



Industrial Heating

TruHeat VCSEL for e-mobility

Lower CO₂ emission
Thanks to higher efficiency

Fast processing
Thanks to high power density

Homogeneous heating
Direct heat treatment for high quality results

Precise control
Individually addressable emission zones

VCSEL based laser heat treatment for e-mobility applications Cost and time efficient solution with high process results

The TruHeat VCSEL systems as infrared laser source are suitable for applications within e-mobility, especially battery manufacturing. The VCSEL heating systems support processes such as drying of battery foils, sealing of pouch cells or perforating of foils. These laser sources deliver directed large-area beams within a compact and robust systems, that is easy to scale.

The highly accurate and homogeneous laser beam of the VCSEL-based laser source achieves highly efficient processes.

Considerable cost advantages compared to conventional lasers can be realized by direct illumination of the target area, without expensive optics or scanner systems. Indirect cost savings are achieved by the small footprint and fast processing.

TruHeat VCSEL systems for efficient laser heat treatment

Key features of industrial TruHeat VCSEL systems:

- High power infrared laser source based on VCSEL (Vertical Cavity Surface Emitting Laser) technology
- Scalable output power
- Accurate and direct heating processes
- Precisely controllable by individually addressable emission zones, enable tailored intensity profiles, in time and spatially
- Compact, robust and easy to integrate with small footprint
- Lower cost than conventional laser systems

Application examples in battery manufacturing

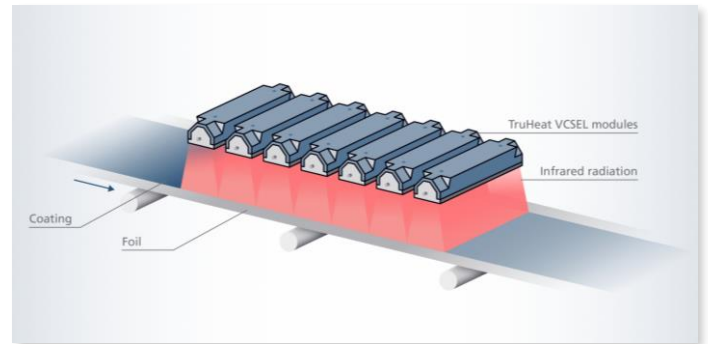
01

Battery foil drying

Efficient drying of active material coating

TruHeat VCSEL systems are used to efficiently dry slurry coatings. The infrared laser solution provides a direct drying process and homogenization of the thermal profiles. Not only is the process fast, but the heating can be controlled quickly to adapt to speed changes in the production line.

The entire production line benefits from the small footprint and reduction in oven length, resulting in overall cost savings.



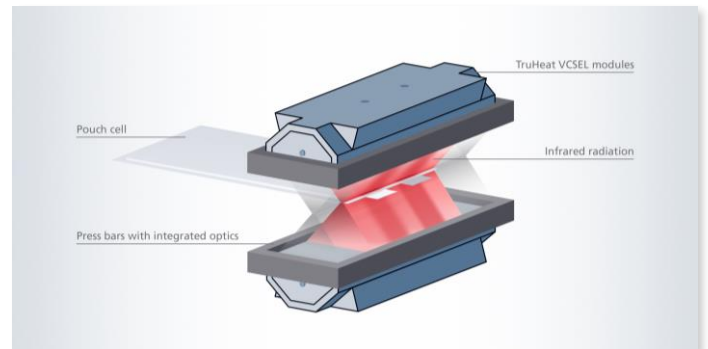
02

Pouch cell sealing

Fast sealing process with high process quality

VCSEL heating systems are an extreme fast heating source, which leads to three times faster processing compared to conventional technologies. High process quality with wrinkle-free sealed seams is achieved, as TruHeat VCSEL systems deliver highly precise processing results and homogeneous heating profiles. There is no color transformation or heat affection on the outer layer.

Depending on the cell format, the processing area of the VCSEL heating systems can be flexible adapted.



For more information visit

www.trumpf.com/s/vcsel-heating-systems

