

# TENDER DOCUMENT

SUB. : Supply and Installation of 10 inch Hydrogen Muffle Furnace

TENDER NO. : SMR/SMRG/CAP08/2019 L/PT

DUE ON : 21 / 02 / 2019

EMD : Rs. 60,000.00 TENDER FEE : Rs. 1000.00



प्रायोगिकसूक्ष्मतरंगइलेक्ट्रॉनिकीइंजीनियरीतथाअनुसंधानसंस्थ  
SOCIETY FOR APPLIED MICROWAVE ELECTRONICS ENGINEERING & RESEARCH  
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## SECTION – I

### **INSTRUCTIONS FOR SUBMITTING THE OFFER**

1. Tender document can be purchased from the SAMEER Center for HMTCT, Technology Complex, IIT Guwahati, Assam-781039, between 1.30 pm to 4.30 pm, on cash payment, on all days except Saturdays, Sundays and public holidays.

If the Tender document is downloaded from our website <http://www.sameer.gov.in> , <https://eprocure.gov.in/eprocure/app> or <http://tenders.gov.in/department.asp?id=1288>, then **Tender fee as well as EMD** should be paid, **along with Technical Bid**, (EMD & Tender Fee should be paid separately). In such case Tender Fee should be paid in the form of Demand Draft drawn in favour of **“Society for Applied Microwave Electronics Engineering and Research”**, from any Indian Commercial Bank.

If the Tender Fee is not paid for any reason , offer will be treated as invalid.

#### **2. Earnest Money Deposit (EMD) :**

**A.** Earnest Money Deposit should be submitted in the form of Account Payee Demand Draft, Fixed Deposit Receipt, Banker’s Cheque or Bank Guarantee from any commercial bank of India, drawn in favour of **“Society for Applied Microwave Electronics Engineering and Research”**. If the EMD is given in the form of Bank Guarantee or Fixed Deposit then it should be valid for minimum 15 days beyond the validity of the quotation.

**B. Refund of EMD :** Unsuccessful tenderer’s earnest money will be returned to them **without any interest** once the tender is finalized. Successful bidder’s earnest money will be returned **without any interest** only after submission of Security Deposit ( Performance Security ).

**C. Forfeiture of EMD :** Earnest money of a tenderer will be forfeited, if the tenderer withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender. Successful tenderer’s earnest money will be forfeited if tenderer does not execute purchase order / contract as per the terms and conditions mentioned therein.

**D. Exemption from submission of EMD :** Firms which are registered with MeitY or All MSEs having registration as per provisions of the MSME Policy i.e. registration with District Industries Centre (DIC) or Khadi and Village Industries Commission (KVIC) or Khadi and Industries Board (KVIB) or Coir Board or National Small Industries Commission (NSIC) or directorate of Handicrafts and Handlooms or Udyog Aadhaar Memorandum or any other body specified by Ministry of MSME are also exempt from payment of EMD. Proof of valid registration should be attached along with the Technical Bid, failing which the Tender will be rejected.

3. **A.** In a tender, either the Indian Agent on behalf of the Principal / OEM ( Original Equipment Manufacturer) or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.

**B.** If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.

Failure to adhere to the above conditions will lead to automatic disqualification of the bid. Tenders submitted by the Indian agent on behalf of his principal /OEM should be supported with a letter of authority from the Principal/ OEM.

In case the manufacturer does not have an authorized representative in India at the time of submission of the bids and the company appoints a representative later on, SAMEER will only correspond with the manufacturer.

#### 4. PERFORMANCE SECURITY

- a. The successful bidder has to give Performance Security Deposit in the form of an Account Payee Demand Draft / Fixed Deposit Receipt from an Indian commercial bank / Bank Guarantee from an Indian commercial bank / a counter Letter of Credit (LC) from our bankers ( in case of foreign order ), for 10 % of Order Value, immediately after receiving the purchase order. Performance Security should remain valid for a period of sixty days beyond the date of all contractual obligations including warranty obligations.
- b. Successful tenderers Performance Security will be forfeited if the purchase order / contract is not executed as per the terms and conditions mentioned therein.
- c. **Performance Security Deposit without any interest will be returned only after complete execution of purchase order ( including warranty period ), as per purchase order 's terms and conditions.**

5. Tender is to be submitted in **two separate sealed covers, superscribed as 'Technical Bid' and 'Price Bid'** respectively and both these sealed covers are to be put in a bigger cover which should also be sealed and duly superscribed. Tender should be addressed to **'The Purchase Officer, SAMEER, IIT Campus, Powai, Mumbai 400 076'**. Tender reference including 'Due Date' should be clearly mentioned on all covers. Name, Address and contact details of the vendor should be mentioned at back side of all covers.

