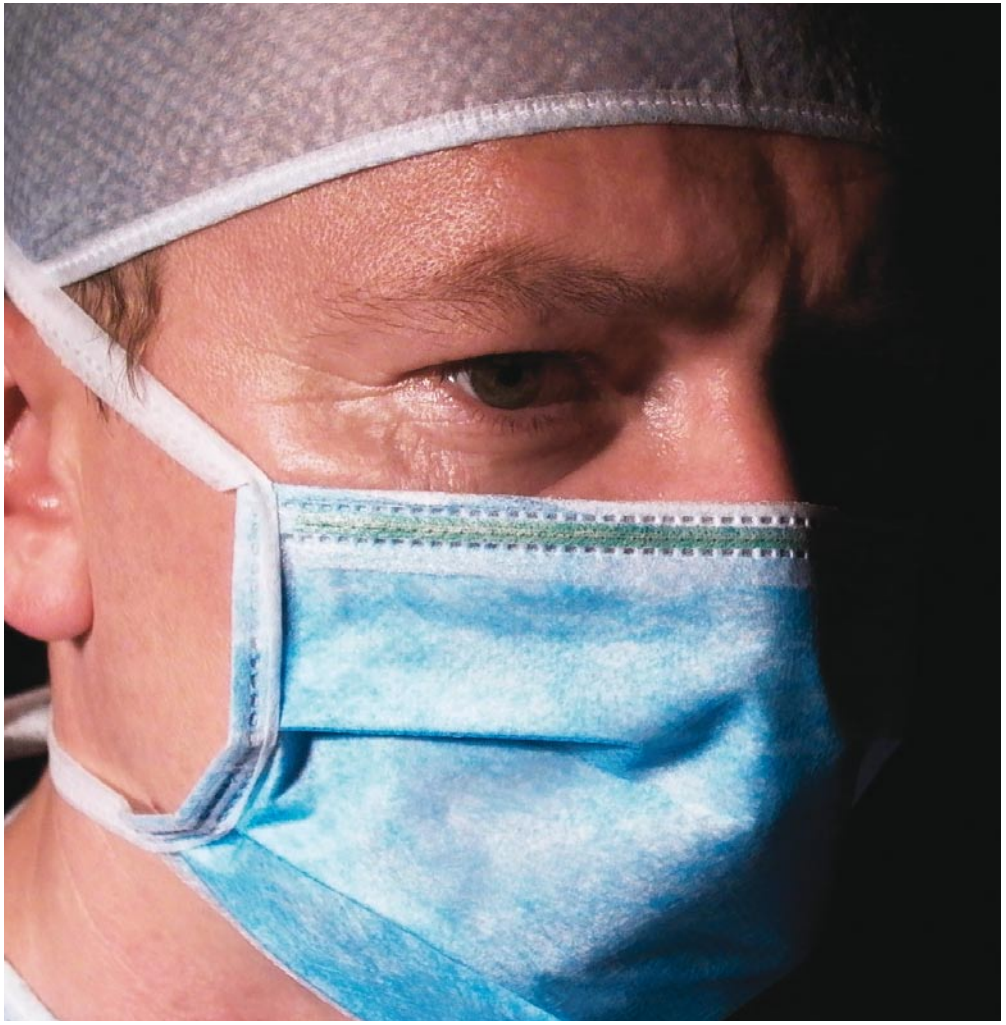
More precision.

MICRO-EPSILON



Measurement technology for medical, pharmaceutical & biotechnological applications

About us

Micro-Epsilon is a medium-sized, family-run company, a leader in the field of measurement technology. For more than 40 years, we have been a top performer, providing our customers with unsurpassed solutions in precision measurement and inspection. Our product portfolio ranges from sensors for non-contact displacement and distance measurement, IR temperature measurement and colour recognition systems to systems for dimensional measurement and defect detection.

Sensors for medical technology, pharma and biotech

Sensors and measurement technology are being used increasingly in the growth industries of medical technology, pharmaceuticals and biotechnology, where they are enhancing quality and efficiency in a sustainable way. Micro-Epsilon is constantly developing measurement solutions for these sectors, in which it represents a competent partner. An overview of some successful projects completed by us are described in this brochure.

