

EMBASSY

Excavator Mounted Bucket Assay System

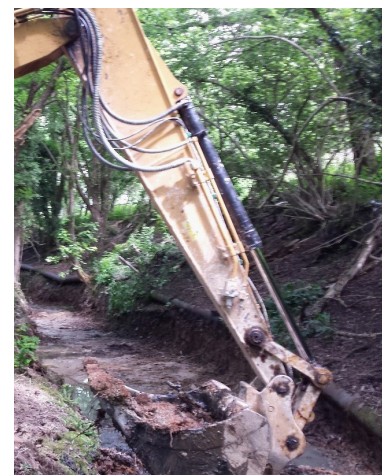
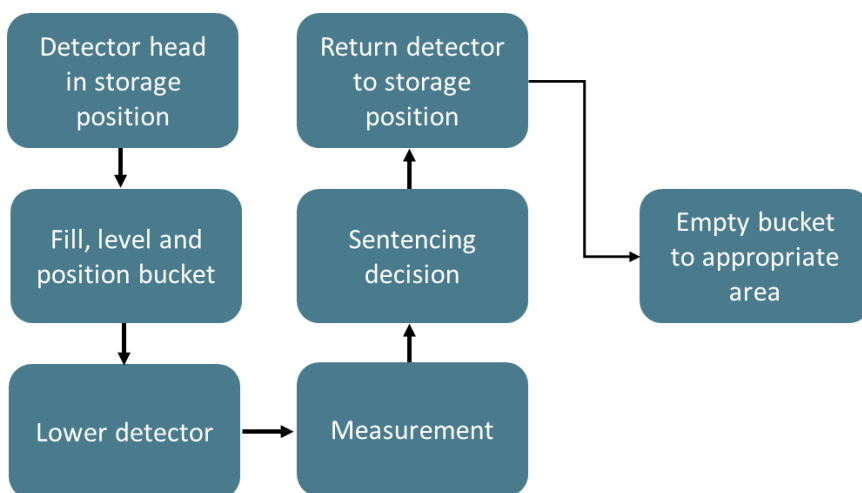


Introduction

The Excavator Mounted Bucket Assay System (EMBASSY) is designed to assay and determine the radiological contents of an excavator bucket. EMBASSY can detect, assay and segregate radionuclide contaminants found in soil, gravel or rubble thereby minimising the waste generated from remediation of the site and saving disposal costs.

EMBASSY is designed to perform measurements that directly allow the determination of whether the bucket contents are In-Scope or Out-of-Scope with regards to the Environmental Permitting Regulations (EPR). This process will reduce the time taken to remediate a site, which in turn saves project costs and allows you to meet programme timescales. The benefit of using EMBASSY is that material handling is greatly reduced as uncontaminated soil or rubble may be returned directly to the source or excavation site and no further handling is required.

This minimises the risks to the workforce and, by combining characterisation with the excavation, will save time and costs. EMBASSY is controlled and operated by a measurement technician who remains outside of the radius of the danger zone associated with the operation of the excavator. This ensures a safe operating environment and minimises the risks at the workplace. The technician controls EMBASSY via a ruggedized tablet computer, which communicates with the system via a wireless link. The measurement results inform the technician as to the sentencing of the bucket contents. The technician instructs the excavator operator in the appropriate disposition of the contents.



Operation Sequence of the excavator bucket assay system.

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Benefits

- Robust real time sentencing decisions that will ensure compliance with transport and disposal regulations
- Site clearance projects will be optimised by allowing real time decisions to be made. This speeds up the sentencing programme and can support project acceleration
- Project acceleration will in turn save the cost of extended site attendance and minimise site based overheads such as equipment hire
- Doses received by the workforce can be minimised by preventing double handling of the waste
- Enables back-fill excavations during the process
- Instant determination of whether material is In-scope or Out of Scope of EPR10
- Removes the requirement for an extensive sampling campaign – time and cost and coverage (confidence in the sampling regime)
- 100% of material assayed giving full confidence in sentencing as ANTECH have a proven track record in providing assay solutions



Technical Facts

Radionuclides that can be assayed include both activation products (such as Co-60) and fission products (such as Cs-137). The device consists of a high efficiency 4" x 2" x 16" collimated thallium-doped sodium iodide (NaI(Tl)) scintillation detector (relative efficiency of greater than 200%). The detector housing contains shielding to block interfering background gamma radiation and is temperature controlled, in order to mitigate the effects of drifts in the detector's energy and efficiency calibrations due to temperature variation. The detector is also mounted in a manner to minimise the effects of vibration due to excavator operations.

The detector housing can be demounted from the excavator for period of intense vibration, such as when driving over hard surfaces such as concreted roadways.

The shielded detector unit is fixed to a shaft with a cam such that the shielded detector can move up and down the shaft and simultaneously rotate as required. The shaft is fixed at two positions to the heavy steel protective grille, which is fitted to the cab of the excavator.

The mechanism allows the shielded detector to be stored in a position at the top of the cab grille assembly – away from the dangerous working area of the excavator bucket. Once the bucket has been filled, it is levelled and moved to a pre-determined position in front of the cab grille - in line with a spring-loaded rod fixed to the front of the cab. Using an electric cable hoist, the shielded detector is moved and rotated to a position immediately above the contents of the excavator bucket for the measurement.

