



Press Release

Battery Show Europe: TRUMPF makes electric cars more affordable

Battery manufacturers save expensive raw materials by using TRUMPF laser technology // Reduction of energy costs in battery production // New generation of laser technology at the Battery Show Europe

Ditzingen/Stuttgart, 23 May 2023 – With a new laser application, the high-tech company TRUMPF is ensuring cost-effective production of batteries for e-cars. By using special laser modules from TRUMPF, battery manufacturers will be able to significantly reduce their energy costs and space requirements for electrode production in the future. Small semiconductor lasers, so-called VCSELs (vertical-cavity surface-emitting lasers), from TRUMPF will help manufacturers further industrialize their production. "To make the shift from fossil fuels to e-mobility, e-cars must be affordable for everyone. This can only be achieved with cost-effective production of the e-car's most expensive component, namely, the battery. With our laser technology, battery manufacturers can ramp up production in their gigafactories and produce more cheaply," said Johannes Bührle, responsible for global battery projects at TRUMPF. This high-tech company is showcasing its latest generation of lasers for battery manufacture at the Battery Show Europe trade show in Stuttgart.

TRUMPF laser technology make batteries for e-cars more affordable

Using millions of these small semiconductor lasers combined to form high-power modules, battery manufacturers can seal pouch cells with greater repeatability and speed compared to competing processes. Manufacturers can set the parameters of these semiconductor lasers very precisely. Unlike thermal processes, the pouch cells cannot overheat when sealed with these semiconductor lasers. Battery manufacturers therefore reduce their reject rate and save expensive raw materials.

Another application for these semiconductor lasers in battery manufacturing is the drying of battery electrodes. "Our VCSELs set completely new standards in the drying process. Manufacturers save up to 30 percent in energy costs

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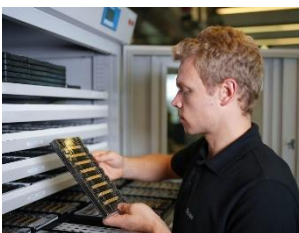
compared to conventional drying techniques, not to mention the savings potential in the footprint of the equipment," said Bührle.

Aluminum replaces expensive stainless steel thanks to laser technology

For the first time, manufacturers can now also produce the housings for power electronics, the control center of electric cars, from inexpensive and lightweight aluminum. Until now, they often had to use expensive stainless steel. "The Multifocus optics from TRUMPF make it possible to weld tightly sealed aluminum electronics housings on an industrial scale for the very first time," said Bührle.

In addition to power electronics housings, cooling management in battery packs is another interesting field of application for aluminum welding. The weld seams of heat exchangers must provide a seal that is 100 percent tight to protect the batteries and sensitive electronic components against moisture. Laser welding process reliability can only be achieved in this application with TRUMPF lasers equipped with the Multifocus optics technology. Alternative processes such as soldering are many times slower and require an immense amount of energy.

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Manufacturing semiconductor lasers

TRUMPF manufactures its semiconductor lasers in Ulm.



Aluminum instead of stainless steel

With laser technology from TRUMPF, manufacturers can produce heat exchangers and power electronics housings from lightweight and inexpensive aluminum. Until now, they often had to use expensive stainless steel.





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About TRUMPF

TRUMPF is a high-tech company offering manufacturing solutions in the fields of machine tools and laser technology. The company drives digital connectivity in the manufacturing through consulting, platform products and software. TRUMPF is a technology and market leader in highly versatile machine tools for sheet metal processing and in the field of industrial lasers.

In 2021/22, the company employed some 16,500 people and generated sales of about 4.2 billion euros. With over 80 subsidiaries, the TRUMPF Group is represented in nearly every European country as well as in North America, South America and Asia. The company has production facilities in Germany, France, the United Kingdom, Italy, Austria, Switzerland, Poland, the Czech Republic, the United States, Mexico and China.

Find out more about TRUMPF at www.trumpf.com

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