



ULIS

Unattended Luggage Inspection System for Homeland Security and Defense

ULIS Portable Threat Detection System



Benefits

NRBCE detection and identification
Simple threat diagnosis : yes or no
Fast Deployment
Easy to use
Autonomous

Technology

Fast neutron interrogation
Associated Particle Detector
Gamma ray analysis
Camera
X-Ray Option

Purpose

Explosive, radiological, chemical threats

Security forces have to face the threat of terrorist attacks in subways, trains, airports, stations and other military or civilian infrastructures. This calls for the capability to investigate suspicious objects which may contain IED, toxic or radiological materials.

EADS SODERN has developed ULIS (*Unattended Luggage Inspection System*), a neutron interrogation based solution, which indicates within minutes whether or not a dangerous material is hidden in a parcel or baggage item. Additionally, an X-ray embedded solution (option) and a video camera offer the possibility to superpose the material with images of the inside and of the outside.

Product definition and utilization

ULIS features a portable case containing the neutron and X-Ray emission system, the gamma ray detectors, an electronics module, a high-voltage power supply and a video camera. The case is connected to a distant laptop through an ethernet cable.

Typically, the ULIS case is placed next to the suspect object and activated from a safe distance (10 to 30 m). Light flashes and a buzzer indicate neutron or X emission.

This device can be used in airports, subways, trains, railway stations or in public areas. Typical users are inspectors and bomb squad in charge of security.

ULIS Interface

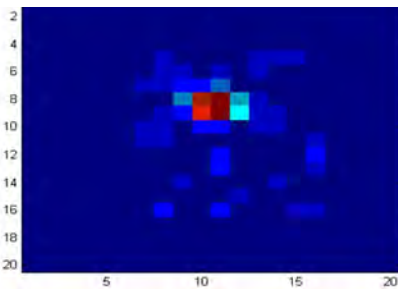
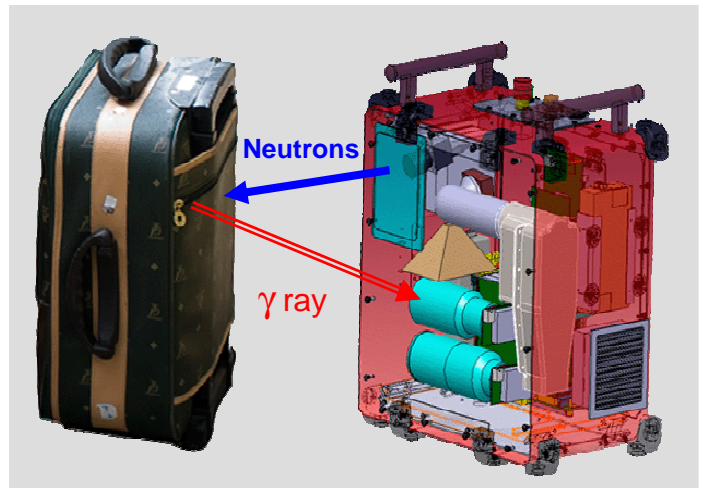
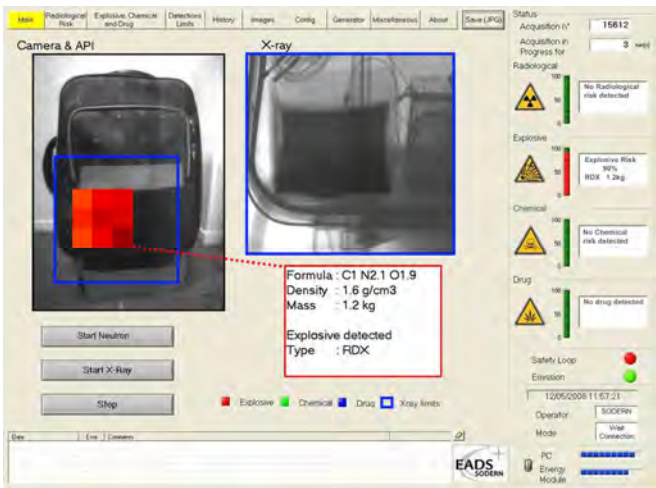
ULIS laptop PC centralizes data processing and provides a user-friendly interface, designed especially for Homeland Security applications. The main window displays the inspected object superimposed with the location of the threat. This feature is also available with an X-ray image. The software can determine if there is a threat in a short time (on average 3'). In case of a real threat, quality (type of material) and quantity (weight) assessments of the threat are delivered with the indication of a confidence level. Otherwise, the system indicates "No Threat Detected".



EADS-Sodern is certified ISO 9001 / 2000 for :
Design, development, manufacturing of systems and
equipment in the areas of neutronics and neutronics
applications and spaceborne optronics and industrial optics.



ULIS Technology



The location of the suspect material is computed by using directional information from the associated particle detector and time-of-flight measurements of the neutrons. Material composition is derived from comparing the detected gamma ray energy spectra with a database (library) in the electronics module.

Fast neutron interrogation and associated particle detection offer the ability to accurately obtain the chemical composition and the mass estimation of any kind of material inside an object. Neutrons are emitted toward the object. As a result, the atomic interactions produce element-specific gamma ray emission which allows to determine the stoichiometry of analyzed matter.

Computation provides a 3D-image, allowing the mapping of the location of the suspect material. An optional X-ray detector can supplement the neutron interrogation result with a conventional X-ray image.

ULIS combines neutron technology and image processing to automatically determine whether an object is dangerous or not, and to provide identification and localization of the threat.

Technical Specifications

Analysis		Operating environment	
Method	API - Associated Particle Imaging	Storage temperature	-20°C to 50°C
Neutron source	Associated particles tube	Operating temperature	5°C to 45°C
Typical detection time	2 to 10 minutes with 20s display refresh	Relative humidity	10 to 90% non-condensing
Performance		Dust and water	IP54
Explosive detected	Semtex, TNT, C4...	Health and Safety	
Chemical elements	Phosphorus, Arsenic, Fluorine, Chlorine, Sulfur, Sodium...	Radiation dose	Lower than 2,5 µSv at 24 meter
Drugs	Cocaine, heroin, ecstasy...	Security access	By USB key encryption
Radiological detection	Automatic after power on	Safety loop	Wire loop
Physical specification		Intrusion detection by laser scanner (option)	
Weight	32 kg	Command & control	Lights, buzzer show operational state emergency stop, safety keys
Detection head	54cm x 62cm x 37cm (L x H x W)	US compliant regulation	USA FDA 21 CFR 179, NRC 10 CFR 20
Field of view	cone truncated by a cube of 60 x 60 x 60cm 130 l	UE compliant regulation	CE compliance
Neutron Flux	10 ⁸ n/s at 14MeV	Maintenance	
Power		Customer support	Sodern Customer Support Service
Power consumption	Less than 150 W	Remote maintenance	Through 4G card network access
Battery	Li-ion, 4 hours autonomy		
Voltage - charge time	110 / 230 V - 7 hours		

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