

LASER
SERVICES



Your vision. Our precision. With Laser Services there are no limits.

At Laser Services we offer a full-service, open-job-shop approach to meeting all your materials-processing challenges. From precision cutting, drilling, welding, marking and etching of ceramics and metals, to hands-on application engineering of custom substrates and etched glass, our fully-equipped facility and experienced team are at your disposal. With up to 2,200 watts of CO₂ energy, and 600 watts of YAG, you can be certain we have the power to get the job done perfectly.

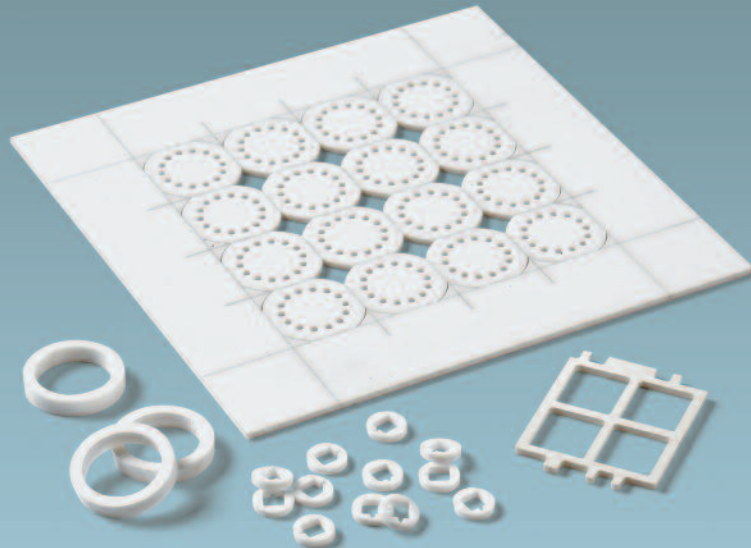
For a job that needs secondary processing, we also offer extensive finishing services including lapping, edge grinding, and surface polishing.

With Laser Services, the only limit is what you can dream up.

Laser machining is a process whereby material is vaporized in a well-defined and very small path or kerf (minimum width: .001 inches). The result is a minimal heat-affected zone (HAZ) and an ability to realize and consistently reproduce intricate designs.

Lasers offer many benefits over conventional machining, including reduced deformation from tool pressure, more efficient material utilization, and limited surface contamination. With minimal or no fixturing required, parts are easy to set up and last-minute modifications are quickly instituted. In addition, lasers equipped with rotary devices accommodate challenging cylindrical cuts that are often impossible with conventional methods.

The laser advantage



MATERIALS

Adhesives

Adhesive Preforms

Alloys

Kovar®
Mild Steel
Molybdenum
Nitinol
Stainless Steel
Steel
Superalloys
Tantalum
Zircaloy

Ceramics

Alumina (90% - 99.9%)
Aluminum Nitride (AlN)
Black Ceramic
Ferrite
Green Ceramic
LTCC / HTCC
Piezo Ceramic
Yttria Stabilized Zirconia

Composites

Kevlar®
Teflon®

Epoxies

Conductive Epoxy
Epoxy Preforms
Frozen Epoxy

Glass

Aerogel
Fused Silica
Glass

Laminates

Duroid®
Flex Circuits
FR4
G10, G11
Garrolite

Metals

Bronze
Cobalt
Cold Rolled Steel
Germanium
Hardened Steel
Hot Rolled Steel
Mild Steel
Molybdenum
Silver
Stainless Steel
Steel
Tantalum
Tungsten

Natural Materials

Mica
Paper/Cardboard
Quartz
Sapphire
Silica
Silicon
Wood

Plastics

Acrylic
Lexan
Lucite
Mylar®
Polycarbonate
Styrene

Polymer

Flex Circuits
Hydrogel
Kapton®

Rubber

Thin Metals/Foils

Aluminum Foil
Brass Foil
Copper Foil
Gold Foil
Molybdenum
Nickel Foil
Titanium Foil



