

CLEAN-LASERSYSTEME GMBH
PRODUCT INFORMATION & TECHNICAL DATA



PORTABLE SYSTEMS: backpackLASER to go

BATTERY-POWERED, COMPACT, VERSATILE



The easy to use backpack

Thanks to the new backpackLASER, it is possible to clean, decoat or condition surfaces for up to 6 hours using battery operation.

Whether in the post-treatment of weld seams, decoating and rust removal, e.g. in vehicle restoration, in tool and mold cleaning, in fire damage restoration or in exterior use for the gentle restoration of monuments, the backpackLASER cleans powerfully and environmentally friendly using laser light only.

backpackLASER

- Available with 30 or 50 watt
- Stable and ergonomic carrying system
- Easy operation and dosage, control via rotary knobs and clear text display
- Recharging in running operation possible
- Option of connecting suction and filter
- Network capability for remote support
- Surprisingly affordable



Photo down left: Neferhotep e.V.



APPLICATION EXAMPLES

- Decoating of small areas
- Restoration & conservation
- Natural stone cleaning
- Rust/oxide removal
- Oil & grease removal
- Selective paint removal
- Micro-profiling
- Pre-treatment to enhance adhesive bonding

PORTABLE SYSTEMS: streamLINE and lightCASE

THE WORLD'S MOST EFFICIENT LASERS IN THIS POWER CLASS



lightCASE including
solid transport trolley

streamLINE

portable lightCASE

The streamLINE, lightCASE and FFC-options (with homogeneous beam distribution) are easy to transport and enable working for longer time periods thanks to their mobile frame and lightweight construction even in difficult to access areas.

Thanks to its modular design, the lightCASE can be manufactured in a short time and delivered at a fair benefit-cost ratio. Just switch it on and get started.

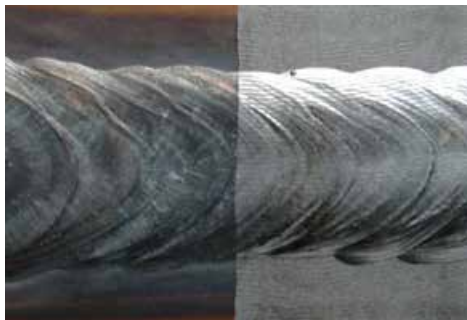
The LED-illuminated handle gives the operator immediate feedback as to the status of the laser process. With the integrated touchpanel and the intuitive cleanTOUCH operating software, it is easy to adjust various settings on the laser and set all necessary parameters directly on the hand-guided optics.

streamLINE and lightCASE

- Compact, easy to use, versatile
- Medium laser power: 20 – 300 watt
- Diode-pumped solid state laser
- Fiber rewind and optics holder
- Option of connecting suction and filter
- Network capability for remote support
- Available with optional fibre-to-fibre-coupling (FFC) for particularly gentle cleaning and automated processing
- Self-sufficient operation due to passive air cooling

APPLICATION EXAMPLES

- Paint stripping and decoating
- Removal of tarnish colours
- Oil removal and degreasing
- Pre-treatment for weld seam inspection
- Weld seam pre-and post-treatment
- Mold cleaning
- Restoration



streamLINE AND lightCASE – COMPACT, LEIGHTWEIGHT AND POWERFUL

LOW POWER SYSTEMS: CL 12 to CL 300

COMPACT MICRO SYSTEM LASERS - AIR-COOLED



Compact laser unit

LOW POWER LASER SYSTEMS

- Average laser power 12 to 300 watt
- Laser systems for the precise cleaning, decoating and pre-treatment of smaller areas
- Diode-pumped solid-state laser
- Very low-noise air-cooled system
- Modular configuration in 19" industrial housing
- Easy production line integration



APPLICATION EXAMPLES

- Processing and decoating of small areas
- Pre-treatment for adhesive bonding
- In-line baking plate cleaning
- Cleaning of rollers
- Decoating of wire and flat conductors
- Rust/oxide removal
- Precise oil removal from metallic surfaces, e.g. for welding pre-treatment
- Pre-treatment of selected plastics
- Structuring of metallic surfaces



