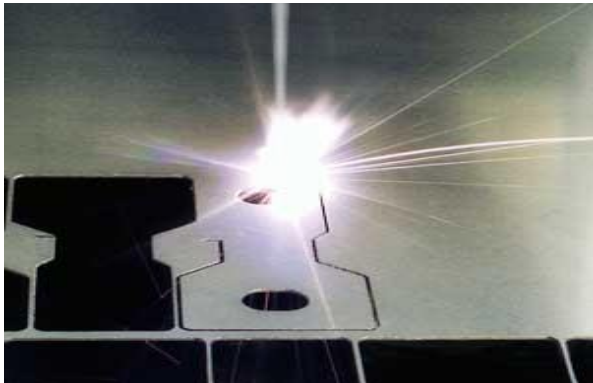




Laser Competency in Machines



Laser-Mikrotechnologie
Dr. Kieburg GmbH
James-Frank-Str. 15
D-12489 Berlin, Germany
www.laser-mikrotech.de



Why lasers?



- Faster
- Higher precision
- No abrasion
- Complete new applications possible





Lut at a glance



The founder Dr. Kieburg was a laser pioneer in the 1970/80s
After decades in the research, 1998 our commercial laser corp.
was found
Research projects, publications
Patents

Strategy



Application first: the machine follows the application
The best of laser material processing AND mechanical
engineering
We make the impossible application possible
Deep vertical integration
High flexibility
1st of its kind and small series



Competency



Laser Technology and Laser Applications
Machine Design (Handling, Robotic, Image Recognition)
Machine Manufacturing
Programming / Automatisaton
Assembly / Initial Production / Installation
Service

Materials



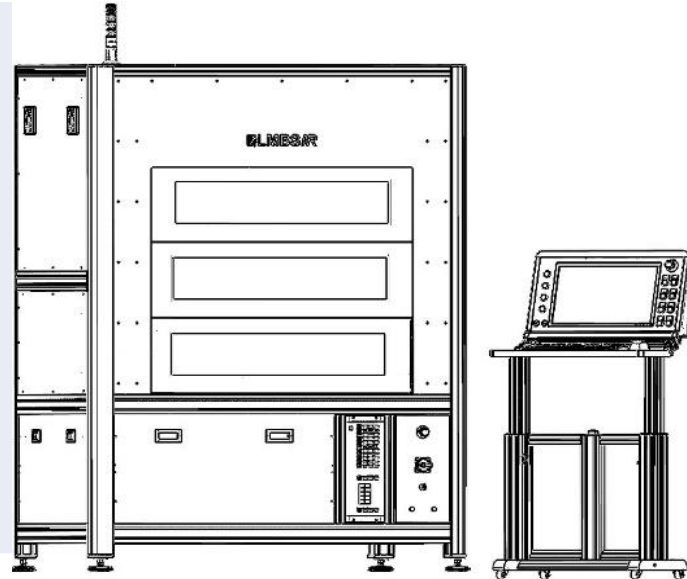
Metal
Glass
Plastics
Ceramics
Silicium
Diamonds



History



- 1999: first marking machine
- 2000: first welding machine
- 2002: first micro machining machine
- 2005: Start software development Multi-Cam
- 2012: first Ultra-short pulse machine
- 2015: first universal machine: cutting, marking, welding
- 2019: first robot machine



Applications



- Marking / Engraving (all applications 2D or 3D)
- Cutting
- Welding 
- Dewelding / debonding
- Ablation
- Cleaning
- Structuring 
- Sintern

Application laboratory



- Laser: 8 x Faser 20W til 4kW, DPSS, DPS, CO2, Ultra-short pulse
- Scanner, Optics, Turning devices, XYZ axes
- Microscopes: Digital (5.000 x) and Scanning electrons (30.000 x)
- Measurements: hardness, height (<math><1\mu\text{m}</math>), components, 3D printing

Industries



- Energy (Hydrogen, Battery Recycling, Turbines)
- Packaging / Jewellery
- Pharma
- Semiconductor
- Metal processing, Automotive, Printed circuit boards

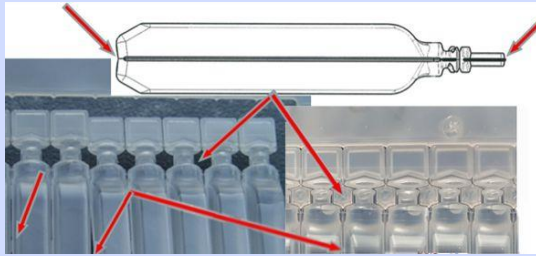


Bundesanstalt für
Materialforschung
und -prüfung



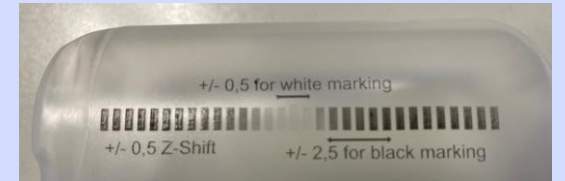


Machines & Applications: Pharma



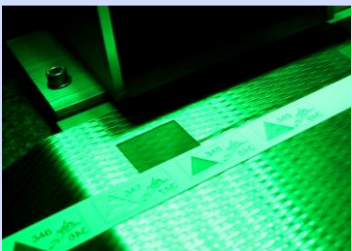
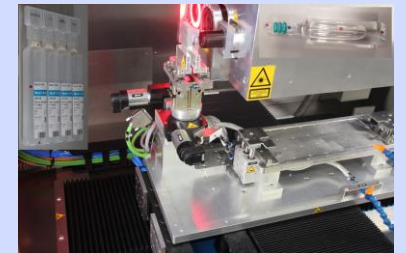
Cut hot plastics from the composite in one production line

