दूरभाष :
TELEPHONE :
तार : बार्क-मुंबई, चेम्बूर.
TELEGRAMS : BARC-MUMBAI, CHEMBUR.
फेक्स संख्या : ९१-२२-२५५० ५१५१
FAX NUMBER : 91-22-2550 5151

सत्यमेव जयते

ट्रॉम्बे,
मुंबई-४०० ०८५.
TROMBAY,
MUMBAI-400 085.

भारत सरकार
GOVERNMENT OF INDIA
भाभा परमाणु अनुसंधान केन्द्र
BHABHA ATOMIC RESEARCH CENTRE
URANIUM EXTRACTION DIVISION

South Site,
Trombay, Mumbai – 85

Ref: UED/Pl.13/22/30455 **Date: 17/02/2022**

TENDER No: BARC/UED/BR/21153
TENDER DUE DATE: 28th February, 2022

Sub: Fabrication, Supply and Installation of Glass tube rotameter and process controller as per specification

Dear Sir/ Madam,

Quotations are invited on behalf of Head, Uranium Extraction Division, Bhabha Atomic Research Centre, Mumbai 400085 in sealed envelope for Fabrication, Supply and Installation of Glass tube rotameter and process controller as per specification at UMRT, UED. Please note that quotations received through Registered/Speed Post of India Postal service will only be accepted. Interested bidder may contact the undersigned for any further clarification. The quotation should clearly indicate the Tender number. The postal address for sending quotation is "Head, Uranium Extraction Division, Bhabha Atomic Research Centre, Trombey, Mumbai- 400085".

1. **Scope of Work and Quantity:** The scope of work includes the followings:

Sr no	Scope of work	Technical Specification	Quantity
1	Fabrication, Supply and Installation of Glass tube rotameter and process controller as per specification	See Annexure A. Technical specification	As per Annexure A

A. **Technical Specification:**

See attached 1. Annexure A (Technical specification and bidding qualification)

3. Materials: All materials for are to be purchased and used by the supplier as per install quantity. No Free Issue of Material (FIM). Welding and cutting gas and consumables will be supplied to the contractor for onsite installation only.

TERMS AND CONDITIONS

A. *Note:* [*Reference:* (2/Misc-9/Lgl/2001/92 dated April 30, 2001, BARC]

I. Confidentiality: No party shall disclose any information to any third party concerning the matters under this contract generally. In particular, any information identified as "Propriety" in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party.This clause shall apply to the sub-contractors, consultants, advisers or the employees engaged by a party with equal force.

II. "Restricted information" categories under Section 18 of the Atomic Energy Act, 1962 and "Official Secrets" under Section 5 of the Official Secrets Act, 1923:- Any contravention of the above – mentioned provisions by any contractor, sub-contractor, consultant, adviser or the employees of a contractor will invite penal consequences under the aforesaid legislation.

III. Prohibition against use of BARC's name without permission for publicity purposes: The contractor or sub-contractor, consultant, adviser or the employees engaged by the contractor shall not use BARC's name for any publicity purpose through any public media like Press, Radio, TV or Internet without the prior written approval of BARC.

B. PRICE: Offered cost should be including the entire scope of work (materials, fabrication, testing, documentation, packing & forwarding, delivery etc). Only Taxes should be quoted as extra.

C. VALIDITY: Price should be valid for at least 45 days.

D. TAX: As applicable, should be clearly indicated in the offer.

E. Warranty: The complete work should be warranted against any performance issue for a **period of 1 year** from the date of installation.

F. JOB COMPLETION: 40 days from the day of issue of work order.

G. PAYMENT: 100% including taxes after receipt of the unit at our site, successful commissioning and submission of the following documents:

1. Delivery challan. 2. Advance Stamped Receipt.3. Original Bill, 4. Guarantee certificate.

J. SAFETY: The vendor should abide by all industrial safety rules and safety instruction imposed by BARC. The vendor should not perform any unsafe work and BARC will not be responsible for any loss/damage arising due to unsafe working procedure.

K. **LABOUR DISPUTE:** The contractor should take care of all deals and disputes related to workers. BARC will not be responsible for any loss/damage/delay due to any arising labor conflict.

