MQCT Computed Tomography Solutions -CT PLUS - MQCT 225J

Key Features:

- Custom designed to suit customer specific inspection requirements
- Manufactured with steel/lead/steel
- Lead Glass window for viewing (optional) Meets National (AERB) and International standards with leakage less than 1µsV
- Motored sliding doors with safety light Curtains and Door limit switches
- CCTV monitor for monitoring and recording the entire process of inspection inside the cabinet
- Provision for lifting of Cabinet for positioning in production floors

A robust inspection solution that is flexible, safe and compliant

Computed Tomography Solutions

Whether it's high volume manufacturing or critical research & development applications, quality is of paramount importance. To ensure defect free operations, you can rely on our fully customised CT solutions for a wide range of industrial applications.

Our range of products covers everything from small, specialized parts to rocket motors and propellants. Uncover defects from even the most difficult-to-reach areas, with stunningly detailed 2D and 3D imagery offered by our Computed Tomography Solutions.

At MQS, we engineer precision CT equipment to enlarge the tiniest abnormality. Quickly expose imperfections in your most critical parts with confidence by switching to our Cabinet based CT units. When multiple parts are to be inspected rapidly, our cabinet-based CT systems offer the speed and precision that your industry relies on. Utilizing the integrated MQS Imaging Suite, your intense workflows can be sustained even during a heavy production cycle.

MQCT systems offer the much-needed flexibility of the latest technological advancements, by performing complex metrology and inspection tasks simultaneously. With defect analysis and feedback, defect-free production is achievable.

CT Inspection Solutions

3D Computed Tomography (CT) allows you to see and examine an object's external and internal structures in 3D volume. With our proprietary Imaging software, the CT system takes multiple 2D projections covering the complete object. The Imaging Software presents manipulator controls, X-Ray parameters, and automation processes intuitively to ensure maximum ease-of-use and precise results. MQS Technologies focuses on helping you inspect your product in record time – improving your quality and efficiency.

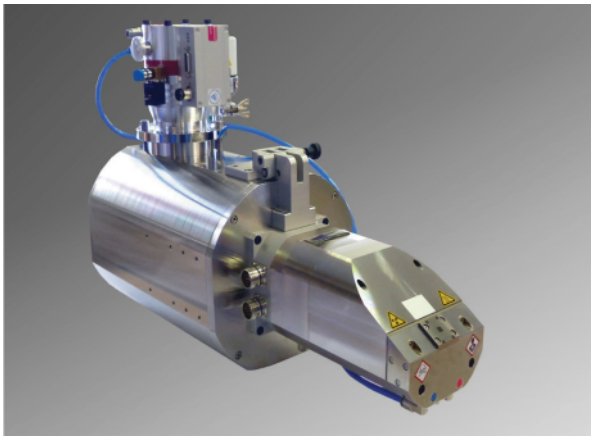
System Configuration

X-Ray Source

Micro/ mini focus X-Ray tubes and linear accelerators are used in aerospace, automotive, electronics industry, heavy engineering, and scientific research. Typical applications are the high-resolution computed tomography of electronic and mechanical components, the testing of weld seams and investigation of castings by digital radiography (DR), and 2D and 3D inline X-Ray inspection.

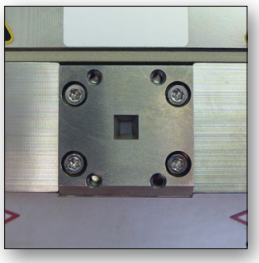
X-Ray Source

Type	: Open Tube Microfocus
Target Options	: Reflection Target
Energy	: 225 kV (MQCT 225J)
Maximum Power	: 500 W
Minimum Focal Spot	: ≤ 8 µm

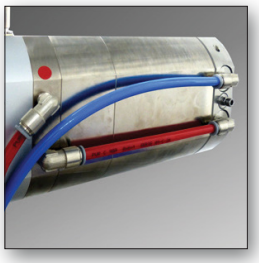


Microfocus X-Ray Tube - Product Line CT PLUS

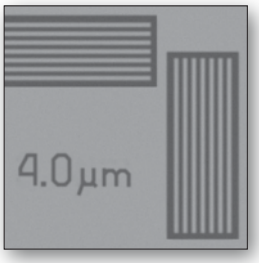
MQCT 225J is a microfocus X-ray system designed for computed tomography and high resolution imaging applications.



