



CLASS 1 INDUSTRIAL-GRADE LASER PARTS CLEANING,
RUST REMOVAL AND SURFACE CONDITIONING SYSTEM
WITH UP TO 42" X 42" OF THE WORKING ENVELOPE.

CleanTech™ LASER

LASER SURFACE PREPARATION AND CLEANING SYSTEM



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Class 1 Industrial-Grade Laser parts cleaning, rust removal, surface conditioning System with up to 42" x 42" of the working envelope.

Industries

- Defense
- Government
- Aerospace
- Automotive
- Metal Fabrication
- Direct Parts Marking
- Molding
- & Many More!

CleanTech™ Laser Surface Preparation and Cleaning Laser

The CleanTech™ Laser system is the first, Class 1 Industrial-Grade laser parts cleaning, rust removal and surface conditioning System with up to 42" x 42" of the working envelope.

The CleanTech Laser system is an industrial-grade, turnkey Laser Surface Cleaning and Conditioning System that operates as a standalone unit or easily integrated into a production line environment.

The CleanTech Laser System is a 5 axis Surface Cleaning and Conditioning system incorporating 3 mechanical XYZ axes coupled with 2 optical XY axes.

The CleanTech Laser System processes a wide range of materials with special attention to highly-reflective metals.



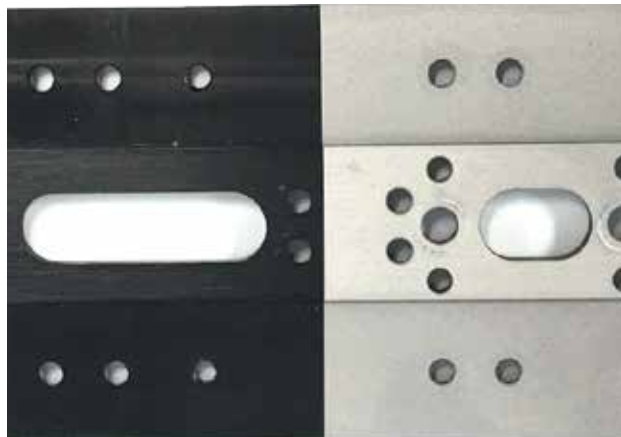
Applications

Applications and Types of Cleaning		Material / Product Suitability	
<ul style="list-style-type: none"> • Fiber Laser Surface Cleaning • Fiber Laser Surface Treatment • Induced Surface Improvement • Uniform Surface with low HAZ • Fiber Laser Paint removal • Subtractive Surface Treatment • Surface Texturing • Cosmetic Surface Conditioning (replaces bead blasting) • Mold Cleaning 	<ul style="list-style-type: none"> • Selective Paint Removal • Metal Parts Cleaning • Anodizing Removal • 3D Surface Cleaning and Conditioning • Laser Cleaning • "On-The-Fly" Laser Cleaning • Laser Ablation (Anodized, Painted or Coated) • Laser Paint Stripping and Removal • Laser Rust and Corrosion Removal • Laser Degreasing 	<ul style="list-style-type: none"> • CFRP (Carbon Fiber Reinforced Polymer) • Aluminum (Cast, Anodized, Polished) • Stainless Steel • Steel • Cast Iron • Chrome • Titanium • Copper • Brass • Nickel • Galvanized Metals 	<ul style="list-style-type: none"> • Multi-Coated Materials • Painted Metal Alloys • Backlit Buttons • Multi-coated materials • Plastics • Polypropylene • Polycarbonate • Cast Iron and Chrome • Chrome • Carbide • Polycarbonate • PVC • Rubber • Rubber and PVC

CleanTech™ Laser Surface Preparation and Cleaning Laser Features:

