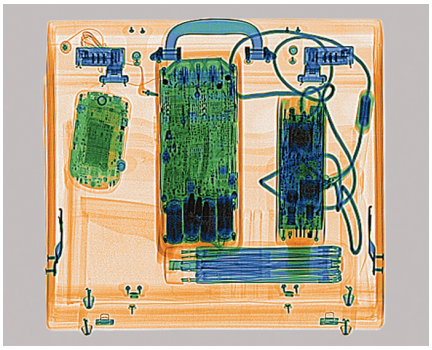
GEMINI® 6040

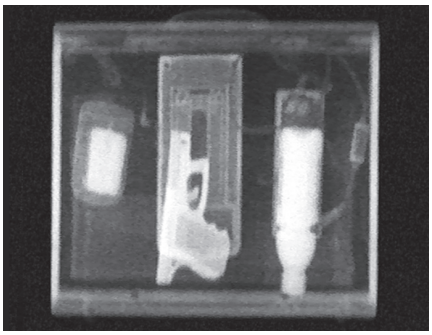
DUAL-ENERGY PLUS Z BACKSCATTER® X-RAY INSPECTION SYSTEM

Gemini 7555 system
Tunnel size 78 cm x 58 cm (30.7 in x 22.8 in)

Gemini 100100 system
Tunnel size 105 cm x 102.5 cm (41.3 in x 40.3 in)

THE GROUND-BREAKING GEMINI SYSTEM SIMULTANEOUSLY DETECTS BOTH METALLIC AND ORGANIC THREATS —EVEN IN CLUTTERED ENVIRONMENTS—FOR MORE COMPREHENSIVE DETECTION THAN TRANSMISSION-ONLY SYSTEMS.





The **electronic clutter** in the dual-energy transmission image *(top)* obstructs views of the threats in a briefcase. The Z Backscatter image *(bottom)* of the same briefcase exposes the **Glock handgun and plastic and liquid explosives.**

Ground-breaking parcel inspection

AS&E's ground-breaking Gemini parcel X-ray inspection system combines dual-energy transmission with patented Z Backscatter technology for **the most comprehensive threat detection available** for parcel, baggage, and mail screening. The Gemini system's unique capability to detect both metallic and non-metallic threats—**even in cluttered environments**—makes it an invaluable inspection tool for security officials.

Powerful combination of technologies

The power of the Gemini system lies in its **ability to simultaneously detect both inorganic and organic materials** by combining dual-energy transmission and Z Backscatter X-rays—two complementary, advanced, and commercially proven technologies. Together, they provide the most information available about the contents of a parcel.

Multi-technology

The Gemini system's dual-energy transmission X-rays generate a **high-resolution image in which metallic threats, such as guns and knives, are easily detected** and fine details, such as tiny wires that could indicate an improvised explosive device, can be discerned. Dual-energy transmission technology uses two X-ray energy levels to determine the "effective" atomic number of objects in the parcel and then colorizes the image based on material type.

The Gemini system's Z Backscatter X-rays generate a **photo-like image in which organic materials—such as sheet, bulk, and liquid explosives, narcotics, and plastic weapons—are bright white.** The easy-to-interpret images produced by Z Backscatter technology also help to reduce operator fatigue.

AS&E®
Detect the difference.

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GEMINI® 6040

DUAL-ENERGY PLUS Z BACKSCATTER® X-RAY INSPECTION SYSTEM

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TECHNICAL SPECIFICATIONS

Operating Features

X-ray Sources

Dual-energy source: 140 keV
Z Backscatter source: 160 keV

Tunnel Opening

Width:	63.5 cm (25 in)
Height:	44 cm (17.3 in)
Length:	Unlimited

Conveyor

Continuous operation in normal mode. Auto-return allows one-person operation.

