AT140 Neutron Calibration Facility



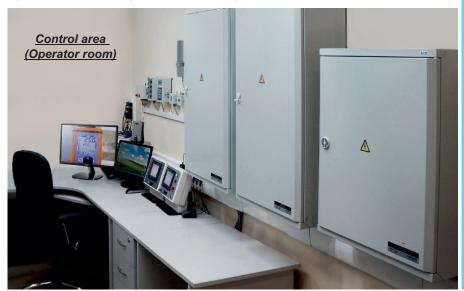
Reference AT140 Neutron calibration facility is designed to simulate and transmit neutron flux density, ambient and individual dose equivalent rates of neutron radiation during calibration, verification and testing of neutron radiation monitors and dosimeters.

Operating principle

Operating principle of facility is based on the use of ²³⁸Pu-Be and ²⁵²Cf radionuclide sources. The facility implements irradiation pattern with fixed irradiator and calibration bench on linear travelling platform, as well as with "open" geometry.

All operations for radiation sources transfer form source magazine to working position and calibrated instruments positioning in radiation beam are automated. Automatic functions of facility are remotely controlled from operator room.

Control system with alarm and interlock functions and radiation monitoring system provides safety operation of facility.



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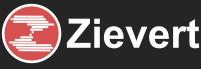
Application

Metrology support of neutron radiation monitors and dosimeters:

- Verification and calibration in metrology service facilities
- Setting-up and graduation of measurement instruments in the process of development and production

Features

- Magazine drum receives up to 3 neutron sources
- Creates fast and slow neutrons field in collimated beam of UKPN sets
- Creates fast neutron field in "open" geometry using shielding cone according to ISO 8529-2
- Programmable control of source travel inside irradiator
- Programmable control of moving platform positioning in fully automatic and manual mode
- φ and Z servo motors are used for moving sources inside irradiator, and servomotor X is used for moving the plate
- Lasers and bar gauges are used for detector centring in radiation beam
- Reads data from calibrated measurement instruments using video surveillance system or instrument interface
- Available alarm and interlock system ensures safety
- Three power outlets (230 VAC, 50 Hz) with insulated neutral on moving platform for verified instruments
- Measurement of radiation environment in working chamber and adjacent rooms
- Video surveillance of room with working chamber
- Intercom system for operator communication
- Safe braking and trip limiting of moving platform
- Emergency power source is available
- Source are loaded into facility using transfer container and manual electrically operated catch
- Control system based on PC and operator panel with automatic calibration functions
- Layout design and calculation of radiation parameters for client's premises



Ionizing radiations detectors and instruments

AT140 Neutron Calibration Facility

Specifications

Neutron source, type, peak neutron flux

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Complete set

Remotely-controlled irradiator:

- Irradiator
- Control unit
- Control panel

- Accessories including source holders and tools for source holder assembling, retrieving magnet, transfer container and lift

- Calibration bench::
- Base frame
 - Moving platform
 - Control unit
 - Control panel
 - Gamma background generating device
- Video surveillance system for measurements
- Laser targeting system
- Accessory set for unit performance monitoring
- Holding stand for detection units
- Water phantom of 300x300x150 mm size
- Alarm and interlock system
- Radiation monitoring service
- Video surveillance system
- Uninterrupted power supply
- AC power adapter
- Desktop computer
- "UDG software solution"
- Accessories kit
- Spare parts kit
- Calibration procedure
- User's manual

The facility complies with: GOST 8.521-84, GOST 27451-87, Safety requirements of IEC 61010-1:2010, EMC requirements of EN 55011:2009, IEC 61000-4-2:2008, IEC 61000-4-3:2008, IEC 61000-4-4:2004, IEC 61000-4-5:2005, IEC 61000-4-6:2008, IEC 61000-4-11:2004

Actual range limits and error are determined by calibration Design and specifications are subject to change without notice







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