C251-4695

SHIMADZU
Excellence in Science

Bench-Top X-Ray CT System

XSeeker 8000

A Single System for All Factories

XSeeker™ 8000

The XSeeker 8000 bench-top X-ray CT system is equipped with a high-output X-ray generator and a high-resolution flat panel detector. Although it is a compact bench-top CT system, it has a high X-ray output of 160 kV, enabling clear observations of molded plastic parts, as well as aluminum die cast parts and other metal parts.
In addition, the newly developed XSeeker control software provides high operability and the highest throughput to date.
Thanks to clear image quality and high throughput, it supports applications in a wide range of situations, from detailed observations in product development and quality evaluation to inspections at machining sites.

High-Power Scanning in a Compact Body

Smallest, Lightest Bench-Top CT System in its X-Ray Output Class

This system is equipped with a 160 kV high-output X-ray generator, enabling observations of thick, hard-to-penetrate plastic parts, as well as aluminum die cast parts and other metal parts. It is the smallest and lightest in its X-ray output class, so it can be installed anywhere.

P.4

Image Quality and Functionality on Par with High-End Models

High-Resolution Flat Panel Detector and High-Functionality Viewer

High-accuracy imaging is achieved in offset scan mode, which provides both a wide 100 mm dia. imaging field of view and an input resolution equivalent to up to 5.6 million pixels. In addition, the CT data viewer is equipped as standard with a VR (3D) display function, enabling more intuitive observations coordinated with the cross-sectional display function.

P.5

Operability Optimized for Inspections

New Functionality Provides Easy Operability and High Throughput

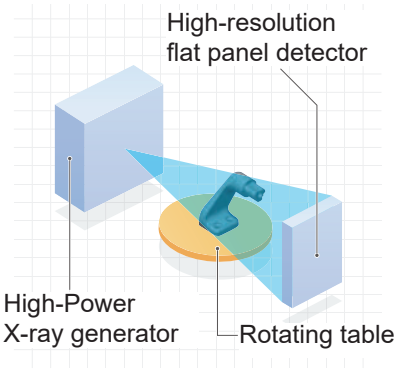
Just a 3-step process enables starting observations. Even users with no operating experience can start CT imaging immediately. In addition, in repetitive imaging in inspection applications, all the processes from starting imaging to observing the cross sections of interest are available at the push of a button.

P.6-9

High-Power Scanning in a Compact Body

Smallest, Lightest Bench-Top CT System in its Class

It is the smallest and lightest bench-top system in its X-ray output class, so it can be installed anywhere.
Since the system size and weight meet the minimum standards for loading into a general passenger elevator in Japan (as per P-6-C *JIS A 4301-1983), there are no difficulties concerning the system delivery route.



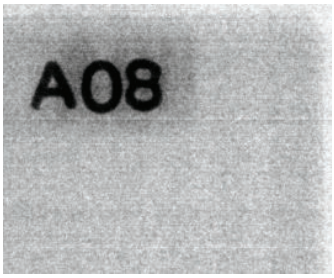
High 160 kV Output Penetrates Metal Parts

Thanks to its 160 kV X-ray output, the system can observe thick, hard-to-penetrate plastic parts and metal parts.
Note: The following are reference values.

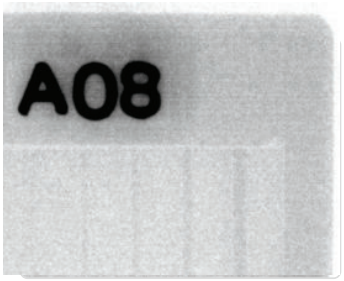
- Transmittance Comparison

Material	Comparison of Transmittance for 100 kV and 160 kV
Plastic	1.2x
Aluminum	1.4x
Iron	2.0x

