CORIS360®

Fast Threat Detection

360° × 90° Gamma-ray imaging across the full energy range for improved decision making

To keep workers safe, it is critical to identify and locate sources of radiation quickly and accurately.

ANSTO's advanced platform imaging technology, CORIS360®, makes the invisible, visible, by identifying and imaging the exact location of radiation sources.

Using four optical cameras, CORIS360® scans a 360° panorama to quickly and accurately detect, identify and locate radiation sources.

Overlaying the radiation image on an optical image makes it easy to determine the exact location of the radiation.

By using compressed sensing techniques, CORIS360® produces high quality images up to 10 times faster than other imaging systems.

With a 360° x 90° field of view, and two plug and play detectors, CORIS360® delivers improved operational decision making for anyone working in radioactive environments and helps to keep workers safe.

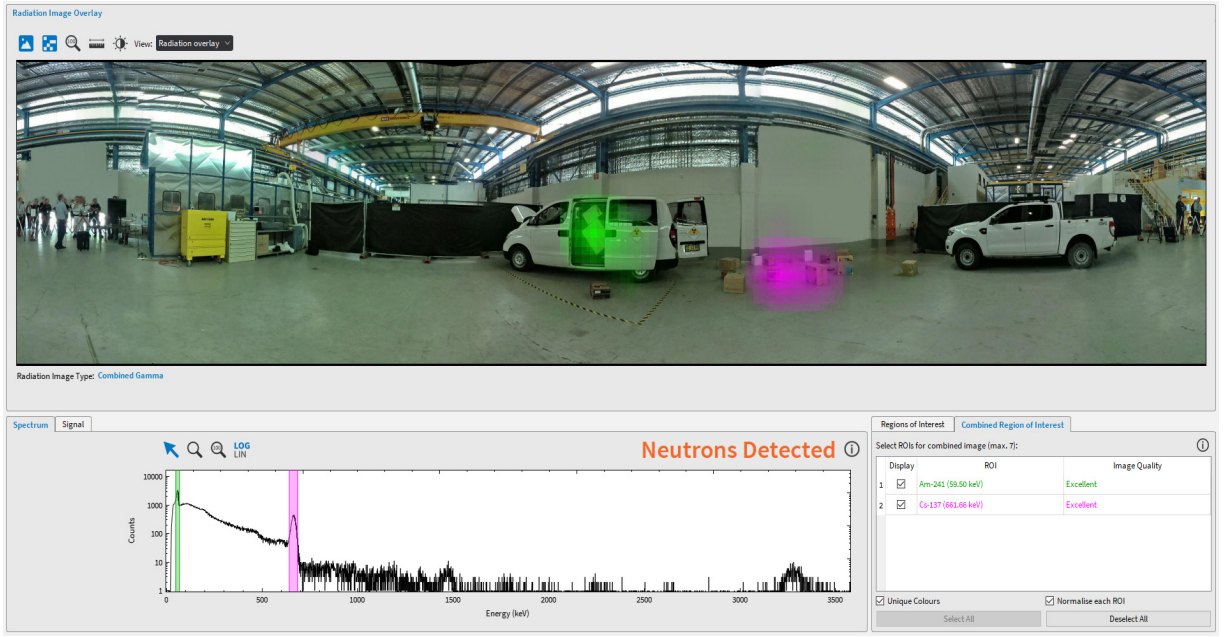
How CORIS360® Works

Advanced compressed sensing technology delivers fast results

The CORIS360® platform imaging technology uses the theory of compressed sensing. Other imaging systems are based on the sampling of uniform discrete elements (pixels) in the entire image field of view. This is how the millions of camera pixels take pictures on our mobile phones. As these optical image files are large, they are normally compressed into the JPEG format, before sharing.

This compressed JPEG image contains all the important image information but is only a fraction of the original file size. The useful information is a small fraction of the measured information. Imagine the benefits of only measuring this useful information.

This is how the compressed sensing technique works. It can directly acquire images by only gathering the useful information, rather than measuring the whole data set and then compressing.



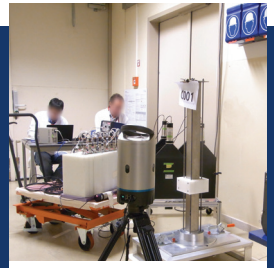
CORIS360® rapidly identified and localized ^{137}Cs and AmBe sources, along with detecting the presence of neutrons, dispersed in a crash scenario. The results highlight the ability of CORIS360® to image an entire area in one acquisition.

