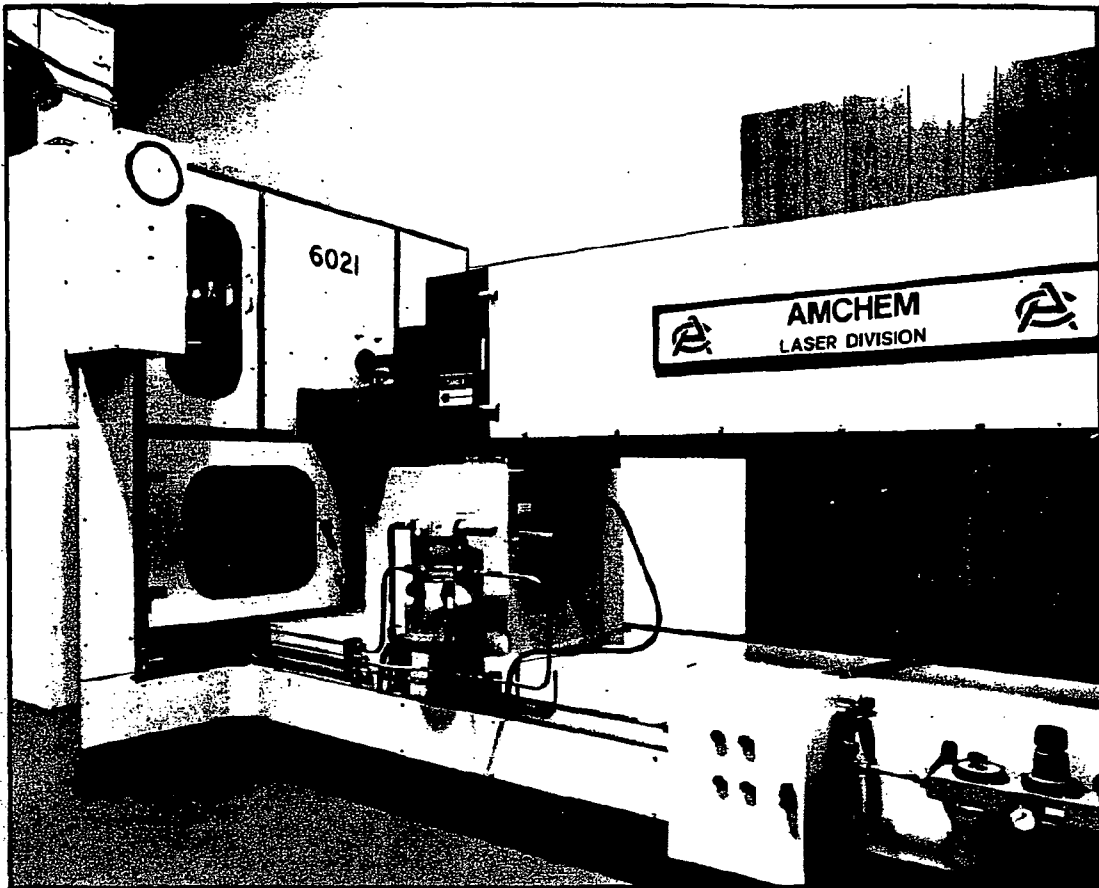


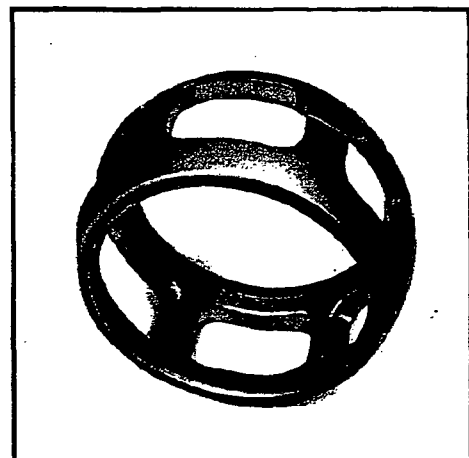


AMCHEM



For over two decades Amchem has been acknowledged as a leader in non-conventional machining technology. Providing solutions for a wide range of companies in the automated high speed production of components where multi position, high accuracy drilling cutting and welding techniques are required.

