X-RAY CORE IMAGING AND CT

AFFORDABLE, PRACTICAL AND BUILT SPECIFICALLY FOR GEOSCIENCE APPLICATIONS

IF CORE'S WORTH TAKING, IT'S WORTH LOGGING

2D X-RAY RADIOGRAPHY AND 3D X-RAY CT IMAGING SYSTEMS FOR GEOSCIENCE APPLICATIONS

Geotek design and manufacture a full range of cabinet-based digital 2D and 3D X-ray imaging systems for a variety of geoscience markets including: Oil and Gas, Marine/ Onshore Geology, Palaeoclimate, Geotechnical etc. Each of our X-ray platforms is designed for mobility, affordability, practicality, footprint, and diameter and type of core required to be scanned. As a result, there is a state-of-the-art Geotek X-ray system for your geoscience application.

GEOTEK X-RAY IMAGING PRODUCT RANGE:

XCT - STANDARD X-RAY CT

Compact 2D and 3D X-ray imaging system perfect for whole or split cores in plastic or aluminium liners.

RXCT - ROTATING X-RAY CT

The most flexible and capable 2D and 3D X-ray imaging system with a rotating source and detector.

VXCT - VERTICAL X-RAY CT

A small footprint vertical 2D and 3D X-ray CT product where samples are scanned vertically and rotated on a heavy duty stage.

plugXcan - CORE PLUG X-RAY CT

A high throughput dedicated core plug and sidewall core X-ray CT system.

scoutXcan - 2D X-RAY SCANNER

An affordable multi-angle 2D X-ray radiography and pseudo-3D laminography system for geological samples.

scoutXcan : MULTI-ANGLE DIGITAL 2D X-RAY RADIOGRAPHY AND LAMINOGRAPHY

Image 1

An affordable multi-angle 2D X-ray radiography and pseudo-3D laminography system for geological samples. Automated digital image acquisition of the full width and length of whole or split cores in plastic or aluminium liners. Cores are securely held by bluetooth-controlled motorised arms that translate and rotate the samples past a closed 130 kV X-ray source and flat panel detector.

Image 2

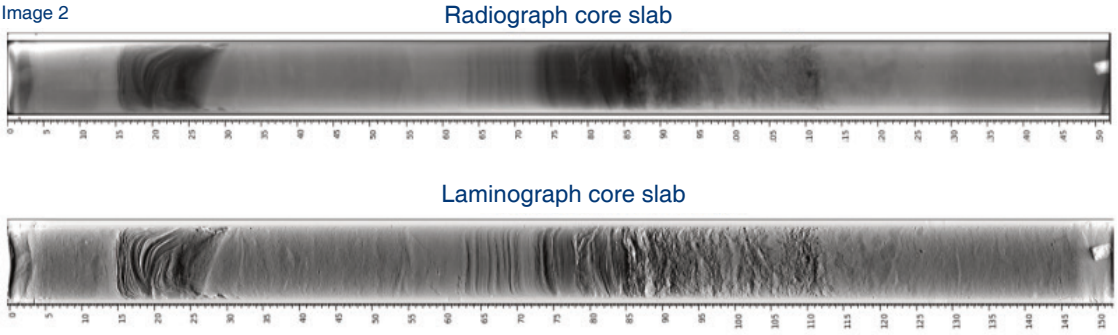


Image 1: Unwrapped circumferential from ScoutXcan using laminography. **Image 2:** 2D Radiograph and Laminograph from ScoutXcan

ScoutXcan is delivered with easy to use software for the creation of 2D radiographs, unwrapped circumferential images from whole cores (Image 1), and 2D laminography images at multiple steps (Image 2).

PSEUDO 3D DATA FROM LAMINOGRAPHY

Laminography is a fantastic, affordable, lower data intensity alternative to a full 3D CT scan. It's a radiographic X-ray technique that creates a sequence of 2D 'slabs' at increasing depths cross-core. Features within each 2D slabs or 'laminograph' are brought into focus at different depths enhancing sedimentary structures, and provide additional 3D information. This technique is also used to create circumferential images without the need for CT (Image 1).

