PRIMA NORTH AMERICA

LASERDYNE 795

The Premier Multi Axis Laser Processing System
for Drilling & Cutting Precision Components

PRIMA NORTH AMERICA

Designed for the Most Demanding Laser Processing Applications Worldwide.

Introducing the LASERDYNE SYSTEMS 795 BeamDirector®. For over 25 years, LASERDYNE SYSTEMS has been designing, manufacturing, and supporting turnkey laser systems since the first installation in 1982. The new 795 system is the most advanced multi axis laser system yet developed by our technical staff. This staff includes some of the most experienced laser processing and laser system design engineers in the world.

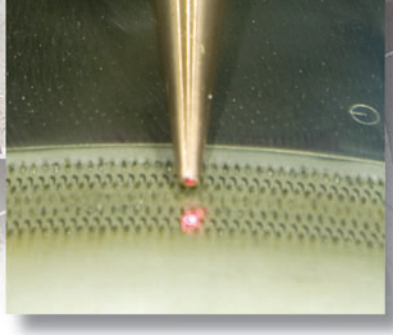
Like all of the quality systems that preceeded this new 795, LASERDYNE SYSTEMS fulfills the wide range of needs, wants and manufacturing approaches of customers. The features and capabilities of this latest, 4th generation LASERDYNE system reflect customer's requirements and the maturing of laser processing technology. With complete integration of all laser, motion, and process sensing through the LASERDYNE S94P control, process quality and integrity is under the complete control of the system, not the operator.

To meet the changing needs of customers and provide the latest laser technology as it is developed, LASERDYNE keeps customers informed of process developments and new capabilities through a multi-faceted program. This includes a bi-weekly newsletter, the LASERDYNE Interface, an annual Users Group Meeting, and ongoing access to the LASERDYNE Applications Engineering staff and equipment within the LASERDYNE Technology Center.

The next five pages show five reasons why the LASERDYNE 795 BeamDirector® has set the industry standard.

LASERDYNE 795 BeamDirector® Specifications:

Axes Travels	
X,Y, Z	XS : 40x40x40 inches (1.0x1.0x1.0m) XL : 80x40x40 inches (2.0x1.0x1.0m)
BeamDirector®®	±450 degrees C axis
Feedrate	
X-Y-Z	0-800 in/mm (0-20m/mind)
BeamDirector® (C-D)	0-90 rpm
Rotary Axis (optional)	Various options available depending upon the application
Resolution	
Linear (X-Y-Z)	0-0.0001 inch (0.0025 mm)
BeamDirector® C-D	0.001 degree
Accuracy	
Linear (X-Y-Z)	± 0.0004 inch (0.01 mm) per 20 inch (0.5 m) ± 0.0008 inch (0.02 mm) full travel
BeamDirector® C-D	± 5 arc seconds
C-D axes intersection	within 0.0005 inch (0.013)
C axis parallelism to X-Y	within 0.0005 inch (0.013)
C-D perpendicularity	within 2 arc seconds
Repeatability	
Linear (X-Y-Z)	within 0.0008 inch (0.02 mm)
BeamDirector® (C-D)	within 5 arc seconds
Rotary Axis (optional)	See individual specification



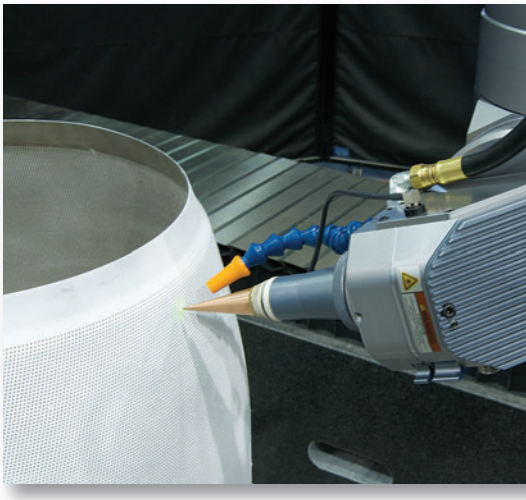
REASON #1
LASERDYNE 795...Turnkey Systems.

