



Optical metrology within medical technology

Metrology within medical technology – sounds reasonable, because especially with highly sensitive parts, which are placed into the human body, there is absolute necessity for accuracy.

Especially within medical technology there are the highest standards of safety and regulations regarding quality. Those parts are not only very expensive but also fragile.

To measure such fragile parts it is imperative not to damage the part itself by using conventional measurement methods.

The optical sensors from ISIS sentronics, located in Mannheim, Germany enable to measure contact-free, optically and with highest precision.

With the especially for medical application designed complete unit called [I-Dex-t](#) it is possible to measure parts like stents (small vascular tubes, often used in tightened coronary arteries to regulate the blood flow) and also small medical tubes.



(I-Dex t)

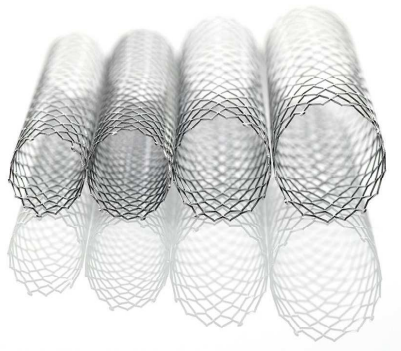
The part which is measured is placed into a specifically designed unit which is rotating the part, allowing the outer sensor head ([StraDex](#)) as well as the inner sensor ([Raydex](#)) to fully measure the object.

The results are inner and outer diameter (and therefore resulting wall thickness), roundness, conicity, co-axiality topography, roughness and distance information.

All measurement results are fully exportable and can be simply imported within other systems.

StratoSpect (ISIS software) is within this complete package as an evaluation software.

The mechanical unit where the object is placed into can be set up individually and shifted electrically in order to get full 3D-measurement data. The sensor heads are self-calibrating, using a calibration glass.

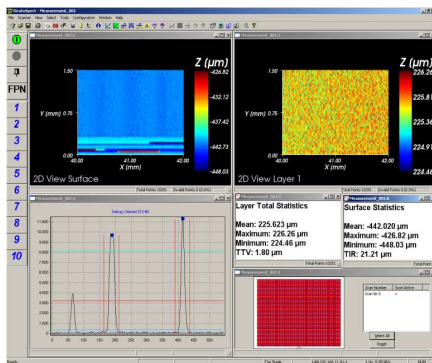


(medical stent)

Another feature of the [I-Dex t](#) is the possibility to measure coatings either inside or outside the stent. Those can be drug coatings or other material placed in or on the stent (up to 30 microns). Medical parts can be transparent or opaque and usually are made of a variety of materials such as metal, plastics, glass or ceramics. Even small glass tubes can be easily placed on the [I-Dex t](#) and be fully automatically measured. Most medical parts also have different diameters and are very fragile (not stable in form), but with the measurement system [I-Dex-t](#) there is no cramping or clamping of parts, simply place the object into the system for automated measurement. Inner diameters starting as little as 1.2mm can be easily measured with this system. All of it contact-free, optically and with the highest precision.

Another metrology-wise challenge is the measurement of the wiring inside stents. Those distances are vital for the stability of the product and therefore for the safety of the patient. Once placed inside a human body the stent will have “life-saving” features which requires absolute accuracy and therefore zero-tolerance. Conventional measurement methods would not be applicable for such parts, because it could damage or even destroy the part entirely. With the (optionally) available camera unit it is possible to measure distances within highest accuracy (less then 1 micron).

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(StratoSpect Software)



Any particles or errors resulting from production can be easily detected (by high resolution 3D image) and eliminated.

The complete system I-Dex t from ISIS is available in different configurations with a camera optionally. The system can be equipped with either one, two or even three sensor heads.

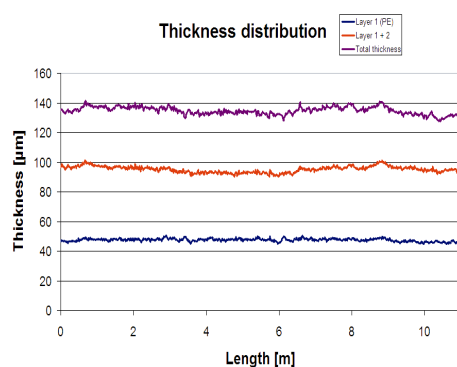
The technology is based on interferometry, a very accurate type of optical and contact-free measurement.

The intuitive use of the system (one-button solution) makes it absolutely fail-proof and easy to use for anybody. Within the shortest amount of time the measurement results are displayed and ready for further processing.

Also very important within medical technology is the quality assurance of medical coated parts such as medical band-aids, etc. Within the application process the thickness distribution may vary, causing an uneven layer of coatings.

With the [StraDex](#) sensor such layers can be easily determined and evaluated. Even multi-layers and thickness distribution of such can be made visible during production process.

Finally, medical products need to be packaged, sealed and stored appropriately and according to highest safety standards. With the [StraDex](#) sensor, for example blister packaging, often used for sealing in pills, can be measured with highest precision. Those blisters are often multi-layer films with different materials. With the [F12](#) or the [M21](#) system from ISIS sentronics, an offline, contact-free measurement system, it is possible to place such an object inside and measure multi-layered films, blisters, foils, etc.



(measurement of thickness distribution)

ISIS sentronics is a “spin-off” company out of ISIS optronics, founded 2006 by the CEO Dr. Alexander Knuettel.

ISIS sentronics offers metrology solutions to the the medical technology field, as well as to the Automotive sector, the wafer and MEMS market, and provides solutions to the films and coatings industry. ISIS sentronics has 30 employees and is located in Mannheim, Germany