Z® BACKSCATTER VAN™
MOBILE X-RAY SCREENING SYSTEM

Z BACKSCATTER VAN (ZBV)

DRIVE-BY Z BACKSCATTER-ONLY CARGO AND VEHICLE SCREENING SYSTEM

American Science and Engineering’s Z® Backscatter Van™ (ZBV) is a low-cost, mobile X-ray screening system built into a commercially available delivery van. With one-sided, backscatter-only imaging and the option for Radioactive Threat Detection (RTD), security officials can use ZBV for screening vehicles, sea containers, and other cargo for terrorist threats, trade fraud, and contraband — simply by driving past the subjects. The ZBV employs AS&E’s patented Z® Backscatter technology, which produces photo-like images of the contents of a container or vehicle, providing manifest verification information and highlighting organic materials. The ZBV can image 10 lbs (4.5 kg) of organic material, such as C4 or cocaine, placed immediately behind 0.24 inches (6 mm) of steel when scanned from a distance of 5 ft (1.5 m) at a scan speed of 0.3 mph (0.5 kph). The ZBV’s optional Radioactive Threat Detection feature is capable of identifying low levels of radioactivity from both gamma rays and neutrons. The ZBV is ideal for screening vehicles for large quantities of drugs, car/truck bombs, and stowaways.

The ZBV is a Z Backscatter-only system that does not require a detector on the far side of the scanned object, making it highly maneuverable and flexible. It can be operated covertly, since it maintains the outward appearance of an ordinary van. With the operator controls mounted on a console in the center of the ZBV’s cab, the system can be operated by one or two people simply by swiveling the console towards the driver’s or passenger’s side.

Stationary and Remote Operation

The ZBV can also be operated in stationary mode by parking the system and producing X-ray images of vehicles as they drive past. Screening can also be accomplished remotely while the system is parked. Remote operation allows scanning to be done safely, even in dangerous environments. In these modes, ZBV operators may elect to scan the occupants of the subject vehicle. For this application, AS&E offers a Personnel Scanning option that may better enable the customer to meet any applicable country-specific regulatory requirements.

TECHNOLOGY

Z BACKSCATTER AND RTD

Patented Z Backscatter technology provides photo-like images that reveal organic threats and contraband, including explosives, cigarettes, and drugs.

Optional Radioactive Threat Detection (RTD) can inspect for neutrons and gamma rays typically associated with fissile (nuclear bomb) or dirty bomb (e.g. Cesium-137) materials.

RAPID AND MOBILE X-RAY SCREENING

The ZBV’s mobile platform allows for immediate deployment in response to security threats and its unmatched scan speed facilitates rapid screening.

THE AS&E ADVANTAGE

CUSTOMERS WORLDWIDE KNOW THE ADVANTAGE OF THE Z BACKSCATTER VAN — THAT IS WHY THE ZBV IS THE NO. 1 SELLING MOBILE X-RAY INSPECTION SYSTEM ON THE MARKET TODAY.
OPERATING FEATURES

X-Ray Source: 225 keV X-ray tube
Resolution: 0.28" (7 mm), normal to the side of the ZBV at a distance of 5' (1.5 m) at a scan speed of 1 mph (1.5 kph)
Scan Speeds (Operator Selectable): 0.3, 1.0, 3.0, and 6.0 mph (0.5, 1.5, 5.0 and 10.0 kph)
Scan Field of View: 12' (3.6 m) in height at 5' (1.5 m) from the side of the ZBV; or 14' (4.3 m) in height at 7.5' (2.3 m) to scan a hi-cube container in one pass

VEHICLE SPECIFICATIONS

Manufacturer: Daimler-Chrysler
Model: Sprinter 515 CDI 4x2
Engine Type: 4-cylinder (3,148 cm³)
Transmission: 5-speed automatic
Steering: Power
Fuel: Diesel*
Dimensions:
Length: 21'10" (6.65 m)
Width: 8' (2.44 m)
Height: 9'1" (2.77 m)
Weight: 10,540 lbs (4,780 kg)