Whether you chose a PRIMA NORTH AMERICA CL50k Nd:YAG or a CP4000 CO2 laser you will be processing with a laser developed by PRIMA North America engineers, the finest and most experienced in the laser industry.

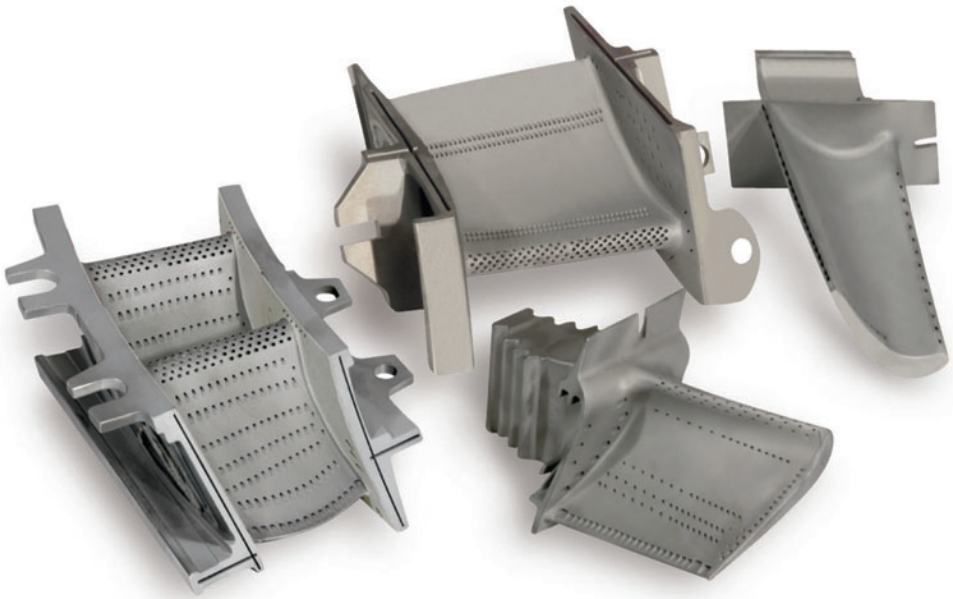
PRIMA engineering, behind LASERDYNE SYSTEMS and CONVERGENT LASERS, is your assurance of the best results in laser processing. The cooperation between LASERDYNE SYSTEMS and CONVERGENT LASERS teams in the design of the CL50K Nd:YAG laser is just one example of customer driven innovation made possible by the vertical integration within the PRIMA Group.

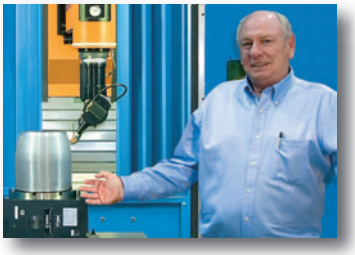
Through continuous innovation, LASERDYNE customers benefit in the changing requirements they face, whether in designs of parts, challenging new materials or stricter quality requirements.

If LASERDYNE SYSTEMS believes that there is a better choice for your productivity, you can be assured that they will stand behind that choice. LASERDYNE SYSTEMS understands that over the life of their products, the initial purchase price is far outweighed by the productivity of that system and its payback. You can be assured LASERDYNE SYSTEMS will always offer you the best choice.



A LASERDYNE system teamed with a robot for part loading and unattended processing. An example of LASERDYNE SYSTEMS commitment to turnkey processing.





"Over a 25 year period, I bought many LASERDYNE multi-axis laser systems while working at four different companies. They were the best equipment decisions I ever made. Those systems are still going strong doing difficult multi-axis laser drilling and cutting at very complex angles and at extremely high speeds. LASERDYNE systems are perfect for aerospace drilling turbo combuster and other difficult applications where hard materials are required." Daryl Grubb.