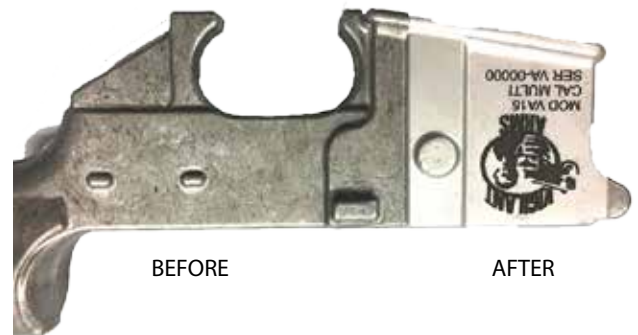
- Designed for continuous performance under high-shock, vibration and dust conditions
- Easily reconfigured for direct installation into a production line environment
- Designed for maintenance-free Laser Surface Cleaning and Conditioning applications
- Standard wall plug operation with high electrical efficiency
- Low voltage power source (110/220 VAC) 8 amps
- Up to 42" x 42" Cleaning coverage for various flat and oversized parts
- Industrial-grade extruded frames with 19" rack mount design
- Exhaust outlet for Fume Extractor
- Fail-Safe Contact Lock front doors with Class 4 operator safe viewing port
- PC based controller, flat panel monitor, mouse and keyboard
- Operating Temp +18C to +25C: Relative Humidity (40-80%) non-condensing
- High throughput with a palette loading/unloading table (Optional)
- 80 PSI Pneumatically activated side sliding doors (Optional)
- Inert gas handling and selection system (up to 3 types of gas) for high quality surface conditioning and treatment.
- Red diode pointer for easy job setup

Application Samples:



BEFORE

AFTER



BEFORE

AFTER



BEFORE

AFTER



BEFORE

AFTER

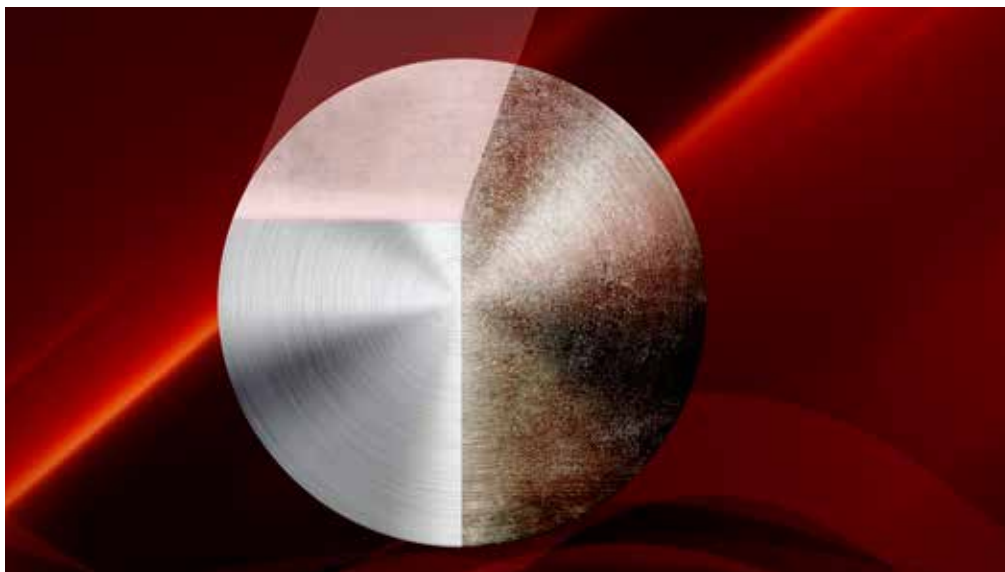
Q- Switched Laser:

The Q-switched Laser was specifically designed for maintenance-free OEM applications. It delivers a laser beam directly to the worksite via a metal sheathed fiber cable. These compact service-free lasers are designed to operate under high shock, vibration and dust conditions, in relatively high humidity, across wide operating temperature ranges. Wall-plug efficiencies up to 50% result in a compact size, reduced utilities, and trouble-free air cooling. There is no routine replacement of parts or materials scheduling; they require only a low voltage power source.



