SENTINEL IIa SPECIFICATIONS:

Inspection Tunnel Size:	615 mm wide x 410 mm high (24.2 in. wide x 16.1 in. high)
Maximum Package Weight:	200 lbs. (90 kg)
System Footprint:	3048 mm long x 686 mm wide x 2159 mm high (10 ft. long x 2 ft. - 3 in. wide x 7 ft. - 1 inch high)
System Weight:	5,000 lbs. (2268 kg)
Conveyor Belt Speed:	9.8 in./sec (0.25 m/sec) forward and reverse
System Throughput:	More than 1,000 bags per hour
Power Requirements:	120/240 V, 50/60 Hz, 3 kVA
X-Ray Dosage:	0.28 mRem per inspection (total all sources)
X-ray Anode Voltage:	100 to 160 kV
Duty Cycle:	100% with no warm-up period required
X-Ray Orientation:	Multi-plane (vertical, horizontal, dual 45 degree) / Dual-spectrum X-ray
Maximum Penetration:	More than 31.5 mm of steel
Spatial Resolution:	0.09 mm (0.0035 in.) diameter copper wire
Detector Channels:	704 channels per plane (2,816 total)
Image Storage:	More than 1,000 images, automatic date and time stamp
Environmental Parameters:	0º – 45º C operating, -20º – 50º C storage, <95% relative humidity
Monitors:	24-inch high contrast monitor, 1280 and 1024 resolution, 24-bit color depth
Multi-Image Projection:	Vertical, horizontal and 45 degree horizontal images in black and white and color hot-button swapping. Color image based on Z_{eff} and density calculation
Image Processing Functions:	Magnification 2X, 4X, 8X, 16X; gamma correction for thickness; sliding density window; edge enhancement; organic stripping; 3-dimensional / inverse

Identification Beam Systems, LLC (IBS) is the security subsidiary of ScanTech, a privately held, U.S.-based company that designs, manufactures and markets advanced technology X-ray and E-beam systems. ScanTech's manufacturing and support partner, V.J. Technologies, Inc., is a world leader in the design, manufacture, installation, operation and long term support of a wide range of industrial X-ray systems.

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SENTINEL IIa™

ADVANCED CHECKPOINT BAGGAGE INSPECTION SYSTEM

IBS
Identification Beam Systems, LLC

ScanTech
ScanTech Security, LLC

Our security is threatened every day by terrorists, smugglers and other individuals with weapons, bombs and drugs. Identification Beam Systems, LLC is dedicated to fighting these extremists and their dangerous contraband by designing and building affordable, non-intrusive detection systems. We bring the technology, products and support necessary for the safety and security of a country's resources.

CHECKPOINT SECURITY ELIMINATES VULNERABILITY

While current technology and manual checkpoint inspections provide varying degrees of protection for our airports and federal buildings, it's generally agreed that the systems we have in place today are still vulnerable. And the limitations of most security checkpoint systems have caused new levels of restrictions to be applied to the most basic items people typically carry – including beverages, cosmetics and toiletries.

Identification Beam Systems (IBS) offers a new, state-of-the-art solution in its **SENTINEL IIa™** checkpoint baggage system. This compact checkpoint and baggage inspection unit is quickly installed and easily maintained; it's ideal for protecting targets such as airports and federal buildings from terrorist threats.

DETAILED IDENTIFICATION OF HAZARDOUS AND CONTRABAND MATERIAL

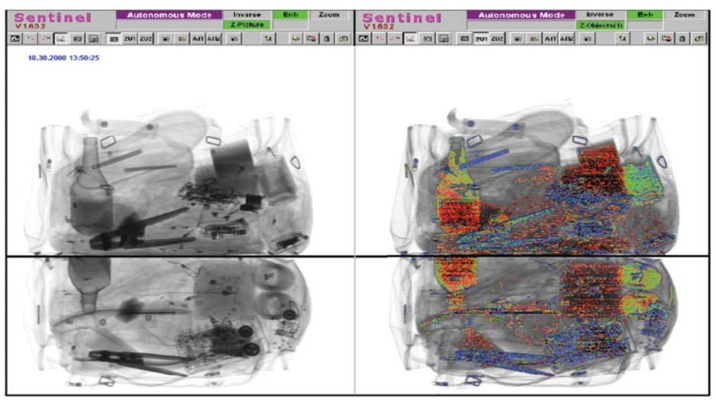
SENTINEL IIa is a multi-plane, dual energy X-ray security inspection system. Using four X-ray sources that peak at different energies, SENTINEL IIa provides four independent images in separate planes – to generate a 3-dimensional map of the density and effective atomic numbers (Z_{eff}) of the scanned target contents. The result is highly reliable detection that not only differentiates between threatening and non-threatening materials, but specifically identifies the items as benign – such as face cream, or dangerous – such as explosives, drugs and hazardous materials.

