

Pedal to the metal

High-strength materials and heavier parts aren't too tough for servoforming technology

In 1940, Henry Ford predicted, "...a combination airplane and motorcar is coming. You may smile, but it will come." If you ask Grant Group President Robert Grant about his new Aida DSF Series 200-ton direct-drive servoformer, his response is akin to that of someone who has seen Ford's forecast fulfilled.

"Imagine if your car could levitate and move off down the road," he says, describing his reaction to a demonstration of the press technology. Headquartered in Fraser, Michigan, Grant Group provides soup-to-nuts value-added stampings, clips and assemblies to the automotive industry. Three facilities totaling 240,000 sq. ft. house a gamut of stamping presses from 30 to 800 tons. Services include robotic welding and quality inspection.

The 53-year-old company was founded by Robert Grant's grandfather, Charles

Grant. Its longevity, he explains, "has been built on a foundation of good, solid equipment and dedicated employees."

The high-volume supplier's throughput rates are boosted by the ability to run small parts at 300 SPM. When the Grant Group began to process heavier components, longer stroke requirements slowed production rates. "We were used to fast," Grant acknowledges. "We would go from 300 SPM on a 90-ton press to just 50 SPM when we moved bigger jobs to a 200-ton traditional press."



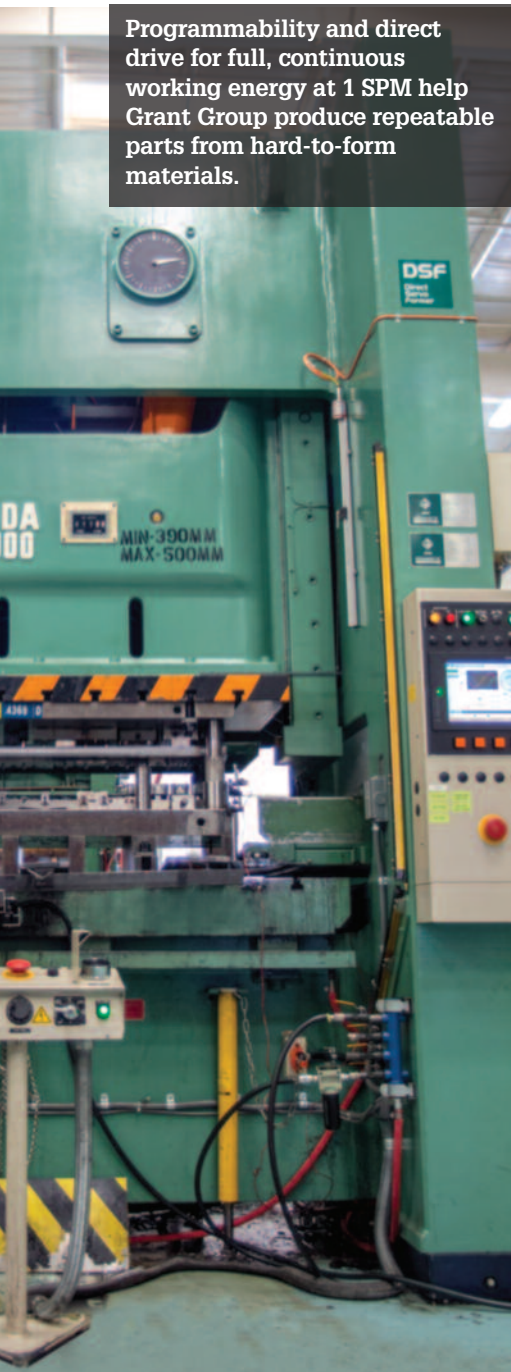
An operator uses step feed to test the die and watch the part form in real time.



It's in the programming

Servoforming was new to Grant Group but the machine's ability to dial up any type of stroke without productivity losses was compelling. An investigation of the technology led the stamper to Aida-America in Dayton, Ohio. The machinery builder supports servo-driven mechanical presses from 80 to 3,000 tons; mechanical

Programmability and direct drive for full, continuous working energy at 1 SPM help Grant Group produce repeatable parts from hard-to-form materials.



“The quality, speed and consistency of the Aida direct-drive servoformer make it the press of the future.”

Robert Grant, Grant Group

stamping presses from 35 to 4,000 tons; and metalforming automation equipment.

With the direct-drive servoformer, operators can program speed and position in a nearly unlimited number of combinations.

Conventional flywheel-driven mechanical presses lose energy at low speeds. The direct-drive servoformer can run at a velocity as low as 1 SPM during forming then regain full speed for the nonworking

portion of the ram cycle to maintain productivity levels.

“Aida set themselves up as a servo leader and they have been doing it longer than anyone else,” says Grant, who admits to being particular when it comes to equipment purchases. Citing a lesson learned from his father, he notes, “It’s not about being cheap. It’s about buying the right equipment the first time.”

Installed last year, the Aida DSF Series



A challenging stainless steel automotive component is no match for Aida's direct-drive servoformer.

Stamping/Presses

runs any size part the machine's 200-ton capacity and 72-in. bed size will accommodate, and allows Grant Group to achieve consistent, precision forming in exotic and high-strength materials.

"We do progressive die and light draw work as well as piercing," Grant explains. "We're also getting into materials we haven't seen before, such as dual-phase steel. Standard presses are having a hard time forming this and other high-strength low-alloy steels."

A large number of automotive components—seat belt and airbag components and door hinges—have been respecified. "We were having trouble producing these parts on our mechanical presses," Grant says. "We have been experimenting with the direct-drive servoformer by slowing the stroke near bottom dead center to produce these parts from grade 304L, a T-300 series stainless steel austenitic, which has a minimum of 18 percent chromium and 8 percent nickel." The result, he says, "has been consistent, superior quality parts."



Speed and position can be programmed in a nearly unlimited number of combinations.

Meeting demands

Automakers' multi-material strategy, using steel and aluminum alongside plastics and composites, will only widen, says Grant, and "the direct-drive servoformer gives us the flexibility to handle what may come down the pike."

Aside from part quality, turnaround times are getting shorter. Grant Group pri-

marily serves Tier 1 suppliers. "Customers want everything cheaper and quicker," Grant observes. "If they could get parts yesterday, they would ask for them."

To manage part quality, the company designs and builds tooling in-house. The direct-drive servoformer "makes it that much easier." Manual step feed gives the operator control over the slide position. Die setup and tryout is available with full energy capability to 1 SPM.

"Before, we had to make sure we had the correct speed and the proper inertia to hit full tonnage, then its metal hitting metal very quickly," Grant says. "It made it hard to see what was happening inside the die."

The company now uses the direct-drive servoformer's step feed to test dies, according to Grant. "We're able to watch a part form under full tonnage and see everything happen in real time without worrying about the press locking up. One of the advantages to this is that engineers are able to see whether or not the forms are engaging properly." The engineers also can determine if the die is engaging at bottom or 5 degrees from bottom. "We're having conversations we could never have before," he enthuses.

The stamping press allows Grant Group to run dies faster than its other presses can. "It's primarily because they are able to program a shorter stroke length and run the press in pendulum motion with link motion," explains Rand Mellinger, sales manager for Aida.

One of the biggest changes for Grant Group wasn't mechanical. "It is about mindset," says Grant. "For us old-timers, watching the direct-drive servoformer in step feed mode with access to full energy and tonnage capabilities made us cringe at first. It's something that is just not done in a standard press." Forty years ago, parts were made with manual equipment, an extremely time-consuming process. "Today the quality, speed, consistency and repeatability of the direct-drive servoformer is spot on. It's the press of the future." **FFJ**

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