



by Kip Hanson, editor-at-large

Direct talk

Aida-America talks about the benefits of direct-drive, servo-powered stamping technology. Just don't forget the training

Anyone who attended the 2023 Fabtech exhibition might have noticed two things. The first was that the show was busier than usual. Chicago's McCormick Place drew in more than 40,000 fabricating professionals, a 26 percent increase over the previous year's show in Atlanta. The second is that Aida-America outgrew its booth. As marketing manager Matt Shetler explained in a pre-show interview, "We couldn't fit all of our technology in a single booth, so this year we're spreading it across two."

That decision stands for Fabtech 2024 in Orlando, Fla. Visitors to the Sunshine State this October can expect to see more advanced metal stamping press technology from Aida-America. And those who missed it will have another chance to poke a few buttons on the company's new Allen-Bradley control, which made its debut on a 300-ton straight-side servo press, part of a complete production system from Aida with partnership from Dallas Industries.

And anyone with questions about Aida's direct-drive servo press technology or those not yet convinced of its benefits will have yet another chance to educate themselves. Literally. That's because the stamping press manufacturer has recently expanded on and formalized its many years of classroom and onsite operator training by giving it a new name, the Servoformer Application Training (SAT) program.

Gaining ground

Servo-driven presses are nothing new. Aida introduced the first direct-drive one in 2002 and has since installed more than 2,500 globally. But as project managers Tony Hentz and Kevin Ho explain, some in the industry have been slow to move away from the traditional flywheel clutch and brake arrangement found on many stamping presses.

"A lot more companies are starting to see why servo presses are the way to go, especially in the automotive market," Ho says. "Much of that is due to the increased use of high-tensile steels, which allow carmakers to reduce material thickness without sacrificing strength. Their goal is to make cars and trucks lighter for improved gas mileage, but with that, they also need to form shapes that are much more complex than those in the past – subframes and so forth – which are not possible with traditional steel."

It's possible to run these parts in a mechanical press, he adds, although it's rarely practical. For very simple parts, the shop might be able to build a special die that gets around certain formability challenges, but this raises tooling costs tremendously.

"With a servo press, there's no need for these sort of die gymnastics because you can adjust the motion profile to accommodate today's advanced materials," Ho says. →



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*Tony Hentz, project manager,
Aida-America*

Hentz agrees, noting that the most effective and, in many cases, only way to generate these shapes is with a servo press.

“With a mechanical press, you’re relying on a flywheel for potential energy,” he explains. “This results in speeds that are often too fast for high-tensile strength steel, causing the material to tear, but you’re unable to slow it down sufficiently without losing too much force. But on a servo press, you can control ram speed throughout the entire stroke and do so without losing any tonnage. You might

bring the slide in fast and then slow it down right before making contact, thus giving the material more time to bend or stretch. So not only does this improve part formability, quality and throughput, it reduces wear and tear on the tooling and machine alike.”

The servo bandwagon

Other stamping press manufacturers have since followed suit, and today, Aida has several competitors that can lay claim to servo press technology. But Ho is quick to point out that most of these use high-speed, low-torque “off- →



Go big or go home: The Aida DSF-series servoformers are said to represent the pinnacle of advanced engineering and manufacturing in the metal forming and stamping press industries.

the-shelf" servo motors that require a series of reducers to achieve the desired torque and speed. Aida, on the other hand, uses just the opposite: a high-torque, low-speed servo motor specifically designed for the application, eliminating the need for complex gearing.

This differentiator might help explain the 2,500 Aida stamping press installations mentioned earlier. Regardless, both experts agree that servo presses are suitable for a wide range of components and materials.

Automakers stamping high-strength steel comprise much of the fan club, but so do their Tier suppliers and other shops that take on work from different vendors and want the ability to run a multitude of dies and remain competitive even on high-mix, low-volume jobs.

"Our smallest direct-drive servo press right now is an 80-ton gap frame that's ideal for general-purpose, job shop-type stamping," Hentz says. "But we also offer servo technology on large transfer and tandem press lines up to 3,500 →



Aida's servo motors are specially designed to maintain tonnage throughout the stroke and provide stroke rates that are 50 percent higher than a mechanical press.



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tons. That said, our bread and butter here in the Dayton, Ohio, factory is a 630-ton, two-point, straight-side press that provides a top speed of up to 60 strokes/min."

The Aida website lists dozens of case studies attesting to servo presses' higher performance. Stated benefits include greatly reduced die maintenance, infinitely variable contact and draw velocity, stroke rates 50 percent higher than a mechanical press, and

maintained tonnage "through the stroke at snap-through."

"Lower scrap rates are another big one with a servo press," Ho says. "This is important not only due to the material waste but also because you have to consider time lost to sorting and checking parts. And what happens if a bad part gets through and you don't discover it until it hits the welding operation? You could end up shutting down the entire line. When you can →



Aida's Servoformer Application Training program was developed for new and experienced press operators and covers a variety of areas, such as optimizing slide motion profiles for transfer die applications.

modify slide motion at any point in the stroke, these kinds of problems suddenly go away.”

Hentz seconds this, adding that once customers understand the power of infinitely variable stamping speeds and invest in the technology, the relationship becomes one of no news is good news. “Our follow-up calls tell us that customers can bring their scrap rates and tooling maintenance costs to as low as zero after moving to a servo press,” he says.

Train up

Achieving these benefits requires programming knowledge, however. Aida’s SAT brochure lists training on the development of optimized slide motion profiles for transfer die applications; profiles to minimize reverse tonnage and improve part quality; programmable limit switch (PLS) and die protection programming based on angles, positions and processes; and programming of “pendulum motion” for increased productivity in progressive die stamping.



Aida’s Servoformer Application Training program includes both classroom and on-the-press training.

This last capability serves to eliminate the top, non-working portion of the press stroke. Ho explains.

“Let’s say you take the pendulum motion back from 90 to 270 degrees of the press stroke,” he says. “That allows you to hit the part more times per minute, but without increasing slide velocity. So one of the common applications that we train customers on is how to generate this type of optimized motion and then adapt their feeder, die protection and so on to that profile.

“There are also occasions when we’re working on a full stroke application and want to program in a slow down or silent deceleration near the bottom of the stroke,” he adds. “These and many other profiles are only possible on a servo press, and they all serve to optimize part quality and tool life.”

Hentz brings up another, often unexpected benefit. “Many customers can loosen up their material specifications so they’re not as dependent on a particular supplier, which, of course, comes with increased cost,” he says. “By switching from a mechanical press to a servo press, they can often use a wider range of materials and still get good parts.”

Attaining all this requires a certain amount of advanced training, an investment many press buyers initially overlook. Hentz offers the following analogy.

“When you purchase an Aida press – servo or mechanical – we provide basic operation and maintenance training onsite or at our facility,” he says. “Our SAT training is much different. Here, we teach them how to optimize their slide profiles for various part geometries, materials and production quantities. Think of it as going back to college for your master’s degree after getting your bachelor’s – maybe you can succeed without it, but I and others here have seen that customers achieve significantly faster ROI and higher OEE by learning all they can about this technology.” ■