Sensors & Applications

Medical Technology & Production

MICRO-EPSILON

More Precision

About us

Micro-Epsilon is a medium-sized company group and a leader in measurement technology.
For more than 50 years, we have delivered top performance by offering unsurpassed solutions when it comes to precise measurement and testing. Our product portfolio ranges from sensors for non-contact displacement and distance measurements, IR temperature measurement and color recognition systems to systems for dimensional measurements and defect detection.

Sensors for medical technology, pharma & biotech

Sensors and measurement technology are increasingly used in the growth sectors of medical technology, pharmaceuticals and biotechnology, where they improve quality and efficiency in a sustainable way. As a competent partner for these industries, Micro-Epsilon is constantly developing new measurement solutions. This brochure provides an overview of some successfully implemented solutions.

Partnerships with customers

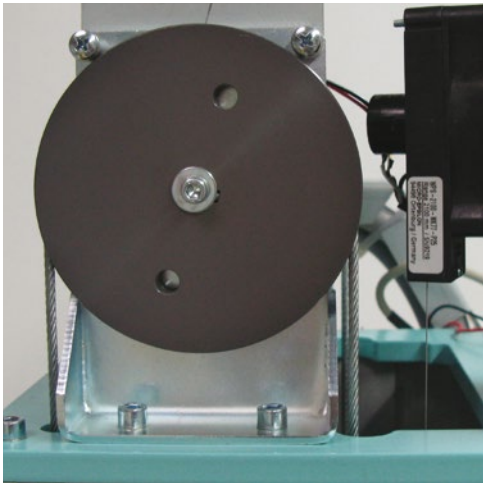
With above-average R&D activity, strong expertise and a large network of cooperation partners, we create innovative sensor products with the highest precision. Partnerships are essential in achieving such levels of excellence. Therefore, we understand that our customers are our business partners, which is a win-win situation for both parties.

Position measurement in X-ray devices

Task: Aligning the X-ray tube to the camera

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

Sensor: wireSENSOR



Advantage:
Perfectly aligned technology for ultra-sharp images

Projection position of mammography devices

Task: Automatic approach of projection positions for certain images

Solution: Displacement measurement of the movement in order to use the data for the control system

Sensor: wireSENSOR

Advantage:
Supports the assistant in aligning the mammography device

Positioning of examination couches

Task: Saving and retrieving the sitting and reclining positions

Solution: Integration of sensors into joints for position measurement

Sensor: wireSENSOR

Advantage:
The measuring wire allows for the sensors to be positioned in the couch as desired.

Position of the operating microscope

Task: Absolute movement correction of the microscope

Solution: Integration of high-resolution capacitive sensors which detect the change in position

Sensor: capaNCDT sensors

Advantage:
High visual stability of images during the operation

Positioning of CT tables

Task: Position measurement of the CT table for 3D reconstruction of images

Solution: Integration of high-resolution draw-wire sensors into the CT table

Sensor: wireSENSOR

Advantage:
Any 3D section can be created with the volume data set.

Angular position of the robot assistant

Task: Support the surgeon in minimal invasive procedures

Solution: Automatic movement of the endoscope on the robot assistant

Sensor: wireSENSOR

Advantage:

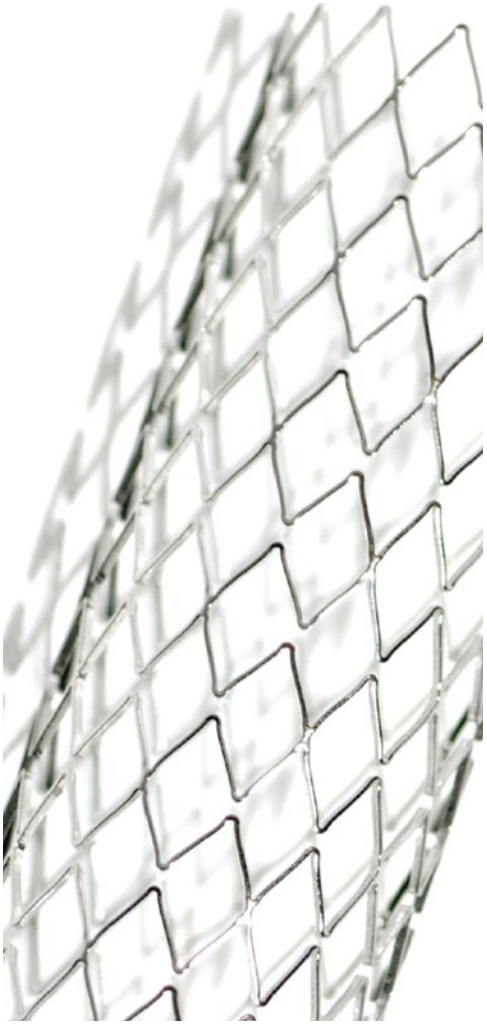
The sensors are X-ray-neutral and mounted below the OR table.

