

Previous model number: 3700-600

G3700-600

Waste Segregation Gamma Container Scanner

Introduction

The ANTECH G3700-600 Waste Segregation Gamma Container Scanner is a modular assay solution for the segregation of gamma-ray emitting waste in large containers. The principle of the measuring system is that of making multiple measurements of the same container from different measuring points, thereby making multiple estimates for the activity that is inside. These results (after correction for geometry and attenuation) may then be combined to produce a best estimate of the container total activity. "Outliers" from the container average point to inconsistencies that lie in either matrix or source distribution homogeneity.

In operation, the container passes the detector measurement station at multiple measurement points, for example at 25%, 50% and 75% of the length of the container. At each point, the multiple collimated HPGe detectors perform multiple simultaneous measurements. In a typical configuration, four detectors are positioned on one side of the measurement station, resulting in 12 sets of assay measurements for the container.

ISOCORR, the latest waste-assay software from ANTECH, manages the gathering of the multiple detector spectra and processes the result. Each detector to be used in the assay is calibrated with a simple multinuclide point source, and the program then extrapolates the calibration to the actual geometry and matrix conditions present at each measurement point. The results from each detector are then averaged and stored within an industry standard database.

The modular nature of the Waste Segregation Gamma Container Scanner means that for easier or more difficult measurement situations, fewer detectors or extra detectors may be used. Furthermore, because ISOCORR calculates a complete container assay based on container physical parameters and a point source calibration for each detector, the loss of one detector is not catastrophic to all measurement process. The system uses STANDARD High Purity Germanium (HPGe) detectors calibrated via simple point sources and collimators of known dimension and materials. If they are required, additional or replacement detectors can be brought to use in minutes, making it cost efficient to upgrade the system.

Features

- Liquid nitrogen mini-dewars or Xcooler options available for HPGe detectors
- Heights of the detectors are individually adjustable
- Multiple detectors provide a faster measurement with lower uncertainty
- Specifically designed HPGe detector crystal dimensions to optimise the performance of the detector for the application - ORTEC profile HPGe detectors
- Data acquisition and analysis software based on ANTECH multi-detector version of ISOCORR waste assay code



Benefits

- Assays large packages, ISO containers and vehicles
- Multiple detector measurements detect hot spots and produce accurate container assay
- Detects matrix inhomogeneity
- High efficiency, high resolution HPGe detectors provide high sensitivity and reliable nuclide identification
- Optional transmission sources for correlation of dense matrices
- Flexible, modular design facilitates changes for different measurement conditions
- Easily calibrated
- Appropriate for the measurement of boxes with a uniform distribution of density and activity
- Suitable for confirmatory measurement of large volumes of waste

Specification

Assay accuracy	Typically 25-65% but largely dependent on the distribution of sources inside the container and the number of measurement points (for uniform distribution of density and activity).
Measurement time	Largely dependent on the distribution of sources inside the container and the number of measurement points. ISOCORR allows measurements to be made simultaneously or sequentially; in the typical formation with four detectors, 3 x 15 minute measurements would be typical, with an overall measurement time of 45 minutes.
Spectroscopy subsystems	Typically 4 standard spectroscopy subsystems, each comprising the following: <ul style="list-style-type: none"> • ORTEC PROFILE Series GEM HPGe detector • X-Cooler non-LN2 HPGe detector cooling