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HOMELAND PROTECTION

AIRPORT & SEAPORT SECURITY

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Grand Prix winner at the 2013
International Exhibition of
Inventions of Geneva

ROBOSCAN AERIA

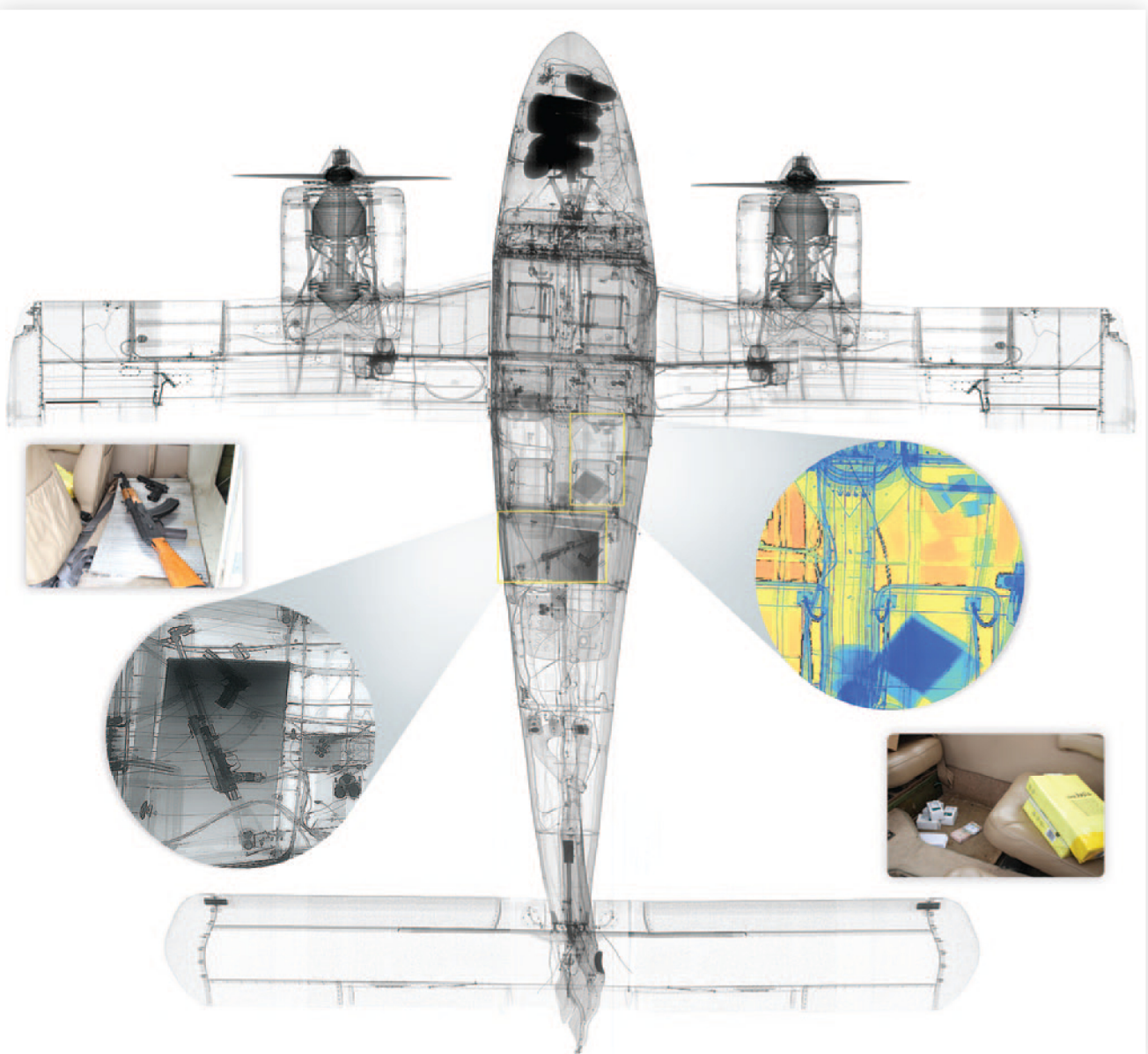
X-ray Aircraft Scanning System

ROBOSCAN AERIA features and capabilities

ROBOSCAN AERIA is a unique and powerful solution for aircraft security inspection providing dynamic scanning capabilities for aircraft ranging in size from small private jets to medium-sized commercial airplanes. Using our patented design, ROBOSCAN AERIA detects threatening materials and illegal or undeclared goods by means of remote operation on airport premises with minimal impact on routine facility operations and without human exposure to ionizing radiation.

