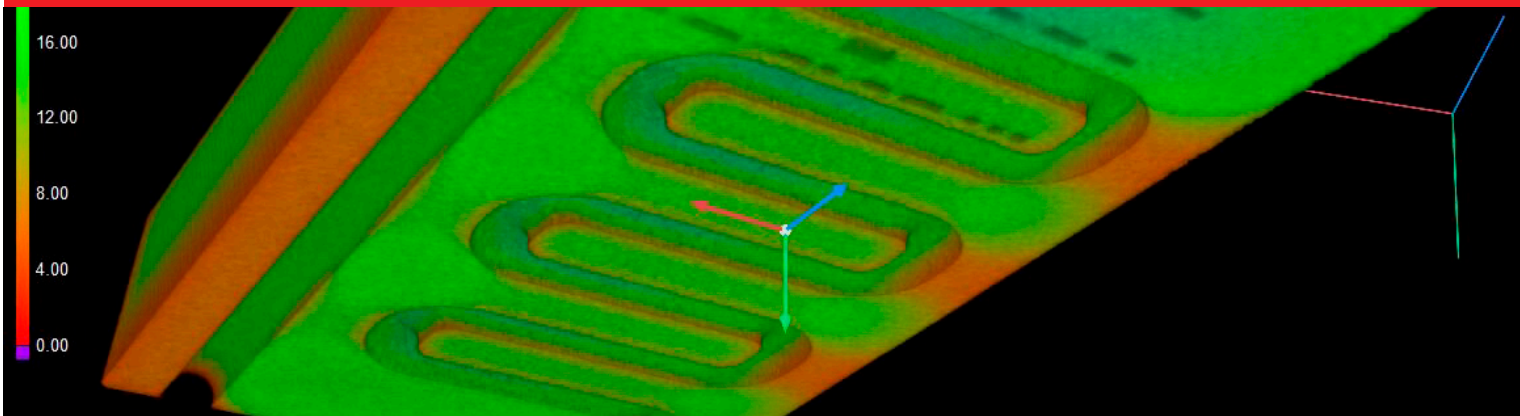


May 2022

# Industrial **computed tomography**

---

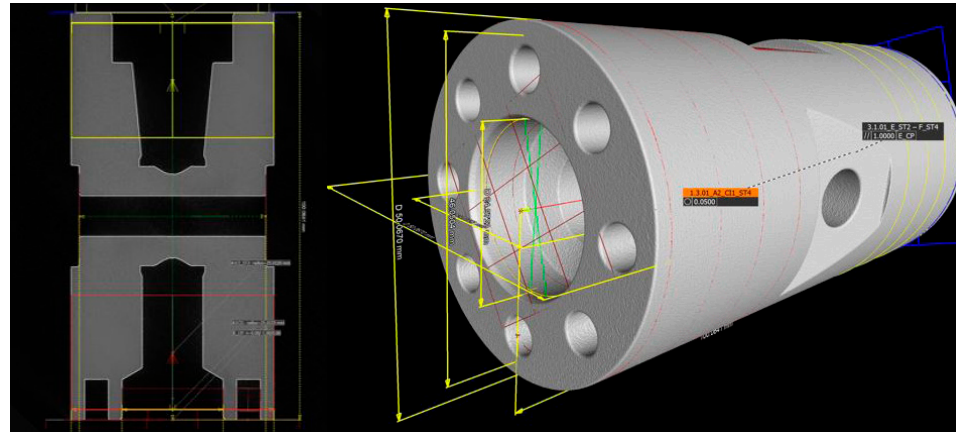
X-rays to display external geometries in three dimensions, internal structures and defects of objects.



## Industrial **computed tomography**

With the help of industrial computed tomography (CT), X-rays can be used not only to display external geometries in three dimensions, but also all internal structures and defects of objects.

It is also possible to track and analyse the damage behaviour of components by means of a testing machine through tension/compression in real time - this is also possible in a temperature interval. This procedure is called „in-situ CT“ (or 4D CT).



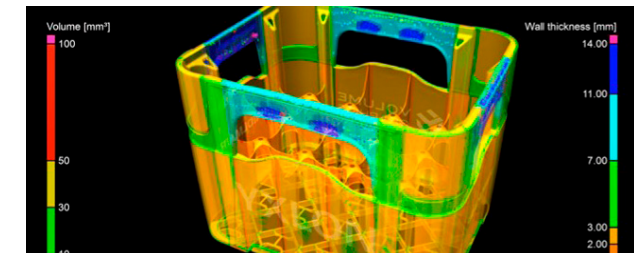
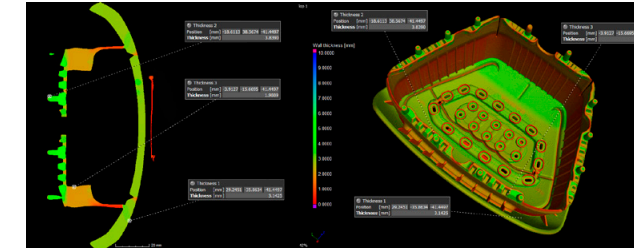
### Differences to medical computed tomography:

In industrial CT, the object to be examined rotates through 360°.

X-ray voltage and duty cycle:

- Medicine: Maximum 120 kV for a few seconds
- Industry: up to 600 kV for a few hours or days

- TPA KKS: largest and most powerful CT in Austria
- Unique test chamber for tensile and compression tests in Austria
- Detail detectability of a few microns 2 X-ray tubes with X-ray voltages of 300 kV and 450 kV
- Maximum possible component dimensions: Ø 1100 mm x H 1675 mm
- Maximum component weight: 200 kg
- Different detectors for component digitisation
- Metals, non-ferrous metals, plastics, composites, technical ceramics and building materials such as wood, stone or concrete; textiles



# Areas of application

---

## **Destructive testing and in-situ CT**

- Tracking crack initiation and propagation
- Tensile/compression tests with defined temperature

## **Non-destructive testing**

- Identification and colour representation of pores, cracks, blowholes, and inclusions
- Location, overall proportion, and manifestations of inhomogeneities

## **Weld seam inspection**

- Assessment of welds regarding welding defects such as pores, binding defects, inclusions, etc.

## **Damage analysis**

- Determination of the actual state as a 3D model
- Detection of defects
- Representation of damage areas

## **Assembly control**

- Control of installed components

## **Coordinate measuring technology**

- Measurement and representation in 2D and 3D

## **Segmentation of multi-material constructions**

- Separation of different materials

## **Nominal/Actual comparison**

- Determine the differences to technical drawings

## **3D wall thickness measurement**

- Analysis and colour-coded representation

## **Reverse engineering**

- Conversion of a CT scan into a CAD model

## **Manufacturing geometry correction**

- Corrections of tools or moulds
- Mesh compensation to eliminate deviations of the actual geometry of additively manufactured components

## **Simulation**

- Component digitisation for FEM analyses



“Industrial  
**computed tomography**  
opens up new  
analysis possibilities  
in **materials testing**.”

## CT and **materials testing**

---

Industrial computed tomography is a new testing method in materials testing.

The advantage over conventional radiographic testing lies in the three-dimensional representation and digitisation of the data. With the help of evaluation software, a variety of analyses are possible.

“

Largest and **most  
powerful CT** in Austria.



TÜV AUSTRIA Group

[office@tpa-kks.at](mailto:office@tpa-kks.at)

[www.tpa-kks.at](http://www.tpa-kks.at)

Tel. +43 (0)1 616 38 99-0

Deutschstrasse 10, 1230 Vienna, Austria