Partnerships with customers

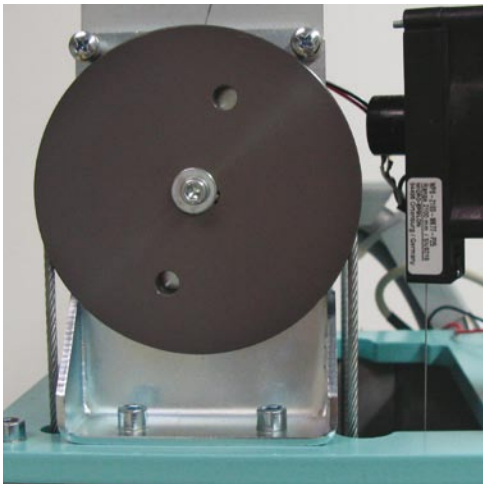
With above-average R&D activity, a high degree of expertise and a broad network of partnerships, we are creating innovative sensor products of the highest precision. Partnerships are essential in achieving such levels of excellence. That is why we view our customers as business partners. We want to win – together – with them.

Position measurement on X-ray machines

Task: Aligning the X-ray tubes to the camera

Solution: Position measurement of all moving components for the synchronised control of the X-ray machine

Sensor: wireSENSOR



Special feature:
Ultra sharp images via perfectly aligned technology

Projection position - mammography device

Task: Automatically approaching projection positions for specific images

Solution: Displacement measurement of the movement, in order to use the data in the controller.

Sensor: wireSENSOR

Special feature:
Support for the assistant in aligning the mammography device

Recumbent position on patient beds

Task: Storing and retrieving recumbent positions
Solution: Integration of sensors into joints for position measurement
Sensor: wireSENSOR

Special feature:
Due to the measuring wire, the sensors can be accommodated at any position in the bed

Position of the surgical microscope

Task: Absolute movement correction of a surgical microscope

Solution: Integration of high-resolution capacitive sensors that detect any change in position

Sensor: capaNCDT capacitive sensors

Special feature:
High visual stability of images during the operation

Recumbent position during computer tomography

Task: Measurement of the recumbent position for 3D reconstruction of the images

Solution: Integration of high resolution wire sensors in the patient bed

Sensor: wireSENSOR

Special feature:
Any desired 3D section can be created with the volume data set

Angular position of the assistance robot

Task: Support of operator during minimal invasive procedures
Solution: Automatically moving the endoscope on the assistance robot
Sensor: wireSENSOR

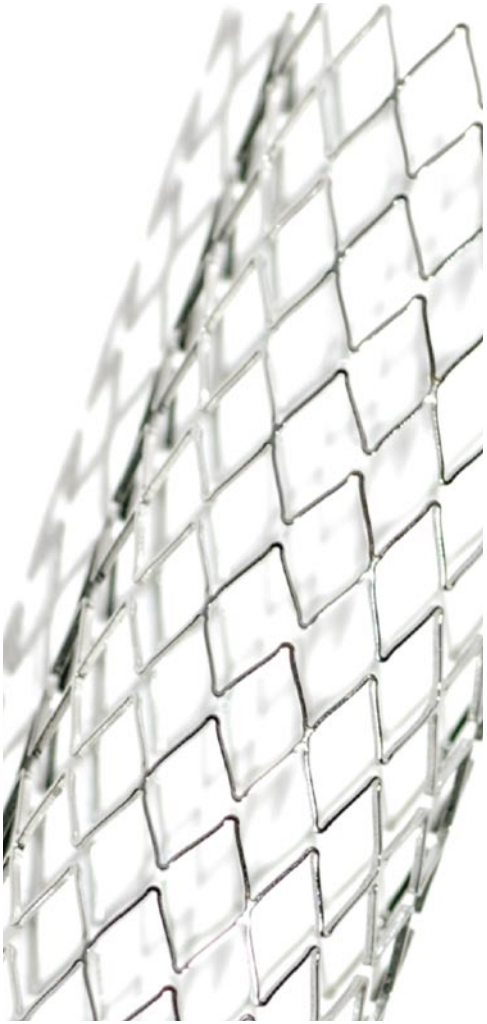
Special feature:
The sensors are X-ray-neutral and housed below the patient bed

