

cleanLASER TECHNOLOGY IN THE ELECTROMOBILITY

Flüssigkeitsgekühlte Lithium-Ionen-Batterie

Liquid cooled lithium-ion battery
 11/19

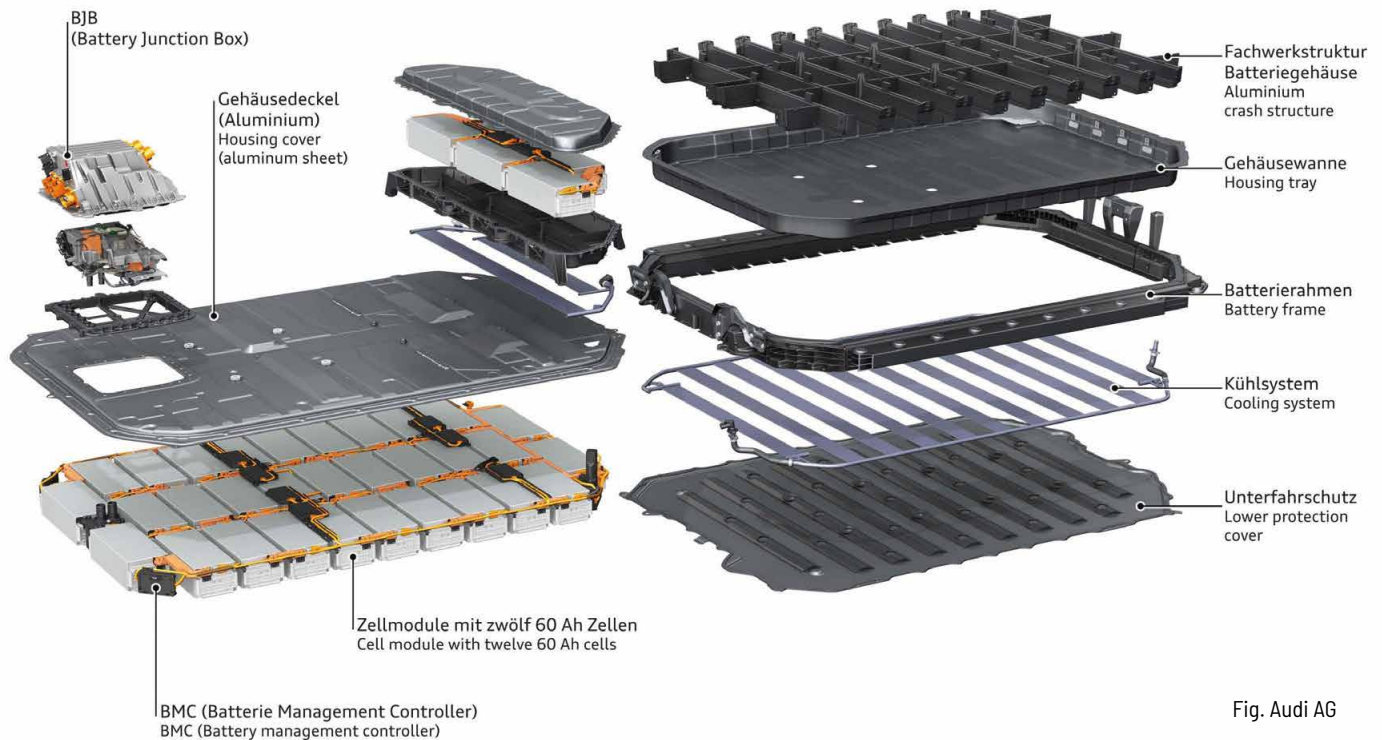


Fig. Audi AG

MANUFACTURING SOLUTIONS FOR YOUR BATTERY PRODUCTION

Whether for contacting or for manufacturing electromagnetically compatible closed housings, electromobility is demanding new cost-effective, reproducible decoating technology. With the use of precise laser-based decoating technology, it is not only possible to selectively decoat battery housings made of aluminum or galvanized sheet steel, but also to efficiently pre-treat cells and cell housings for bonding and welding.

Battery modules and control units can also be pre-treated according to demand, depending on the adhesive and sealant to be used.

A further application is the joining pre-treatment of aluminum housing components for bonding pre-treatment. The laser can be effectively used on uncoated material as well. The modification optimally prepares the surface for the bonding of adhesives and sealants.

