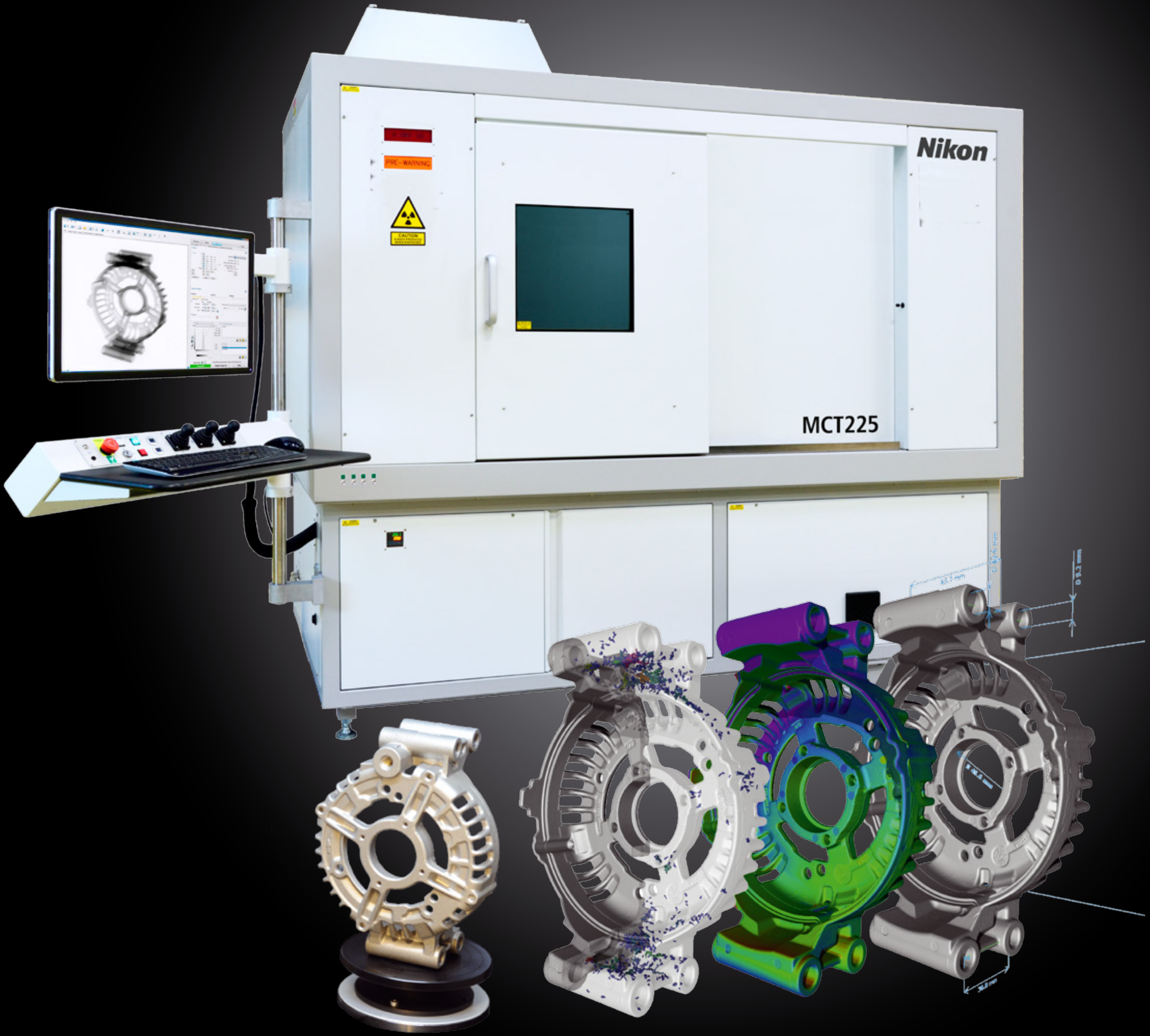
MCT225

Metrology CT



NIKON METROLOGY | VISION BEYOND PRECISION

MCT225

MCT225 provides Metrology CT for a wide range of sample sizes and material densities in accordance with the latest industry standards. All internal and external geometry is measured efficiently without reference measurements or damaging the sample. With more than thirty years' X-ray experience, our pedigree for reliable high quality Metrology CT is second to none.