The SENTINEL IIa technology is capable of determining the shapes of items inside a carry-on suitcase, briefcase or package, and also what those items are made of. The screener will be able to tell whether the substance is hazardous material or a harmless personal hygiene product, a bar of soap or plastic explosives. In fact, the system is so precise, it can tell the difference between soda, ice tea, water and nitroglycerine.

DUAL-ENERGY, X-RAY CONFIGURATION WITH HIGH THROUGHPUT

The scalable multi-plane, dual-energy X-ray SENTINEL IIa system employs two perpendicular dual energy X-ray sources that enable the screener to automatically differentiate among metallic, nonmetallic and organic substances to aid in discriminating threats.

In addition to standard image manipulation capabilities, such as **zoom, gamma, sliding window and inverse image**, SENTINEL IIa provides operators with **Screener Assist Technology (SAT) and Automated Threat Identification (ATI)** image analysis tools. SAT examines the image of each inspection target and highlights suspicious sections based on the analysis of the physical properties of the target's contents. ATI then identifies the material that SAT has highlighted by comparing the Z_{eff} number and mass density against the values of known materials.



Images of actual data with color enhancement (right), side view of target in upper part of display window and top view located in the lower section of the image display window

Proprietary software controls the inspection process and allows for analysis of real time and stored images. If the system or operator identifies a suspected threat item, the conveyor is stopped and expanded analysis tools can be used to make a final determination of the risk.

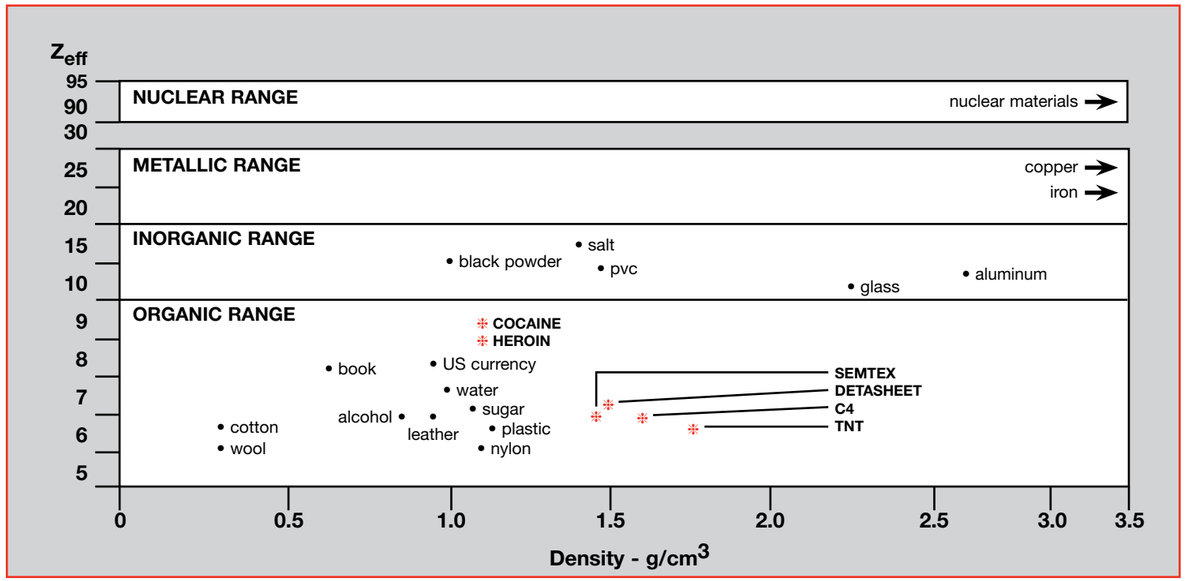


Chart identifying unique pairs of Z_{eff} number and mass density value

DEVELOPING BREAKTHROUGH APPLICATIONS

SENTINEL IIa provides one of the most non-intrusive, advanced technology carry-on and checkpoint screening systems available in the market today. SENTINEL IIa meets or exceeds all testing specifications for Advanced Technology Screening System Public Announcement ASTM F792-01.

With this technology and its ability to identify the atomic makeup of items within packages, water bottles, cosmetics and other toiletries that now fall under the Transportation Security Administration's (TSA's) tight 3-1-1 edict (no more than 3 ounces per bottle in a 1-quart clear plastic bag and only one bag per passenger) benign items might once again be carried onboard flights without restriction.

SENTINEL IIa incorporates unique technological advances including a proprietary sensor, two planes of merged dual-energy/spectra data and detection algorithms that use an ingenious technique to remove background clutter from an object or volume of interest. Combined with the relatively accurate determination of Z_{eff} and density, SENTINEL IIa can effectively discriminate metals, explosives, radioactive materials and illegal drugs from common organic and inorganic substances for improved probability of detection and reduced false alarms.

SENTINEL IIa features:

- Color-coded identification of organics and metals for trouble-free reference
- Automatic threat detection that reduces operator error
- Z_{eff} and mass density calculations
- Function keys for image enhancement
- Shield alarms
- Four levels of access security
- Reporting capabilities for easy review
- Image archiving for history tracing
- Event/data logging capabilities
- Network connectivity