MQCT CT system CT Plus with new collimator



MQCT CT system CT Plus with new cooling circuit



JIMA resolution 4.0 µm:

Salient Features:

- Paramount tube power 500 Watt also at maximum voltage of 225kV
- Internal cooling of the tube head and turbo pump for highest stability of focal spot position increases accuracy of CT scans
- Reduced heel effect and round focal spot by redesigned reflection target
- Automatic Intensity Control (AIC) for continuous intensity of radiation
- Unlimited lifetime

Technical data

Data		**Product line** *CT Plus*
Model No	MQCT 225J	
Max. voltage (kV)	225	
Min. voltage (kV)	20	
Max. current (mA)	3.0	
Min. current (mA)	0.05	
Max. power, emission (Watt)	500	
JIMA resolution (µm)	4.0	
Tube type		Reflection
Target type		***High Power***
Target material		Tungsten
Min. focus-object-distance (FOD, mm)	8.0	
Opening angle (approx. °)	40	
Mounting length incl. 90° HV plug (mm)	800	
Tube weight (approx. kg)	50	

Focal spot size

		Voltage [kV]						
					225			
Target power [W]	50				40			
	100				80			
	150				125			
	200				170			
	250				225			
	300				285			
	350				340			
	400				400			
	450				450			

Focal spot sizes in microns (µm) based on measurements according to ***EN 12543-5.***

X-Ray Detector

The next generation of the XRD family of flat panel detectors provide real-time imaging up to 30fps while maintaining an industry leading 16-bit contrast resolution. Extensively used for industrial non-destructive testing (NDT, cone beam CT (CBCT) and metrology.

Technical Specifications

Receptor Type	Amorphous Silicon
Conversion Screen	Direct Deposit CsI, DRZ Plus
Pixel Area Total	19.5 x 24.4 cm (7.68 x 9.6 in.)
Pixel Matrix Total	1,536 x 1,920 (1 x 1) 768 x 960 (2 x 2)
Pixel Pitch	127 µm2
Limiting Resolution	3.94 lp/mm
MTF, X-Ray	>48% @ 1 lp/mm (1 x 1), CsI screen
Energy Range	40 - 225 kVp
Fill Factor	57%
Image Capture	Gigabit Ethernet
Scan Method	Progressive
A/D Conversion	16-bit
Frame Rate	12.5 fps (1 x 1) 30 fps (2 x 2)
Data Output	Gigabit Ethernet
Exposure Control	Opto Coupled, External Sync, Expose OK

Power

Power Dissipation	12 Watts nominal power consumption 11 to 35V input range, 15V typical
Power Supply/Mains	100 - 240 VAC, 47 - 63 Hz

Software

The software release includes ViVA™, a basic application for image acquisition and viewing on an end-user workstation running Microsoft® Windows™. The developer's software package includes a "Virtual Command Processor" software interface that performs detector calibration, detector set-up, image acquisition, and image corrections. ViVA™ includes fi le type translators for .viv, .raw, .jpg,

Mechanical

Weight	9.2 lbs. (4.3 kg)
Housing Material	Aluminum
Sensor Protection Material	Carbon fiber plate (2.5 mm thick) and aluminum

Environmental

Temperature Range - Operating	10°C to 35°C (max.) (measured on the back cover)
(Ambient) - Storage	-20°C to +70°C
Humidity - Operating & Storage (non-condensing)	10 to 90%
Atmospheric Pressure - Operational & Storage	70 kPa to 106 kPa

