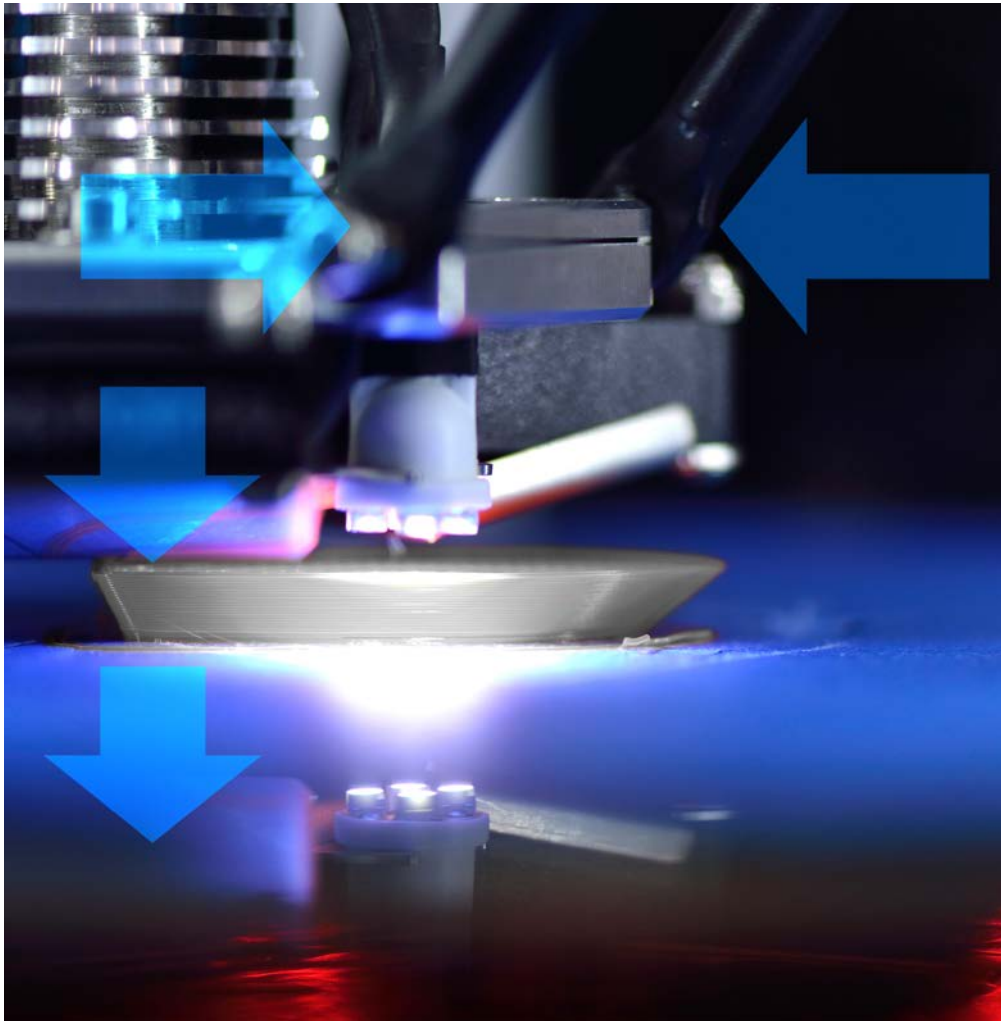
Sensors & Applications

Additive Manufacturing / 3D Printing

MICRO-EPSILON



More Precision

Monitoring the tilted squeegee

Capacitive displacement sensors monitor the position of the squeegee. Two synchronized sensors measure with high resolution both ends of the squeegee to provide exact statements about its tilt angle. This is to ensure that the powder bed has been pulled off evenly.

