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भारत सरकार  
Government of India  
भाभा परमाणु अनुसन्धान केन्द्र  
BHABHA ATOMIC RESEARCH CENTRE  
पदार्थ संसाधन प्रभाग  
Glass and Advanced Materials Division

**M R Gonal**  
**Scientific Officer - 'F',**  
**Materials Development Section**  
**Glass and Advanced Materials Division**

**Ref: GAMD/MRG/2018/426**

**Date: 10/09/2018**

### **Tender Invitation**

**Sub: Invitation of quotation for Design, manufacture and installation of Controlled atmosphere metallization furnace at ML, D-Block, BARC**

**Due Date: 01/10/2018, Time: 11:00hrs**

You are requested to submit your quotation in sealed envelope for the above mentioned job as per details given below. The reference no. given above should be clearly mentioned on the sealed envelope. Quotation shall be completed in all respects with regard to price, validity of the offer, etc. and must reach the undersigned by 11:00 hrs. on 01/10/2018.

#### **Brief description of the job:**

<b>Description of material</b>	<b>Quantity</b>
Design, manufacture and installation of Controlled atmosphere metallization furnace	One No.
Spares as mentioned in below specifications	As mentioned in specification

#### **Technical Specifications for Controlled atmosphere metallization furnace**

Design, manufacture, installation and performance testing at user's site as per specifications given below:

1. Design: Horizontal Furnace

- Resistance heating.
- Outer chamber made of Stainless Steel of 2 mm thick with proper reinforcing framework
- Integrated control panel to be provided below the furnace
- Outer shell temperature should be less than 50°C at 1600° C
- Temperature 1600° C and continuous operation at 1550° C
- Hot zone 100 mm +/- 5 ° C
- Recrystallised alumina tube Type C-799 grade (more than 99.7 % pure and bulk density more than 3.85 g/cc) make CeramTec Germany or equivalent make.

(Note: Other grade will not be accepted. Supplier should furnish original manufacturers certificate). Tube Size 60 mm ID x 70 mm OD and length as applicable.

- Both ends of the tube fitted with stainless steel or light weight leak proof flange with O ring (viton) seal press fit type along with water cooling arrangement.
  - Furnace will be used in flowing N and O and Ar atmosphere
2. Heating Elements:
    - Superior grade MoSi<sub>2</sub> “hair pin” type heating elements capable of heating to a max. working temperature of 1600°C and continuous operation at 1550° C.
    - Heating rate 2-10 deg. C/ min.
    - Easily disconnectable heaters for facilitating quick replacement.
    - Heating Elements make :Kanthal/Sandvik Asia/I Squared R.
  3. Insulation:
    - High quality vacuum formed light-weight ceramic fibre board insulation to ensure low skin temperature and light-weight construction.
    - Skin temperature should not exceed 50°C at max. operating temperature
    - Capable of maintaining heating/cooling rate of 10 deg. C/ min.
    - Ceramic fibre board make : Rath, Germany or Murugappa.
  4. Thermocouple:
    - Easily replaceable B-type Pt Rh6%-Pt Rh30% thermocouple in ceramic sheath – two nos. one for the control another for safety controller
    - Another B-type Pt Rh6%-Pt Rh30% thermocouple in ceramic sheath of suitable length to register the specimen temperature within the work tube with proper connector along with an temperature indicator on the front panel.
  5. Dimensions of the furnace:
 

Outer dimensions of the furnace should not exceed length 600 depth x 600 width x 500 height (excluding tube length and control panel).
  6. Temperature control system:
    - Suitable microprocessor-based thyristor controlled PID temperature controller from reputed make like Eurotherm (Model 2416).
    - Built in separate over temperature protection (Eurotherm make) and safety alarm
    - Provision for data recording using RS485/RS232 communication port.
  7. Electrical Power supply and control:
    - Suitable for operation on single-phase, AC, 230V, 50Hz
    - Maximum current during heating and at 1600° C should be less than 25 A
    - Design should work satisfactorily for +/- 10% input voltage supply
    - Eurotherm make thyristor control only.
    - Heat On indicator, Power On Indicator, Digital ampere meter for secondary load display, Digital volt meter for secondary voltage display and over temperature protection buzzer need to be provided.
  8. Supplier has to demonstrate the performance of the furnace during pre-dispatch inspection as well as at user site after installation.
  9. Supplier has to provide one set of operation manual.
  10. Supplier must submit a compliance report while quoting.
  11. Only original equipment manufacturer (OEM) should quote.
 