Regulatory

Canada	CAN/CSA-C22.2 No. 61010-1
U.S.	UL 61010-1
Europe	EN 61326-1:2013

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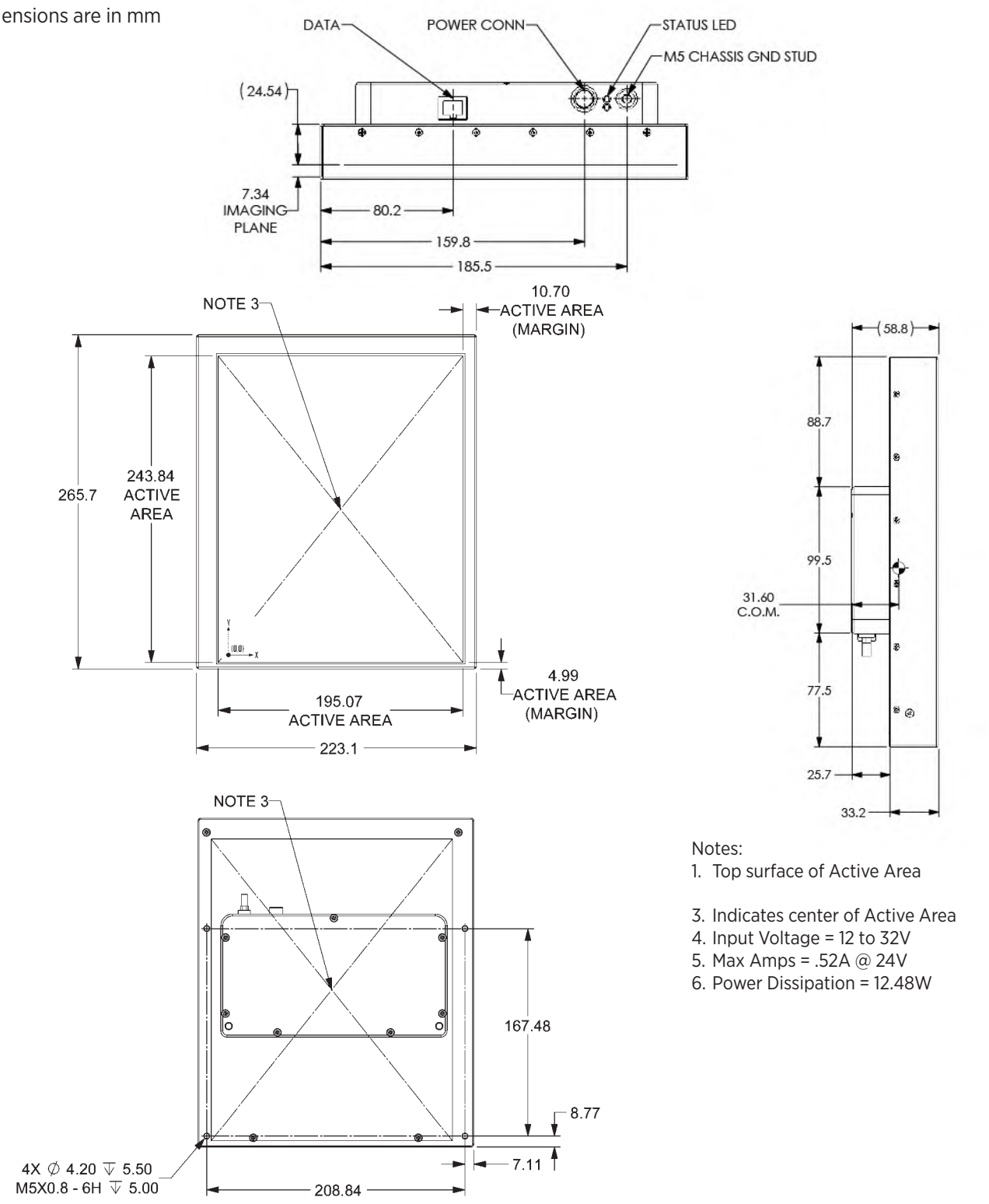
Mechanical Characteristics

Dimensions are for reference only

Dimensions are in mm



Notes:

