

DETERMINATION OF RADIATION HARDNESS OF THE ELECTRONICS AND MATERIALS AGAINST NEUTRON AND GAMMA IRRADIATION

Fields of use

Measuring X-radiation, gamma radiation, corpuscular radiation, or cosmic or neutron radiation

Stage of Development

Operational use

IPR status

Know-how

Publication

TBA

Developed by

Jožef Stefan Institute

Contact

Jožef Stefan Institute,
Jamova cesta 39,
1000 Ljubljana,
Slovenija
Phone: + 386 1 47 73 224
E-mail: tehnologije@ijs.si
Web site: <http://tehnologije.ijs.si/>



Background

In harshest environments like nuclear power plants, containment and spent fuel storage areas, and other nuclear, medical facilities, where ionizing radiation is present, the equipment used must be evaluated concerning radiation hardness. While the reliable operation of any equipment in such environments is most critical, the lifetime of the equipment may be severely affected by gamma or neutron irradiation. Every electronics is affected by radiation including housing, screws, gaskets, coatings, connectors, wires, etc.

Description of the invention

The technology developed provides estimating the radiation hardness of the components, maximum allowed irradiation dose, estimating the lifetime of the devices and components and testing of specific materials for protection against irradiation. The method is useful for:

- estimation of the lifetime of the devices and components in the harsh operating environment
- research and testing of the irradiation protection methods
- radiation hardness testing of the protective components while exposed against maximal radiation dose

The researchers have years of experience in operating nuclear reactors. They have the technology and knowledge to perform the testing under harsh environmental conditions inside the working nuclear reactor.

Main Advantages

The technology can be used before the live operation, during research, development or production of the equipment. Life expectancy can be estimated in advance before installation into a harsh environment.