#### 6. Further details concerning 'Technical Bid' and 'Price Bid' are given below :

##### A. Technical Bid :

- ❖ Original manufacturer's technical specification sheet must support details provided in the Technical bid with all the specifications/ relevant technical Literatures/Brochures/Catalogues for the item. Bids received without the printed technical specification sheet/brochures/catalogues for item will be technically disqualified.
- ❖ The Technical Bid should not contain any **price information.**
- ❖ The item and accessories quoted must be from original manufacturer and must be new ( **No second hand item/sub-item will be accepted** )
- ❖ In case the bidder is the authorised representative of a foreign manufacturer/supplier, a certificate from the principal must be included along with the technical bid.
- ❖ In case of deviation or substitution from the particular specification contained in the tender document, please indicate clearly as 'Alternative offer' and should contain sufficient details to show that the alternative would equally serve the purpose. All relevant technical data should be enclosed. In case of equipment, the itemized cost of essential accessories, optional accessories and spares required need to be specified.
- ❖ **Technical Bid should contain the following information :**
  - a. **Earnest Money Deposit (EMD)**
  - b. **Tender Fee** ( if tender document is not purchased from The Accounts Section, SAMEER, Mumbai).
  - c. **Technical Specification**
  - d. **SECTION III** of Tender Document i.e. Commercial Terms & Conditions duly filled, stamped and signed.
  - e. A copy of '**Price Bid**' with all financial figures **suppressed/deleted.**

**Technical Bid without the above information will not be considered.**

**B. Price Bid :**

**Price bid shall contain the following information:**

- a. Quotation for the items ( including the price break up for all options and accessories).
- b. TAXES , DUTIES AND LEVIES if applicable should be clearly specified.
- c. Discount offered on quoted price ( considering that SAMEER is an R&D organization).
- d. Total price should be mentioned in both figures and words. Alterations, if any, should be attested / initialed.
- e. The bid shall be free of hidden costs / ambiguity.
- f. There shall be no overwriting.

**7.**Tenders/Bids should be dropped in **Tender Box** only.

**8.** Tender received via email, fax and **Late Tenders** will not be considered.

**9.**Unsuccessful bidders will **not be formally informed** of the result of their tender.

**10.**Only **Technical Bid** will be opened on the next day of the due date.The tenderers or authorized representatives may make themselves available at that time. The Price Bids of the technically short listed tenderers will be opened at a later date with intimation to the short listed tenderers.

**11.****Date and Timingfor opening Tender** :Next working day after due date at 10.30 AM

**12.**For any clarification please mail to [purchase@sameer.gov.in](mailto:purchase@sameer.gov.in)

**13. Corrigenda:** Corrigenda, if any, to this tender will be published on our website [www.sameer.gov.in](http://www.sameer.gov.in). The bidders are advised to check our website, before submitting the bid.

**SECTION - II****TECHNICAL SPECIFICATION**

| <b>Sr. No.</b> | <b>Main Characteristics</b> | <b>Specification</b>  |
|----------------|-----------------------------|---|
| 1.             | Muffle Tube                 | 10.25 Inch OD x 10 inch ID x 15 inch length (hot work zone) and 35 inch overall length made from inconel 601 alloy.<br>Muffle should be flanged at both ends and at each end should be sealed to a water cooled sections made from SS tubes.  |
| 2.             | Working Temperature         | RT to 1200 <sup>o</sup> C Max<br>Ramp rate settable from 1 <sup>o</sup> C-30 <sup>o</sup> C/ minute<br>Continuous operation- 1150 <sup>o</sup> C<br>Temperature control accuracy +/- 1 <sup>o</sup> C   |
| 3.             | Mode of heating of muffle   | Directly / indirectly<br>During heating, the muffle should be well insulated from outside to minimize heat loss.  |
| 4.             | Working Zone (Hot Zone)     | 10 inch ID x 15 inch length   |
| 5.             | Furnace atmospheres         | Nitrogen, Dry hydrogen, Wet hydrogen  |
| 6.             | Flow meters                 | 0-30 lpm calibrated flow meters for above gases with flow adjustment.   |
| 7.             | Humidifier                  | A non-reverse flow featured bubble type humidifier for wet hydrogen operation   |
| 8.             | Atmosphere burn off         | Near the inlet end of the muffle tube, hydrogen burn off should be provided.  |
| 9.             | Hydrogen safety system      | In case of hydrogen pressure drop/failure nitrogen should be purged inside automatically.<br>In case of power shut down, hydrogen/ nitrogen gas purging should not be stopped.  |
| 10.            | Entry section               | 12 inch long SST tubing (this section should be water cooled)   |
| 11.            | Exit section                | 12 inch long SST tubing (this section should be water cooled)   |
| 12.            | Entry/Exit doors            | Manually operated, sealed doors with view ports.  |
| 13.            | Job resting platforms       | At the time of loading/unloading the job into/from furnace resting platforms at both entry/exit door (foldable type) should be provided.  |
| 14.            | Temperature controllers     | <b>Programmer controller:</b> The controller should be equipped with thermocouple burn out protection and should control temperature by feeding input into thyristor assembly.<br><b>Eurotherm make:</b> Model 2404<br><b>Over temperature controller:</b> A separate thermocouple and controller should be provided to shut off heating incase at point of OT controller is crossed.<br><b>Eurotherm make:</b> Model 3216/CC<br>Through thyristor power pack<br><b>Eurotherm make:</b> Model E-power/250 A.<br><b>Transformer:</b> Single phase air cooled step down transformer.<br>90 KVA, single phase type.<br><b>Make:</b> TSI international.<br><b>Thermocouple:</b> K' type simplex- 2 Nos.<br>K' type thermocouple with mineral-oxide insulation and high temperature alloy sheath should be provided. |
| 15.            | Thermocouple                | A chromel alumel MI type for both programmer and OT controller.   |
| 16.            | Mounting                    | All the controllers and instrumentation should be located on the front panel.   |