Amchem have a long tradition of research and development in the use of lasers for industrial purposes; and today these specialist skills and laser technology are being applied to great advantage by a wide range of industrial and research facilities throughout the world.



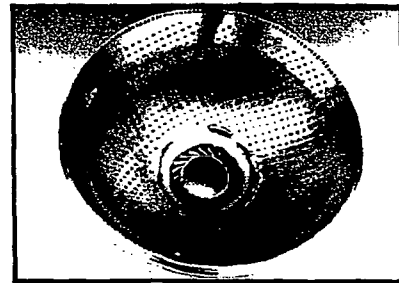
A M C H E M

Why Lasers?

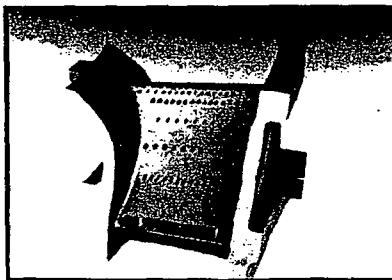
Component production requirements demand:

- HIGH QUALITY
- HIGH PRODUCTIVITY
- LOW TOOLING COSTS
- FLEXIBILITY
- RELIABILITY

Amchem have combined their knowledge of machine tool, system design and component manufacturing requirements with their knowledge of state of the art laser processes to produce a leading range of laser machining systems to satisfy these requirements.



LASER WELD



TREPANED COOLING HOLES IN NOZZLE GUIDE VANE

High Quality

Precision slideways with linear and rotary feedback devices ensure positional and repeatability accuracies demanded by the most stringent of customers.

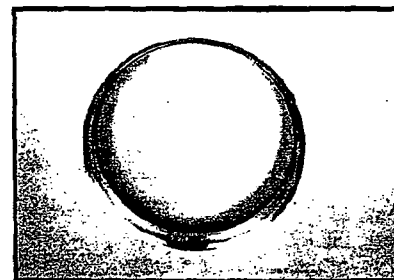
High Productivity

Robust construction aligned with high performance motion devices ensure maximum productivity. Holes can be percussion drilled or trepanned using

traditional trepanning techniques using the UV trepanning axes or the major machine axes.

Drilling on the Fly — D.O.F.

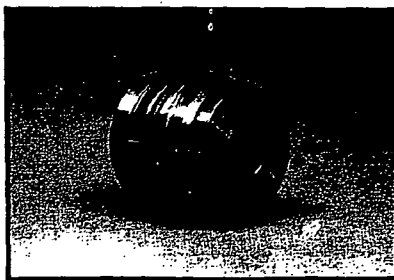
Using Amchem's patented Drill On the Fly technique, holes can be percussion drilled in typical aero-engine fabrications, reducing production times by over 80%. Multiple drilling on successive passes allow machining of combustor bodies and spinnerettes. Those components which may have up to 60,000 holes are ideal examples of the vast time savings possible.



JET COOLING RING

Low Tooling Costs

Due to the low machining forces exerted by the laser cutting and by the multi-axes movements available, the tooling cost is kept to an absolute minimum.



