

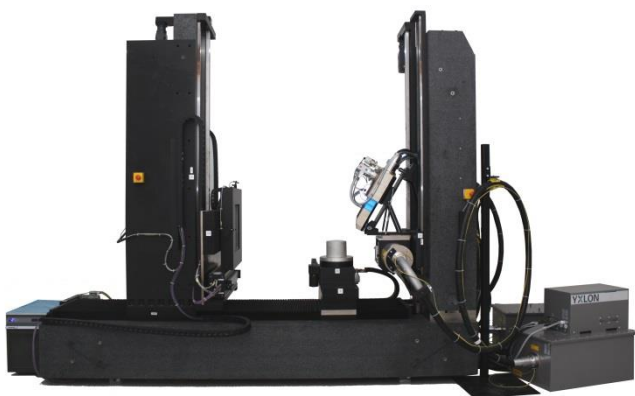
Industrial computer tomography (iCT) in the aerospace sector

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 expanded its range of services to include **industrial computer 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 condition. 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.

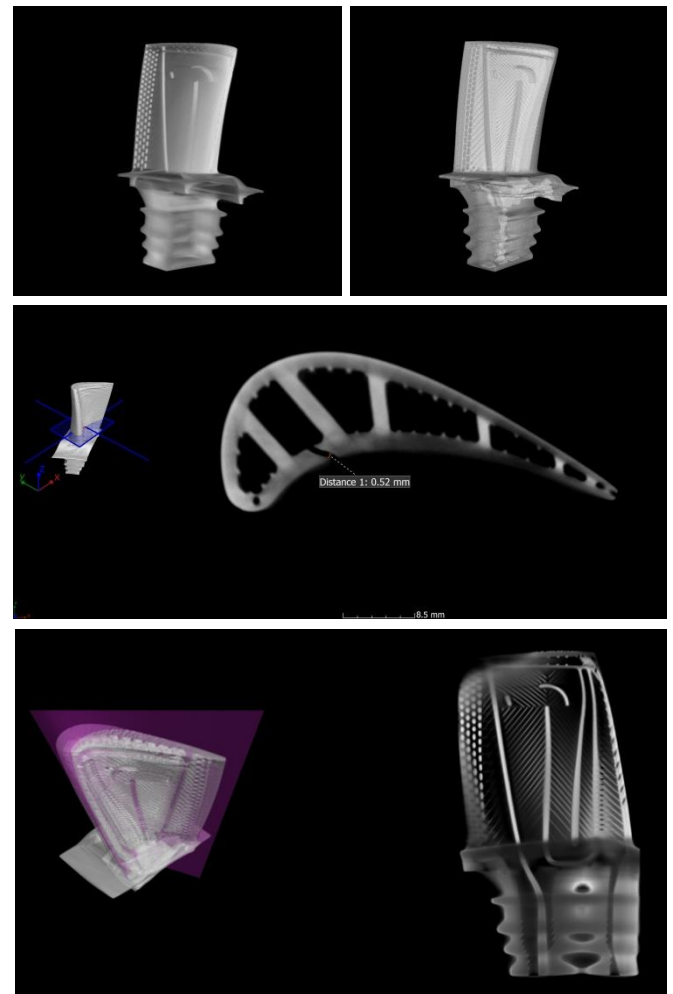
Qualitech AG operates one of the **most modern** and **largest CT systems in Switzerland**. The high radiation power of up to 600 kV allows the analysis of large and thick-walled components, while the 225 kV microfocus X-ray tube allows high-resolution images in the micrometer range.



Modular CT of the company YXLON at Qualitech AG

Aerospace

The accuracy and dimensional stability of components plays such a major role in almost no other industrial sector as in the aerospace industry. Material defects can have catastrophic consequences here. It is therefore a matter of course that the latest testing and measuring methods are used.



CT image of a turbine blade; top: 3D volume; middle: cross-section perpendicular to the longitudinal axis; bottom: Cross section along a polyline

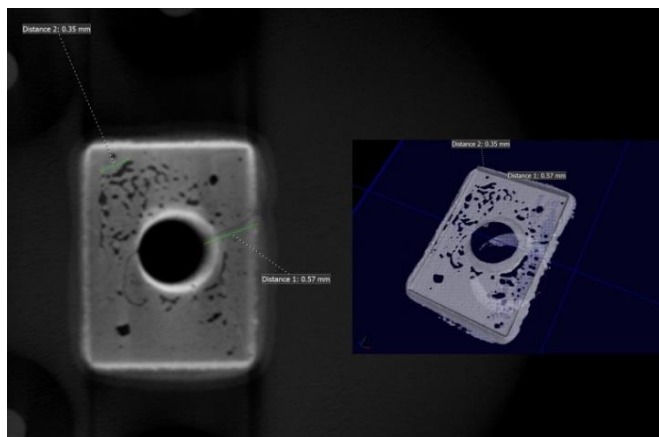


Inhomogeneities, such as porosity or cracks

Within a short time, a 3D representation of the existing porosity in the component is obtained. This can be evaluated with regard to various aspects, such as total porosity, pore volume (in the entire part or in partial areas), pore size or number of pores and can be marked in colour in the generated 3D volume. Inclusions or cracks can also be evaluated and graphically displayed. Thus the casting process can be evaluated in detail quickly and easily and optimized if necessary.

Soldered or glued joints

You would like to inspect soldered or glued connections within an assembly, for example? Using industrial computed 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, various connections can be analyzed non-destructively for defects or adhesion.



CT image of a soldered joint; left: Cross section through the soldered joint with clearly visible defects; right: Volume representation of the soldered joint

Target-performance comparison of moulded parts

CT offers the advantage of measuring the complete component including internal structures without contact and displaying them in color-coded form, which is not possible with tactile methods. Thus, target and actual values can be compared quickly and easily using CAD files and deviations can be highlighted in color directly on the CAD model.

Wall thickness analysis

With the volume data of a CT examination, wall thickness analyses can be carried out with little effort. In this way, the wall thicknesses in the 3D volume and in the individual sectional images can be displayed in color-coded form. Thus, critical areas can be highlighted in colour and can be found quickly and easily.

Delivery times

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

	Cone Beam CT		Fan beam CT
	225 kV Microfocus	600 kV Minifocus	225 kV Microfocus
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