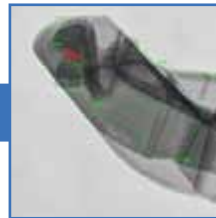


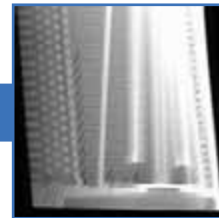
GE
Measurement & Control

Seifert x|cube

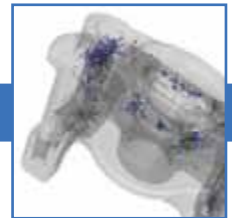
Versatile X-ray system for real-time 2D inspection with 3D computed tomography option



Assisted automatic 2D defect recognition (ADR) in an aluminum casting



Radiographic turbine blade inspection



Precise defect localization and quantitative porosity analysis with 3D CT

Key features & benefits

- Wide application range from automotive's high throughput requirements up to high resolution requirements for aviation casting
- The new 320 kV version can handle samples up to 300 kg
- Simple loading with extractable parts manipulator
- Max. sample size 600x900 mm (800x1,500 x|cube XL)
- Patented extremely low vibration C arm manipulator, flexible swivel angle of +45° to -45°
- Robust design and intuitive operator guidance with x|touch® control panel and teach and learn functions
- DICONDE standard compliant image management
- Optional CT functionality for virtual 3D sections and quantitative porosity analysis



2D X-ray real-time inspection

Flexible automotive and aerospace components assessment

Besides the inspection of safety-relevant castings in the automotive and aerospace industry, the Seifert x|cube is also applied in all areas of industry where there is a need for the fast and effective X-ray inspection of castings, welded structures, plastics, ceramics and special alloys. Its versatility means that it can be used equally well in production, incoming materials inspection and failure analysis environments. Its robust design and the software safety cage ensure it is also ideal for busy industrial areas. The proven Seifert inspection system is now even faster, more flexible and easier to use, while offering a full computed tomography option for when traditional 2D radioscopy is unable to provide clear results.



Designed for a wide application range

Depending on the inspection task, two x|cube models are available:

- The x|cube Compact is offered with 160 kV, 225 kV or 320 kV, and can handle workpiece dimensions of up to 600 mm diameter and 900 mm height, and an overall weight of up to 100 kg (max. 300 kg at 320 kV).
- The XL model, available with 160 kV or 225 kV, has a larger X-ray protection cabinet and is, thus, suitable for the X-ray inspection of parts with dimensions of up to 800 mm diameter and 1,500 mm height.

Fast, flexible and easy to use

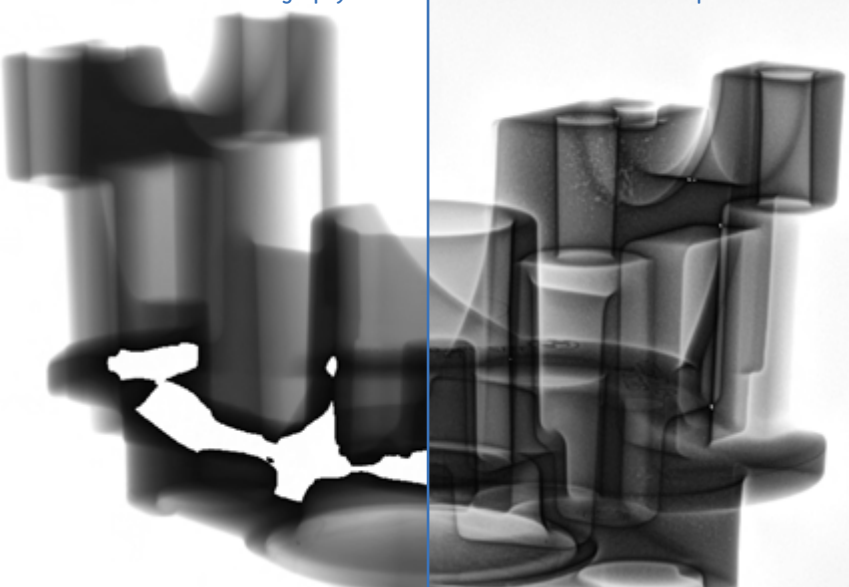
A number of innovative elements ensure that the Seifert x|cube is extremely easy to use. Faster set-up, cycle and image management times result in improved productivity:

- Immediate operational availability without homing
- Fast PLC-type Fanuc servo drives
- Intuitive user guidance with teach and learn capabilities
- x|touch® panel for easy teach-in inspection program creation in less than 30 seconds
- Software safety cage to prevent collisions
- VISTAPLUS software for live, top quality images
- Optional automatic 2D defect recognition (ADR)



Conventional radiography

Flash!Filters™ optimized



Flash!Filters™: See more – know more

GE's proprietary image optimization technology provides brilliant inspection results optimized for the human eye. This helps significantly to ensure short failure detection times and rich contrast increasing failure detection rate and therefore productivity.