SPECIFICATIONS
X-ray source: 65 W Thermo Kevex Microfocus
Voltage Range: 45 kV to 130 kV
X-ray Spot Size Range: 7 µm to 100 µm
Detector: 1920 x 1536 pixel flat panel detector
Image Resolution Range: 30 µm to 350 µm
Size (L x W x H): 4997 mm x 700 mm x 2022 mm
Utilities: 100V to 240V, single phase, 50-60 hz
Cores Dimensions: Diameter - 50 mm to 150 mm, Length - up to 1.5 m in length

plugXcan:

Dedicated high throughput and high resolution

CORE PLUG and SIDEWALL CORE X-RAY CT SYSTEM

A high throughput dedicated core plug and sidewall core X-ray CT system. Up to 100 core plugs or sidewall cores can be scanned per day with a cubic voxel resolution of c. 80 microns. PlugXcan utilises a long lifetime closed 130 kV X-ray source, a large flat panel detector, and motorised object positioning to optimise resolution between 40 µm and 250 µm. Multiple core plugs (up to 8) are securely mounted using a Geotek “QuickFix” holder for stable and automated scanning.

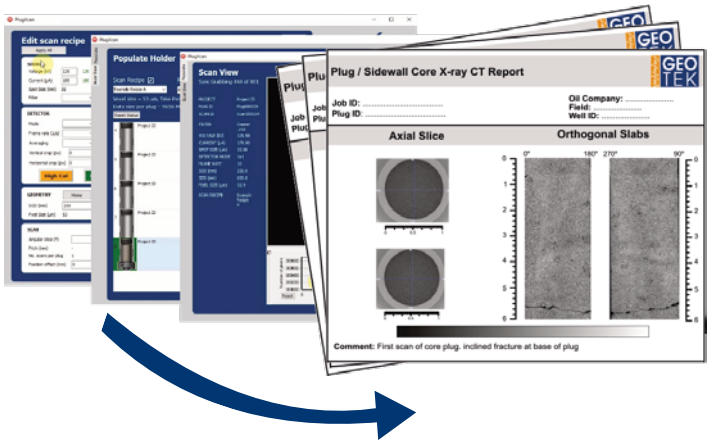
PlugXcan Benefits and Applications

SPECIFICATIONS

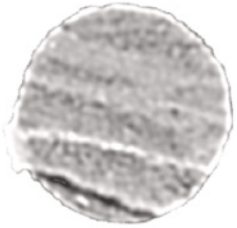
X-ray source: 65 W Thermo Kevex Microfocus
Voltage Range: 45 kV to 130 kV
X-ray Spot Size Range: 22 µm to 100 µm
Image Resolution Range: 40 µm to 250 µm
Typical Resolution: c. 80 µm for 1.5” core plugs
Size (L x W x H): 1457 mm x 767 mm x 1982 mm
Utilities: 100V to 240V, single phase, 50-60 hz
Cores Dimensions: Diameter - 1” to 3”, Length - up to 6” in length
Weight: c. 1500 kg
Cooling: None
Output: 16-bit Tiff stack with automated report generation
Core Loading: Geotek QuickFix holders
Rotation accuracy: 0.002 degrees
Rotation Method: Vertical core rotation

- Fast (2-3 minutes per plug) scanning to enable scanning of all core plugs/sidewall cores
- Superior image resolution and sensitivity compared to medical CT data for core plugs/ sidewall cores

