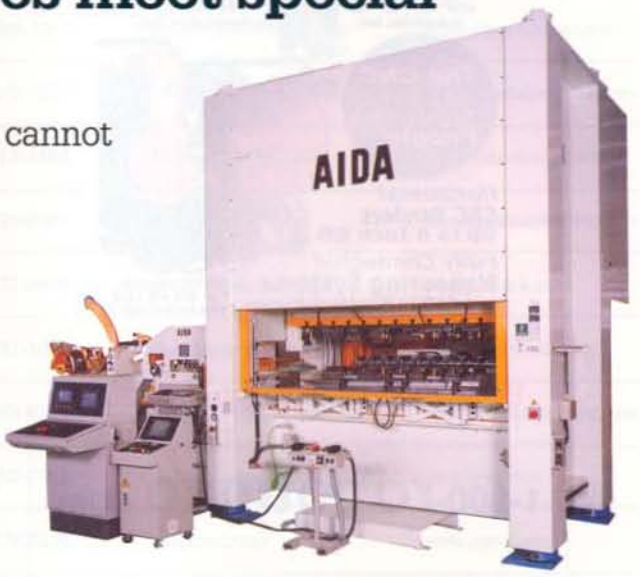
Servo mechanical presses meet special needs of specialty steel

Aida's ServoPro goes where other presses cannot



No doubt about it: When it comes to the future of automotive stamping materials, the watchword is "exotics."

To meet that and other pressing needs of today's stamping operations, Aida has introduced the ServoPro, an electric servo-mechanical press that sets itself apart with large, high-torque, low-rpm servomotors that have been developed for capacities of up to 300 tons per drive motor. (The company plans to increase those tonnage capacities in the near future.)

Aida also has worked to reduce the ServoPro's power consumption, which the company says is now comparable to standard mechanical press drives for most applications.

Traditionally, mechanical press users had to pay a premium to adjust the operating speed and stroke length or to alter the slide motion on mechanical presses because of the rigid platforms on which those presses are built, according to Aida-America Product Manager Dennis Boerger. The ServoPro gives stampers the benefits of a mechanical press while adding those features that in the past eluded the cost-conscious.

By attaching servomotors directly to the press drive shaft to replace the flywheel, clutch and main motor in its mechanical presses, the ServoPro's stroke lengths, rating points above the bottom of the stroke, torque and energy remain the same as the standard mechanical press drive.

According to the company, the ServoPro motors were designed specifically for use in general presswork, including forming. However, the press line was not necessarily created to displace current technology across the board.

"This technology isn't intended for every stamping job that comes [up], Boerger said. "This is probably not a technology that will replace all hydraulic and mechanical presses down the road. What it will do is gain a significant share of the market over time, because it does give you the ability to control forming operations, especially in exotic materials and high-strength steels.

"They [customers] are going to be looking to aluminums and magnesiums and high-strength steels, and we're working now in projects in titanium that you couldn't really consider doing on conventional press equipment."

Boerger noted that magnesium, in particular, is one difficult-to-form material that is gaining a foothold for premium uses such as high-end computer cases. Not only does magnesium need to be heated properly to be stamped, but the press that does the forming must have the proper controls to get a quality product.

"That's where I see servo technology gaining in the marketplace," Boerger said. "It allows you the infinite control of slide position within microns, and you can't do that on hydraulic presses."

The development of the ServoPro has been an evolutionary process. Aida began about 12 years ago to engineer a drive system with the kind of adjustability end users wanted at a cost that would make it attractive. That effort resulted in the first servo- driven mechanical press in 1997.

The first and second generations of Aida's servo technology used high-speed, low-torque servomotors developed for plastic injection molding. Good as they were for embossing or blanking, they were limited in forming applications and impractical for normal presswork.

In addition, the company notes, these motors were not available for higher-tonnage presses without tying several motors together with complex drive systems to convert high rpm into a controllable vertical slide motion—an expensive proposition from a capital and energy consumption standpoint, and one that was difficult to maintain.

Aida is hoping for much more widespread use with the increased tonnages available with ServoPro's latest technology. As ServoPro moves to larger capacity straight-side presses, it will use multiple servomotors tied together in the drive system (rather than functioning independently) to ensure that the slide remains as parallel to the bolster as possible during operations with high off-center loads.

"This is not a technology to replace the general stamping press," Boerger said. "It will gain strength as more exotic materials become more commonplace in automotive and appliance and other [applications]." FFJ

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