LASER PHOTONICS

THE FIBER LASER EQUIPMENT EXPERTS

LASER PHOTONICS

TiTAN Series

HIGH POWER FIBER LASER CUTTING SYSTEM

A FONON BRAND

TiTAN FX *Series*

Advanced precision laser processing of highly-reflective materials

The Titan FX Series high-power fiber laser cutting system is designed to consistently meet the high demands of the metal fabricating industry. The Titan FX Series is an entirely new state of the art design combining the latest developments in motion engineering, PC-based CNC control and fiber laser technologies. It is the most advanced industrial grade fiber laser cutting and engraving system available on the market.

THE TITAN ADVANTAGE

- Saves money—the Titan consumes less than 5% of the power required by conventional C02 laser systems
- Cuts highly-reflective metal
- Direct Drive Motion System—the cutting head moves with the highest possible acceleration and smoothness, reducing stress and vibration on the carriage frame and lowering maintenance requirements.
- Integrated laser and cooling system, only requiring a single connection point for electricity, air, and factory water.
- Adaptive thick-to-thin beam shaping adjusts dynamically to metal thickness
- Large-format, up to 6' x 12' (larger custom sizes available)
- Maintenance-free, requires no consumables
- Upgrade your Titan laser wattage in the field
  Industrial-grade reliability: 100,000 hours MTBF
- Reduced installation costs, no need to pour concrete
- Software-controlled orthogonality, calibrated to the user's specifications.

Manufacturers which cut highly-reflective metals will particularly benefit from the Titan, particularly producers of construction equipment, aluminum vehicles, kitchenware, copper and brass gaskets, food processing equipment of any kind, and materials used in the aerospace and defense industries.

APPLICATIONS

The Titan excels at quickly cutting highly-reflective metals, such as copper, aluminum, and brass.

For all other metals, when compared to a CO2 laser of equal wattage, Laser Photonics technology cuts at least 3X faster.

Aluminum vehicles

Construction equipment

Aircraft skins

Stainless steel kitchen equipment

The Titan excels at processing several different types of materials, including:

- Aluminum
- Stainless steel
- Mild steel
- Galvanized steel
- Armor plating
- Anodized aluminum
- Coated & plated metals
- Alloy metals
- Opaque plastics
- Copper
- Brass

Armor plating

Copper gaskets

Tools

Agricultural Equipment

Moldmaking

Aluminum automotive structures

Alloy metal components

Brass fixtures

Various metal parts

Your Titan will save time and money from its first day on the manufacturing floor. New technology provides immediate savings and extended ROI, including the lowest cost of operation, least downtime, and lowest power consumption of any cutting platform in the industry.

STANDARD FEATURES

Class 1 Enclosure
The enclosure surrounding the laser cutting area protects operators from scattered optical radiation that is generated by the fiber laser during cutting operations. Operations can be observed thru specially- filtered windows in either side of the enclosure.

Diode Pointer
Red aiming beam for visual alignment.

Laser Cutting Head
The Titan arrives standard with a top performance laser cutting head for high accuracy and throughput.

Optical Cartridge
Quickly replace focal lenses, minimizing service downtime and increasing productivity.*

.* We recommend obtaining additional cartridges for reduced service downtime.

Control System Software
The system features a high-performance, software-only motion controller that is easily programmable, and will respond to CNC or G codes. It marries a robust, high performance motion engine with vision, PLC, robotics and I/O in one unified programming environment.

Control Terminal
The system is operated from a PC control unit with a 17" display, equipped with 5 USB connections, 1 RJ45 network connector, and an industry-standard FireWire (IEEE-1394) connector.

Single Pallet Shuttle System (Motorized)
The Titan FX Series comes standard with a 4' x 8' [1.2m x 2.4m], 5' x 10' [1.5m x 3m] or 6.5' x 13.12' [2m x 4m] motorized single pallet shuttle system **

Laser Safety Starter Kit
Included with the standard system: An optical cartridge tool changing kit, a lens cleaning kit, and protective goggles

System Manuals
The following manuals are included, in English. Other languages are available upon request.

- Operating & Maintenance Manual
- Programming Manual
- Electrical Manual
- Parts Manual

** Dual pallet shuttle systems are also available. See "Optional Features," or speak to a Laser Photonics representative for more information.

OPTIONAL FEATURES*

*Please contact a sales representative for any additional options

Electronic Control Gas Pressure Regulator (ECGPR)
Electronic Control Gas Pressure Regulator for ease of preset pressure depending on the type and thickness of materials to be processed.

