HIGHvision

Advanced Machine Vision System

Maximize your productivity by combining Coherent remote laser processing heads with an in-house-developed machine vision system. The HIGHvision™ system implements state-of-the-art algorithms combined with bestfitting hardware, enabling highly reliable laser welding processes. The intelligent features of the system are intuitively integrated in the graphical user interface. An example is the user-defined deviation limit for plausibility checks that ensures the highest confidence on each weld. The result is an all-in-one ideal match of software and hardware that offers the fastest detection times at the highest accuracy. Furthermore, the system can be enhanced with AI-assisted algorithms to master the most challenging applications.

FEATURES

- All-in-one solution: Laser processing head and machine vision system combined with one unified software environment for precise control
- Fastest detection times using in-house-developed algorithms and real-time-based computing
- Configurable deviation limits for plausibility checks
- Application-tailored packages available to cover all possible use cases
- Machine vision system prepared for AI-assisted algorithms
- Industry 4.0/ IoT ready: Extensive PLC interface for data logging and full traceability

APPLICATIONS

- Fillet welds typically found in body-in-white and car door applications
- Battery manufacturing processes such as cell sealing, bus bar, and tab welding
- Hairpin welding in the production of electric motors

COHERENT

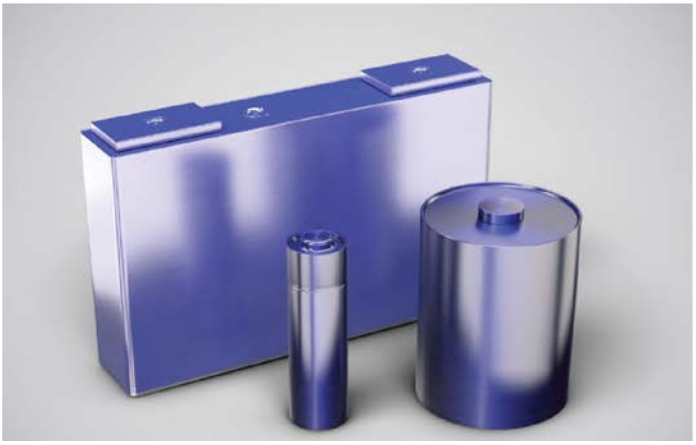
Designed for Coherent Remote Laser Welding Heads:

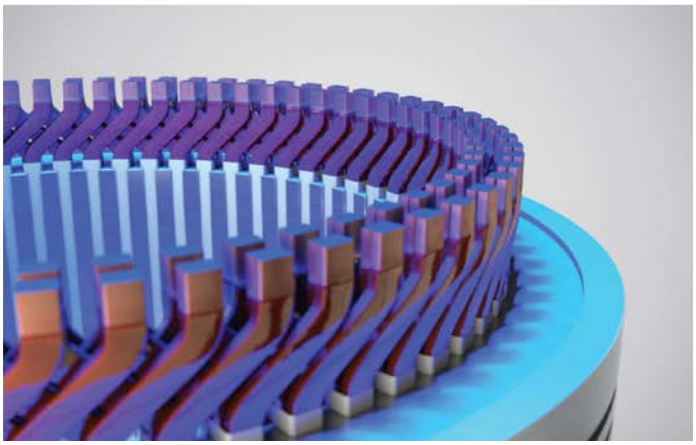
HIGHmotion 2D™

- Power level of up to 8 kW cw
- Optical magnification of 1.5, 2.25, 3, or 4
- Large work space of up to 251 x 372 mm^2

RLSK

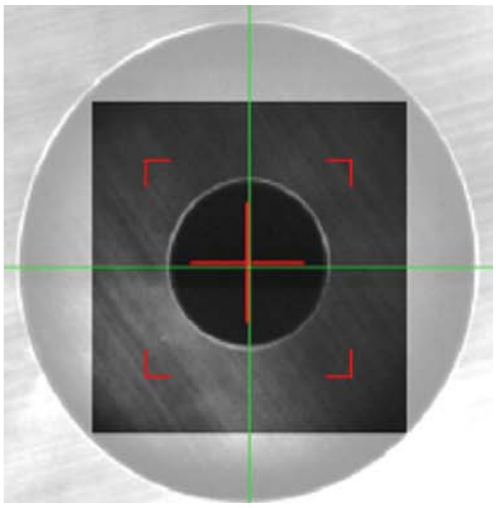
- Power level of up to 8 kW cw
- Optical magnification of 3
- Large work space of up to 233 x 344 x 200 mm^3





