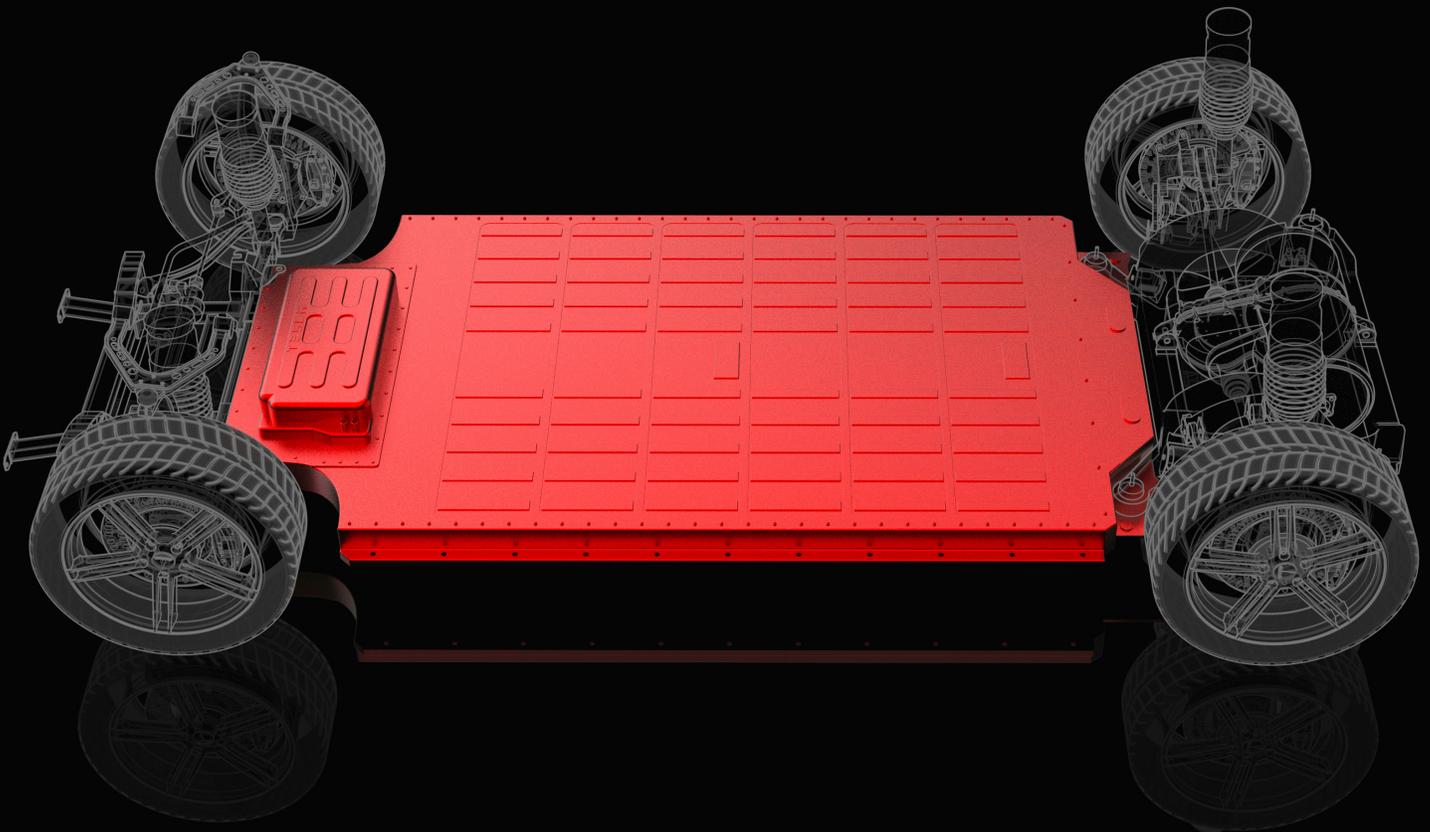


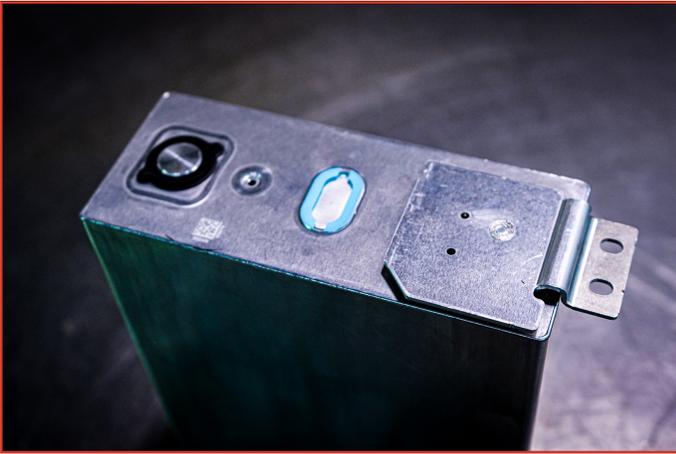


# INDUSTRIAL LASER SOLUTIONS

FOR THE BATTERY INDUSTRY



# LASER APPLICATIONS FOR BATTERY MANUFACTURING

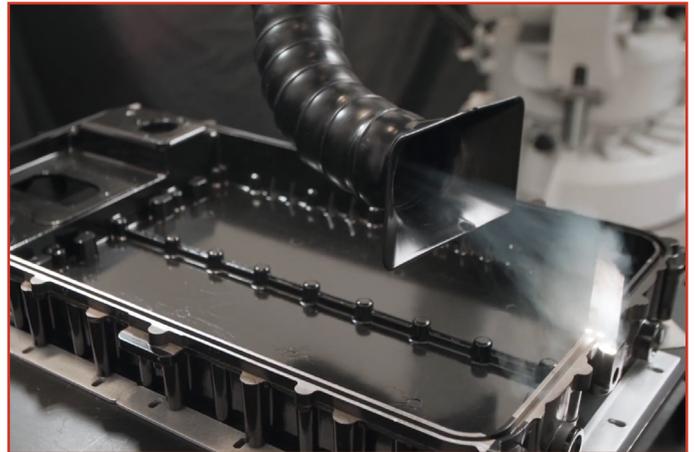


## LASER WELDING

### **BUSBAR TO CELL CONNECTION AT HIGH RATE WHILE ACHIEVING HIGH YIELD**

With its high flexibility, precision, and speed, laser welding is an increasingly popular and proven method, especially for the most recent processes in the battery industry. Welds can be sized and shaped to fit into small spaces, allowing for a wider range of module