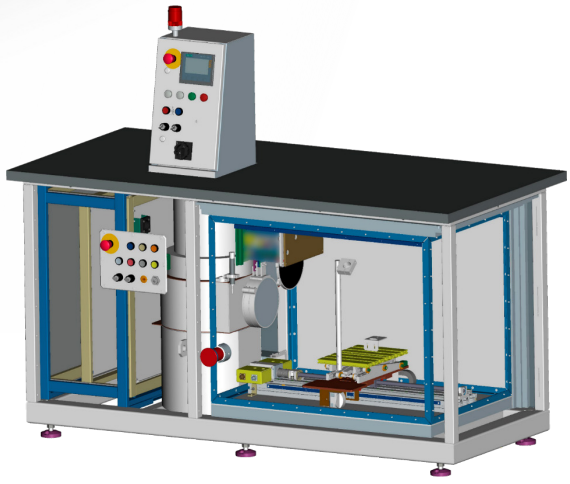
radmetron®

Radiation measurement for your safety

SELF-CONTAINED GAMMA IRRADIATOR PM9300

SAFE AND COMPACT SELF-CONTAINED IRRADIATION CALIBRATION SYSTEM THAT REQUIRES NO SPECIAL ROOM



Application

PM9300 is used to reproduce the following radiological quantities:

- air kerma and air kerma rate,
- exposure dose and exposure dose rate,
- ambient dose equivalent and ambient dose equivalent rate,
- personal dose equivalent and personal dose equivalent rate

during calibration, verification, graduation and testing of dosimeters and gamma radiation dose rate meters.

Features

Mobility

- Supplied with two wheeled platforms for moving the unit through standard doorways
- Demountable design allowing to easily transfer the parts

Safety

- Does not require a specially designed room or any additional shielding
- Safe and convenient source loading without any additional equipment

Ease of use

- Intuitive operator interface, computer-controlled operation

Affordability

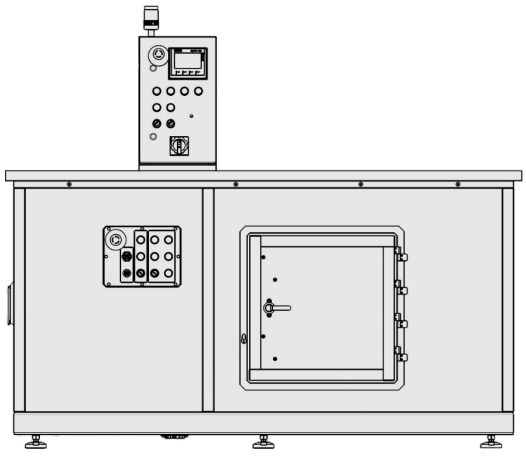
- Low-cost design and installation

Compactness

- Irradiator does not require a large space

Reliability

- Mean time between failures is tens of thousands of hours



Safety

- PM9300 with a set of sources can be installed in **the rooms that do not require additional radiation protection**. The radiation impact on personnel and the **public** during normal operation, abnormal operation or accident is limited to the installation itself and does not affect the room where it is installed.
- When the source of maximum activity (Cs-137 with activity 820 Ci) is in the expose position, the dose rate at 30 cm from the PM9300 surface does **not exceed 2 μSv/h**.
- When the sources are in the storage position, the dose rate on any surface of the PM9300 does **not exceed 0.5 μSv/h**.
- **The radiation safety** during the PM9300 operation is ensured by the control system together with the alarm and interlocking system, as well as the radiation monitoring system consisting of one gamma radiation detection unit located in the working chamber of the installation.

Overview

The irradiation chamber is shielded with lead of various thicknesses.

The instruments to be calibrated are placed on the operating table of the LPS. **The operating table** can be adjusted in heights via the electric drives, as well as the instrument being calibrated can be moved along the irradiation axis.

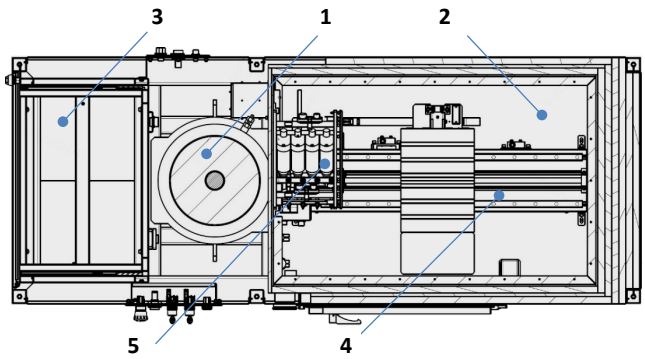
The set of attenuators consists of 4 lead attenuators and ensures attenuation of the radiation flux from the source.

The control unit provides remote movement of sources in the irradiator via the electric drives from the storage position to the expose position and vice versa, positioning of the instruments being calibrated along the X axis of the radiation beam, height adjustment of the operating table and adjustment of attenuators.

System components

1 – Irradiator
2 – Irradiation chamber
3 – Control unit

The irradiation chamber includes the linear positioning system (hereinafter, the LPS) (**4**) and the set of attenuators (**5**).



Instruments to be calibrated are placed on the operating table of the LPS through the door. All the mechanisms of the installation are controlled via the central and adjustment consoles in the adjustment and semi-automatic modes.

The video surveillance system consists of 3 video cameras that provide control over the LPS platform position on a tape measure, the readings of the instruments being calibrated and the working chamber. The image from the cameras is displayed on the PC of the operator.

The installation is equipped with 6 height-adjustable supports and two specialized **wheels used to move the assembled installation over short distances** (inside the room).

Specifications

Number of sources	up to 2 sources
Maximum ^{137}Cs source activity, up to	820 Ci
Produced dose equivalent exposure rate range	0.35 μSv/h to 15 Sv/h
Confidence limits of relative errors of reproduction (confidence coefficient 0.95): • of ambient dose equivalent rate and personal dose equivalent rate units, no more than • air kerma rate and exposure dose rate, no more than	 7 % 5 %
Positioning accuracy of the operating table along the X-axis, no more than	0.2 mm
Maximum allowable weight of instruments placed on the operating table of the LPS is limited to	30 kg
When the sources are in the storage position, the dose rate on any surface of the PM9300 does not exceed	0.5 μSv/h
Power consumed from the AC at a nominal voltage of 230 V, no more than	400 W
Overall dimensions of the assembled installation (L×W×H)	1.9 m × 0.9 m × 1.65 m
Weight, no more than	3500 kg

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