Under current practice and protocols, commercial aviation passengers and their luggage are thoroughly inspected. However, auxiliary services and private or general aviation—especially international flights arriving or departing from smaller airports with lower security levels—can be an important, less-scrutinized vector for the smuggling of weapons, narcotics and undeclared currency. ROBOSCAN AERIA is a new and unique solution that closes this critical gap in aviation security by enabling within minutes the complete and thorough scanning of the entire aircraft without the crew or passengers on board.

High Definition Aircraft Radiography



The main features of ROBOSCAN AERIA system

- Optimized for screening of the entire aircraft, the vertical scanning frame delivers a clear radiographic image of the fuselage and wings, providing a high-resolution picture with unparalleled levels of detail
- Complete scanning of the aircraft fuselage in a single pass through the screening frame and, depending on aircraft size, complete wing scans with additional passes
- Highly mobile, able to be driven at rapid speeds to multiple sites without additional infrastructure requirements and ready to scan within 15 minutes of arrival
- Fully autonomous, no local resources required for operation
- Outdoor, weather-proof operating capability in airport environment
- Robotic operation, controlled by one process operator and one image analyst located outside the exclusion area, avoiding ionizing radiation exposure
- Anti-collision system prevents any damage due to operator error
- High quality X-ray images based on state-of-the-art image processing algorithms
- One image analysis operator, safely situated outside the exclusion area

ROBOSCAN AERIA - Transport & Scanning Mode



- Fully automated screening process
- Certified components for aviation use
- Radiation levels safe for operators and bystanders
- Megapixel resolution intelligent video surveillance process
- Built-in auto archiving facility and statistic reports capability; operators can create customized databases including images of scanned aircraft
- Data Integration in Command & Control Centers via wireless LAN or broadband internet connection (optional)
- Automatic Protection of the Exclusion Area (APEA) system

Operational concept

Main Components

- Mobile scanning unit integrates the X-ray generator and command center placed inside the driver's cabin (portable remote operation console optional)
- Portable detector modules with crossing ramps and mobile electronics cabinet
- Aircraft tug mobile unit with process operator's console
- Safety and Security systems: portable Automatic Protection of the Exclusion (APEA) system, video surveillance system, additional command centers integrated in pelican cases or existing building infrastructure

Configurations and Operating Sequences

- In transport mode (when being moved to a different site), the mobile scanning unit safely carries all other ROBOSCAN AERIA components in dedicated compartments. The unit can be transported or driven on standard roads without specialized training
- In scanning mode, components are unloaded from the mobile unit and deployed in designated positions according to the deployment sequence
- Deployment sequence:
 - Drive mobile scanning unit to designated scanning location
 - Unload all operational components
 - Position X-ray generator boom
 - Position portable detector modules, ramps and cabinet
 - Position APEA subsystem
- Scanning sequence:
 - Ensure all people are removed from the aircraft and surrounding area
 - Attach tug mobile unit to aircraft
 - Tow aircraft through the screening frame via straight, automated movement
 - Remove tug mobile unit from aircraft
 - Move tug mobile unit to reception area and then to next aircraft

