

Phone: 25594946  
Email : sathakur@barc.gov.in



Trombay, Mumbai-400 085

Government of India  
BHABHA ATOMIC RESEARCH CENTRE  
Glass and Advanced Material Division

S.A.Thakur  
Scientific Assistant D

Ref: BARC/GAMD/SAT/2022/E-65179

Date: 03/01/2023

Online

**Notice Inviting Tender**

Sub: **Invitation of Quotation for Service contract for maintenance and operation of furnace and material handling. Due date: 13<sup>th</sup> January 2023**

Dear Sir,

**For & On behalf of the President of India, quotations are invited by the undersigned for following service work.**

Description of work
Service Contract for maintenance and operation of furnace and materials handling, as per <b>Annexure 1</b> at Glass & Advance Materials Division (GAMD), BARC, Mumbai. The job involves above operations for <b>four months</b> .

The quotation should be sent in a sealed envelope. The envelope shall *clearly be super scribed* with the reference no., due date and with the words "**Quotation: not to be opened**". It should be addressed to following person and should reach him/her on or before the date mentioned.

S.A.Thakur, SA/D, Glass and Advanced Material Division, Materials Group, BARC Mumbai 400085	On or before <b>13-01-2023</b>
--	--------------------------------

**Instructions to the tenderer:**

1. The contractor **should visit the site** in order to understand the quantum of work and should **sign the register** kept in room no 409, 3<sup>rd</sup> floor, REDS Building, South Site, BARC (contact no 25594946), failing to which they are not eligible for tendering process and hence their quotation will not be opened.
2. The quotations are to be in printed letter head/ quotation format which should consist of GST Registration Number, PAN number of the firm. Quotations received without signature, over-writing, summation errors etc. will be construed as invalid and thus rejected.
3. The tenderer should write in words as well as figures, the rate(s) quoted by him. All corrections must be attested by the dated initials of the tenderer.
4. Income-Tax and surcharge on income-tax as applicable shall be deducted from the bill. The payment for the work done shall be paid by our Accounts Division only on satisfactory completion of the work within one month.
5. The acceptance of the tender rests upon the undersigned with a right to reject the tender without assigning any reason.

*Sethi*

सहायक  
वैज्ञानिक अधिकारी / Scientific Officer Assistant  
कांच एवं प्रगत पदार्थ प्रभाग  
Glass and Advanced Materials Division  
भारत सरकार / Government of India  
भाभा परमाणु अनुसंधान केंद्र  
Bhabha Atomic Research Centre  
त्रांबे, मुंबई / Trombay, Mumbai - 400 085.

## **TECHNICAL SPECIFICATION AND SCOPE OF WORK**

**Name of Work:** Service contract for maintenance and operation of furnace and material handling.

**Site of Work:** S-30 South site and Mod Lab 'D' Block, Glass and Advanced Materials Division, Trombay, Mumbai -85.

**Duration of Contract:** Four calendar months from the issue of contract period mentioned in Work order.

### **List of general instruction:**

1. Bidders are requested to visit the site to understand the actual scope of work given in **Annexure '1'** against each item before quoting for the job. Bidders must visit the site to assess the total scope of work.
2. Rates quoted by bidder should be inclusive of all taxes, freight, levies, duties and charges shall remain firm throughout the currency of the contract.
3. Bidders should submit EMD amount @ 2% on the cost of NIT and Performance Bank guarantee @ 3% on work order value.
4. List of equipment's covered under this contract is enclosed. Some equipments may be added or deleted during period of contract for operation.
5. It is to inform all the bidders that manpower to be deployed at site for this work shall have valid 'Police Verification Certificate' and same shall be arranged by contractor at their own cost before commencement of work.
6. Contractors have to arrange the movement of their staff from the entry gate to the site.
7. Contractor shall provide suitable uniform/boiler suit, safety shoes etc. to the man power deputed for the work.

### **Clause No. 1: Service contract for maintenance and operation of furnace and material handling for a period of 4 months.**

#### **a. Deployment of manpower at site:**

- Work should be carried out in General shift (Timing: 9.30 AM to 6.00 PM).
- Contractor shall depute minimum 03 numbers of skilled operators (Minimum ITI passed. 02 Numbers Fitter and 01 number Electrician) and 02 numbers of Semi-skilled (Minimum SSC passed plus 05 years' experience in Technical/Industrial field) every day. Contractor's operators shall report to Shri. S.A.Thakur, SA/D at S-30, ACMS, GAMD and Dr. Jyoti Prakash, SO/F at Mod Lab 'D' Block, ACMS, GAMD.
- It shall be the sole responsibility of bidder to ensure that required number of operators as mentioned above are available at the site operation. Substitute of operators for their absence on account of sickness or any emergency situation shall be made by the contractor without fail to ensure the uninterrupted operation at site.