Recording the diameter of stents

Task: Quality assurance of stents after production

Solution: Random testing of diameter and monitoring the wire of the stents

Sensor: confocalDT confocal sensors



Special feature:
Exact wire thickness ensures the function and quality of the stents

Lattice structure of stents

Task: Internal inspection of the lattice structure of stents
Solution: Checking the structure visually using endoscopes
Sensor: Eltrotec endoscope

Special feature:
Checking the stents for burrs and structural distortions

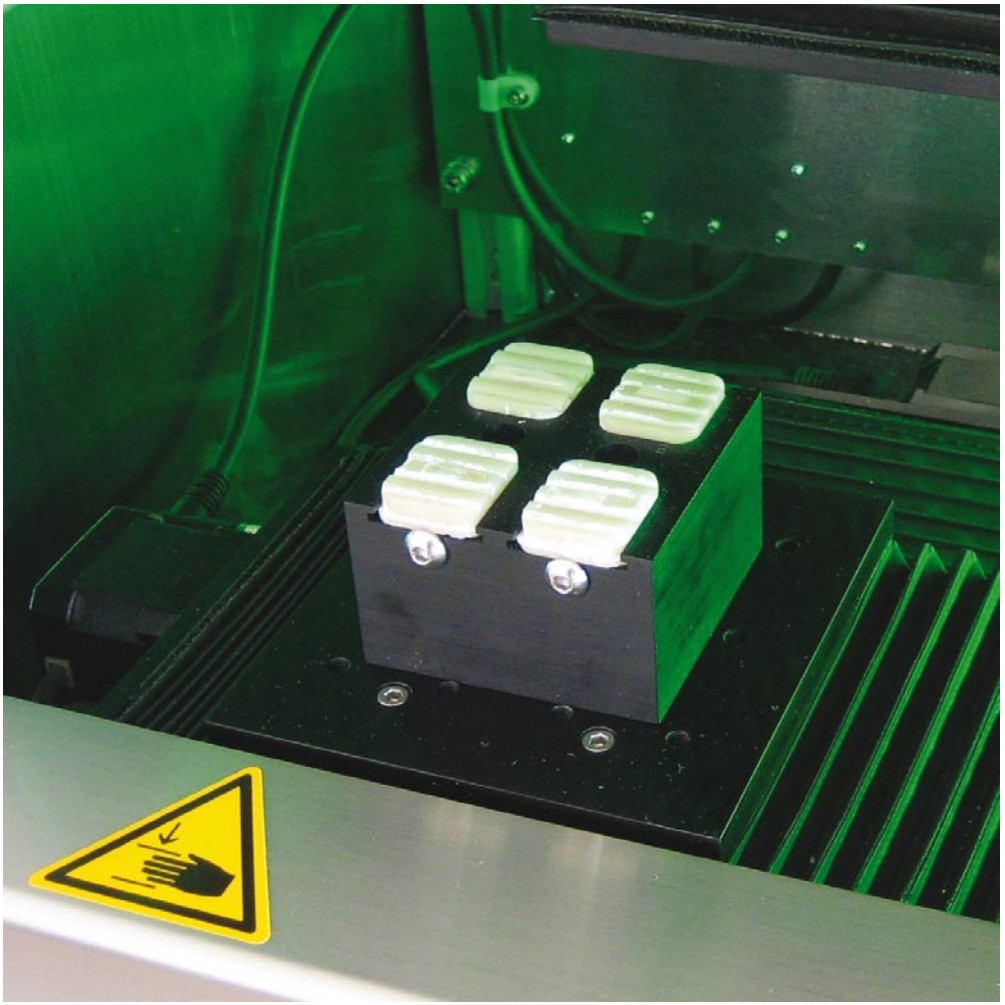
Measuring dental samples

Task: Investigation of the occlusal (contact with an opposing tooth) surfaces of dental implants and checking for signs of wear

