Industrial Computed Tomography (iCT)

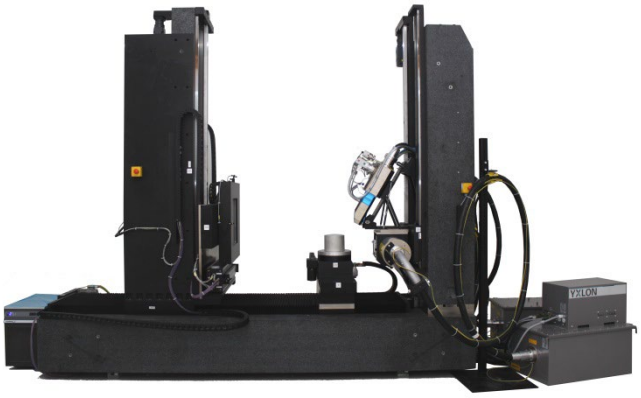
for testing electronics and sensors

Eurofins Qualitech AG is a leading service provider for non-destructive material testing with highly trained and qualified experts. Our decades of experience in all common methods of non-destructive testing offer you a wide range of testing options to check your materials and workpieces for freedom from defects. This guarantees you satisfied customers, because nothing is more damaging to your business than unexpected damage.

In spring 2016, Eurofins Qualitech AG's range of services was expanded to include **industrial computed tomography (CT).**

CT makes it possible to generate a non-destructive digital image of the current state of an object within a short time. Subsequently, the data set obtained can be specifically analysed, allowing a direct comparison with the target state. Compared to conventional material testing or tactile measuring methods, CT offers several advantages. By means of CT, for example, cracks can be detected very well, which are often difficult to detect with conventional 2D radiographic inspection. In the field of metrology (measurement) it is possible to measure internal structures which are not accessible by tactile means.

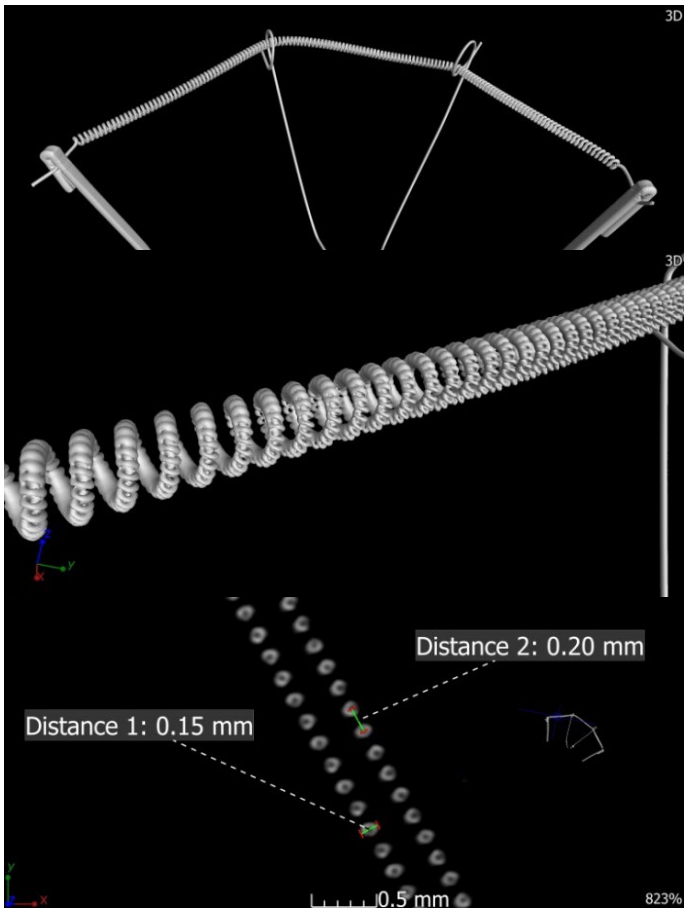
Eurofins Qualitech AG operates one of the **most modern** and **largest CT systems in Switzerland**. The high radiation power of up to 600 kV allows the analysis of large and thick-walled components, while the 225 kV microfocus X-ray tube allows high-resolution images in the micrometer range..



Modular CT of the company YXLON at Eurofins Qualitech AG

Electronics and sensors

Electronic components and sensors are becoming smaller and smaller, which makes it much more difficult to inspect for defects such as broken contacts or flaws in soldering or adhesive joints. This is where the strengths of industrial computed tomography become apparent. With the help of high-resolution, three-dimensional images, you can obtain meaningful details about your components. Depending on geometry and material, a spatial resolution of up to approx. 15 micrometers is possible. Even the smallest defects in soldered joints can be detected and dimensioned.