CL 50 Low Power with air cooling in mobile control cabinet



CL 100 Low Power in mobile industrial housing

STANDARD SYSTEM FEATURES

- Compact laser unit
- Low-noise cooling system
- Internal control electronics with various interfaces
- Laser optics with large operating distance (up to 500 mm)
- Flexible fiber optics beam delivery up to 4 m
- Wifi hotspot for telediagnosis and remote diagnostics already integrated

Options

- 2D beam deflection incl. software cleanSTUDIO
- Integrated red targeting laser
- Air-conditioned industrial housing (dust-proof)
- Water-cooled optical systems for hot applications (bakeries, molds)
- Fieldbus-control
- Beam homogenizer for sensitive surfaces

Compact and versatile, the low power lasers are designed for the costeffective treatment of small areas that require gentle high precision cleaning, decoating and other surface treatments.

The basic system consists of the laser source, with control system and cooling, a fiber optics for beam delivery and a processing head.

These laser systems are easy to operate, virtually maintenance-free with a very low energy demand.

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MID POWER SYSTEMS: CL 150 to CL 600

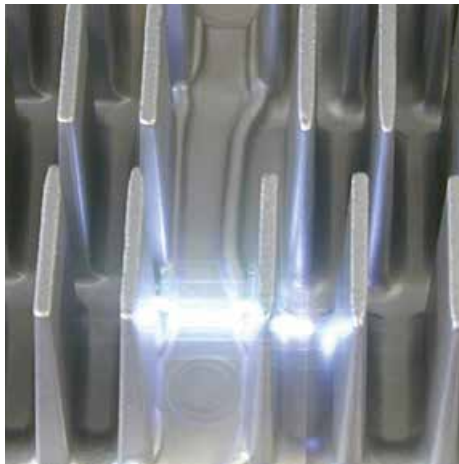
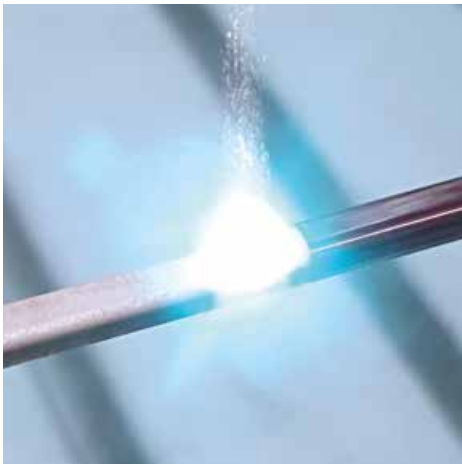
ROBUST CLEANING LASERS – INTERNAL WATER COOLING



Mobile, self-sufficient laser system

MID POWER LASER SYSTEMS

- 150 up to 600 watt average power (cw)
- Space-saving, compact construction
- User-friendly operation
- Pulse power up to 400 kW
- Mobile or stationary
- Diode-pumped beam source
- Touchscreen-based control system (menu-driven)
- Modular design in industrial housing
- Safe and easy integration into the production line



APPLICATION EXAMPLES

- Complete or selective paint removal (e.g. for weld inspections)
- Removes oxides, oil, grease & production residues
- Mold cleaning
- Pre-treatment for adhesive bonding
- Precise decoating
- Natural stone cleaning
- Decoating metallic and glass surfaces



CL 600 in mobile industrial housing with optics
Stamp for robot-guided application

STANDARD SYSTEM FEATURES

- Integrated cooling system
- Diode-pumped solid-state laser
- Range of end effectors/optics
- Flexible beam delivery by 10 m fiberoptics
- Teleservice-module cleanTOUCH for remote diagnostics via external or internal PC

Options

- Beam switch with 2nd laseroptics
- Extended fiberoptics (up to 100 m)
- 2D beam deflection incl. software
- Laser process data storage
- Fieldbus interface for automation integration
- Laser optics for automated and special applications
- Integrated red targeting laser
- Optical fiber pluggable by the user
- Highly brilliant gaussian beam focussing for targeted structuring and modification of the base material (G-series)

The core of Mid Power laser systems is a powerful, diode-pumped laser in combination with the appropriate processing optics.

