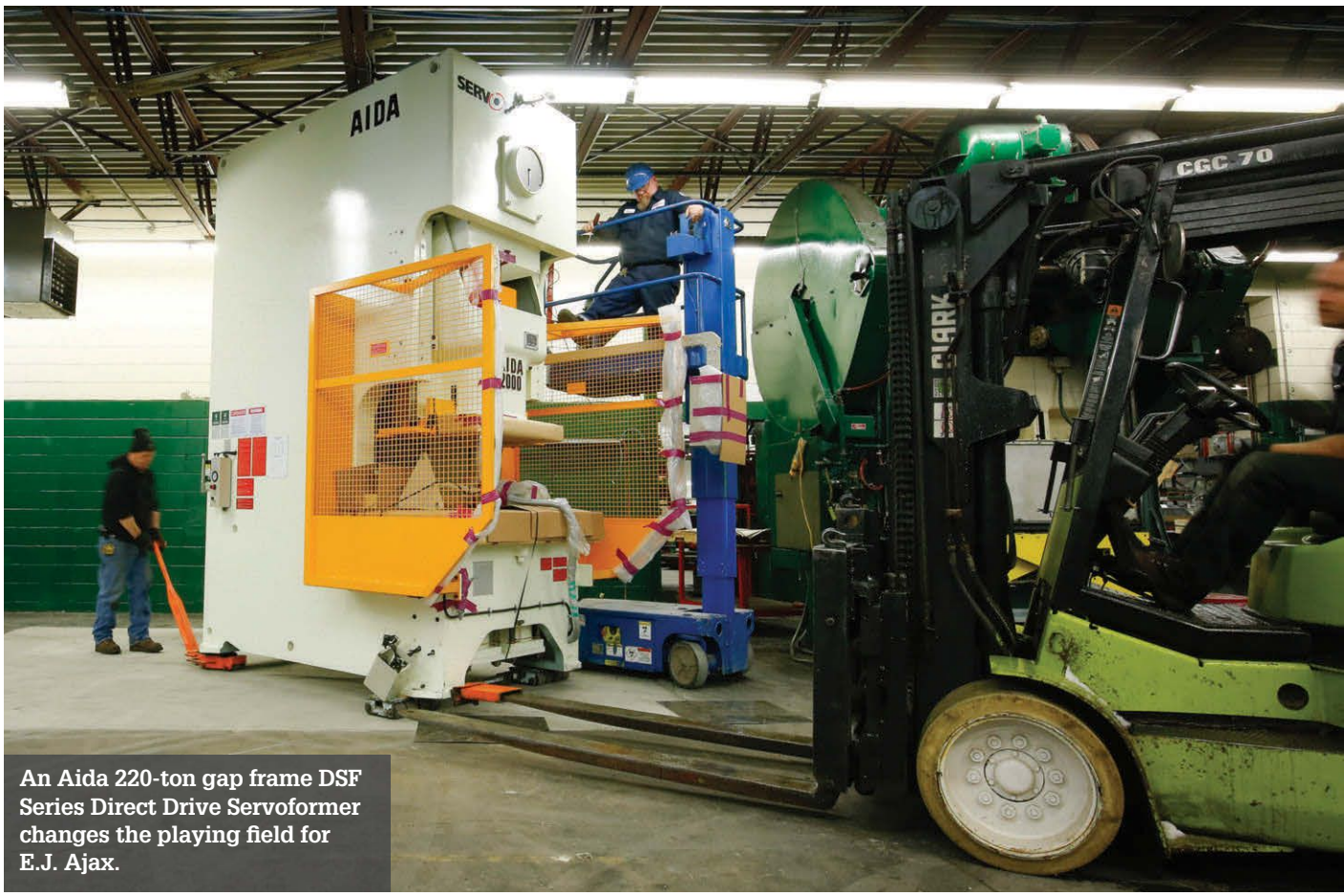
BY LYNN STANLEY, SENIOR EDITOR

The sky is the limit

Growing company combines workforce talent with servoforming, joins metalforming short list



An Aida 220-ton gap frame DSF Series Direct Drive Servoformer changes the playing field for E.J. Ajax.

Gadgets like Project Morpheus, Sony's virtual reality headset, and smart technology like the Apple wristwatch and Windows 10 are making headlines as some of 2015's most anticipated product launches. Excitement is also building among employees at E.J. Ajax and Sons Inc. in Minneapolis for technology that will revolutionize its forming operations. But they didn't have to camp out all night to wait in line for it. The metal stampings producer commissioned an Aida 220-ton gap-frame DSF Series Direct Drive Servoformer last August and installed it in November 2014.

"Thirty minutes into the training session, I walked out to see how our operators were doing," says Don Wellman, vice president of sales for E.J. Ajax. "I could see this machine was turning their clock. I talked with them afterwards—they were spitting out ideas about ways we could improve our current processes. I asked them to start writing those ideas down because I didn't want to miss anything."

The Servoformer permits operators to program speed and position in a nearly unlimited number of combinations. Unlike a mechanical press that loses energy at

Aida's Servoformer reduces cycle time with hand-fed operation.

low speeds, the Aida DSF Series Servoformer allows the operator to run the press at a velocity as low as 1 spm during forming then return to full speed for the nonworking portion of the ram cycle without causing a drop in productivity levels.