FUEL HOLES IN INJECTOR BARREL

Flexibility

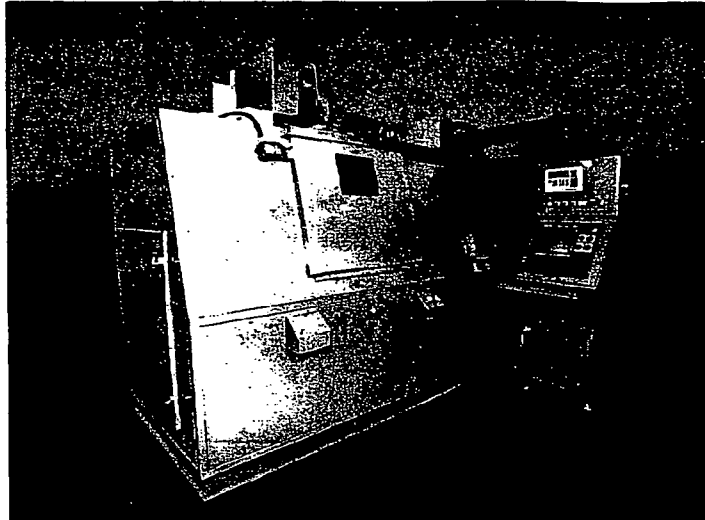
Process and tooling flexibility allowing drilling, cutting and welding mean that low batch sizes can be economically produced.

Reliability

Proven machine modules, high quality CNC systems and purpose designed laser units are combined to give the highest possible reliability.



VL SERIES

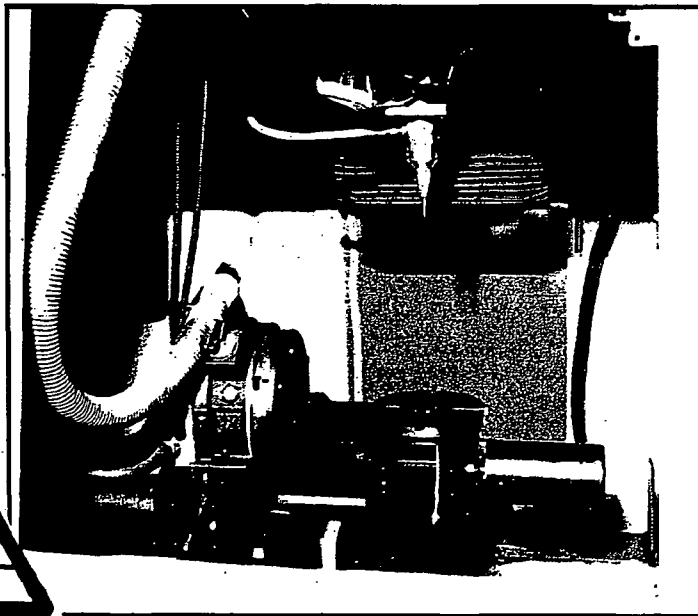


The Amchem Laser Range

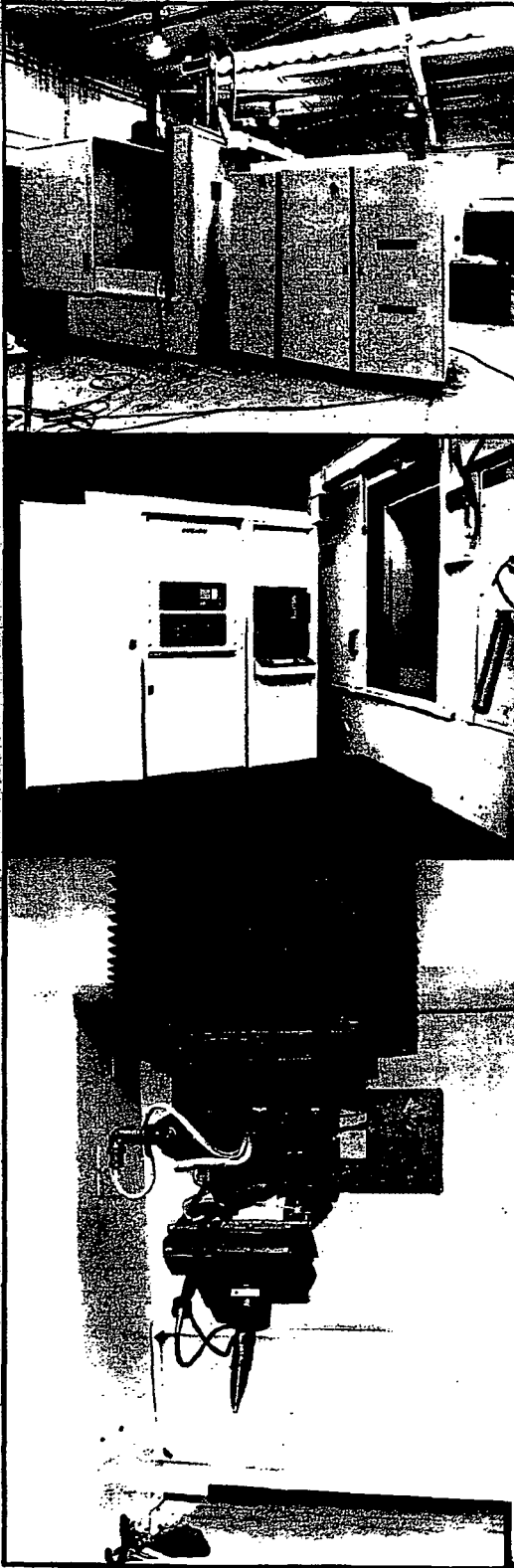
Since components vary in specification Amchem offer a selection of machine configurations. All exhibit the same high quality, high specification features.