Each unit is designed to consistently deliver high performance with reliability and virtually maintenance-free. Easy to set-up, operate and automate. Plug it in, turn it on and start cleaning/decoating with laser light - without chemicals, media, dust, water and/or clean-up.

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HIGH POWER SYSTEMS: CL 1000 to CL 2000

POWERFUL CLEANING LASERS – INTERNAL WATER COOLING



Extra strong and fast – the High Power

The High Power laser systems show their power especially on large surfaces or thicker layers as well as in applications that require high processing speeds.

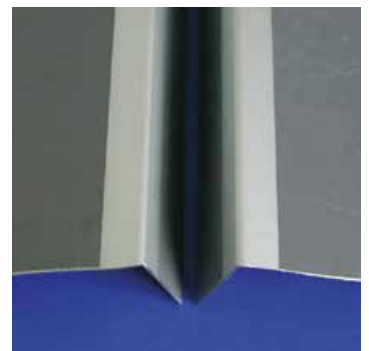
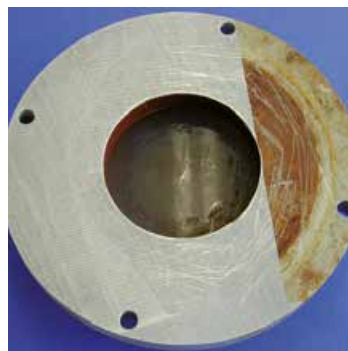
They are ideally suited for automated processing, but can also be used hand-guided or as a mobile, compact unit. Thanks to the homogeneous beam profile, the laser systems are gentle on the base material and powerful at the same time.

HIGH POWER LASER SYSTEMS

- From 1000 watt average power (cw)
- Diode-pumped beam source
- Self-contained and fully mobile
- Robust construction for durability in production intensive industries
- Real-time control laser control
- TFT touch screen display of laser parameters and for process data storage
- Optionally with beam switch for second processing optics
- Powerful expansion of the Mid Power series

APPLICATION EXAMPLES

- Complete paint removal
- Pre-coating surface preparation /contaminant removal
- Pre-treatment to enhance adhesive bonding
- Cleaning of large molds
- Weld seam pre-treatment
- Fast cleaning of oily surfaces
- Rust/oxide removal
- Nuclear decontamination



ADVANTAGES OF LASER SURFACE TECHNOLOGY

AND ADDITIONAL SERVICES

ADVANTAGES

- Cleaning with light => no abrasives, chemicals, solvents, residue-free
- Energy-saving and eco-friendly
- Gentle cleaning or targeted modification
- High processing speeds achievable
- Low operating costs
- Virtually maintenance-free and long-life technology with high reliability
- High reproducibility and process monitoring possible

ADDITIONAL SERVICES

- Worldwide product service
- Application testing and prototype processing (certificated)
- Contract processing in our laboratories
- Development and engineering service
- Training and education center cleanACADEMY
- Industrial cleaning services with qualified partners

OPTICS – FOR HAND-HELD AND AUTOMATED APPLICATIONS

Clean-Lasersysteme GmbH offers a wide range of processing optics to bring the powerful laser beam optimally onto the component. We also have or configure the most efficient optics solution for your application, for example:



effiSCAN: the particularly lightweight, ergonomic, and easy-to-use cleaning optics



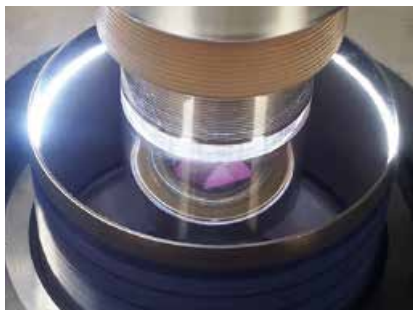
OS H 70: automated cleaning optics for Mid and High Power, e.g. for welding preparation