Black marking ampoules



Particle-free marking of plastics in a cleanroom

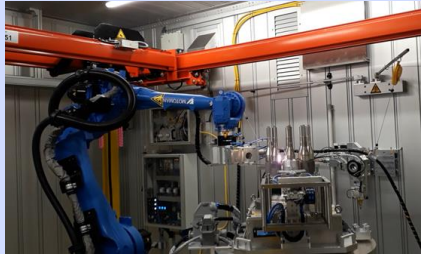
Micro-drilling



Structuring, ablation with high precision wrap technology and camera measurement



Machines & Applications: Packaging/Electronics



Gas Turbines: Robot Welding

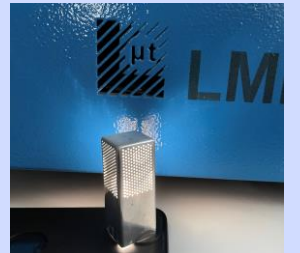


Precise fitting and position-accurate welding of special parts

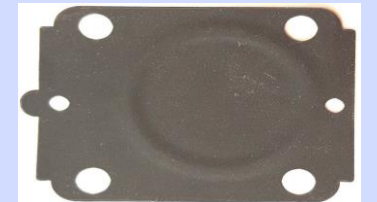


Marking with robotics & Quality control

3D Marking



Cutting of membrans





Machines & Applications: Mechanical Engineering/Energy and Automotive



Cutting and marking of printed circuit boards

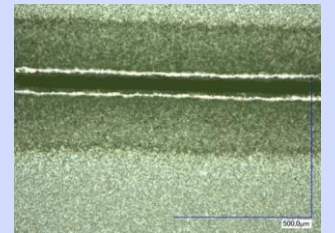


Welding of housing parts

Welding of safety-relevant components (automotive)



Particle-free cutting of electrode foils for Li-ion battery cells



Position-accurate all-round marking



Upcycling gives batteries a 2nd life

Previously recycling by shredding/melting:

- destroys valuable resources
- Generates waste

Circular economy:

- Waste turns into revenue
- 50% CO2 savings
- Price/ton becomes price/piece

Automated battery recycling and upcycling (2nd generation)

Discharge (no deep discharge)

Handling

Laser: opening of battery system & pack: cutting, welding, weakening glue

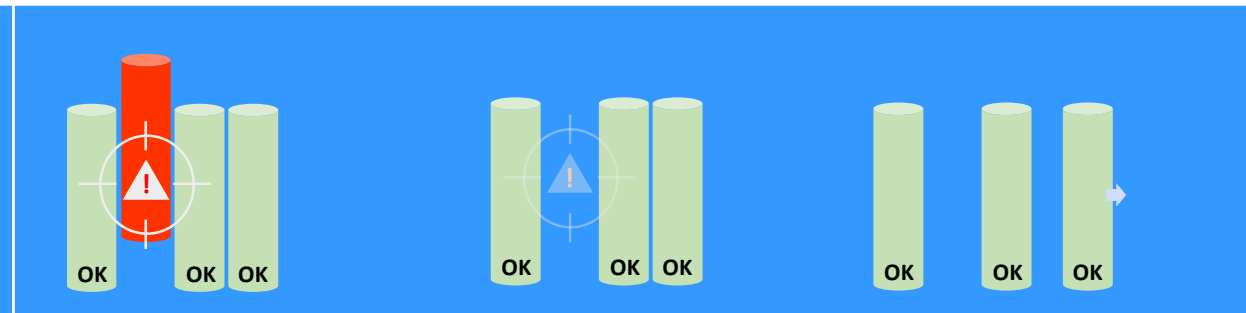
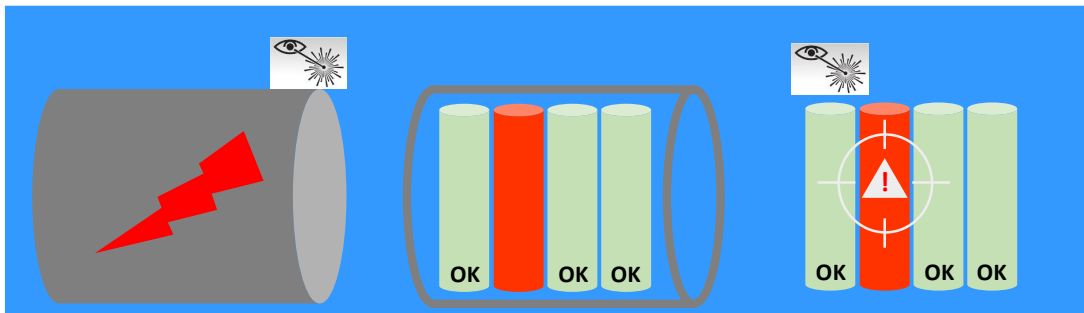
Mechanical unpacking of battery modules (crane/robot)