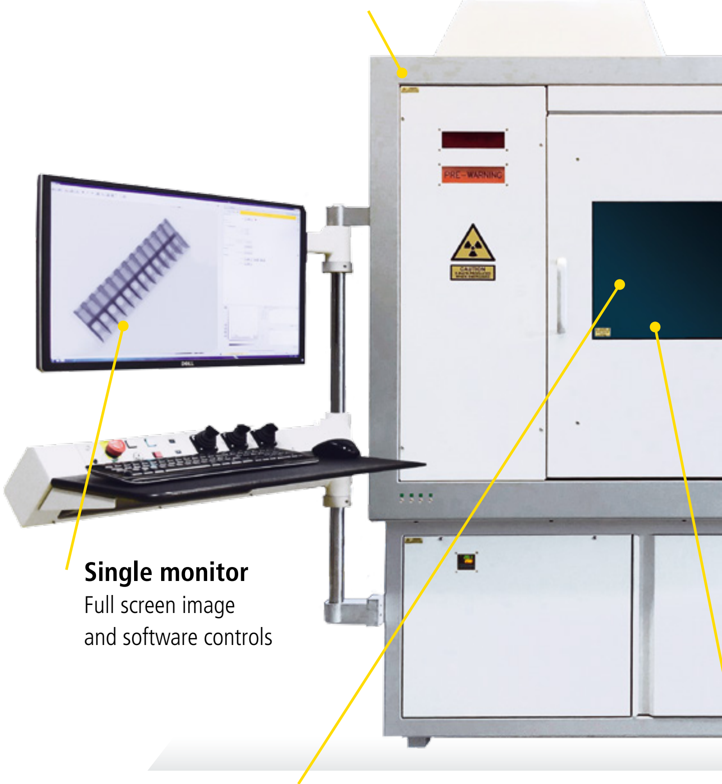
FLEXIBLE EFFICIENCY

Widest range of sample sizes and material densities

MCT225 is an invaluable asset for manufacturers seeking to benefit from reduced leads times and inspection cycles. The powerful X-ray source and large capacity manipulator combine with high magnification and small feature detection to create a solution suited to a wide variety of applications. All internal and external geometry of complex parts and assemblies can be measured and analyzed in a single non-destructive process.

Mold tool development

Plastic injection-mold and metal die-cast toolmakers can reduce correction cycles during tool development by 50%. All shrinkage, deformation and dimensional errors are clearly identified with easy to understand inspection reports. Optimization of mold parameters can be shortened from weeks to days, accelerating the time to market for new products and designs.



$\text{MPE}_{(SD)}$ 9+L/50 µm
Certified according to VDI/CDE 2630

Single monitor
Full screen image
and software controls

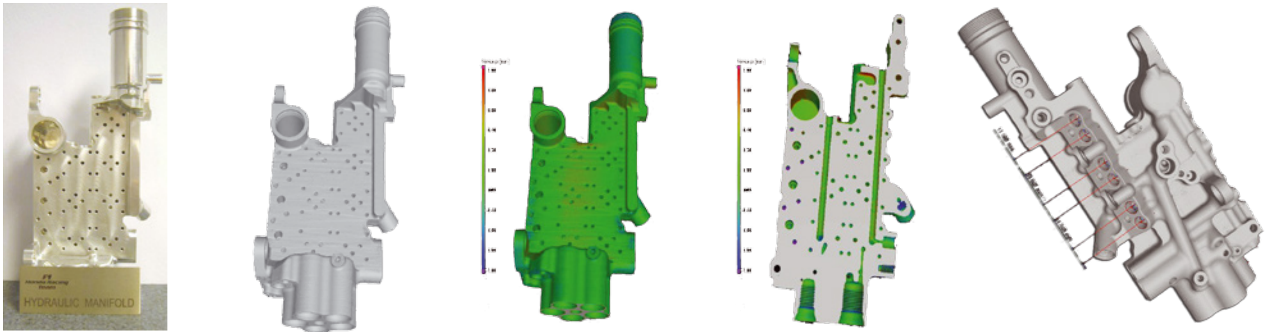
Nikon Metrology X-ray source
Variable voltage 225kV
micro-focus reflection source

