

More precision.



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

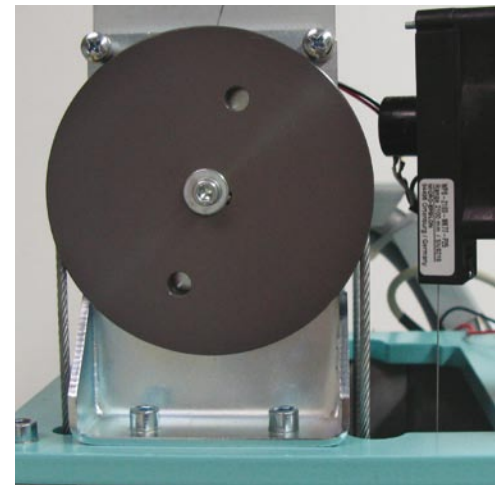
With above-average R&D activity, a high degree of expertise and a broad network of partnerships, we are creating innovative sensor products of the highest precision. Partnerships are essential in achieving such levels of excellence. That is why we view our customers as business partners. We want to win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

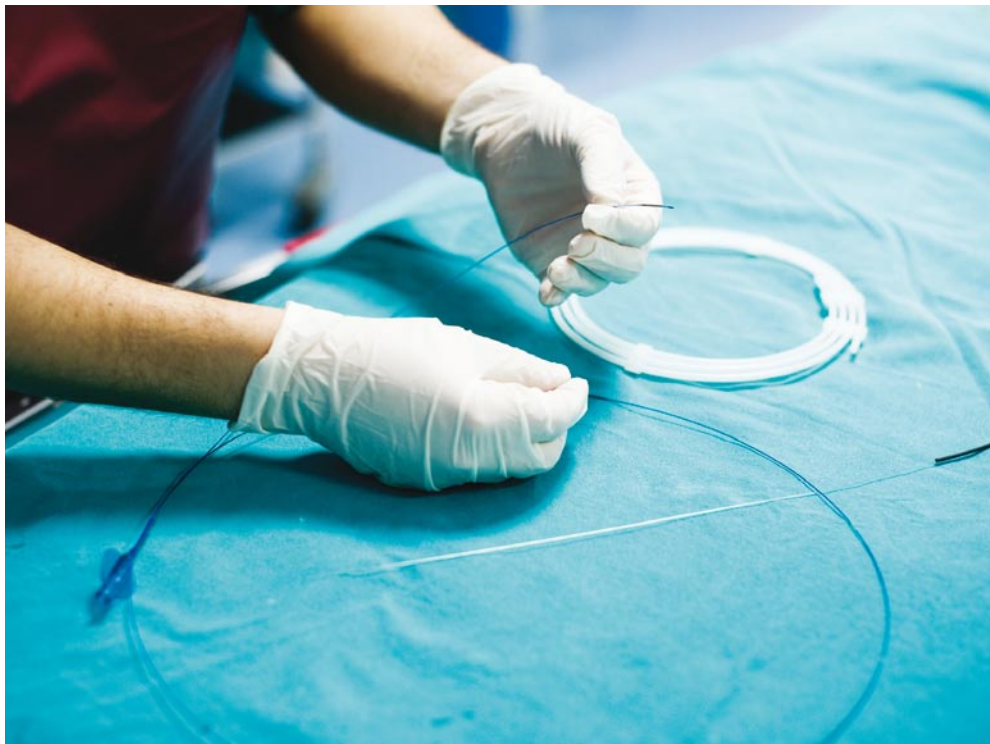
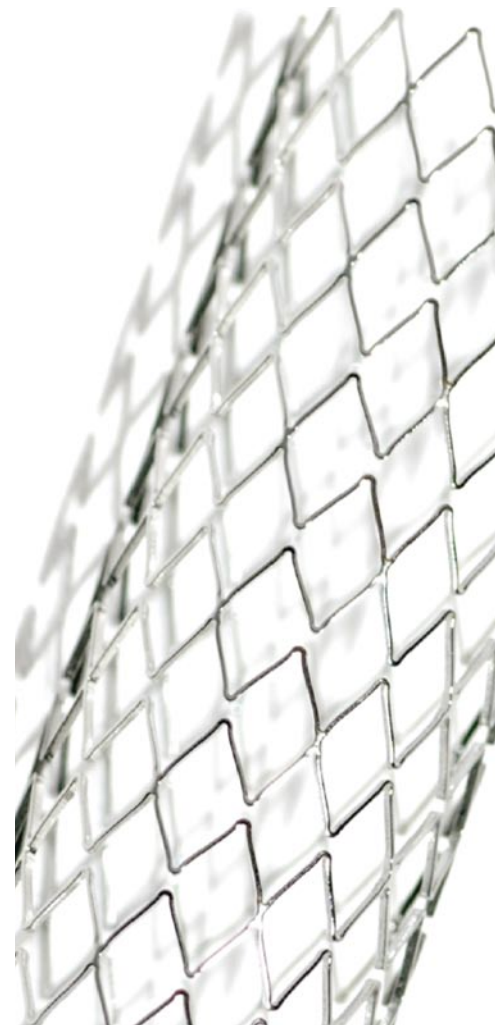