- Image of a Penetrameter when Penetrating 100 mm of Aluminum



100 kV Output System

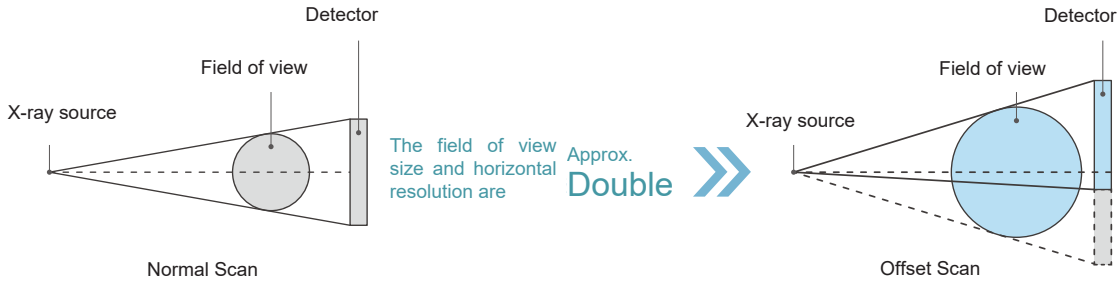


XSeeker 8000
(160 kV output)

Image Quality and Functionality on Par with High-End Models

High-Accuracy Imaging Utilizing a Maximum Input Resolution of 5.6 Million Pixels

The offset scan layout extends the width to approximately twice that of conventional normal scans, resulting in an input resolution equivalent to 5.6 million pixels. The system provides high-accuracy imaging across a wide 100 mm dia. field of view size.



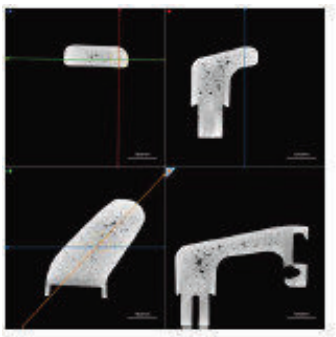
Equipped with a 50 µm Pitch Fine Pixel Flat Panel Detector

The system is equipped with a flat panel detector with fine picture elements measuring approximately 50 µm per pixel. This is the smallest pixel pitch of any equivalent class instrument, enabling sharp observations down to the level of fine structure.

Equipped as Standard with a High-Functionality All-In-One Viewer

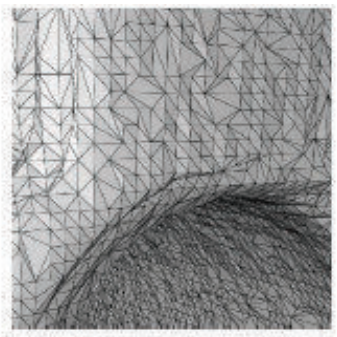
The system is equipped as standard with a high-functionality viewer with the following three functions. In addition to an MPR display, which shows multiple cross-sectional images side by side, this can be combined with a VR display capable of 3 dimensional displays, resulting in more intuitive observations.Measurement can be performed on both MPR images and VR images. Further, the CT data can be converted to mesh data (STL) for output. Data converted to STL can be utilized in a variety of applications such as loading into 3D CAD or outputting with a 3D printer.

MPR Display



VR Display

Conversion to Mesh Data (STL)



Operability Optimized for Inspections

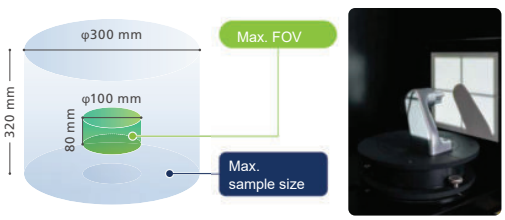
3-Step Scan

Just a 3-step process enables starting observations. Even users with no operating experience can start CT imaging immediately.
Calibration is not required prior to sample placement.

STEP 01

Positioning the Sample

The system is equipped with a unique sample placement support mechanism.
It visualizes the CT imaging region with guide lights at hand for sample placement.



STEP 02

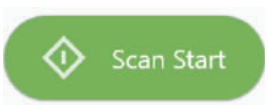
Setting the Scan Conditions

The conditions can be selected with a single click from 4 simple conditions buttons. (Recommended Scanning Function: Page 8)

STEP 03

Scan

Click the imaging start button to start imaging.
Imaging takes as little as 12 seconds.