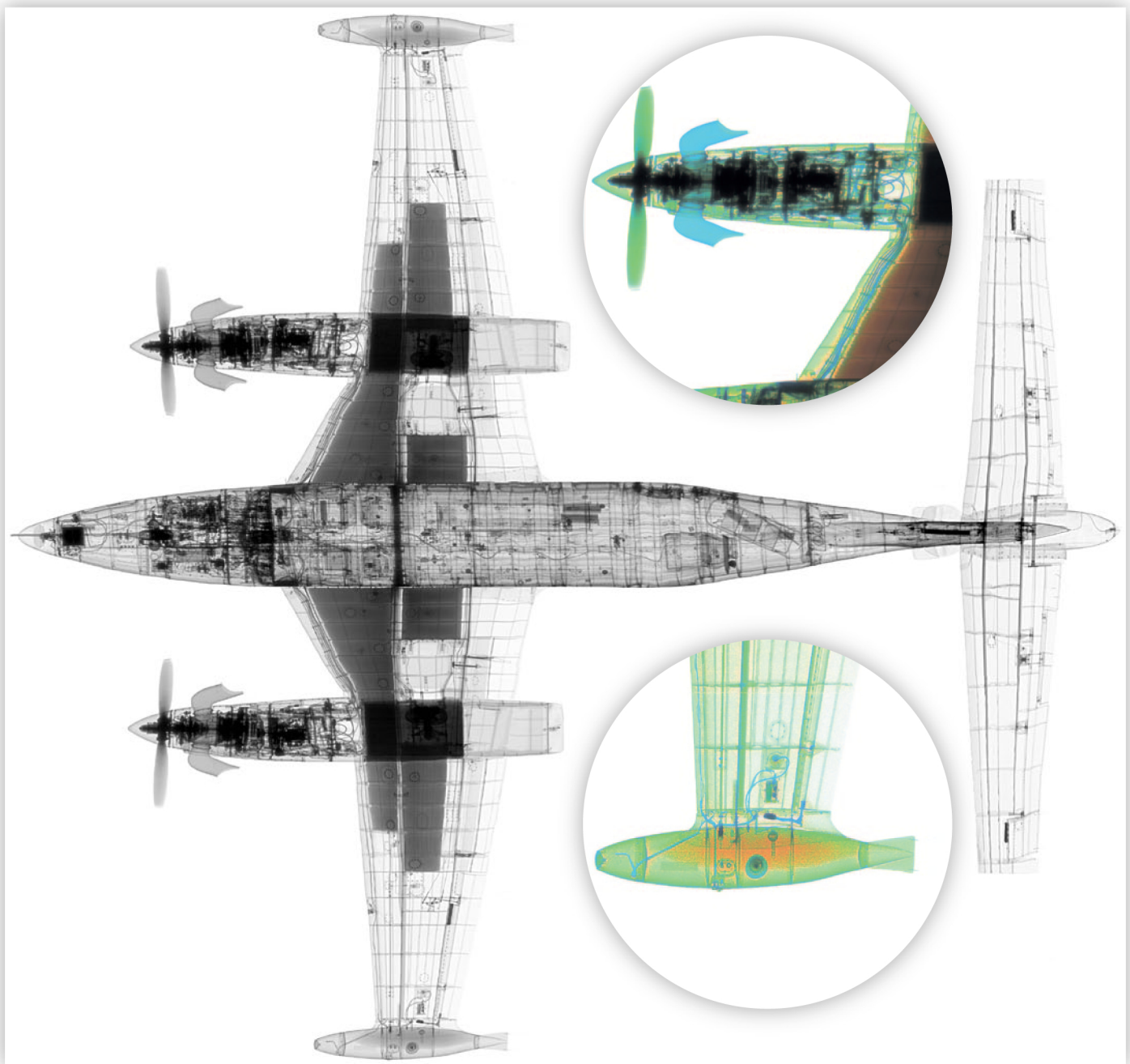
ROBOSCAN AERIA - Scanning Mode



Safety Features

- Compliant with Safety of Radiation Generators and Sealed Radioactive Sources, Safety Guide No. RS-G-1.10 /2006 issued by IAEA and with EURATOM Radiation Protection Directive 96/29
- Recommended exclusion area during scanning operation of 30m x 30m (approx. 98.4 ft x 98.4 ft)
- Exclusion area perimeter supervised by portable APEA system; X-ray generator automatically stopped in case of intrusion
- Radiation dose outside of exclusion area well below prescribed limits (IAEA 115 / 1996)

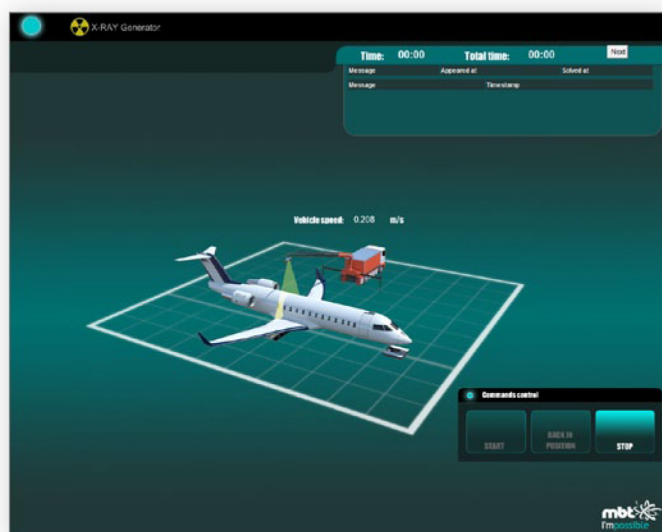
Aircraft Radiography / Material discrimination details using dual energy detection



