



Precise, Comprehensive Metrology
In the Laboratory or Anywhere

CAIRNHILL METROLOGY 2024



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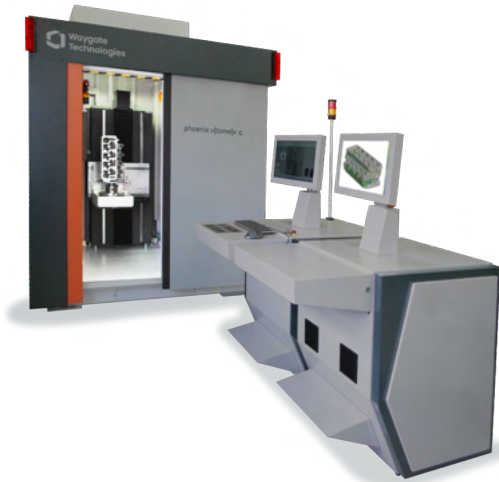
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www.cairnhill.com

V|tome|x C450 High Power/Productivity CT with Metrology



- Compact 450kV CT system for production process control
- Max 3D scanning area Ø 500x1000mm
- Crane for efficient handling of heavy samples up to 50kg
- VDI 2630-1.3-dimensional traceability as standard
- One-button|CT fully automates the entire CT process, increasing repeatability and reproducibility of CT results
- Velo|CT II Accelerated 3D Reconstruction
- Measures size, volume, inclusion density, cavities and internal geometries to optimise production
- Significant productivity advantages for parts qualification
- Ideal for NDT, QA Labs in foundries and 3D metrology
- For automotive, aerospace, additive manufacturing, etc
- Low maintenance and cost of ownership

V|tome|x C450



Automated wall-thickness



One-button|CT



Quick|pick manipulator

Model	V tome x C450	V tome x C Scatter correct / HS
X-Ray Tube	Closed Bipolar Minifocus Tube, 450kV at 700W/1500W	
Focal Spot Size	0.4mm (max power 700W); 1.0mm (max power 1500W)	
Focus Detector Distance (FDD)	1300mm	1150mm
Voxel Size Range	100 to 146µm	87 to 139µm
3D Geometrical Magnification	1.37 to 2X	1.44 to 2.3X
Spatial CT Resolution	2.5 lp/mm at 130µm voxel resolution referring to ASTM E 1695	
Detail Detectability	Down to ~100µm	
Measurement Accuracy ¹	20+L/100µm	
Datos x metrology pack (Option)	Surface extraction – automatic generation of surface data Easy calib – module for CT system calibration Calibration object – 1 calibration tool with certificate	
Cone Beam Flat Panel Detector	Dynamic 41 200 or Dynamic 41 100	
Fan Beam Line Detector Array	16-bit 820mm sensitive width, 2050 pixels, 400µm pitch. Linear subpixel-shift axis for resolution improvement and quality enhancement ²	
Dual Detector Configuration ²	LDA and Flat Panel Detector, with detector shift and easy switching between both modes	
Granite-Based High Precision Manipulator	Two axes (R, Y) manual Z-Axis (300mm)	3 (R, Y, Z) or 4 (R, Y, Z, XB) in HS base Z-auto or HS quick pick + detector shift axis
Max 3D Scan Area/Weight	Ø 500 x 1000mm H (Ø 270 x 1000mm H Scatter correct) / 50kg	Ø 270 x 310mm H / 10kg (rotation unit HS) Ø 100 x 125mm H / 3kg (Quick pick gripper)
Focus Object Distance	650 to 950mm	500 to 800mm
System Dimensions W x H x D	2310 x 2750 x 2870mm, excluding the console	
System Weight	Approx. 15,000kg	
Datos x CT Software	Highly automated One-button CT, including modules for CT data and workflow optimisation with VG or other 3D evaluation software for metrology and failure or structural analysis	
Filter changer (Option)	Automated change of up to 4 filters for max flexibility and quality at automated batch CT	
Velo CT II Package (Option)	For ultrafast volume reconstruction	
Cabinet Crane (Option)	For ergonomic handling of heavy samples up to 50kg	
Barcode Reader (Option)	For easy sample identification	
Radiation Protection	Full protective radiation safety cabinet per German RöV, French NFC 74 100 and US Performance Standard 21 CFR Subchapter J.	

¹Measured as deviation of sphere distance in tomographic static mode SD(TS) per VDI 2630. ²Not for Scatter|correct and HS.

