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Contamination Monitoring System – Dosimetry Gate

The PI-MSKA series of radiation monitoring systems are devices based on radiometric gates. They are designed to detect very low levels of gamma and neutron radiation.

A system designed in accordance with the guidelines of standard **PN-EN 62022** concerning the permanent installation of monitors for the control and detection of gamma radiation from sources contained in recyclable and non-recyclable materials transported by vehicles, **PN-EN-IEC 62244** concerning the permanent installation of radiation portal monitors (RPMs) for the detection of illicit trafficking (transport) of radioactive and nuclear materials, and the ANSI N42.35 standard – American National Standard for Evaluation and Performance concerning monitors for detecting radiation generated by materials transported by rail, road and other means of transport, IAEA-TECDOC-1312 (International Atomic Energy Agency) document on the detection of radioactive materials at borders.

PI-MSKA system with two detectors positioned opposite each other

The system helps prevent costly radioactive contamination of areas such as waste disposal sites, scrap yards, rubbish dumps, equipment, industrial sites – steelworks, products and personnel – by continuously monitoring selected areas, e.g. vehicle and railway gates, and pedestrian and vehicular crossings. The system itself is safe and does not generate ionising radiation. Highly sensitive sensors, combined with a computer-based CPU control unit, allow PI-MSKA systems to be classified as top-of-the-range equipment.

The system comprises:

- An innovative design with various detectors;
- A detection unit containing between 1 and 16 detectors;
- A CPU control unit with a touch panel;
- A vehicle presence sensor in the monitored zone;
- Sensors for measuring vehicle speed through the monitored zone (optional);
- Built-in automatic system integrity check **(patent pending)** (optional),
- Emergency power supply.

The PI-MSKA railway system with an upper detector and two detectors positioned opposite each other

Functions:

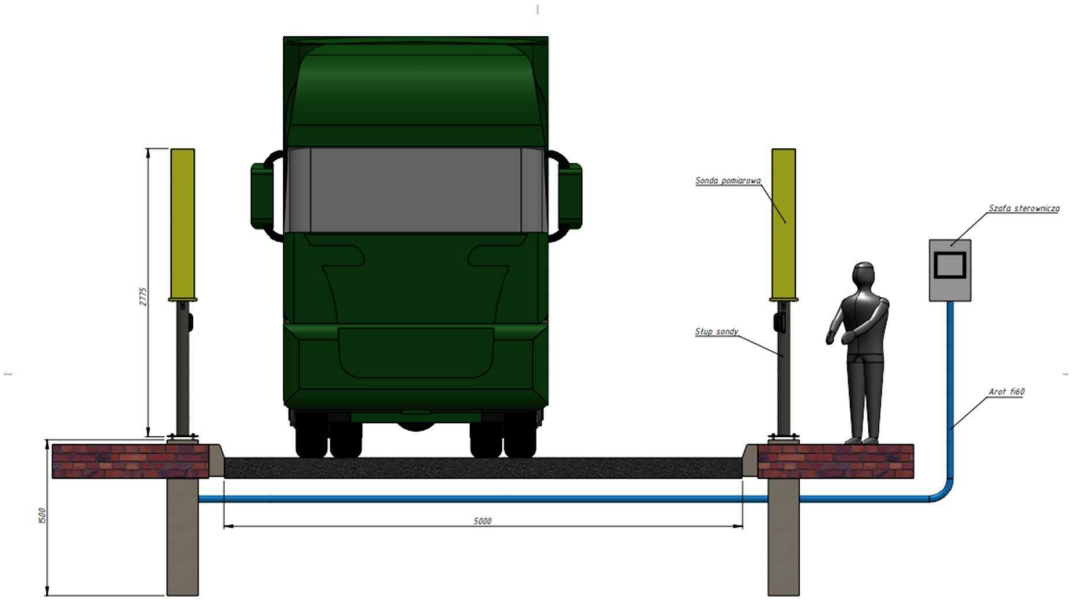
- Statistical analysis of alarms and background measurements;
- Information on the location of the detected source on the vehicle being transported;
- Online and offline monitoring;
- Measurement of vehicle speeds in the monitored zone (optional);
- Automatic system verification and calibration **(patent protected)** (optional);
- Online determination of detection criteria against a variable background **(new)**;
- Archiving of measurements and alarms;
- Alarm notifications via the Internet and GSM;
- Reporting in printed form;
- Real-time measurements;
- Eliminating the effect of background noise on source detection.

