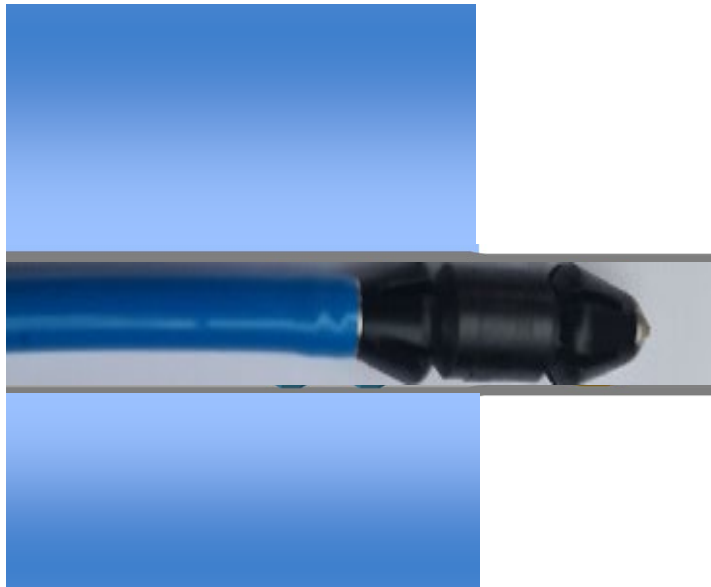


# Indicative proposal

Eddy current Array probe for the inspection of VVER 1000 SG tubesheet



**2020**

ECAZA, S.R.O., PREŠOVSKÁ 125/24, 949 01 NITRA, SLOVAKIA

CP 036/2020/00

## INDICATIVE PROPOSAL

### Eddy current Array probe for the inspection of VVER 1000 SG tubesheet

#### A. Introduction

Dear customer,

Based on the CALL FOR MARKET CONSULTATION No. 45778 announced by NPP Kozloduy, we submit the following technical offer and price offer regarding the Array probe and technology delivery for the implementation of VVER 1000 Steam generator tubesheet inspection.

#### Specification of the offer scope

1. Delivery of Eddy current **Array probe Z6** – frequency range 5 ÷ 70 kHz. The probe's design is to detect material damage in tubesheet material with a focus on axial indications. The probe meets all required technical and electrical parameters from the provided technical specification. The technical solution of coils connection does not require the use of a multiplexer.
2. The calibration block for probe calibration is designed and manufactured following best practices NDT.
3. The extension cable is located outside the manipulator. We must consult the cable chain's extension cable's integration must be consulted with the manipulator manufacturer or owner.
4. We will locate the Slip-ring (rotating element for signal transmission) on the probe reservoir/probe tray. The exact way of placement should be specified with the manipulator manufacturer, respectively, with the manipulator owner.
5. We will propose - development - optimization of the inspection procedure. We will develop the inspection procedure for the inspection system consisting of MIZ-85iD and SW EddyNet® version 1.7.2.3, including AQ / ZAC (V1.6.2.0) for data acquisition, AN-V1.2.2.0 for data analysis. The structure of the procedure will be in line with the European ENIQ methodology. We will discuss the final SW revision.
6. Technical support - first deployment inspection with Array probe Z6 for SG tubesheet inspection. We will agree on the scope of this deployment with the customer and the inspection implementer.
7. Personnel training on the inspection procedure will be five days.

8. Equipment tests at the manufacturer and customer:

a) Pre-complex tests at the manufacturer.

According to the developed test manual, we will perform pre-complex testing (Field Acceptance Test) on the mockup (test stand). The results of Pre-complex tests will be documented by protocols that should be part of the submitted accompanying technical documentation.

b) Complex tests at the customer

Complex tests (Site Acceptance Tests) will be carried out at the customer's workplace, determined by the customer. According to the prepared test manual, we will carry out the SATs, which will be commented on and approved by the customer. The results of Complex tests will be documented by protocols that should be part of the submitted accompanying technical documentation. Upon completing the FAT and SATs, the customer will take over the device by protocol.

9. Accompanying technical documentation

We will deliver the documentation in printed copies (2 pcs), in electronic form on a CD (1 pcs), the documentation will be in English. The prepared and delivered accompanying technical documentation represents a complete set of documents, which contains the following:

- Inspection procedure
- Calibration test block certificate
- The Program of Pre-complex and Complex tests
- Quality documentation (Certificates of conformity, Certificate of quality)
- Originals of all manuals from standard deliveries (1 pcs)

References:

During the development, all the experiences from the deployment and In-Service Inspections of SG tubesheet at ČEZ NPP Temelín (VVER 1000), implemented by Ecaza, s.r.o., will be used and utilized. System is qualified and used during outages.

**B. Customer consideration**

- Customer will modify SGIS manipulator the to the necessary and agreed extent.

**C. Place and date of performance**

- Dates of performance:
  - according to the offer scope specification until 30.04.2021We will make delivery within 12 weeks after the contract signing.
- Place of delivery:
  - Premises of Ecaza, s.r.o.
  - Premises of NPP Kozloduy

#### D. Fulfillment

The result of the subject of performance will be covered by a protocol and handed over to the customer responsible for technical matters (documents in electronic and printed form).

#### E. Prices

Item No.	Description and technical features of the offered product	Unit	Quantity	Unit price excluding VAT	Total price excluding VAT	Currency
1	Array probe	pcs	2	8 800.00	17 600.00	EUR
2	Calibration test block	pcs	1	6 800.00	6 800.00	EUR
3	Extension cable	pcs	1	5 000.00	5 000.00	EUR
4	Slip-ring	pcs	1	7 300.00	7 300.00	EUR
5	Inspection procedure	set	1	21 500.00	21 500.00	EUR
6	Deployment technical support	set	1	9 000.00	9 000.00	EUR
7	Training	set	1	8 800.00	8 800.00	EUR
8	FAT and SAT	set	1	7 000.00	7 000.00	EUR
9	Documentation	set	1	3 700.00	3 700.00	EUR
<b>Total</b>					<b>86 700.00</b>	<b>EUR</b>

#### F. The validity of the offer

The offer is valid until 15.12.2020.

#### G. Contact

Address: Ecaza, s.r.o.  
Prešovská 125/24  
949 01 NITRA  
Slovensko  
Mobil: +421 908 537 292  
Tel.: +421 37 3811 744  
e-mail: [zahradnik@ecaza.sk](mailto:zahradnik@ecaza.sk)  
www: [www.ecaza.sk](http://www.ecaza.sk)

Drafted: Juraj Zahradník

In Nitra: 23.11.2020