

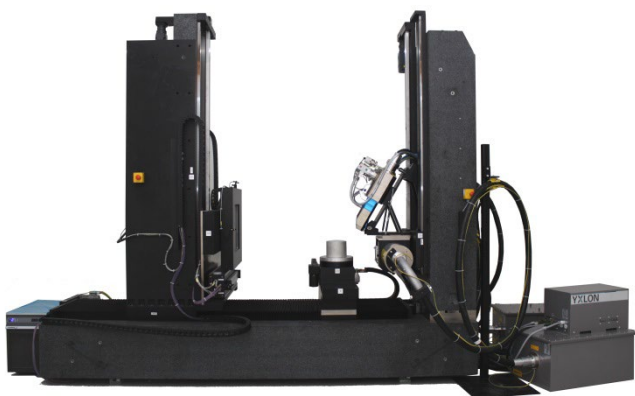
# Industrial computed tomography (iCT) in the aerospace sector

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

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

CT makes it possible to generate a non-destructive digital image of the actual condition of an object within a short period of time. The data set obtained can be specifically analysed afterwards, enabling a direct comparison with the target condition. CT offers several advantages over conventional material testing or tactile measurement methods. For example, CT can be used to detect cracks very well, which are often difficult to recognise with conventional 2D radiographic testing. In the field of metrology (measurement), it is possible to measure internal structures that are not tactilely accessible by tactile means.

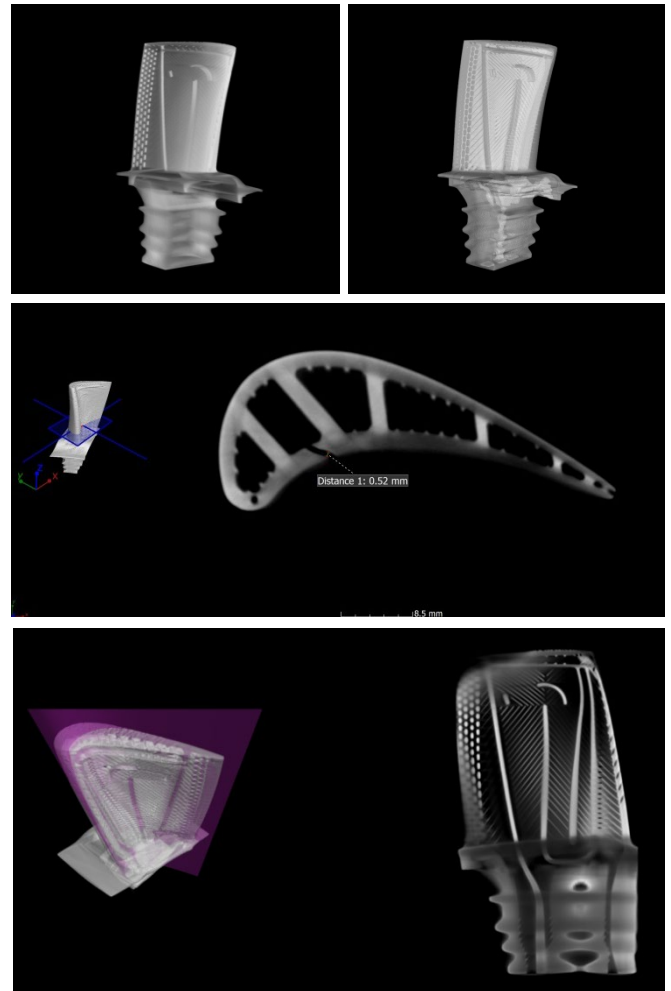
**Eurofins Qualitech AG** operates one of the **most modern and largest CT systems in Switzerland**. The high radiation output of up to 600 kV makes it possible to analyse large and thick-walled components, while the 225 kV microfocus X-ray tube enables high-resolution images in the micrometre range.



Modular CT from YXLON at Eurofins Qualitech AG

## Aerospace

In almost no other industrial sector is the accuracy and dimensional stability of components as important as in the aerospace industry. Material defects can have catastrophic consequences here. It therefore goes without saying that the latest testing and measuring methods are used.



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

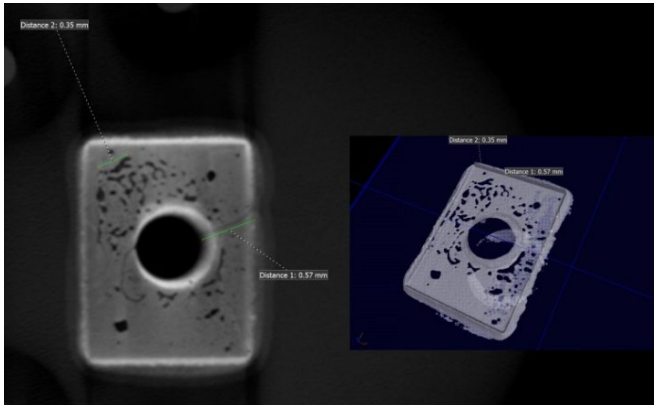


**Inhomogeneities, such as porosity or cracks**

Within a short time, a 3D visualisation 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 marked in colour in the generated 3D volume. Inclusions or cracks can also be analysed and displayed graphically. This allows the casting process to be quickly and easily evaluated in detail and optimised if necessary.

**Soldered or bonded joints**

Would you like to check soldered or bonded joints within an assembly, for example? Using industrial computed tomography, we can scan either a complete component or just a partial area (ROI) and visualise it in three dimensions or in section, as required. This means that various connections can be analysed non-destructively for defects or adhesion.



CT image of a soldered joint; Left: Sectional view through the soldered joint with clearly recognisable defects; right: volume view of the soldered joint

**Target/actual comparison of moulded parts**

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

**Wall thickness analysis**

Wall thickness analyses can be carried out with little effort using the volume data from a CT scan. In this way, the wall thicknesses can be colour-coded in the 3D volume and in the individual sectional images. Critical areas can thus be highlighted in colour and are therefore quick and easy to locate.

**Delivery times**

Depending on the type and scope of the inspections carried out or the required inspection duration. Usually within a few working days or even hours.

	Cone beam CT		Fan beam CT
	225 kV Mikrofocus	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

**Translucent wall thicknesses**

Steel:	ca. 7 mm	ca. 90 mm	ca. 90 mm
Aluminium:	ca. 100 mm	ca. 300 mm	ca. 300 mm
Ni-base:	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 radiopaque wall thickness of different materials