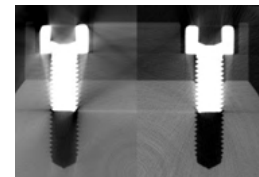
V|tome|x M Hi-Resolution Microfocus X-Ray CT

Award-winning mid-size stabilised cabinet, versatile high power, hi-resolution microfocus XCT with 180kV/20W nanofocus option, ready for VDI 2630-1.3-Dimensional Length Traceability



V|tome|x M

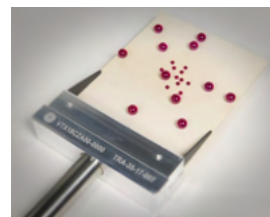
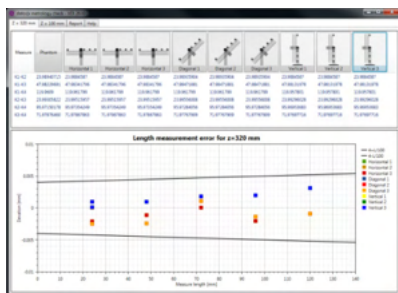
- High power 300kV/500W or 240kV/320W unipolar microfocus tubes with $<1\mu\text{m}$ detail detectability
- Dual|tube pre-configured for 180kV/20W nanofocus option
- Temperature-stabilised tube and cabinet
- Metrology|edition: VDI 2630-1.3 traceable certification
- Very high image quality at up to 30fps, extremely fast acquisition via Dynamic 41 series detector array
- Long|life filament up to 10x increased lifetime
- Diamond|window for 2x faster data acquisition



Without (L) / With (R) Scatter|correct screw scan comparison

Ground Breaking Option Scatter|correct: Advanced cone beam radiation scatter correction for fan-beam image quality at up to 100x faster cone-beam CT acquisition speeds. Ideal with 400x400mm² Dynamic 41 flat panel detectors.

V|tome|x M Metrology|edition (Option) – Measures accurately up to $3.8+L/100\mu\text{m}$



True|position / Ruby|plate



Ball Bar CFC with sphere
(24, 48, 72, 96 and 120mm L)

Datos|x metrology checks to verify VDI 2630-1.3 performance using calibrated artefacts above

Metrology Pack incl. vibration-insulated manipulator, long-term stabilised X-ray tube, two calibration test phantoms, Datos|x *Click & Measure CT*, *Metrology*, Automatic Voxel Calibration (auto-calibrates voxel size for whole travel range of the magnification axis) and ASTM 1965 CT system performance (image monitoring, determination of Modular Transfer Function (spatial resolution) and Contrast Discrimination Function (sensitivity, inverse of CNR) in %).

Production|edition (Option) – Collaborative robot for high-throughput parts handling



The future is now, and it's fast. WT's industrial CT portfolio provides the ease of use, repeatability, and reproducibility needed to reduce scrap caused by defects and ensure productivity and quality. With highly automated systems, minimise the human factor and ensure up to 100% production control!

Add-on a collaborative robot to automate sample loading and achieve higher throughput and productivity with reproducibility.

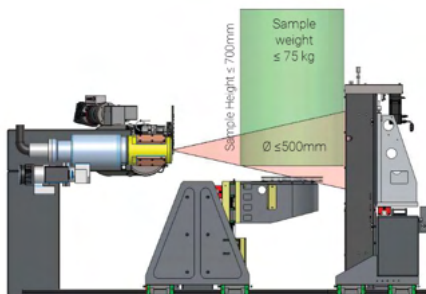
Phoenix V|tome|x M Neo **NEW!** Precision meets Productivity



Phoenix V|tome|x M Omni

All premium features such as proprietary Scatter|correct technology, High-flux|target, exclusive Dynamic 41 detectors, and options for Automated Defect Recognition (ADR) with X|approver and a new standardised interface for integration into automated workflows with robotic and at-line inspection solutions.

- Variable Focus-Detector-Distance (FDD) for improved scanning results at reduced scan time
- High coverage of applications
 - Samples up to 500mm \varnothing at ≤ 700 mm in height or up to 740mm in height \varnothing in diameter
 - Sample weight up to 75kg
- Improved Metrology performance referring to VDI2630-1.3
- New tube orientation for improved image acquisition
- New cabinet design to offer best-in-class flexibility and user options:
 - Load samples from the top or front to enable usage manually or with a crane or robot
 - Increased accessibility to core components for maintenance and repair
- New integrated dashboard system status, health monitoring and troubleshooting
- New standardised interface for integration into automated robotic and other at-line inspection workflows



Variable FDD 280-900mm

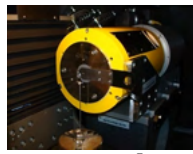


Phoenix V|tome|x M Omni is well prepared to operate in the highest throughput scenarios

V|tome|x S Compact High Power Micro/Nano-focus XCT Platform



V|tome|x S



NanoCT®



Dual tube configuration

- High power 240kV/320W microfocus tube
- Dual|tube configuration for 180kV/20W nanofocus tube option
- Long|life filament for up to 10x increased lifetime
- Large-area Dynamic 41|200 with superior image and result quality with extremely high dynamic range > 10000:1
- High dynamic temperature-stabilized DXR detector for fast CT acquisition and brilliant live images (option)
- Diamond|window for two times faster data acquisition