Two options are available:

- Flash!Filters™ for casting inspection
- Flash!Filters™ for weld inspection

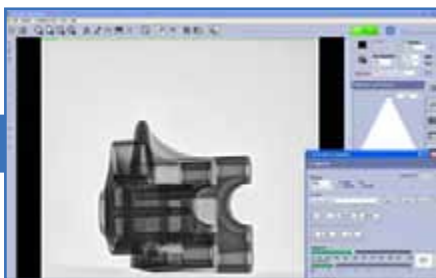
Quantitative 3D failure analysis with CT

Determine the shape, position and size of defects

The new computed tomography option converts the Seifert x|cube into an extremely versatile inspection system that also enables detailed 3D inspections. Thanks to the highly dynamic GE DXR digital detectors, it is possible to display the finest contrast differences such as caused by hidden porosity. The program for CT set-up, image acquisition, volume reconstruction and visualization is easy to use. In contrast to 2D X-ray inspection, 3D analysis and process control using volume data offer considerable advantages:

- Reduction of the reject rate due to the 3D analysis of the position, shape and size of defects
- Depending on their size and their absorption behaviour, impurities, such as inclusions or sand core residue in castings or composite delamination, can be detected, located and classified according to their actual density and position

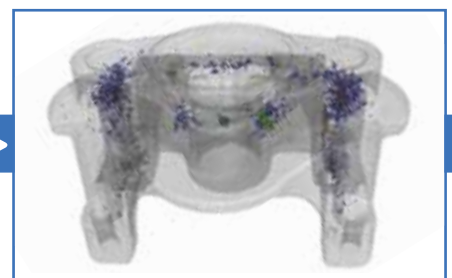
Computed tomography workflow:



With the GE intuitive software it takes just a few clicks to set up the CT scan...



... while the workpiece rotates in the X-ray beam, the extremely fast GE DXR flat panel detector captures a series of 2D radiographic images...



... the reconstructed volume is automatically opened for the 3D analysis and enables, e.g., any virtual sections and quantitative pore analyses.

ASTM and DICONDE compliant inspection solution

The x|cube ensures X-ray inspection according to international NDE standards:

- Interface to GE Rhythm software for inspection and automatic image archiving compliant with the international DICONDE standard which incorporates many features that are NDE-focused describing all of the necessary syntax, attributes and data elements

Seifert x|cube – your benefits

- Fast and flexible for a wide range of applications
- Inspection task programming and ADR for high sample throughput
- Intuitive operator guidance
- Visual real-time inspection combined with optional 3D CT capability
- DICONDE compliant digital image analysis and data management
- Modular design configuration for customer oriented solutions
- All relevant hardware and software components are GE technology
- Reduced maintenance – lower operating costs



Technical specifications



Seifert x cube	Compact			XL	
Energy (max.)	160 kV	225 kV	320 kV	160 kV	225 kV
Max. sample size (Ø x height in mm)	600 x 900 **	600 x 900 **	600 x 900 **	800 x 1500**	800 x 1500**
Max. sample weight	100 kg *	100 kg *	300 kg *	100 kg *	100 kg *
Cabinet dimensions, incl. backpack (L x W x H in mm)	2540 x 1700 x 2455	2540 x 1700 x 2455	2500 x 2250 x 2450	2865 x 2106 x 3100	2865 x 2106 x 3100
Cabinet weight approx.	3950 kg	4550 kg	13000 kg	6550 kg	6550 kg
Control panel weight approx.	350 kg				
Manipulation Travel					
Max. horizontal motion across the X-ray beam	650 mm			850 mm	
Max. external loading/unloading position	250 mm				
Max. horizontal motion magnification axis	650 mm			850 mm	
Focus detector distance (FDD)	800 - 1000 mm			1000 - 1200 mm	
Max. vertical motion	900 mm			1500 mm	
Max. tilt of the C arm	± 45°				
Max. sample rotation	n x 360°				
2D software	Integrated image optimization system VISTAPLUS, optional with semi-automatic defect recognition (pass/fail assessment by the operator)				
System control	Simple and intuitive system control and programming of recurring inspection tasks thanks to X-Touch® Panel				
Control / Drives	Hardware PLC PC independent / Fanuc servo drives				
Detector options	Selection of various digital flat panel detectors, e.g. temperature stabilized highly-dynamic GE DXR 250RT digital detector for pin sharp live images and very fast CT scans, the GE DXR 500 L detector for particularly high-resolution applications or the DXR 250 providing a large active area				
Flash!Filters™ option	Proprietary live image optimization technology for easier visual defect detection in castings or weldings				
Tube options	Various mini to macro focuses as well as various high-power X-ray tubes up to 320 kV for Compact, 225 kV for XL				
Computed tomography add-on	CT package contains all the required hardware and software components for combined 2D/3D operation with GE detectors				
CT scan range	Max. 170 mm Ø x 170 mm height at DXR 250RT 8"x8" detector				
Min. voxel size	Up to 100 µm, depending on the sample size				
Connection values / capacity	3N PE 400/230V 50 Hz, 35 A, TN-S or TN-C-S network / up to approx. 16 kVA***				
Earthing	Separate earthing for X-ray device and high-voltage generator (< 2 Ω) with at least 6 mm²				
Means of transport	Complete X-ray protection cabinet with fork lift truck / Control panel (on pallet) with fork lift truck				
Ambient conditions (in accordance with IEC 60 601-1)	Ambient temperature +10° C to +40° C, air pressure 700 hPa to 1060 hPa				
Compliant with national and international standards	ISO 9001; VDE 0100; UW; DIN EN 60204 (VDE 0113); VBG; DIN EN 60529 / IEC 529; German Radiation Control Act (RöV) of 1987 (with amendments in the current version); DIN EN 954-1; CFR 1020.40; DIN 54113				
Radiation protection	The radiation safety cabinet is a full protective installation without type approval according to the German RöV. It complies with French NFC 74 100 and the US Performance Standard 21 CFR Subchapter J. For operation, other official licenses may be necessary.				

* Depends on the loading position.

** Longer workpieces are possible, this involves the workpiece being reloaded and inspected.

*** Depends on the applied X-ray tube

Note: The inspection volume that can be X-rayed varies according to the total wall thickness and the material density.

www.ge-mcs.com/x-ray



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