For the smaller components Amchem offers the VL range. Developed from the VMZ EDM machine structure, thus giving advantages of spare parts holding, the VLI is ideally suited for nozzle guide vanes and other intricate components requiring multi-axes machining. Normal X.Y.Z motions are provided with rotary tables giving the option of two further axes. The UV trepanner gives high accuracy movements to any programmed shape.

Choice of Yag or CO2 laser with minimum beam path, choice of CNC system and facilities for closed circuit television give the operator a user friendly laser machining system with full laser safety features.



GL SERIES



For the larger components such as combustor liner rings, bodies, spinnerettes, spars etc, the GL range of machines has been developed. Offering larger strokes on all linear axes additional rotary and surface following axes it is common to have 9 axis movements to suit specific customer requirements.

Amchem will recommend and provide the best solution to the customers problems using standard modules and specifically designed features.

Options available include:

- Surface following by contact or non contact
- Vision inspection or flow control inspection for closed loop machining.
- Beam Benders.
- Component manipulators.

Product Support

Total support is Amchem's philosophy. Support at the specification and purchase. Support with implementation, installation commissioning and training of your operators, programmers and process engineers. Plus after-sales support and service from our team of process and service engineers.



SPECIAL APPLICATIONS



Special Applications

Whatever the application, the design and production teams at Amchem have the expertise to meet the challenge. Working with the latest CAD/CAM design systems offers exceptional facilities for the most intricate of detail.

Amchem are exceptionally proficient in supplying designs within demanding schedules to meet the criteria laid down by the customer.

All products that leave the premises are meticulously designed to meet their intended application. Rigid quality control techniques are applied to match the tightest standards.

The use of closed circuit television interfaced to a computer as an inspection system has been perfected by Amchem. These systems can be supplied and retrofitted into your existing production environment.

VISION SYSTEM

The principle in vision technology is that an image received via the camera is processed and displayed as a digital representation. Pixels (the actual dots from which a picture is constructed) are stored within the computer's memory bank for retrieval at a later date. This information can be assessed by a computer to determine dimensional accuracies against known masters.

Use of vision inspection systems offer several distinct advantages being non-contact and non-destructive.

Inspection times are greatly reduced even on complex, awkward and sophisticated shapes. On automated production lines, data received from the vision system can be fed directly into a computer for dimensional analysis and subsequent adjustment to the machining process. The use of vision systems within a production environment offers significant improvements to productivity.