Model	V tome x M300	V tome x M240	V tome x S240
X-Ray Tube	Open directional high-power microfocus X-ray tube, closed cooling water circuit. Optional dual tube configuration for additional nanofocus X-ray tube.		
Microfocus Tube Power	Max 300kV/500W	Max 240kV/320W	
Detector Type	Dynamic 41 200 (4MP) or Dynamic 41 100 (16MP)		DXR S100 Pro, DXR250RT or Dynamic 41 200
Microfocus Min Voxel Size	Down to 2µm/1µm with 41 200 and 41 100 respectively		Down to 2µm
Nanofocus Tube Option	Optional nanofocus tube, max 180kV and 20W. Tube exchange by a push of a button		
Nanofocus Min Voxel Size	Down to 0.5µm (nanofocus). Detail detectability: 0.2µm		
Measuring Accuracy ¹	3.8+L/100µm per VDI 2630-1.3 (Metrology edition)		N/A
Metrology edition Option	Datos x CT package “metrology” + patented 130mm length Ruby plate phantom for 3x faster, automated verification setup of CT scans with higher measurement accuracy		
Scatter correct Option	2D fan beam CT with minimised scatter radiation artefacts. Max scan Ø: 260mm, geometric magnification 1.51x to 100x		
Manipulation	Granite-based precision 4-axis manipulator		Optimised high stability 5-axis metal precision manipulator
Focus-Detector-Distance	800mm with 16” detector		800mm/8” FPD; 930mm/16” FPD
Max Sample Ø x Height	360x600mm; up to 500x600mm with limited travel range		260mm Ø x 420mmH
Max 3D Scanning Sample	420mmØ x 400mmH		
Max Sample Weight	High accuracy CT up to 20kg; Max up to 50kg		10kg
Dimensions W x H x D	2620 x 2060 x 1570mm (D: 2980 with user panel+generator)		2170 x 1690 x 1500mm
System Weight	Approx 7960kg		Approx 4550kg
Temperature Stabilization	Active X-ray tube cooling, temperature-controlled cabinet and temperature-stabilized detector		Active X-ray tube cooling and temperature-stabilized detector
High-flux target Option	2X faster CT scans or doubled resolution; X-ray inspection power up to 100W		
2D Inspection Bundle Option	Tilt and rotation axes for tilted 2D inspection of samples up to 10kg; Software with Flash!™		
Click&measure CT	Fully automated CT process chain, included as standard		Option
Helix CT & Offset CT Option	Advanced scanning trajectories for improved scanning volume and data quality; Helix CT for long part scans with fewer artefacts; Offset CT for bigger parts or higher resolution		N/A
Production edition Option	Fully automated with a collaborative robot on request		
Datos x Software	Phoenix Datos x 3D computed tomography acquisition and reconstruction software. Different 3D evaluation software packages for 3D metrology, failure or structure analysis on request		
Analysis Software	Various evaluation packages, such as Volume Graphics for 3D metrology, failure analysis, porosity, transport phenomena, foam structure, fibre composite, etc., on request.		
Radiation Protection	Full protective radiation safety cabinet per German StrSchG/StrSchV, French NFC 74 100 and US Performance Standard 21 CFR Subchapter J.		

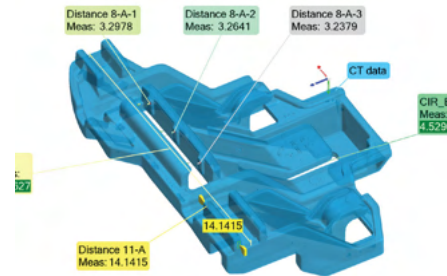
¹Per VDI 2630-1.3 measured as deviation of sphere distance in tomographic static mode SD (TS), with True|position and Ruby|plate, valid only for Phoenix V|tome|x M Metrology|edition. L: sample length in mm

Nanotom M High-Resolution nanoCT[®] X-Ray CT

Outstanding nanofocus tube, hi-dynamic, hi-resolution DXR digital detector array and advanced algorithms combine to deliver optimal high image quality with detail detectability down to 200nm.



Nanotom M



Measurement of 5 features of injection moulded part with CAD variance.

Nanotom M	
X-Ray Tube	Proprietary open nanofocus tube, max 180kV/20W output, optimised for long-term stability with internal tube cooling.
Target	Diamond window. Other materials, e.g., molybdenum on request
Filament	Tungsten hairpin, pre-adjusted plug-in cartridges for fast and easy exchange
3D Geometrical Magnification	1.4 to 300x
Best Detail Detectability	0.2µm
Minimum Voxel Size	0.3µm
Detector	Temperature stabilised high dynamic DXR500L
Pixels/Pixel Size	3072x2400 / 100µm
Manipulation	Granite-based 5-axes manipulator, vibration insulation, precision rotation table on air bearings
Detector Focus Distance	Variable from 200 to 600mm
Max CT Sample Size/Weight	240mm Ø x 250mm H / 3kg
Sample Travel Length Y/Z	250mm/400mm
Rotation	0° to 360° x n
Dimensions W x H x D / Weight	1980 x 1600 x 925mm / Approx. 1900kg
3D Metrology Bundle Option	Temperature stabilised cabinet, high accuracy direct measuring system, Calibration object, Datas x module packages “metrology” and “Click & measure CT.”
Datos x Software	Phoenix Datas x 3D computed tomography acquisition and reconstruction software. Different 3D evaluation software packages for 3D metrology, failure or structure analysis on request.
Analysis Software	Various evaluation packages, such as Volume Graphics for 3D metrology, failure analysis, porosity, transport phenomena, foam structure, fibre composite, etc., on request.
CT Reconstruction	Phoenix Datas Velo CT high-speed (up to 6 GPUs)
Advanced Sample Manipulation Options	Manual XY highly accurate positioning table, tensile & compression testing stage system, and cool stage specimen cooling unit. Or Motorized XY-table with two linear axes
Radiation Protection	Full protective radiation safety cabinet per German StrSchG/StrSchV, French NFC 74 100 and US Performance Standard 21 CFR Subchapter J.