OS H 50: manual optics for Mid Power series



Stamp: adjustable optics, e.g. for paint removal and adhesive pre-treatment



turnMOTION: optics for internal pipe cleaning



bakeLINE: heat-resistant optics for residue-free cleaning of baking molds



wireLINE DIRECT: special in-line optics for all-round decoating of wire



2D optics Stamp 10, e.g. for partial decoating

ONE AND TWO DIMENSIONAL OPTICS

1D OPTICS

- For hand-held use, e.g. effiSCAN
- For automated use

2D OPTICS

- For automated use

SPECIAL OPTICS

POINT AND LINE OPTICS

- cleanPOINT: optics for punctual processing
- cleanLINE: line focusing optics for narrow lines

OPTICS FOR SPECIAL OPERATING CONDITIONS

- bakeLINE: heat-resistant optics for continuous baking mold cleaning during baking operation

ROTATION OPTICS

- singleMOTION: single beam rotary optics for vertical surface treatment and radii
- shareMOTION: two-jet rotary optics for groove and tongue pre-treatment on both sides
- turnMOTION: optics for internal pipe cleaning

wireLINE optics

- Special optics for in-line paint removal for all-around processing of wire and tubes

WORKSTATION AND AUTOMATION SYSTEMS

COMPACT PROCESSING STATIONS



safeBOX: entry-level system/housing for safe laser processing



compactCELL: Semi-automatic laser system with linear axis for the processing of smaller components

safeBOX

The safeBOX is the affordable entry-level model for safe laser processing. It consists of a laser-safe housing (class 1) and contains a scaled, manual Z-axis for focus adjustment.

compactCELL

The compactCELL combines the very compact design with the possibility of fully automatic machining. The production cell requires a footprint of only 0.6 x 0.8 m and is equipped with a servo-driven linear axis and a manual Z-axis with scale for focus adjustment.

A large viewing window provides a view into the laser-safe housing (class 1). Loading is carried out manually via the front door. The working area is typically 180 x 600 mm and depends on the laser optics installed.

The modular design of the semi and fully automated laser systems makes it possible to select the optimal device configuration for the respective application.

The basic module is usually a laser-safe cell, which can be supplemented as required with process monitoring and measurement technology or other production steps required by the customer. Alternatively, the systems are also available as OEM versions.

Whether via digital I/O interface or via fieldbus, the lasers can be optimally connected to industrial automation technology both mechanically and electrically.

safeBOX

- Safe and small housing
- Basic equipment with one manually adjustable z-axis

compactCELL

- Semi-automatic laser system in smallest space
- Laser safe housing
- Two axis

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TURN-KEY AUTOMATION CELLS: cleanCELL

cleanCELL - THE MODULAR, VERSATILE AUTOMATION CELL



cleanCELL 2220 for processing rollers and wheels (with optional rotary indexing table and rotary axis)

The dimensions can be selected modularly, so that both small components as well as working areas up to 1,500 x 700 mm, when using the largest product series, can be processed. The generous front doors allow comfortable loading of complete workpiece carriers. Alternatively, customer-specific lateral opening of the machine is possible. This allows loading and processing with a single or double conveyor belt or loading with alternating drawers for full-time processing.

Solid, dust-protected linear axis systems with ball circulation spindle driven by powerful Siemens servo drives with absolute value encoders ensure optimum positioning precision and a long service life.



cleanCELL 2220 for the adhesive pre-treatment of gearboxes and control housings

cleanCELL

- Modularly adaptable to customer requirements, both in the working area as well as in the loading
- Designed for unlimited 3-shift operation
- In three different sizes available
- For Low, Mid and High Power laser systems
- Maximum efficiency and direct interlinking of the cleaning task with highest possible utilization
- Solid and laser safe for high-precision and reproducible component processing

BASIC CONFIGURATION

- Solid steel base frame in compact design
- Servo drives and controllers with Siemens technology (optional Beckhoff)
- 3-axis linear system in H-portal arrangement with optional extension axis
- Touch screen and keyboard operation
- PC-based graphical control software cleanSTUDIO
- Laser-safe housing with manually opening front door
- Application-specific integrated suction nozzles and pipes
- Integrated air-conditioned switch cabinet for storage of the control technology and the laser system