Produce CT Deliverables Faster with PlugXcan



Medical CT
300µm x 625µm

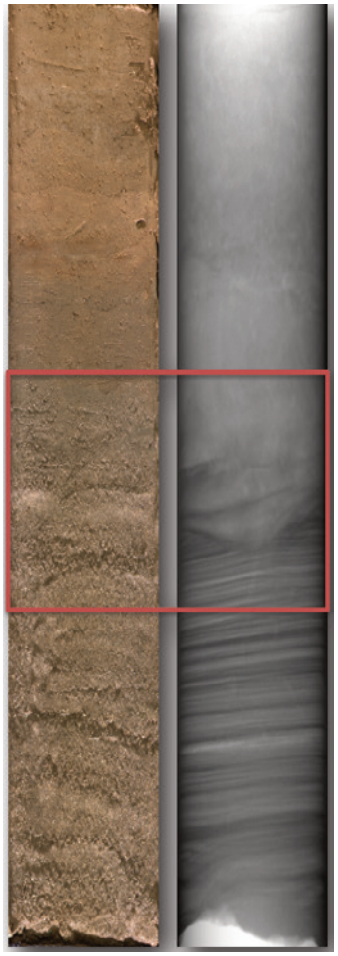


plugXcan
100µm x 100µm

XCT: STANDARD X-RAY CT SYSTEM

A versatile and compact 2D and 3D X-ray imaging system perfect for whole or split cores in plastic or aluminium liners. Core are translated and rotated past a long lifetime closed X-ray source and flat panel detector. The Geotek XCT system is available with two X-ray source set ups. Choose from either the 65 W Thermo Kevex Microfocus or 90 W Hamamatsu 180 kV microfocus, depending on your requirements. The XCT system uses bluetooth-controlled motorised arms with a variety of adapters to hold cores securely. Furthermore, the X-ray source and detector positions are adjustable for optimisation of image quality and resolution for each core size. The space-efficient design of the XCT allows the instrument to share space in a crowded laboratory, or fit inside a 20' container lab for onshore or offshore field projects.

X-ray Imaging provides crucial information on the natural and artificial of unconsolidated sediment and lithified rock cores that may be missed through visual observation alone.



- XCT can be installed into laboratories without a lead-lined room
- XCT is capable of 2D radiography, laminography and 3D X-ray CT
- XCT can acquire X-ray images of whole cores without splitting/cutting cores
- XCT has stable horizontal geometry for split core X-ray imaging
- XCT provides automated scanning without the need to splice images together manually
- XCT has flexible resolution for different core sizes between 30 µm and 350 µm

SPECIFICATIONS

X-ray source: 65 W Thermo Kevex Microfocus **or** 90 W Hamamatsu 180 kV microfocus
Voltage Range: 45 kV to 180kV
X-ray Spot Size Range: 130 kV - 7 µm to 100 µm 180 kV - 20 µm to 200 µm
Detector: 1920 x 1536 pixel flat panel detector
Image Resolution Range: 30 µm to 350 µm
Size (L x W x H): 130 kV - 4997 mm x 700 mm x 2022 mm 180 kV - 5210 mm x 765 mm x 2036 mm
Weight: 130kV - c. 1200 kg Weight: 180kV- c. 2000kg
Utilities: 100V to 240V, single phase, 50-60 hz
Cooling: None
Cores Dimensions: Diameter - 5 cm to 15 cm, Length - up to 1.5 m in length
Output: 16-bit Tiffs for 2D deliverables and 16-bit Tiff stack with automated report generation for CT deliverables
Core Loading: Bluetooth-controlled Push-Me-Pull-You motorised arms
Rotation accuracy: 0.002 degrees
Rotation Method: Horizontal core rotation
CT Reconstruction: Cone beam with volume stitching

