



BORDER SECURITY

HOMELAND PROTECTION

AIRPORT & SEAPORT SECURITY

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TUDOR SCAN AERIA DV DUAL VIEW X-RAY AIRCRAFT SCANNING SYSTEM



Grand Prix at the 41st edition
of the International Exhibition
of Inventions of Geneva

TUDOR SCAN AERIA DV features and capabilities

TUDOR SCAN AERIA DV is the unique solution for aircraft security inspection according to our patented design, designed to scan aircrafts ranging from small private jets up to the largest commercial planes, giving the operator the capability to detect within minutes threats, illegal or undeclared goods. The scanning process is remotely operated inside airport premises with minimal impact for routine operations, without any human exposure to ionizing radiations and is the only fast and efficient technology capable to clear civil aircrafts under bomb threat, being also the only tool capable to fight against contraband with narcotics, explosives, guns, high values and illegal transports of money in cash.

The classic method of physical security inspection implies long delays in the streamline airport traffic and reduced chances to find bombs or hidden objects, due to limited access of the security inspectors inside the technical cavities of the fuselage, tail and wings that generates a systemic vulnerability in civil aviation.

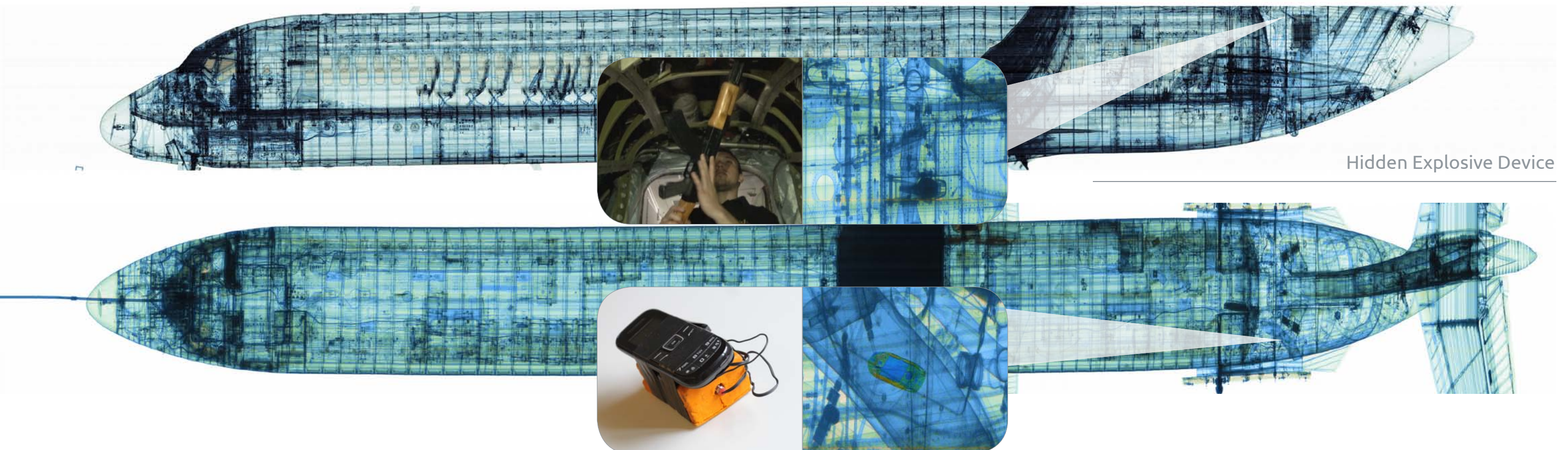
The key advantages of TUDOR SCAN AERIA DV system

Optimized for entire aircraft screening: the vertical and horizontal scanning frames will deliver a clear dual-view radiography of the fuselage and wings, generating a high resolution image with unparalleled details offering to the end users an essential tool for security applications;

- Complete scan of the aircraft fuselage in a single pass through the screening frame and, depending on the aircraft size, complete wings scan with additional passes. Unparalleled tool for fast clearing of aircrafts under bomb threat;

- Highly mobile, can be driven on public roads, from one site to another, without any additional infrastructure requirement, being ready to scan in 15 minutes from arrival on site;
- Fully autonomous, no local resources required for operation;
- Outdoor, weather-proof operating capability in airport environment;
- Robotic operation, controlled by one process operator from outside the controlled area, avoiding ionising radiation exposure;
- Anti-collision system preventing any damage due to human operating error;
- Total cost of acquisition and operation a few times lower than the losses incurred by an airport and airline under a fake bomb threat;
- Totally safe for avionics components;
- Certified components for aviation use;
- Radiation safe for operators and bystanders;
- Built-in auto archiving facility and statistic reports capability; perators can create customized databases including images of scanned aircraft;
- Data Integration in Command & Control Centres via wireless LAN or broadband INTERNET connection (optional);
- Automatic Protection of the Exclusion Area (APCA) system.

