



# MCT225

Metrology CT



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**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.

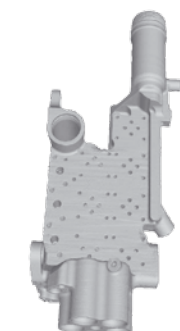
### Mold tool development

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.

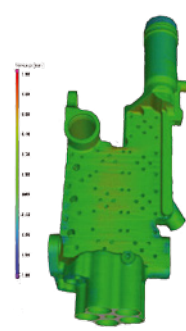
### Metrology CT process



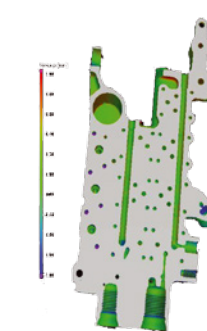
F1 car hydraulic manifold



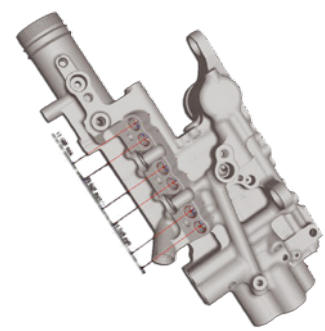
CT volume reconstruction



Direct comparison to CAD model



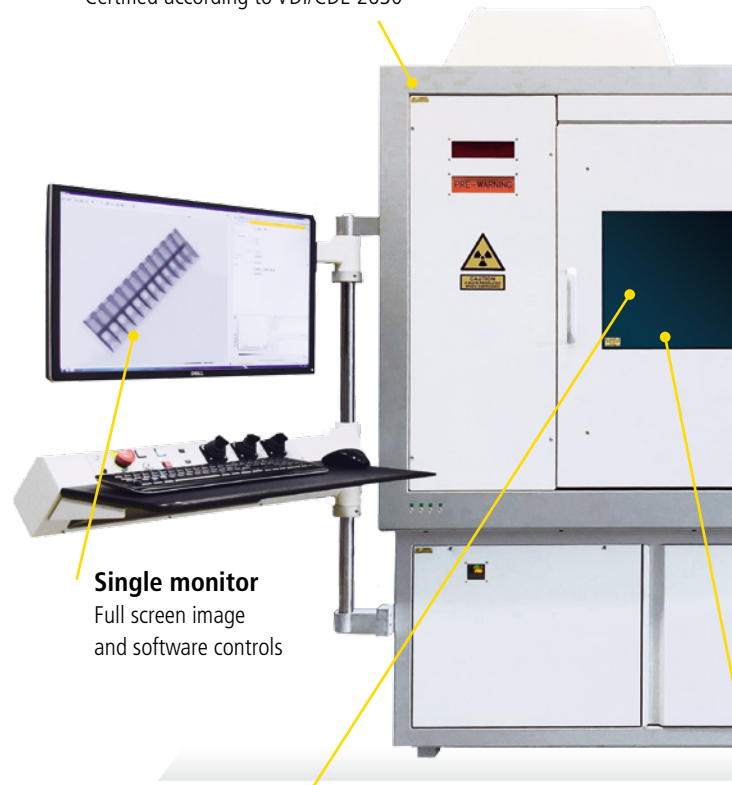
Section of internal geometry



Dimensional report GD&T

**MPE<sub>(SD)</sub> 9+L/50 µm**

Certified according to VDI/CDE 2630



**Single monitor**

Full screen image and software controls

### Nikon Metrology X-ray source

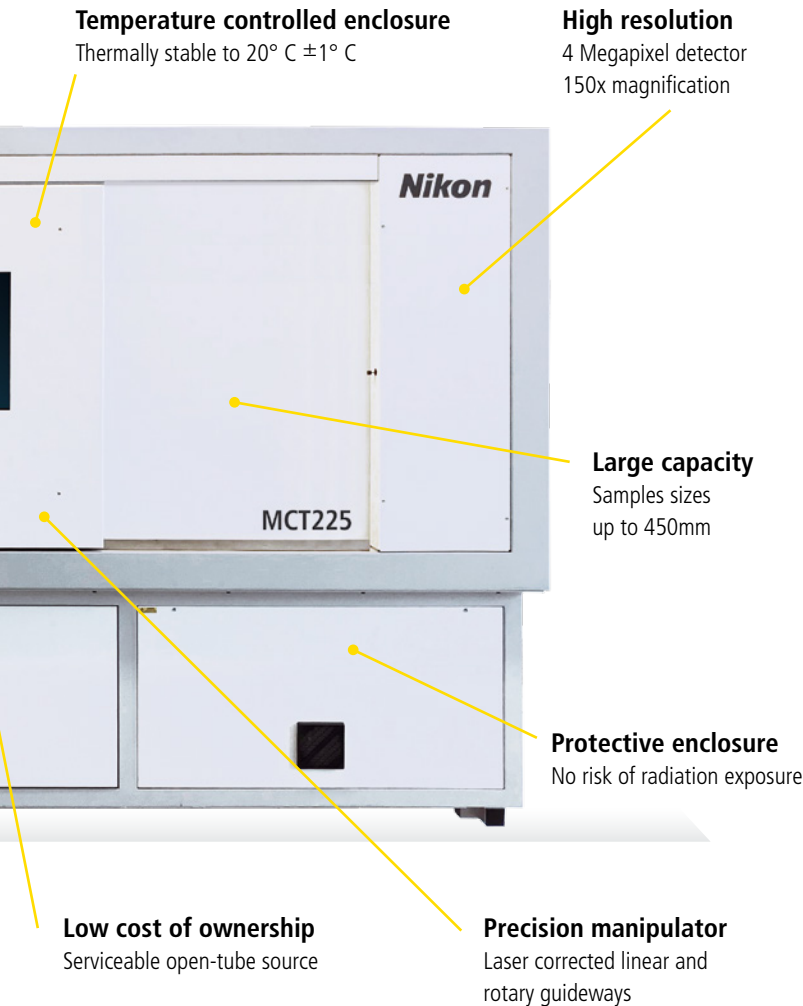
Variable voltage 225kV  
micro-focus reflection source

