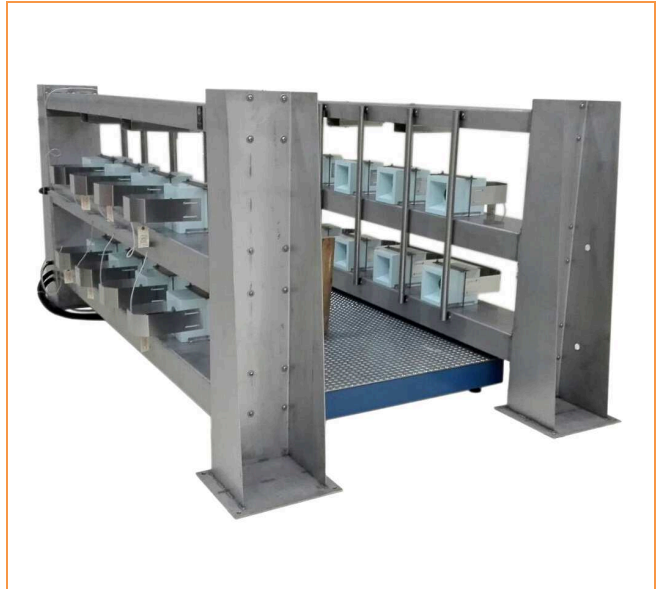


SPECTROMETRIC STATION WITH SCINTILLATORS FOR CHARACTERIZATION OF RADIOACTIVE WASTE

FREE-AND 16

MAIN FEATURES

- *Efficient alternative to HPGe-based systems*
- *Versatile structure*
- *Sub-sections measurements to allow characterization of big containers*
- Robust mechanical structure with weighting platform
- Detectors: 16 NaI(Tl) scintillators 3"x3" with MCA
- Lead shielding/collimator for each detector
- Max container dimensions: 100x100x200 cm
- Geometries database and release limits calculation
- Data archive and measurement reports
- MDA (Cs-137): down to 0.04 Bq/g (15 min)



DESCRIPTION

The **FREE-AND 16** spectrometric station is a robust and handy system designed to perform spectrometric analysis of waste materials, where the fine spectroscopy provided by HPGe-based systems is not needed.

The main components are:

- 3"x3" NaI(Tl) scintillators coupled to MCA (16 in total)
- Mechanical support structure for detectors
- Weighting platform
- Control PC with user-friendly software

The detectors are distributed in two arrays of 4 units for each side. Each detector is provided with a lead shielding, which acts as a collimator: this way each scintillator "sees" a defined portion of the container volume. The system can achieve an MDA of 0.04 Bq/g (15 minutes measurement, 300 kg of material, 1 g/cm³ density).

The mechanical support structure is made of stainless steel, which can well resist to the weight of the equipment and to accidental bumps.

The weighting platform has a maximum limit of 6000 kg. Containers of different type and dimensions can be placed on the platform, up to a maximum of 100x100x200 cm (WxHxD).

The operator interacts with **FREE-AND 16** through a sophisticated yet easy-to-use software. To perform the measurement, the operator selects the proper geometry from a previously defined database, then sets the measurement time; the procedure automatically starts when the container is placed upon the weighting platform. Measurement reports are provided at the end of each scan.

Thanks to the geometry and the configuration of the spectrometric station, **FREE-AND 16** can be used for many applications, and it can be adjusted to the requirements as for dimensions and detectors number.

TECHNICAL SPECIFICATIONS

Overall maximum dimensions

- WxHxD = 202x150x360 cm

Detectors

- Type: 3"x3" NaI(Tl) scintillator crystals
- Number of units: 16 in total, 8 for each side, distributed on two lines of 4 units each
- Energy resolution: < 7.5 % for Cs-137
- Lead collimator thickness: 5 cm

Weighting system

- Maximum limit: 6000 kg
- Resolution: 1 kg
- Platform dimensions: 150x250 cm
- Steel platform and framework

Management software

- Representation of detector – collimator – container
- Efficiency curves calculation
- Calculation of specific activity (Bq/g)
- Container geometry database
- Customizable release concentration limits
- Customizable analysis reports and printing options
- Calculation of the activities of non gamma-emitters using tabulated scaling factors
- Good functioning verification



User interface

