arktis
RADIATION DETECTORS

Fully automated and remotely supported solution

Arktis V2000 Radiation Portal Monitor

Reliable Radiation Detection for the Waste and Recycling Industry

Radiological materials enter the recycling and waste streams via a variety of different paths. Examples of this include accidental disposal at universities and hospitals, contaminated waste, and lost or stolen industrial devices. It is critical that such materials are detected prior to entering processing facilities. Failure to prevent radiation contamination could cost millions to remediate and lead to problems for both public health and the environment. The V2000 offers a highly reliable screening of vehicles for radioactive materials.

Key features

- High sensitivity/high-speed gamma radiation measurements
- UNI 10897:2016, CEI EN 62022 compliant
- Configurable to meet layout requirements and vehicles specifications
- False alarm rate < 1:10,000
- Real-time monitoring and dynamic background radiation subtraction
- System health and Alarm event management, with local display and remote indicators
- Ethernet communication for remote monitoring and support
- Connectable to vehicle identification devices (like plate readers)
- Neutron detection option available
- Optional radioactive materials categorization upgrade

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Case description

Radioactive sources entering the supply chain are a major health risk. The strict regulations required to mitigate the risk of contamination demand a reliable radiation detection infrastructure at both recycling and manufacturing facilities.

Employees are not authorized to manage a radiological alarm without appropriate training. In the case of either a false or real alarm, an expert must be consulted to assess the threat, which results in delays and high ownership costs.

Arktis solution

Arktis offers advanced systems, characterized by an intuitive user interface and remote monitoring capabilities. In the case of an alarm, the data can be directly uploaded to a remote expert team for a preliminary assessment, reducing the total cost of ownership for the customer. Arktis offers the option of a pre-determined alarm algorithm which can reduce false alarms by up to 90% by setting precise alarm parameters. The Arktis V2000 system is designed to deliver high-performance monitoring of vehicles and their cargo while complying with international regulations.

The power, acquisition and control module can be installed up to 1 km from the detection units, allowing for the best flexibility to merge with pre-existing operations and infrastructure. The monitoring activity can be remotely supervised using the Ethernet-LAN port of the control console, enabling the operator to contact Arktis personnel for online service or send alarm data in real-time for preliminary evaluation. Tailored for recycling centers, steel mills, and incinerators, the Arktis V2000 system offers the best features to ease daily work and reduce operating costs to a minimum.

Specifications	V2000
Measurement Features	■ False alarms rate: <1/10,000 (5 σ alarm threshold) ■ Efficiency (Cs-137): 150 kcps/μSv/h (per detector, source at 2 m) ■ Energy range: 35 keV to 2 MeV (and above) ■ Minimum detectable dose rate: 5 nGy/h (95% confidence, 0.4 s integration) ■ Maximum transit speed: User adjustable, up to 20 km/h
Detection Unit	■ Detector type: Plastic PVT scintillator ■ Number of units: From 1 to 3 ■ Volume of each unit: 25 liters ■ Surface of each unit: 5000 cm^2 ■ Position sensors: 2-3, at the entrance/exit of the portal area
Detector Housing	■ Maximum dimensions (WxHxD): 734 x 1483 x 222 mm ■ Material: Stainless steel AISI 304 S.B., with plexiglass windows ■ Ingress Protection grade: IP65 ■ Measurement side: PMMA 5 mm ■ Shielding on external sides: Pb 10 mm ■ Total weight (of each unit): 171 kg ■ Maximum wind speed: 150 km/h ■ Dynamic equivalent pressure: 2.25 kN/m^2 ■ Minimum ground-load capacity: 0.6 MPa
Support Structure	Standard: H = 140 cm weight = 52 kg; Weight and dimensions: variable among versions;
Power	Low-noise power supply: IN 220 VAC – 50 Hz (other supply available on demand)
Control Console	■ Type: Tower or rack PC ■ OS: Windows 7 desktop or more recent version (available also for Windows 7 for Embedded Systems. Not compatible with Windows 10 IoT and Windows Embedded Compact) ■ Data communication: LAN Ethernet 100 Mbps
Standards	UNI 10897:2016; CEI EN 62022