Guardian ADV-Pedestrian

Pedestrian Radiation Detection System

A customisable system for pedestrian radiation monitoring.

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Guardian systems are able to discriminate between the presence of NORM and other radioactive materials. The system incorporates state of the art passive scanning technology to detect changes in radiation levels emitted by gamma radiation in objects, vehicles, or containers.

Guardian Steel Mill systems exceed the strict requirements that professionals demand in today's complex operations. These systems are highly accurate, have maximum sensitivity, and are environmentally rugged. Guardian steel scrap systems are designed to meet the ANSI 42.35 and IEC 62022 standards; however systems can be designed to meet additional requirements if requested.

The modular design provides several benefits. This 'plug and play' approach results in an off the shelf yet customisable solutions for bag house, containers, rail or conveyors. In addition, the modular construction means ease of maintenance. On-site personnel can act as the first line of defence for any service or maintenance needs. Furthermore, the networking and advanced remote monitoring and debugging capabilities mean fewer interruptions for maintenance or service, saving time and money.

The system can be monitored from anywhere on the network or over the internet (when access is granted into the site network) using the included service and diagnostic software. This software application provides complete control of all system hardware settings; there are no controls or manual adjustments required at the hardware.

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Features

- Free flow pedestrian radiation monitoring.
- Minimises nusiance alarm from medical patients.
- Fully digital system design.
- Operates at walking speeds up to 5 mph (8 kph).
- Gamma and neutron detection.
- Advanced anaylsis algorithms for high sensitivity results with essentially zero false alarms.
- Spectroscopic capable (option).
- Direct connection to the network, enabling overview of all alarms on all systems.
- Multi-faceted alarm notification methods.
- Real-time state of health reporting for identification of issues before they turn into problems.

- Alarm classification to sort alarms into scrap and non-scrap categories for easier control.
- Automatic system sensitivity monitoring.
- Modular system design for easy servicing.
- System designed for easy on-site service by local staff for 'instant' service support.
- Sophisticated occupancy sensors optimised for protection from sunlight, environmental elements, and shock damage.
- Source localisation.
- Available remote 24/7/365 monitoring and support by trained experts.
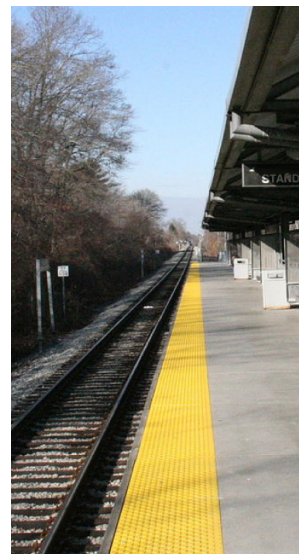
Software

RADNet system operating software can be installed on any number of computers connected to the network, each running its own user-defined configuration. This allows the portal to be operated in a variety of ways. Each instance of the programme will not interfere with each other instance running at any other location.

The Threat Matrix provides a runtime rule evaluation engine consisting of numeric, logical, and string operations combined with logical and mathematical operands. The result of the expression becomes a true or false value. If true, the user can specify a rule definition, including a message to be displayed, a visible alarm indicator, an audible alarm indicator, and hyperlinks to other files.

The engine to build the Threat Matrix is contained in an independent software module. Typically, the application and specific rule set is controlled, prohibiting unauthorised or unintentional access and modification.

Software controls and parameters at a glance

- Detector high voltage.
- Detector gain.
- Detector pole zero.
- Detector ROI settings.
- Detector noise threshold.
- Detector temperature.
- SSA temperature.
- Sampling rate.
- Time 1 (T1) and Time 2 (T2) averaging rate.
- IP and network addressing.
- Counts per ROI.
- Live time.
- Internal pulser.
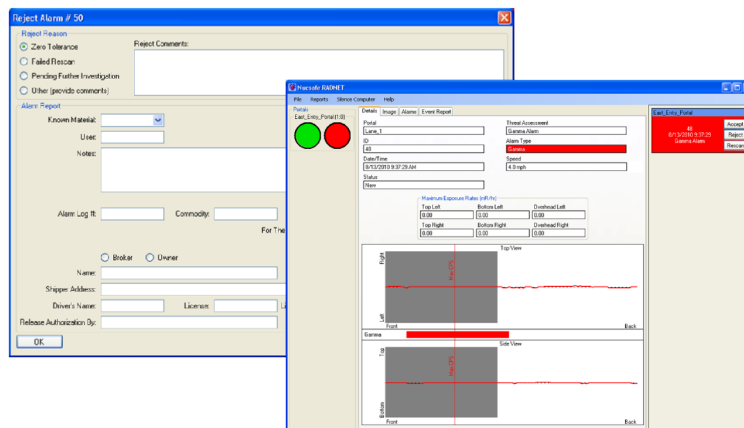
System options

- Spectroscopy.
- Battery backup (> 3 hours).
- Overview camera.
- Video of alarms.
- Customisable Threat Matrix.
- Remote monitoring plans.

Specifications (Standard Configuration)

Architecture

- Modular and compact design.
- Patented NORM rejection.
- Dynamic background updating for lowest possible detection levels, even when weather is a problem.
- 50 mSec (20/Sec) data sampling rate for pinpoint accuracy.
- State of health and error reporting to service computer via the internet, enabling fast fault diagnosis and resolution.
- Full Ethernet connectivity to plant network.
- RSO overview of all system alarms via plant network.
- Plant network connectivity to service department via internet and multi-plant connectivity via internet.
- Remote alarm validation and reporting.
- 24/7/365 technical support for fast responsive support from technical specialists.
- System sensitivity analysis and auto correction to minimise signal loss, with no radioactive sources required to test system performance.
- Support for Radio-Frequency Identification (RFID) tags to permit absolute vehicle or container identification in a very cost effective manner.

System controller

- Dimensions: 89 cm (35 inches) (H) x 30 cm (12 inches) (W) x 22 cm (9 inches) (D).
- 90/240 VAC input.
- Industrial COTS processor operating temperature range: -40°C to +80°C
- All data storage on solid state memory.
- Windows XP OS.
- IP67 rated enclosure.
- Ethernet (wired, fibre, or wireless) communication.

Detector

- Volume: 3000 in^3/detector.
- Dimensions: 112 cm (44 inches) (W) x 30 cm (77 inches) (H) x 22 cm (9 inches) (D).
- Total DSP (Digital signal Processing).
- 2 PMT's mounted for optimum low noise operation.
- ADC/DSP: 256 channel spectrometer on each PVT, 20/sec data sampling rate.
- High performance internally occupancy sensors.
- -20°C to 50°C system operating temperature range.
- No user adjustments required.
- Energy range: 20 keV to 3.3 MeV
- Sensitivity: < 0.08 uR/hr
- 12 digitally controlled output drivers (24 VDC @ 100 mA).
- Automated system sensitivity checks.
- 24 VDC detector and controller operation.
- Synchronised data analysis across all panels.
- Automated report generation with detailed alarm analysis.
- Exposure-rate or count-rate output (user selectable).
- Background trending analysis.
- Management reports.
- Vehicles scanned report (non alarming and alarming).
- Max., min., and average speeds reported.
- Remote communications package (standard).
- Battery backup for 8 hours of operation (optional).
- Password protected.
- Built-in RSO and operator procedure following messages.
- Automated e-mail and SMS generation to multiple recipients.
- Data traceability.