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Laser Next Enhances Diversity at Diversified Tooling Group

With its four affiliated companies, Diversified Tooling Group (DTG), Madison Heights, MI, delivers single-source solutions to the automotive, heavy truck, defense, industrial equipment, power generation, rail, and foundry industries. As its name implies, its *diversified* capabilities enable the company to be a full-service manufacturer of prototype and production stamping dies, low-volume stamped parts and assemblies, as well as fabrication, machining, and assembly of highly-engineered components.

Diversified Tooling Group is a privately-held company with third-generation management. "In 1973, my father started this business in a small 5,000-square-foot alley shop with three employees making tooling aids for copy mills and stamping dies," explains John J. Basso, owner and president. "I came on board in 1975. Fast forward to today and my son John Michael Basso is also an owner and vice president in the company, and we have grown to four companies with a total of 775,000 square feet of engineering and manufacturing floor space with 425 highly-skilled employees."

Diversified Tooling Group's four affiliated companies include:

Superior Cam, Madison Heights, MI

A technical leader in the prototype sheet metal industry, Superior Cam specializes in low-volume production parts and assemblies.

Midland Design, Madison Heights, MI

Midland Design has 50 years of experience designing all types of vehicle stamping dies.

Bespro Pattern, Inc., Midland Heights, MI

Bespro Pattern is a respected leader in the CNC machining of poly patterns, wood patterns, and urethane patterns of solid CAD die design.

American Tooling Center, Inc., Grass Lake, MI

American Tooling Center, Inc. has three locations in Grass Lake, Jackson, and Lansing, MI with six facilities totaling 540,000 square feet. The company supplies hot stamping dies to automotive OEMs and suppliers.

"With the integration of these four companies, DTG can provide complete tool & die service to our customers," explains Mike Austin, director, manufacturing engineering. "Prototypes are made at Superior Cam, the production die designs are made at Midland Design, the patterns are made at Bespro Pattern, and the production stamping dies are made by American



After evaluating many different machines 5-axis machines, American Tooling Center purchased the Prima Power Laser Next 1530 in 2014.

Tooling Center. And those dies are sold to North America's major automotive OEMs. We are a Tier 1 tooling supplier. Most of the parts that we make today with our tools are the large Class A parts that are the visible parts of an automobile or a heavy truck. There is a requirement for high surface quality. The other part of our business is in the defense sector. We became involved in the defense business 20 years ago to round out our business and make use of excess capacity that naturally occurs in the tool & die business. We started making the parts that would be installed on ground defense vehicles. We began by making armor plate and heavy sheet metal. And this was one of the first applications for us in laser cutting with Prima Power. Because we were supplying thinner gauge steel plate that would be used in various defense vehicles, we needed to have 2D laser cutting. And we also needed a laser for 3D laser cutting for trimming and piercing holes."

Prima Power Lasers

Through the years, the companies of DTG have become very familiar with Prima Power lasers, including an early model of the LASERDYNE, two Platino 2D lasers, four Rapido 3D lasers, and, most recently, two Laser Next 5-axis lasers.



The Laser Next 1530 is primarily used for the hot stamping part of the company's business including R&D work, prototype work, production tool tryout, and process development including laser cutting development, and low-volume production.

"By 2014, we needed a very large and very fast 5-axis laser to support our hot

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stamping press,” explains Basso. “When we evaluated the machines, we compared the Prima Power Laser Next to the competing 5-axis machines and robotic laser cutting. We tested each of these machines for ease of setup, ease of programming, the accuracy of the cutting, how fast we could do the trim lines, the ease of maintenance, support from the manufacturers, the technical level of the machine, and the overall cycle time of the machine. The Laser Next was selected because it clearly beat the competition in almost every category. We went to the 2014 FABTECH show and purchased the first Laser Next that was sold in North America and installed it at American Tool Center.”

Laser Next

“Once we installed the Laser Next 1530 and started using it for tryout and development of the process, we were amazed at how fast the machine was,” adds Austin. “It was light years beyond anything we



In 2016 Superior Cam was in need of a very large 5-axis laser to prototype body sides. The company purchased a larger envelope Laser Next 2130 to fit the job requirement.

had dreamed of. In terms of performance, the robot took over two minutes to cut the part, the competing 5-axis laser took over one minute to cut the part, and the Laser Next cut it in 45 seconds. That difference in performance put the decision over the top...that, and the history we had working with Prima Power for so many years, made it an easy decision.”

“Once we installed the Laser Next 1530 and started using it for tryout and development of the process, we were amazed at how fast the machine was. It was light years beyond anything we had dreamed of.”