"Initially the technology was developed specifically to run ultra high-strength steels," says Todd Wenzel, president of TCR Inc., a Wisconsin-based distributor of metalforming equipment and systems, including Aida-America.

Aida-America designs, manufactures, services and supports a full range of servo-driven mechanical presses (80 to 3,000 tons), mechanical stamping presses (35 to 4,000 tons) and metalforming automation equipment at its facility in Dayton, Ohio.

Higher output

Wenzel does not believe the Servoformer should be reserved for special tools, exotic materials and complex jobs any longer. "I'm more excited when a stamper like E.J. Ajax finds they can take their existing tooling and materials and run parts more efficiently and with greater accuracy and quality. Because the Servoformer runs standard materials and tooling at much higher cycle rates than a conventional press, output can be doubled or even tripled."

E.J. Ajax did its homework, investigating servo to understand the technology's impact on its drawing, forming, trimming and punching operations. "We needed more capacity and our research told us that servoforming is the direction stamping is taking so we wanted to get ahead of the curve," says Wellman.

Getting ahead of the curve has driven the stamper to expand through several moves into its current 50,000-sq.-ft. facility. The company is owned and managed by Tom and Erick Ajax, third-generation metalformers. "Grandpa Erick was the typical inventor working out of his house," says Erick Ajax. "With several patents under his belt he started the company in 1945 based on creative ideas and hard work. Those principles continue to anchor our business."

Innovation and elbow grease may serve as the muscle for E.J. Ajax, but its backbone is a skilled workforce. "The talent we harvest is the most important asset our company has," says Wellman. "My colleagues are forward thinking. They are constantly looking for ways to improve processes. That approach helps our customers be more competitive with their products and it gives us an advantage in the marketplace."

Combining servoforming with a proficient crew was a next, natural step for E.J. Ajax. "It adds us to a short list of metalformers skilled in the application of servo technology," Wellman explains. "It widens the scope of our capabilities for existing customers and positions us to attract larger companies for our next growth phase."

Competition for machine choice was close, Wellman says, "But Aida was able to get us up and running right away and we felt their experienced support team could keep us operational."

The manufacturer prototypes, cuts, stamps, forms, bends and punches a wide variety of parts from mild steel, aluminum and stainless in sizes ranging from 12 in. by 12 in. up to 36 in. by 36 in. It also produces parts as small as a pencil tip. Plugging the Servoformer into its current production flow, the manufacturer was able to begin making parts within days of installation.

"We draw, pierce and form in a work cell," says Wellman. "We're using the machine in a hand-fed deep draw operation. Prior to servoforming we were limited to basically one option because of the shut height and speed restrictions associated with performing a 3-in. draw in a tall part. The DSF Direct Drive Servoformer gives us full clearance. We can run the part at speed, slowing the ram just above bottom dead center. We're already seeing reductions in cycle time and gains in capacity and versatility."

Servo Presses

The step feed feature allows operators to manually and precisely move the slide.

A mechanical press typically requires multiple steps or redraws to perform deeper draw work. A Servoformer can start drawing higher in the stroke, eliminating some or all of a tool's redraw stations.

"Since a Servoformer press can do more per station, tooling and labor costs are reduced which translates into a higher competitive advantage," Wenzel explains.

The machine's ability to perform multiple restrikes at bottom dead center minimizes material springback, giving parts a more refined profile. "With a standard press you have to cycle all the way around," notes Wenzel. "Restrikes require additional tooling stations. The Servoformer's ram is able to reverse directions and restrike the part after barely lifting off of it. Aside from lower tooling costs, restriking a still warm part is more effective than a restrike performed after the part has cooled and work hardened."

The ability to restrike parts helps the manufacturer maintain a tight radius on critical components adds Wellman.

Stepping with servo

E.J. Ajax also expects to see gains with the tooling it designs and builds in-house. The versatility of servoforming will free tool-and-die makers to consider different approaches engineered to eliminate steps, streamline processes and take on new part profiles with optimal efficiency.

Die testing and setup are also made easier by the Servoformer's manual step feed. Operators can manually and precisely move the slide in 0.1 mm increments yet have access to the machine's full energy and tonnage capabilities. The manual step feed eliminates the "inch mode" setup procedure, a method mechanical press users find precarious and sometimes costly due to crashes or misalignments.

E.J. Ajax operators are already noticing improved performance with existing tooling. "One of our colleagues on the floor had an idea that promises to reduce a current process from three stages to two," Wellman illustrates.

Ideas like these are just an example of the concepts E.J. Ajax associates are developing. "We have some of the best and brightest on our team," according to Wellman. E.J. Ajax machine operators' skills are tested and proven through the National Institute of Metalforming Skills (NIMS) credentialing program. Every employee is required to take 100 hours of job-related continuing education annually.

In addition to growing its workforce, the stamper is nurturing a new crop of customers. In the last 12 months E.J. Ajax has grown by more than 15 percent. "I've filled out more nondisclosure agreements in the last year then I've seen in my 17-year career," he notes. "That means a wealth of great opportunities. We have the brain trust and infrastructure in place now to make game-changing improvements for our customers in quality and cost." FFJ

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