

Previous model number: 3107-1000

G3107-1000

Soil Measuring and Segregation System (SMSS)

Introduction

The ANTECH Model G3107-1000 Soil Measuring and Segregation System measures and segregates soil with radiological contamination from uncontaminated soil.

It is a self-contained system that can be used in conjunction with radiological survey to sort all potentially contaminated soil at a given site. This makes it possible to isolate soil contaminated above the assessed reporting level and to return uncontaminated soil to the site as landfill. Despite the costs of soil handling and soil monitoring, the Soil Measuring and Segregation System (SMSS) enables significant cost savings to be made by minimising the quantity of contaminated soil that must be shipped off-site for disposal.



In a single trailer mounted unit the Soil Measuring and Segregation System combines a soil belt conveyor, a dual technology shielded radiation detector, a soil diverter/sorter and all of the necessary motors, drives and control electronics including a microprocessor based electronic controller. Overall control of the system and data acquisition and analysis is performed by a PC connected to the microprocessor controller. The system can be controlled via the PC from a local control panel or over a remote link (Ethernet).

Typically, contaminated soil is input into the conveyor through a conventional soil screening plant that screens the soil and removes large stones. In some circumstances a conventional soil drying or shedding plant may also be required to prepare the soil before soil measurements are performed.

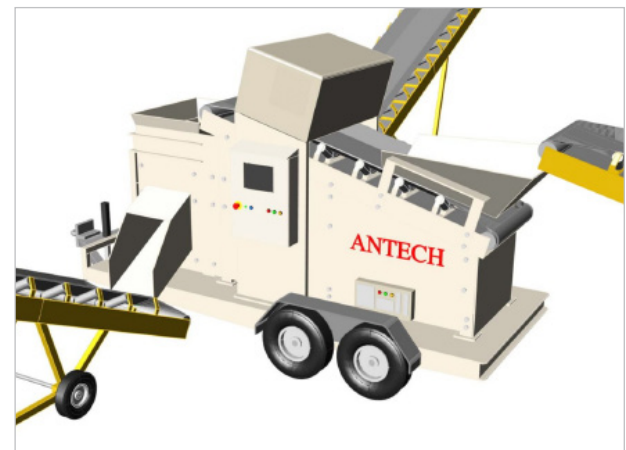
Soil that has been screened arrives at the system belt conveyor input and is levelled to a fixed depth across the conveyor. It then passes under the measurement system, which is optimised to detect particular radionuclides. Through the PC and microprocessor controller the analysed measurement data directs the diverter to segregate contaminated soil.

The segregated soil output at the diverter/sorter output chute is carried away by two or three conventional soil elevator stacker conveyors. The separated contaminated and uncontaminated soil are either stockpiled for later disposal or loaded directly into vehicles for backfill or off-site disposal (in the case of contaminated soil). The measurement cycle may be repeated to further optimise the segregation.

as an alternative to the trailer mounted system, the SMSS can be supplied as a set of components that are easily transported and assembled on site using a forklift truck.

Features

- Dual detection technology employing plastic gamma-ray scintillators and NaI Low Resolution Gamma Spectroscopy (LRGS) detector
- Shielding of detectors and soil to reduce background noise
- Variable measurement system conveyor speed
- Small radionuclide sources embedded in representative soil are used to construct a broad energy calibration
- SMSS calibration and measurement sensitivity are confirmed by Monte Carlo calculation
- 2 or 3 way soil segregation (diversion)



Benefits

- High throughput for soil measurement and segregation
- Self contained, mobile trailer mounted system for field operation
- Employs conventional elevator conveyors that are readily available
- Preprocessing of soil by conventional industry standard soil screening plant
- Suitable for measuring and segregating a wide range of radioactive soil contaminants
- Soil depth under the detector is controlled and, as an option, soil density can be measured
- Measurement data is archived for subsequent review
- 3 way diverter allows soil to be segregated into 3 streams:
 1. Uncontaminated soil - for return to site
 2. Low contaminated soil - for disposal at suitable level landfill
 3. Higher contaminated soil - for off-site disposal at ?? waste site

Specification

Conveyor mass transfer rate	22.5 kg/s (50 lbs/s)
Soil throughput	54 cubic metres/hour (81 metric ton/hr)
Segregation criteria variable	2.7 pCi/g (0.1 - 1.83 Bq/g) (typical)