Performance Specifications

Imaging system	Penetration in Aluminum (Al)	230mm (approx. 9.06 inch)
	Wire Resolution	0.5mm Cu (in air)
	Contrast Sensitivity	4%
	Material Discrimination Capability	Four classes: organic, light minerals, medium density minerals, heavy minerals
	TIP (Threat Image Projection)	Optional
Operation and performances	Triangle Scanning Frame	6.6m base; 10m height (approx. 21.6 ft base; 32.8 ft height) Other dimensions by request
	Scan Mode	Aircraft tugged through the scanning frame, straight automated movement
	Scanning Speed	Variable 0.1 to 0.3 m/sec
	Deployment/Stowing Time	Less than 15 minutes
	Operating Personnel	One process operator and one image analysis supervisor
	Remote Operation	Yes, by internet connection or portable console
	Anti-collision Protection	Yes
	Special Features	Data integration in Command and Control Center (optional)
	Continuous Operation	24 / 7 / 365
Safety Systems	Megapixel Video Surveillance Subsystem	Yes (standard)
	Personal Radiation Monitor	Yes (standard)
	Optic and Acoustic Warning Signals during Scanning	Yes (standard)
	Automatic Protection of the Exclusion Area	Yes (standard)
Environment	Operation Temperature Range	-15°C to +45°C (+5°F to +113°F) standard
	Storage Temperature Range	-25°C to +60°C (-13°F to +140°F) standard
	Relative Humidity	Max. 98% non-condensing

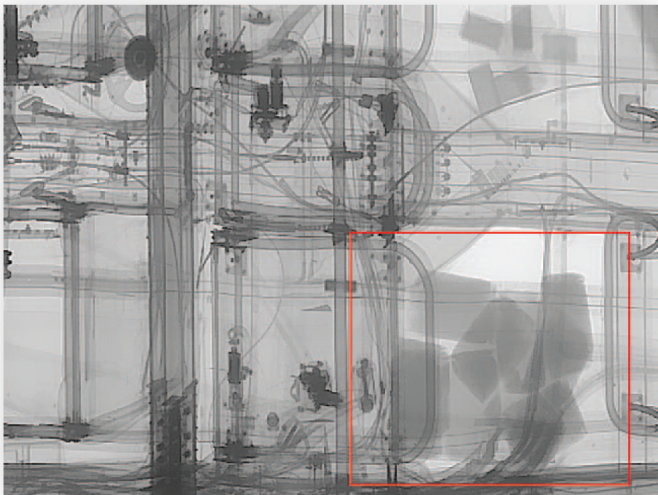
Operator Interface Screenshots:



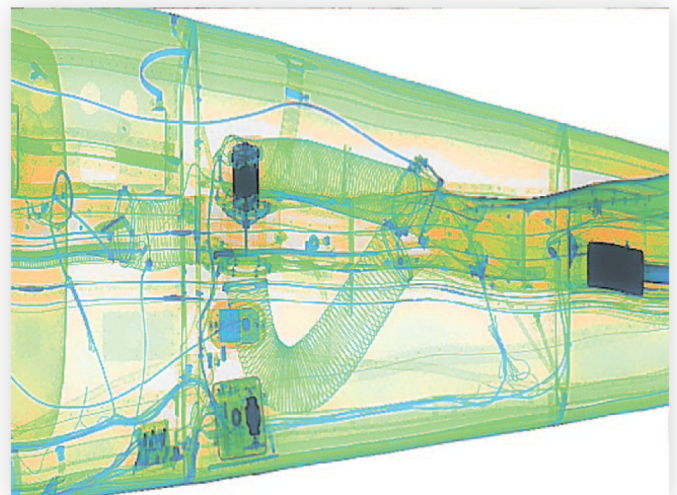
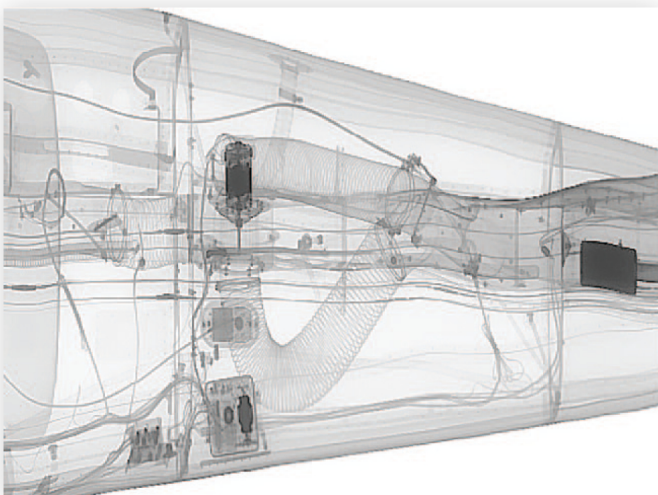
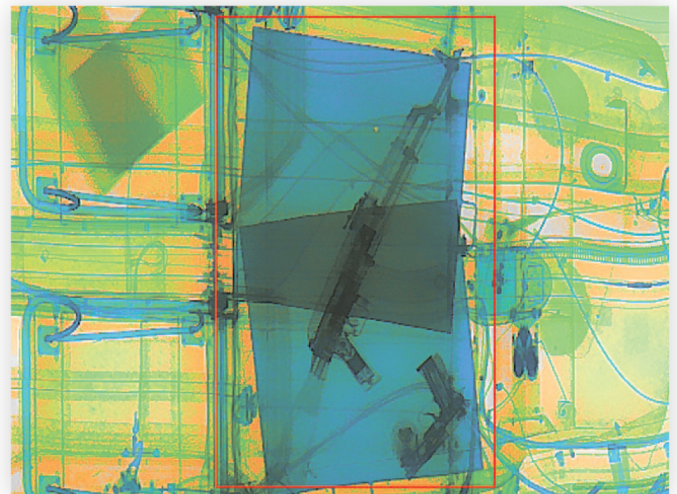
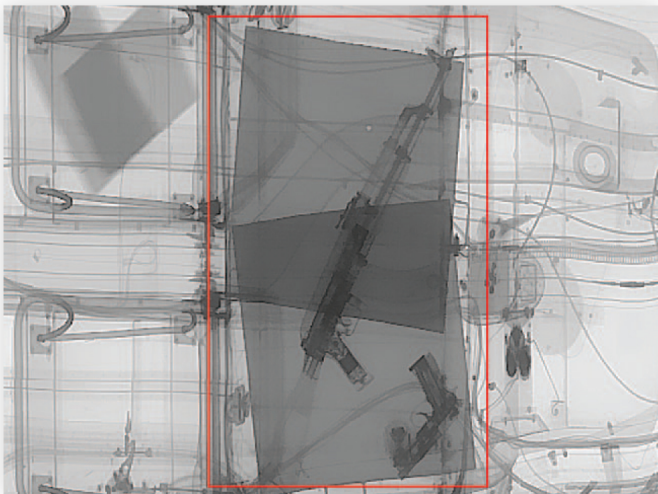
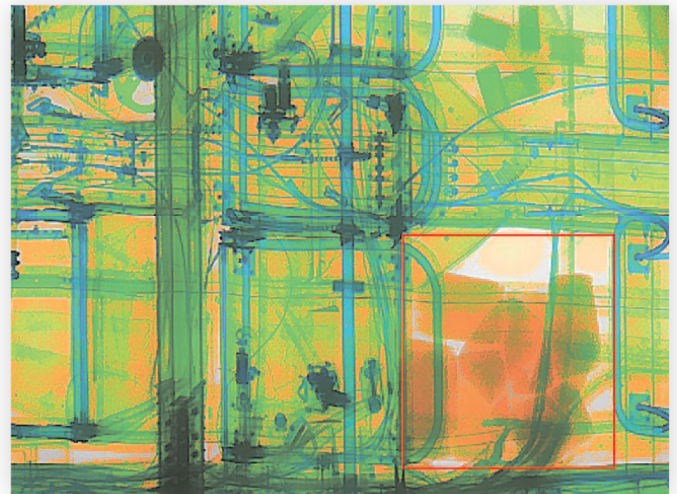
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Weapons (behind 12 mm of steel plates) and other suspect items concealed within aircraft fuselage

X-ray Standard View:



Dual-Energy X-ray Material Discrimination View:



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