designs. As a non-contact process, laser welding can reach small battery areas that are often not accessible with ultrasonic bonding and resistance welding.

Laserax offers an extensive solution including the development of the laser process and complete welding solution. It includes components such as the laser head and the vision cameras mounted on a gantry system with dynamic clamping ensured by SCARA robot arms. All equipment are installed by Laserax and operated with a single, dedicated welding machine software.

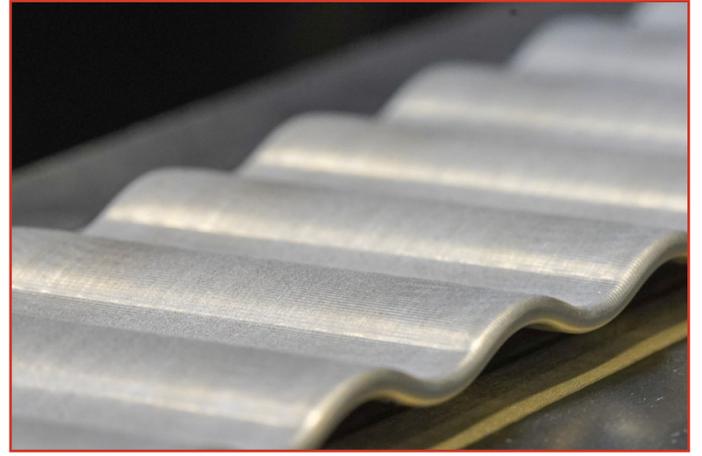
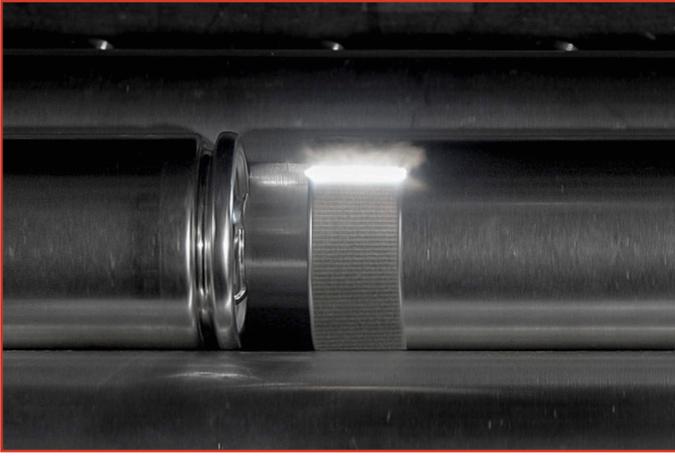