Laser: de-welding of cells, removing busbar, smoothing (μm)

Complete unpacking of cells

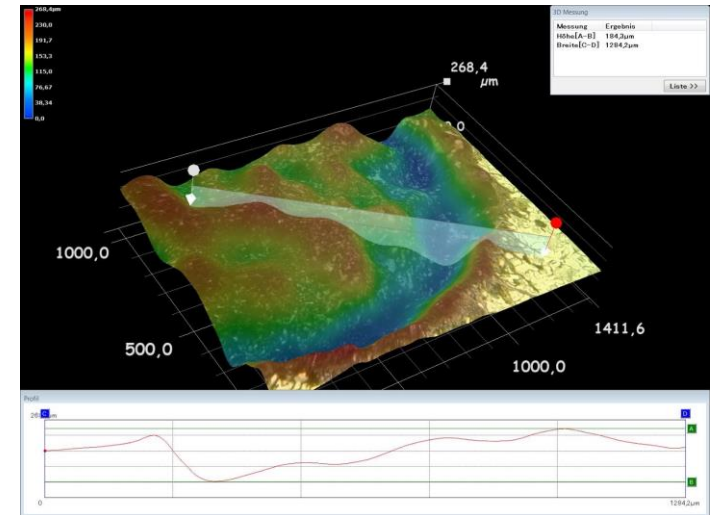
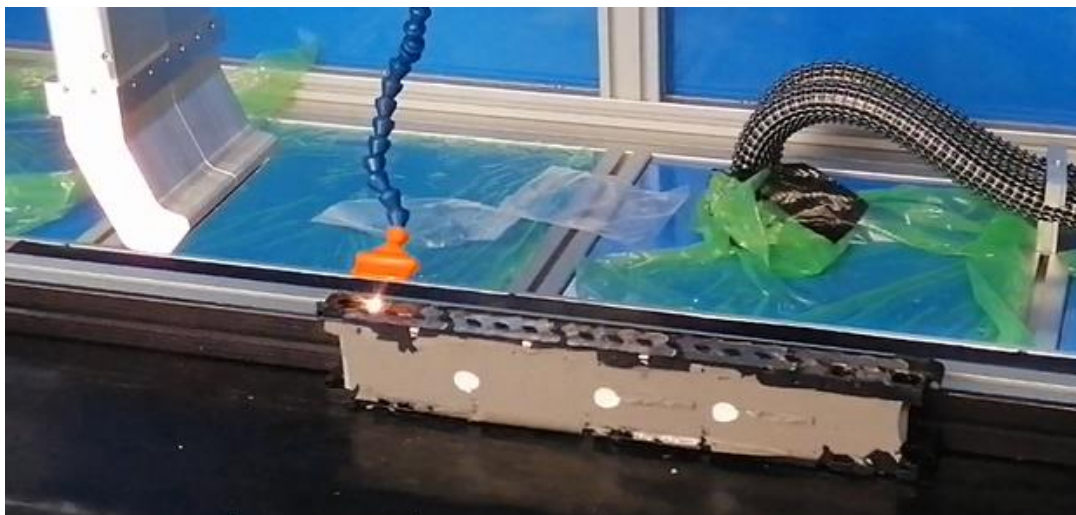
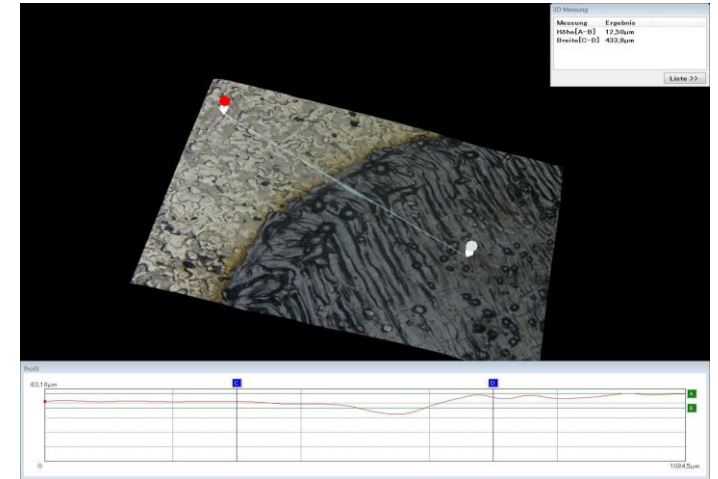
Quality control of cells by camera/sensors

Safety systems to detect and react in case of accidents





The Laser Process



For each **occasion**

**We hope we did catch
your interest and look
forward for a great
cooperation.**

The right **closing picture**

If needed we even mark your hair!