Solution: High-resolution digitalisation of the implant using a displacement sensor

Sensor: confocalDT confocal sensor

Special feature:
Up to four implants can be scanned at the same time



Monitoring the quality of arch wire

Task: Monitoring arch wire performance after automatic bending

Solution: Contour test on three axes using micrometers

Sensor: optoCONTROL ODC optical micrometer

Special feature:
Faster treatment time due to perfectly bent arch wires

Foil temperature on the dental thermoforming unit

Task: Temperature measurement of dental film for thermoforming

Solution: Non-contact temperature measurement of the foil using infrared sensors

Sensor: thermoMETER CS OEM temperature sensor

Special feature:
The miniature sensor hardly affects the design of the device

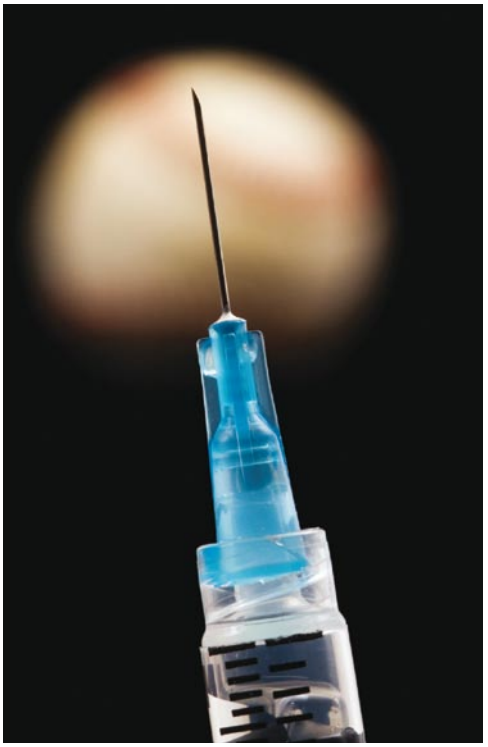
Motion measurement in rehab and fitness equipment

Task: Logging the movement of the device
Solution: Position measurement and counting the movements made
Sensor: wireSENSOR

Special feature:
Optimal training through logging of training data

Inserting needles in cannulas (tubes)

Task: Determining the ideal time for needle adherence
Solution: Temperature monitoring with infrared sensors
Sensor: thermoMETER temperature sensors



Special feature:
Firm fit of the needle in the cannula (tube)

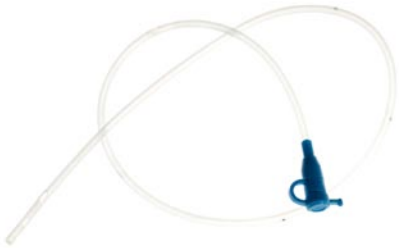
Colour assignment with cannula holders

Task: Assignment of the cannula holder to the correct cannula diameter
Solution: Colour measurement of the cannula holder during production
Sensor: colorSENSOR colour sensor

Special feature:
Automatic sorting of parts in production

Detection of hose thickness

Task: High quality due to consistent hose wall thicknesses
Solution: Layer-thickness measurement using a non-contact sensor
Sensor: confocalDT confocal sensor



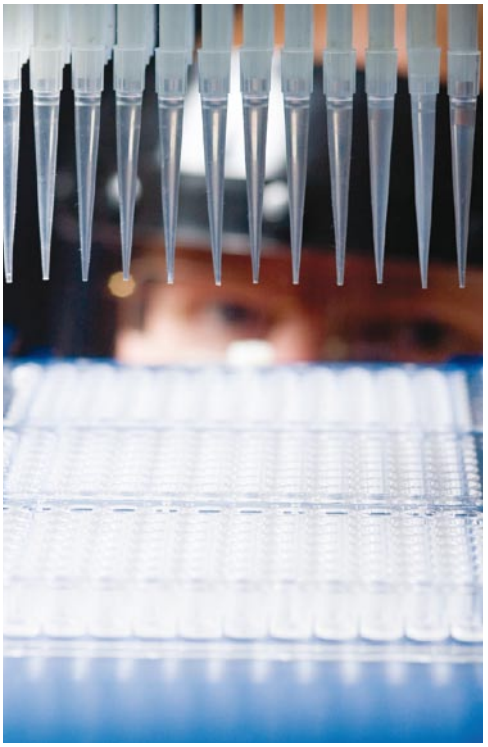
Special feature:
One sensor is sufficient for checking multiple layers in the hose

