innovation in Radiation Monitor design

RAVEN compatible

Conveyor Portal Monitors

CVM-267AGN

Gamma-Neutron conveyor monitor

Description

TSA's CVM-267AGN is a stand-alone conveyor monitor which can be positioned on the side or mounted directly above a moving beltway. This extremely reliable system features highly sensitive detection for both gamma and neutron radiation.

All of the essential components are contained in the single pillar: gamma and neutron detectors, SC-770 system controller and SCA-775 amplifier/single channel analyzer, and occupancy detector. A light tower with flexible positioning is used for distinct audible and visual gamma and neutron alarms with status indicators for fault and ready conditions. An alarm output relay is provided which may be ac coupled to stop or divert the conveyor.

The CVM-267AGN is equipped with Ethernet communications capability. TSA's RAVEN (Radiation Alarm and Video Event Notification) monitoring system connects through wired or wireless Ethernet.

OPERATION: After the initial site preparation is completed, the system can be installed and operating in less than an hour. When the system is powered up, it acquires an initial background count. The process normally takes twenty seconds. The background count is continually updated until the system is occupied.

When the detector senses occupancy, the system starts comparing the current count with the most recent background data. Alarm comparisons are made every 200ms. If the count exceeds the alarm level, both audible and visual alarms will be triggered. The system monitors itself and indicates low and high background conditions. System status is continuously updated on the SC-770 display. User-selectable settings for sensitivity, energy discrimination, and fault levels may be entered on the keypad of the SC-770 system controller.

Specifications

- SENSITIVITY:
  - Gamma: Will detect 10g of ^{235}U (HEU) or 25g of ^{239}Pu, 50% probability of detection, 95% confidence in 20 µR/hr background at a passage speed of one meter per second
  - Neutron*: Will detect less than 200g of ^{239}Pu in a shielded container that reduces the gamma flux to 1% of the unshielded gamma flux.
- DETECTORS:
  - Gamma: One, 30"l x 6"w x 1.5"d (76 x 15 x 4cm) organic plastic scintillator detector per pillar; provides approximately 270 in^3 (4.4 liters) of detector volume per system. The scintillator detector is shielded on four sides with 0.375" (10mm) of lead.
  - Neutron*: 2" diameter x 36" (5 x 91cm) ^{3}He tubes.
- ALARM INDICATION: Gamma alarms are indicated by a red strobe light mounted on the light tower. High and low faults along with other fault conditions are indicated by an amber light. Neutron alarms are indicated by a blue strobe light. Separate audio alarms are triggered for gamma and neutron alarm conditions.
- DISPLAY: Numeric LCD, 4 lines x 16 characters.
- COMMUNICATIONS: Equipped with Ethernet communications capability.
- POWER REQUIREMENTS: 90 – 250 Vac, 47 – 63 Hz, less than 100 VA
- DIMENSIONS: 70.5"l x 18.5"w x 12"d (179 x 47 x 30cm) including mounting flanges.
- WEIGHT: ≈371 lb (168kg) per unit
- ENVIRONMENTAL: 0° to 122° F (-18° to 50°C) Designed for sheltered areas.
- OPTIONAL COMPONENTS: AM-270, RAVEN monitoring system

** For neutron detection please contact TSA Systems to determine availabilty and quantity of ^{3}He tubes.*

Applications

This monitor is designed to continuously scan conveyor belt luggage and parcels without the need for frequent calibration or maintenance. It is intended for applications in transportation centers where the relatively low energy emissions from ^{235}U and ^{239}Pu are the main concern. Its neutron monitoring adds the capability of detecting shielded neutron emitters.

The CVM-267AGN features TSA's unique design features of high sensitivity and reliable operation in variable background environments. This system covers most coveyor belt applications, and TSA's engineering staff can adapt it to meet special requirements as necessary.

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