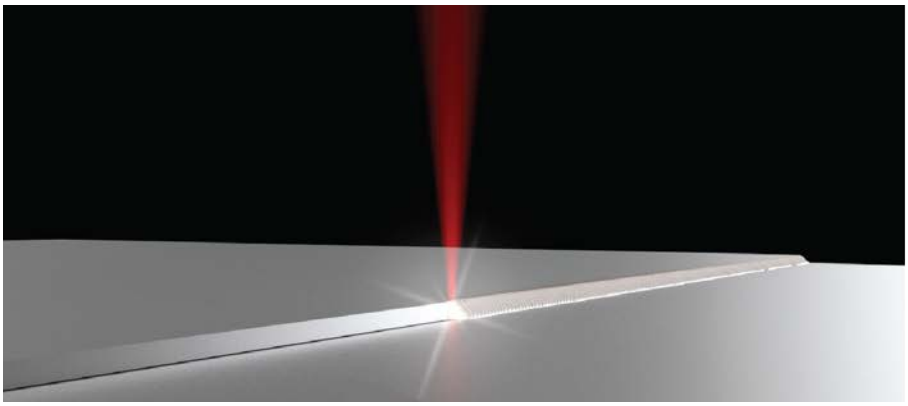
HIGHvision™ POSITION MATCHING

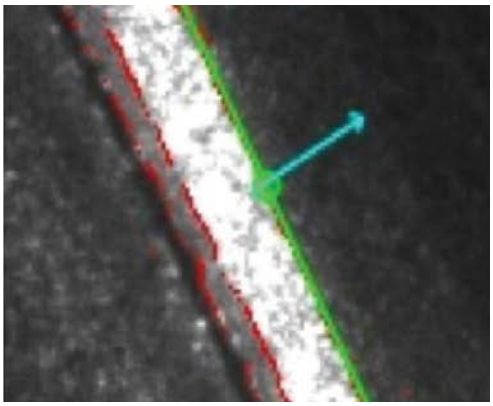
By using advanced image-processing algorithms, this machine vision package recognizes misalignments and orientation of the part and corrects the programmed seam position with high accuracy, ensuring the best weld quality. The system is able to recognize all kinds of features, making it the perfect choice for welding different types of batteries used in EVs, including prismatic, cylindrical, and pouch cells.



HIGHvision™ SEAM TRACKING

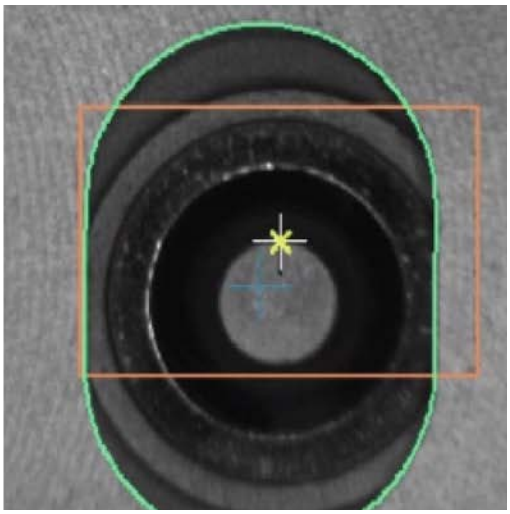
The seam tracking package is the optimal solution for fillet welding. The omnidirectional vision system recognizes a deviation on the programmed fillet position and automatically corrects the laser's beam position "on the fly." The precise position correction can be achieved over the entire workspace and at welding speeds of more than 10 m/min. This vision system is the perfect solution for reliable and efficient B-pillar, car door, and seat welding applications.





HIGHvision™ SHAPE RECOGNITION

Built around algorithms to recognize a user-defined shape on the captured image, this package makes the system capable of correcting the pre-programmed seam position in relation to the found shape. This translates into higher productivity by simplifying the part's positioning preparation tasks. The user can freely define the shape's type and size; typical examples are circles, squares, and ovals.



HIGHvision™ HAIRPIN DETECTION

The hairpin detection package enables automatic position detection and correction of hairpins in just a few milliseconds, making it one of the fastest detection systems available on the market. Once the system has detected the position of the hairpins and the gap between them, the system automatically adjusts the seam parameters to ensure the highest weld quality. This hairpin detection package is an excellent match for electric motor welding.