1. Top surface of Active Area

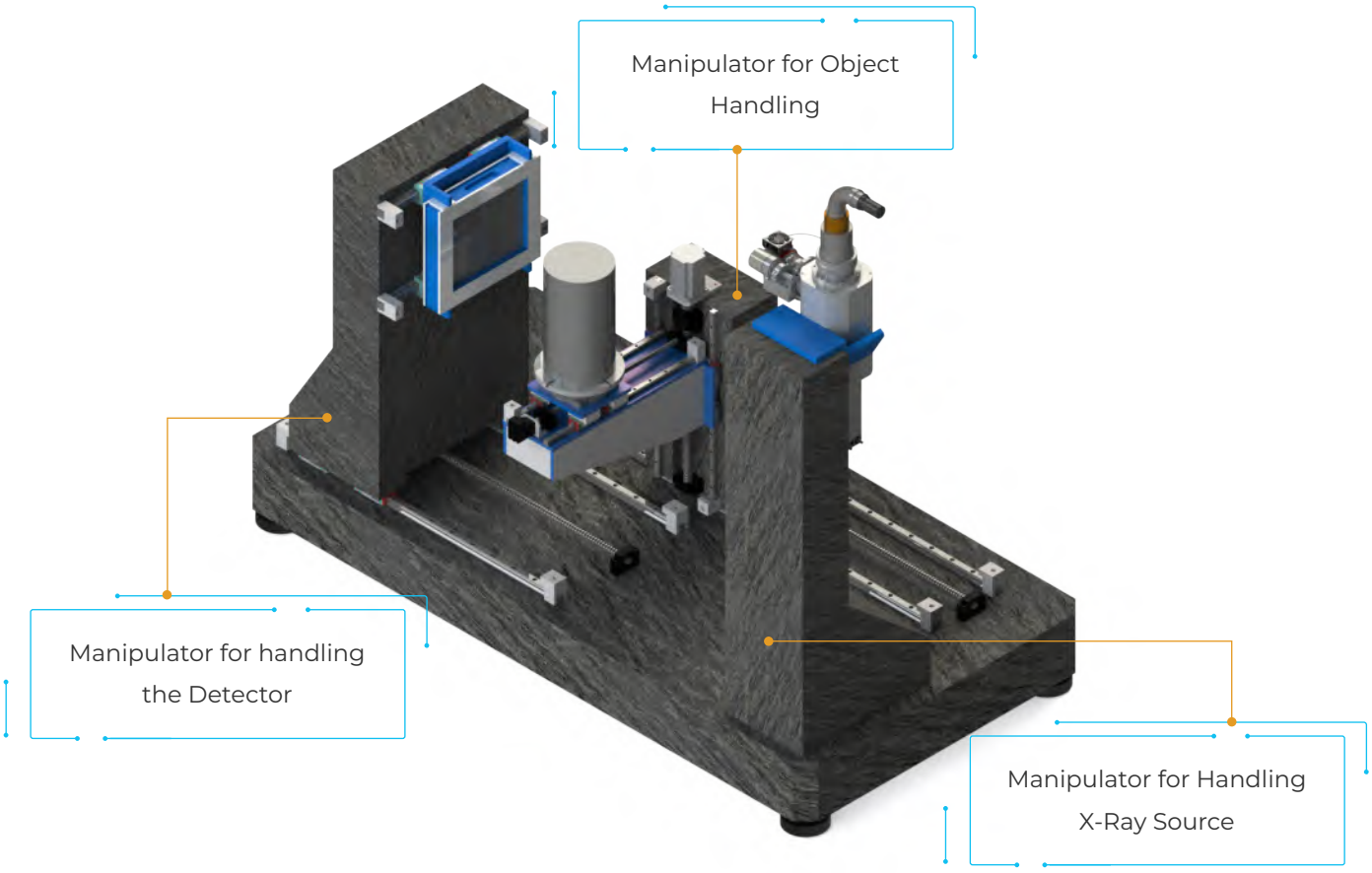
3. Indicates center of Active Area
4. Input Voltage = 12 to 32V
5. Max Amps = .52A @ 24V
6. Power Dissipation = 12.48W

Standalone Manipulators

Standalone manipulators are designed for use in legacy cabinet systems or concrete bunkers with greater flexibility to use the system's existing features.