Ultrasonic Materials Sensor
Ultrasonic materials sensor determines the presence of materials in the working area and prevents misfiring of the laser.

Auto Focus Height Sensing Unit
Capacitor or ultrasonic sensors are available depending on material requirements.

Table Slats
- Knife Edges on 2"Center
- Knife Edges on 1" Center

Automatic Shuttle Tables
Dual: "Pass Thru" Motorized Pallet Changer

Worksheet Clamps
Pneumatic clamps are used to position materials in the correct work position during processing.

OPTIONAL FEATURES (cont.)

Chip Removal
Gathers chips, slugs, scraps and small parts from the machine for the ease of cleanliness and discard.

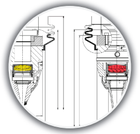
Air Compressor
Laser Photonics offers an air compressor to provide compressed air to the laser machine. Air is utilized to operate pneumatic cylinders, and provides the medium for the external beam path.

Material Cutting Library Data Base (requires Autofocus and ECGPR)
Data base Library to recall cutting different types of materials and thickness.

Side Air Blow Unit
The side air blow unit contains dual directed nozzles to re-direct anti-spatter compounds with high pressure air to keep particles off the material, lens and nozzle during

External Exhaust System
Laser Photonics offers a dust collection system manufactured to remove large particles from the exhaust

Fiber Laser Upgrades *
The Titan's laser is modular, and available in 1kW, 2kW, or 4kW increments, allowing users to increase the laser cutting power up to 8kW. The system is field-upgradeable, allowing users themselves to quickly adapt the system to changes in their production



Additional Optical Cartridges
Spare optical cartridges are recommended for quickly changing between material thicknesses. Duplicate optical cartridges of the same lens can also allow for quick maintenance. Available optical Cartridges 2.5", 3.75", 5", 7.5", 10.0".with washable static filters.

Remote Joystick
Remote joystick operation for minor axial adjustments

** Custom applications are available up to 8kw.

Advanced Laser Technology

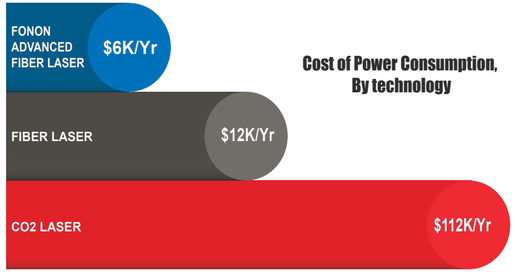
The Titan FX Series is built upon the latest innovations in fiber laser technology. Users enjoy the immediate following benefits:

Lowest Cost of Operation – The Titan FX consumes less than 5% of the power required by a CO2 laser system with the same output wattage
(image: Cost of power consumption, by technology)

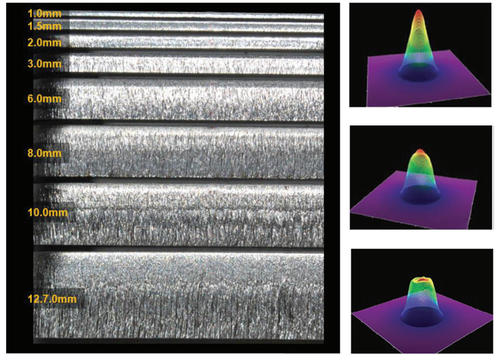
Placement Accuracy—The Titan's laser provides the highest possible accuracy and repeatability, resulting in the smallest possible penetration point and the finest edge control

Modular – Users can increase their laser cutting power in increments of 1kW, 2kW, or 4kW, to a maximum of 8kW

Adaptive Thin-to-thick Beam Shaping—The properties of the laser beam automatically adjust to process a wide range of material thicknesses, providing economical operation, superior edge quality on thick plate, and high-speed cutting of thin material.



Adaptive Thin-to-thick Beam Shaping



Cleanest Cut in the Industry
CleanCut technology is an improvement on the precision and slimness of the laser beam itself. Conventional laser cutting methods create an area of discoloration, potential brittleness, and weakness in the material on either side of a cut known as the Heat Affected Zone.

CleanCut reduces or eliminates the Heat Affected Zone by producing a beam narrower than any conventional laser.

TurboPiercing technology
A standard on all Titan FX Series systems, TurboPiercing guarantees the fastest and most consistent piercing speeds available. Unlike conventional methods, TurboPiercing technology creates an accurate hole, avoiding unnecessary craters in the material.

