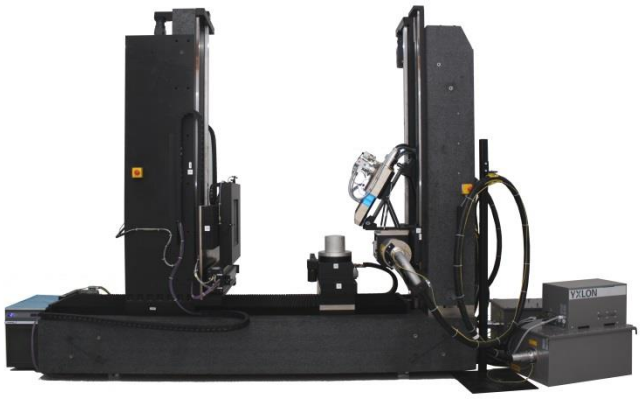
Industrial computer tomography (iCT)

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, 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.

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 Qualitech AG

Fields of application
Industrial computed tomography has a very wide range of applications, which is certainly unique for a test and measurement system.

Non-destructive materials testing
Analysis regarding e.g. porosity, inclusions, delaminations, cracks, or general defects or inhomogeneity.

Structural analyses
Structural analyses of various materials, e.g. composites, ceramics, metals, foam structures, among others with regard to fibre orientation/distribution, precipitation or general composition (material contrast).

Metrology - target-performance comparison
Dimension and graphically display complex components including internal structures without contact. This allows target/actual values to be compared using CAD files and differences highlighted in colour.

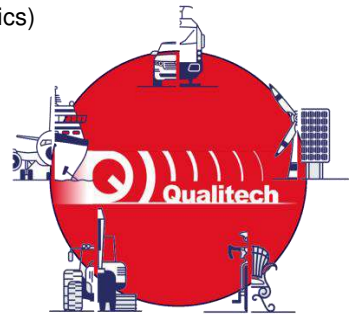
Metrology - Wall thickness measurement
Wall thickness analyses on the solid model or in cross-sections and colour-coded representation of the wall thickness distribution.

Metrology - Reverse Engineering
Reproduction of components without technical drawings and CAD files: We generate a 3D model of your component and support you in transferring the data into a CAD file.

Metrology - Assembly Analysis
Inspection and final inspection of assembled components to visualize assembly or functional errors.

Markets

- Foundry industry (metal / plastics)
- Plastics / Composites
- Electronics and sensors
- aerospace
- Medical Technology
- Ceramics
- Energy
- Pharmaceutical industry
- Metalworking
- art and cultural heritage
- research and development
- 2D/3D animations for marketing applications



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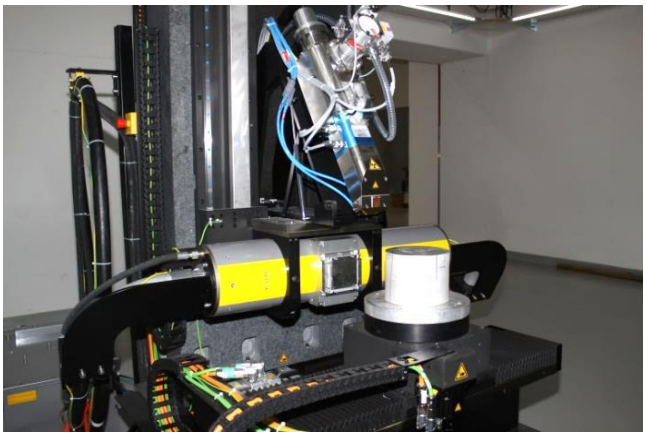
Technical data
Our system has two different scanning modes.

1) Cone beam CT
X-ray tube: 225 kV microfocus or 600 kV minifocus
Detector: Flat panel detector XRD 1621 AN18 ES

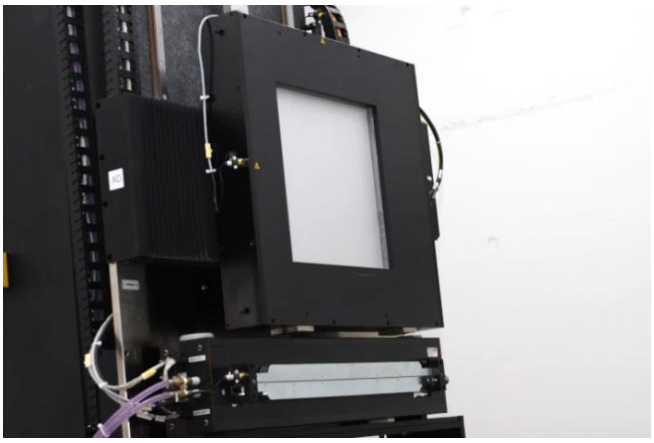
In this mode, ordinary 360°, but also 180° scans can be performed during stop-and-go or continuous movement. The measuring circle can be extended both horizontally and vertically. Thus scan heights up to 2100 mm and scan widths up to 650 mm can be achieved. Furthermore a helix scan is also possible.



CT tube side; top: 225 kV microfocus X-ray tube; bottom: 600 kV minifocus X-ray tube

2) Fan beam CT
X-ray tube: 600 kV Minifocus
Detector: Line detector Y.LineScan 250-16-60

In this mode, individual layers of the component are scanned with a line detector during stop-and-go or continuous movement up to a height of 1550 mm. The measuring circle can be extended vertically to scan even very wide components up to 880 mm.



CT detector-side; top: flat panel detector; bottom: Line detector

	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 diameter:	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