NanoCT[®] – Closest to Synchrotron X-Ray CT

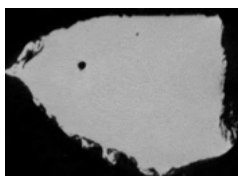


Image from nanotom m

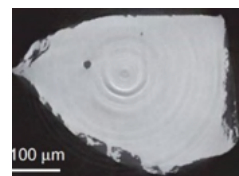


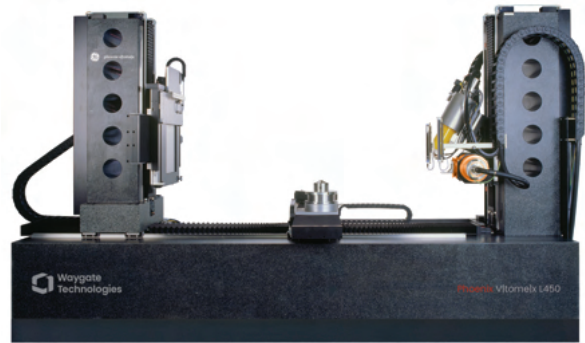
Image from ESRF Synchrotron

Nanotom M detects minute details with optimised image quality, making it an accessible alternative to limited-availability synchrotron facilities for materials science, micro-engineering, electronics, life sciences, geosciences, etc.

V|tome|x L300 / L450 Large Size Customizable XCT



V|tome|x L300



V|tome|x L450

- High-mag unipolar 300kV tube for evaluating high-absorbing steel parts and large aluminium castings
- Option: 180kV/20W high-power nanofocus X-ray tube
- 3D Metrology package for dimensional measuring
- Easy switch between 2D and XCT
- Micro and Nano mode with details down to 1µm
- Optimised metal-ceramic bipolar 450kV/1500W minifocus tube for sharp scans of high-absorbing parts
- Long-life filament option
- Fast CT via temperature-stabilized Dynamic 41 detector at up to 30fps

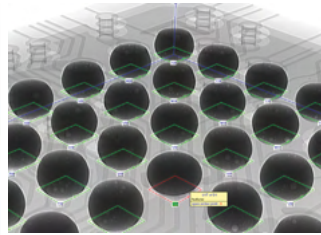
Model	V tome x L300	V tome x L450
Max Tube Voltage / Output	300kV / 500W	450kV / 1500W
Detail Detectability / Min FOD ¹	Down to 1µm	Down to 2µm
Min 3D Voxel Resolution ²	2µm	
2D Geometric Mag	1.25 to 238x	1.25 to 400x
3D Geometric Mag	1.25 to 187x	1.25 to 242x
Max Object Size / Weight	600mm H x 500mm Ø / 50kg	1000mm H x 800mm Ø / 100kg
Manipulator Type	Granite-based 6-axes manipulation unit	
Detector	16" Dynamic 41 200 (4MP) or in combination with Line Detector Array	
2D X-Ray Imaging	Yes	
3D CT	Yes	2D / CT switch
Datos x Software	Phoenix Datas x 3D computed tomography acquisition and reconstruction software. Different 3D evaluation software packages for 3D metrology, failure or structure analysis on request.	
System Dimensions W x H x D	4100 x 2600 x 2800mm	6400 x 3900 x 4300mm
System Weight	22,000kg	65,500kg
Radiation Protection	Full protective radiation safety cabinet per German StrSchG/StrSchV, French NFC 74 100 and US Performance Standard 21 CFR Subchapter J.	

¹Focus Object Distance. ²Proportionate to object size.

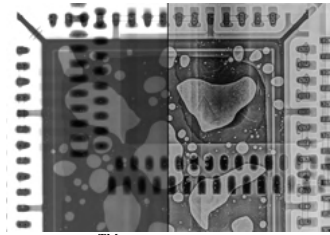
X|aminer Easy to Use Entry-Level High-Quality Electronics X-Ray Inspection



X|aminer



Open BGA ball with live CAD overlay and FLASH!™ image optimisation



Flash!™ Electronic specially optimised for electronic applications.

- Unlimited-life 160kV/20W microfocus tube with optional 3D CT even for high absorbing components
- New improved scintillator superior resolution DXR S85 detector—better image high-efficiency inspections
- Comprehensive, fast, intuitive Live CAD overlay software
- Automated real X-ray sample map for easy orientation on the top, bottom and even inside samples
- Anti-collision sample protection feature
- Economical, small footprint