Top: 3D representation of a filament; centre: Detail of the 3D representation of the filament; Bottom: Longitudinal section through the winding of the filament with dimensioning

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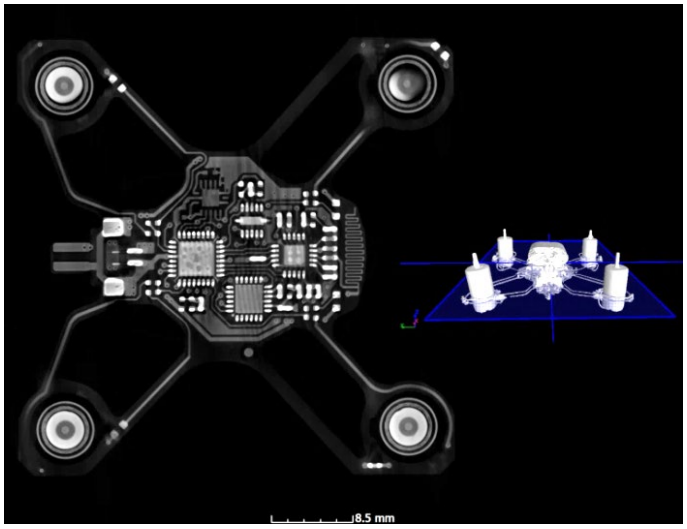
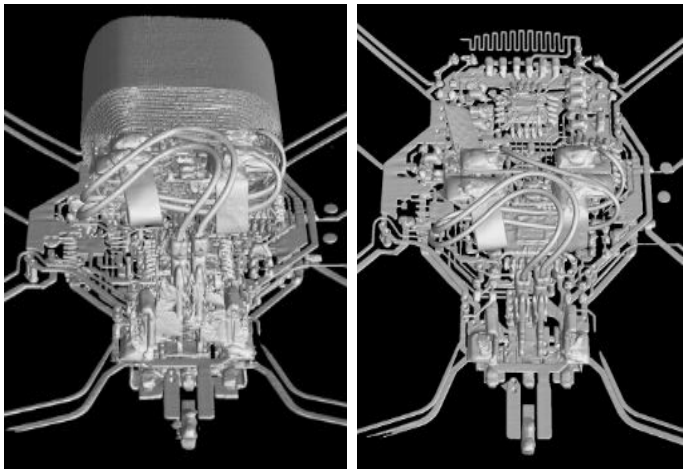
Assembly Analysis

An assembly analysis allows the non-destructive analysis of complete assemblies. You would like to know how your connector or module is constructed and whether the assembly may have led to a broken contact? Using industrial computer tomography, we can scan either a complete component or only a part of it (ROI) and display it three-dimensionally or in section, as desired. Thus, even encapsulated components can be analysed quickly and easily.

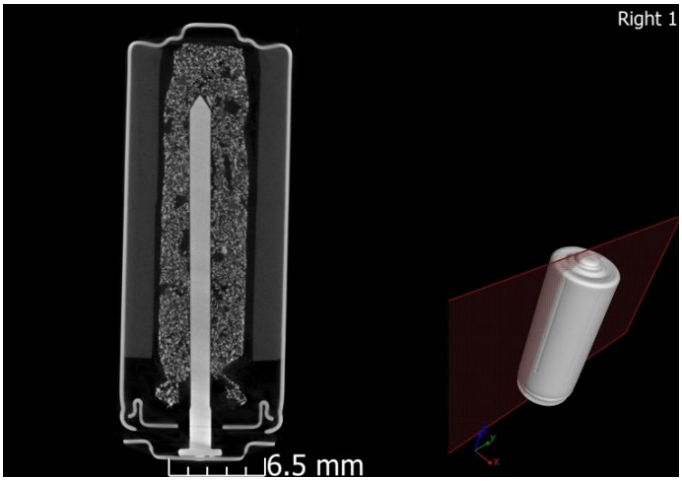


Sectional view through a flying drone for the inspection of solder joints, recorded by iCT.

Due to the high image dynamics and the possibility to adjust the grey tone profile, certain materials can be faded out. Thus relevant areas and material differences can be clearly displayed.



Detail of the 3D representation of a flying drone; left: complete ROI; right: ROI with hidden accumulator



Industrial computed tomography of a battery; longitudinal section through the battery, showing e.g. the degree of filling, particle distribution and alignment of the components

Technical data sheet of the computer tomograph

As a service provider, we want to cover the widest possible range of applications for different materials, component sizes and wall thicknesses. With the modular system we can test very large components, such as cast cylinder heads or housings up to a theoretical height of 2 m and a diameter of approx. 880 mm. But also very small components can be displayed in high resolution. For this purpose, two different X-ray tubes and two detectors were installed.

	Cone beam -CT		Fan beam -CT
	225 kV Microfocus	600 kV Minifocus	600 kV Minifocus
Scan field height:	ca. 2100 mm	ca. 1950 mm	ca. 1550 mm
Scan field diameterr	ca. 610 mm	ca. 650 mm	ca. 880 mm
Opt. spatial resolution:	ca. 15 µm	ca. 175 µm	ca. 190 µm
Component weight:	ca. 350 kg	ca. 350 kg	ca. 350 kg

Radiolucent wall thickness:

Steel:	ca. 7 mm	ca. 90 mm	ca. 90 mm
Aluminium:	ca. 100 mm	ca. 300 mm	ca. 300 mm
Ni-Basis:	ca. 4 mm	ca. 50 mm	ca. 50 mm

Technical data of the different measuring modes of the computer tomograph with an approximate indication of the radiolucent wall thickness of different materials

Delivery times

Depending on the type and scope of the examinations carried out and the necessary test duration. Usually within a few working days or even hours.

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