Fill level in a microtitre

Task: Accurate dosing while automatically pipetting microtitres

Solution: Micrometer accuracy filling level measurement using a confocal sensor

Sensor: confocalDT confocal sensor

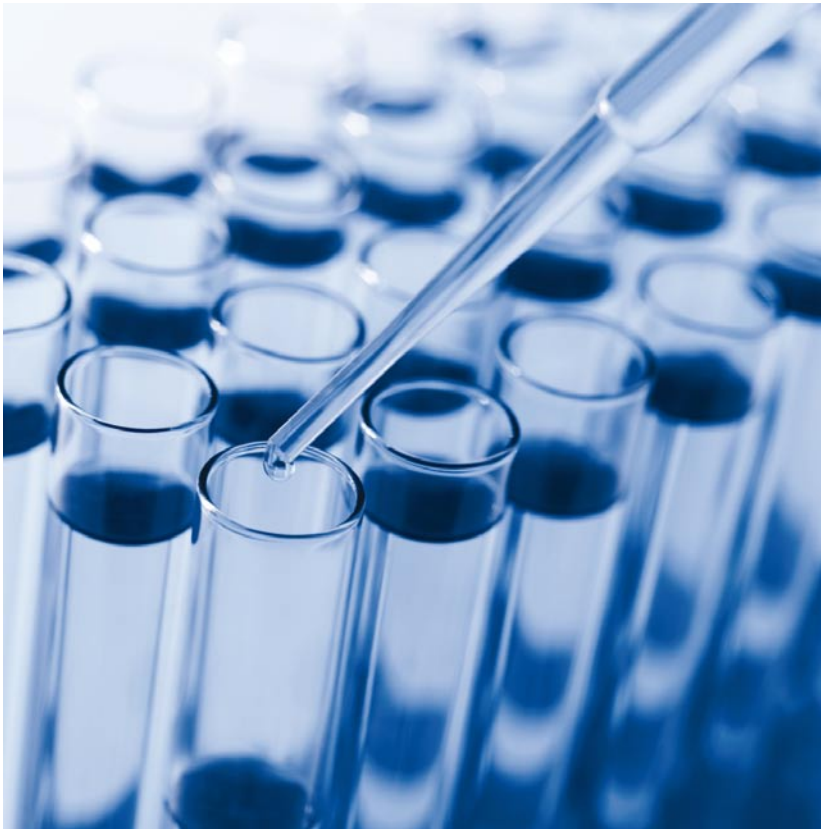


Special feature:
Measurement of all liquids

Contour of glass capillaries

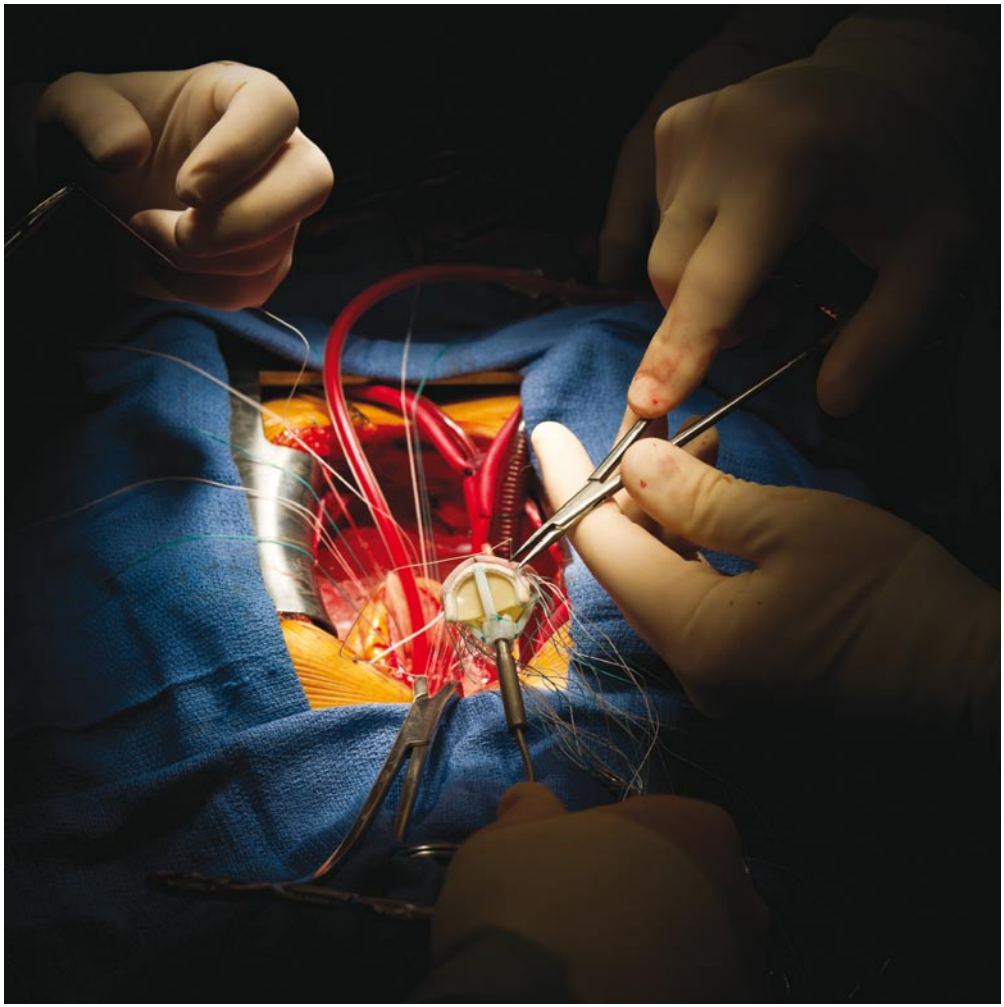
Task:	Quality assurance of the production of glass capillaries
Solution:	Checking the diameter and layer thickness of glass capillaries
Sensor:	confocalDT confocal sensor

Special feature:
Measuring and classifying several layers using one sensor



Measuring membrane thickness

Task: Functional assurance of the membrane for ventricular pumps
Solution: Non-contact thickness measurements during production
Sensor: confocalDT confocal sensor



Special feature:
Consistently high quality and service life of the membrane

Checking the wear of tablet presses

Task: Constantly stamping pressed tablets

Solution: Displacement measurement system integrated in the tablet punch to check the wear of the punch

Sensor: optoNCDT laser sensor

Special feature:
Accurate determination of the system's maintenance intervals to minimise costs

Determining tablet size

Task: Monitoring tablet size during production
Solution: Height measurement and classification of pressed tablets
Sensor: optoCONTROL ODC optical micrometer

Special feature:
Constant tablet size over a long period

Testing the active ingredients of tablets

Task: Constant distance of the Raman microscope from the tablet
Solution: Precise surface topography of the tablet using a confocal sensor
Sensor: confocalDT confocal sensor

Special feature:
Due to the high resolution, the distance from the microscope to the tablet is kept exactly constant

Foreign bodies in the tablet packaging process

Task: Recognising foreign bodies between the individual layers of the blister packs

Solution: Recognising tablet parts and foreign objects, ejecting defective blister packs

Sensor: mainSENSOR magneto-inductive sensor

Special feature:
Foreign bodies are detected indirectly via a lever

Recognising the tablet colour

Task:	Putting the correct tablets in the correct packs
Solution:	Checking the colour of the tablets before packaging
Sensor:	colorSENSOR colour sensor

Special feature:
„Duds“ are found and can be rejected

Temperature measurement of batteries

Task: Monitoring the temperature of high-performance batteries

Solution: Non-contact temperature sensor for monitoring the assembly of the battery

Sensor: thermoMETER temperature sensor

Special feature:
No defective batteries are manufactured or delivered

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