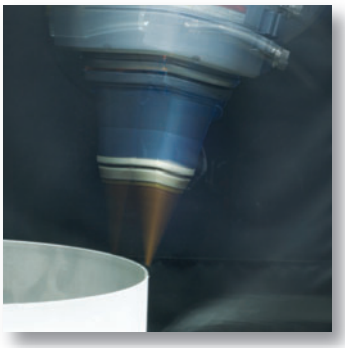
REASON #2

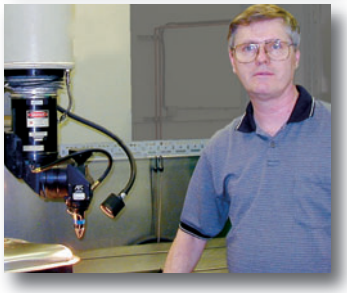
LASERDYNE SYSTEMS 3rd Generation BeamDirector®. Industry's Fastest, Most Accurate, and Most Versatile 3D Beam Delivery.

The third generation of BeamDirector® maintains the features that have set LASERDYNE systems apart and adds new features to make laser processing even more productive, flexible, and accurate. Improved design and full 5-axis laser beam motion allows the most efficient use of the work envelope. This enables processing at complex angles on parts much larger than systems that require workpiece positioning or rely on one axis of beam positioning and a rotary table.

LASERDYNE systems, for more than 25 years, have been recognized for their flexibility in accessing hard-to-reach part locations in a single setup. The latest BeamDirector® will improve access even more. The "compact" version used on Nd:YAG and fiber laser applications allows processing parts along the full travel of the Z-axis at angles as shallow as 10° to the surface. The CO_2 version provides for laser beam diameters up to 50mm for high power cutting and welding applications.

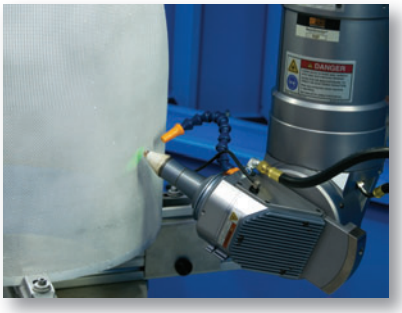
All BeamDirector® models feature unmatched crash protection supported by a 5 years ***unlimited hours warranty*** covering crash related damage. Processing at 45° above horizontal, direct drive features where needed, optical encoder feedback, lens and coverslide drawers for quick accurate changeover, and a full line of focusing lens and nozzle assemblies address whatever applications that you have now or in the future.





"Our LASERDYNE BeamDirector® systems have achieved volumetric accuracy equivalent to coordinate measuring machines. The system accuracy is achieved in the system's axis' straightness, squareness and rigidity." Ron Sanders, Southwestern Laser, Inc.

High speed drilling on the fly with a CL50k Nd:YAG laser using LASERDYNE exclusive OFC (Optical Focus Control), BTD (BreakThrough Detection, and CylPerf programming at normal, minor, shallow, and compound angles.



REASON #3

Flexibility...Only With a LASERDYNE SYSTEM.

BeamDirector® 3rd generation and 4th generation system design. The design goal for LASERDYNE SYSTEMS engineers for the new 795 system was to produce a motion system that provided users with unmatched flexibility in processing. By reviewing past system designs and taking advantage of developments in materials, electronics and sensing technology they have developed a system that is without equal the most versatile processing platform available today. Driven by real world customer requirements, from a worldwide base of LASERDYNE SYSTEMS users, the design of the system guarantees access to the most difficult challenges whether they are land based or aerospace turbine components.

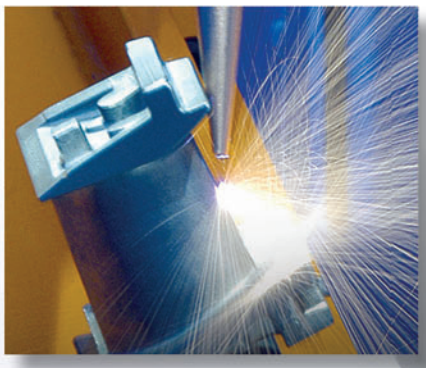
LASERDYNE SYSTEMS S94P software features have helped a major aerospace turbine manufacturer maintain ±2% airflow on a new generation of parts where ± 10% had been the norm.