Supplier should have sufficient prior experience (at least 5 nos.) in designing, manufacturing and supplying such furnaces. They should attach a consolidated list of their previous supply so that if need arises the indenter can independently visit and evaluate the performance of their old units and take decision based on the user feedback. If need arises the indenter can independently visit and evaluate the performance of their previously sold units and take decision based on the user feedback.
  12. Documentation and warranty
    - All the manuals and documents should be provided in English. Complete set of manuals for operation of all the components of the system in hard as well as soft copy

to be provided.

- Minimum one-year warranty from the date of installation of the system needs to be provided
12. The contractor shall arrange all necessary equipment and personnel required for the successful completion of the work and the department will not release any free-issue material except electricity and water.
13. Spares to be quoted separately
- One set of heating elements (Number of elements as fixed on the furnace)
  - Recrystallised alumina tube : Tube Size 60 mm ID x 70 mm OD x 1000 mm length  
Quantity: 2 Nos.
  - A calibrated rotameter for gas flow with range from 0.1 to 10 ml/min attached to gas regulator with necessary piping.

**Note:**

1. The quotations are to be in printed letter head/ quotation format which should consist of GST Registration Number registered with local GST authority, PAN number of the firm, Service Tax Registration Number. Quotations received without signature, over-writing, summation errors etc. will be construed as invalid and thus rejected. Also computer generated forms are to be construed as invalid and rejected. The quotation should be sent in a sealed envelope. The envelope shall *clearly be superscribed* with the reference no., due date and with the words “**Quotation: not to be opened**”. It should reach the undersigned within the due date given above. The quotation reached after the due date will not be considered.
2. Due consideration shall be given to the following aspects while you submit your offer.
3. The contractor shall arrange all equipment and personnel required for the successful completion of the work and the department will not release any free-issue material except electricity and water.
4. Time of completion of the work : 03 months from the date of receipt of the work order.
5. The offer shall be valid for a period of thirty days and in case of placement of the work order, shall remain firm till the completion of the work.
6. Taxes etc., if applicable, should be indicated separately.
7. Income tax at 2% and surcharge on IT as applicable will be deducted from your bill.
8. Payment would directly be made by Accounts Division of BARC after the work is completed and on the submission of advance stamped receipt, bank details, invoice bill, and satisfactory completion certificate from the user.
9. **Confidentiality Clause.**

No party shall disclose any information to any third party concerning the matters under this contract. In particular, any information identified as “proprietary” 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 subcontractors, consultants, advisors, or the employees engaged by a party with equal force.

A) “**Restricted information**” categories under section 18 of the Atomic Energy Act, 1962 and “**official secrets**” under section 5 of the Official secret Act, 1923:  
Any contravention of the above-mentioned provisions by any contractor, subcontractor, consultant, adviser or the employees of a contractor will invite penal consequences under the aforesaid legislation.

B) **Prohibition against use of BARC’s name without permission of publicity purpose:**

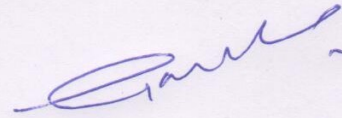
10. The contractor, subcontractor, consultant, adviser or the employees of a contractor shall not use the BARC's name for any publicity purpose through any public media like press, T.V., radio or internet without the prior written approval of BARC.

**Security Rules and Regulations:**

Rules and regulations of BARC Security have to be strictly followed by contractor. Contractor has to get photo passes issued from security for which Police Verification Certificate is a must. Police Verification Certificate is valid for only 6 months and need to be renewed after every 6 months. All persons working in BARC premises should have a Police Verification Certificate.

Thanking you

Yours sincerely,



(M. R. Gonal)  
Scientific Officer (F)  
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On behalf of the President of India