MATERIAL PENETRATION GUIDE

PLASTIC	170 mm (6.7")
ALUMINIUM	75 mm (2.9")
IRON	15 mm (0.6")

Other suitable materials include:
STEEL, CERAMIC, CARBON FIBRE, WOOD

Metrology CT process



F1 car
hydraulic manifold

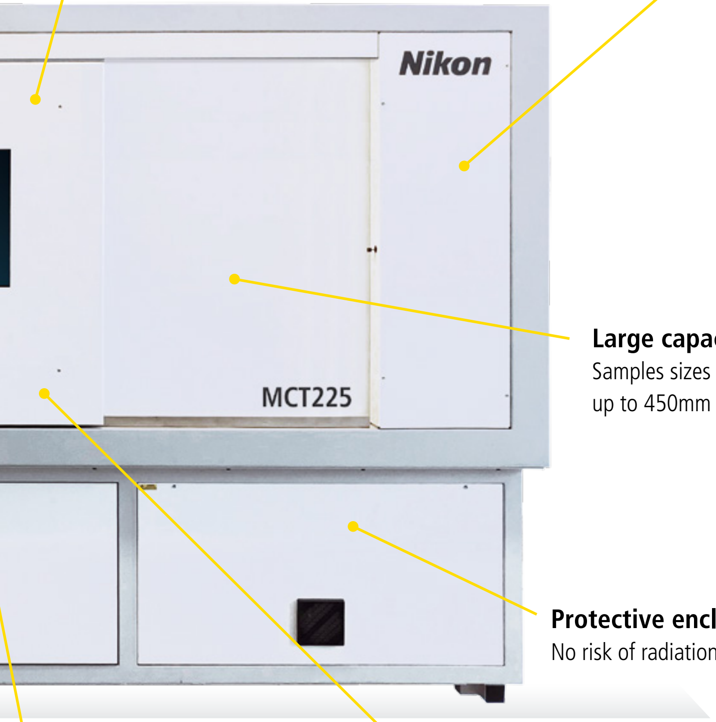
CT volume
reconstruction

Direct comparison
to CAD model

Section of
internal geometry

Dimensional report
GD&T

ABSOLUTE ACCURACY FOR INSIDE METROLOGY



Temperature controlled enclosure
Thermally stable to 20° C ±1° C

High resolution
4 Megapixel detector
150x magnification

Large capacity
Samples sizes
up to 450mm

Protective enclosure
No risk of radiation exposure

Low cost of ownership
Serviceable open-tube source

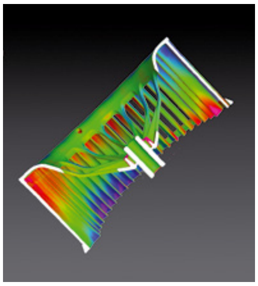
Precision manipulator
Laser corrected linear and
rotary guideways

ABSOLUTE ACCURACY

MCT225 is pre-calibrated using accuracy standards traceable to the UK's national measurement institute (NPL) and verified using VDI/VDE 2630 guidelines for Computed Tomography in Dimensional Measurement. Absolute Accuracy guarantees measurement accuracy without time consuming comparative scans or reference measurements, samples are simply placed on a rotary table inside the enclosure and measured. Several key metrology features provide long term stability and enable the MCT225 to achieve an impressive $\mathrm{MPE}_{(SD)}$ of 9+L/50µm.