Cleaning Head:

The Cleaning Head is designed to quickly and precisely deflect and position laser beams with powers up to the kilowatt range. With selection of standard patterns and ability to create custom size laser cleaning beam, it makes the system extremely versatile and flexible for parts cleaning and surface structuring for large range of parts, materials and shapes. Very stable operating conditions as well as high long-term stability are provided by air cooling of the entrance aperture, electronics, and galvanometer scanners supplemented by air cooling of the deflection mirrors. The compact housing is dust proof and water spray resistant.



CleanTech™ Laser User Interface:

The user-friendly software interface entails a fully integrated driver, remote diagnostic capabilities for worldwide support and multiple hardware interfaces for the ability to execute any Fonon or Laser Photonics laser Cleaning system. It allows to choose any of preinstalled cleaning patterns or develop a custom pattern for a specific job, surface specification or throughput requirements. File links to several internal databases make the CleanTech program flexible and powerful. A process can include multiple passes using different values for power, frequency and speed on each laser pass. The database can contain and manage many thousands of different process 'recipes'.

The fixture database allows the user to control fixture offsets and define step and repeat processes. Just like the material database, any cleaning job can use any fixture defined in the fixture database.

The links allow all appropriate beam profile and process information to be automatically loaded when the operator selects the cleaning file. At any time the operator can change the links, for example a cleaning job that is normally performed on stainless steel, can be used on brass by selecting the brass process file prior to executing the job program file.

Operators don't have the need to remember cleaning patterns for a particular job because CleanTech automatically performs all required job parameter loading. CleanTech does not require users to learn any programming languages or special codes and provides all of the flexible controls that users are accustomed to such as radial Cleaning, cleaning line spacing, angular rotations and other parameters.

3D Scanner:

With optional installation of a 3D Scanner the system can automatically follow the height profile of a parts with up to 8" height differences.

Frame Design:

Rigid, light aluminum extrusion provides excellent protection of equipment corners and a stiff design for long term stability.

Skins Design:

New modern 3 layer laminate: Aluminum, plastic, aluminum. Powder coated for industrial durability providing excellent protection for laser radiation according to CDRH requirements.

Transparent Protective Window:

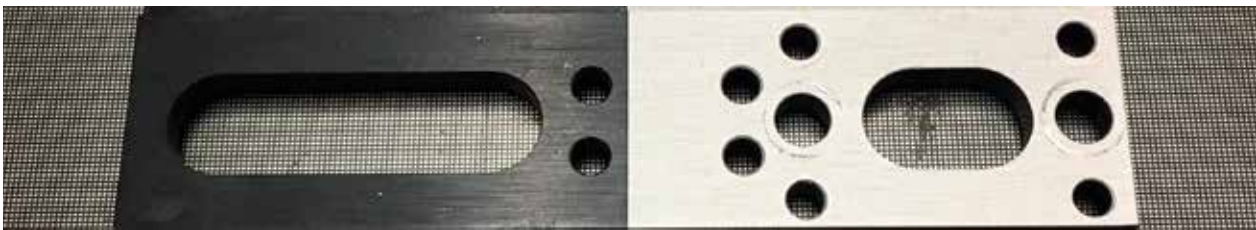
CDRH rated yellow transparent laser rated acrylic window for visualization of lasing processes and easier alignment.

Operations & Maintenance Manual
(in English) includes:

- Service information
- General description
- Laser safety manual
- Schematics (Appendix A)
- Software manual (Appendix B)
- Operation description
- I/O description
- Troubleshoot guide
- Scan head manual
- Control board manual
- Warranty certificate

Equipment and Facility Specifications

Maximum Parts Size	Miniature Sub mm to 36" x 36" x 4" Up to 3' high with special adjustments
Laser Equipment	Customer selected depending on required throughput, material, and application. For a proper selection, please consult with our Application Engineering Department.
Mode of Operation	CW or Pulsed Q-Switched (see laser selection paragraph)
Programmable Z-Axis	4" Travel
Inverted XY System	30" x 30" travel
Cleaning area Standard	33" x 33"
Cleaning Area Extended *	36" x 36"
System Dimensions	See envelope drawings below
Weight	375 pounds
Operating Temperature	+18 to +25° C
Relative Humidity	40 – 80% non-condensing
Electrical Requirements	120 volt 8 amps
Clean Dry Air* (If Required and equipped)**	80 PSI
Process Assist Inert gas Selection ***	Nitrogen, Argon, Carbon Dioxide, Compressed air