High Definition Aircraft Radiography



Operational concept

a. Main components:

1. Mobile scanning unit – integrating the X-ray generators and the command centre placed inside the driver's cabin (Portable remote operation console as option);
2. Portable detector modules with crossing ramps and mobile electronics cabinet;
3. Aircraft tug mobile unit with process operator's console;
4. Safety and security systems, - portable Automatic Protection of the Controlled Area (APCA) system, video surveillance system, additional command centres integrated in pelican cases or existing building infrastructure.

b. Configurations and operating sequences:

1. In transport configuration, during transport, the mobile scanning unit will also safely carry all the other components of TUDOR SCAN AERIA in dedicated compartments. The crew drives the unit on public roads, with appropriate driving licence;
2. In scanning configuration the components are unloaded from the mobile unit and deployed in designated positions according to the deployment sequence;
3. Deployment sequence:
 - Driving the mobile scanning unit to the designated scanning location;
 - Unloading all the operational components;
 - Positioning of the X-ray generator boom, side-view detector boom and side-view X-ray generator
 - Positioning of the portable detector modules, ramps and cabinet;
 - Positioning of the automatic protection of the controlled area subsystem.
4. Scanning sequence:
 - Clearing the aircraft from any human presence;
 - Attaching the tug mobile unit to the aircraft;
 - Towing the aircraft through the screening frame, by using straight automatic movement;
 - Removing the tug mobile unit from the aircraft;
 - Free moving the tug mobile unit to reception area and going back for the next aircraft.