Sensor: capaNCDT 6200

capaNCDT 6200

- Capacitive multi-channel measuring system for machine position monitoring
- Displacement and distance measurements down to the nanometer with measuring ranges from 0.05 to 10 mm
- High frequency response for dynamic measurements
- Ideal for long-term measurements
- Multi-channel controller for synchronous detection of multiple measuring positions

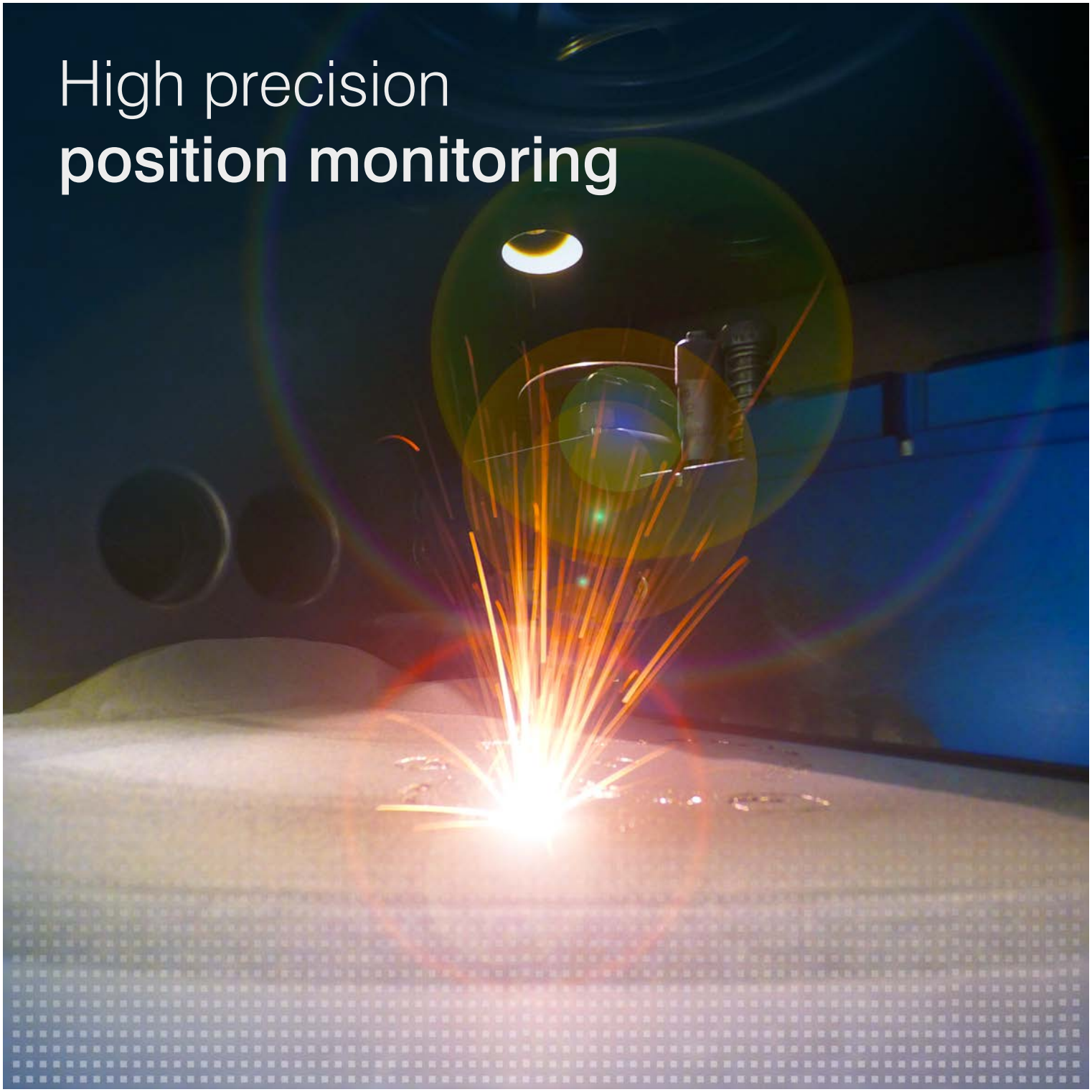
eddyNCDT 3005

- Miniature eddy current measuring system, ideal for integration into plant and machinery
- Non-contact displacement and distance measurements with measuring ranges from 1 to 6 mm
- High accuracy and high frequency response
- Pressure-resistant versions up to 2000 bar, resistant to oil, dust & dirt

Orientation and positioning of the building platform

With selective laser sintering, the building platform is lowered after each melting cycle by a defined value which corresponds to the required Z resolution. Inductive displacement sensors based on eddy currents monitor this building platform in order to allow the print head to be aligned in parallel.

