KTC offers Large Cargo Container Scanner Systems as well as radiation detection systems.

KTC integrates and delivers high-energy cargo screening for security, customs and other specialized applications. The Drive Through Systems offers drive-through operations with multi-level safety options which allows the drivers to safely remain in the cab during scans.

The dual-energy material discrimination illustrates organics from inorganic materials and metals, enabling the System operators to work more efficiently and effectively. The System is widely configurable with a multi-range of energy levels, integration and networking capabilities and full stack of globally available optional features.

High Volume Large Cargo Container Scanner Systems

KTC specialist company Industrial Imaging Solutions has designed the flexible System platform . This proprietary design involves a redesign of its patent protected Cargo Container Scanning System. The System is capable of scanning (to the closest possible resolutions) two parallel tracked cargo, each moving at up to 7.5 MPH in the same or in opposite directions. Both of these systems use the World leading Varian High Energy Physics Package in conjuncture to the Varian Linear Accelerator, along with the KTC HYTEC FlashCT® award winning software and control systems.

The KTC System has proven and award winning solutions to the challenges in the other commercially offered applications, which are the height of the energy beam and the opposed detector (triple stacked car-carriers or double stacked container are quite high), the relatively narrow space between edges of (potentially swaying) Cargo vehicles and handling the data volume generated off the detectors.

KTC cargo container scanning systems scan 40-foot containers or entire tractor-trailers in 20-22 seconds, are relocatable, and feature outstanding subsystems, such as Varian Linear Accelerators with the HEPP and the HYTEC software imaging, control, and storage systems capable of outputting Internet transmittable encrypted images.

In Place (Fixed) Scanning Inspection Station for Trucks and Trailers

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Technical Information and Data Sheets

Standard Feature Highlights:

· High throughput of 120 to 180 Container vehicles per hour
· Multiple range of scanning speeds
· Scanning speed up to 12 km/7.5 mph
· Operating temperature -20°C to +50°C (-4°F to +122°F)
· Efficient and reliable search results

Additional Packages:
· R&D Award winner Hytec FlashCT® integrated for realtime organic/inorganic material discrimination at 6MeV
· People Safe, Driver safe scan options
· Auto Alert Radioactive Material Detection
· Advanced intensifier imaging systems for enhanced visual material discriminations

KTC systems offer accelerators with energy grades from 4MeV to 6MeV, allowing for steel penetration from 250mm to up to 400mm while providing a high throughput. Highlights

Ref Notes:

The screening systems are capable to inspect cargo trucks with containers, and large vehicles for threats such as explosives, narcotics, weapons of mass destruction (WMDs) and contraband, as well as manifest verification, reducing the need for manual inspection. The modular and flexible compact design of the System provides the ability for the system to be relocated, adapting to the user's specific needs.

A user specific customized System installation

Typical Technical Data Sheet

General specifications

Nominal energy (MeV)	4 to 6MeV
Scanning principle	Pass through x-ray system with target vehicle driven through at slow speed upto 12 Kmph/ 7.5 Mph

System specifications

Footprint	Modular design to customer requirements
Scanning height	1' -16' (4.8 meters)
Max height under gantry	16' (4.8 meters)
Min crew requirement	2
Relative humidity	Up to 100%
Electrical consumption	30 kVA Standard operations – 50 kVA Optional Specs

Computer system

Image workstation	Large size hi-res screen, workstations (user specific)
Printer	As per user specification
Network	Fully compatible DMS
Image analysis tools	Marks and annotations, Histogram equalization, Contrast and edge enhancement, filters, Material discrimination, Analytics and review of image database, and data manifestation for specified analysis, standard image formats, objects measurement
Database workstation	SQL database
Data storage	Scalable SSD HDD
Data archiving	Multiple storage option (user specific)

Radiation protection safety

Surveillance	Full user Video surveillance, infrared barriers etc.
Markings	Multiple tri-color indicators, sirens & regulatory displays
Regulations	Compliance WHO, ICRP 103 (ICRP 60), EU & US regulations

Health & security

Dose in the environment	Less than 0.5μSv/hour, and less than 1mSv/year
Dose rate in operator room	Less than 0.5μSv/hour (average) and less than 1mSv/year

System Operational Configurations (Configurable)

Nominal energy (MeV)	6, Linear Accelerator M-6 Digitally Interlaced
Detector (HEPP)	M-6 Paired Detector: Photodiode Size: 4 mm x 30 mm Crystal Type: CdWO41.3; Detectors/ Board: 32; ADC Depth: 18 bit (typical); Gain Settings: 1 to 16 in 2 dB increments; Vertical Detector Pitch: 4.6 mm; Module: 6 MeV with 32 channels

Detailed technical data for critical subsystems part of the Varian HEPP like Linatron M, X Ray source, TCU, Detector Arrays etc. are available upon specific customer request

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Additional Options

Free-Standing Radiation Detectors

The Radiation Detection systems have been developed by Thermo Electron, in close working relationships with major integrators including KTC and with the DOE (Radiation Portal Program) and the US Department of Homeland Security.
There are four major components of the radiation detection system: two primary sensors (gamma radiation detectors and neutron detectors); handheld secondary inspection detectors and, the computer system which links the first two and provides information to the port worker/inspector who investigates a container or package after receiving an alarm from the primary sensors.
Throughout the transit chain the Integrated KTC Sensor Sheds could provide x-ray and/or neutron probes, fault detection monitoring receivers, radiation detection, and state-of-health of the railcars and the casks.

Vibration Mitigation and Modeling

KTC – ISS- HYTEC is the foremost vibration modeling and mitigation firm in the world. That is why we were chosen for LIGO, PHENIX, ATLAS (USA), DAHRT, Large Hadron Collider, GLAST, ACT, SNAP, and the Los Alamos Neutron Science Center's 22 MV accelerator projects. For example the packaging of sensors in the Yucca Storage field requires vibration stability.

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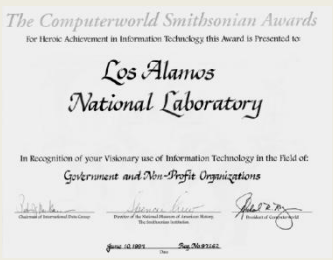
KTC specialist companies are DCAA-Audited, DOE-Audited and Approved, ISO 9001-2000 Certified manufacturer and integrator of radiation detection, x-ray and neutron beam 2D and 3D imaging systems, and advanced sensors. Our user software won the coveted R&D 100 Award in 2003.

Department of Energy Quality Awards

Together with the DOE Directives Management Team, the DOE Technology Transfer Team, and the LANL Industrial Partnership Office, the Energy Quality Awards for the DOE Technology Information Network and the Automated Directives have been awarded.



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