|     |                               |  |
|-----|-------------------------------|--|
| 17. | Insulation around muffle tube | ISO approved insulation material should be used around the muffle. Suitable insulation should be provided to reduce the skin temperature to the minimum. Necessary sealing's should be provided on the door to prevent the heat loss.  |
| 18. | Cooling Blower                | Noise free cooling blower should be provided at appropriate location for fast cooling the muffle after heat cycle<br>Capacity- 0.25 HP (approx.) single phase  |
| 19. | Safety features               | Failure alarms should be provided.<br>Visual and audible alarm indication should be provided in case of failure/ low pressure of the following utilities Hydrogen/ Nitrogen/ recirculation water, Over temperature, Furnace door open  |
| 20. | Molybdenum boats              | For loading the jobs inside the furnace till working zone molybdenum boats should be provided along with job loading rod to push/ pull the assemblies inside/ outside the furnace.   |
| 21. | Power rating                  | ≈60 KW   |
| 22. | Power Supply                  | 440 Volts/ 3 phase - 50 Hz   |
| 23. | Casing                        | Furnace frame/structure should be constructed by using MS sheets of suitable thickness and entry section should be made out of 20 inch stainless steel.  |
| 24. | Door                          | Door should be manually operated.  |
| 25. | Heating element               | The heating element should be the tube itself.   |
| 26. | Flow meters                   | Separate calibrated flow meters for both hydrogen and nitrogen gases should be provided. The atmosphere flow manifold should be designed to permit individual flow or mixing of the inlet gases.   |
| 27. | Gas manifold                  | A suitable gas manifold with one inlet and three outlet ports (1/4 inch NPT female threading) should be provided for H <sub>2</sub> gas.<br><b>We actually need gas manifold with 3 inlet and 1 outlet to connect three H<sub>2</sub> gas cylinder at a time. The outlet port of the manifold will be connected to the furnace.</b>  |
| 28. | Humidifier                    | A selectable bubble type humidifier with non reverse flow feature should be provided for humidification of the processing atmosphere.  |
| 29. | Entry section                 | The entry section should be provided with manually operated, gravity-sealed door. The door should be provided with a counter- balanced raising and lowering mechanism and a view port.<br>A solenoid-actuated flame curtain and pilot should be provided at the entry end of the furnace.  |
| 30. | Pressure Gauges               | Pressure gauges (0-60 psig) at the inlet of H <sub>2</sub> and N <sub>2</sub> lines to indicate the line pressures should be provided.<br>Solenoid valve for H <sub>2</sub> & N <sub>2</sub> , flow switch for (water) 3-9 CPM 1/2.<br>Pressure switch for H <sub>2</sub> & N <sub>2</sub> , Roto meter for H <sub>2</sub> & N <sub>2</sub> .<br>UV flame failure detector with sensor should be provided. |
| 31. | Atmosphere Burn Off           | A burn off combustible gas mixtures should be provided near the inlet end of the furnace.  |
| 32. | Control Panel                 | An aesthetically designed control panel, self standing, duly painted, which should house all necessary switch gear items like Ammeters, Voltmeters, indicating lamps, On/Off switches, contactors, push buttons etc with necessary control instruments like temperature controller, safety controller, Thyristor, Control transformer etc. The panel should be neatly wired.                               |
| 33. | Mounting                      | All controls and instrumentation should be located on the front panel of the furnace.  |
| 34. | Paint                         | All the mild steel parts of the oven should be given with rust preventive coating and final finish of the oven should be with powder coated.   |
|     |                               |  |

