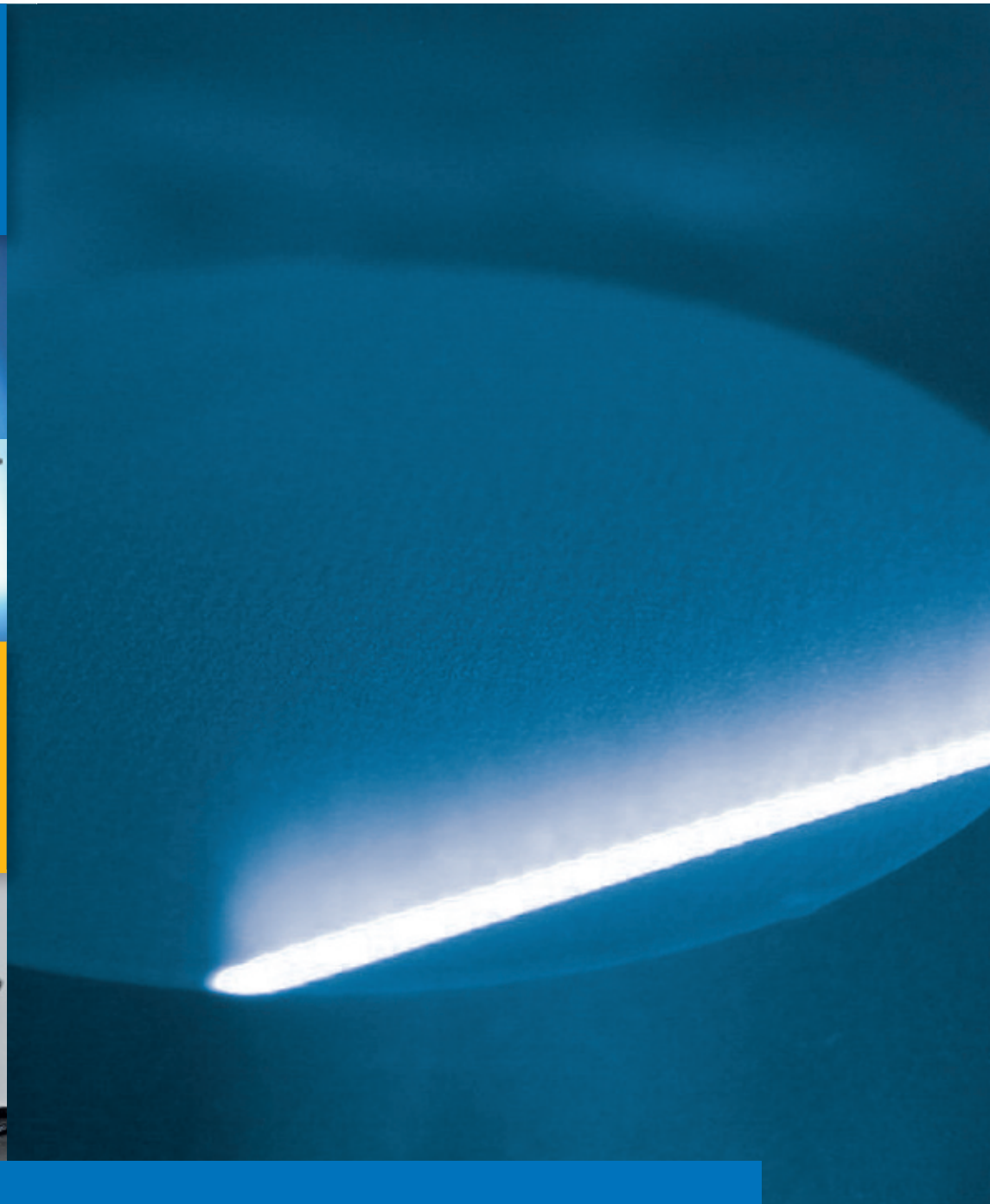
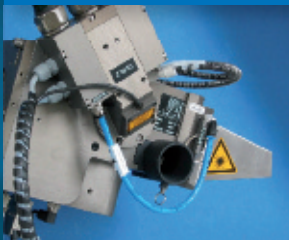


CLEAN-LASERSYSTEME GMBH

PRODUCT INFORMATION & TECHNICAL DATA



HIT THE SPOT WITH LIGHT.

