Passionate cleaning - at different levels

cleanLASER offers solutions for laser cleaning and relies on clean air conditions

cleanLASER headquarters (©cleanLASER)

Cleaning surfaces using laser technology is a process that is increasingly being used in many industrial and craft sectors. Based on laser ablation, residues on metals - such as corrosion residues, oil deposits or paintwork - are removed. The selective removal of impurities makes the process particularly interesting: firstly, the effort is much lower compared to conventional cleaning processes, and secondly, laser cleaning is more economical because neither chemicals nor blasting agents are used. The third advantage is the high energy efficiency.

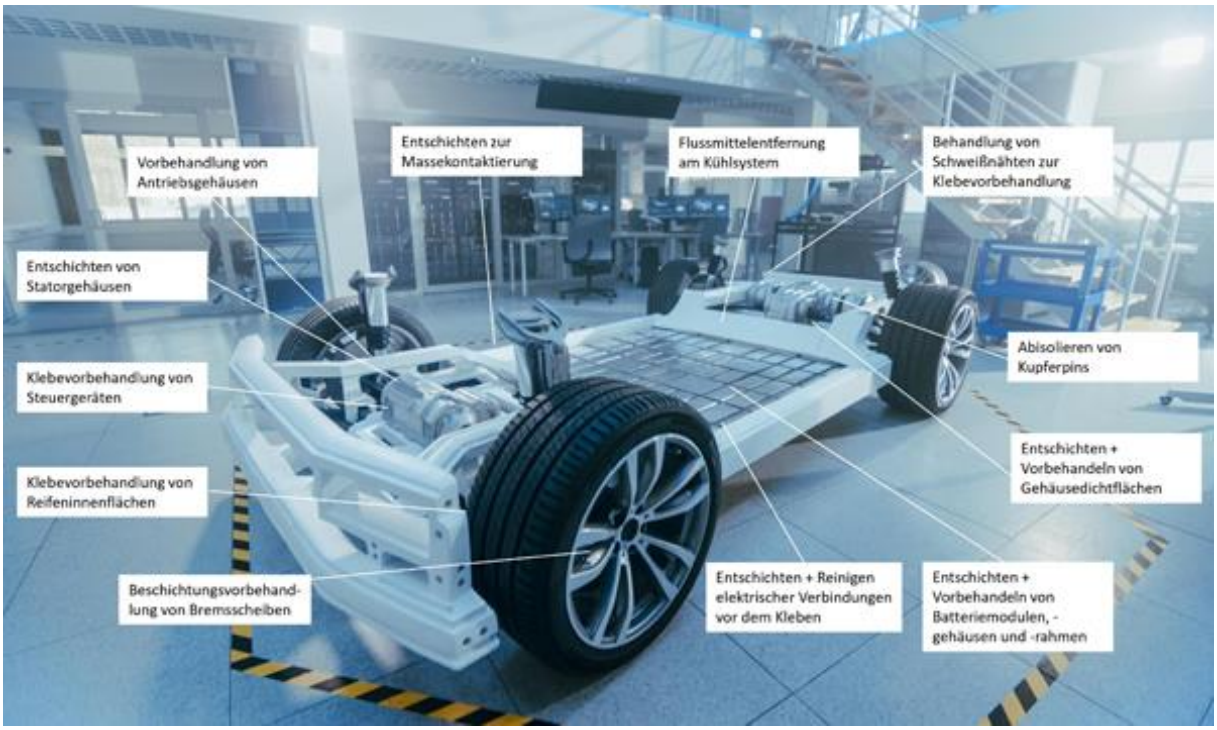
The company Clean-Lasersysteme GmbH (cleanLASER) has been developing and producing laser systems for component cleaning and industrial surface processing for more than 25 years. The company's products are used worldwide, supported by around 20 international distribution partners. The managing partners have already been awarded the German Environmental Prize from the Federal Environmental Foundation for their sustainable technology.

Managing partners Dr. Winfried Barkhausen and Edwin Büchter (left) at the presentation of the German Environmental Award by the then Federal President of Germany Christian Wulff (©cleanLASER)

cleanLASER specializes primarily in mold and tool cleaning, paint stripping and coating removal as well as cleaning and modification of metallic surfaces. Complete solutions are offered from a single source – from the initial task to the turnkey production system for various industries and applications. The portfolio ranges from small backpack lasers to the CL 2000 High Power System.
In addition to hardware, cleanLASER offers services in the field of application testing and feasibility testing through to near-series process qualification. There are also development and construction services as well as product service and a corporate training center.