Observation

In the observation window, the displayed position of the cross-sectional images and VR images, as well as the brightness and contrast are adjusted to ensure the optimal display of the region to observe.

Operation at the Push of a Button

In inspection applications with repeated imaging of samples with the same shape, operation at the push of a button further enhances throughput.
The optimal conditions including the position displayed and the contrast during observations are recorded together with the imaging conditions, so observations can start immediately after imaging without adjusting the observation position or contrast. All operations from starting the imaging to observing the results can be completed at the push of a button, without any software operations.

Optimal for lot inspections!

STEP 01

Setting the imaging conditions is unnecessary!

Positioning the Sample

Samples with the same shape are positioned at a set position on the stage. Thanks to a function that reproduces the imaging conditions, it is not necessary to set the conditions again for each imaging.

STEP 02

Setting observation conditions automatically!

Scan・Observation

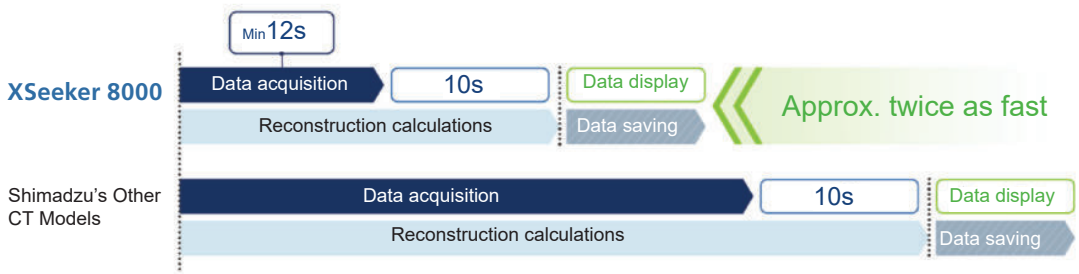
After positioning the sample, press the CT start button on the main unit to start imaging. The observation conditions are automatically set, so with just a push of a button, the region to observe is displayed with the optimal conditions.

One button!

Operability Optimized for Inspections

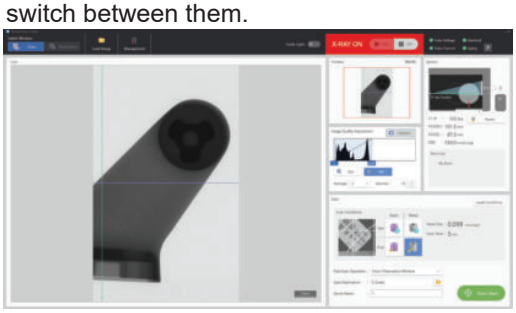
Imaging in as Little as 12 Seconds and High-Speed Reconstruction Calculations

High-speed imaging can take as little as 12 seconds. In addition, the system is equipped with the same reconstruction system as high-end models, so CT data can be displayed a mere 10 seconds after imaging is complete. This is approximately twice as fast as Shimadzu's previously fastest imaging capable CT models.

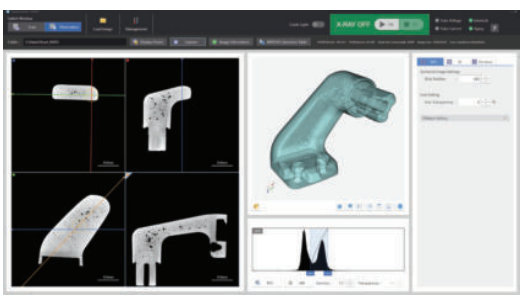


Newly Developed Control Software Enables Intuitive Operations

The simple UI, which eliminates complicated operations, provides intuitive operability so that anyone can easily use it.
There are dedicated windows for imaging and observation respectively, and the user is free to switch between them.