 cleanLASER

LOW POWER: CL 20 BACKPACK

ULTRA-MOBILE COMPACT LASER CLEANING

2



- Backpack mounted laser - the ultimate in mobility
- Average laser power up to 20 Watt
- Gentle & precise cleaning of sensitive surfaces
- Optional rechargeable battery powered operation
- Diode pumped solid-state laser
- Very quiet air-cooled system
- Large operating distance (up to 250 mm)
- Laser class 4 product

Laser optics and remote control



Laser optics OS H 20 (optional with distance sensor or F-Theta objective)



Stamp optic for automated 2D surface treatment



Useful remote control

Application examples



- De-coating 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

Photo down left: Neferhotep e.V.



Backpack Laser in action – battery operated - no external power necessary, fiber optic beam delivery, integrated control & cooling unit

Standard system features: CL 20 Backpack

- Extremely compact laser unit
- Combination direct power supply and quick-charger for batteries
- Special Backpack-package - includes carrying system & protective cover
- Handheld laser optics OS H 20 with large operating distance (up to 380 mm)
- Beam delivered via 2 meter fiber optic
- Remote control box

Options:

- *Additional battery pack*
- *Integrated red targeting laser*
- *2D laser beam package with Stamp optic (incl. software and laptop)*
- *Wide-range of beam focal optics*

Whether it's an Egyptian burial chamber, a plane's wing or other difficult to access areas, the backpack laser goes almost everywhere.

The CL 20 Backpack features a 20 Watt diode pumped laser source with adjustable power settings. The laser is mounted to a backpack support frame for ease of transport and operator comfort.

This super portable 20 Watt laser is well-suited for small area treatments. Powered by high-capacity batteries, the mobile laser system is fully operational on site without a power source day by day for many hours.

CL 20 BACKPACK TECHNICAL DATA

Size [mm]	Approx. 220 x 400 x 650
Weight (approx.) [kg]	14,5 kg (~31 lb)
Cooling system	Internal air-cooled system
Specified laser power of the beam source [W]	20
Wavelength [nm]	1064
Power supply (incl. quick charger)	100 - 240 AC (50/60 hz)
Minimum / Maximum ambient temperature [°C]	5 - 40
Humidity [%]	10 - 95 non-condensing

LOW POWER

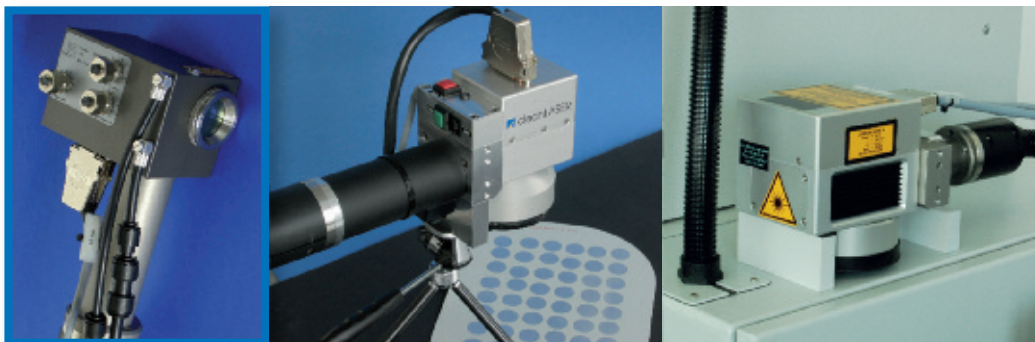
COMPACT MICRO SYSTEM LASERS

4



- Average laser power 12 to 100 Watt
- Laser systems for the precise cleaning of sensitive surfaces
- Diode pumped solid-state laser
- Very quiet air-cooled system
- Large operating distance (up to 500 mm)
- Modular configuration in 19" industrial housing
- Easy production line integration
- Laser class 4 product

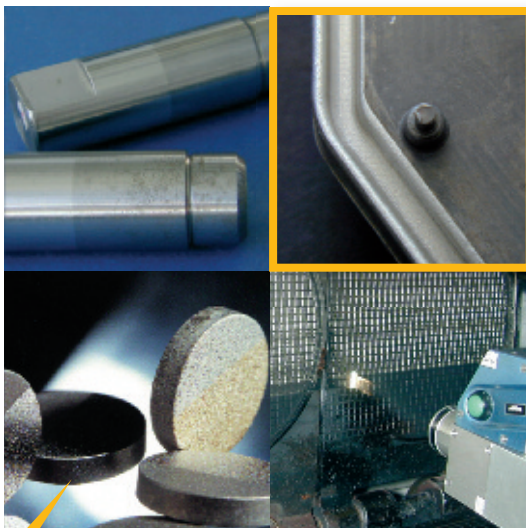
Laser optics



Laser optics OS A 20
(optional with F-Theta objective)

