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



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

## URANIUM EXTRACTION DIVISION

Ref: UED/Pl.13/18/93584

Dt: 10/05/2018

**TENDER No: BARC/UED/KM/18010**

**DUE DATE: 25/05/2018**

### **TENDER ENQUIRY**

**Sub: Fabrication, installation and commissioning of a control panel for mica band heaters in UED, BARC.**

Dear Sir / Madam,

Quotations are invited on behalf of Head, UED in sealed envelope for fabrication, installation and commissioning of a control panel for mica band heaters in UED, BARC as per following specific terms and conditions.

#### **1. SCOPE OF WORK AND TECHNICAL SPECIFICATIONS:**

The scope of work includes the followings:

- Fabrication, installation, testing and commissioning of control panel using 2mm thick CRCA sheet steel, 7 tank chemically treated, spray painted, oven dried and front operated electrical panel.
- The control panel should be of IP 42 protection standard.
- The control panel is for operation of 3 Mica band resistive heaters.
- The heaters are installed on a tank in three zones; each heater is a 1 phase, 15KW heater.
- Each heater should be controlled using thyristor based power control as per given specifications in Table 1.

- The thyristor should be controlled using 4 to 20 mA signal from PID controller.
- The vendor should provide PID controllers and blind/ safety controllers of reputed make as per given specifications in Table 2 and Table 3 for temperature control.
- All the zones have individual ammeters.
- The overall panel should have a voltmeter and an ammeter.
- The panel should have self ventilation.
- The panel should have provision for cable entry from the top.
- The panel should provide with a four pole 100 A MCCB at incomer.
- The cabling should be done with proper ferruling and color coding.
- LED indication of all the heating status, incomer status should be available on the panel.
- **All material required for the panel is in the scope of vendor.**
- The panel has to be available in complete form for inspection before dispatch.
- The fabrication of panel should be done only after the approval of all the relevant drawings.
- The commissioning support is required during panel installation.
- The panel fabrication should follow the following standards: IS: 732 for electrical wiring and all cables shall conform to IS: 692, IS: 7098, IS: 1554 (Part-1) 1964 and IS: 694-1990 or latest.

**Note:**

- The Vendor/Contractor shall follow the Industrial Safety Regulations strictly during the job. All tools & tackles and Personal Protective Equipment (PPE) required for the job shall be arranged by the vendor.
- TLD will be issued to the workers along with one supervisor of the vendor which will be monitored as per Health Physics procedure. Two copies of passport (PP) size photos are to be submitted to Health Physicist, UED for obtaining TLD. After completion of work order, all TLD's along with name list and request for cancellation for TLD batches should be submitted to Health Physicist Unit (HPU), UED by the Vendor/Contractor (if no other radioactive related job apart from work order issued against this Tender is being carried out by Vendor/Contractor in UED).
- **As per BARC security norms, the Vendor/Contractor shall have to obtain the Police Verification Certificate (PVC) to work inside BARC for all the persons to be employed for this work and should be comply with all security regulations strictly.**
- **Vendor/Contractor and his work force should have experience of working in BARC premises related to above mentioned jobs Proof for the same is to be submitted.**
- Party should follow all the safety procedure while working inside BARC. During the execution of the work order party will be responsible for all safety precautions to be maintained in the work area. The party should arrange all the safety appliances. As per BARC security norms, the contractor shall have to obtain in the police verification Certificate (PVC) to work inside BARC for all the persons to be employed for this work and be comply with all security regulations strictly. Any injury/damage caused

to the contractor's work force during execution of the job for any reason whatsoever shall be the liability of the contractor only. The vendor will be only responsible for any labor related dispute.

**Table 1: Specifications for Thyristor modules**

<b>Requirement</b>	<b>Single Phase Thyristor Modules</b>
<b>Quantity</b>	<b>03 Nos.</b>
Type of load	Single Phase Resistive load (Single phase mica band heater)
Power rating	15 KW
Control action	Phase angle control
Control signal	4 to 20 mA/ 0 to 10 V
Power Output	230 VAC variable according to control signal
Auxiliary power supply	230 VAC
Mounting	Thyristor power regulators can be mounted on the base plate of the control panel using 4 screws/bolts (Panel mounting)