Automotive part manufacturers need highly-specialized products for the cutting of sheet metal parts, capable of answering to all their specific requirements. Thanks to a deep and unique experience of over 35 years in this field and to a continuous dialogue with customers and partners operating in the car industry, Prima Power has designed the new 3D laser machine for automotive production: Laser Next.



The Laser Next's high accuracy, repeatability, and precision have allowed Diversified to replace some dies and pierced dies with laser cutting, making the process more competitive for its customers.

Every detail was studied and developed to maximize machine uptime. Maintenance was also lowered and simplified to reduce non-productive times and the need of specialized resources dedicated to these activities.

Laser Next has a working range of 3,050 x 1,530 x 612 mm and is equipped with 3 kW or 4 kW high brilliance fiber laser. Its compact focusing head, fully sealed for best protection, features direct drive motors, double protection SIPS, fully-metallic sensor, and Focal Position Control.

The high-precision and dynamic turntable with servo motor and absolute encoder is designed to ensure the highest reliability, safety, and ergonomics. With the blocking times, the distance between table and light curtains is very short, allowing faster and more comfortable loading/unloading operations in full safety.

According to Austin, the Laser Next 1530 is primarily used for the hot stamping part of the company's business including

R&D work, prototype work, production tool tryout, and process development including laser cutting development, and low-volume production. "We learned from the Laser Next 1530 that the turntable was a major benefit to minimize the lost time of loading and unloading," says Austin. "The machine is down a minimum of time to load and unload parts. Our cost of laser cutting very much depends upon keeping that beam running. It is very seldom that you will see it running without tooling on both sides of the table so that we minimize that load/unload time."

"At the American Tooling Center, the Laser Next 1530 is cutting some heavy gauge exotic material," says Basso. "Its main focus is on the hot stamping material which is a different grade of steel. That machine has stood up to the speed requirements. All the hot stamping parts by necessity have to be laser trimmed. You cannot use any trim dies. That machine has been holding up great to all the production we have."

"Both of our Laser Next machines have been very durable, very dependable, and the speed and accuracy have been excellent."

In 2016, another DTG company, Superior Cam, was in need of a very large 5-axis laser to prototype body sides. "We purchased a larger envelope Laser Next 2130 to fit the job requirement," explains Basso. "Both of our Laser Next machines have been very durable, very dependable, and the speed and accuracy have been excellent. We have been very happy with both. There has been very little downtime. They have run very true."

"The improvement in productivity has been enormous. The cut quality is excellent....and we are doing that with nothing more than high-pressure shop air."

According to Frank Delkov, plant manager of Superior Cam, prior to the Laser Next 2130, the company had two CO2 lasers running production on door assemblies for a Class A truck. "We had one machine making left hand door outers and another machine making right hand door outers," explains Delkov. "We moved this job to the Laser Next 2130. We now run both the left and right hand door outers in one fixture on the Laser Next. What took us over three minutes per door outer now takes us 30 seconds. The improvement in productivity has been enormous. The cut quality is excellent....and we are doing that with nothing more than high-pressure shop air. There are no specialty gases we are using. That's huge. It's simple, effective, and the quality is excellent. The Laser Next is also a very user-friendly machine. We do all our training internally between our operators. And in



From left to right, John J. Basso, owner and president; Mike Austin, director, manufacturing engineering, and Frank Delkov, plant manager of Superior Cam.

a matter of just a few weeks, we can take someone off the floor and have them operational on the Laser Next."

"The Laser Next's high accuracy, repeatability, and precision have allowed us to replace some dies and pierced dies with laser cutting," says Basso. "That makes the process more competitive for our customers. In many cases it allows them to make low-volume parts that they otherwise would not be able to make. It has also allowed us to supply our customers with parts and tooling to make parts that previously they would not be able to produce. Some of those parts are cold stamped parts and others are hot stamped parts, but if we didn't have the laser cutting we would not be able to afford the tooling to make those parts. The lightning-fast fiber laser cutting, combined with the extremely accurate and repeatable Prima Power Laser Next 2130 and 1530, allows us to eliminate the tooling cost for trim and pierce dies for cold stamped parts, significantly reducing investments for low-volume production, with production costs comparable to a *die complete* process."

"And as new processes are introduced, we know that Prima Power will be there to support us."

"This has opened up new lines of business for us in automotive, truck, defense, and specialty areas of our business," concludes Basso. "It is a manufacturing process that we previously only had used for prototypes. We also know that Prima Power is a leader in the development of new processes. And as new processes are introduced, we know that Prima Power will be there to support us."