X aminer	
X-Ray Tube	Low maintenance open microfocus tube, transmission head, 170° cone angle, collimated, Tungsten target rotatable for multiple uses.
X-Ray Detectors	Waygate Technologies DXR S85 1536 x 1536 pixel CsI detector
Geometric Magnification	>2100X
Total Magnification	>91000X
Best Detail Detectability	0.5µm
Max. tube voltage/power	160 kV/20 W
Filament	Tungsten hairpin, pre-adjusted in plug-in cartridges for fast and easy exchange in <20mins
Manipulator	High-precision vibration-free synchronised five-axis manipulation.
Max Inspection Area /Sample	410 x 410mm / 510 x 510mm
Max Sample Weight	5kg
ovhm – Oblique View Rotation	Adjustable view angle up to 70° n x 360°
Control	Manual Joystick or mouse control and Automatic CNC mode
Manipulation Aids	sample X-ray mapping, click'n-move-to function, click'n-zoom-to function, automatic isocentric manipulator movement, active anti-collision system
Dimensions W x H x D / Weight	1800 x 1900 x 1430mm (D without console and demountable back extension) / 2050kg
Radiation Protection	Full protective radiation safety cabinet per German StrSchG/StrSchV, French NFC 74 100 and US Performance Standard 21 CFR Subchapter J.
Software Configuration (Option)	<i>X act BGA check strategy</i> : automated CAD-based analysis of BGA solder joints. <i>X act PTH check strategy</i> : automated CAD-based analysis of PTH solder joints. <i>QFP module</i> : automated QFP solder joint evaluation. <i>QFN module</i> : automated inspection of QFN / MLF solder joints. <i>PTH module</i> : automated pin-through-hole solder joint evaluation. <i>X act review</i> : a visual interface for rework and failure indication. <i>FLASH!™</i> Waygate's exclusive image optimisation technology, especially for electronics applications, is available as an option.
CT (Option)	Available as an option for easyfixCT
Barcode scanner	Manual bar code reader: for product identification
Tilt / Rotate Unit Option	Tilt ±45° and rotate n x 360° samples up to 2kg
Positioning Aid (Option)	Laser crosshair
Rotation PCB Holder Option	Max Board 310 x 310mm
XY Table Option	510 x 510mm inspection area without rotation and OVHM

Microme|x / Nanome|x neo Hi-Res Micro/Nanofocus X-Ray Inspection



Microme|x neo / Nanome|x neo



CT of USB flash drive



Brilliant DXR-HD live imaging

- Temperature-stabilized digital DXR flat panel detector with active cooling (high dynamic live imaging)
- 180kV/20W high-power micro- /nanofocus tube with up to 0.5µm/0.2µm detail detectability respectively
- X|act CAD-based µAXI programming and inspection. Flash!TM (option) for faster, more reliable failure detection.
- Diamond|window for two times faster data acquisition
- CT Upgrade Option for 3D scans within 10 seconds. PlanarCT easy 2D Slice and 3D Volume Inspection

Model	Nanome x neo 180	Microme x neo 180	Microme x neo 160
X-Ray Tube	nanofocus 180kV/15W	microfocus 180kV/20W	microfocus 160kV/20W
	Low maintenance open tube with unlimited lifetime, transmission type, 170° cone angle, collimated, target rotatable for multiple uses		
Target	Diamond window for up to 2 times faster data acquisition		Al Window, Optional Diamond window
X-Ray Detector	High dynamic 200µm pixel resolution detector DXR250RT or Large size 100µm pixel resolution detector DXR S100 Pro		Superior 85µm pixel resolution detector DXR S85
Geometric Magnification	DXR250RT: Max 1970x; DXR S100 Pro: Max 2185x		Max 1970x
Total Mag 27" Monitor/2K	DXR250RT: Max 36,800x; DXR S100 Pro: Max 40,700x		DXR S85: Max 84,800x; CMOS: Max 96,000x
Best Detail Detectability	0.2µm	0.5µm	
Filament	Tungsten hairpin, pre-adjusted in plug-in cartridges for fast and easy exchange		
Manipulator	high-precision vibration-free synchronised 5-axes manipulation		
Max Inspection Area	460x360mm, 610x510mm without rotation table		
Max Sample Size / Weight	680x635mm / 10kg		
ovhm – Oblique View Rotation	continuously adjustable view angle up to 70°, rotation 0° to 360°		
Control	Manual Joystick or mouse control and CNC		
Manipulation Aids	sample X-ray mapping, click'n-move-to/-zoom-to functions, automatic isocentric manipulator		
Positioning Aid	laser crosshair	Optional laser crosshair	
Anti-Collision System	may be deactivated for maximum magnification (tube touching the sample)		
Dimensions W x H x D / Weight	1590 x 1958 x 2160mm w/o control console. (Transport 1770mmW) / 3250kg		
Dose Reduction	Dose manager, with Shadow target, inside the X-ray tube, enables real-time dose monitoring and up to 60% dose reduction for radiation protection of sensitive inspection samples.		
Image Processing Software	<i>Phoenix X act</i> : inspection software with image enhancement, measuring functions, and fast automated CAD-based programming for automatic inspection. <i>BGA module</i> : Intuitive view-based BGA solder-joint evaluation, including automatic wetting analysis. <i>VC module</i> : Intuitive view-based voiding calculation including multiple dies attach voiding evaluation capability.		
Software Options	<i>Flash!TM</i> image optimisation. <i>PlanarCT module</i> : Non-destructive 2D slice and 3D volume board evaluation including 3D viewer software		
Hardware Options	Tilt (± 45°)/ rotate (n x 360°) unit for samples up to 2kg. Manual bar code reader.		
CT Options	<i>Datos x</i> : volume acquisition/reconstruction for 2D/3D CT (via precision rotation unit). Max geometric mag: 100x. Best voxel resolution: 2µm (depends on sample size and tube type)		
Radiation Protection	Full protective radiation safety cabinet per German StrSchG/StrSchV, French NFC 74 100 and US Performance Standard 21 CFR Subchapter J.		