Cutting & Drilling

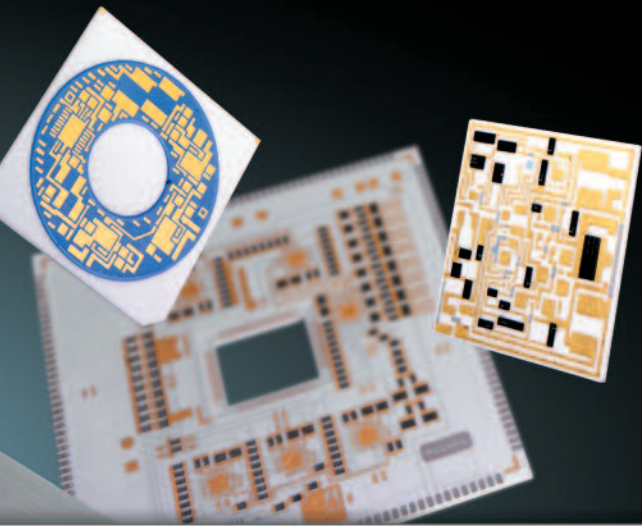
Straight cutting, drilling and scribing, plus rotary axis lasers to process tubes, pipes, spheres and cylinders. State-of-the art CAD/CAM programming, micro-positioning tables, multiple beam systems, and statistical process controls.

Welding

Precise control for perfect seams and spot welds. Capacity to work with high-conductivity metals such as copper and aluminum, plus high-melting point metals such as tungsten, molybdenum, and tantalum. Rotary chucks for 360° welding.

Marking & Etching

Professional, permanent markings on metals, ceramics, plastics and other materials. A variety of metal coatings and finishes. Sequential serial numbers, logos, and alphanumeric bar codes on any variation of flat, curved or round surfaces.



From jet engine cores to medical devices to integrated circuits, Laser Services has the experience. For nearly 30 years, leading designers and scientists have been challenging us to deliver their parts with increasing precision. And under new leadership, we continue to push the boundaries of innovation every day.

Ceramic Specialty

We serve a variety of markets

Quality ceramic substrates for today's microelectronics market. Large inventory of alumina in various dimensions, plus a variety of as-fired standard alumina sizes for immediate delivery. In-house inventory of our customers' substrates for just-in-time processing. Secondary processing including lapping, edge grinding, and surface polishing.