- Nikon Metrology developed micro-focus X-ray source.
- Temperature controlled enclosure.
- High precision linear guideways.
- Axis travels error corrected.
- Liquid cooled X-ray source.
- High resolution optical encoders.
- High resolution 4Megapixel detector.
- Finite Element Analysis (FEA) optimized manipulator.

CT scan of plastic fan



Section showing CAD comparison

COMPLETE SOLUTION

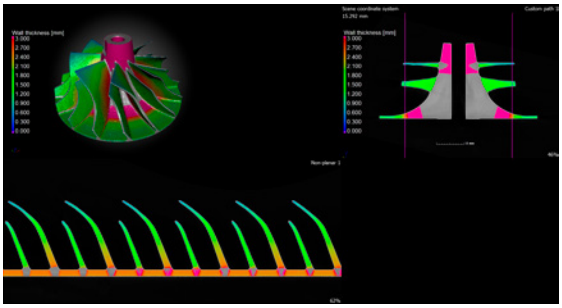
Everything to hand

The unique CT Wizard guides the operator every step of the way from sample loading to creating the final inspection report. Settings are automatically optimized for accuracy and image quality without compromising on productivity. Accelerated reconstruction of the sample volume, using optimized graphics cards, reduces the total process time from hours to minutes.

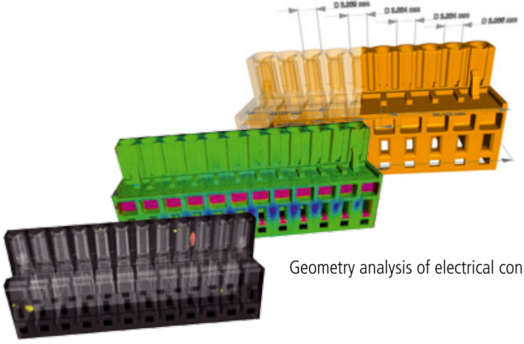
Reporting and analysis features include:

- Part-to-CAD comparison with colour mapping
- Surface measurement using surface and voxel data
- Geometric feature inspection
- Geometric Dimensioning and Tolerancing (GD&T)
- 3D visualization of the sample volume

The same dataset can easily be used for measurement and defect analysis (NDT).



Extensive 3D analysis of impeller



Geometry analysis of electrical connector

SPECIFICATIONS

MPE$_{(SD)}$ (μm) [1]	9+L/50 (L in mm)
Sample size (maximum)	Diameter 250 mm (9.9”) Height 450 mm (17.8”)
Sample weight (maximum)	50 kg (110 lbs) (Max) 5 kg (11 lbs) (for metrology applications)
Manipulator travel	(X) 400 mm x (Y) 300 mm x (Z) 730 mm (15.8” x 11.8” x 28.8”) x R 360° continuous
Source to detector	1,175 mm (46.26”)
Detector	16 bit 4 Mpixels (2,000 x 2,000 pixel)
Magnification	1.6x to 150x
X-ray source	225 kV / 225 W open tube
X-ray spot	3μm (0.00012”) micro-focus
Enclosure temperature	19 to 21° C (66 to 70° F)
Ambient temperature	17 to 25° C (63 to 77° F)
Radiation protection (DIN 54113-2, IRR99)	< 1 μSv/hr
Cabinet dimensions (WxDxH)	2,414 mm x 1,275 mm x 2,205 mm (86.8”x 50.2”x 95.0”)
System weight	4,200 kg (9,260 lbs)

[1] *Applies only to single material samples with a maximum diameter of 250mm (9.84”) and maximum height of 250mm (9.9”)*

MCT225

Absolute accuracy for inside geometry

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