

WAM-400

WASTE ASSAY MONIOTOR



MAIN ADVANTAGES

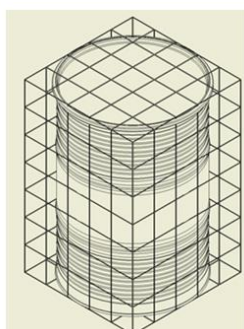
- Monitor configuration to customer requirements
- Tomographic analysis of the activity and density distribution in the drum
- Peak attenuation correction
- Integrated waste drum weighing
- Optional Fast-Scan function
- Detector with optional adjustable collimator
- Measurement of the density of the material in the waste drum
- Integrated control software

PURPOSE

The WAM-400 monitors are intended for the quantitative and qualitative characterization of radioactive waste deposited in drums with overall activity from 100 kBq to 30 TBq (for Cs-137).

WAM-400 monitors are suitable for measuring waste drums with high heterogeneity in the distribution of activity sources and material density in the entire drum volume. They provide measurements with an error typically in the range of 5–20% (maximum 50%).

WAM-400 monitors can identify specific radionuclides along with their activity in all voxels distributed across 9 vertical layers of the drum.



Identification of hotspots in a single layer of a drum

All WAM-400 monitors include:

- Rotating platform for measured waste drums with an integrated weighing scale
- Gamma spectrometric HPGe detector with 50% efficiency, cooled with liquid nitrogen, that measures radionuclides in a selected sector of the drum
- Fixed collimator of the detector
- Vertical lifting mechanism, which ensures measurement of the waste drum over its entire height
- A data processing system that provides comprehensive waste drum analysis
- Transmission source to correct for nonhomogeneous material distribution in the waste drum. Eu-152 is used as standard, in case of need other nuclides can be used, e.g. Se-75.

The following options and features can also be added to the WAM-400:

- HPGe detector with different efficiencies corresponding to the activity of the waste in the drum
- Alternative detector cooling: electric or hybrid (combination of liquid nitrogen and electric cooling)
- One to four collimated dose rate detectors for the Fast-Scan function
- Collimator with an adjustable aperture for measuring a wide range of activities in waste drums with automatic aperture setting using the Fast-Scan function
- Manual or automatic waste drum handling system
- Swab wipe system for measuring surface contamination on waste drums
- Barcode, QR or RFID reader for waste drum identification
- Area gamma detectors
- Calibration fixtures and check sources

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Once the waste drum has been loaded onto the rotating platform, it is weighed. The operator is then prompted to enter the required information before starting the measurement.

When integrated, the Fast-Scan function uses dose rate detectors to quickly determine the maximum dose rate at the surface of the waste drum. The collimator aperture is then automatically adjusted to achieve optimal detection efficiency.

Next, a density measurement of the waste drum with the radionuclide source is performed to determine the average density of the material inside the drum. Depending on the measured density, the corresponding peak attenuation correction factor is set.

Then the waste drum is then gradually measured by an HPGe detector in individual cylindrical segments over its entire height. Once the measurement is complete, the monitor provides the user with a report detailing the total and mass activity of the radionuclides present in each of the measured segments, as well as the total and mass activity of the waste in the drum for each radionuclide. It also identifies the location, activity and density of individual hotspots within the drum.

WAM monitors are controlled by WAMIS software, which offers the following features:

- Starting new waste drum measurements
- Manual WAM control and calibration
- Archiving of waste drum measurements
- Archiving of calibrations performed
- Archiving status and error messages
- Printing reports of waste drum measurements
- Printing WAM calibration reports



Collimator with an adjustable aperture and the MDG-12S detector for the Fast-Scan function

SPECIFICATION

Detector	HPGe
Typical efficiency	50%
Measuring range for Cs-137	100 kBq to 30 GBq
Resolution FWHM for 122 keV	< 0,85 keV
Resolution FWHM for 1330 keV	< 1,85 keV
Energy range	40 keV to 3 MeV
Dimensions (W × H × D)	(2500 × 3000 × 3350) mm
Weight	2 170 kg
Power supply	220 – 240 VAC
Temperature	from 5 to 55 °C
Fast-Scan detector	collimated CdTe
Humidity	max. 80 % non-condensing
Typical weight of the waste drum	< 600 kg
Typical diameter of the waste drum	610 mm
Typical volume of the waste drum	200 l

RELATED PRODUCTS

WAM-200	Waste monitors for evaluating the distribution of radionuclide activity in drum in up to 9 vertical segments
WAM-300	Waste monitors for evaluating the distribution of activity and material density in drum in up to 9 vertical segments
MK-30P	Measuring Chamber
HF	Hand-Foot Contamination Monitor
PAM-170	Portable Activity Meter
MDG-12S	Directional Dose Rate Meter
RMS	Radiation Monitoring System