2D laser optics Stamp for complex geometries (ovals, circles)

Application examples



- Processing and de-coating of small areas
- Pre-treatment for adhesive bonding
- In-line baking plate cleaning
- Cleaning of print rollers
- Precise de-coating
- Restoration & Conservation
- Rust/oxide removal
- Precise oil removal from metallic surfaces, e.g. for welding pre-treatment
- CFRP repair/pre-treatment
- Structuring of metallic surfaces

TECHNICAL DATA



Modular laser system with CL 20 and additional cooling system to control the temperature of the optical system

The low power systems are q-switched pulsed lasers. This gives a peak pulse of up to 50 kW. Compact and versatile, the low power lasers are designed for the cost-effective treatment of small areas that require gentle high precision cleaning, de-coating and other surface treatments.

The basic system consists of the laser source, with controls and cooling, a fiber optic for

Standard system features:

- Compact laser unit
- Quiet cooling system
- Internal control electronics with various interfaces
- Laser optics with large operating distance (up to 500 mm)
- Flexible fiber optic beam delivery up to 4 m

Options:

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

beam delivery and a processing head. A simple main power supply is used for operation with a very low energy demand.

No other media is required for treating parts. These laser systems are easy to operate and virtually maintenance-free.

TECHNICAL DATA

Size (d x w x h) [mm]	Ca. 650 x 483 x 175 (19"/ 4 HE)
Weight (approx.) [kg]	(with optics) 27 kg (~28 lb)
Cooling system	Internal air cooling system
Specified laser power of the beam source [W]	12/20/40/50 or 100
Wavelength [nm]	1064
Power supply	100 V/240 AC (50/60 hz)
Maximal power consumption [W]	150 - 600
Minimum / Maximum ambient temperature [°C]	5 - 40
Humidity [%]	10 - 95 non-condensing

MID POWER

INDUSTRIAL CLEANING LASERS

6



- 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
- μ C-based controls (menu driven)
- Laser class 4 Product

Laser optics



cleanLINE special optical system for line focusing

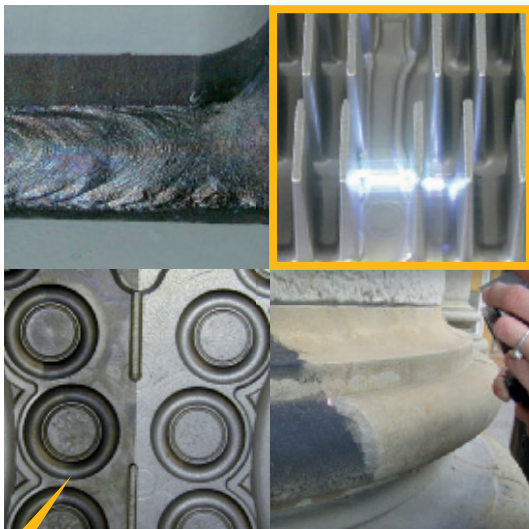


OS H 50 laser optics for manual application



Stamp 2D optic

Application examples



- Complete or selective paint removal (weld inspections)
- Removes oxides, oil, grease & production residues
- Mold cleaning
- Pre-treatment for adhesive bonding
- Natural stone cleaning
- De-coating metallic and glass surfaces

TECHNICAL DATA



Optional 19" control cabinet with system operation and performance display

These mid power systems are designed around a powerful, diode pumped solid-state laser source. Mid-power lasers deliver performance with gentleness for de-coating and cleaning industrial parts.

Using the remarkable power of short pulses of laser light high-value parts can be treated without damage and virtually no emissions. Laser cleaning applications include surface prep for bonding and

Standard system features:

- Integrated cooling system
- Diode pumped solid-state laser
- Range of end effectors/optics
- Flexible beam delivery by 10 m fiber optic

Options:

- Beam switch with 2nd laser optic
- Extended fiber optic (up to 50 m)
- 2D beam deflection incl. software
- Teleservice-module CLQ-Control for remote diagnostics via external or internal PC
- Laser process data storage
- Fieldbus interface for automation integration
- Laser optics for automated & special applications
- Integrated red targeting laser

welding, de-coating metallic surfaces - fully or selectively, removal of production residues from tools, molds and many more.

