

Previous model number: 3400-340C

G3400-220

Low Level Waste Segregation and Sentencing System (QED)



Introduction

The G3400-220 Low Level Waste Segregation and Sentencing System is designed to assist radioactive waste generators and assay specialists with the task of identifying, quantifying, and sorting radioactive wastes. The G3400-220 makes it possible to sort and demonstrate that 'non-radioactive' wastes are free release candidates. The high cost of disposing of low level waste means that the G3400-220 is a highly cost efficient tool. The definition of what waste is non-radioactive varies but for most facilities the G3400-220 can make the determination in a single one minute count.

Generally, smaller containers will result in lower detection limits than larger containers filled with the same material. The G3400-220 handles small paper or plastic bags of waste and carboys containing liquids, as well as standard 55 gallon over pack (340 litre) drums.

Drums are manually loaded using a conveyer and rotated on a platform inside the low background shield in order to average out matrix attenuation effects. A special cross-correlation method detects and minimises the effects of vertical inhomogeneity.

The G3400-220 typically employs three ORTEC PROFILE series GEM detectors with SMART-1 option that 'view' the drum in three vertical slices or segments. Unlike conventional High Purity Germanium (HPGe) detectors, which are specified according to the usual IEEE standard that only defines relative efficiency for a point source at 250 mm (9.84 in), PROFILE series GEM detectors have warranted crystal dimensions. This ensures that "your" G3400-220 will perform as well as "ours".

The G3400-220 features a unique, modular shield design. The shield is shipped either as individual pieces or partially assembled and can be easily installed in a matter of hours. Each lot of low background steel is individually analysed before fabrication to ensure that there is no extraneous contamination.

Features

- Low background 100 mm (3.94 in) shield, free from ^{60}Co
- Water tight stainless steel inner liner
- Latest ORTEC DSPEC-Jr digital spectroscopy hardware
- Moveable remote operator console (connected by Ethernet)
- Portable operator console that may be remote from the measurement vicinity
- Ethernet communications via ORTEC CONNECTIONS™, which is easily interfaced with other systems (for record keeping or reporting) and enables spectral data and results to be viewed on other network PCs
- High efficiency, high resolution HPGe detectors that provide reliable nuclide identification
- Digital spectroscopy electronics that provide ultra stable operation override ranges of count rate and temperature

Benefits

- Identifies and quantifies gamma-ray emitting radionuclides in a variety of containers; non-emitters may be determined by correlation
- Naturally occurring radioactive materials (NORM) activities may be excluded from results
- Corrects for matrix material density and detects inhomogeneity
- Modular shield design allows easy installation-reinstallation, easy decontamination and adaptation to non-ideal situations such as restricted spaces or waste storage areas
- Password protected User software
- Flexible reporting: results stored on Access Database format
- Quantification of nuclides with no gamma emissions by correlation

Specification

Minimum Detectable Activity	Less than 370 Bq per cubic meter of low density waste for nearly all nuclides Ultra low (~10 nCi) for 'No Activity' Even lower (~1 nCi) with optional NaI detectors
TRU sorting	Performs at 100 nCi/g over a wide density range (0.1 to 1.5 g/cc)
Load cell capacity	725 kg (1598.35 lb)