Detecting the diameter of stents

Task: Quality assurance of stents after production

Solution: Random diameter and wire inspection of the stents

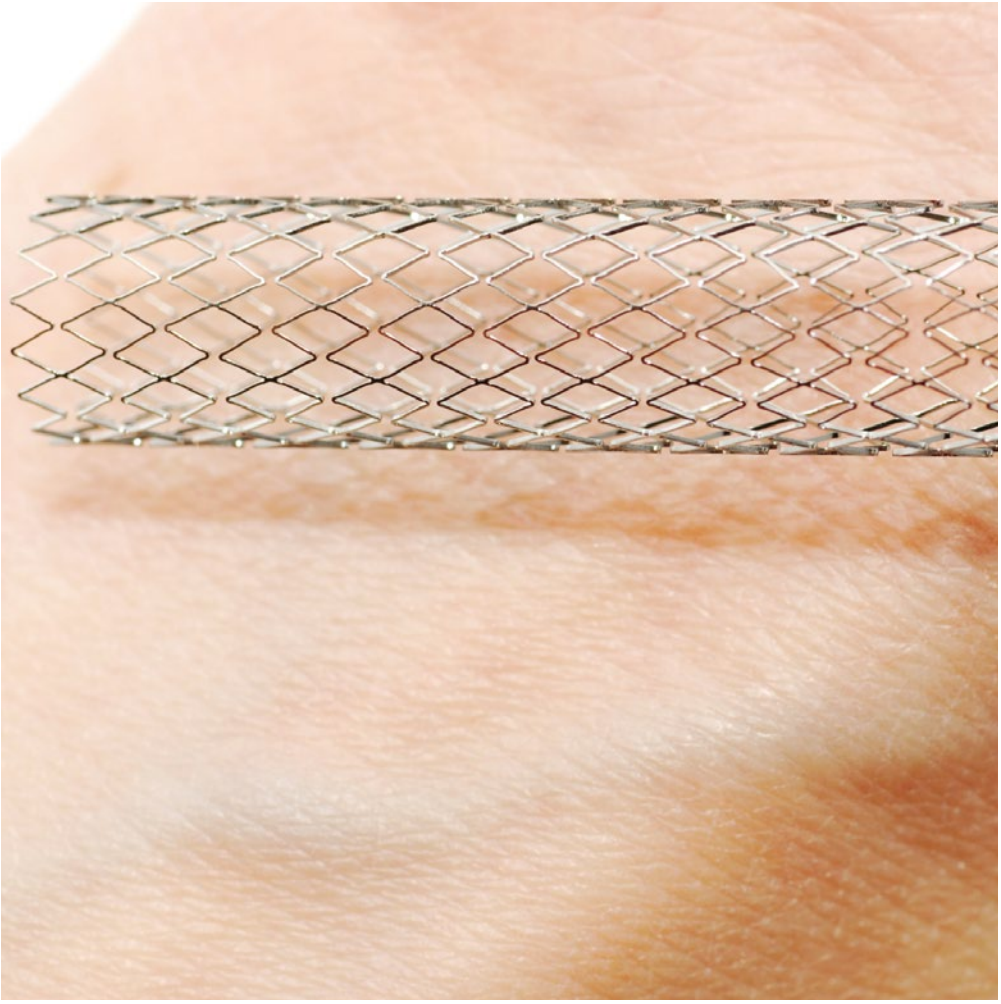
Sensor: confocalDT sensors



Advantage:
The exact wire thickness ensures function and quality of the stents.

Mesh structure of stents

Task: Internal inspection of the stent mesh
Solution: Endoscopes perform a visual inspection
Sensor: Eltrotec Endoscope