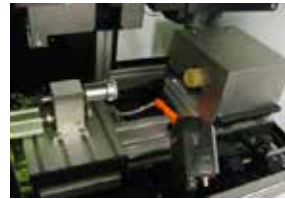


Options for CleanTech™ Laser System

Light barriers for safe operation



Tail Stock



Rotary "C"-Indexer for circumferential selective cleaning



3D Scanner for job slicing and 3D path generating trajectory

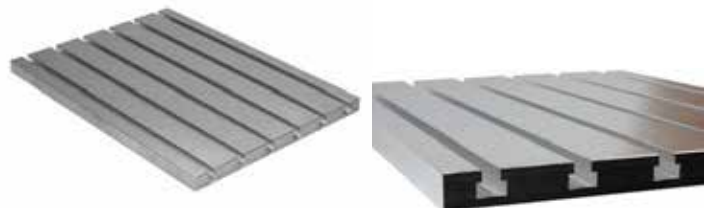


Barcode, UID, 2D Data Matrix Code Scanners and Readers for cleaning quality verification

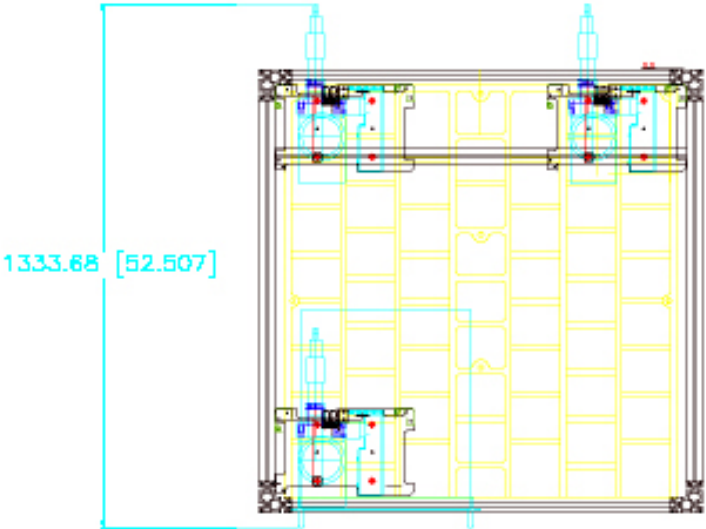
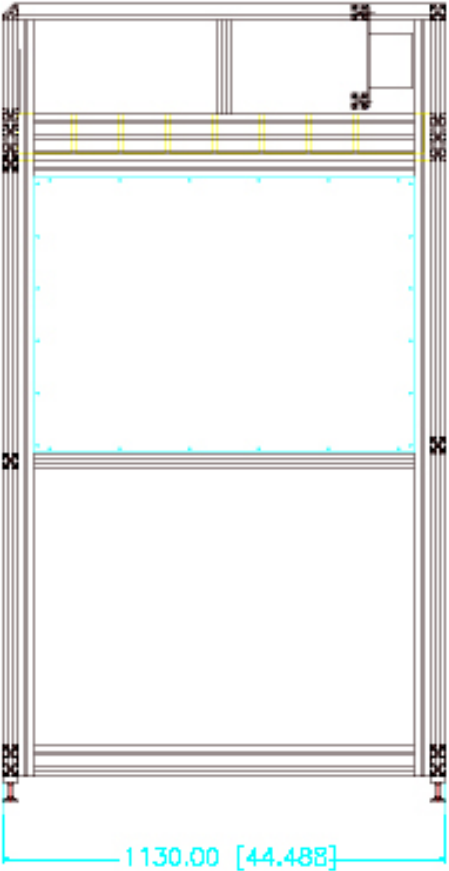
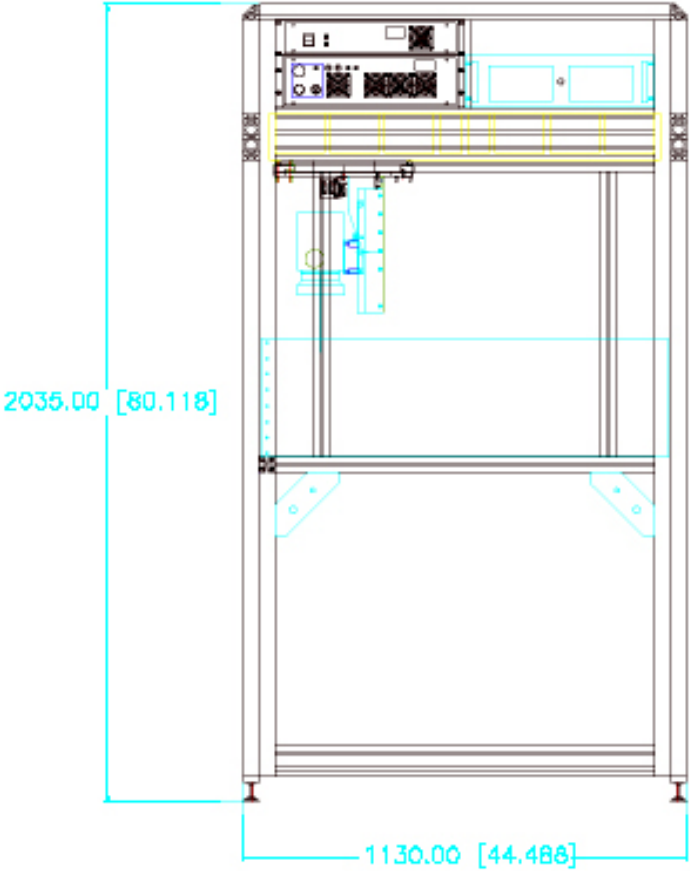


