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Strategic Expansion Hinges on Servo Press

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Servo Press a Centerpiece of Strategic Expansion

Here today, gone tomorrow-stampers know too well that jobs on the floor today can be on a competitor's floor tomorrow. That's why managers at Batesville Tool & Die strive to leverage new technology to stamp difficult parts. Its latest fulcrum: an Aida servo-drive press.





Batesville Tool & Die invested \$10 million to build a new addition to its 255,000-sq.-ft. plant and acquire two new big-bed presses, including this Aida 800-ton two-point servo-drive press. The addition boasts a ceiling height of 32 ft. to accommodate larger presses, and an expandable under-floor scrap conveyor that moves scrap outdoors. A Coe servo-feed line delivers material to the press from 72-in.-dia. coils; material capacity is 0.090 in. thick by 60 in. wide to 0.312 in. thick by 12 in. wide.

Taking on very complex and increasingly large, high-tonnage automotive stamping jobs that's how Batesville Tool & Die (BTD) CEO and president Jody Fledderman characterizes his company's focus over the last several years, as well as its approach to research and development.

"We don't necessarily set aside money for R&D," says Fledderman. "We learn on the job. We look for learning opportunities presented by large and complex jobs, and then oftentimes we figure out how to best produce the parts after we win the bid."

"Figuring it out," as Fledderman says, often means leveraging new technology, well before many other stampers make the same leap of faith. Such is the case with BTD's most recent investment, an 800-ton Aida servodrive press. It's the kingpin of the company's most recent expansion, its firstever "strategic expansion," says Fledderman, to allow for future work. This as opposed to the capacity-driven expansions company managers had become familiar with in the past.

"As a management team, there are certain product lines we want to get into," shares Gene Lambert, BTD vice president of sales. "Big deep-draw programs are one example. We believed we needed to add capacity for this type of work, and we didn't want to just add capacity, we also wanted to add technology."

Technology came not just in the way of the servo press, but also via a 1200ton conventional straightside mechanical press. It's outfitted with a threeaxis servo-transfer system, the firm's first press-mounted servo system. Previously, it ran all transfer dies using die-mounted servo systems.

"The world is a different place than it used to be," notes Fledderman. "We're trying to do a better job of selecting The servo-drive press stamps these seat side brackets, of 0.156-in.-thick 80-KSI high-strength low-alloy steel, two-out from 15-in.-wide strip over 10 die stations. While stamping the brackets on a conventional press created excessive snapthrough, the flexibility and controllability of the servo-press has reduced snapthrough to a manageable 55 reverse-tons. Flatness on the part's coined sections has been improved, and press speed has increased by more than 15 percent.

who we want to do business with, rather than always having the customer positioned to select us. Having servodrive press technology helps us accomplish that strategic goal. We can be more selective about the products we make, and the customers we serve."

Leading the industry by innovating is in the company's blood. Technical expertise helped it become an original Honda supplier in the mid-1980s, which, says Fledderman, "made us a better company. We were one of the first companies in Indiana to bring in wire-EDM technology, we were ahead of the industry in implementing CAD for tool design, and we also had early expertise forming difficult deep-drawn motor cases."

Fast-forward to mid-2011 and it's no surprise that Fledderman, his brother Jay (vice president of manufacturing) and the rest of the BTD management team saw servo-drive press technology as a ticket to a brighter future.



Removing Restrikes from the Equation

Summarizing its experience with the servo-drive press after running it in production, as well as in tryout to troubleshoot dies running on other presses, BTD's management team says, in concert: "We're getting better part quality and consistency, at a faster pace."

Describing the first production job run on the servo-drive press, Jay Fledderman describes the productivity and quality gain realized from moving a progressive die from a conventional 1200-ton press to the servo-drive press.

"The die stamps seat side brackets," Fledderman says, "to the tune of 36,000 parts/week, about 20 percent of press capacity." Brackets are of 0.156-in.thick 80-KSI high-strength low-alloy steel. They're stamped two-out from 15-in.-wide strip over 10 die stations.

"We had run the job for years on one

of our two 1200-ton presses," he continues, "learning to live with and compensate for as much as 145 tons of reverse tonnage. While the addition of

hydraulic dampers on the press brought snapthrough force down to 115 tons, our press operators and diesetters found the dampers burdensome and cumbersome."

Moving the part to the servo-drive press and redesigning the process to reduce ram speed at certain portions of the stroke, during piercing and coining, brought snapthrough down to a manageable 55 reverse tons.

"We've found the press to be extremely adjustable in terms of how many times within each stroke we can specify ram speed," says Robert Holtel, vice president of tooling. "This capability not only helps with snapthrough, but it also improves flatness on coined sections of the bracket, and has reduced the amount of adjustments we need to make within the tool for the form shape. Before, the hit at the bottom of the stroke was so brief that we had to overform to control part dimensions on springback. This proved very inconsistent. To get servo-press-like performance on the 1200-ton mechanical press, we would have had to add a couple of restrike stations to the die.

> "With the servo-drive press, we nearly stop at bottom," Holtel continues, "while overall cycle time has decreased by more than 15 percent, with the press running at 40 strokes/min. Scrap rate is down, and we have fewer, if any, broken punches."





Watch this press run by viewing a 2-min. video in our Multimedia Center: www.metalformingmagazine.com/multimedia

BTD moved this deep-drawing job from a standard mechanical press to its servo-drive press and enjoys more than a 20 percent increase in throughput as a result. The servo press runs the part, of 0.085-in. cold-rolled steel, in the pendulum mode at 52 strokes/min. Critical tolerances are the ID/OD, formed to ± 0.006 in.

Drawing at 50 Strokes/Min., and Tryout as Well

The BTD team also showed us another job moved to the servo-drive press from a standard mechanical press —deep drawing a high-volume (2 million/yr.) automotive part. Now the job runs in the pendulum mode at a 10-in. stroke (maximum

Servo Press

stroke on the Aida servo press is 16 in.), compared to 14 in. before. The press now runs at 52 strokes/min., a considerable productivity boost compared to running at 40 strokes/min. previously.

"One of the big advantages of the servo-drive press,' says Lambert, "is that it can perform like several different presses. We can run 400- or 600-ton jobs on it, vary its shut height and stroke length, and manipulate ram speed and tonnage anywhere during the stroke, as often as we want to."

In addition to production jobs, the flexibility of the servo press has proven its value in tryout and troubleshooting tasks. "Our tooling department loves the servo press," says Holtel. "When there's time available on the press, we can use it for die development, since we can operate the press under full tonnage but at very slow speeds. We can watch the material form under very controlled but production-like conditions.

"In more than one case, we've been able to use the capabilities of the servo press to diagnose problems with production dies running on other presses," continues Holtel. "In one case, for example, stampings were fracturing in the tool. We thought ram speed might be the culprit. But when we ran the die in the servo press at very slow speed, fracturing still occurred. That allowed us to turn our attention to other possible causes."

Here to Stay

"Knowing what we know now about servo-drive technology," surmises Fledderman, "the next time we're in the market for a new press we definitely will consider another servo-drive model. It's like having three or four presses in one—we can run flat parts really quickly, and also perform deep drawing under very controlled conditions.

"We believe that the Aida press has positioned the company at least 2 yr. ahead of the curve," he adds. "Even though we brought the press in to run just the one job, the roll of the dice already has paid off, while preparing our company for the future." **MF**