

# HeliScan microCT

Most versatile micro computed-tomography solution for quantitative analysis in a wide variety of MS applications

The HeliScan System brings a new era of microCT to Materials Science by leveraging advanced helical scanning and iterative reconstruction technology to produce unsurpassed image fidelity. As part of a multi-scale imaging solution, the HeliScan System enables scientists to gain valuable insight from internal structures to explore and validate a wide range of material properties.

## Multi-Scale Workflow

The Thermo Scientific™ HeliScan™ microCT System is a valuable component of a multi-scale, multimodal workflow that may progress through higher-resolution imaging with a focused ion beam/scanning electron microscope to atomic-scale analysis in a transmission electron microscope.

## Advanced Imaging for Quantitative Analysis

The HeliScan microCT was first designed by our partners at Australian National University (ANU) in 2010 for their imaging research consortium. The physicists at ANU designed a unique helical X-ray tomographic solution that produced highly accurate, high-resolution 3D images containing excellent geometric fidelity for quantitative analysis.

Building on this game changing technology, Thermo Fisher Scientific introduces the HeliScan microCT System for Materials Science. Maintaining the true microstructure of the sample combined with the highest signal-to-noise ratio imaging available in the microCT market provides an ideal solution for quantitative analysis for any sample.

## Process, Analyze, and Visualize Samples

HeliScan is the only microCT system to offer the industry-standard Thermo Scientific Avizo™ Software for 2D and 3D visualization for interactive exploration, segmentation and in-depth analysis for Materials Science sample data. Avizo Software provides scientists with a powerful tool to accurately explore and characterize reconstructed 3D microCT images.

## Key benefits

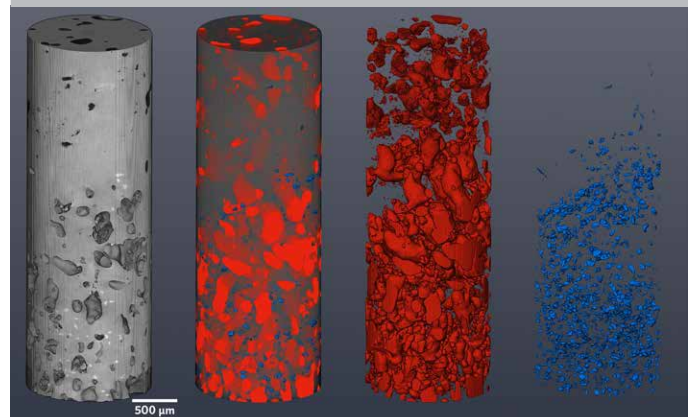
**Accurate segmentation:** HeliScan is the only microCT system specifically designed for quantification of high-quality, geometrically precise images

**Fast throughput, high-quality analysis:** Helical scanning and a large cone angle, combined with proprietary autofocus and drift correction, delivers the highest signal-to-noise ratio, while efficient scans of representative volumes provide ready-to-segment raw data that reduces the need for digital manipulation

**Better statistical relevance:** Seamless representative volumes of high-aspect ratio samples captured in one scan rather than inefficient, artifact prone multi-scan with stitching

**Customizable, dynamic *in situ* experiments:** Customizable feed-through ports, adaptable stages and a cabinet designed as a versatile open platform that easily supports your experiments

**Ease-of-use and reliability:** System optimized for multi-user environments with advanced features available for expert users; components chosen for dependability and serviceability



Segmented additive manufactured sample of CuAlZr alloy.



## Specifications

- X-ray source: 20–160kV, power 8W
- X-ray detector: 3072 × 3072 pixels, 16 bit, flat panel
- Spatial resolution: 800 nm\*
- Sample diameter up to 240 mm
- Load capacity: 15 kg
- Sample stage
  - Y-range:
    - Source – Stage: 400 mm
    - Source – Detector: 750 mm
  - Z-range: 195 mm
  - R-range: 360° continuous

## Installation Requirements

- Weight: 2300kg
- Dimensions (W × D × H mm)
  - Assembled system: 2200 × 1088 × 2091
  - Room minimal: 4000 × 3000 × 2400
  - Room recommended: 4450 × 4300 × 3000
  - Door minimal: 900 × 1900
  - Door recommended: 1100 × 1900
  - Corridor width: 1500 flat surface; no steep ramp; no steps bigger than 5 mm

- Floor
  - 1000kg/m<sup>2</sup>
  - Floor point load (installed system): 8,3kg/cm<sup>2</sup> (95lb/in<sup>2</sup>)
  - Floor point load (installation): 150kg/cm<sup>2</sup> (2100lb/in<sup>2</sup>)
  - Surface: Hard flat surface (concrete or hard vinyl).
- Mains
  - Preferred 200–230V, 15A, (50/60Hz). Additional grounding point required. If not available, system will be connected to mains matching transformer. In this case required input fusing should be:
  - Reconstruction cluster: 110–240V, 25–20A. Preferred 4x power outlet 200–240V, 10A, (50/60Hz)

Required Input fusing	108–115 V	→ 50AT
	208–230 V	→ 25AT
	400 V	→ 16AT
	I <sup>∧</sup> 2t value min. 20A <sup>∧</sup> 2sec	

- Heat
  - System: 1900W (including Chiller and PVP)
  - Chiller: 700W; Can be installed in service room. Distance is not limiting factor.
  - Reconstruction cluster: 6500W; Can be installed in service room. Maximum distance: 10m.

## Warranty and Training

- 1-year warranty
- Choice of service maintenance contracts
- Choice of operation/application training contracts

\*(2d) Spacial resolution (or 10% MTF resolution)

Resolution is the distance between objects (or cavities) at which they can still be identified as independent from each other in an image.

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