Optional cleaning heads

Tooling plate with T-slots 30" x 30" x 1.5" Optional



System Dimensions and Weight
375 pounds



Application Research Center:

Laser Photonics maintains an applications lab for processing customer samples and assisting with process development. Our applications lab has the latest testing equipment to analyze all of your application needs.

For cleaning applications, we provide the highest quality analysis of each and every mark using our Surface Quality Assessment™ (SQA™) software. With our SQA™ software, we have the ability to guarantee and verify the accuracy and quality of our surface treatment.

The screen shot above demonstrates how the SQA™ software reads the level of pixels in the material marked. The line (marked in red) has been analyzed with the MQA™ software. The high and low pixel values demonstrate the overall quality of the surface. This procedure can be applied to various different cleaning processes and surface qualities generated by our Laser Cleaning systems.

Requirements beyond those listed herein will be quoted upon request. Contact the Laser Photonics office or visit our website www.laserphotonics.com if you need any assistance determining which capabilities best suit your needs.

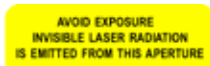


Safety Considerations During Operation

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

21 CFR 1040.10 Compliance

The product is a Class 4 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 audible and visible emission indicators with five (5) second emission delay settings.



All these features, in combination, constitute the laser radiation safety system, which allows Laser Photonics equipment to be used in a safe and secure manner.

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Laser Photonics - Product Range

CleanTech™ Laser System



Titan CT Series



OEM CleanTech Kits



Handheld CT Series



LaserTower™ CT Series

Laser Photonics, a Foton Brand, is the industry leader in developing high-tech Fiber and CO₂ laser systems. Laser Photonics exclusively specializes in advanced, innovative, latest generation laser systems, processes and technologies. We focus on cutting edge Fiber Laser technology for material processing. We have delivered hundreds of Fiber Laser cutting and engraving machines worldwide. Contact us to learn more about our marking, cutting, and engraving systems.



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