X-RAY CORE IMAGING WITH CT

MSCL-RXCT: ROTATING X-RAY CT FOR SEDIMENT AND ROCK CORES

VERSATILE X-RAY SCANNER

With the Geotek MSCL-RXCT X-ray core imaging system, linear digital X-ray images can be collected on whole core, split core, or slabbed core sections. Images collected while the source and detector rotate around the core material can be used for computed tomographic (CT) reconstructions, allowing users to visualise and record three-dimensional structures within the cores. X-ray CT imaging provides valuable quantitative data as well as information about core quality for sub-sampling or further anlyses.

DESIGNED FOR CORE MATERIAL

Core sections up to 155 cm in length and 15 cm in diameter can be inserted into the Geotek MSCL-RXCT X-ray system. The X-ray source and detector positions are adjustable and can be optimised for image quality and core size. Core material, either plastic-lined sediment or bare rock core, is placed in a tray which moves horizontally past the rottaing source-detector assembly. The tray can accept material of any shape, including fragile material that cannot be rotated. This makes the MSCL-RXCT suitable for cores that cannot be rotated in the standard MSCL-XCT.

CABINET SAFE

X-ray CT without a shielded room! The system is fully sheilded and enclosed, compliant with USA and EU regulations, allowing it to be used in any normal laboratory environment. Warning lights indicate when the system is energised, and safety interlocks ensure that the X-ray source cannot be energised whenever doors are opened.

MSCL-RXCT.
Core material moves horizontally past the central section containing the rotating X-ray source and flat-panel X-ray detector.
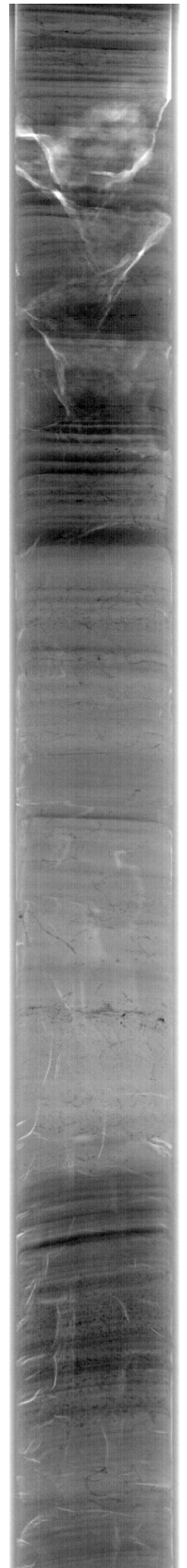
IF CORE'S WORTH TAKING, IT'S WORTH LOGGING

NO SLABBING

Visually flat images can be created from scanned whole or split cores using software corrections. A uniformly high-quality image can be obtained across the entire width of the clindrical (or half-cylindrical core without the need for physical slabbing.

DIGITAL X-RAYS

Data from the 14-bit digital flat panel is output to the user as 16-bit grayscale TIFF images with a typical resolution of 120 microns; these images can easily be converted to JPEG or other formats.

GANTRY ROTATION

MICROFOCAL X-RAY SOURCE

CORE TRANSLATION

X-RAY DETECTOR
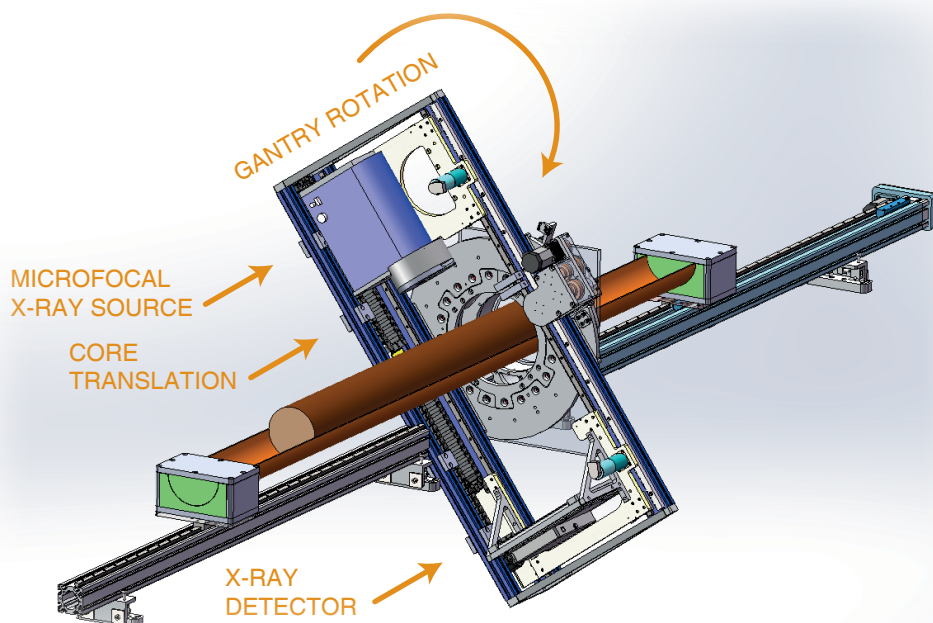
AUTOMATION OR INTERACTION

Once the core is loaded, scanning of the core (both linear and rotational scans) is fully automatic. The user simply enters all the image views required into a queue. Alternatively, the user may manipulate the core under the X-ray beam, using linear and rotational controls, while examining images on a real-time display before deciding which images to acquire.

CT PROCESSING

All X-ray CT processing takes place on the MSCL-RXCT computer. The full three-dimensional data set is made up of individual TIFF 'slices': reconstructed images perpendicular to the axis of the core. Individual slices can be viewed as two-dimensional images or the collected data can be viewed in three-dimensional viewers (Geotek CTQuickView or other CT data viewers).

SPECIFICATIONS

- **X-RAY SOURCE & DETECTION**
  Variable intensity (up to 130 keV) microfocal source and 14-bit flat-panel digital X-ray detector (pixel array 1920 x 1536).

- **CORE ACCEPTED**
  Length: up to 155 cm. Diameter: up to 15 cm.

- **CORE MOTION**
  Fully automated motion. Linear precision: 0.01 mm. Angular precision: 0.01 degrees.

- **IMAGES OUTPUT**
  Resolution: 40-300 microns. 16-bit greyscale TIFF images and AVI movie files. With included

Geotek conversion software: conversion to 8-bit greyscale TIFF, BMP, JPG, PNG.

- **CT OUTPUT**
  Resolution: 100-150 microns. 16-bit TIFF stacks compatible Geotek CTQuickView (included) and other DICOM viewers.

- **DIMENSIONS**
  Standard system Size: 5125 mm x 1960 mm x 2225 mm (L x W x H). Weight: approximately 2200kg.

- **EXAMPLE IMAGES**
  Visit: www.geotek.co.uk/products/mscl-xray/examples

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