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/de-coating with laser light - without chemicals, media, dust, water and or clean-up!

TECHNICAL DATA

Size (l x w x h) [mm]	1560 x 760 x 1160
Weight (approx.) [kg]	340
Cooling system	air - water optional water - water
Average power of the beam source [W]	150/300/500 or 600
Wavelength [nm]	1064
Maximum power consumption [kWh]	2/4/6/7
Power supply (German vision)	3 x 16 A, 400 V (50/60 hz)
Minimum / Maximum ambient temperature [°C]	5 - 40 (36°C for air-cooled version)
Humidity [%]	< 95, non-condensing

HIGH POWER: CL 1000

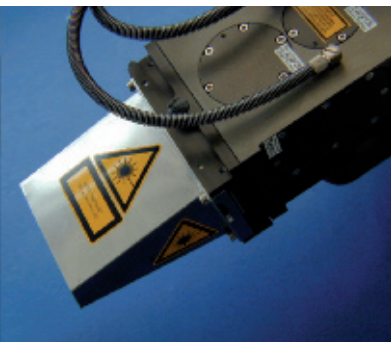
POWERFUL CLEANING LASERS

8

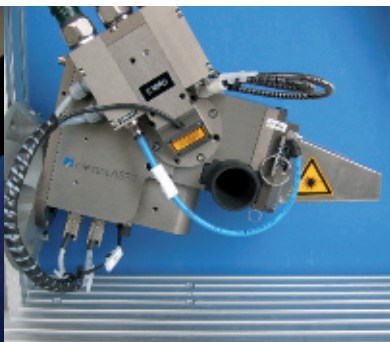


- 1000 Watt average power (cw)
- Diode pumped beam source
- On-board integrated PC for process control, data storage, communications
- Self-contained and fully mobile
- Robust construction for durability in production intensive industries
- Real-time control laser control
- TFT touch screen display of laser parameters
- Laser class 4 product

Laser optics available



Laser optic type OS A 70

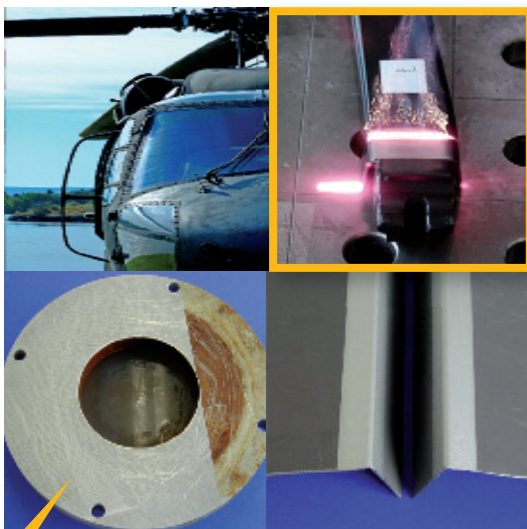


Laser optic type OS H 80

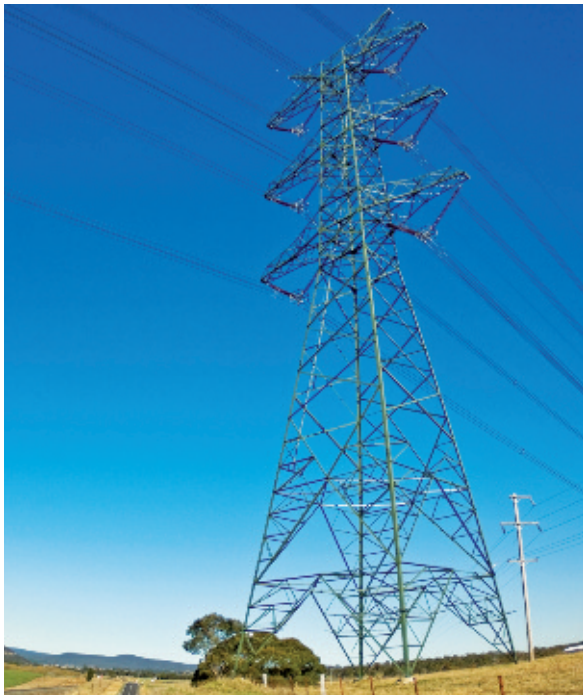


Optional sensors

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 de-contamination



Eco-friendly stripping of power poles with cleanLASER

The CL 1000 delivers amazing performance with an average laser power of 1000 Watt. This unit features a diode pumped laser source for a system that's reliable and virtually maintenance-free. This laser system can be configured for both handheld use and automated applications with a fieldbus interface.