Advantage:
Checking the stents for burrs and structural distortions

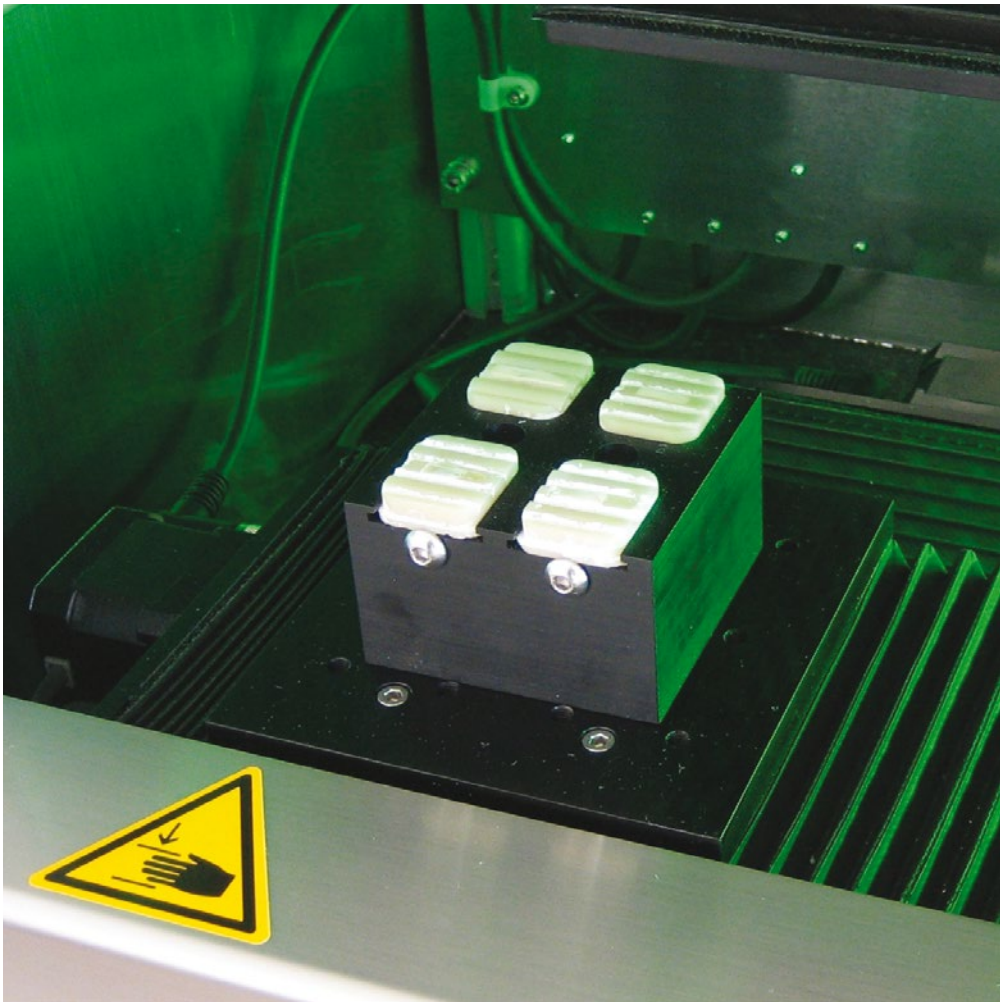
Measurement of dental implants

Task: Inspecting the chewing surfaces of dental implants and checking for wear

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

Sensor: confocalDT sensor

Advantage:
Up to four implants can be scanned simultaneously



Quality monitoring of arch wires

Task: Inspection of the orthodontic wire after automatic bending

Solution: Contour inspection across three axes with micrometers

Sensor: optoCONTROL ODC optical micrometers

Advantage:
Shorter treatment time due to perfectly bent arch wires

Foil temperature in the dental thermoforming unit

Task: Detecting the temperature of the dental foil for thermoforming

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

Sensor: OEM temperature sensor thermoMETER SE

Advantage:
The miniature sensor hardly affects the design of the device

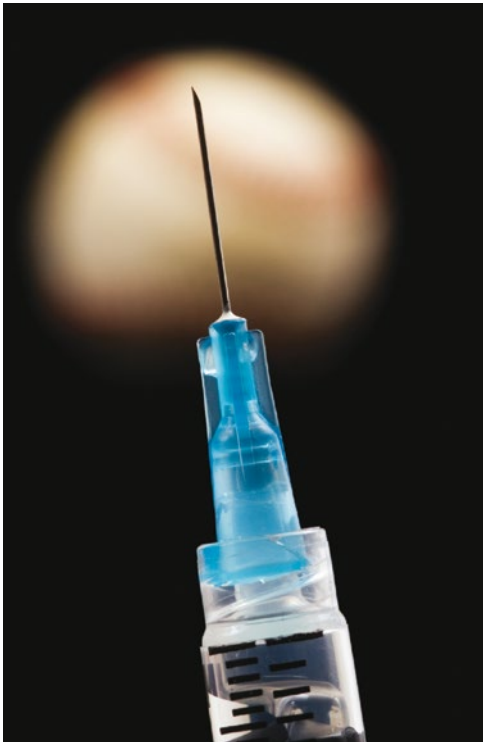
Movement measurement in rehab and fitness equipment

Task: Logging the movement of the device

Solution: Displacement measurement and counting of the movement

Sensor: wireSENSOR

Advantage:
Training log for optimal results



Inserting needles into cannulas

Task: Determining the ideal time to glue the needle into the cannula
Solution: Temperature monitoring with infrared sensors
Sensor: thermoMETER temperature sensors

Advantage:
Firm fit of the needle in the cannula

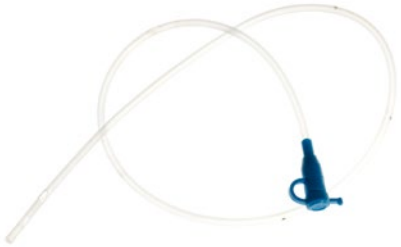
Color assignment with cannula holders

Task: Assign the cannula holder to the correct cannula diameter
Solution: Color measurement of the cannula holder during production
Sensor: colorSENSOR

Advantage:
Automatic sorting of parts during production

Detection of the infusion tube thickness

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



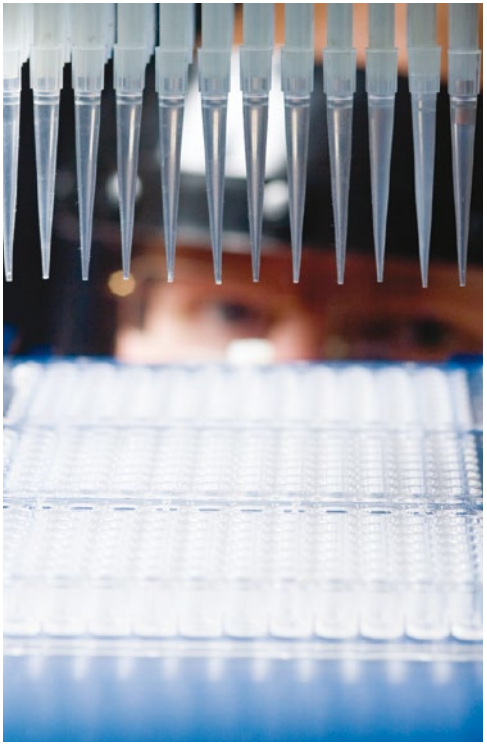
Advantage:
Only one sensor is required to check several tube layers