Tube Manipulator*	:	FIXED (Customizable)
DFPD Manipulator*	:	FIXED (Customizable)
Object Manipulator*	:	X, Y, Z and Rotation Axis
Diameter of Object*	:	Customizable as per the size of sample
Construction*	:	Granite base with Extruded/ Sheetmetal-based Aluminum on machined casting plates

Suitable for realtime inspection.
*Manipulator axis with strokes is designed as per the sample requirement and may be customized.

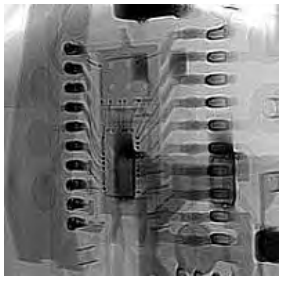


Key Features

- High Precision manipulators for CT applications.
- High accuracy rotary table.
- Fully automated, servo motor controller with position feedback.
- Also available with flame proof option.
- Ease of usage - Position along all axis can be preset and recalled, thereby saving time and labor for large object inspection/ production jobs.
- User Friendly - Easily operable touch controller with motion animation.

Imaging Software

MQS Imaging Suite (MIS) offers 2D and 3D CT projection acquisition and image processing with a user-friendly interface. MIS software is packaged with X-Ray source control, manipulator control for automation and image processing.



Electronics Car Key

Toy Car

Transformer Coil

Car Key

Thermal Fuse

Key Features

Perform 3D Analysis effortlessly with our range of single- and dual-energy systems and software. We make it easy to run structural and Porosity analyses on your prototypes and production parts. Our software assists you further in decoding every defect and ensuring quality. In conjunction with our cabinet-based CT systems, you can conduct in-house inspections as per your industry's demands for precision.

- Acquisition – Single Shot / Sequence / Continuous for2D applications.
- Automated acquisition of projection data from CT manipulators for performing 3D reconstruction.