Plasma Shield Technology
When transitioning from straight line cuts to corner cuts, Plasma Shield technology precisely restricts plasma generation. Conventional CO2 lasers cut a deformed edge while maneuvering corners, resulting in an inferior cut quality and minimizing production acceptance. Laser Photonics' Plasma Shield technology tightly regulates acceleration speed, controling plasma generation by while maintaining superior quality and production throughput.

LASER PHOTONICS TECHNOLOGY

LightBridge

The Titan's bridge and motion unit is extremely light-weight, aiding its cutting velocity and acceleration.

Direct Drive Motion System

Traditional flatbed laser cutting systems which rely on rack and pinion, ball screws, or belt drives to traverse the cutting head face limitations common to all mechanical, high-contact systems, including wear and tear of the gears, reduced belt tension over time, and damage from the inevitable accretion of contaminants, grit, and dust generated by normal production conditions. The Direct Drive Motion System uses linear motion technology, effectively levitating the cutting head smoothly and quickly across the working surface area. Direct benefits include smoother, faster acceleration of the cutting head, less stress and vibration on the carriage frame, a lower system weight, and decreased maintenance requirements.

Orthogonality of the Gantry System

The material positioning functions of the Titan are impervious to shock and vibration, increasing long-term reliability with no positioning error, and require no maintenance. Material in process will remain in alignment.

One-button Gantry Recalibration

Users can recalibrate the gantry instantly, ensuring the material is always in alignment, free of seizures and unplanned machine failures.

Sealed Feedback Sensor

Built to perform flawlessly in harsh industrial environments, the feedback sensor of the Titan FX is impervious to shock and vibration.

Integrated laser

Integrating the laser equates to less overall floor space than conventional systems that rely on standalone laser systems. The entire Titan system only requires a single point of electrical access to power all of its components, including its laser. Installation is simple, and costs of installation are lower than for conventional laser cutting systems.

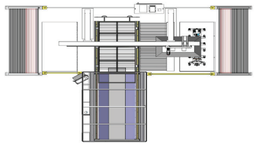
Integrated Heat Exchange

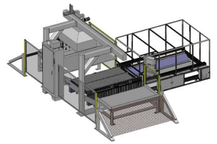
The Titan's heat exchange requires no specially-treated water; it will run on any tap water. The system in integrated to the degree that one entire Titan system only requires a single point of utility access for all of its components, including its heat exchange. Installation is simple, and costs of installation are lower than for conventional laser cutting systems.

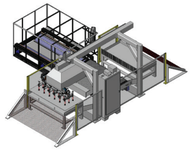
FLEX LOAD AUTOMATION

FLEX LOAD Automation Single or Dual Pallet Gantry Loading/Unloading system is an expandable high-production material transporter. The system will provide automatic loading of 4′ x 8′ [1.2m x 2.4m], 5′ x 10′ [1.5m x 3m] or 6.5′ x 13.12′ [2m x 4m] sheets onto the laser, and automatic unloading of the cut product and scrap from the laser table. One work table is provided for storage of the raw sheet stock, and a second work table/box collects the cut material.

- Meets all industrial material weight standards
- Dual load stations allow for multiple material processing
- Guaranteed precision motion control







FLEX LOAD

Un-loader-Vacuum (1 Table)

Automatic controls allow "hands off" loading and unloading of the laser table. The system is configured to handle sheet sizes from 4′ x 8′ [1.2m x 2.4m] up to 6.5′ x 13.12′ [2m x 4m] and thickness from 0.030″ [0.762mm] up to 1″ [25.4mm].

FLEX LOAD DUO

Un-loader-Vacuum/Rakes (2 Tables)

FLEX LOAD™ DUO includes a rake for small parts handling. System allows faster throughput by positioning material in the laser working area while unloading onto a second table.

LASER PHOTONICS - A FONON BRAND

Laser Photonics systems—cutting edge laser material processing equipment—are used worldwide in the automotive, aerospace, medical, electronics, food and beverage, defense, semiconductor and flat panel display industries. The products support laser cutting, scribing, dicing, simulation, marking and engraving. Laser Photonics holds several worldwide licenses for innovative and 'unique to the industry' laser products. Laser Photonics is the flagship brand of Fonon Corporation; Fonon designs laser-based material processing technologies for advanced industrial manufacturing and manufactures state of the art equipment utilizing those technologies. The company products empower manufacturers in the areas of application-specific 3D metal printing (additive manufacturing), and 2D and 3D laser cutting, marking and engraving applications (subtractive manufacturing).