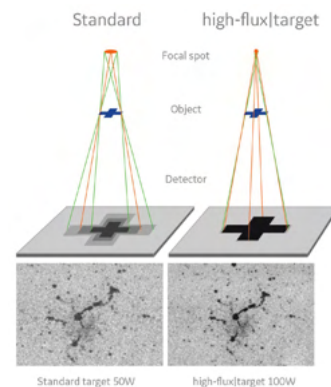
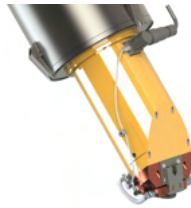
Detectors for High-Performing XCT Systems

Dynamic 41 100	Dynamic 41 200
Detector for Premium CT results in less time	Detector for improved inspection throughput
Next generation 410mm x 410mm industrial flat panel detector. Proprietary Endurance™ CsI scintillator improving superior resolution/brightness. New photodiode design - 10x improved efficiency; 2-3 times cycle time increase without quality impact. Optimised for long-term reliability at high-energy use.	
Double resolution 16MP 100µm pixel size for up to 50µm feature detection with mini-focus tubes	4MP 200µm pixel size for up to 100µm feature detection even with mini-focus X-ray tubes
Reduced inspection times due to increased detector sensitivity, faster frame rates, larger imaging area, and adaptive imaging modes. Dynamic range > 10000:1.	
Proprietary dynamic 41 detector exclusively for Waygate Technologies systems customers. Dynamic 41 100 detector as an option for Phoenix V tome x C, M, and L systems and Seifert X cube.	

DXR500L	DXR250RT
Static Digital Detector Array	8" Real-Time Digital Detector Array
307mm x 249mm flat panel detector with 100µm pixel size (7MP). 1.5X virtual enlargement. High-resolution images for the detection of subtle features	200mm x 200mm flat panel detector with 200µm pixel size (1MP). Quick full-resolution 30fps image acquisition. 2x virtual enlargement
Endurance™ technology for optimal image quality & lag	
Incorporated temperature controller for stable scans over longer periods, more consistent imaging, and fewer calibrations. Dynamic >10,000:1.	
Aerospace, gas turbine castings, wax, ceramics, metrology, science/geology	High throughput castings, pipes, electronics, manipulation systems
DXR detectors exclusively available for Waygate Technologies system customers	

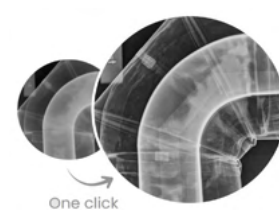
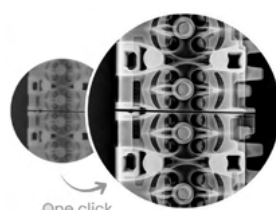
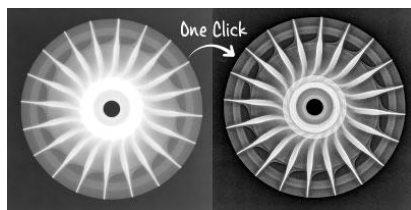
All detector specs per ASTM E2597-07.

High-flux|target Up to 2X Faster microCT Scans or Doubled Resolution!



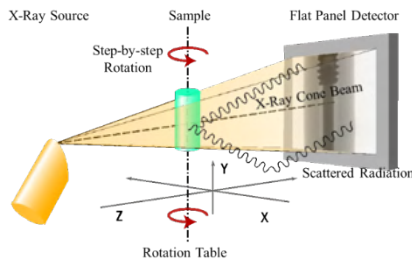
- With optimised thermal conductivity for higher power on a smaller focal spot for up to 2 times throughput at the same high resolution
- Provides better CT quality with less noise to improve speed or accuracy
- Option for all Waygate Technologies microfocus X-ray tubes up to 300kV without impacting geometric magnification properties

Flash!™ Advanced Intelligent Image Processing for new NDT Standards!

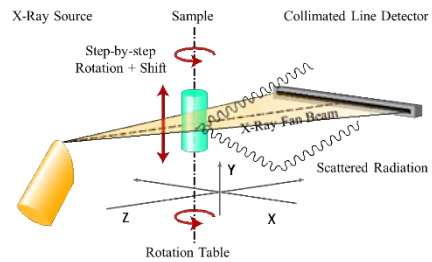


- Highest radiographic inspection image quality available
- High- and low-density details visible in one crisp image

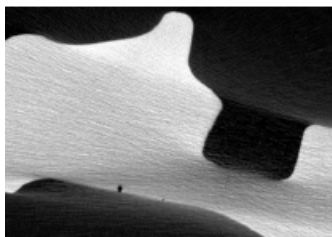
ASC|filter: Adaptive Scatter|Correct Filter Unrivalled Image Quality!