Typical applications are production intensive de-coating, pre-treatment of weld seams or de-contamination.

Standard system features: CL 1000

- Diode pumped solid-state laser
- Air or water-cooled
- Laser optic Type OS A 70 or OS H 80
- 10 m fiber optic for flexible beam delivery
- On-board integrated PC with touch screen for process control, data storage, communications

Optional:

- *Beam switch with 2nd laser optic*
- *Teleservice-module for remote diagnostics via external PC*
- *Fieldbus interface for automation integration*
- *Laser optics for automated & special applications*
- *Integrated red targeting laser*
- *Extended fiber optic (up to 50 m)*

For big projects, in the factory, in the field or at sea, this laser is ready to deliver high power for maximum production with all the benefits of cleaning with light.

The CL1000 is designed for reliability and minimal maintenance. It's easy to set-up, operate and automate. Plug it in, turn it on and start cleaning/de-coating with laser light – without chemicals, media, dust, water and no clean-up!

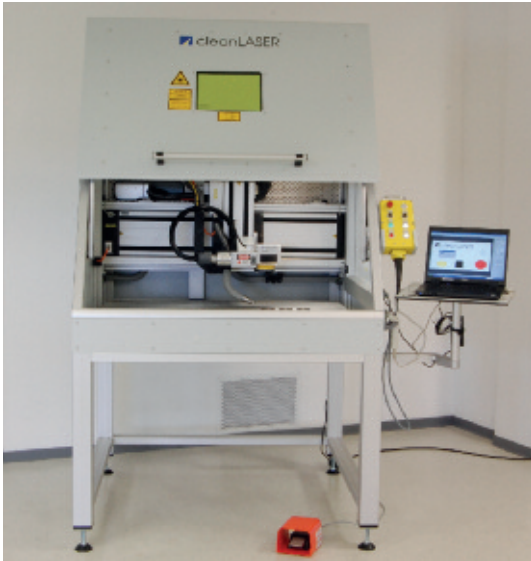
CL 1000 TECHNICAL DATA

Size (l x w x h) [mm]	1600 x 760 x 1270
Weight (approx.) [kg]	490
Cooling system	air - water or water - water
Average laser power [W]	ca. 1000
Wavelength [nm]	1064
Maximum power consumption [kWh]	10 (incl. air cooling)
Power supply (German vision)	3 x 16 A, 400 V (50/60 hz)
Minimum / Maximum ambient temperature [°C]	5 - 40 (36°C for air-cooled version)
Humidity [%]	< 95, non-condensing

CL WORKSTATION & AUTOMATION TECHNOLOGY

HIGH PRECISION APPLICATIONS

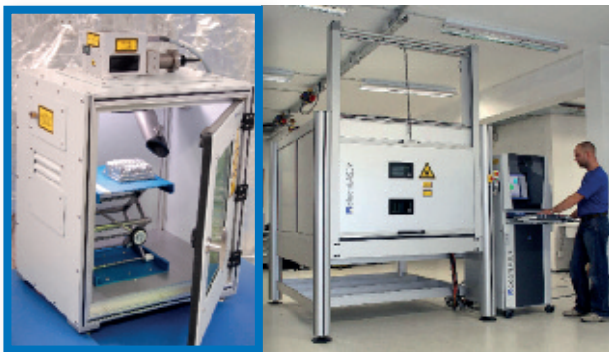
10



Basic version cleanCELL with 3 axis linear system

- Available in any laser system power from 20 to 1000 Watt
- Ultra compact solid state or CO₂ laser (1064 nm or 10,6 μm wave length)
- Dust-tight optics
- Various aperture lenses
- Beam delivery by fiber optic or direct beam
- Scan2D ablation software controls laser and multi-axis hardware
- Laser class 4 (optional class 1 housing)

