

In-Situ Mobile Assay of Gamma Equipment

IMAGE

Introduction

The ANTECH IMAGE is a suite of measurement service equipment used for portable assay of all types of waste containers for Gamma radiation. The suite consists of a variety of pieces of equipment:

- The ANTECH ANTCart
- The ANTECH Portable Drum Turntable
- Operator Laptop (ruggedised Optional)
- HPGe Detector (variants accommodated)
- ANTECH Remote Battery Boxes
- Integrated video camera to display and record detector field of view.

ANTCart

The ANTECH ANTCart is a rugged, portable detector trolley capable of holding a variety of detector types and lead shielding, including the Ortec IDM-200-V. The ANTCart features a detector platform that can be rotated, allowing the detector view to be pivoted through 180 degrees. It is positioned facing the side of the ANTCart to allow for ease of manoeuvrability and in order to allow the detector to be positioned as closely as possible to the container, if required. The detector platform can be raised and lowered using a hand driven linear actuator. The detector can be adjusted from a minimum height of 0.5m to a maximum height of 1.9m. Moving with the detector is an integrated camera recording the detector view. The actuator is mounted in the centre of the frame, about a pivot point allowing the detector column to be collapsed for transport using a quick-release pin.

The ANTCart is mounted on four sturdy castors, the rear two of which are braked and are mounted on swivel stability extensions. This provides the ANTCart with a high level of manoeuvrability and allows for compact packing for transport. The Castors are mounted on a significant footprint base frame, providing maximum stability when the swivel extensions are deployed at right angles.

For the Operator, a system Laptop tray and an equipment tray are mounted on the actuator mounting column. These also provide the handles to propel the ANTCart from place to place. On the front of the ANTCart, a battery tray is available to allow for remote operation of the system.



Portable Drum Turntable

The Portable Drum Turntable provides a rotational mounting platform for 200 litre (55 US Gal) drums and 340 litre (85 US Gal) overpack waste drums. As with the ANTCart, the Portable Drum Turntable is mounted on four ruggedised castors, two of which are braked, swivel castors to allow maximum manoeuvrability. The Drum turntable consists of a stainless steel protection plate to provide easy decontamination, onto which are mounted two concentric rings of hard-anodised aluminium. These centralise the drums onto the rotation platform.

The Drum turntable is mounted on three high precision load cells, each rated at 300kg. Rotation is provided by a motor/gearbox slung under the Portable Drum Turntable frame, connected to a Control Cabinet on the back of the assembly.

The rotation speed is controlled by the motor inverter within the cabinet and can be adjusted using a USB connection to the Operator Laptop. The Control Cabinet provides user control of the turntable, including an on/off switch, and key-resettable emergency stop and reset switches, a Weigh-Scale PCB which reports the weight of the drum and an indicator light showing operation.

Power Cell Unit & Power Cell Charger

For remote operations, ANTECH Operator Laptop and IDM detector can be operated using the ANTECH Remote Power Cell Unit (PCU) and Power Cell Charger (PCC). These provide a rugged, portable case of LiFePo batteries and a UPS/Charger providing a 15Vdc output for the detector and the Laptop.

The Remote Power Cell Unit houses two LiFePo batteries providing uninterrupted power supplies for >22hrs of operation. The Power Cell Charger houses a single LiFePo battery and a battery charger & UPS. The Battery modules are easily swappable, allowing an empty battery to be quickly replaced with a charged unit from the PCC. Both Units are housed within tough Pelican-style cases, with anti vibration and shock absorbing foam to protect the charging electronics. The cases are IP67 rated. On the top surface of the cases, the charge status is provided by LED lights. The cases are provided with collapsible handles and castors, allowing easy transportation over uneven or rough ground.



When the IMAGE suite is in operation for remote operation for the Portable Drum Turntable, extended Mains Voltage supply cables for up to 20m distances are provided for use in combination with the PCC and PCU. When operation is beyond this range, ANTECH can provide a Generator for operation to provide 110Vac supply.

Detector Options

The ANTECH IMAGE Suite is compatible for use with a range of detectors, including the ANTECH G3050 Rad-Search Unit, which can be mounted on the ANTCart. The most common operation is in combination with the Ortec IDM-200-V which provides high relative efficiency and exemplary low energy resolution.

Benefits

- Versatile equipment array capable of providing a portable assay service for all container types.
- Controllable rotation platform for increased measurement accuracy with internal load cells providing weight measurement, capable of holding 200L and 340L overpack drums.
- User configurable, variable Rotation speed
- Compatible with a variety of HPGe and Scintillation detector types.
- High manoeuvrability of systems on swivel, braked castors.
- Detector orientation to allow for close range positioning of the detector.
- Integrated camera recording detector view.
- Rotational detector platform on the ANTCart
- providing full range of visibility for assay.
- Lead Shield and Field of View Collimation for the detector.
- Use of Ortec Isotopic (Iso-Plus) or ANTECH's IsoCorr density and geometry correction software.
- Remote, battery powered operation for >22hrs of operation.
- Lightweight, Packable systems for ease of transportation. Quick deployment and demobilisation through quick-release pins.
- Provision for Operator Laptop Tray and Operator Equipment Tray for use during measurements.

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