See these features demonstrated at LASERDYNE SYSTEMS in the Technology Center and learn how this controller is helping users experience a 2X increase in output.

The LASERDYNE 795 is a true thoroughbred system. It is not a collection of existing components made from milling machines and coupled with critical components from 3rd party vendors. Rather, it is a carefully engineered and built system created by engineering design teams with over 25 years experience in laser processing.

Your challenge is to visit and see your part processed on a LASERDYNE system and learn what is critical for your success. Ask yourself these questions -- can you process holes at critical shallow angles? What is the largest diameter that can be processed on the system? Will you be able to drill compound angle holes?

Do not miss this opportunity to improve your laser processing needs with the new 795 System. And remember, the oldest LASERDYNE machines are still in operation, including serial number 4 – still in production at a major engine manufacturer after 25 years of service!



According to Gary Loringer, head of laser processing for Turbo Combustor Technology, the LASERDYNE systems were purchased primarily for overall processing versatility. "The addition of the 13th LASERDYNE system, with its increased intelligence and new features, will help increase our capacity for laser drilling and productivity," reported Loringer.

REASON #4

Real Time Processing Power.

System 94P Laser Process Controller:
LASERDYNE engineers and customers know the most important element of productivity is to produce parts correctly without scrap. The System 94P Laser Process Controller accomplishes this, continuing an impressive history of providing laser system users with unique control feature tools. The LASERDYNE SYSTEM controller features a touch screen with a dual operating system combining Linux and Windows interface for ease of use by operators.

A partial list of LASERDYNE SYSTEMS exclusive System 94P features include:

OFC® – Optical Focus Control

CylPerf® – for complicated hole drill programming

BTD® – BreakThrough Detection when Nd:YAG drilling

HDC® – Hole Diameter Compensation allows direct offset control for hole size with the CL50k

FlowComp® – Control airflow directly from an airflow bench

SPC Data Acquisition – for compiling statistics for NADCAP certification that the laser process is in control

Shaped Hole software – for easy programming of this new challenge to manufacturing

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See these features demonstrated at LASERDYNE SYSTEMS in the Technology Center and learn how this controller is helping users experience a 2X increase in output.

"Using LASERDYNE BeamDirector® Systems, we employ percussion, trepanning and drill-on-the-fly laser drilling techniques for effusion cooling holes as well as full five-axis laser cutting on pre-formed parts. We drill holes as small as 0.005 inch and diameter at angles from 20° to 90° degrees to the surface." Eric Nelson, LAI, International, Inc.

REASON #5

Robust Features That Really Matter!

Measuring throughput means more than comparing axis speed. You must also consider how easy it is to keep your system operating to specification.

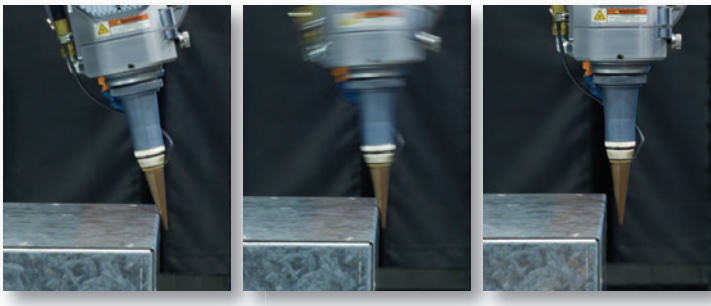
LASERDYNE SYSTEMS, with its new 795 System, continues its tradition of having the most complete package of product features, accessories and service support compared to any other laser system manufacturer.

Critically compare the features that LASERDYNE has built into the 795 for ease of maintenance and maximum uptime. Start with the diagnostic package on the S94P controller. Continue with the automated setup features that insure consistent and accurate operation of the system with minimum operator influence.