Recording the diameter of stents

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



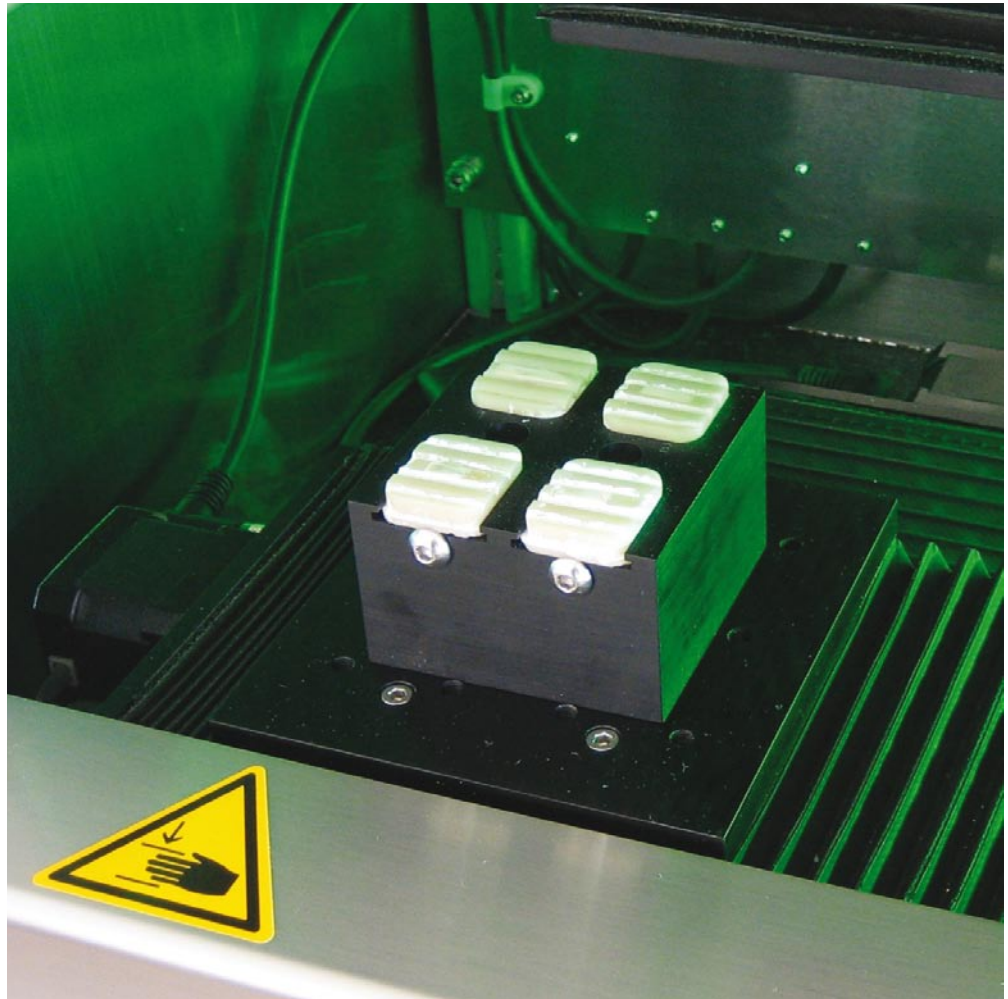
Special feature:
Checking the stents
for burrs and structural
distortions