J. NOTE TO THE BIDDER: The supplier must possess valid PVC, working permit/License/Security clearance to work inside BARC premises. Party should clearly mention the tender no, due date, party's name and subject on the top of the envelope duly sealed and addressed to Head, Uranium Extraction Division BARC, Trombay, Mumbai – 400 085. Proof of prior work (PO/ work order copy) should be attached with quotation. Vendors are requested to visit the site before submitting quotation for detailed understanding of the job. For site coordination vendors may please contact Shri Bikram Roy, SO/D, 25596422

Note: ***Please mention your PAN No, S.T. No & VAT TIN No with the offer. Otherwise the offer is liable for rejection****.*

On behalf of President of India

वैज्ञानिक अधिकारी / Scientific Officer
युरेनियम निष्कर्षण प्रभाग / Uranium Extraction Division
भारत सरकार / Government of India
भाभा परमाणु अनुसंधान केन्द्र / Bhabha Atomic Research Centre
ट्रम्बे, मुम्बई - 400085 / Trombay, Mumbai - 400085

Shri Bikram Roy
Scientific Officer E,
UED, BARC
022 2559 6422
bikram@barc.gov.in

ANNEXURE A : TECHNICAL SPECIFICATION AND BOM

A. Scope of the work:

- Design, submission and approval of technical specifications and drawings, materials for the items based on requirements as stated in this specification.
- Materials and Fabrication of the sensors and accessories.
- Inspection and testing (range, calibration, accuracy, resolution) of sensor as per technical specification at vendor's site.
- Supply of sensors and accessories to BARC, Trombay.
- Installation at plant location.
    1. Installation of **Rotameter**: To be replaced against existing Rotameter. **8 Nos** of SS304 M16 nutbolt and washers for each meter to be provided by the supplier. All materials including Teflon gasket should be supplied and installed by the vendor.
    2. Installation of **Process controller**: **10 numbers** of process controllers should be replaced against existing faulty process controller. The job involves a) Removal of process controller from panel, b) Removal of existing electrical connection, c) Installation of new controller, d) Configuration of new controller as per specification. Other 10 controllers should be supplied as spare.
- Documents for installation, operation, maintenance and troubleshooting to be provided.
- Guarantee of the system

B. Technical Specification:

1. Specification of SS304L Rotameter:

Flange size	2.0" ϕ
Type	Glass tube rotameter
Design	Straight inline
Service	Liquids and acids
Specific gravity	Meter 1- 1.2, Meter 2- 0.85, Meter 3- 1.0, Meter 4- 1.1, Meter 5 & 6- 1.04. Meter 7 & 8- 1.08 Individual SG will be confirmed during order acceptance and drawing approval
Maximum Flow	For Meter 1-6 :Upto 7000LPH. For Meter 7&8: 2000-20000LPH. Individual flow ranges will be confirmed upon order acceptance and drawing approval
Float	SS316L
Process connection (Inlet/Outlet)	2.0" ANSI B16.5 Class 150 SORF
Process connection MOC	SS304L
Wetted parts MOC	SS304L
Non wetted parts/casing/Scale MOC	SS304L
Max Pressure	5 Kg/sqcm
FF distance	For Meter 1-6: 500 mm For Meter 7&8: 425 mm
Design and testing	As per ASTM D3195
Cerification	Calibration certificate from NABL approved facility
Inspection	Inspection and testing as per NABL standards.

Warranty	Minimum 1 year
Make	Any reputed make confirming to above standards.
Enclosure	SS 304L
Scale	Polycarbonate with white background
Quantity	**8 Nos**

2. **Specification of Process controller**:

Main Features: Universal input On off and PID controller with transmitter supply and retransmission output in 96*96 configuration.

Equivalent product**: Radix NEX 605 – 2771-1-2-1-1-2**

Quantity: 20 Nos

INPUTS	
Input	
Thermocouple	B, E, J, K, N, R, S, T
RTD	Pt100, 3-wire
Voltage	0~10 V
Current	0~20 mA, 4~20mA
Sampling time	200 ms
Range limits	See Table 1
Accuracy	Thermocouple : ± 0.25% of FS ±1 °C Pt100 : ± 0.05% of FS ±1 °C Linear inputs : ±0.25% of FS ±1 digit
Warm up time for specified accuracy	30 minutes
Cold junction compensation	Automatic
OUTPUTS	
No. of setpoints	2SP (Relay in control) 3SP (Analog output in control)
No. of relays	2
Relay contact type	NO-C-NC (Relay1), NO-C (Relay2)
Relay contact rating	7A/250 V AC (Relay1) 5A/250 V AC (Relay2)
SSR drive	12 V DC drive signal for external SSR
No. of analog outputs	0 / 1
Current output	4~20 mA / 0~20 mA / 20~4 mA / 20~0 mA isolated from input
Maximum load for current output	500 ohms
Voltage output	0-10 V / user specified
Load for voltage output	>10 Kohms
INDICATION	See Table 2
POWER SUPPLY	
Supply voltage	a) 85~265 V AC, 50/60 Hz b) 20~30 V DC
ISOLATION	
Mutual isolation between input, output, supply, relays	1500 VAC rms, 50 Hz / 1 minute
ENCLOSURE	
Mounting	Panel flush mounting
Terminals	M3 screw, suitable for 2.5 mm^2 wire
Housing material	ABS plastic, grade: UL94V-0
Dimensions (in mm)	See Table 2 and Fig.1
Weight	See Table 2
Protection	
Front	IP66(IEC) / NEMA 4X (optional) (when properly installed using IP66 kit)
Rear (behind panel)	IP20 (IEC 6052)