## TECHNICAL TERMS AND CONDITIONS

1. Vendor should have prior experience to manufacture and supply such system in near past (at least from last 3 to 5 years)
2. Vendor has to provide reference of such system with user details (reference should be for analogous to
3. present system only)
4. The test certificates of raw materials used for the fabrication of the furnace chamber has to be provided.
5. The test certificate for the leak testing of the furnace chamber has to be provided. The NDT test carried out on the furnace chamber has to be indicated.
6. The engineering drawing has to be submitted to SAMEER within 20 days of acceptance of Purchase Order for prior approval before starting the fabrication of the system
7. Only after approval of the engineering drawing by SAMEER, the fabrication will commence.
8. The entire muffle furnace system operation has to be demonstrated to the rated specifications and for proper functioning of all the subsystems to the designed logic at supplier's site. Only after that, the system will be cleared for dispatch to SAMEER Centre for HMTCT, Technology Complex, IIT, Guwahati.
9. Two sets of operation instructions manual has to be provided. Training to operate the system should be provided to Engineers / Scientists from SAMEER at SAMEER Site
10. The electric wiring schematics should be provided.
11. A detailed list of spare parts, showing the components installed with reference to the drawings in the technical documentation has to be provided.
12. The electrical / electronic circuit drawings should be provided.
13. Delivery and installation and commissioning of the system will be done at SAMEER Centre for HMTCT, Technology Complex, IIT, Guwahati, Assam.
14. The entire muffle furnace system operation has to be demonstrated again at SAMEER Centre for HMTCT, Technology Complex, IIT, Guwahati after the installation.
15. Loading, unloading, Delivery, installation and commissioning of the system at SAMEER Guwahati centre will be vendor's scope of work.

Vendor's Signature:

Seal:



**SECTION- III**

**Commercial & Other Terms and Conditions**

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Vendor to state Complied / Not Complied – Deviations if any in the REMARKS column

| S.N.                | DESCRIPTION                          | ESSENTIAL CONDITIONS  | REMARKS |
|---------------------|--------------------------------------|---|---------|
| a.                  | PRICES                               | <p>a. For Import Order :Prices quoted should be on FCA (<u>nearest Intl. Airport at shipper's country</u>) , Name of the Airport should be mentioned clearly.</p> <p>b. For Local Order : Prices should include delivery charges up to <u>SAMEER's Guwahati 781039</u>. Octroi charges, if applicable, should be charged at actual. Any additional charges, taxes and levies should be clearly mentioned. In the event of a Purchase Order, it will be the responsibility of the supplier to pay whatever charges are payable to different agencies in their country. Octroi charges, if any, will be reimbursed to the supplier on production of the octroi receipt. The purchaser will not pay any charges other than the agreed price as per the contract.</p> |         |
| b.                  | TAXES , DUTIES AND LEVIES APPLICABLE | <p>(Existing applicable rates should be mentioned)</p> <p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p>  |         |
| c.                  | PACKING                              | All the items should be packed in suitable boxes, crated and protected from damages during the transit till they are delivered to destination.  |         |
| d.                  | FREIGHT AND INSURANCE                | To be arranged by supplier. All the items shall be delivered to SAMEER Center for HMTCT, IIT Campus, Guwahati, Assam after obtaining a shipping release in the appropriate pro-forma from the purchaser. The Vendor shall be fully responsible for the safe delivery of all the items from and to SAMEER center for HMTCT, IIT Guwahati and shall satisfy the purchaser that adequate measures have been taken for the same.  |         |
| e.                  | ANY OTHER CHARGES APPLICABLE         | SUPPLIER TO SPECIFY   |         |
| f.                  | MODE OF DELIVERY                     | <p>a. For Local Order : By road</p> <p>b. For Import Order : By Air</p>   |         |
| g.                  | DELIVERY SCHEDULE                    | 3 months  |         |
| Vendor's Signature: |                                      | Seal:   |         |