Imaging Window

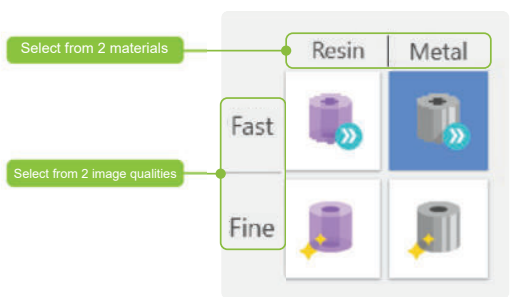


Observation Window

● Recommeded Scanning

ANALYTICAL INTELLIGENCE

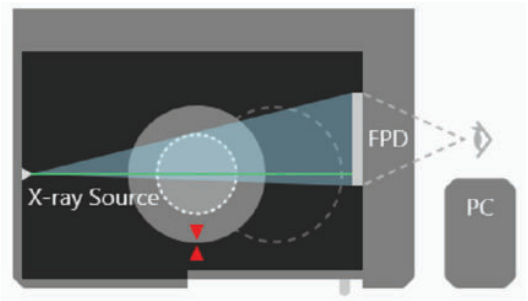
The system is equipped with the automated CT support function, which can set all the imaging conditions with a single click. The optimal imaging conditions can be set easily just by selecting one combination of material and image quality.



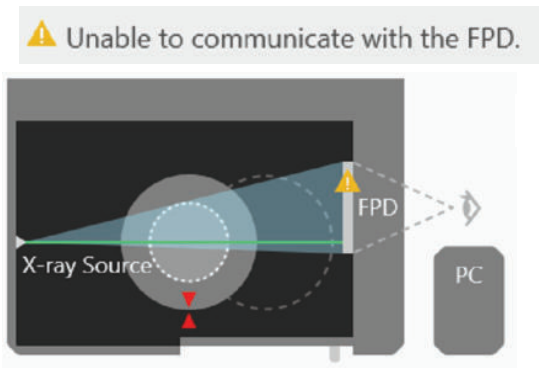
Supporting the Safety and Security of Users

Status Monitor

The status of the CT system is displayed.
The system not only displays instrument status including the stage position during normal operation, but also the details of the error during abnormal operation and the site where the problem occurs, so the operator is notified of the problem immediately.
The status of the system as a whole is always monitored, from warnings that the sliding door is not shut for example to alarms indicating overheating of the X-ray generator and communications faults.



During Normal Operation



During Abnormal Operation

Safety Compliant with the CE Marking

1 µSv/h or less. external X-ray leakage

Equipped with a safety box to ensure that the above-mentioned leakage is not exceeded even with 90 inspections per hour.

Door damper for preventing jammed fingers

The damping mechanism ensures that the sliding door moves slowly and quietly when samples are inserted or removed, so jammed fingers are prevented.

Electromagnetic lock

The system is equipped with an electromagnetic lock mechanism, so the sliding door cannot be opened during irradiation.

CE marking compliant design

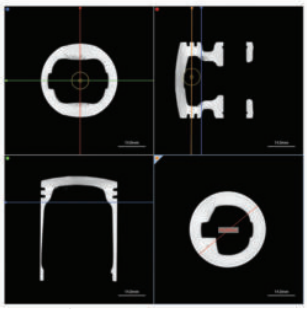
The interlock, indicators, and other safety features are designed for compliance with the CE marking.

Safe rotating table control

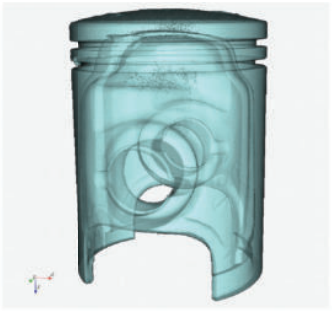
The power is shut down while the sliding door is open so that the rotating table cannot move.