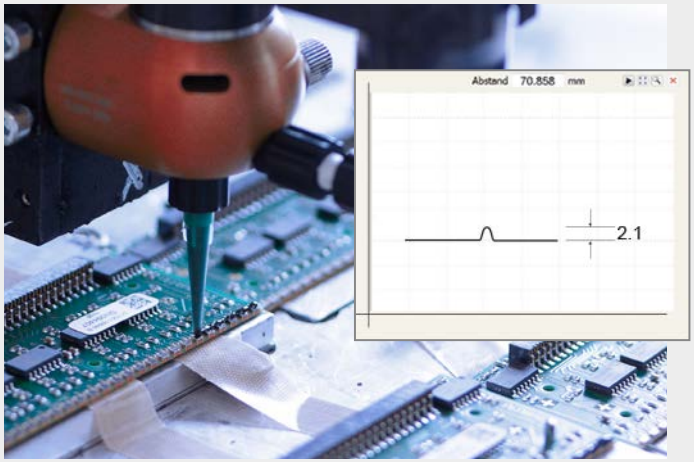
Sensor: eddyNCDT 3005


High precision
position monitoring

Distance control
of print heads

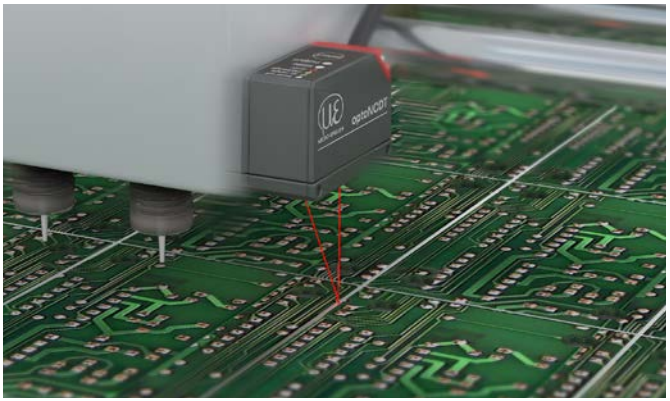
optoNCDT 1420

- Powerful laser displacement sensor for print head control
- Measuring rate of 4 kHz for precise and high speed measurements
- Measuring ranges: 10 mm - 500 mm
- Compact sensor design with integrated controller
- Robust and long-life design