*Diesel fuel runs vehicle and X-ray equipment generator. System uses two gallons of diesel fuel per hour when scanning.
†With mirrors extended
‡To top of scanning lights

SYSTEM OPTIONS

Stationary Scan Mode: Scans vehicles driven past parked ZBV; includes shore power (230 VAC +/-5, 50/60 Hz, 80 amps, single phase)
Remote Operator’s Console: Console can be located up to 1,640' (500 m) from parked ZBV; includes stationary scan mode
Forwards Scatter™ Technology: Provides a second scatter perspective to display dense regions of images; includes additional detectors and transport trailer. For use in stationary scan mode.
Personnel Scanning Mode: Dose is less than 0.01 mR (0.1 μSv) per scan at 1 mph (1.5 kph) at 5' (1.5 m) distance; Meets American National Standards Institute N43.17 when operational procedures are followed
Radioactive Threat Detection: Automatically detects both gamma rays and neutrons
Isotope Identifier: Digital handheld multi-channel spectrometer providing gamma and neutron isotope identification
Color Printer: Located in ZBV cab
Shipping Tie-Downs: Includes 10 D-rings
Diesel/JP8 Generator: For use with Remote Console, Cold Weather, and Harsh Environment
Spotlights: Located on both sides of ZBV cab
Local Language: Available upon request
Custom Paint Colors: Available upon request
Custom Window Tint: Available upon request

SYSTEM SOFTWARE AND IMAGING TOOLS

Operator’s Console: 14.1" LCD high-intensity monitor
Operating System: Windows XP
ASEInspection Software and Features
ASEInspection is the Windows-based application software used to convert X-ray data into images. ASEInspection contains a suite of tools for manipulating and enhancing images, and it is used for image storage and retrieval.
Mark and Annotate: Attaches pointers and comment fields to images
Database Function: Provides ability to create records relating to specific scans
Quick Save: Allows operator to save any part of a multi-target image as well as the entire image
Full Save: Automatically saves the current image to hard disk when its accompanying database record is saved
Archive: Manually saves stored image files on a CD/DVD-RW disk, and creates a reference to the disk in the database
Export Image: Provides capability to export “what-you-see-is-what-you-get” (WYSIWYG) image or full image into TIF/JPEG formatted files
AS&E Image Simulator (AIS) Software (Optional): Allows user to view and manipulate images on a stand-alone PC

Image Analysis Tools
Density Expand: Controls and continuously adjusts the contrast of the displayed image, thus enhancing the differences in objects
Auto Enhance: Automatically optimizes contrast throughout the image
Sharpen: Accentuates the edges of objects in the image
Reverse Video: Displays the normal, “positive” image or the reverse black-and-white “negative” image
High Contrast: Intensifies subtle differences in contrast
Color Palettes: Adds the ability to evaluate images in greater depth using up to 11 color palettes
Historical Compare: Adds the ability to compare images at different times
Zoom: 2x, 3x, 4x magnification with the ability to roam continuously through full field of view
Pan and Scroll: Ability to examine any part of the image at preset display magnifications

HEALTH AND SAFETY

Dose to Cargo: Less than 0.01 mR (0.1 μSv) per scan, at an average speed of 3 mph (5 kph) at 5' (1.5 m) distance
Environmental/Operator Dose: Less than 0.1 mR (1 μSv) in any one hour
CE Certified

ENVIRONMENT

Ambient Operating: 32°F to 108°F (0°C to 42°C)
Storage: -4°F to 140°F (-20°C to 60°C)
Operable in: rain, snow, and high winds
Hot Weather Package (option): Guarantees operation up to 122°F (50°C)
Cold Weather Package (option): Guarantees operation down to -20°F (-29°C)
Harsh Environment (option): Includes hot and cold weather packages