



## Optimizing weld seams with profile measurements

Inrotech A/S in Denmark relies on sensors from Micro-Epsilon to achieve optimal quality of weld seams in a fully automatic process.

The company has developed a welding robot called "Inrotech-Crawler" which calculates welding processes in advance before carrying them out. Therefore, the robot uses the precise measurement values provided by the powerful laser profile scanner from Micro-Epsilon.

A scanCONTROL 2900 scanner is fixed on the Inrotech-Crawler and detects the geometry of the seam to be welded before the actual welding process starts. Only these high precision profile measurements enable the process to be automated. Due to its compact, lightweight design with integrated controller, the laser profile scanner is ideally suited to this measurement task. Various connection possibilities offered by the SDK (Software Development Kit) enable the customer to directly transmit the profile data calibrated to their own software via scanCONTROL DLL. The Weldlogic technology from Inrotech then calculates, among other things, the number of welding passes, the position of the weld seams, the weld speed and the oscillation width. Directly after the calculation, the Crawler automatically performs the welding process.

The welding robot enables the scanning of weld geometries such as plates or curves with various surface characteristics. Based on the optimal exposure time regulation and high resolution, the sensor reliably measures almost any measurement object.

Designed for mobile applications, the robot is ideal for different environments, e.g., for welding tasks in the oil & gas industry (pipelines), offshore, shipbuilding, wind turbines and building construction.

A resistant sensor is the base requirement in this and many other environments. The laser profile scanner from Micro-Epsilon is ideally suited to these requirements. In addition, the scanCONTROL 2900 model is integrated into a protection housing provided by the customer.

### Requirements for the measurement system

- Measuring width: 100 mm
- Reference resolution in Z: 12  $\mu$ m
- Measuring rate: 300 Hz

### Ambient conditions

- Sensor is integrated in mobile device, depends on its operation site

### System design

- Sensors: LLT2900-100
- Customer protection housing
- Software: Connection to customer PC using scanCONTROL DLL

### Advantages

- Space-saving solution: compact sensors with integrated controller
- Reliable measurement results for a smooth process
- Support for software integration and setting optimization at the customer