The Titan FX laser cutting system, with its drastically-reduced base price, ease of installation, and low operational costs, opens the door for SMBs and enterprises to avail equally of the most advanced laser cutting technology.

CUSTOMER SUPPORT

These support and maintenance services are offered on an annual basis in one of two ways:

- An optional service for those products which are supplied on payment of a one-time fee
- Part of an annually licensed service contract

Laser Photonics offers a variety of customer service tools from training and field service to technical support and engineering, with a single goal of providing all the necessary tools to compliment Laser Photonics' customer needs. The company's reputation in customer care has been proven through numerous repeat orders from satisfied customers, references, testimonials and awards received by Laser Photonics for its consistently exceptional response to the market.

SAFETY CONSIDERATIONS DURING OPERATION

1064 nm wavelength laser light emitted from this laser system is invisible and may be harmful to the human eye. Proper laser safety eyewear must be worn during operation.

21 CFR 1040.10 Compliance
This product is a Class 1 laser as designated by the CDRH and MEETS the full requirements for a stand-alone laser system as defined by 21 CFR 1040.10 under the Radiation Control for Health and Safety Act of 1968. As an added level of security, a redundantly switched safety interlock system helps prevent accidental exposure to excess laser radiation. Plus, the system is equipped with an electrical power manual reset, a key-locked laser power switch and a remote interlock connector. Finally, the system has visible emission indicators with five (5) second emission delay settings. All these features, in combination, constitute the laser radiation safety system, which allows the equipment to be used in a safe and secure manner.

AVOID EXPOSURE
INVISIBLE LASER RADIATION
IS EMITTED FROM THIS APERTURE

PRODUCT LINE:

MarkStarPRO™
PORTABLE HANDHELD LASER MARKING SYSTEM

LASERTOWER™ Series
FIBER LASER MARKING & ENGRAVING SYSTEMS

OEM Marking Kits
OEM MARKING KITS FOR INTEGRATION

SBMseries
PROFESSIONAL AND INDUSTRIAL LASER CUTTING SYSTEMS

FIBER LASER CUTTING & WELDING ROBOTIC SYSTEM

EXCALIBUR
FLEXIBLE MANUFACTURING

LASER PHOTONICS - *TiTAN Series* SPECIFICATIONS

ITEMS		Specifications		
Model Name		Titan 48	Titan 510	Titan 2x4
Type		Flat Bed		
Max. cutting size		1270 mm x 2489 mm	1524 mm x 3048 mm	2000 mm x 4000 mm
		50” x 98”	60” x 120”	78.74” x 157.48”
Machine table height		838 mm (33”)		
Max. load weight		447 kg (986 lbs)	751 kg (1655 lbs)	1043 kg (2300 lbs)
Axis Stroke	X	1295 mm (51")	1549 mm (61")	2025 mm (79.72")
	Y	2514 mm (99")	3073 mm (121")	4025 mm (158.46")
	Z	50.8 mm (2")		
Feed Rate		X, Y: 30 m/min (1200 in/min)		
Rapid Rate		X, Y: 90 m/min (3600 in/min)		
		Z: 3 m/min (120 in/min)		
Positioning Speed		X-Y axis 300 m/min; Z-axis 30 m/min		
Repeatability		X, Y, & Z ±0.005 mm (0.0002")		
Cutting Head		3-Axis with 100mm lens/ 7.5" focal distance		
Z-axis profiler		Non-Contact		
Drive Feed Method		Direct Drive		
Worksheet Clamps (option)		3 Clamps; 1 Locator		
Worksheet lifter (option)		5 mm (0.20") of lift travel		
Assist Gas Selector		Programmable Selection		
Air Supply (only for machine and when the shop air assisted cutting is used)		0.58 Mpa (85 psi)		
Gas Supply		Max: 2.48 Mpa (360 psi)		
Power Supply		AC, 3 phase, Y 208 V		

ITEMS	LASER TYPE		
	Unit	2 kW	4 kW
Optical Parameters			
Wavelength	nm	1064	
Nominal output power	W	2000	4000
Output range	W	200-2000	400-4000
Electrical Parameters			
Electrical requirements	V AC	360-528V, 3P+PE, 60-60Hz	
Typical power consumption	kW	7-10	16
Direct modulation	kHz	0-5	
General Parameters			
Max. cooling water consumption	m^3/h	1.4	2.4
Cooling water temperature range	°C	20-25	
Weight	kg	350	460
Ambient temperature	°C	10-50	

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