INDUSTRY AND SECTOR APPLICATIONS

By accurately imaging radiation across the full energy range, CORIS360® delivers operational benefits for many industry applications.

Nuclear reactor operations

Health physics



Safeguards

Border protection and national security

Decommissioning and decontamination

Defense and military

First responders

See More, Know More

Reduce risk and improve radiation safety

KEY BENEFITS

- **Manage risk:** Better data for improved operational decision making in radioactive environments.
- **Fast:** High quality images with up to 10 times fewer samples than other methods, delivering significant savings in time, money and resources.
- **Large field of view:** Overlaying a wide 360° x 90° radiation image onto a panoramic optical image in a single acquisition makes interpretation easy.
- **Full energy range:** Accurate visualization and identification of isotope specific and scattered sources of radiation across the full 40 keV to > 3 MeV energy range enables a greater understanding of the surrounding environments.
- **Precision:** Imaging of multiple point sources as well as distributed sources.
- **Easy to use:** User-friendly, portable and versatile system with modular detectors for different dose rate environments.
- **Safe:** Remotely operated to keep workers safe.

KEY FEATURES

Large Field of View


Unprecedented scene visualization with a 360° optical and gamma field of view.


Simultaneous imaging of multiple radionuclides over a broad energy range.


Wide 360° x 90° field of view.

Fast, Precise Imaging


Spectroscopic detector to provide full spectral imaging.


Rapid automatic identification of sources.

Detects neutrons.


High sensitivity with maximum detector crystal volume of 44 cm^3.

Easy to Use


Plug and play detector modules provide optimized operation for low to high dose rate environments.

Easy to set up, ready to use in 1 minute.


User-friendly with an intuitive interface.


Compact, portable design, well suited for indoor and outdoor use (IP54 rated).

CORIS360® Specifications

SYSTEM INCLUSIONS

	CORIS360® Imager
	CORIS360® Imaging and processing software
	Tripod (optional tripod mount to image full 4π available)
	Ruggedised carry case
	Two detectors
	Power and data cables (optional IP-rated battery available)
	^{152}Eu calibration puck
	Hex key

Dimensions	210mm × 425mm (D × H) | 8.3" × 16.8" (D × H)
Weight	15 kg | 33 lbs
Power Supply	100 VAC - 240 VAC (47 Hz - 63 Hz) Input
Operating Temperature	5°C - 40°C (Ambient) | 41°F - 104°F (Ambient)
Storage Temperature	5°C - 40°C (Ambient) | 41°F - 104°F (Ambient)
Detector Type/s	Cubic 0.5" CLLBC Scintillator with SiPM array Cylindrical 1.5" x 1.5" CLLBC Scintillator with SiPM array
Energy Resolution	~4% FWHM @ 662 keV
Energy Range	40 keV to >3 MeV Gamma and Thermal Neutron Detection
Angular Response	Uniform sensitivity around 360°

Imaging Region of Interest	Peaks and non-peaks
Gamma Field of View	360° × 90° (H × V)
Optical Field of View	360° × 90° (H × V)
Max. Angular Resolution	16° ± 1° (0.5" detector) 20° ± 1° (1.5" detector)
Dose Rate Range	<0.1 µSv/h - 40 mSv/h for ^{137}Cs (0.5" detector) (<0.01 mrem/h - 4 rem/h) <0.1 µSv/h - 2 mSv/h for ^{137}Cs (1.5" detector) (<0.01 mrem/h - 200 mrem/h)
Radionuclide Identification	Customizable library of radioisotopes included
Start-up Time	1 minute
Communication	Ethernet, Wi-Fi

CONTACT US
For case studies and technical reports, please get in touch.

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Product By Australian Government | ANSTO

"What would have taken about six months to accurately characterize and map the facility, instead was completed in six weeks. And it was done at a fifth of the cost of traditional surveying, saving us more than $430,000."

Alec Kimber
HIFAR Reactor Decommissioning Project Lead

GOOD DESIGN AWARD® GOLD WINNER

CE

Patent Protected
Gamma-Ray Imaging
US 10,795,036 B2 | US 11,346,964 B2
EU & UK 3146527 | AU 2015263838