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



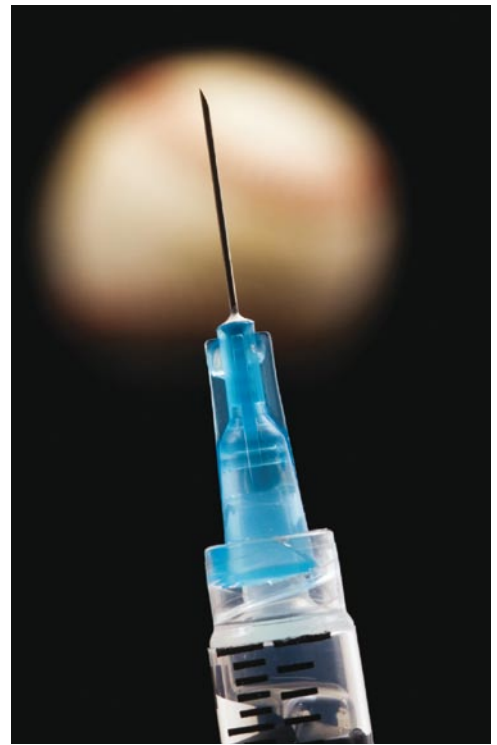
Special feature:
Optimal training through logging
of training data

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

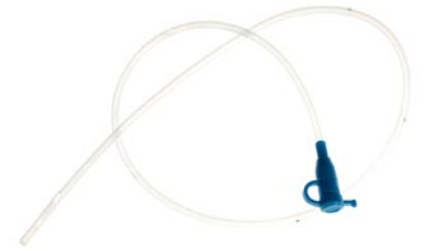


Detection of hose thickness

Task: High quality due to consistent hose wall thicknesses

Solution: Layer-thickness measurement using a non-contact sensor

Sensor: confocalDT confocal sensor



Special feature:

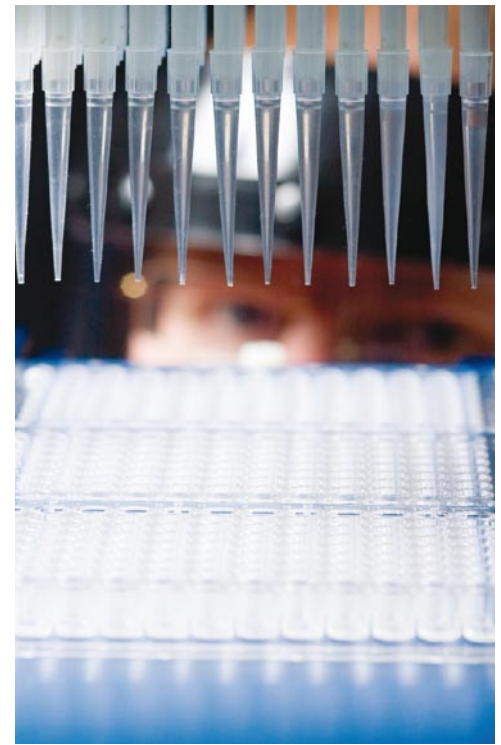
One sensor is sufficient for
checking multiple layers in
the hose

