

Syscade, a mobile laboratory for inspection and characterization of nuclear waste, presented at WNE.



DSi, Scannix and Technord joined their expertise to develop a mobile unit for radioactive waste drums analysis, both physically (drum contents) and radiologically (qualitative and quantitative analysis of the isotopes present in the drums).

Syscade solution combines inspection and characterization tools for waste produced by the nuclear industry in a compact mobile laboratory. Syscade is aimed to tackle so-called "historic" waste that needs to be characterized and for which the use of non-destructive techniques is particularly suitable.

Innovation: 2 characterization techniques in a single mobile container

Combining physical and radiological characterization is the major innovation of this mobile and compact installation.

The physical inspection is carried out using an X-ray radiography system, which provides high definition images of the drum contents.

The radiological characterization is performed with a high-resolution gamma spectroscopy system with HPGe (High Purity Germanium) detector to determine which isotopes are present in the inspected wastes and evaluate the activity levels. Several characterization modes are provided: "Open Geometry" (global measurement of the drum activity); the "SGS" mode or by segments; or the "A-SGS" mode which consists to proceed to 16 angular measurements in each segment.

These non-destructive analyses are fully automated and allow the characterization of the drums without opening them, requiring only one operator.

The objective: to optimize the management of radioactive waste storage

Syscade offers a wide range of applications, from Nuclear Waste Assay, to Decontamination and Decommissioning (D&D) and nuclear safeguards to research laboratories.

Changes in international legislation and the need to guarantee long-term storage solutions often require waste to be re-characterized in order to determine its content and residual activity level, and thus define the appropriate type of treatment (compaction, incineration, etc.) for final storage.



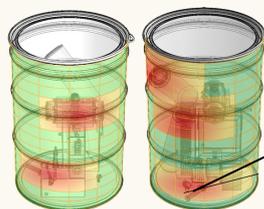
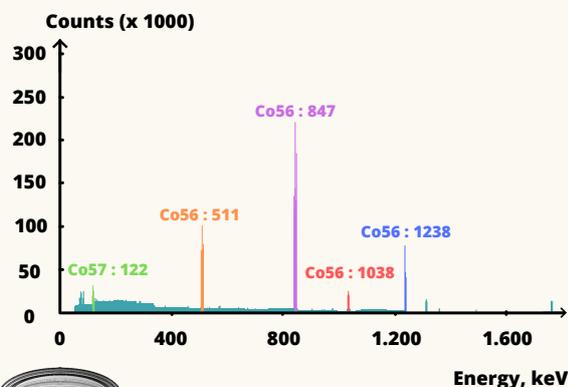
The official presentation of the mobile laboratory will take place at WNE in Paris from 30th November to 2nd December 2021. Visitors will have the opportunity to discover this technological innovation right in front of the exhibition entrance.

Results combining X-ray analysis and gamma spectrometry

Syscade can be adapted to various needs:

- The X-ray equipment allows to visualize the contents of the drums by non-destructive evaluation (NDE), thus providing detailed images of each drum from different angles that are easy to interpret. As an option, we offer 3D stereoscopic imaging or tomography. The equipment is available with X-ray generators whose energy can vary from 225 kV to 450 kV depending on the average density of the drums. A latest generation digital linear detector ensures minimum inspection time (about 1 minute per drum and per angle) as well as images available in real time.
- The gamma spectroscopy equipment is based on a high-resolution HPGe (High Purity Germanium) probe that allows the determination of the isotopes present and the evaluation of the activity levels present in each drum, each segment or each angular segment, depending on the characterization mode chosen.

The results of the physical and radiological characterizations can thus be interpreted in terms of waste type, contaminant, activity levels, and location:



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