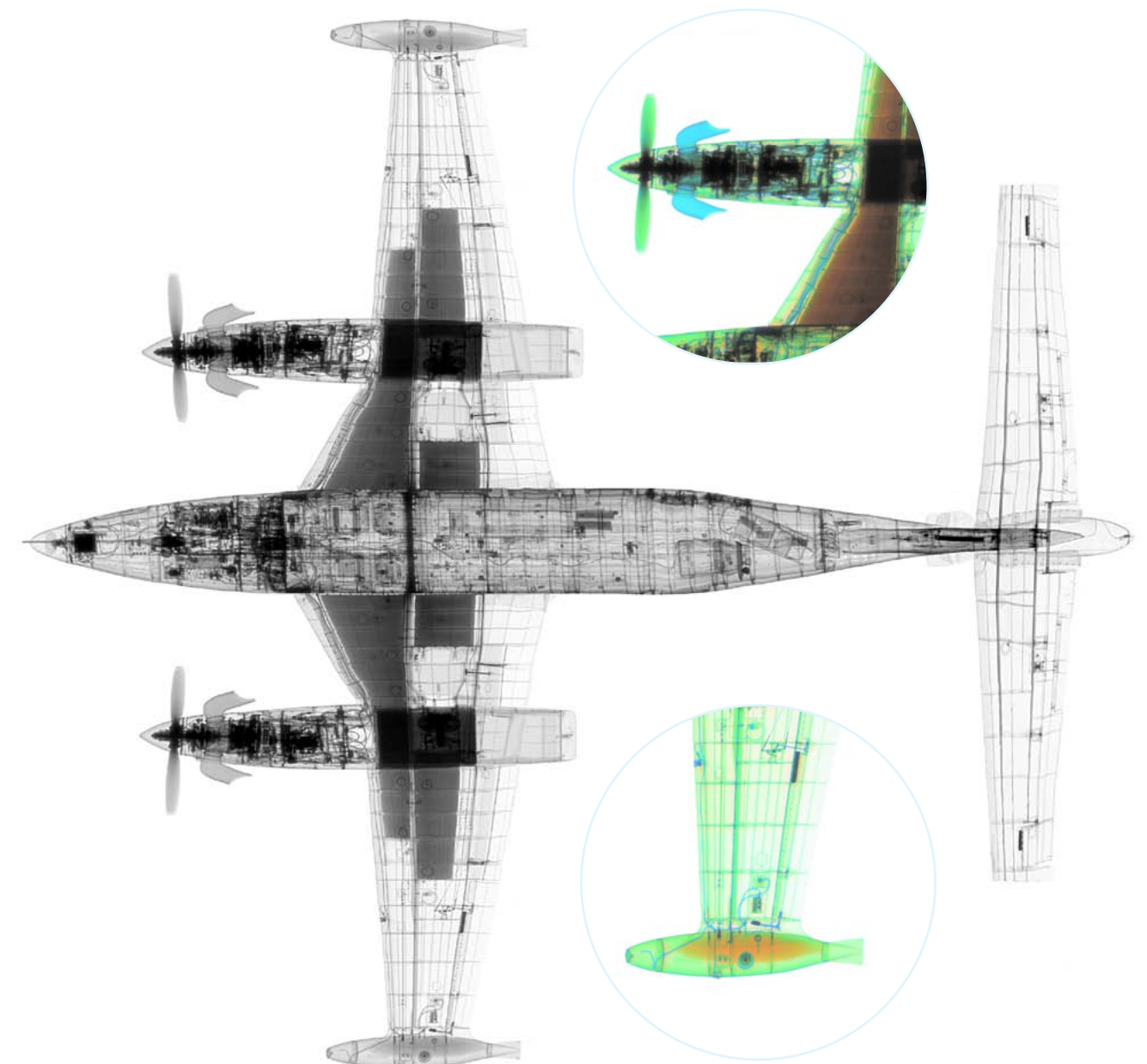
TUDOR SCAN AERIA - Scanning Mode



Safety Features

- Compliant with Safety of Radiation Generators and Sealed Radioactive Sources, Safety Guide No. RS-G-1.10 from 2006 issued by IAEA and with EURATOM Radiation Protection Directive 96/29;
- Recommended controlled area during scanning operation of minimum 30m x 30m;
- Controlled area perimeter supervised by a portable APCA system; X-ray generators automatically stopped in case of an intrusion;
- Radiation dose outside the controlled area less than the legal limit according to International Regulations, namely IAEA 115/1996.

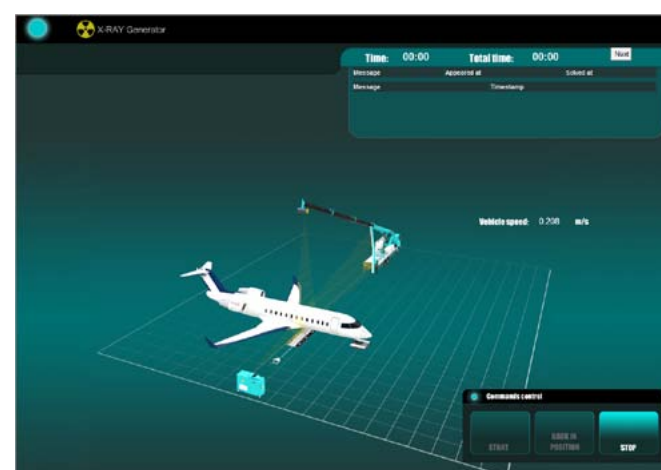
Aircraft Radiography / Material discrimination details using dual energy detection



