

Helical X-ray CT scanner

Purpose:

Helical X-ray CT is a non-destructive technique that allows visualization of the internal 3D structure of objects. For a safe and economical process of siting, design, and seismic provision on various structures, we use the medical-type helical X-ray CT scanner to analyze kinematic evolution of faults in analogue model experiments, deformation structure in fractured rock along fault, weathering of gravel and rocks, and gas-migration and water flow through engineered barrier (bentonite), rock and cement.

Specifications:

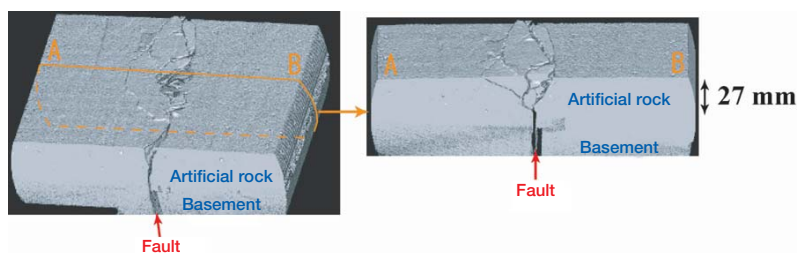
The Toshiba Aquilion multi-slice helical CT scanner investigates 64 slices through the model simultaneously during one rotation. Each slice has a selectable thickness between 0.5 and 8 mm. The multi-slice scanner has a circular opening 72 cm in diameter, whereas the field of investigation is a circle of 50 cm. A spot with a diameter of 0.35 mm can be observed. The digital image processing and computer visualization software allow the reconstruction of sections in any direction through a 3D data set and the production movies that show, for example, successive serial cross sections through one particular deformation stage or the temporal evaluation of model deformation in 2D or 3D.

Location and Date of Installation:

Abiko Campus, December 2006



Helical X-ray CT scanner and experimental apparatus used for fault modeling.



Three-dimensional views of fractures induced experimentally in artificial rock subjected to strike-slip displacement along basement fault.