APPLICATION EXAMPLES

- Bonding and coating pre-treatment of cells and cell housings
- Soldering, bonding and welding pre-treatment of cell contact systems
- Partial decoating of battery housing components (EMC)
- Joining pre-treatment of housing components
- Bonding pre-treatment of control units

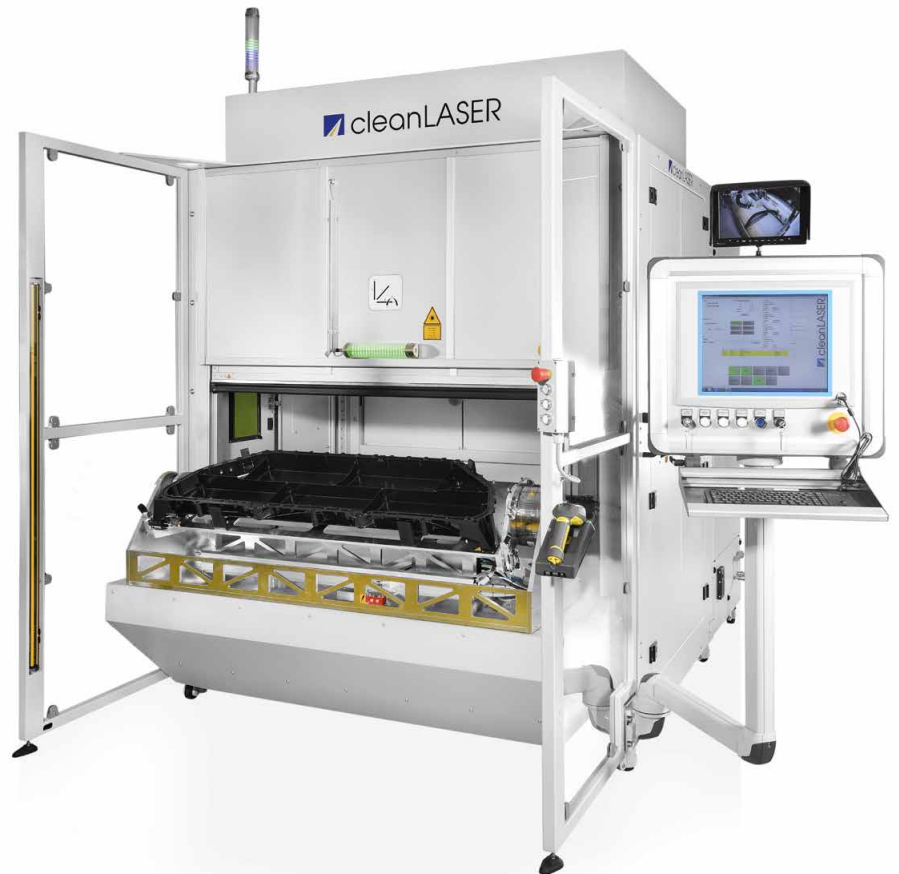
BATTERY HOUSING – DECOATING

Components made of galvanized steel or aluminum can be decoated at up to 30 cm² per second, depending on the type of coating. In the case of aluminum, paint removal is restricted automatically by the reflection from the „bare“ metal. In the case of sheet steel, the corrosion-protective zinc layer is preserved by appropriate laser parameters.

Since the processing of battery housings and lids has to be precise in terms of position and contour on the one hand, but on the other hand there should be as little programming effort as possible during the application, cleanLASER has developed the software „contourSCAN“. This technology can be used with the cleanCELL standard automation systems as well as with their spin-off cleanGANTRY systems. With the highly precise gantry systems, the processing of large components and assemblies is possible in a reproducible and quality-controlled manner.



cleanLASER in the production of battery housings



Turn-key solution:
cleanCELL 3220

APPLICATION

- Partial decoating of housing components for electrical contacting (EMC)
- Decoating of different KTL systems
- Area rates up to 30 cm²/s achievable
- Substrates: galvanized steels, aluminum and die casting
- contourSCAN and On-The-Fly processing strategy for high production rates
- Turn-key solutions on cleanCELL or cleanGANTRY basis

CELLS, CELL HOUSINGS AND BATTERY MODULES



cleanLASER in the production of cell contact systems

In the e-mobility sector, the contacting of different systems is the key to cooperation. The laser process can be regulated by beam deflection in such a way that precise energy input only takes place where it is required, thus guaranteeing gentle processing.