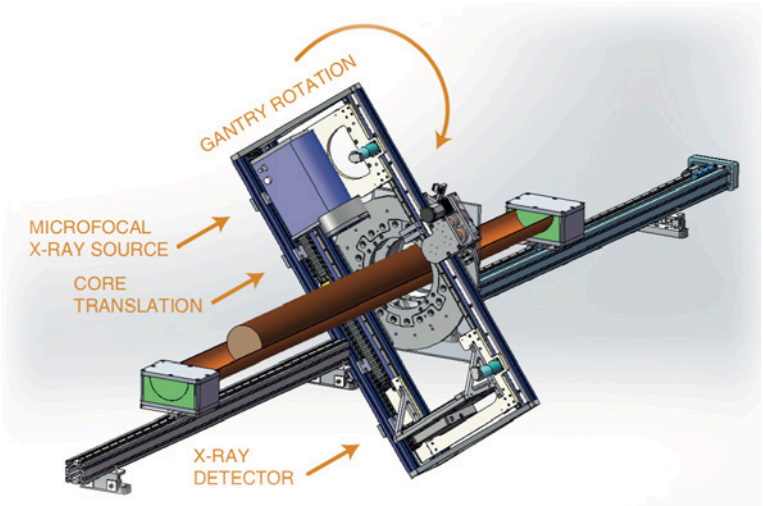
RXCT: ROTATING X-RAY CT SYSTEM

The RXCT is Geotek's most flexible and capable 2D and 3D X-ray imaging system. The system is fitted with a rotating source and detector gantry and is the ideal instrument for fractured or fragile cores that cannot be rotated but where CT data are required. Cores are securely held using a variety of adapters specifically designed for geological samples and translated past the source and detector using bluetooth-controlled motorised arms.

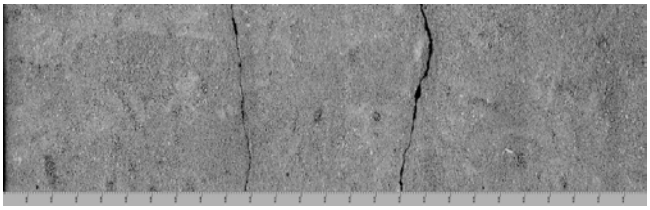
SPECIFICATIONS

- X-ray source: 65 W Thermo Kevex Microfocus
- Voltage Range: 45 kV to 130 kV
- X-ray Spot Size Range: 7 µm to 100 µm
- Detector: 1920 x 1536 pixel flat panel detector
- Image Resolution Range: 30 µm to 350 µm
- Size (L x W x H): 5150 mm x 2050 mm x 2300 mm
- Weight: c. 2,200 kg
- Utilities: 100V to 240V, single phase, 50-60 hz
- Cooling: None
- Cores Dimensions: Diameter - 5 cm to 15 cm, Length - up to 1.5 m in length
- Output: 16-bit Tiffs for 2D deliverables and 16-bit Tiff stack with automated report generation for CT deliverables
- Core Loading: Bluetooth-controlled Push-Me-Pull-You motorised arms
- Rotation accuracy: 0.002 degrees
- Rotation Method: Horizontal core with rotating X-ray source and detector
- CT Reconstruction: Cone beam with volume stitching

ACQUIRE 2D X-RAY SCANS AND 3D X-RAY CT VOLUMES

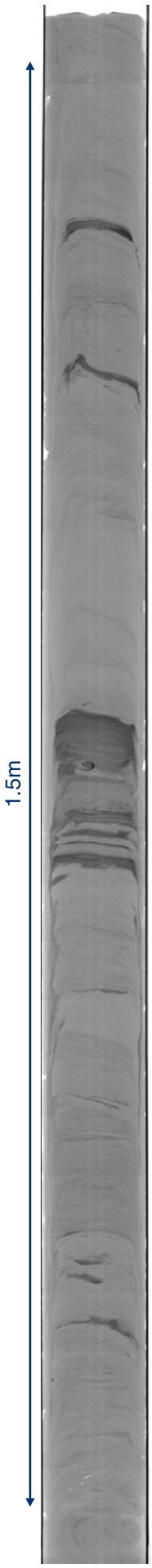


- The RXCT is the solution to whole core scanning without the cost, poor resolution, complexity, size, and infrastructure required for a medical-style CT system.
- Designed with a unique rotating X-ray source and detector gantry for whole core scanning of lined rock cores, fractured material, and unconsolidated sediments.