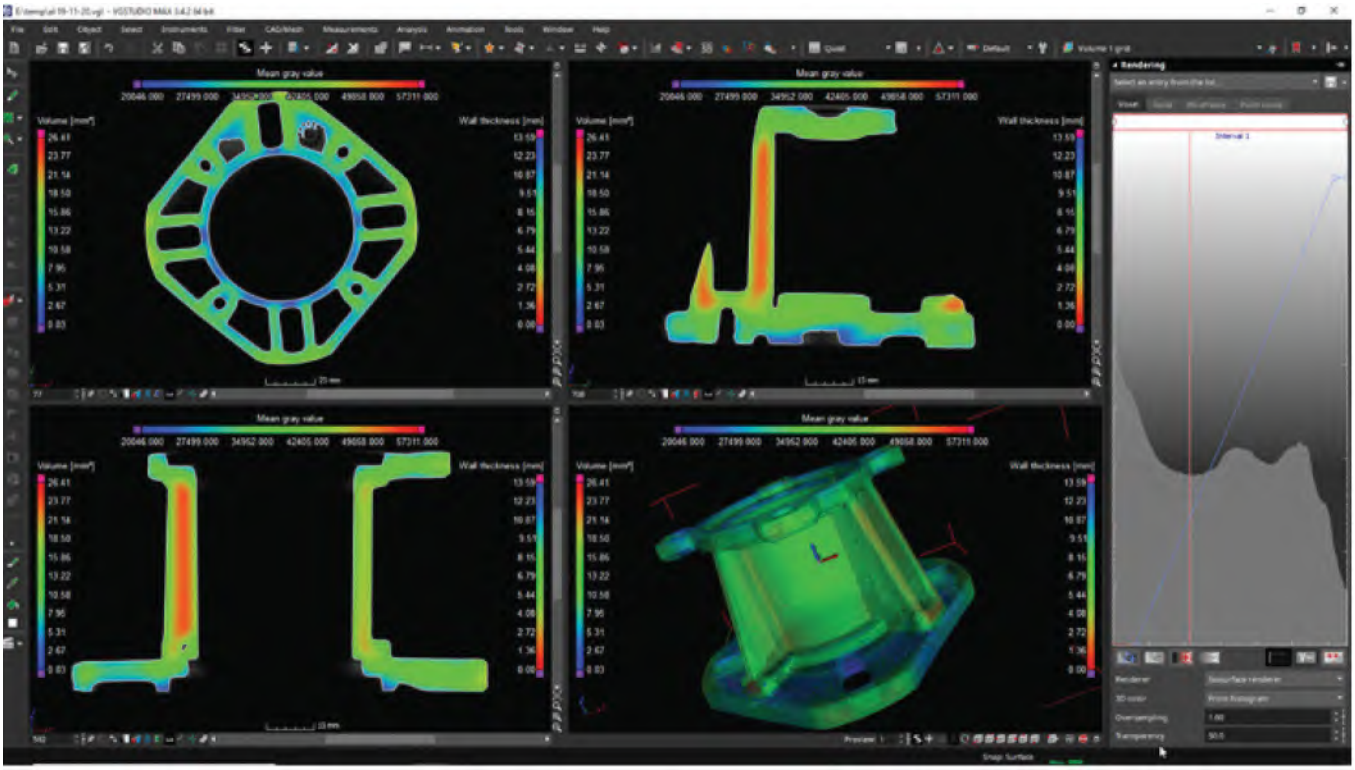
- Acquisition – Single Shot / Sequence / Continuous for2D applications.
- Automated acquisition of projection data from CT manipulators for performing 3D reconstruction.
- Powerful Image Processing tools like Interactive windowing, Grayscale invert, Zooming, Flip / Rotate, ROI tool, Magnifier, Pointer, BNC, Reference imageviewer, thumbnail views & 3D plotting etc.
- Measurement & Analysis tools.
- Histogram tool to count and plot the total number of pixels at eachgrayscale level.
- Multiple storing formats - Line Profile tool to plot the variations of intensity along a line.
- Examining boundaries between components, quantifying the magnitude of intensity variations and detecting the presence of repetitive patterns.
- Built in MACROS (Presets) to automate an inspection task.
- All standard image processing filters.
- Facility to calculate detector characterization parameters such as SNR,CNR and BSRB
- DICOM Print facility both on Film and Paper.
- Calibration (offset, gain/multigain and Pixel). Advanced Filters set for enhanced image viewing capabilities and detecting the defects.
- Assisted defect evaluation.
- Programmable presets for Batch processing.
- Ease of interfacing with multi detectors.
- Dual Monitor Configuration available.
- Multi image format saving.
- DICOM/DICONDE Compliant.
- Frame averaging, histogram correction, Pseudo coloring by threshold, line profile function, Multi user login
- Video recording/ capturing in real time.

CT Reconstruction and Analysis

Ever enhancing industrial manufacturing techniques lead to higher complexities in parts. To manage this complexity - Defect analysis, reengineering and quality control are key elements. With the Volume Graphics, comprising of VGSTUDIO MAX, VGSTUDIO, VGMETROLOGY, VGinLINE, and myVGL, you can carry out all kinds of analyses and visualizations directly on data from industrial computed tomography (CT).

Volume Graphics software is used worldwide by customers in the automotive, aerospace, electronics, medical devices and consumer goods industries for first article inspection reports, automated batch processing, and even inline process control.

MQS CT System along with MIS and Volume graphics software offers a comprehensive and precise X-ray metrology device. The software gives you the most precise picture of all objects' surfaces you can get – and saves it in the very compact .mvgl format. This provides the most accurate metrology on original CT data with no trade-off between file size and the quality of information.