Level measurement in the microtiter

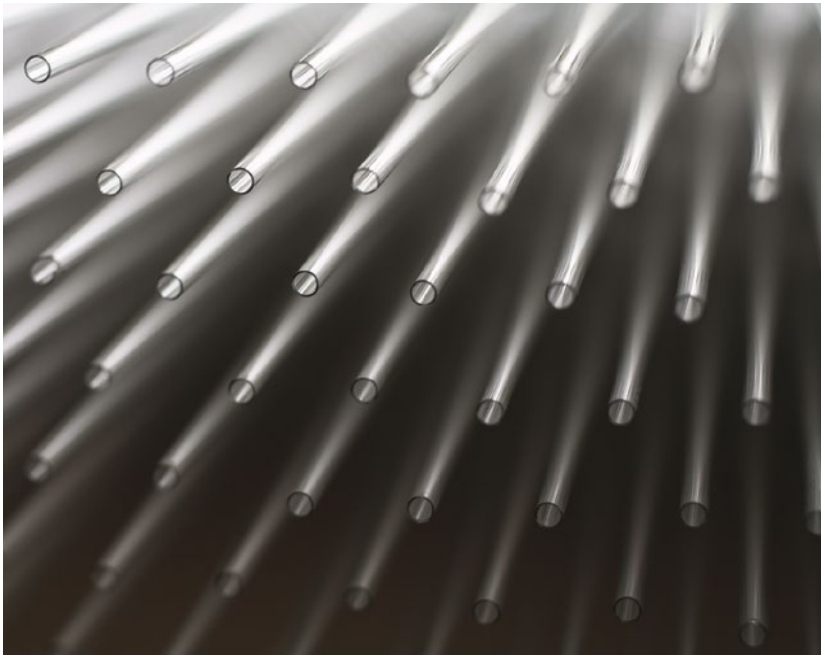
Task: Precise dosing during automatic pipetting of microtiters