#### **b. Payment Clause:**

Payment will be paid in yearly basis. Measurement of payment will be made on days (each day comprising with minimum five operators) basis.

- i. The payment shall be made only on the satisfactory completion of the work and on submission of attendance sheet and wage sheet duly signed by contractor and endorsed by engineer in charge along with the bills, delivery challans (in duplicate) (as applicable), PAN of the firm, GST of the firm,

guarantee/warranty certificate for a period of one year for material quality and workmanship (as applicable), duly filled GST undertaking as per the Annexure-II, and advance stamped receipt addressed to the Accounts officer, BARC, Trombay.

- ii. GST challan and EPF/ESIC challan should be provided along the bill.
- iii. SD @ 2.5% of work order value will be deducted from the running bills.
- iv. All payments are subject to Income Tax @ 2% and GST deduction @ 2% at source as applicable.
- v. No advance payment will be made whatsoever.
- vi. The contractor should comply with PF/ESI and Minimum Wages Act as revised from time to time by the Central Regional Labour Commissioner, Mumbai.
- vii. The remittance of wages to labour must be made through Cheque or by directly crediting to his/her Bank account, for which the Contractor has to produce the proof of payment to Indenting officer.

**c. Penalty:**

**If due to any reason, the contractor operating staff fails to attend duty in a particular day then Rs.1000 per operator absent per day shall be deducted from the bill. This penalty clause is applicable during the contract period mentioned in work order.**

**d. Performance of contractor:**

Departmental Engineer in-charge in each day evaluate performance of operators and report will be submitted to Head, ACMS, GAMD in quarterly. The performance shall be evaluated based on the following points

- a. Attendance
- b. Discipline
- c. Cordial and cooperative.
- d. Technical proficiency
- e. Initiative etc.

Performance of contractor shall be evaluated by Head, ACMS, GAMD on monthly basis based on performance report of operators submitted by Engineer in-charge on above parameters. If the performance score is below 75%, in 1<sup>st</sup> instance warning shall be issued to the contractor and subsequently if score again falls below 75%, the contract shall be short closed and firm shall not be allowed to participate in tender in future for the similar job in the department.

**e. Other Terms and Conditions:**

- i. The personnel of the contractor deployed for the work should strictly adhere to the safety guidelines. The personnel should wear the prescribed personnel protective equipment (PPE) during the work.
- ii. The personnel protective equipment (PPE) required for the job will be provided by BARC as and when required. Any mishap/injury occurring to the deployed personnel due to unsafe work practice shall be contractor's liability.
- iii. This office shall not be responsible for any damages, losses, claims, financial or other injury to any person deployed by the contractor in the course of their performing the functions/duties, or for payment towards any compensation.

## Annexure 1

### Operating procedure of Service contract for maintenance and operation of furnace and material handling.


Sr. No.	Activity	Responsibility
<b>1.</b>	<b>Maintenance, and operation of CNT fiber synthesis furnace</b>	<b>Engineer In-charge</b>
1.1	Check list: - Check readings of the thermocouple and the MFC	Operator
1.2	Check the power supply at the panel. Voltage should be 230V± 5%.	Operator
1.3	If power supply found failure contact Engineer In-charge. Check whether MCB tripped, continuity of circuit i.e. including heating coil.	Operator
1.4	If heating coil found damaged then replacement of coil and insulation as well should be carried out.	Operator
1.5	Check for any alarm signal, in case of any alarm touch screen will have the RED ALARM button at the bottom. If alarm appears, press and see the alarm and take necessary remedial action before clearing the alarm from panel.	Operator
1.6	Check thermocouples are intact before starting the furnace.	Operator
1.7	If thermocouple found short then replaced with new one.	Operator
1.8	Observe for any visible leakage/abnormality	Operator
1.9	The thermocouple reading in the furnace must be cross checked with an external thermocouple and calibrated periodically	Operator
1.10	The pressure in the cylinders must be monitored continuously and cylinder must be changed in case of low level cylinder must be changed.	Operator
<b>2</b>	<b>Maintenance, and operation of fully automatic 3D Graphene synthesis furnace</b>	<b>Engineer In-charge</b>
2.1	The hydrogen generator must be checked for water level before start of operation	Operator
2.2	Leak check in all the pipelines must be carried out	Operator
2.3	All the valves in the system must be checked for power supply and proper response	Operator
2.4	The reactor tube must be cleaned with solvent	Operator
2.5	The set and process values in the temperature controller and MFC must be monitored	Operator
2.6	Pressure of the argon cylinder and methane cylinder must be checked and monitored continuously	Operator
2.7	<i>Water flow in the o rings must be ensured throughout the process</i>	Operator
<b>3</b>	<b>Maintenance, and operation of fluidized bed furnace</b>	<b>Engineer In-charge</b>
3.1	The system must be checked for leaks by soap test	Operator
3.2	The thermocouple and MFC must be checked for power supply	Operator