PI-MSKA system mounted above conveyor belts

Typical applications for industries:

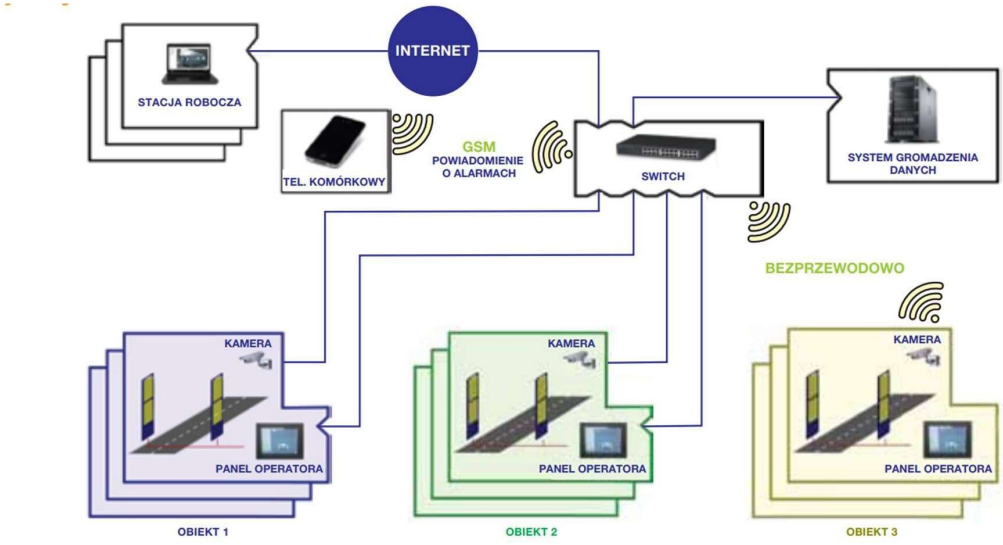
Additional components:

- vehicle video recording;
- automatic number plate recognition;
- geometric measurement of vehicle dimensions;
- radio communication in the unlicensed band.



Visualisation of a vehicle's passage via the monitoring system

Remote monitoring system for Stationary Radiation Monitors installed at one or more sites:



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System benefits:

- Convenient, modular installation;
- IP65 enclosure protection rating (other IP ratings available on request);
- Capable of operating in extreme temperatures (-35 °C to +50 °C);
- Detection of trace amounts (well below natural background levels) of gamma and/or neutron radiation, graphical and digital display for each detector, including conversion to:

    1. Dose rate: µGy/h for gamma radiation (optional),
    2. Flux density: n/s/cm² for neutron radiation (optional);

- Measurement of vehicle speeds through the monitored zone;
- Information on the location of the detected source on the vehicle being transported;
- Online and offline monitoring;
- Measurement of vehicle speeds in the monitored zone (optional);
- Built-in automatic system verification (patent protection) (optional);
- Online determination of the detection limit against a variable background (new).