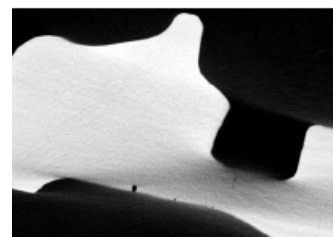
Cone beam CT via a high dynamic FPD capturing thousands of slices in parallel generates whole scan volumetric data in one 360° rotation. However, X-rays not along the source-detector path, falling on the detector array, results in scattered radiation yielding image artefacts.



Fan beam CT with a collimated line detector acquires one slice of data at a time without scatter, resulting in high-quality images. The sample is then vertically shifted and scanned. Finally, all the results are combined. This takes time, while the manipulator movement introduces dimensional error.



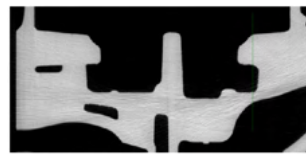
Scatter|correct



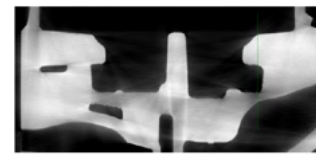
Scatter|correct with asc|filters



Conventional Fan Beam CT (2 hours)



Scatter|correct (9 mins + 1 initial scan)



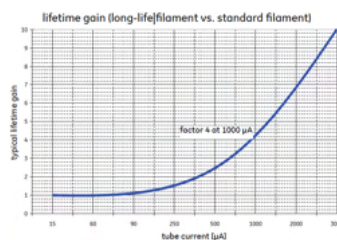
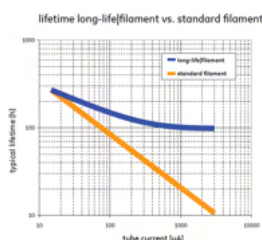
Conventional Cone Beam CT (9 mins)

- Must be ordered with your system and factory-installed. Upgradeable on existing Scatter|correct versions.
- Reduced artefacts for best image quality. Fast and easy data evaluation.

Waygate Technologies' proprietary **Scatter|correct** incorporates leading-edge hardware and software advances to significantly correct cone beam scattering, allowing faster high-image resolution scanning with quality and accuracy.

For high scattering materials such as steel, aluminium, composites, and multi-material samples. Significant productivity gains enabling CT to move from R&D to production automation of serial CT inspections. Requires one-time initial correction (teaching scan) per part type, which is then saved for subsequent scatter-corrected scans. Up to 100 times faster than conventional fan beam CT! Ideal for VDI 2630-1.3-dimensional length metrology.

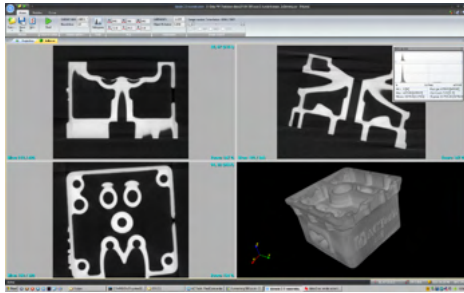
Long|life filament Up to 10X increased lifetime



Long|life filament

- lifetime Long|life filament vs standard conventional filament; increases up to 10 times
- Standard for all WT X-ray directional type microfocus X-ray tubes up to 300kV (tube current of 3000µA)
- Increased filament operation lifetime at high emission currents; increasing uptime for high through-put scenarios
- Easy-to-change plug-in cathode with pre-adjusted filament: The entire change process takes <20min

Phoenix Datos|x Fully Automated CT Data Acquisition Software

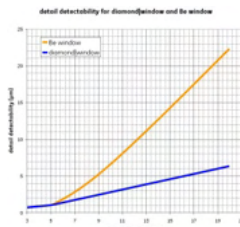
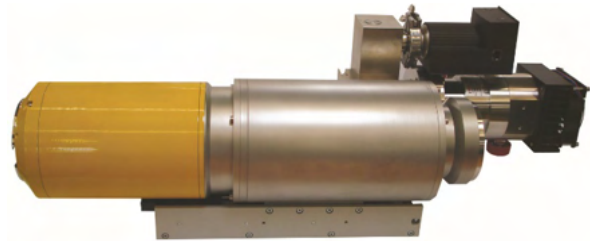


- Up to 14 times faster volume reconstruction for accelerated sample throughput with multi-GPU-based reconstruction
- Click & measure|CT functionality for high throughput
- Flexible functionality and interfaces for Customized CT
- CT system performance monitoring following ASTM 1695 guideline
- Production mode with One-button|CT functionality and intuitive user interface for improved ease of use
- Now available with Flash!TM as an option

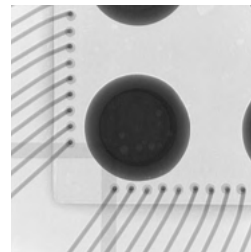
Diamond|window for up to 2 times faster hi-res data acquisition

Tube with Diamond|window

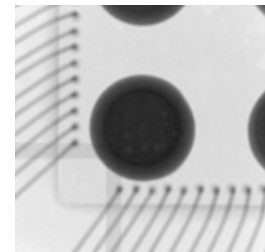
- Standard non-toxic target for all Phoenix micro- and nano-focus X-ray transmission tubes for 180kV/20W
- Up to 2X faster data acquisition at the same hi-res image
- Improved focal spot stability for long-term measurement
- Less degradation – increased high-power target life



Min Focus-Object-Distance 0.3mm. Max mag of high power nanofocus X-ray tubes increased – Min spot size like W/Be target.