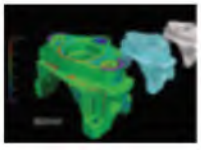


Modules Available

Coordinate Measurement

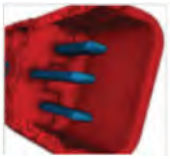
Wall Thickness Analysis

CAD-Import for PMI



Nominal Actual Comparison

Porosity/Inclusion Analysis

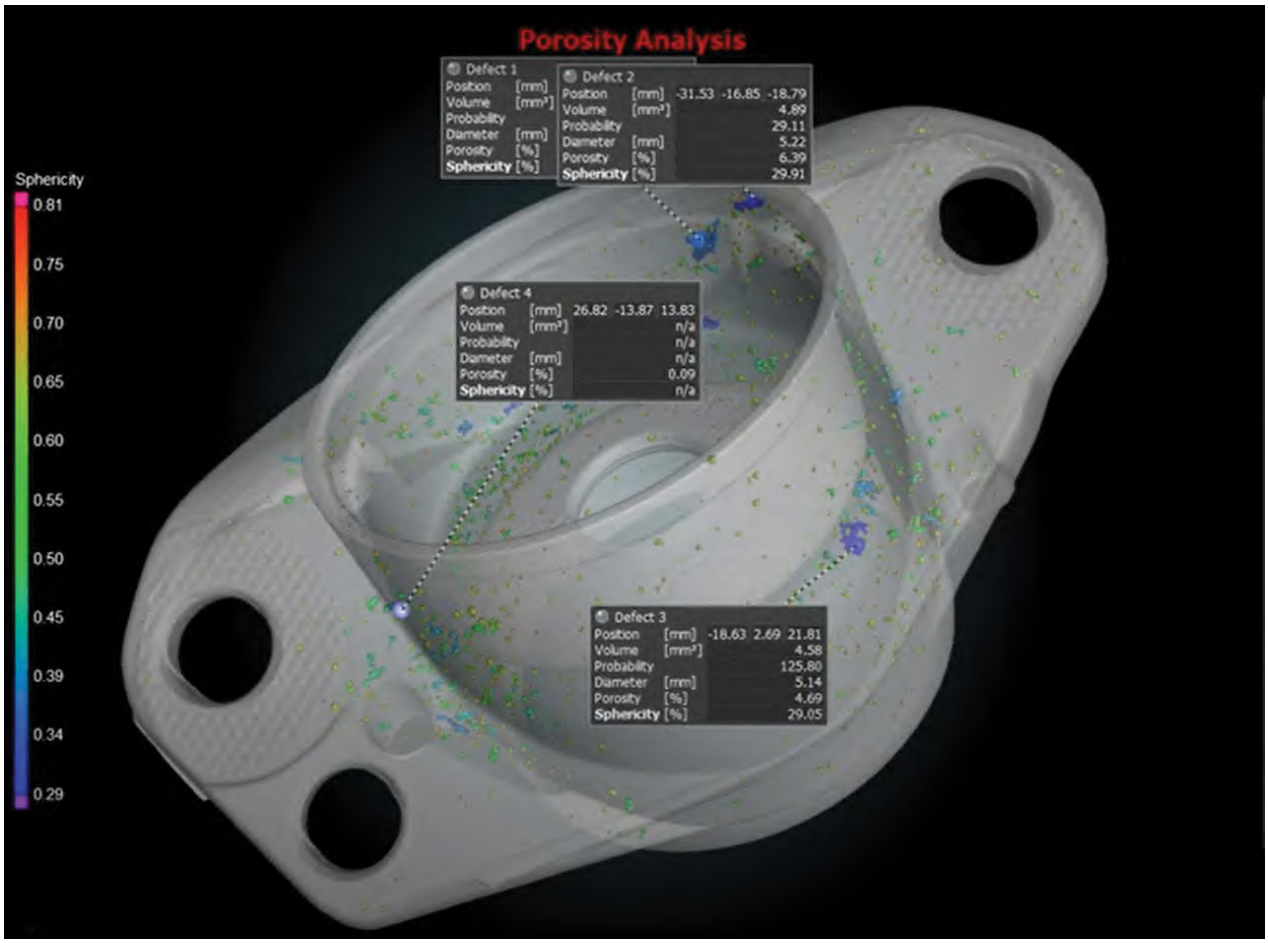


Volume Meshing

Metrology with Industrial CT (Optional)

The metrology software from Volume Graphics and MQS Industrial CT systems gives you maximum accuracy and an efficient workflow.