**Table 2: Specifications for ON-OFF controllers**

<b>Requirements</b>	<b>Programmable ON-Off controller</b>
<b>Quantity</b>	<b>03 Nos.</b>
Input Type	Universal
Output1	Relay NO-C-NC
Output2	Relay NO-C-NC
Output3	4 to 20 mA, DC (Re-transmission)
Transmitter supply	To be provided
Max load for current output	600 Ohms
Aux. power supply	230 VAC, 50 Hz
Display	4 Digit, 7 segment display and LEDs or relay status
Mounting	Panel mount
Panel cutout	92 X 92 mm
Operating ambient temperature	Up to 50 deg. C
No. of set points	2
Delay time	<2 sec
o/p relay contact ratings	5A, 230V AC

**Note:**

1. The controller must have provision of loop power for two wire transmitters by providing internal 24 V DC supply.
2. The controller must have provision of retransmission output signal (4 to 20 mA).
3. The vendor must provide controller manual and its calibration certificate.

**Table 3: Specifications for PID controller:**

<b>Requirements</b>	<b>PID controller</b>
<b>Quantity</b>	<b>03 Nos.</b>
Input Type	Thermocouple (J,K,E,T,S,R)
Output1	4 to 20 mA
Output2	Relay NO-C-NC
Aux. power supply	230 VAC, 50 Hz
Display	4 Digit, 7 segment display and LEDs or relay status
Mounting	Panel mount
Panel cutout	As per PID controller
Operating ambient temperature	Up to 50 deg. C
No. of set points	2
Delay time	<2 sec
o/p relay contact ratings	5A, 230V AC
Retransmission of 4 to 20 mA	Required

**2. QUANTITY:**

Total job is as tabulated below:

<b>Sr. No.</b>	<b>Description</b>	<b>Quantity</b>
1.	Fabrication, installation, testing and commissioning of a control panel for mica band heaters	1 Set.

- 3. TESTING:** The panel has to be tested with loads connected. The testing should be done in BARC and with equipment connected at the user site in the presence of the user. Proper test certificate for the control panel has to be provided by the vendor.
- 4. PRICE:** Offer should be including the entire scope of work Unit price should to be given in the offer, extra job, if any will be on pro rata basis only.
- 5. FREE ISSUE MATERIALS:** No free issue material is to be provided by us.
- 6. TOOLS AND TACKLES:** All the required tools for the work are to be brought by the vendor.
- 7. SAFETY:** The contractor shall follow the Industrial Safety Regulations strictly. Any injury/damage caused contractor's work force during execution of this work for any reasons whatsoever shall be the liability of the contractor only. Any dispute regarding safety and labor related issues it will be the only responsibility of the vendor. The party should arrange all the safety appliances. As per BARC security norms, the contractor shall have to obtain in the police verification Certificate (PVC) to work inside BARC for all the persons to be

employed for this work and be comply with all security regulations strictly. Any injury/damage caused to the contractor's work force during execution of the job for any reason whatsoever shall be the liability of the contractor only. The vendor will be only responsible for any labor related dispute.

8. **VALIDITY:** Price should be valid throughout the contract period.
9. **COMPLETION PERIOD:** The job is to be completed within **3 Months** from the date of receipt of the order any delay which is liable to the contractor is liable for penalty @ 0.5% per week (5% maximum) to be imposed on the contractor.
10. **INCOME TAX:** Income Tax @2% as applicable shall be deducted from vendor's bill.
11. **PAYMENT:** 100% including taxes after receipt of the unit at our site, final acceptance of the total job and submission of the following documents:
  1. Delivery Challan.
  2. Advance Stamped Receipt.
  3. Original Bill.
  4. Guarantee certificate
  5. Job completion certificate.

**12. TERMS AND CONDITIONS:**

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

**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.

**"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.

**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.

**Party should write clearly the Tender No. and due date on the top of envelope. Quotation should be submitted on printed letter head and to be addressed to Head, Uranium Extraction Division, Bhabha Atomic Research Centre, Trombay, Mumbai - 85. Party should mention their own PAN/GST No. on top of quotation.**

**Party should send the Quotation using Indian postal service only i.e. speed post, registered post or ordinary post only and should not send the Quotation by private courier service. The quotations sent by private courier service will be treated as invalid.**

Thanking you,

Yours faithfully,

**(P. Kalpana Mitra)**  
**SO/F, UED**  
**For and On Behalf of**  
**President of India**