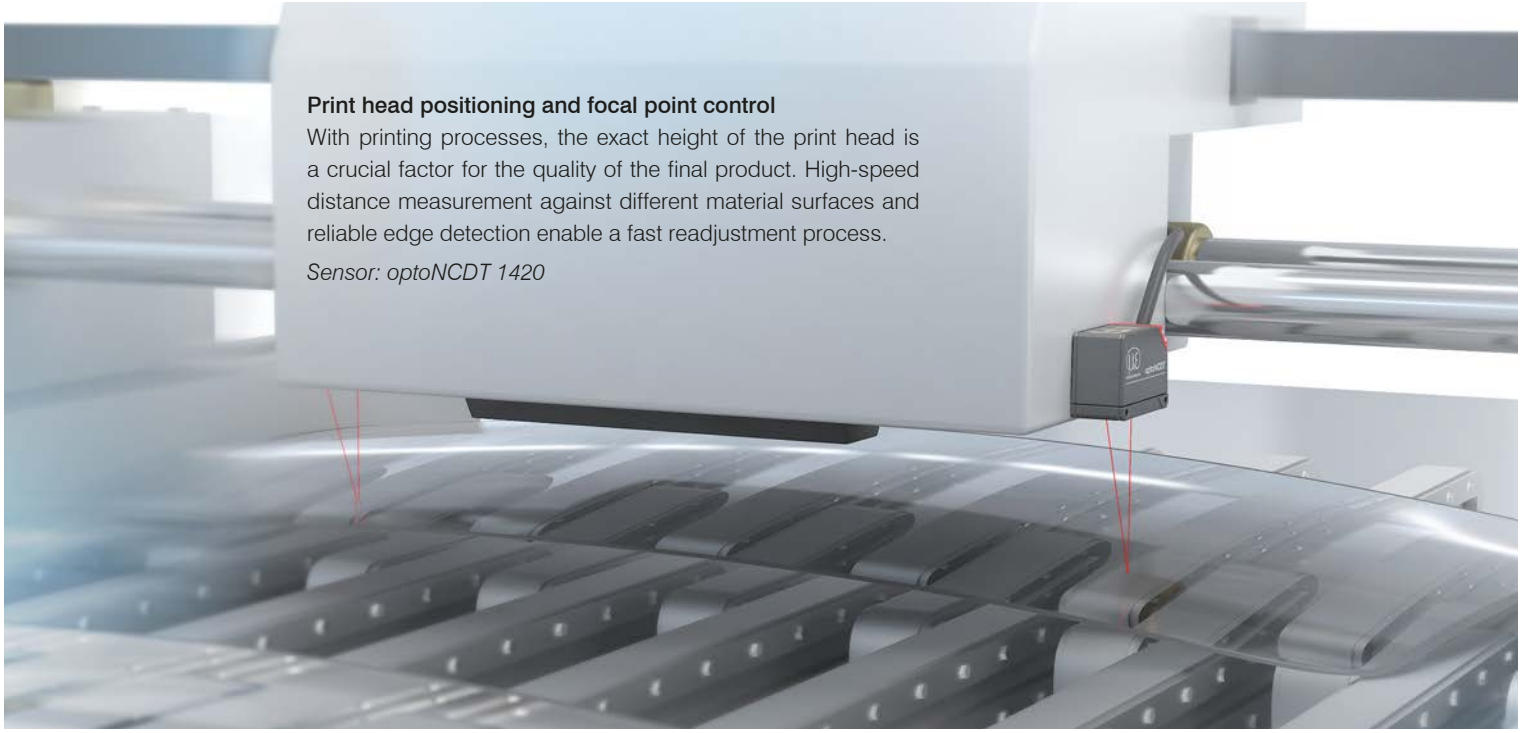
Glue bead measurement in dispensing systems
After the reflow soldering process, glue is applied on some points to protect the circuit. The glue bead thickness is a critical factor that is reliably inspected using laser sensors.

Sensor: optoNCDT 1420



High-resolution fine positioning when printing PCBs
With printing, soldering and assembling processes of printed circuit boards, the exact height positioning of the print head is crucial for a flawless process. optoNCDT laser sensors enable precise positioning of the print head. Regardless of surface reflections, these sensors provide precise measurement results which are used to adjust the height and to detect the edges.

Sensor: optoNCDT 1420



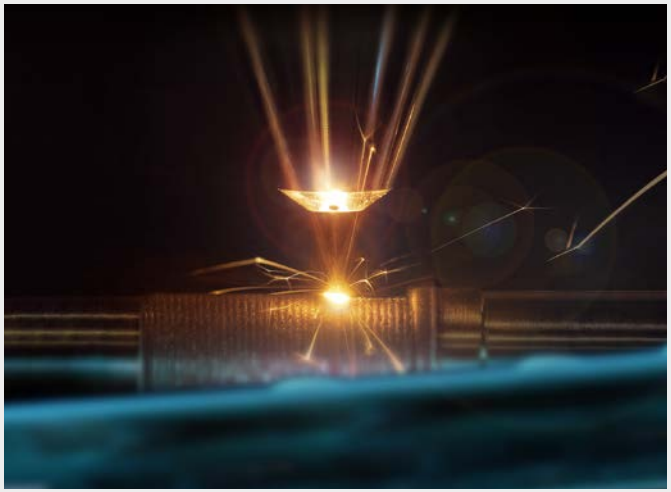
Print head positioning and focal point control
With printing processes, the exact height of the print head is a crucial factor for the quality of the final product. High-speed distance measurement against different material surfaces and reliable edge detection enable a fast readjustment process.