TEMPERATURE, HUMIDITY	
Ambient operating temperature	-10 to 50 °C
Relative operating humidity	Below 90% RH, non-condensing
PROGRAMMABLE PARAMETERS	
Mode	Indicator/On-off Controller/PID Controller
Setpoint	Full range (See Table 1)
Unit	°C, °F, EU
Resolution	
For RTD & TC	0.1 or 1
For Linear Input	0.001, 0.01, 0.1 or 1
High scale (Input/Output)	Full range (See Table 1)
Low scale (Input/Output)	Full range (See Table 1)
High Range for Voltage Input	0~10 V
Low Range for Voltage Input	0~10 V
Digital filter	Low, High, None
Bias	-99.9 ~ 99.9
Setpoint offset	0.1~999.9
Band (P)	0.1~999.9, 0~100% of span
Integral time (I)	Off, 1~6000 seconds
Derivative time (D)	Off, 1~6000 seconds
Cycle time	1~1000 seconds
Hysteresis (ON/OFF control)	0.1-999.9
Relay logic	a. Heat b. Cool c. Full scale high alarm d. Full scale low alarm e. Deviation high alarm f. Deviation low alarm g. Inband alarm h. Outband alarm
Alarm types	Auto/Latch/Latch-hold (at power on)
Alarm acknowledge	Through key
Setpoint lock	ON, OFF

TABLE 1:

SENSOR / INPUT	RANGE LIMITS (°C / EU)	
	LOW SCALE	HIGH SCALE
Iron / Constantan (J)	-100	850
Chromel / Alumel (K)	-200	1370
Pt / Pt - 13% Rh (R)	0	1700
Pt / Pt - 10% Rh (S)	0	1700
Copper / Constantan (T)	-200	400

SENSOR / INPUT	RANGE LIMITS (°C / EU)	
	LOW SCALE	HIGH SCALE
Pt - 6% Rh / Pt - 30% Rh (B)	400	1800
Chromel / Constantan (E)	-200	850
Nicrosil / Nisil (N)	-200	1300
Pt100, 3-wire	-200	850
Linear (4~20 mA, 0~10 V)	-1999	9999

TABLE 2:

Display	Upper 0.64" / 16.3 mm Lower 0.35" / 9 mm	0.8" / 20.32 mm	Upper 1" / 25.4 mm Lower 0.56" / 14.2 mm
Relay output	2		
Isolated analog output	Isolated 1 x 0/4~20 mA or 0-10 V DC for control / retransmission output		
Transmitter excitation supply	Available		
Maximum configuration	A: 1 x Input, 2 x Relays, 1 x Analog output B: 1 x Input, 2 x Relays		

D. Terms and condition:

a. **Inspection & Testing:**

All items in 100% quantity shall be inspected and successfully tested as mentioned above in presence of BARC engineer before delivery to the site.

b. **Preparation for shipment**:

The items shall be and packed in wooden crate. The supplier is responsible for preserving and packing of the items and safe delivery to purchaser's stores in accordance with this specification. **Complete documentation including all test reports should be supplied in bound volumes (3 copies) with the supply of the materials.**

c. **Quality assurance Plan**:

The supplier shall submit QAP to the purchaser in the event of an order. QAP shall identify all the testing review, witness and hold points.

d. **Acceptance of quotation:**

- **The offer should include complete technical details, dimensions, drawings, manufacturing details, source of raw materials, company profile, exclusions and/ deviations (if any).** Incomplete offers will be liable for rejection.
- Vendor has to submit full technical details with engineering drawings with BOMs with the offer for technical evaluation. Otherwise the offer is liable for cancellation.
- Technical details should include design code/ standard, operating parameters etc.

- ***Wherever the specifications of the offered model vary from the mentioned ones point is to be highlighted***.
- The supplier shall provide the test method for each test to the purchaser for approval.
- Quality assurance plan indicating the testing schedule and review and witness points shall be submitted with the offer.
- The supplier has to ensure access of BARC representatives to the manufacturing facility for evaluation and discussion.

****