Applications

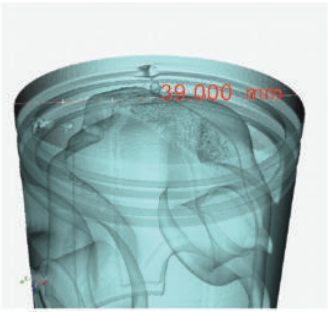
Aluminum Diecast: Piston for Motorcycle



Cross-sectional image
(Dimension measurement)

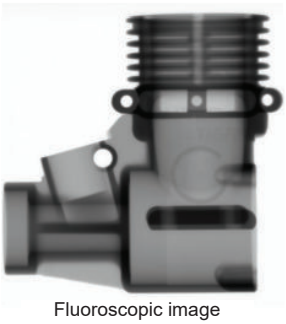


VR Image

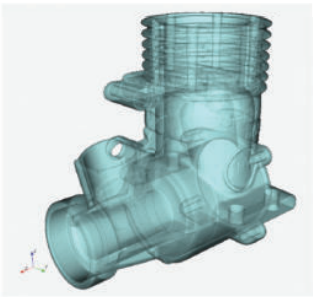


VR Image
(Dimension measurement)

Aluminum Diecast: Drone engine parts

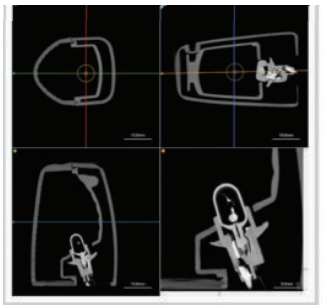


Fluoroscopic image

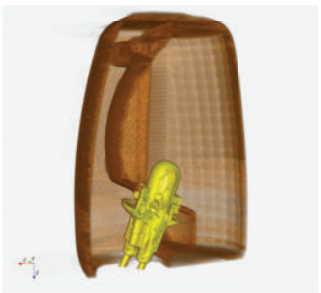


VR Image

Resin parts: motorcycle turn signal lamps

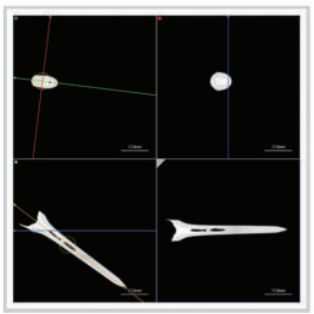


Cross-sectional image



VR Image

Resin Parts: Golf Tees

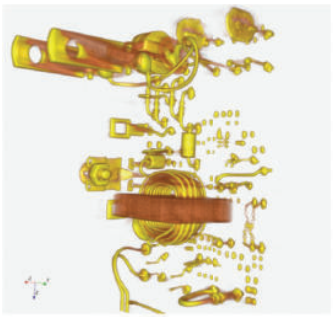


Cross-sectional image

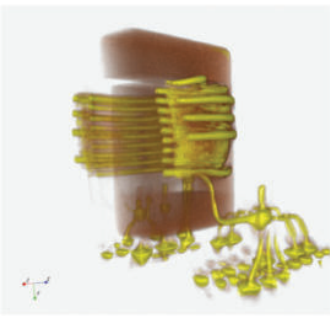
VR Image

Electrical parts: AC adapters

Cross-sectional image

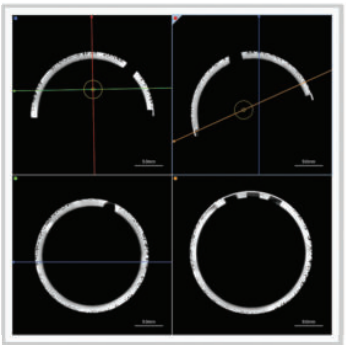


VR Image

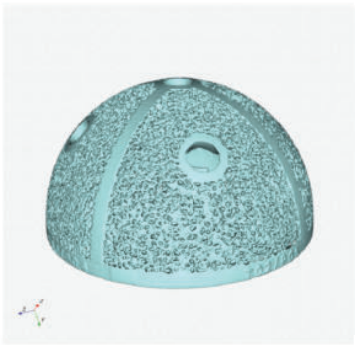


VR Image
(Coil Part Enlarged)

