

Development Contract With Ignalina State Nuclear Power Plant

A co-operative project between Ignalina nuclear power plant and Ultrasound Institute

Ultrasonic Zirconium Tube Meter for RBMK type reactors

Contract No.: 6279

The objective of the project

To develop the instrumentation to measure diameter and the wall thickness of the zirconium tubes in the RBMK-1500 type reactors at Ignalina NPP.

The necessity to measure

Nuclear fuel pellets are loaded into zirconium tubes, which are assembled into bundles. These bundles are loaded in the zirconium tubes of the technical channels. The heat exchange between the fuel bundles and surrounding water flow takes place. The dimensions of the zirconium tubes during operation time are changed. In order to fulfil high safety requirements, dimensions of the tubes should be periodically checked.

Main features of the zirconium tube meter

- ▶ Diameter and wall thickness measurements with uncertainty of $\pm 50 \mu\text{m}$;
- ▶ Performance in high radioactivity conditions and temperatures up to 100°C ;
- ▶ Measurement control and data acquisition using remote PC;
- ▶ Processing and filtering of acquired data.

RELATED INFORMATION

1. R. Kažys, L. Mažeika, R. Šlīteris, A. Vladiškauskas, A. Voleišis and K. Kundrotas. Ultrasonic measurement of zirconium tubes used in channel-type nuclear reactors. NDT & E International. 1996. Vol. 29. No. 1. P. 37-49. [/pdf/](#)
2. L. Mažeika, R. Šlīteris, A. Voleišis, K. Kundrotas, V. Kiseliiov. The measurements of the zirconium tubes parameters in the RBMK reactors. Ultragarsas. 1996. Vol. 26. No.1. p.15-16. [/pdf/](#)