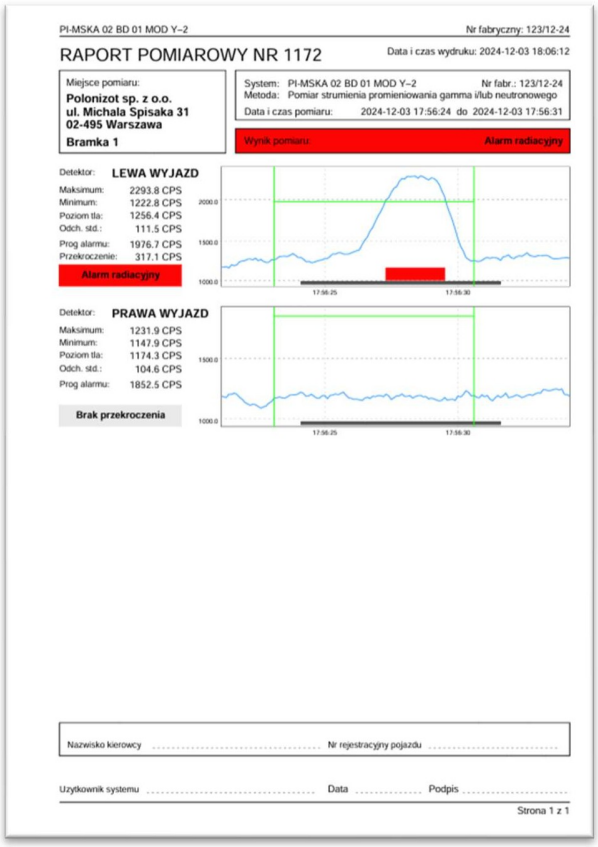
Examples of software screenshots

Detection on detector 2

Location closer to Detector 2 from the front

Source detection, Detector 1 with reduced background,

Detector 2 without reduced background; Central location



PI-MSKA 02 BD 01 MOD Y–2 Nr fabryczny: 123/12-24

RAPORT POMIAROWY NR 1172 Data i czas wydruku: 2024-12-03 18:06:12

Miejsce pomiaru:
Polonizot sp. z o.o.
ul. Michała Spisaka 31
02-495 Warszawa
Bramka 1

System: PI-MSKA 02 BD 01 MOD Y–2 Nr fabr.: 123/12-24
Metoda: Pomiar strumienia promieniowania gamma i/lub neutronowego
Data i czas pomiaru: 2024-12-03 17:56:24 do 2024-12-03 17:56:31

Wynik pomiaru: Alarm radiacyjny

Detektor: **LEWA WYJAZD**
Maksimum: 2293.8 CPS
Minimum: 1222.8 CPS
Poziom tła: 1256.4 CPS
Odch. std.: 111.5 CPS
Prog alarmu: 1976.7 CPS
Przekroczenie: 317.1 CPS
Alarm radiacyjny

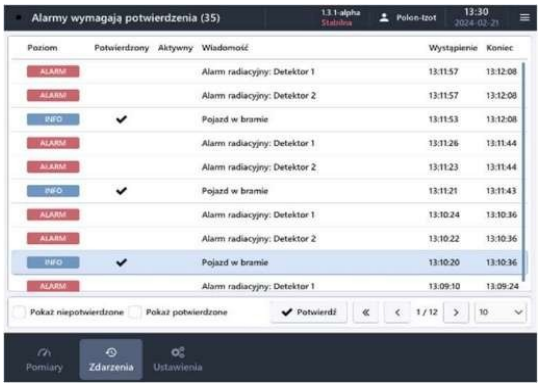
Detektor: **PRAWA WYJAZD**
Maksimum: 1231.9 CPS
Minimum: 1147.9 CPS
Poziom tła: 1174.3 CPS
Odch. std.: 104.6 CPS
Prog alarmu: 1852.5 CPS
Brak przekroczenia

Nazwisko kierowcy ..... Nr rejestracyjny pojazdu .....

Uzytkownik systemu ..... Data ..... Podpis .....

Strona 1 z 1

Sample measurement report



Alarm memory window for each detector

POLON-IZOT is a Polish manufacturer of measurement equipment for laboratories and industry. We are the successor to the world-renowned company POLON Zjednoczone Zakłady Urządzeń Jądrowych, founded in 1956 and operating as the Office of Nuclear Technology Equipment. We can therefore boast over 60 years of technical expertise.
Our mission is to develop our own advanced technical solutions for measuring equipment – whether online, at-line or for typical laboratory use.

We are equipped to manufacture customised measurement and control equipment.

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