- Full-featured -VGMETROLOGY offers you the full metrology-related functionality of VGSTUDIO MAX including GD&T functionality.
- Uncompromisingly accurate – VGMETROLOGY gives you the complete picture of all object surfacesand saves it in the very compact .mvgl format.
- Universal - VGMETROLOGY works natively on voxel, point cloud, mesh, and CAD data.
- Easy to use - The focused range of functionality makes VGMETROLOGY easily accessible for new users.
- Efficient - Powerful automation functions speed up your work when dealing with repetitive tasks and analyzing periodic structures.
- Seamless - You can exchange files between VGMETROLOGY and other Volume Graphics products.
- The Universal Metrology Solution - VGMETROLOGY is made for metrologists. Our universal metrology solution
- turns your computed tomography scanner into a comprehensive and precise metrology device.



Our Strengths

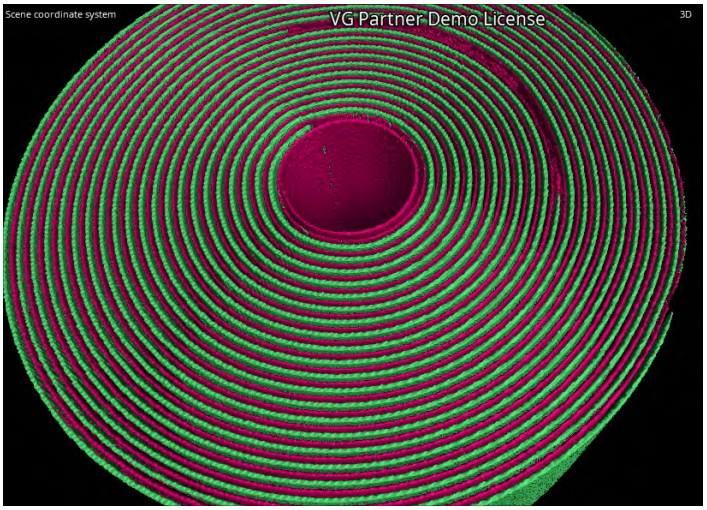
- Multi-disciplinary in–house expertise: (Design, Assembly, Integration & Testing) – Electronics, Instrumentation, Electrical, Imaging, Embedded & LabVIEW Applications, and Mechanical/ Mechatronics
- Cost competitive – Localized sourcing and manufacturing
- Partnering with International OEM's (Global market leaders) for operations in India
- Tailor-made solutions to perfectly match end-to-end CT requirements

KEY ELEMENTS

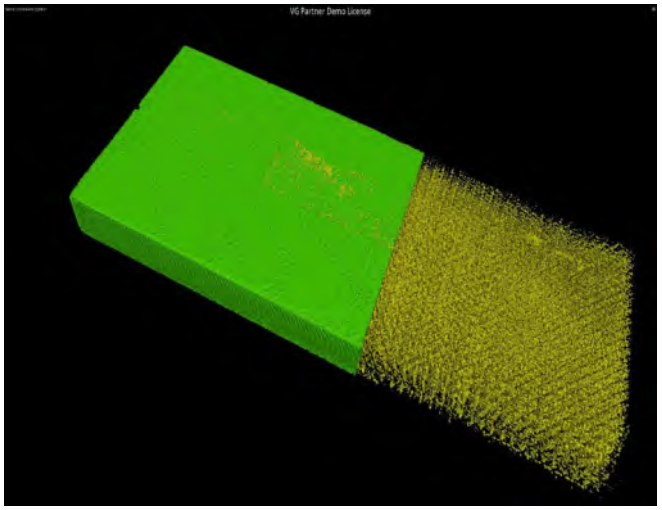
- Parallel CT reconstruction and evaluation
- **Detectability:** Up to 0.5µm in one direction

APPLICATIONS

- Aluminum, steel, and composite components
- Additive manufacturing components
- Aerospace components
- Li-ion batteries inspections
- Injection moulding components
- Industrial and Scientific applications



CT Image for Li-Ion Battery Analysis



CT Analysis of Carbon Composite Material

Our Clients

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ISO 9001:2015 CERTIFIED COMPANY

MQS TECHNOLOGIES formerly MEDEQUIP

Partner
SYSTEM INTEGRATION

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