|    |   |   |  |
|----|---|---|--|
| h. | WARRANTY                                  | 3 years from installation and commissioning   |  |
| i. | PAYMENT TERMS                             | <p>a. For Import order : 90 % against Irrevocable Letter of Credit or Sight Draft and balance 10 % through wire transfer after acceptance of material at SAMEER.</p> <p>b. 75 % after delivery followed by inspection balance 25 % against Test, Installation &amp; acceptance ( whichever is applicable ) of material / consignment, at SAMEER.</p>  |  |
| j. | VALIDITY OF QUOTATION                     | 90 DAYS MIN FROM THE DUE DATE.  |  |
| k. | Tender Fee                                | <p>If not paid in cash then by Demand Draft from any commercial bank of India, drawn in favour of "<b>Society for Applied Microwave Electronics Engineering and Research</b>".</p> <p>If the Tender Fee is not paid for any reason , offer will be treated as invalid.</p>  |  |
| l. | Earnest Money Deposit (EMD)               | <p><b>Earnest Money Deposit</b> (EMD) should be submitted in the form of Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any commercial bank of India, drawn in favour of "<b>Society for Applied Microwave Electronics Engineering and Research</b>".</p> <p>For exemption, please refer SECTION I, 2 d</p>  |  |
| m. | PERFORMANCE SECURITY                      | The successful bidder has to give Security Deposit in the form of an Account Payee Demand Draft / Fixed Deposit Receipt from an Indian commercial bank / Bank Guarantee from an Indian commercial bank / for 10 % of Order Value, immediately after receiving the purchase order. Performance Security should remain valid for a period of sixty days beyond the date of all contractual obligations including warranty obligations.  |  |
| n. | EXEMPTION FOR CUSTOM DUTY AND EXCISE DUTY | SAMEER is registered with Department of Scientific and Industrial Research ( DSIR ) for the purpose of availing <b>custom duty exemption</b> in terms of Government of India Notification No. 51/96-customs amended to 24/2007-customs dated 1 <sup>st</sup> March 2007. {approx. 5.20% duty is applicable under his notification ( 5 % Basic + cess/surcharge )} and <b>central excise duty exemption</b> in terms of Government Notification no. 10/97-central excise amended to 16/2007-central excise dated 1 <sup>st</sup> March 2007. |  |
| o. | JURISDICTION                              | Mumbai  |  |

Vendor's Signature:

Seal:

**SECTION- IV**

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**Format for Price Bid (in INR )**

**IMPORTANT**

Vendor is required to submit the price bid in the given format on their LETTER HEAD.

One copy of the price bid without the financial figure should be enclosed along with the Technical Bid.

| ITEM | DESCRIPTION  | QUANTITY | RATE IN INR | PRICE IN INR |
|------|--|----------|-------------|--------------|
| I    |  |          |             |              |
| II   |  |          |             |              |
| III  |  |          |             |              |
| IV   |  |          |             |              |
| V    | <b>OTHER CHARGES , if any</b>  |          |             |              |
| 1.   | <b>TAXES AND DUTIES APPLICABLE ON ITEMS</b>  |          |             |              |
|      | I  |          |             |              |
|      | II   |          |             |              |
|      | III  |          |             |              |
|      | IV   |          |             |              |
| 2.   | <b>FREIGHT</b><br>from Vendor's manufacturing facility to SAMEER Center for HMTCT, IIT Guwahati. |          |             |              |
| 3.   | <b>INSURANCE</b>   |          |             |              |
| 4.   | <b>ADDITIONAL CHARGES IF ANY</b>   |          |             |              |
|      | <b>TOTAL AMOUNT</b>  |          |             |              |
|      | <b>TOTAL AMOUNT (IN WORDS)</b>   |          |             |              |
|      | Vendor's Signature:  |          | Seal:       |              |

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**Format for Price Bid (in foreign currency)****IMPORTANT**

Vendor is required to submit the price bid in the given format on their LETTER HEAD.

One copy of the price bid without the financial figure should be enclosed along with the Technical Bid.

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| ITEM | DESCRIPTION  | QUANTITY | RATE IN<br>( Name of<br>currency) | PRICE IN<br>( Name of<br>currency) |
|------|--|----------|-----------------------------------|------------------------------------|
| I    |  |          |                                   |                                    |
| II   |  |          |                                   |                                    |
| III  |  |          |                                   |                                    |
| IV   |  |          |                                   |                                    |
|      | <b>ADDITIONAL CHARGES IF ANY</b>   |          |                                   |                                    |
|      | <b>FCA CHARGES ( Name of the Intl. airport)</b><br>From Vendor's manufacturing/shipping facility<br>to Manufacturer's country's Intl. Airport. |          |                                   |                                    |
|      | <b>TOTAL AMOUNT</b>  |          |                                   |                                    |
|      | <b>TOTAL AMOUNT (IN WORDS)</b>   |          |                                   |                                    |
|      | Vendor's Signature:  |          | Seal:                             |                                    |

S/d  
Purchase Officer