Aerospace & Avionics



Alternative Energies



Automotive



Electronics



Firearms



Marketing



Medical



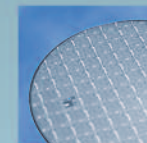
Military



RF/Microwave



Robotics

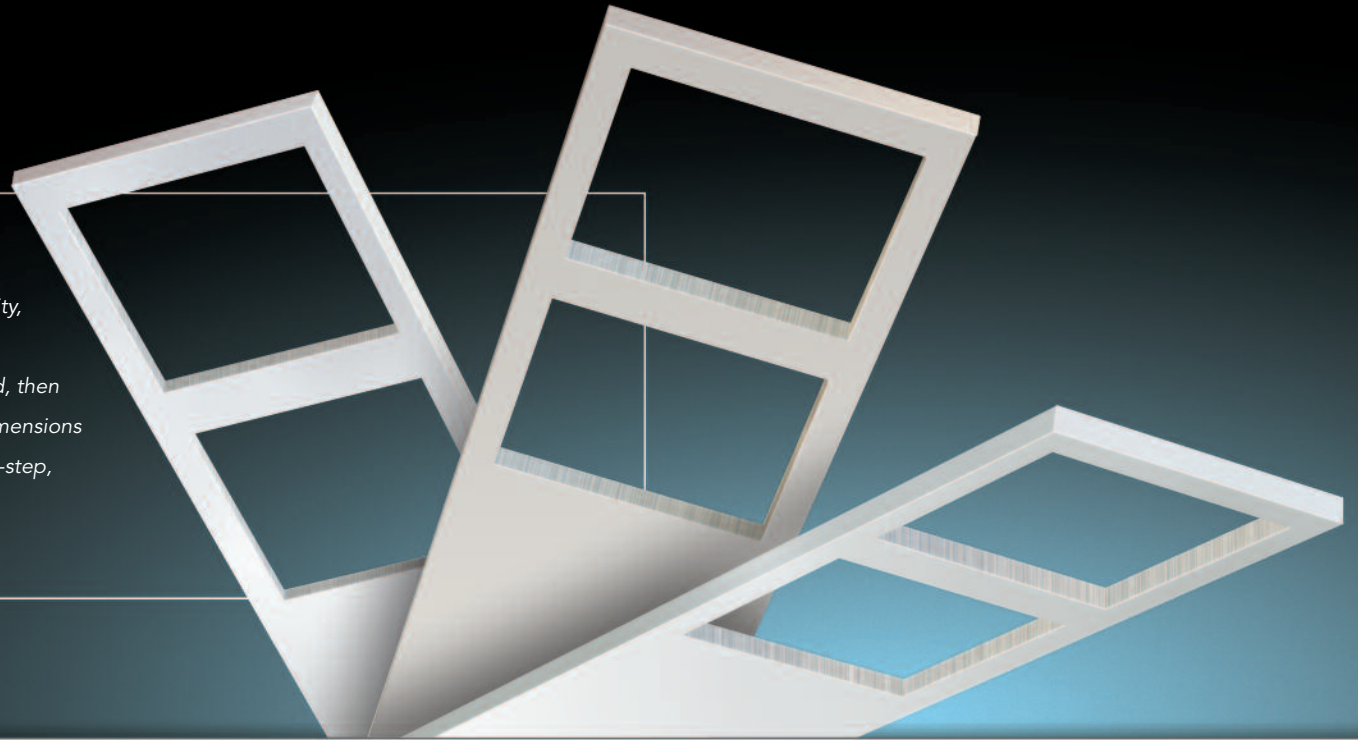


Semiconductors

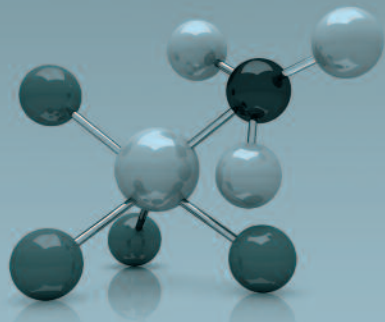


Test & Measurement

Aluminum Nitride (AlN) is an increasingly popular material due to its dielectric and thermal conductivity, plus its non-toxic qualities. These AlN frames for Stanford University School of Medicine were lapped, then precision cut by a laser, and finally diced with all dimensions measuring to within a 0.5 mil tolerance in this three-step, turnkey process.



"The AlN frame required precision machining—something that Laser Services performs"



On the cutting edge. At Laser Services, it's more than a play on words—it's where we live with our customers almost every day. Take Craig S. Levin, Ph.D., for example. As an associate professor of radiology at Stanford University School of Medicine, he's developing a positron emission tomography (PET) system to detect early-phase breast cancer.

A critical component in the PET system design is a 1.666" x 0.25" heat-conductive frame. This

frame provides a support structure while it precisely positions scintillation crystal arrays onto photodiodes. For the frames, Dr. Levin selected Aluminum Nitride—and the cuts and the finishing had to be perfect.

Laser Services knew all about AlN's inherent qualities. So we were able to consult on an ultra-efficient design and manufacturing procedure to achieve a precise, repeatable frame. Also, we were able to

When the design team at Independent Fabrication (IF) Bikes of Somerville, Mass. developed the XS, a custom-fit, high-performance road-racing bicycle, the prototype included a titanium frame with lugs that needed to be custom-cut into a crown shape.

For this precise cut, IF engaged the professionals at Laser Services, who used rotary axis lasers to turn the bike-company's vision into a road-worthy reality.



ed with efficiency and care.”

Crowning achievement

“Our complex designs need the flexibility and accuracy of laser cutting. Now I just call up Laser Services, supply the drawings, and they take care of me.”

Tyler Evans

Vice President, Independent Fabrication Bikes

educate the Stanford team on the variety of material-appropriate processes to produce optimum results.

First, the surface of the AlN material was lapped to specification. Next, the windows were precision cut by a laser. Finally the frames were trimmed out by an AlN dicing blade—with all dimensions measuring to within a 0.5 mil tolerance. These AlN frames are a showcase example of our turnkey approach and our application engineering capabilities.



For more information, including materials-processing design guidelines, visit our Web site at laserservicesusa.com

Laser Services is
ISO/Aerospace
Certified

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