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

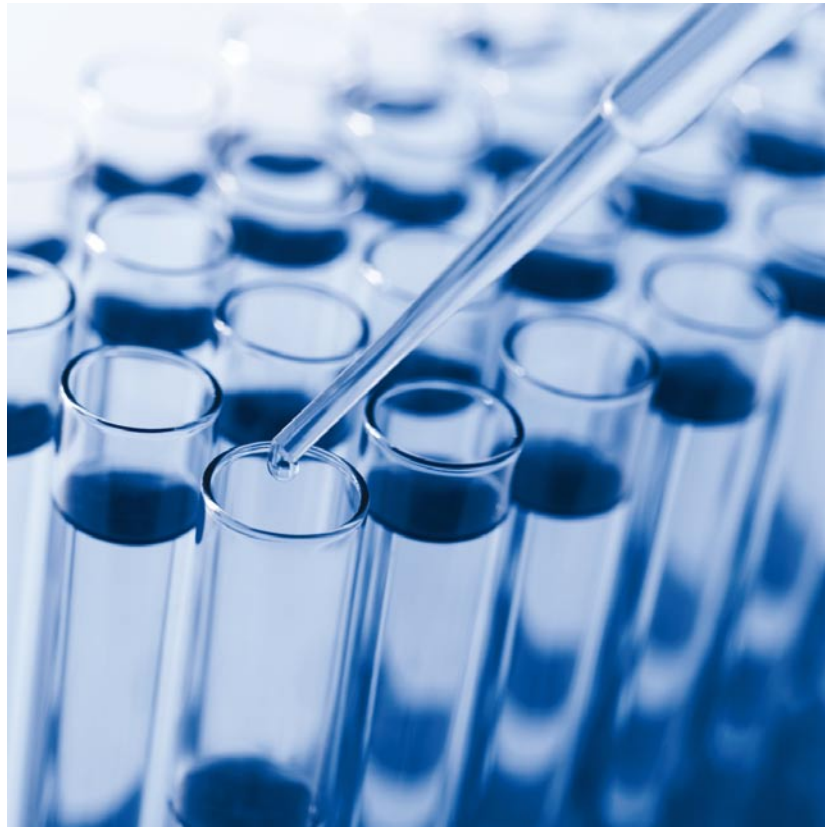
Contour of glass capillaries

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

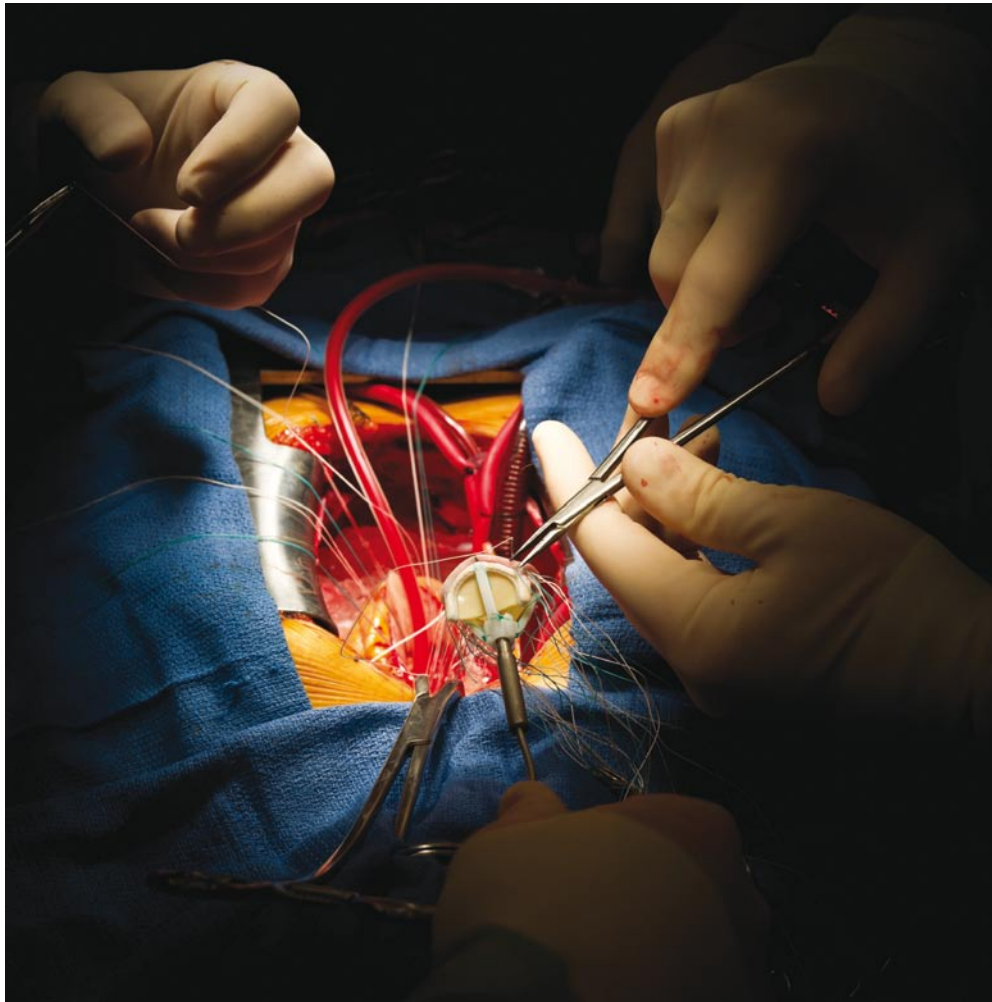


Measuring membrane thickness

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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