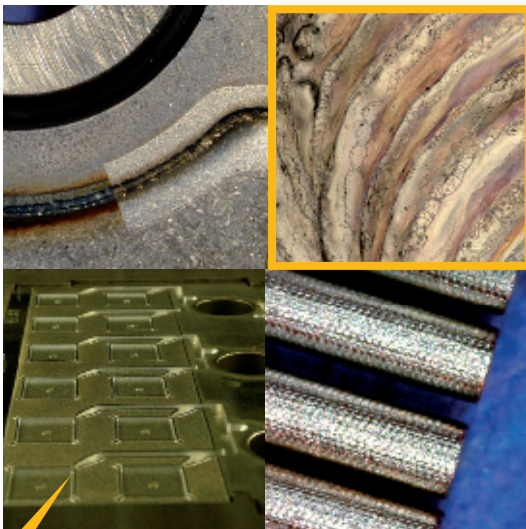
Workstation variants



Compact laser treatment cell Safebox Customized workcell

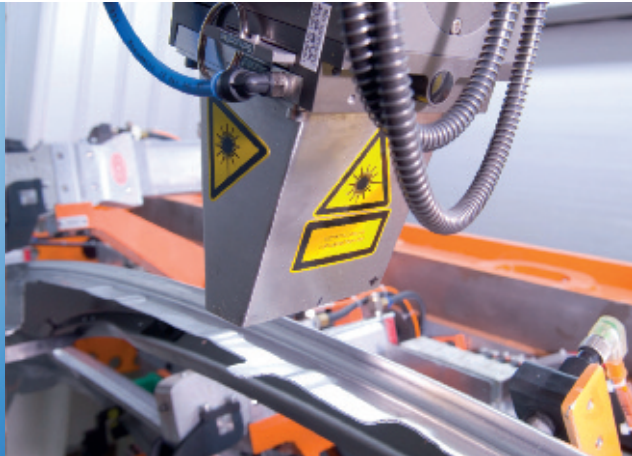
cleanLASER Workstations are flexible systems, well-suited for cleaning/de-coating processes involving manual part assembly. From the cost-effective cleanCELL basic laser safe workstation, to multi-functional automated systems with parts feeding, cleanLASER configures and optimizes each for the application.

Application examples



- Partial structuring
- Pre-treatment for adhesive bonding processes
- Treatment of complex 2D-profiles
- Highly precise paint removal from metallic surfaces
- Partial or selective de-coating
- Automated cleaning processes requiring high precision

CUSTOMIZED SPECIAL SYSTEMS



Special system for integration into an existing production line

Robot-guided laser pre-treatment in serial production (picture: Audi AG)

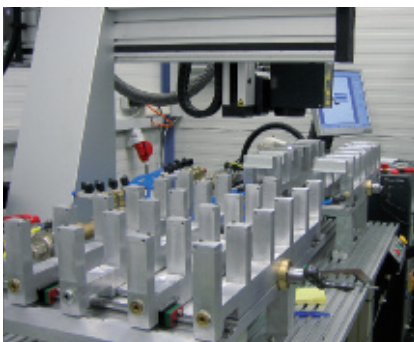
cleanLASER units can be easily integrated into the production line. They use compact end effectors, beam delivery via flexible fiber optic and a compact laser source that will save space as it saves time.

All laser systems are available in modular designs to accommodate existing facilities and automation via digital I/O or fieldbus.

With our global partners cleanLASER offers ready-for-use and customized solutions to a wide range of industries.

When fully-automated, laser cleaning systems maximize the technologies' advantages and economic pay-back potential. cleanLASER can help.

From laser systems using industrial robots, specially designed laser cleaning facilities, our team provides support from the first test, to implementation, with on-going service and technical support.



Customer-specific work piece carrier and fixture



Customized solution "mold WIPER" for cleaning sensitive molds in semiconductor industries



Facility for pre-treatment of brake pads

Cleaning with laser light – environmentally friendly, precise and profitable.

Please contact us to discuss your application and discover what's possible when you clean with light and cleanLASER Systems.

awarded with
2010
Deutscher
Umweltpreis



HIT THE SPOT WITH LIGHT.

 cleanLASER

Clean-Lasersysteme GmbH
Dornkaulstr. 6
52134 Herzogenrath near Aachen
Germany
Phone +49 (0) 2407-9097-0
Fax +49 (0) 2407-9097-111
info@cleanlaser.de
www.cleanlaser.de