3.3	The reading in the temperature controller and MFC must be checked continuously for abnormality	Operator
3.4	The furnace tube must be cleaned with solvent	Operator
3.5	The thermocouple must be calibrated with a reference thermocouple	Operator
3.6	The compressor must be checked for leakage	Operator
3.7	The flashback arrestor must be inspected	Operator
<b>4.</b>	<b><i>Maintenance, and operation of fully automatic CNT fiber furnace with robotics</i></b>	<b>Engineer In-charge</b>
4.1	The Roller and the guideway in the glovebox must oiled and greased periodically	Operator
4.2	The homing of the roller must be performed	Operator
4.4	The glovebox must be checked for leakage using pressure gauge	Operator
4.5	The gloves must be inspected for tears and replaced when required	Operator
4.6	The oxygen sensor in the system must be checked before starting the operation	Operator
4.7	The level of ethanol in the spraying system must be checked before starting the system	Operator
4.8	Pressure in the cylinder must be monitored continuously	Operator
<b>5.</b>	<b><i>Maintenance, and operation of Spouted bed furnace</i></b>	<b>Engineer In-charge</b>
5.1	The furnace tube must be cleaned with suitable solvent before starting the system	Operator
5.2	The particles must be inspected for foreign particles before loading in the furnace	Operator
5.3	The temperature and flow reading in the MFC and controller must be noted and entered in log book.	Operator
5.4	The pressure drop in the system must be continuously monitored	Operator
5.5	The o rings in the furnace must be inspected daily	Operator
5.6	The water level in the chiller must checked and temperature of water has to be monitored	Operator
5.7	After starting the machine observe all parameters till the machine is loaded and stabilised.	Operator
<b>6</b>	<b><i>Maintenance, and operation of muffle furnace</i></b>	<b>Engineer In-charge</b>
6.1	Check thermocouples are intact before starting the furnace.	Operator
6.2	If power supply found failure contact Engineer In-charge. Check whether MCB tripped, continuity of circuit i.e. including heating coil.	Operator
6.3	The thermocouple must be calibrated with a reference thermocouple	Operator
6.4	The gas pressure in the cylinders must be monitored	Operator
6.5	The furnace must be cleaned with suitable solvent	Operator
<b>7</b>	<b><i>Maintenance, and operation of carbonization furnace</i></b>	<b>Engineer In-charge</b>
7.1	The thermocouple and MFC must be checked for power supply	Operator
7.2	The set and process values in the temperature controller and MFC must be monitored	
7.3	Leak check in all the pipelines must be carried out	Operator

7.4	The furnace tube must be cleaned with solvent	Operator
7.5	If power supply found failure contact Engineer In-charge. Check whether MCB tripped, continuity of circuit i.e. including heating coil.	Operator
7.6	Check thermocouples are intact before starting the furnace.	Operator
<b>8</b>	<b><i>Material handling and packaging samples</i></b>	<b>Engineer In-charge</b>
8.1	Sample preparations for analysis and R&D works (mixing, grinding, milling, sieving, drying, palletization, digestion, dilution etc.).	Operator
8.2	Assisting in arrangement of samples, chemicals, lab-wares, records, sample bags, etc. in the QC and R&D Laboratory, cleaning of laboratory equipment, lab-wares, etc. including disposal of laboratory waste (after neutralization), glass-wares, empty bottles, etc. and any other work assigned then and there by the Indenting officer (I/O).	Operator

### **Equipment List of the plant**

Sr No.	Equipment	Quantity
1.	Horizontal electrical resistance furnace with glove box and PLC	2 Nos
2.	Fiber handling robotic system	1 Nos
3.	Fully automatic horizontal electrical resistance furnace	1 Nos
4.	Horizontal electrical resistance furnace	2 Nos
5.	Vertical electrical resistance furnace	1 Nos
6.	Compressor	1 Nos
7.	Sonicator	3 Nos
8.	Mass Flow controller	15 Nos
9.	Ball Valve	15 Nos
10.	Butterfly valves	10 Nos
11.	Water Chiller	2 Nos
12.	CNT spraying system with conveyor belt	1 Nos
13.	Temperature readout box	2 Nos
14.	PID Controller	15 Nos
15.	Thermocouple	10 Nos

  
 वैज्ञानिक अधिकारी / Scientific Officer Assistant  
 कांच एवं प्रगत पदार्थ प्रभाग  
 Glass and Advanced Materials Division  
 भारत सरकार / Government of India  
 भाभा परमाणु अनुसंधान केंद्र  
 Bhabha Atomic Research Centre  
 टांम्बो, मुंबई / Trombay, Mumbai - 400 085.

(S.A.Thakur)

SA/D, GAMD