### MATERIAL PENETRATION GUIDE

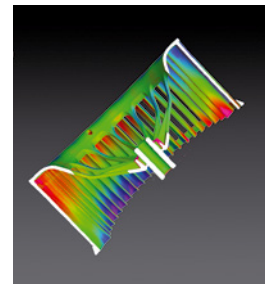
PLASTIC	170 mm (6.7")
ALUMINIUM	75 mm (2.9")
IRON	15 mm (0.6")

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

# ABSOLUTE ACCURACY FOR INSIDE METROLOGY



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:

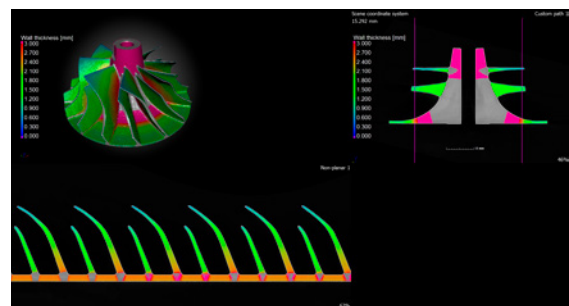
- Part-to-CAD comparison with colour mapping
- Surface measurement using surface and voxel data
- Geometric feature inspection
- Geometric Dimensioning and Tolerancing (GD&T)
- 3D visualization of the sample volume

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

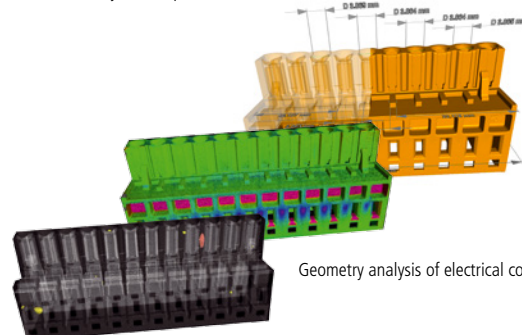
## ABSOLUTE ACCURACY

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  $MPE_{(SD)}$  of  $9+L/50\mu m$ .

- 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.



Extensive 3D analysis of impeller



Geometry analysis of electrical connector

# SPECIFICATIONS

MPE <sub>(SD)</sub> (µm) <sup>1</sup>	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)

<sup>1</sup> 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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### NIKON METROLOGY NV

Geldenaaksebaan 329  
B-3001 Leuven, Belgium  
Tel: +32 16 74 01 00 Fax: +32 16 74 01 03  
Sales.NM@nikon.com

### NIKON METROLOGY EUROPE NV

Tel: +32 16 74 01 01  
Sales.Europe.NM@nikon.com

### NIKON METROLOGY GMBH

Tel: +49 6023 91733-0  
Sales.Germany.NM@nikon.com

### NIKON METROLOGY SARL

Tel: +33 1 60 86 09 76  
Sales.France.NM@nikon.com

### NIKON METROLOGY, INC.

Tel: +1 810 2204360  
Sales.US.NM@nikon.com

### NIKON METROLOGY UK LTD.

Tel: +44 1332 811349  
Sales.UK.NM@nikon.com

### NIKON CORPORATION

Shinagawa Intercity Tower C, 2-15-3, Konan,  
Minato-ku, Tokyo 108-6290 Japan  
Tel: +81 3 6433 3701 Fax: +81-3-6433-3784  
[www.nikon.com/products/industrial-metrology/](http://www.nikon.com/products/industrial-metrology/)

### NIKON INSTRUMENTS (SHANGHAI) CO. LTD.

Tel: +86 21 6841 2050 (Shanghai branch)  
Tel: +86 10 5831 2028 (Beijing branch)  
Tel: +86 20 3882 0551 (Guangzhou branch)

### NIKON SINGAPORE PTE. LTD.

Tel: +65 6559 3651

### NIKON MALAYSIA SDN. BHD.

Tel: +60 3 7809 3688

### NIKON INSTRUMENTS KOREA CO. LTD.

Tel: +82 2 2186 8400

### NIKON SALES (THAILAND) CO., LTD.

Tel: +66-2633-5100

### NIKON INDIA PRIVATE LIMITED

Tel: +91-124-4688500

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for NIKON CORPORATION

ISO 9001 Certified  
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Industrial Metrology Business Unit



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