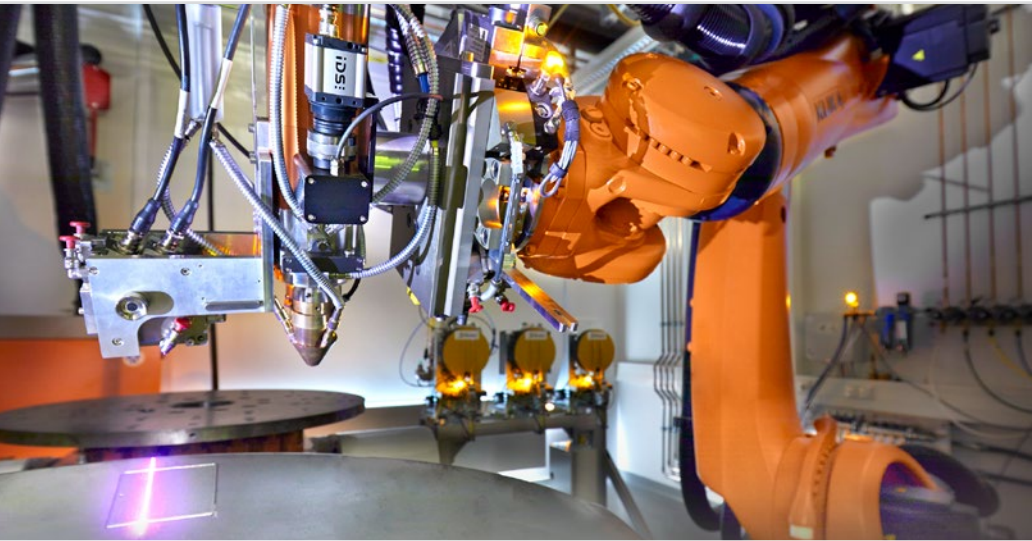




Automated machining of workpieces

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Production-related fluctuations, tool wear or inaccuracies during clamping can occur during the mechanical processing of workpieces. These cause deviations in component shape, position and orientation. 3D scanners from Micro-Epsilon are used to detect these deviations. This means that the machining process can be individually adapted in the automation process for each component. The laser profile scanners are integrated directly into the machine, optimizing the process and thus ensuring consistently high product quality.

Micro-Epsilon scanCONTROL laser profile scanners are ideal for machine integration and automation due to their high accuracy, compact design and universal application options. In addition to a powerful laser profile scanner for the detection of the component geometry, corresponding evaluation software is also used. The company BCT GmbH from Dortmund has developed the OpenSCAN software solution for this purpose, which enables the machine-integrated digitization of workpieces in combination with 3D scanners from Micro-Epsilon. Components are detected directly in the processing machine in terms of position and shape.

Optimal machining processes can be determined from the data obtained. Time-consuming reclamping processes can be eliminated and intermediate stages of the manufacturing process can be included. This combination enables quality inspection before, during and after machining. In addition, subsequent work steps can be adapted to the actual geometry. The measurement data serve as a starting point for the complete process chain, which can consist of additive (e.g. laser cladding) and subtractive (e.g. milling) manufacturing processes. Numerous forms of processing, from component repairs and the precise post-processing of additively manufactured components to final quality control, can be implemented quickly and precisely using this system.

Requirements for the measuring system

- Reliable measurements on various surfaces
- Output of raw data

Ambient conditions

- Sensor integrated in processing cell, conditions thus variable

System design

- scanCONTROL sensors
 - Measuring range and type depending on application
- OpenSCAN software from BCT GmbH
- External PC for evaluation of raw data and further planning of welding tracks

Advantages

- Precise 3D measurement for optimal component processing