Applications

- High-threat facilities
- Airports
- Building lobbies
- Mailrooms
- Security checkpoints
- Correctional facilities
- Customs checkpoints

Gemini systems, with their combination of transmission and Z Backscatter™ technology, provide enhanced detection over transmission-only systems.

Ground-breaking parcel inspection

The ground-breaking Gemini™ parcel X-ray inspection system from AS&E combines dual-energy transmission with patented Z Backscatter™ technology for the most comprehensive threat detection available for parcel, baggage, and mail screening. 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 organic and inorganic materials with its combination of 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

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, are 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.

Gemini system’s Z Backscatter X-rays generate an image in which organic materials — such as sheet, bulk, and liquid explosives; narcotics; and plastic weapons — are bright white. These items are frequently missed in transmission-only systems. Z Backscatter’s photo-like images facilitate image interpretation and reduce operator fatigue.

The electronic clutter in the dual-energy transmission image (left) obstructs views of the threats in the briefcase. The Z Backscatter image (right) of the same briefcase exposes the Glock handgun and plastic and liquid explosives.
### Operating Features

- **X-Ray Sources**
  - Dual-Energy source: 140 keV rated, operating at 140 keV
  - Z Backscatter source: 160 keV rated, operating at 160 keV
- **Tunnel Opening**
  - Width: 25.0" (63.5 cm)
  - Height: 17.25" (43.8 cm)
- **Conveyor**
  - Continuous operation in normal mode. Auto-return allows one person operation.
  - Width: 25.0" (63.5 cm)
  - Height: 27" (68.6 cm)
  - Capacity: 300 lbs (136 kg)
- **System Dimensions**
  - Length: 78" (198 cm)
  - Width: 33.5" (85 cm)
  - Height: 53.25" (135 cm)
  - Weight: 1750 lbs (794 kg)

### Image Display

- **System Performance**
  - Resolution: 40 AWG
  - Penetration: 30 mm steel
  - Contrast: 16,000 gray levels visible
- **Detection Capability**
  - Simultaneous transmission and Z Backscatter imaging. High resolution dual-energy transmission X-ray provides the ability to detect inorganic “High Z” objects such as guns, knives, and wires for IEDs and provides metallic and organic discrimination in uncluttered environments. Z Backscatter detects organic “Low Z” objects such as explosives, plastic weapons, and drugs.

### System Features

- **Operating System:** Windows XPe
- **System diagnostics screen**
- **Monitors:** Two 22" 16:9 LED color monitors
- **Display:** 
  - 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 34" (86.4 cm).
  - **Temperature**
    - Operating: 32°F – 104°F (0°C – 40°C)
    - Storage: -4°F – 140°F (-20°C – 60°C)
  - **Humidity:**
    - 5 – 95% relative humidity (non-condensing)
  - **Power**
    - 120 VAC +/- 10%
    - 20 AMP single phase
    - 220 VAC +/- 10%
    - 15 AMP single phase
    - 50Hz/60 Hz

### Health and Safety

- **Operator receives less than 0.1 mR/hr (1.0 µSv/hr) at 2" (5 cm) 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