Width:	63.5 cm (25 in)
Height:	68.6 cm (27 in)
Capacity:	136 kg (300 lbs) distributed
Speed:	23 cm/s at 60 Hz; 20 cm/s at 50 Hz

System Dimensions

Length:	198.1 cm (78 in)
Width:	85.1 cm (33.5 in)
Height:	135.2 cm (53.2 in)
Weight:	794 kg (1750 lbs)

Transmission beam orientation: Diagonally upwards
Z Backscatter beam orientation: Vertically upwards
Portability: Swivel castors allow convenient relocation of unit. Unit passes through doorways greater than 86.4 cm (34 in).

Temperature

Operating: 0° C to 40° C (32° F to 104° F)
Storage: -20° C to 60° C (-4° F to 140° F)
Humidity: 5 to 95% relative humidity (non-condensing)

Power

120 VAC +/- 10%
20 AMP single-phase dedicated line

220/240 VAC +/- 10%
10 AMP single-phase dedicated line
50 Hz/60 Hz

System Features

Systems diagnostics screen
Monitors: Two 22-inch 16:9 LED color monitors
Intel® i5-2400 processor
≥ 3.4 GHz, Quad Core
≥ 6 GB RAM
≥ 500 GB hard drive
DVD-RW drive
Three USB ports
System utilization display (X-ray hours, system hours, number of inspections)
Network-capable
Adjustable-height operator console shelf
Image save and restore
Autosave

System Options

Two 24-inch 16:9 LED color monitors
Color printer
Global power conditioning (Sola Regulator) 50 or 60 Hz
Steel roller tables (2 ft, 4 ft, 6 ft)
Stainless steel exit trays (18 in, 3 ft)
Remote console capability (50 ft, 75 ft, 100 ft)
Threat Image Projection (TIP)
Centralized TIP Management
Computer-based training
Ergonomic mobile monitor and operator's console cart
Imaging test fixture
Gamma Radiation Detector
ASE Connect™ networking solution
ASE Learn™ training solution

Health and Safety

Operator receives less than 1.0 µSv/hr (0.1 mR/hr) at 5 cm (2 in) from cabinet.

Complies fully with all applicable federal health and safety regulations: Center for Devices and Radiological Health Standards for Cabinet X-ray Systems (21 CFR subchapter J Section 1020.40).

Film-safe

Image Display

System Performance

Resolution*: 38 AWG guaranteed, 40 AWG typical
Penetration*: 30 mm guaranteed; 34 mm steel typical
Contrast: 16,000 gray levels visible
Complete coverage of objects in tunnel—no corner cutoff
*Per AS&E test fixtures

Detection Capability

High-resolution dual-energy transmission X-ray provides the ability to detect inorganic "High Z" objects such as guns, knives, and IED wires and provides metallic and organic discrimination in uncluttered environments. Z Backscatter detects organic "Low Z" objects such as explosives, plastic weapons, and drugs.

Operator's Console

User-friendly ergonomic control panel. Two high-resolution displays present separate and simultaneous transmission and Z Backscatter images.

ASEInspection™ Software

ASEInspection is the Windows-based application software used to convert X-ray data into images. It contains a suite of tools for manipulating and enhancing images and is used for image storage and retrieval.

Image Analysis Tools

Auto Enhance: Improves resolution of the image by optimizing contrast throughout, thereby enhancing subtle differences in the image
Color Palette: Adds the ability to evaluate images and areas of interest in greater depth using color
Continuous Zoom: Zooms images to 16x magnification
Density Expand: Adjusts the contrast of the displayed image, thus enhancing the differences in objects
Edge Enhancement: Accentuates the edges of objects in the image, enabling the operator to recognize objects faster and more readily
Mark and Annotate: Attaches pointers and comment fields to mark an area of interest in an image
ASE Frame: Automatically frames areas of high density where X-rays do not penetrate
High: Changes image contrast so details of high penetration are more defined
Metallic Stripping: Strips out inorganic material, leaving only those colored orange or green and enabling the operator to better identify organic materials
Organic Stripping: Strips out organic material, leaving only those colored green or blue and enabling the operator to better identify inorganic materials
View Z: Toggles the image between black-and-white and Z_{eff}-associated colors, allowing the operator to better discriminate different materials in the image