

Description

Computed tomography (CT) is a non-destructive X-ray inspection technique that produces high-resolution 3D images of samples. After reconstruction the sample can be viewed from any 3D angle, sliced in any direction, measured and even animated in a virtual workspace. This enables detailed analysis of the internal structure of a wide range of components. TWI has acquired the X-Tek 450 keV and 75 keV systems.

In CT the sample is X-rayed from a range of angles over 360 degrees. The TWI installation has a manipulator with 5 degrees of freedom so that all areas of the component can be covered. The X-Tek CT reconstruction engine uses the X-ray images to calculate the density at all points within the volume to create a 3D model of the component. The model can be rotated and viewed from any desired position and angle.

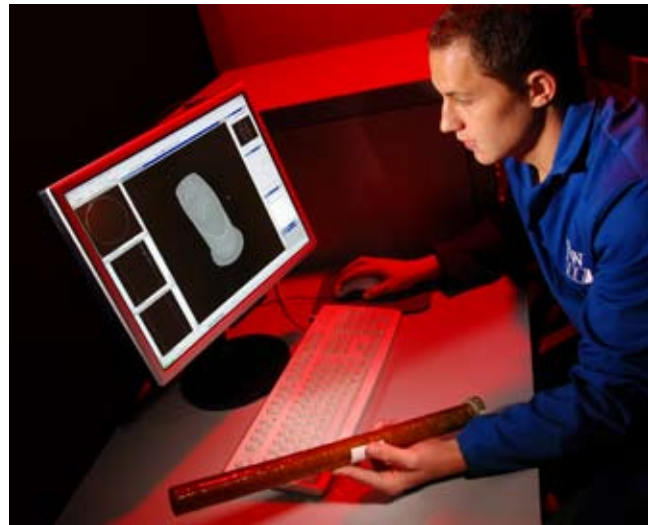
CT enables complex 3D analysis of the structure of components. It can be used to:

- Verify complex internal structures
- Isolate and inspect internal components
- Measure dimensions and angles within the sample without sectioning it
- Automatically detect and measure internal voids / volumes
- Remove / strip external surfaces from view to ease inspection

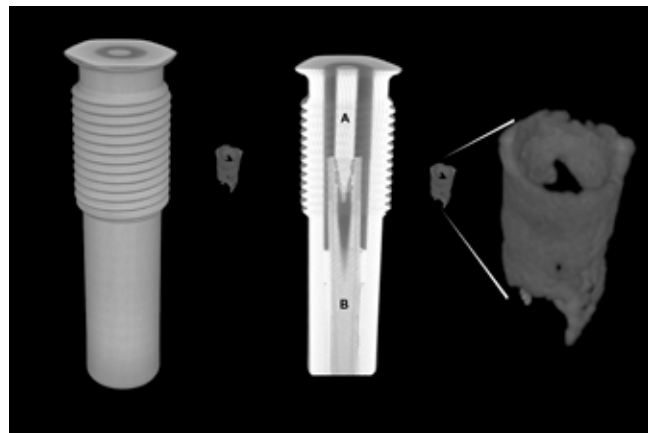
Selected Applications

TWI uses CT to inspect a variety of safety critical components:

- Small machine components such as valves of various types.
- Gauges.
- Sensors.
- Turbine blades, etc.



The operator here is looking at a CT image of the GFRP pipe that he is holding. The task was to locate impact damage. The image shows how CT can be used to 'cut away' parts of the component.



CT images of a glow plug. They demonstrate how CT can be used to reveal internal details of a component. The task was to determine the quality of the solder layer in the tapered hole between components A and B. To the right of the component in each view is a smaller image that has been expanded on the extreme right. This shows areas where the solder has not wetted the components.

For more information on the services offered in this leaflet, contact:

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