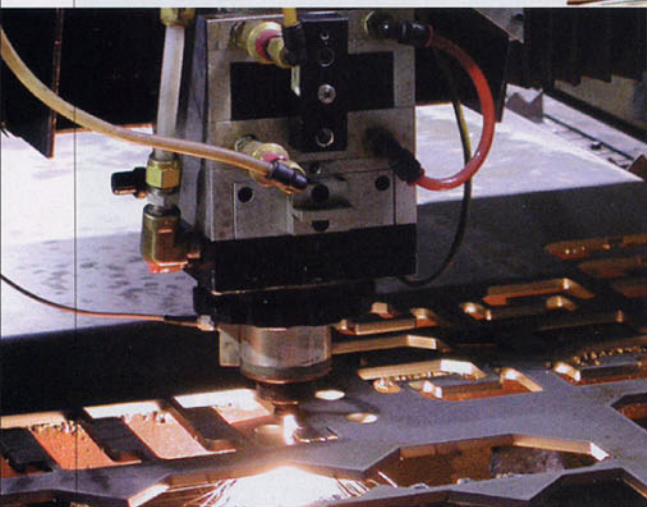
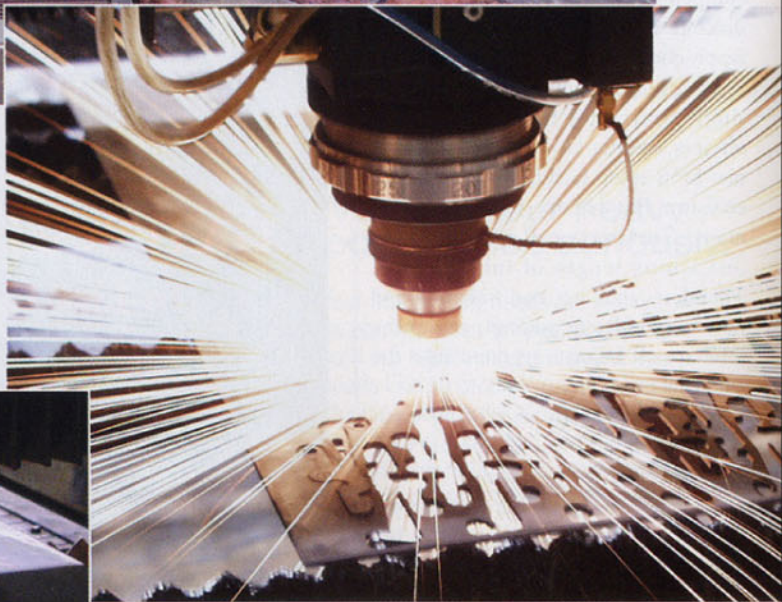


More than 20 lasers at Alabama Laser Technologies produce components for a broad range of customers, including sister division Alabama Laser Systems.



Take a broad collection of flat-sheet laser cutting machines and add a 5-axis laser, laser etchers and custom-designed lasers. Throw in press brakes, folding equipment, CNC lathes and mills, wire EDMs, a weld shop with multiple robotic welders and finishing equipment and you have one of the largest and most complete laser job shops in the country.

Alabama Laser Technologies, Munford, Ala., houses its equipment in a 300,000-square-foot facility located along Interstate 20 halfway between Birmingham and Atlanta. The plant, which is currently undergoing an expansion, holds a variety of carbon and specialty steels purchased in mill runs. By stocking this material, the company eliminates delays and ensures rapid



Steelmaster deburrs, deoxidizes and grains punched and laser-cut parts.

BY SUE ROBERTS
A smooth
edge
symbolizes
Alabama Laser
Technologies'
dedication
to quality

Finishing touches

turnaround for customers who require just-in-time delivery.

According to Matthew Johnson, president of Alabama Laser Technologies, components produced in his 200-employee shop find their way into everything from lawn mowers to the space shuttle. Customers span the United States and extend beyond the borders. "We stand as a one-stop center for custom manufacturing or machining needs," says Johnson. "We have more than 20 laser systems for job shop work, special projects and laser research."

Lasers for lasers

As a division of Alabama Specialty Products, Alabama Laser Technologies has an interesting twist to its client base. In addition to serving a full spectrum of OEMs and service centers, the company produces components that go to a sister division, Alabama Laser Systems. This division specializes in design, development and manufacturing of custom laser systems for unique processing solutions. Systems are designed according to customer specifications, with a choice of lasers, beam delivery, motion systems and controls.

Samples of Alabama Laser Systems' custom offerings include flat-sheet and 5-axis laser systems, laser weld stations, welding systems, dual laser welding systems, laser etching systems and multi-head laser welding systems. Most of the hardware going into Alabama Laser Systems' equipment is produced in the Alabama Laser Technologies shop.

Several of the lasers on the floor at Alabama Laser Technologies, though not all, bear the Alabama Laser Systems logo, including four ALS Express 3,000-watt CO₂ lasers, an ALS Express 6,000-watt CO₂ laser and an ALS 1,000-watt CO₂ laser. The largest machine on the floor is 6 feet wide by 10 feet long. The smallest has a 2-foot-by-2-foot bed for precision cutting.

Varied materials, processes, jobs

Materials processed are as varied as the lasers: carbon steel up to $\frac{3}{4}$ inch, a broad mix of specialty alloys, stainless alloys, titanium and all types of exotic materials. Industries provided with Alabama Laser Technologies' components, as Johnson points out, are also varied, including aerospace, auto racing, transportation, medical,

furniture, lawn and garden, automotive and the chemical and oil field industries.

Each job that comes in, whether it's a single prototype or a production run of 30,000 parts, is evaluated to determine the best laser for its processing. Part thickness, material type, and required accuracies determine which machines will be called into service.

