LOW POWER: CL 20 BACKPACK

ULTRA-MOBILE COMPACT LASER CLEANING

- 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

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
TECHNICAL DATA

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 optics
- Remote control box

Options:
- Additional battery pack
- Integrated red targeting laser
- 2D laser beam package with Stamp optics (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

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size [mm]</td>
<td>Approx. 220 x 400 x 650</td>
</tr>
<tr>
<td>Weight (approx.) [kg]</td>
<td>14.5 kg (~31 lb)</td>
</tr>
<tr>
<td>Cooling system</td>
<td>Internal air-cooled system</td>
</tr>
<tr>
<td>Specified laser power of the beam source [W]</td>
<td>20</td>
</tr>
<tr>
<td>Wavelength [nm]</td>
<td>1064</td>
</tr>
<tr>
<td>Power supply (incl. quick charger)</td>
<td>100 - 240 AC (50/60 hz)</td>
</tr>
<tr>
<td>Minimum / Maximum ambient temperature [°C]</td>
<td>5 - 40</td>
</tr>
<tr>
<td>Humidity [%]</td>
<td>10 - 95 non-condensing</td>
</tr>
</tbody>
</table>
LOW POWER

COMPACT MICRO SYSTEM LASERS

- 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)
bakeLINE optics for in-process cleaning of baking ovens

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

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 optics for 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

<table>
<thead>
<tr>
<th>Size (d x w x h) [mm]</th>
<th>Ca. 650 x 483 x 175 (19”/ 4 HE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (approx.) [kg]</td>
<td>(with optics) 27 kg (~28 lb)</td>
</tr>
<tr>
<td>Cooling system</td>
<td>Internal air cooling system</td>
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<tr>
<td>Specified laser power of the beam source [W]</td>
<td>12/20/40/50 100 or 200</td>
</tr>
<tr>
<td>Wavelength [nm]</td>
<td>1064</td>
</tr>
<tr>
<td>Power supply</td>
<td>100 V/240 AC (50/60 hz)</td>
</tr>
<tr>
<td>Maximal power consumption [W]</td>
<td>150 - 410</td>
</tr>
<tr>
<td>Minimum / Maximum ambient temperature [°C]</td>
<td>5 - 40</td>
</tr>
<tr>
<td>Humidity [%]</td>
<td>10 - 95 non-condensing</td>
</tr>
</tbody>
</table>
MID POWER

INDUSTRIAL CLEANING LASERS

- 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
- μC-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 optics
- cleanCUBE optics for manual and automated applications

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

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 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!

<table>
<thead>
<tr>
<th>TECHNICAL DATA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (l x w x h) [mm]</td>
<td>1560 x 760 x 1160</td>
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<tr>
<td>Weight (approx.) [kg]</td>
<td>340</td>
</tr>
<tr>
<td>Cooling system</td>
<td>air - water optional water - water</td>
</tr>
<tr>
<td>Average power of the beam source [W]</td>
<td>150/300/500 or 600</td>
</tr>
<tr>
<td>Wavelength [nm]</td>
<td>1064</td>
</tr>
<tr>
<td>Maximum power consumption [kVA]</td>
<td>1,8/2,8/3,9/4,3 (water - water)</td>
</tr>
<tr>
<td>Power supply (German vision)</td>
<td>20 A, 480 V (60hz)</td>
</tr>
<tr>
<td>Minimum / Maximum ambient temperature [°C]</td>
<td>5 - 40 (36°C for air-cooled version)</td>
</tr>
<tr>
<td>Humidity [%]</td>
<td>&lt; 95, non-condensing</td>
</tr>
</tbody>
</table>

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

Options:
- Beam switch with 2nd laseroptics
- Extended fiberoptics (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

Optional 19\textsuperscript{th} control cabinet with system operation and performance display
HIGH POWER: CL 1000

POWERFUL CLEANING LASERS

- 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

CL 1000 with 50 m fiberoptics cable

Laser optics available

Laseroptics type OS A 70
Laseroptics 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
TECHNICAL DATA

Standard system features:
CL 1000

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

Optional:

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

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.

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 CL 1000 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

<table>
<thead>
<tr>
<th>Size (l x w x h) [mm]</th>
<th>1600 x 760 x 1270</th>
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</thead>
<tbody>
<tr>
<td>Weight (approx.) [kg]</td>
<td>490</td>
</tr>
<tr>
<td>Cooling system</td>
<td>air - water or water - water</td>
</tr>
<tr>
<td>Average laser power [W]</td>
<td>ca. 1000</td>
</tr>
<tr>
<td>Wavelength [nm]</td>
<td>1064</td>
</tr>
<tr>
<td>Maximum power consumption [kVA]</td>
<td>6,5 (water-water)</td>
</tr>
<tr>
<td>Power supply (German vision)</td>
<td>20 A, 480 V (50/60hz)</td>
</tr>
<tr>
<td>Minimum / Maximum ambient temperature [°C]</td>
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CL WORKSTATION & AUTOMATION TECHNOLOGY

HIGH PRECISION APPLICATIONS

- 3-axis gantry based automation system with powerful servo drives
- Integration of any kind of cleanLASER from CL 12 to CL 1000 available
- Modular design, available in 3 different sizes, including class 1 laser enclosure
- Optional user-friendly automated pneumatic front door
- Wide range of options available (camera, process monitoring, rotation axis, workpiece carriers, feeding systems, etc.)
- Easy integration into existing workflow by robot or linear transport systems and standardized I/O module
- Integrated laser and automation software type cleanSTUDIO including monitoring and visualization terminal
- Optional NC automation system for continuous-path control

CleanLASER workstations are flexible systems, well-suited for cleaning/de-coating processes involving manual part assembly. From the cost-effective cleanCELL basic 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

Workstation variants

Standard automation system cleanCELL 2220 for fully automated surface treatment

- safeBOX, class 1 laser safe enclosure cell
- compactCELL workstation with 1 linear axis for semi-automated treatment
CUSTOMIZED SPECIAL SYSTEMS

Special system “cleanBOX” 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 fiberoptics 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 faculties, 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
Please contact us to discuss your application and discover what’s possible when you clean with light and cleanLASER Systems.