With only one cleanLASER, functional surfaces for different joining processes can be created on the component. Therefore, both bonding surfaces and welding spots for the subsequent process can be pre-treated in one step. In the course of this, the parameter data set is stored for quality management purposes.

Non-productive times can be significantly reduced thanks to fast scanner technology and the use of smart software and drive solutions. This ensures efficient and reliable pre-treatment at low cost.

The cleanLASER process is also an effective pre-treatment method for coating or painting. The decisive factor here is the quality of the surface

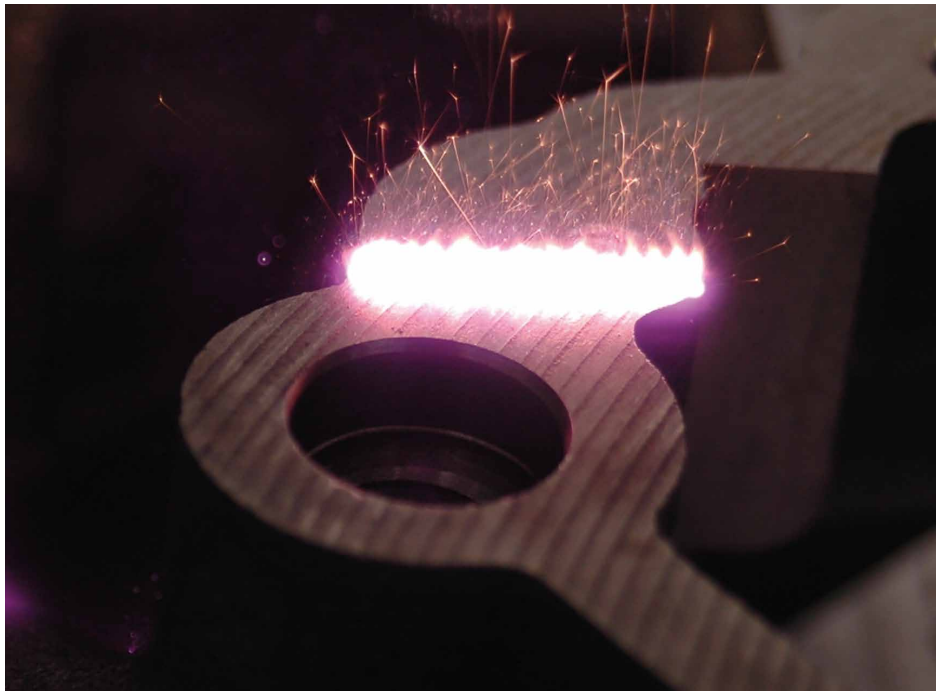
APPLICATION

- Bonding and coating pre-treatment of cell housings
- Soldering, bonding and welding pre-treatment of cell contact systems
- Pre-treatment for wire bonding of battery cells
- Spatially resolved processing for creating functional surfaces
- High efficiency achieved through On-The-Fly processing
- Low heat input
- Quality monitoring of the processing

wetting and the residue-free removal of contaminants from previous processes. This makes efficient, reproducible subsequent processing possible.



BATTERY HOUSINGS AND CONTROL UNITS



cleanLASER in the production of battery housings

APPLICATION

- Joining pre-treatment of aluminum housing components and control units for bonding pre-treatment
- Adhesion improvement on uncoated material for FIPG and CIPG seals
- Adhesive pre-treatment also for crash-resistant structural bonds
- Weld seam post-treatment for sealing with hot butyl or MS polymers

When pre-treating aluminum housing components for bonding, the laser can also be used effectively on uncoated material.

The modification prepares the surface for the bonding of adhesives and sealants, thus achieving optimum adhesion of FIPG and CIPG seals. In addition, the surface cleaning and modification is applicable for structural bonding. By targeted modification of the crystalline structure, e.g. in the case of aluminum, it is possible to reduce the electrochemical corrosion potential and thus achieve permanent bond strength even for structures subject to crash impact.

The post-treatment of weld seams, e.g. for sealing with hot butyl or MS polymers, can also be implemented in a contamination-tolerant and process-stable manner using laser cleaning. The advantages of the laser process are the proven very good bonding properties and adhesive strength, the increase in corrosion resistance, a permanent and stable seal and crash resistance.



Turn-key solution: cleanCELL 2220

subject to technical changes 21-10

PLEASE CONTACT US. WE ARE HAPPY TO ADVISE!

 **cleanLASER**
cleaning with light