Edwin Büchter, Managing Partner, says: “Our target markets primarily include high-tech and the premium automotive industry. With our laser systems, for example, we support the sustainable transition to electromobility.”

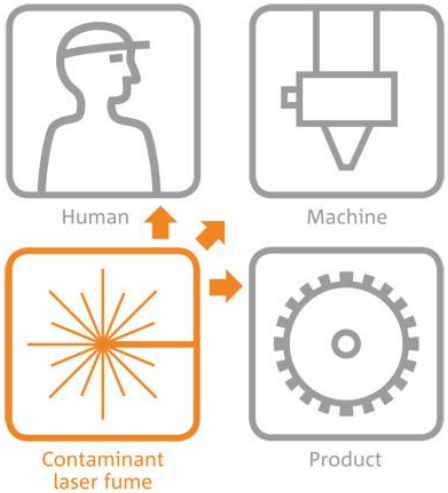
Typical fields of application for cleanLASER systems are adhesive pre-treatment and paint stripping, e.g. of aluminum and steel components, partial paint stripping of electric battery components and pre-treatment for structural bonding. There are a variety of applications, some of which are shown in the following figure.



Utilization of laser cleaning systems for e-mobility (©cleanLASER)

However, laser cleaning has an effect that is common to all laser applications: The generation of fume and dust, which can consist of the finest particles between 10 and 0.1 µm in size. Depending on the often insufficiently known ingredients, the fine dust may contain respirable or carcinogenic particles, occasionally mixed with aromatic hydrocarbons. Due to the small particle size, the dusts can also be explosive or flammable.

cleanLASER was aware of the potential negative effects of laser emissions on employees, production equipment and products at a very early stage. Since then, the safe collection and separation of process dust has been part of cleanLASER's corporate strategy, which is geared towards sustainability and waste avoidance. In addition to environmental aspects, occupational health and safety plays a key role within the company.



The influence of laser emissions on employees, equipment, and products (©ULT)

“Environmentally conscious behavior and resource conservation is one of our highest goals and has been anchored in cleanLASER’s DNA from the beginning,” says Edwin Büchter. “Healthy and creative employees and customers are our most valuable asset. Together with ULT, we have taken environmental and occupational safety to a new level.”

cleanLASER has been using extraction and filter systems from various manufacturers for several years. In 2017, for example, a ULT LAS Double 500 laser fume extractor was installed, on the basis of which a new type of extraction system was developed. cleanLASER emerged as a reference and development partner.

Axel Karnuth, sales engineer at ULT AG, reports: “I communicated the different development statuses with cleanLASER and received feedback, which was then taken into account. The company was also one of the first to receive a prototype of the LAS 800 extraction system for testing. Those responsible at cleanLASER were very impressed by the suction power, low noise level, the Profinet interface provided and our safety considerations.”

LAS 800 Ex fume extraction system (left) in use with a laser cleaning system from cleanLASER (©cleanLASER)

The laser system provider showed clear interest in a system that reliably extracts large, combustible amounts of dust on a permanent basis. There was and still is important input, both on the functional and documentary side. System features such as fire detection,

compensation for pressure fluctuations, multiple filter stages, fill level sensors, various extinguishing accesses, or a larger discharge bucket than necessary were worked out and integrated into the extraction system. In addition, cleanLASER was prepared to test promising solutions in the field.

cleanLASER accompanied the development of the LAS 800 model from the prototypes to the production-ready system over a period of around 1.5 years. “The competence and innovative strength of ULT combined with our high standards, especially in risk analysis and the development of an optimized interface to the laser system, ultimately made the difference,” says cleanLASER Managing Director/CTO Werner Knöppel.

After using several smaller extraction systems for laser smoke in recent years, the LAS 800 Ex system has now developed into a standard for equipping cleanLASER's laser processing machines.
cleanLASER has not regretted the decision for ULT and the company's extraction solutions. “ULT impresses with its medium-sized company structure and its high willingness to cooperate, to explore creative new paths together with a strong partner,” concludes Werner Knöppel.

Authors:

- Tanja Büchter, Editorial and corporate communications at cleanLASER, Herzogenrath, Germany
  Contact: tanja.buechter@cleanlaser.de, Web: https://www.cleanlaser.de/
- Stefan Meißner, Corporate communications at ULT AG, Löbau, Löbau, Germany
  Contact: stefan.meissner@ult.de, Web: https://www.ult.de