## LASER CLEANING

### **BEFORE WELDING AND GASKETING**

Batteries include thousands of welds and are packaged in gasketed components. A good gasketing and welding performance starts with a good surface preparation. Laser cleaning is a highly precise, consistent, and fast process that removes all types of contaminants from metal surfaces, such as electrolytes, dust, oils, and oxides, while leaving the battery components intact.

Such preparation before gasketing improves the bonding strength and sealing properties. As for laser cleaning of cell tabs before laser welding, it has been shown that this process helps produce good welds every time by reducing the number of false negatives reported by LWM devices.



## **LASER TEXTURING**

### **FOR THERMAL AND STRUCTURAL ADHESIVES**

Laser texturing is a key technology for battery structural resistance and cooling systems. By creating a desirable texture and roughness on metal surfaces, it improves surface properties before assembly, resulting in better heat transfer for thermal adhesives and better bonding performance for structural adhesives. The process can be optimized to meet specific adhesive requirements. It can also be performed at the same time as laser cleaning for complete surface preparation in a single step.

## **LASER MARKING**

### **FOR PERMANENT TRACEABILITY**

There are thousands of cells and hundreds of parts that need to be identified for traceability in a battery assembly.

Laser marking is a fast, precise, and consistent process that creates permanent markings for optimal traceability.

Serial numbers, data matrix codes, and other types of identifiers can be etched within less than 100 milliseconds.



## **RECOMMENDED LASER SOLUTIONS**



**ROBOT CELL**



**BATTERY LASER WELDING MACHINE**

## COMPANY

### UNLOCKING YOUR FULL POTENTIAL WITH COMPLETE LASER SOLUTIONS

Laserax is revolutionizing manufacturing processes across the world for fast growing industries like EVs and batteries that benefit from faster, more efficient, and greener methods.

We deliver industrial laser solutions inspired by your needs, enabling us to provide unparalleled features and a seamless, customized experience. From OEM lasers to fully automated turnkey solutions, all our projects are tailor made for your applications.

## COMPETITIVE ADVANTAGES

- Speed - Less than 100 ms per cell
- Flexibility - No expensive tooling and 10 minutes change for different module
- Software - Single software interface for all components.
- Highest potential yield - 3D vision based dynamic clamping and AI based weld monitoring.
- Global presence - 4 services and welding lab (Canada, USA, Germany and Japan)

## OUR CUSTOMERS

northvolt®

BORGWARNER

LASER WELDING

LASER TEXTURING

LASER CLEANING

LASER MARKING

## LASER SERVICES



### FEASIBILITY STUDIES

Laserax perform preliminary tests to validate feasibility and demonstrate the laser's capabilities before developing a laser process. We then send a full report with our recommendations.



### LASER PROCESS DEVELOPMENT

Laserax develops the laser configuration to meet your process requirements. This includes choosing the right laser, optical components, parameters, part handling systems and fume management.



### BATCH PROCESSING & PROTOTYPING

Manufacturers looking to explore the benefits of laser and validate whether it works in their manufacturing process can use our batch processing service for prototyping, preproduction or while waiting for a laser machine order.

LASERAX

[laserax.com](http://laserax.com)

## INDUSTRIAL LASER SOLUTIONS FOR THE BATTERY INDUSTRY



ISO 9001:2015 & ISO 14 001:2015

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