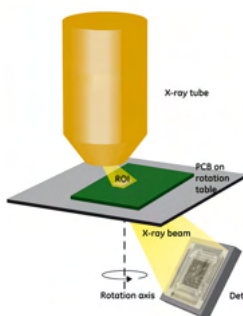
Diamond|window



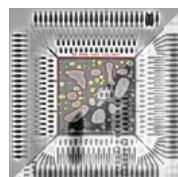
Conventional Beryllium Window

The focal spot has to be wider at higher power to avoid the target material melting. The non-toxic, high thermal conductivity CVD Diamond|window solves this for transmission at 180kV power, allowing smaller focal spots or higher resolution image acquisition up to two times faster for inspecting small features with high-absorbing materials.

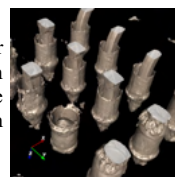
PlanarCT Easy 2D Plane and 3D Volume Inspection Module



- For large planar boards (without cutting or fixing), e.g., complex circuit boards
- 2D slice view for better quality than conventional X-ray with overlaying features
- Excellent image quality and high magnification for wide defect coverage
- Slice and ROI CT volume evaluation in any direction with Datos|x 3D|viewer
- Available with Microme|x and Nanome|x. Upgrade option for already-installed systems



Reconstructed PlanarCT slice or multi-slice view of inspection results of a single plane or a whole package without overlaying from other board areas

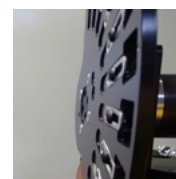


Complete visualisation and evaluation of multiple slice volumes of THT solder joint defects with Datos|x 3D|viewer

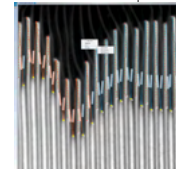
Speed|scan HD 100% Inline High-Speed microCT for Production



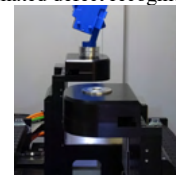
Speed|scan HD



Automated filterchanger



AI automated defect recognition (ADR)



Dual manipulator

- Industry-proven fully automated high-speed inline CT system for production process control and optimisation. Automated part handling for 24/7 Speed|scan HD operations at exceptional voxel resolutions down to 25µm
- Large sample size inspections up to 100% of production volume
- Full 3D production control for electronic, automotive, medical devices, batteries, connectors, injection mouldings, and complex assemblies. Advanced AI-based battery anode overhang analysis as well as automatic defect recognition (ADR) for pass/fail decisions and fully automated CT workflows
- Proprietary, rugged microfocus X-ray tube (Inline|edition, 240kV/100W) designed for production environment
- Automated filter|changer for increased flexibility (up to 10 different hardware filters)
- Dynamic41|200p+ X-ray detector for long-term stability and reliability at industrial high-energy use in production, delivers up to 10 times more efficiency and sensitivity than advanced technology 200µm pixel detectors.
- Dual manipulator shortens inspection cycles, reducing loading/unloading wait times

Speed scan HD	
X-Ray Tube Type	Open directional high-power 240kV/100W microfocus tube with closed cooling water circuit
3D Geometrical Magnification	8X
Detail Detectability/Voxel size	Down to 20µm/Min 25µm
Detector type / Focus Detector Distance	Temperature stabilised Dynamic 41 200p+ large area detector with superior image and result quality, 410x410 mm, 200µm pixel size, 2036x2036 pixels (4MP), extremely high dynamic range > 10000:1 / 800mm. Optional Dynamic 41 100 large area detector with superior image and result quality, 410x410mm, 100µm pixel size, 2048x2048 pixels (16MP), extremely high dynamic range > 10000:1
Max Sample Size/Weight	150mm(Ø) x 200mm(H) / 5kg
Dimensions W x D x H/Weight	~2310 x 2200 x 2055mm (without external components) / 7250kg
Max Focus Object Distance	500mm
Temperature Stabilization	Active X-ray tube cooling temperature stabilised detector
Production edition	Fully automated robot-based workflows
Software	Phoenix Datas x 3D computed tomography acquisition and reconstruction software. WT proprietary Automated defect recognition (ADR) software with a focus on battery overhang detection. Barcode/matrix code reader for part identification. Optional 3D evaluation software packages available for 3D metrology, failure analysis, and structural analysis
Options	48 GB network attached NAS storage with an air-conditioned PC rack with optional uninterruptible power supply; 2 calibration objects for enhanced accuracy; Click & Measure CT for fully automated CT process chain; Dual-stage manipulation for faster part handling; Flash!™ provides outstanding image enhancement on 2D images; Filter changer with up to 10 filters hosted for automatic filter setting adjustment during part mix scanning
Radiation Protection	Full protective radiation safety cabinet per German StrSchG/StrSchV, French NFC 74 100 and US Performance Standard 21 CFR Subchapter J.