Metallic AM: Acetabular samples

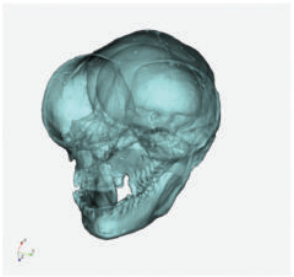


Cross-sectional image



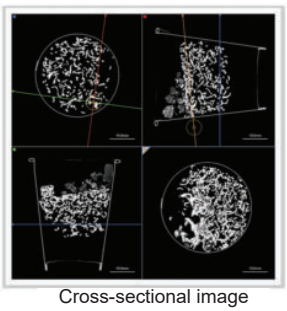
VR Image

Bone: tarsier



VR Image

Food: Cup noodles (mini size)



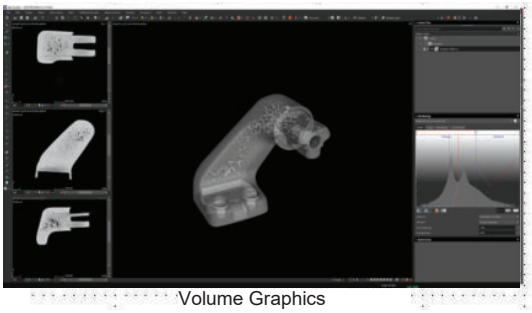
Cross-sectional image

VR Image

Optional Software

VGSTUDIO MAX

This is high-functionality volume rendering (VR) software. It has functions for creating animations, various measurements, extraction of regions of interest, image filtering processes, and positional alignment of 3D images.



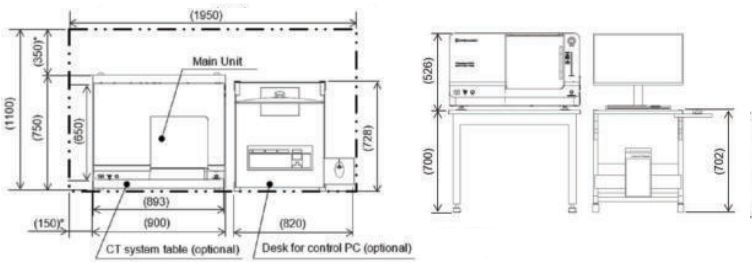
Volume Graphics

Main Specifications

X-Ray Generator Output		160 kV 1.2 mA	
X-Ray Detector		Flat panel detector	
Max. Input Resolution		Approx. 5.6 million pixels	
Max. Sample Size/Weight		SRD*1=475 mm	φ300 mm×H 320 mm、10 kg (Including sample placement jig)
		SRD=550 mm	φ150 mm×H 320 mm、10 kg (Including sample placement jig)
Imaging Region		SRD=475 mm	φ85 mm×H 70 mm
		SRD=550 mm	φ100 mm×H 80 mm
Spatial Resolution		100 μm (SRD=550 mm)	
Imaging Time		12 sec or 5 min	
Rated Output	Main Unit	Single phase 100 to 240 V AC ± 10 %, 50/60 Hz, 1.0 kVA	
	Control Computer	Single phase 100 to 240 V AC ± 10 %, 50/60 Hz, 1.0 kVA	
	Grounding	Grounding resistance of 100 Ω max.	
Weight		290kg	
Operating Environment Conditions		Ambient temperature: 10 to 30 °C; Ambient humidity: RH of 45 to 80 % max. (No condensation)	
External Leakage Dose		1 μSv/h or less.	

*1 SRD ： Abbreviation for source to rotation center distance. Distance from the X-ray source to the rotation center of the sample.

XSeeker 8000 Image and Layout (Units: mm)



Recommended installation space: W1,950 mm × D1,100 mm
*Leave at least 350 mm of space behind the CT system table and 150mm of space left side in order to permit access for maintenance work.

SHIMADZU

Shimadzu Corporation
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初版発行：0000年00月 0000-00000-00XXX