

# GEMINI® 100100

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

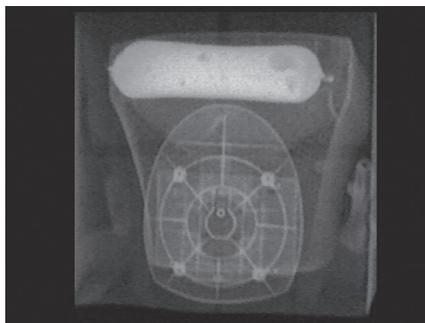
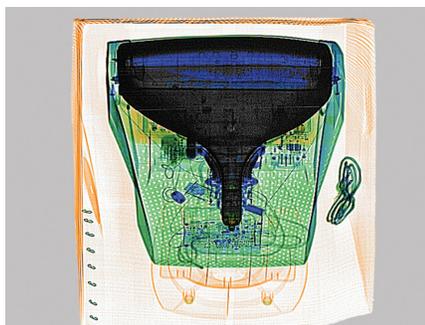


**Gemini 6040 system**  
Tunnel size 63.5 cm x 44 cm (25 in x 17.3 in)



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



This computer monitor contains **1.3 kg of explosives**. Gemini's high-resolution dual-energy transmission image (top) shows the wires and details of the monitor. The Z Backscatter image (bottom) of the same monitor exposes the organic explosive threat.

### 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 and baggage 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.



Detect the difference.

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[www.as-e.com/gemini100100](http://www.as-e.com/gemini100100)

# GEMINI® 100100

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



### TECHNICAL SPECIFICATIONS

#### Operating Features

##### X-ray Sources

Dual-energy source: 170 keV

Z Backscatter source: 160 keV

##### Tunnel Opening

Width: 105 cm (41.3 in)

Height: 102.5 cm (40.3 in)

Length: Unlimited

##### Conveyor

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

Width: 105 cm (41.3 in)

Height: 90 cm (35.5 in)

Capacity: 200 kg (440 lbs) distributed

Speed: 24 cm/s (47.3 ft/min)

#### System Dimensions

Length: 420 cm (165.4 in)

Width: 149.8 cm (59 in)

Height: 203.2 cm (80 in)

Weight: 1818 kg (4000 lbs)

Transmission beam orientation: Diagonally upwards

Z Backscatter beam orientation: Vertically upwards

#### 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

220 VAC +/- 10%

15 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

Two USB ports

System utilization display (X-ray hours, system hours, number of inspections)

Network-capable

Image save and restore

Autosave

#### System Options

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 (4 ft, 6 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.

##### ASE Inspection Software

ASE Inspection 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  $Z_{\text{eff}}$ -associated colors, allowing the operator to better discriminate different materials in the image