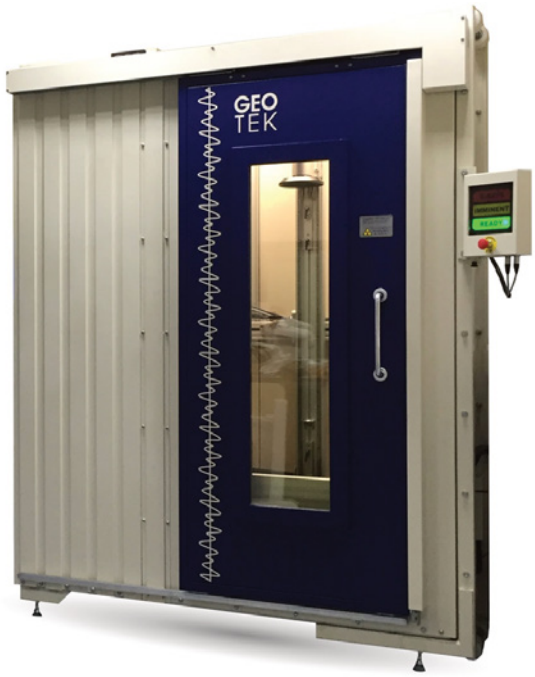
Loose Oolite 1.5" core with two fractures scanned on the RXCT at c.35 micron resolution

VXCT: VERTICAL X-RAY CT SYSTEM



SPACE-SAVING DESIGN WITH ALL THE FUNCTIONALITY

A small footprint vertical 2D and 3D X-ray CT product where geological samples are securely mounted vertically and rotated on a heavy duty stage. A three-axis geometrical movement of the source, object, and detector creates an adaptable environment for set-up for variety of core sizes and types.



- High stability and highest resolution from any Geotek X-ray CT system
- Space-saving compact system with the ability to log whole core samples up to 1.5m, and with reinforced precision stage for heavy and large samples
- Cores are rotated and can be viewed through a lead glass window for **sample inspection during scanning**
- Flexible adapters for easy location of core samples or hand specimens onto the stage for consistent geometry
- One system solution for whole core, core plugs and sidewall cores
- Vertical arrangement perfect for X-ray imaging of seabed marine sediment cores

SPECIFICATIONS

X-ray source: 65 W Thermo Kevex Microfocus
Voltage Range: 45 kV to 130 kV
X-ray Spot Size Range: 7 µm to 100 µm
Detector: 1920 x 1536 pixel flat panel detector
Image Resolution Range: 30 µm to 350 µm
Size (L x W x H): 1950 mm x 670 mm x 2500 mm
Weight: c. 2,200 kg
Utilities: 100V to 240V, single phase, 50-60 hz
Cooling: None
Cores Dimensions: Diameter - 5 cm to 15 cm, Length - up to 1.5 m in length
Output: 16-bit Tiffs for 2D deliverables and 16-bit Tiff stack with automated report generation for CT deliverables
Core Loading: Vertically held with centralising core cones on a heavy duty stage
Rotation accuracy: 0.002 degrees
Rotation Method: Vertical core rotation
CT Reconstruction: Cone beam with volume stitching

MOBILE SYSTEMS

X-RAY CAPABILITY IN THE FIELD

Geotek's core logging equipment is designed to be mobile and versatile to suit a range of project environments both offshore and onshore.

We can install an XCT system into a standard 20ft or 40ft container. Geotek mobile X-ray container labs are self-contained working environments that can be quickly deployed to the desired location for near-real time data acquisition.

SUPPORT

Geotek offer Gold and Silver service and support packages for our X-ray CT product line. The Geotek team incorporates a range of engineers, software developers and geoscientists who can provide both instrument and application support to our customers.

	SILVER	GOLD
Telephone and online support for application and instrument queries	✓	✓
Online diagnostic support	✓	✓
Latest software upgrades	✓	✓
30% Discount on labour and consumable parts	✓	
Labour and consumable parts included		✓
Annual service or repair visit		✓

PURCHASE

LEASE

SERVICE

The Geotek X-ray CT systems are available for purchase, lease or service. Please contact us for more information.

GEOTEK

Geotek Limited

4 Sopwith Way • Daventry • Northamptonshire • NN11 8PB • United Kingdom

Tel: +44 1327 311666 or email: info@geotek.co.uk

www.geotek.co.uk