"All of our lasers have strengths and weaknesses," explains Johnson. "I have some machines that do really well on thick carbon steels and I have other machines that specialize in stainless or aluminum or high nickel alloys.

"We place each job on the proper machine," he says. "I use the saying a lot—if you've got a small nail, use a small hammer. If you've got a big nail, use a big hammer. I have lots of lasers so I have an arsenal of different-sized hammers."

Quality of each piece, regardless of the laser used or the number of processes performed, is stringently monitored and tracked according to ISO 9000 specifications. An inspection process is built into each step. Inspection starts with the first part from

each process performed on a component or assembly. There are in-process inspections and then a final inspection before shipping.

To produce high-quality edge deburring and surfaces, Alabama Laser Technologies has two Steelmaster W209RT wide belt deburring and graining machines. Steelmaster is manufac-

tured in Germany by Büttering and imported by AM Machinery Sales, Warminster, Pa.

Designed as a single solution for deburring, oxidation removal and graining, the Steelmasters combine a series of belt and brush heads to remove burrs and apply a surface finish. Parts are placed burr-side up on a variable speed

conveyor that passes them under each head for processing.

Vertical burrs caused by a cutting or punching process are knocked into a horizontal position by an abrasive belt. Seven cup-style brushes, each 6 inches in diameter, are staggered across the width of the machine within the brush carriage. The brushes spin while the carriage oscillates back and forth, removing the horizontal burrs and leaving rounded, deburred edges.

Alabama Laser Technologies typically uses stainless steel brushes which are versatile enough to use with a wide range of materials. Brushes made from other materials are available to provide a variety of edge qualities.

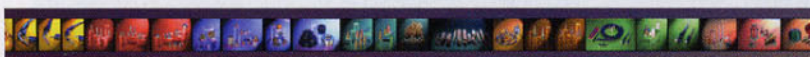
Graining and deburring in a wet application provides additional advantages as the parts move through the system. Wet machines extend abrasive belt life, provide a better surface finish and keep the shop environment cleaner. A series of three squeeze rollers, three on top and three on the bottom, clean the part of water and grit created during the deburring process. Two air knives on the top and two on the bottom complete the drying process. Clean, dry, deburred parts immediately go to another process after exiting the machine.

Stainless, aluminum and thicker carbon steel parts, particularly if they have included a punching process which can leave more burrs than the laser cutting itself, pass through one of Alabama Laser Technologies' two Steelmasters.

More than deburring

Steve Mace, vice president of sales, notes that deburring is only one of the reasons to send parts through the Steelmaster. "A lot of times we use the Steelmasters just to put finishes on things that don't need to be deburred," he says. "Maybe we need a polish or to put a grain on a piece of material for aesthetic purposes. We have a 37-inch-wide machine so I can grain a 37 inch width with indefinite length."

Controls on the Steelmasters can save up to 100 programs, allowing for easy recall of repeatable jobs and consistent quality. The operator enters the material thickness, and the



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Brass

RODS/BARS: Rounds, Hexes, Squares, and Rectangles in 360 free-cutting, 464 Naval Brass, 485 Leaded Naval Brass, 314 Commercial Bronze, 510 & 544 Phosphorous Bronze, 642 Aluminum Bronze, 651 & 655 Silicon Bronze.

SHEETS/PLATES/STRIP: Alloys 260 Yellow Brass, 280 Muntz, 220 Commercial Bronze, 464 Naval Brass and Mirror Bright.

Copper

RODS/BARS: Rounds, Hexes, Squares and Rectangles in 110, 101 Oxygen-free, 145 Tellurium, 182 Chromium and Beryllium, Bus-Bars stocked bare, silver plated, and tin plated.

SHEETS/PLATES/STRIP: Alloys 110, 101 Oxygen-free, also Copper Roofing sheet and coil.

OTHER: Lead-coated copper sheet, Copper Nails, Gutters and Downspouts and Accessories, Copper rings, Circles, Radiator Strip and Tubing.

Aluminum

RODS: Rounds & Hexes in 2011T6, 6061T6, 2024T351, 7075T6

BARS: Rectangular in 6061T6 and 6101T6 Bus Bar-Bare and Plated.

Stainless Steel

RODS: Rounds & Hexes in 303, 304, 316 and 416.



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One of Alabama Laser Technologies' laser machining centers.

machine table automatically moves to the precise position needed for processing.

Changeover of abrasive belts when moving from one type of material to another is quick and easy. A turn of a pneumatic switch releases the tension from the top roller, creating slack in the belt and allowing it to be easily replaced.

"We will literally run a batch of stainless, a batch of carbon, a batch of aluminum, then go back to stainless. The changeover times are so minimal that they're insignificant," says Johnson.

According to Mace, customers receiving parts that have gone through the Steelmaster see a better end product.

Improved product, lower costs

Johnson describes the improvements from a business perspective. "We've been able to increase the quality of our product while simultaneously reducing our costs," he says. "That's an awesome thing. We're giving the customer a better product and it's costing us less to do it."

The Steelmasters replaced a finishing step that had been done by hand. "We used to have people on hand grinders doing all types of manual grinding work," he says. "You have the human-error factor there and they could miss burrs or not hit them well enough.

"When you put a part through the Steelmaster you don't miss an edge, a hole, a burr. It looks more professional than a part that has been run over with die grinders."

Mace finishes, "One of the beauties of having all these capabilities in the facility is that we're able to look at a situation and see what is important, what we have to run and what machines to put it on. If one machine isn't available, we're able to move things around and put them on another machine so we're still able to meet the commitments of our customers. The finishing processes add to our commitment to our customers for superior quality, quick delivery and a fair price." ■

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