Performance Specifications

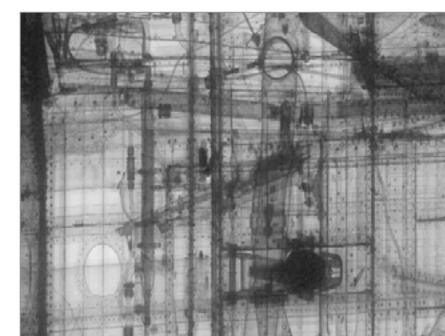
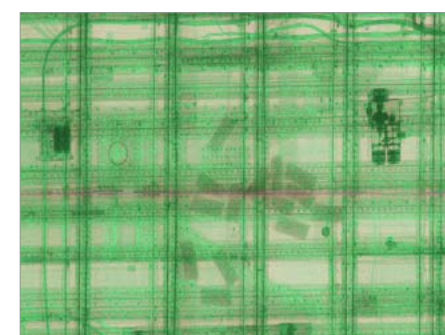
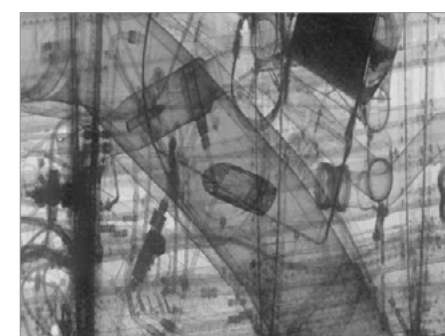
Imaging System	Penetration in Aluminum (Al)	230 mm
	Wire resolution	0.5 mm Cu (in air)
Operation and Performances	Contrast sensitivity	4%
	Material discrimination capability:	Four classes: organic, light minerals, medium density minerals, heavy
	minerals	
	TIP (Threat Image Projection)	Optional
Safety Systems	Triangle Scanning Frames:	Top View 6,6 m base and 15m height. Side view 7 m height by 40 m wide. Other dimensions by request.
	Scan mode	Aircraft tugged through the scanning frame, straight automatic movement
	Scanning speed	Variable 0.1 to 0.3 m/sec
	Deployment/stowing time	Less than 20 minutes
	Operating personnel	One process operator and one image analysis supervisor
	Remote operation	Yes, by internet connection or portable operation console
	Anti-collision protection	Yes
	Special Features	Data integration in Command and Control Centre (optional)
	Continuous Operation	24 / 7 / 365, weather proof integration
Environment	Megapixel Video Surveillance Subsystem	Yes (standard)
	Personal Radiation Monitor	Yes (standard)
	Optic and Acoustic Warning Signals during Scanning	Yes (optional) Automatic
	Protection of the Controlled Area	
	Operation Temperature range	-15°C ÷ +45°C standard
	Extended temperature range available by request	
	Storage Temperature Range	-25°C ÷ +60°C standard
	Relative Humidity	Max. 98% non-condensing

Operator Interface Screenshots

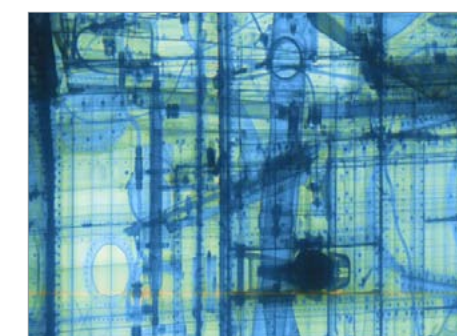
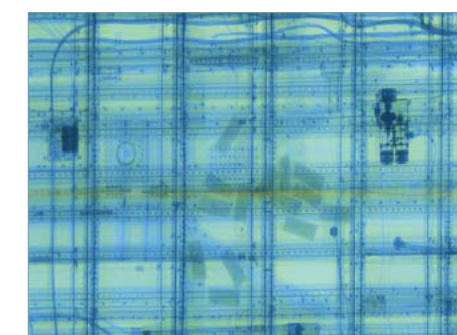
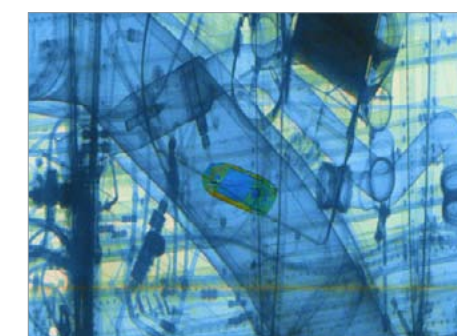
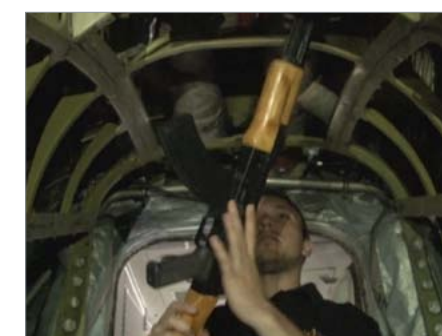


Weapons, drugs and explosives concealed within aircraft fuselage

X-ray standard view:



Dual-Energy X-ray Material Discrimination view:





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