



# **Tender EuropeAid/121464/D/S/RU**

## **Tacis Nuclear Safety Programme: On-Site Assistance to Balakovo NPP/Russia**

### **Tacis Project R1.02/03 A, Leakage monitoring system for one unit**

## **SUMMARY OF TECHNICAL SPECIFICATION**

*Access to the technical specifications is restricted for public security reasons  
Technical specifications can be obtained upon request to the EC  
(see section 18 of the procurement notice)*

With a view to improve the operational safety of one Unit at Balakovo Nuclear Power Plant, the present project provides for delivery and installation of a Leakage Monitoring System (LMS) for detecting potential leaks of coolant from the components and the piping systems of the primary circuit.

The subject of the contract is the design, manufacturing, conformity certification, head sample testing (in case the equipment is NOT industrially proven), workshop testing, delivery, assistance to the End-User during licensing, supervision of installation, supervision of testing and commissioning, supervision of the first scheduled maintenance. The scope of work also includes the provision of documentation, training and instruction in the use of the equipment, and the provision of spare parts for warranty period and a further 5-year period<sup>1</sup>.

The system to be supplied shall ensure the detection of leaks from the reactor upper unit and the pressurizer piping systems.

The Supplier may offer one LMS which makes possible to monitor the leaks in both areas or two independent LMS: one for the upper unit and the second for the pressurizer piping systems.

### **Reactor Upper Unit**

The LMS to be supplied shall ensure the monitoring of the reactor upper unit (reactor vessel head equipment) which includes the following:

- Nozzles' flange of the RCPS (Reactor Control Protection System) actuators, neutron flux monitoring channels, temperature monitoring (total 91 flanges);
- Neutron flux monitoring jackets (total 16 jackets, 4 flange connections for each jacket);
- Conic sealing for the RCPS actuators' jackets (total 61 sealing);
- Flange of the air extraction pipeline from under the reactor head (2 flanges).

### **Pressurizer**

- Nozzles, welds, bents of pipelines Dn 350 of the pressurizer surge line, along the whole length of the pipeline
- Nozzles, welds, bents of pipelines Dn 200 and Dn 100 of the coolant injection into the pressurizer.

The system shall comprise:

- Leakage monitoring and data processing equipment;
- Devices and parts for mounting, fastening and connecting the sensors;
- Cables and connection devices;
- All devices and components necessary for interfacing the new equipment with the visualisation and alarm equipment in the main control room and shutdown control room;
- All parts and devices, as well as special tools, necessary for installing, connecting, testing, calibration, commissioning, operating and maintaining the systems;
- Spare parts and consumables in quantities sufficient for 5 years of operation after the expiration of the warranty;
- All equipment and software associated to the acquisition of the necessary measurement signals, to their processing, to the performance of associated diagnostics and to associated Man-Machine-Interface ;
- All necessary simulation means for the system testing on-site;

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<sup>1</sup> In addition to the spare parts that are included in the scope of supply, the Supplier shall secure the possibility to purchase spare parts during the whole lifetime of the equipment. Such service (availability of spare parts during equipment lifetime), if requested by the End-User, will be performed upon an agreement to be set separately between the End-User and the Supplier.

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- All necessary documentation in English and Russian;

The equipment to be supplied shall be qualified according to Russian requirements, which shall be confirmed with the corresponding certificates. The Supplier shall execute all stages of the project implementation according to the QA Program developed by him and agreed with the Contracting Authority. The Leakage Monitoring System will meet the standards and safety qualifications according to Russian NPPs requirements.