THE cleanCELL - MAXIMUM EFFICIENCY FOR MANY APPLICATIONS

OPTIONS AND VARIATIONS

- Pneumatic front door
- Automatic loading by gripper/ robot loading
- Also suitable as a throughput system for belt transfer systems
- Extension by numerous axes
- Process monitoring
- Integration of further process technology such as adhesive dosing
- Extension of the control on PLC or NC basis
- Water cooling
- Height adjustment
- Modification and adaptation to customer-specific design guidelines and operating equipment regulations possible
- Turnkey already available as turntable machine and (double) drawer system
- Integrated handling robot for component movement in the workspace



cleanCELL 1170 for laser treatment of medium sized components

SOFTWARE HIGHLIGHTS

- Multitasking software for axis, laser and scanner control
- Axis control based on script commands or automatical by means of virtual image fields
- Processing geometry based on graphics or flexibly generated by DXF import
- Free parameter setting of the processing objects
- Automatic monitoring of area limits and laser functions
- Process data storage
- Optional CAD/CAM interface with post-processor
- Available in over 10 languages



cleanCELL 3220 for laser pre-treatment and partial paint stripping of battery housings

APPLICATION EXAMPLES

- Adhesive pre-treatment
- Welding pre- and post-treatment
- High-precision paint stripping from metallic surfaces
- Partial or selective decoating
- Surface modification
- Automatic processes with high reliability

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SPECIAL AND CUSTOMIZED AUTOMATION

COMPLETELY AUTOMATED LASER MACHINING



Fully automated, large-area laser cleaning



These special systems are usually equipped with conveyor belts or transfer systems and can thus be fully automatically integrated into the customer's production chain.

Whether via robot or ATV - IPG | cleanLASER can be combined with almost any type of automation technology or integrated into existing production lines - from the aircraft industry to the bakery. Clean-Lasersysteme GmbH also delivers individual, turnkey automation technology for interlinked highly integrated production.



Laser system for integration in „hot“ flat wafer ovens cleans tunnel baking ovens in the installed state even with very limited opening of the baking plates

cleanGANTRY – TURN-KEY AUTOMATION

PLANT FOR THE MACHINING OF LARGE COMPONENTS AND ASSEMBLIES



Turnkey automation for large workpieces,
here with rotary indexing table

cleanGANTRY combines high-precision laser surface technology with highly dynamic portal systems. The result is an efficient complete solution for processing of large-area-components, in particular for partial laser processing of functional surfaces.

Application areas are for example the cleaning of tools and molds, the surface activation and adhesive pre-treatment as well as paint stripping.

Even with spans of several tens of meters, very high repeatability can be achieved. Thus cleanLASER offers a highly precise and technically sophisticated complete solution.

The cleanGANTRY portal systems can be optionally equipped with rotary indexing tables or double drawer systems and thus enable a loading with maximum possible part throughput during machining.

With the integrated contourSCAN software extension the movements of axis and scanner systems can be synchronized centrally. This minimizes the cleaning area and maximizes the cleaning speed at the same time.

The laser can thus work through most of the process without interruption. This saves time and money.

cleanGANTRY

- Turnkey plant for processing large components and assemblies
- Integrated control concept for laser, scanner and automation
- High-precision portal as automation basis
- Optionally combinable with a robot
- Optional loading parallel to machining time via rotary indexing table or double drawer loading
- Supports optional contourSCAN technology and CAD CAM interface
- Laser-safe complete enclosure
- Footprint-minimized design
- Scalable sizes
- For the 24/7 production

awarded with
**Deutscher
Umweltpreis** 2010



CLEANING WITH LASER LIGHT - ENVIRONMENTALLY FRIENDLY, PRECISE AND PROFITABLE.

01/2025 subject to technical changes



www.cleanlaser.de



 **cleanLASER**
cleaning with light

PLEASE CONTACT US. WE ARE HAPPY TO ADVISE!

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