TECHNICAL SPECIFICATION

		VL1	GL1	GL2	GL3
X	Stroke	450mm 17.8"	1000mm 39.3"	1200mm 41.2"	1500mm 59"
	Accuracy	$\pm 25\mu$ 0.001"	$\pm 13\mu$ $\pm .0005"$	$\pm 15\mu$ $\pm .0006"$	$\pm 18\mu$.0007"
	Repeatability	$\pm 10\mu$ 0.0004"	$\pm 8\mu$ $\pm .0003"$	$\pm 8\mu$ $\pm .0003"$	$\pm 8\mu$ $\pm .0003"$
Y	Stroke	450mm 17.8"	1000mm 39.3"	2000mm 78.7"	3000mm 118"
	Accuracy	$\pm 25\mu$ 0.001"	$\pm 13\mu$ $\pm .0005"$	$\pm 20\mu$ $\pm .0008"$	$\pm 25\mu$ $\pm .0001"$
	Repeatability	$\pm 10\mu$ 0.0004"	$\pm 8\mu$ $\pm .0003"$	$\pm 8\mu$ $\pm .0003"$	$\pm 8\mu$ $\pm .0003"$
Z	Stroke	450mm 17.8"	1100mm 43.3"	1100mm 43.3"	1100mm 43.3"
	Accuracy	$\pm 25\mu$ 0.001"	$\pm 13\mu$ $\pm .0005"$	$\pm 13\mu$ $\pm .0005"$	$\pm 13\mu$ $\pm .0005"$
	Repeatability	$\pm 10\mu$ 0.0004"	$\pm 8\mu$ $\pm .0003"$	$\pm 8\mu$ $\pm .0003"$	$\pm 8\mu$ $\pm .0003"$
A	Stroke	300 degrees	± 90 degrees	± 90 degrees	± 90 degrees
	Accuracy	± 30 arc sec	± 15 arc sec	± 15 arc sec	± 15 arc sec
	Repeatability	± 15 arc sec	± 10 arc sec	± 10 arc sec	± 10 arc sec
B*	Stroke	N/A	± 180 degrees	± 180 degrees	± 180 degrees
	Accuracy		± 30 arc sec	± 30 arc sec	± 30 arc sec
	Repeatability		± 15 arc sec	± 15 arc sec	± 15 arc sec
C*	Stroke	360 degrees	360 degrees	360 degrees	360 degrees
	Accuracy	± 30 arc sec	± 10 arc sec	± 10 arc sec	± 10 arc sec
	Repeatability	± 15 arc sec	± 8 arc sec	± 8 arc sec	± 8 arc sec
U/V*	Stroke	± 6 mm ($\pm 0.23"$)	± 6 mm ($\pm 0.23"$)	± 6 mm ($\pm 0.23"$)	± 6 mm ($\pm 0.23"$)
W*	Stroke	± 3 mm ($\pm 0.12"$)	± 3 mm ($\pm 0.12"$)	± 3 mm ($\pm 0.12"$)	± 3 mm ($\pm 0.12"$)

* Optional

Whatever . . . Wherever . . .
Amchem Laser Machining Systems
can help your production capabilities.



AMCHEM

Amchem Company Ltd.

Manor Drive, Sileby,
Leicestershire LE12 7RZ
ENGLAND

Telephone: (050981) 2925
Facsimile: (050981) 4964
Telex: 341618

Amchem Company Inc.

155N New Boston Street,
Woburn
MA01801 U.S.A.

Telephone: 617 938 0700
Facsimile: 617 935 8395

Amchem Company Inc.

P.O. Box 12667
Scottsdale, Phoenix
AZ 85267 2667

Telephone: (602) 860 6050
Facsimile: (602) 860 6050

Amchem Company Inc.

3809 Lodimeadow Court
Saline, Michigan 48176

Telephone: 313 429 4754
Facsimile: 313 429 4072

Designed & Produced by Graphtec
Telephone: (050981) 4319