Sensor: optoNCDT 1420

Quality monitoring
& Inspection

scanCONTROL

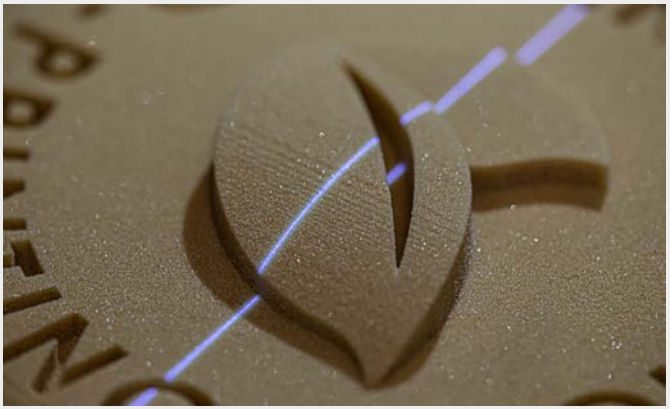
- Compact laser scanner with integrated controller
- High profile frequency for dynamic measurements
- Synchronization enables multi-scanner applications
- Various measuring ranges
- Blue Laser Technology for high precision measurement of various surfaces



Deposition control of coatings
In coating processes based on laser cladding or laser deposition welding, laser scanners from Micro-Epsilon monitor the coating. Their high profile resolution enables reliable monitoring of the weld deposition.
Sensor: scanCONTROL 2610

Robot path calculation in repair welding processes
In order to calculate the robot path, scanCONTROL laser scanners determine the areas that need to be welded. Providing a high profile resolution and profile frequency, these laser scanners enable quick repairs.
Sensor: scanCONTROL 2700

3D scan prior to laser cladding / laser deposition welding
Laser scanners from Micro-Epsilon are used to detect the contour during laser cladding. These scanners detect the exact contour of the object before the weld is deposited. The 3D data is used to exactly determine the guidance of the weld head.
Sensor: scanCONTROL 2900



CAD comparison of the printed component
In order to monitor their production quality, printed components are inspected using Blue Laser scanners. The components are moved past the scanners with a traversing unit. A 3D image is produced from the laser profiles and then compared with the CAD data.
Sensor: scanCONTROL 3060BL

Sensors and Systems from Micro-Epsilon

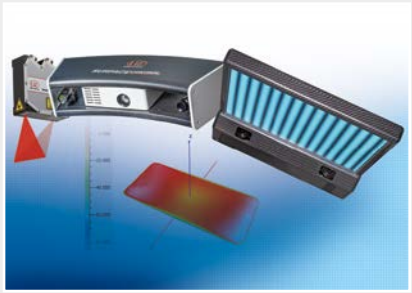
Sensors and systems for displacement, distance and position

Sensors and measurement devices for non-contact temperature measurement

Measuring and inspection systems for metal strips, plastics and rubber

Optical micrometers and fiber optics, measuring and test amplifiers

Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection

More Precision

Whether it is for quality assurance, predictive maintenance, process and machine monitoring, automation or R&D – sensors from Micro-Epsilon make a vital contribution to the improvement of products and processes. High precision sensors and measuring systems solve measurement tasks in all core industries – from machine building to automated production lines and integrated OEM solutions.

MICRO-EPSILON

www.micro-epsilon.com