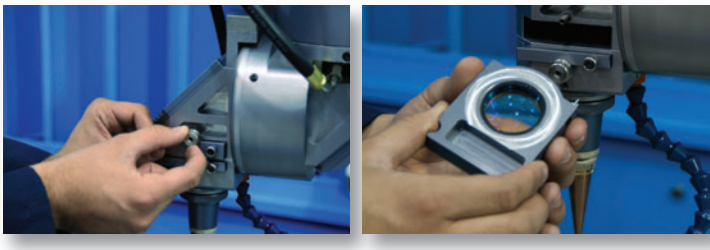
See also that the LASERDYNE 795 has new features added to the workstation that allow it to be used worldwide. As an example, the lens drawers for cover slides and lens replacement has a built-in universal feature.

Also important, LASERDYNE SYSTEMS provides training aides and classes for all system users. This includes the exclusive S94P simulated controller which can be added to a users PC to allow students to gain familiarity with the controller and programming without taking valuable system time.

LASERDYNE SYSTEMS also provides an easy to use ***Parts Finder*** and complete system manuals on CD for your maintenance needs as well as classes for your technicians on maintaining the system, controller, and laser.

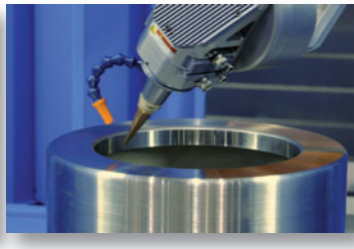


Laserdyne exclusive crash protection

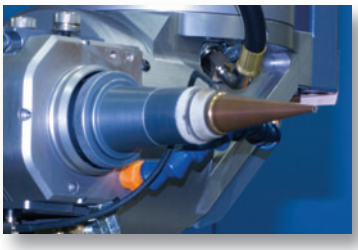


Quick change lense/cover slide drawers.

AutoAlignment™ feature.



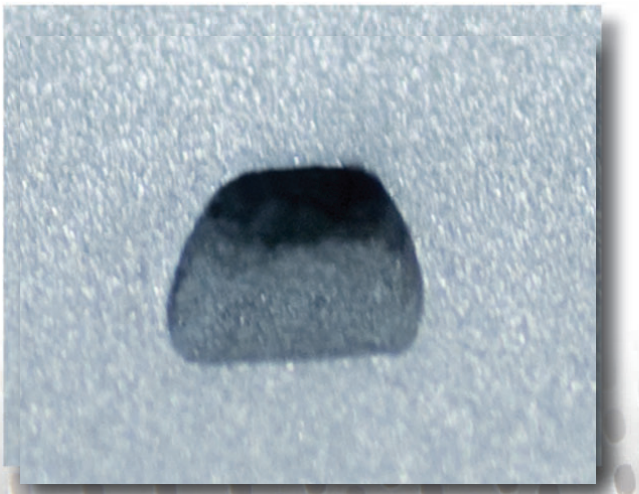
FfeatureFinding™



Custom nozzle assemblies available.

Adjustment-free mirror changes.

See what LASERDYNE SYSTEMS has to offer for shape hole processing. Software and hardware features that allow consistency in processing.



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•25 plus years – founded in 1982 •450 systems installed worldwide •393 systems in aerospace manufacturing

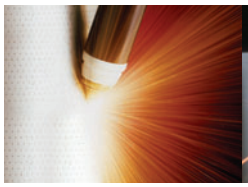
•Laserdyne systems produced parts for every major turbine manufacturer worldwide.

1982 first 780 system installed

1984 first BeamDirector® system installed

1986 Automatic Focus Control (AFC) introduced

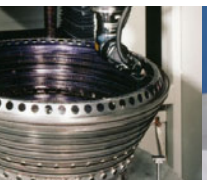
1990 first 890 BeamDirector® installed



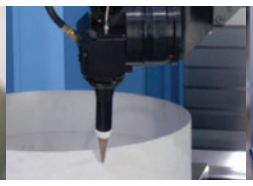
1991 development of effusion cooling hole process

1992 first 550 BeamDirector® NGV driller supplied

1996 Flaser developed for Solar Turbines



1998 200th 5-axis system installed



2002 first OFC installed

2003 300th 5-axis system installed

2004 first 450 system installed

2008 CLP50K Nd:YAG laser introduced

2008 first 795 BeamDirector® installed

2009

Improve your laser processing with a LASERDYNE