Solution: Micron-precise filling level measurement using a confocal sensor

Sensor: confocalDT sensor



Advantage:
Measurement of all types of liquids



Contour of glass capillaries

Task: Quality assurance of glass capillaries

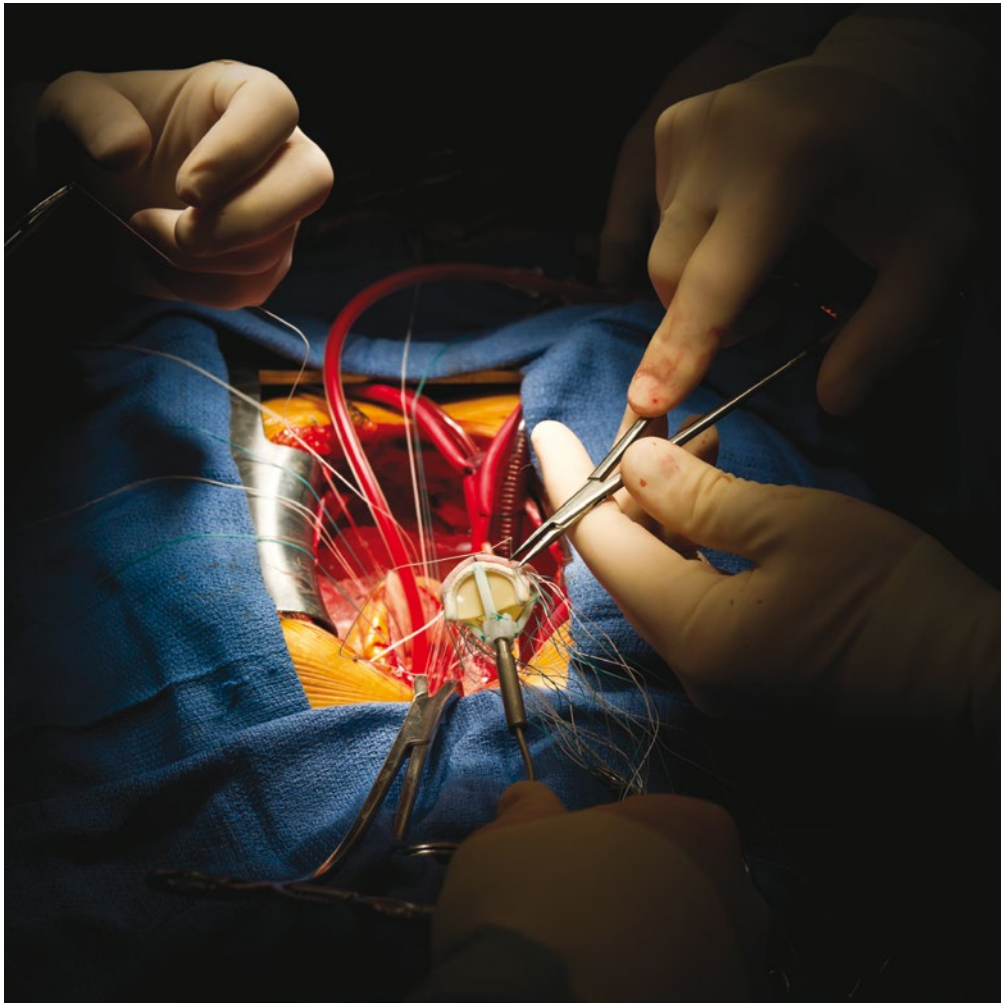
Solution: Diameter and layer thickness inspection of glass capillaries

Sensor: confocalDT sensor

Advantage:
Measuring and classifying several layers using only one sensor

Measuring the diaphragm thickness

Task: Functional assurance of the diaphragm for LVAD pumps
Solution: Non-contact thickness measurement during production
Sensor: confocalDT sensor



Advantage:
Consistently high quality and service life of the diaphragm

Checking the wear of tablet presses

Task: Constant compression of the pressed tablets

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

Sensor: optoNCDT laser sensor

Advantage:
Precise determination of the system's maintenance intervals to save costs

Detection of the tablet size

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

Advantage:
Constant tablet size over long periods of time

Testing the active ingredients of tablets

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

Advantage:
The high resolution enables to keep a constant distance between microscope and tablet.

Foreign bodies in the tablet packaging process

Task: Recognition of foreign bodies between the blister layers

Solution: Recognition of tablet fragments and foreign bodies, rejection of defective blisters.

Sensor: Magneto-inductive mainSENSOR

Advantage:
A lever directly detects the foreign bodies

Tablet color detection

Task: Sorting tablets for the correct packaging

Solution: Color check of the tablets before packaging

Sensor: colorSENSOR

Advantage:

Identification and rejection of faulty items

Temperature measurement of batteries

Task: Monitoring the temperature of high-performance batteries

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

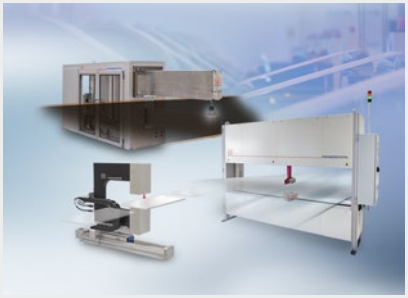
Sensor: thermoMETER temperature sensor

Advantage:
Prevents the production and delivery of defective batteries

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.

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