TENDER DOCUMENT

SUB.: Supply and Installation of Spark Plasma Sintering System

TENDER NO. : SMR/SMRG/CP003/2021 L/PT

DUE ON : 17/09/2020

EMD : Rs. 1,80,000.00

TENDER FEE : Rs. 1000.00 + 18 % GST

SOCIETY FOR APPLIED MICROWAVE ELECTRONICS ENGINEERING & RESEARCH
IIT CAMPUS, POWAI, MUMBAI 400 076. TEL. : 022-25723030, 25727100
WEB SITE : www.sameer.gov.in E-mail : purchase@sameer.gov.in
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SECTION - I

INSTRUCTIONS FOR SUBMITTING THE OFFER

1. Tender document can be purchased from the Accounts Section of SAMEER located at IIT Campus, Powai, Mumbai-76, 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 or https://eprocure.gov.in/eprocure/app, then the Tender Fee is not applicable.

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. EMD also can be paid through online payment mode. Intimation should be sent to SAMEER once the online payment is done. A copy of the transaction details should be enclosed with Technical Bid.

   For online payment our banker’s details are as below:

   Beneficiary Name : Society for Applied Microwave Electronics Engineering and Research (SAMEER)
   Name and address of the Bank : Canara Bank, IIT Powai Branch Mumbai 400 076. Account Number: 2724101086829, Type of the Account: Saving, IFS Code: CNRB0002724, MICR : 400015129

   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 & Tender Fee : 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 (KVIC) 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 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 tenderer 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 address 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 authorized representative of a foreign manufacturer/supplier, a certificate
  from the principal must be included in the technical bid.
- In case of deviation or substitution from the particular specification contained in the tender
document, please indicate clearly as ‘Alternate 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 Receipt Number (if the tender document is purchased from The Accounts
     Section, SAMEER, Mumbai).
  c. Technical Specification
  d. SECTION IV 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 on quoted price (considering that SAMEER is a R&D organization).
d. Total price should be mentioned in both figures and words. Alterations, if any, should be attested/initiated.
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 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 Timing for opening Tender: Next day after due date at 10.30 AM

IMPORTANT NOTE:

a. Participation in Public Tender Opening will be STRICTLY via ONLINE VIRTUAL PLATFORM.
b. Vendors interested must fill the ONLINE FORM available at http://publictender.sameer.gov.in/, two working days before the tender opening date.
c. On the day of tender opening, virtual meeting link will be provided through mail to the vendors who have registered for participating in the tender. Only the vendors who has submitted the offer can participate in the online tender opening.
d. It will be assumed that those Vendors who did not fill in the form are not interested in joining the Tender Opening Process.

12. For any clarification please mail at purchase@sameer.gov.in

13. Corrigenda: Corrigenda, if any, to this tender will be published on our website www.sameer.gov.in. The bidders are advised to check our website, before submitting the bid.
## SECTION - II

### TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Main Characteristics</th>
<th>SPARK PLASMA SINTERING SYSTEM (2STON-10000A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>SYSTEM GENERAL SPECIFICATIONS</strong></td>
<td>The maximum system operating temperature is 2400°C (dependent on tooling design, size, and material). Standard Process: Gasses used are Argon, Nitrogen at a gauge pressure of 1 psi which should be controlled by relief valve. Pressing Capability: 25 metric tons (245 kN) <strong>The system should be complete in all the aspects to be usable smoothly.</strong></td>
</tr>
<tr>
<td>2.</td>
<td><strong>CHAMBER ASSEMBLY</strong></td>
<td>A front loading, rectangular shaped chamber should be made out of stainless steel with a fully opening hinged door. The walls of the chamber must be fabricated with double-wall baffled design to provide efficient cooling. The chamber should be vertically mounted on a platen in the press frame. Necessary ports must be provided for top movable ram, bottom fixed ram, Vacuum connection, gas manifold, viewing window, infrared pyrometer, thermocouple feedthroughs, etc. are to be provided in the chamber. All mating parts should be provided with Viton O-rings. The chamber size shall be approximately 450mm(W) x 450mm(D) x 500mm(H)</td>
</tr>
<tr>
<td>3.</td>
<td><strong>VACUUM PUMPING SYSTEM</strong></td>
<td>A Turbo Molecular Pump of around 500 l/sec, backed by a suitable capacity Dry scroll pump should be provided to evacuate the furnace chamber up to 5 x 10^-6 mbar, or better within 30 min. in cold condition. Necessary pneumatic controlled High Vacuum Gate Valves (make: VAT/Edwards), connectors, adapters, plumbing lines and required hardware are to be provided. A full range gauge (measuring from Atm. To 10^-8 mbar) and a Pirani gauge (one for the chamber and one in backing line) with suitable controller is provided for monitoring the vacuum levels. A solenoid operated vent valve is also needed to be given for venting the chamber. The ultimate vacuum in the chamber should be in the order of 10^-6 mbar under clean, empty and room temperature conditions.</td>
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<tr>
<td>4.</td>
<td><strong>HYDRAULIC PRESSING SYSTEM</strong></td>
<td>A rigid four pillar with cross beam platens suitable for 25 metric tons should be provided as the load frame. A top mounted hydraulic cylinder with 6” (150mm) stroke is needed. The working space between the ram work faces should be approximately 300 mm. The Hydraulic power pack includes a pump, oil reservoir, filter, relief valve, pressure gauge, tank sight gauge. A proportional pressure control valve is necessary to be incorporated in the hydraulic circuit for high precision pressing during processing. Typical force control error should be less than ± 10kg. A linear transducer must be provided to maintain precise ram position during setup. Water-cooled rams of 100mm diameter with user replaceable face plates should be provided.</td>
</tr>
</tbody>
</table>

Vendor’s Signature: Seal:
5. **SINTERING POWER SUPPLY**

The Pulsed Power Supply should be made up of a Thyristor based Rectified DC Power Source which is regulated and well filtered to keep the AC ripple to minimum level.

The circuit must be designed to work as a Constant Current Source. Provision should be made to set the Voltage and Current individually. The Output Voltage and Current can be SET in this Stage

The Pulsing Unit should be a Microcontroller based circuitry that can be fully programmable.

The ON-Time, OFF-Time and the TOTAL Time, either as number of Cycles or Total Duration, may be programmed on a wide range through Keyboard provided on the front panel.

The parameters must also be programmed through PC using suitable Interface and Software.

The Power Devices can be IGBTs which should have very high Current draining capability and are to be designed to give a fast Rise and Fall time.

The POWER DEVICES should be well cooled to work in Continuous working Conditions.

The Thyristors along with the Power Transformer is either AIR COOLED or OIL COOLED depending on the working environment. The Output Power Devices of the PULSING Unit should be AIR COOLED. The Power Supply should be protected from Short Circuits 10,000 Amps, 10V

Continuous DC Output: 0 – 10,000 amps

Pulsed DC Output at peak current

On Time: 2 – 100 ms

Off Time: 0 – 100 ms

Temperature/ current control based operation.

6. **CONTROLS & INSTRUMENTATION**

A PLC with SCADA based Process controls (Siemens) should be provided with provision for online viewing of the process parameters and recording. The panel must display the Vacuum levels, Temperature, Pressing Force, Current, Voltage, Ram/piston velocity, etc

Alarm should be displayed, stored and alarms during system failure.

The unit should have all the safety devices/interlocks like water pressure flow switch, Air pressure switch, overload protection devices, safety valves for releasing the pressure in case of emergency.

7. **TEMPERATURE MEASUREMENT**

Adjustable focus pyrometer (measuring range 400 to 2500°C)- its output should be used for closed loop PID control of sample temperature.

Two suitable thermocouples for temperature measurement of the rams (bottom and top) should be given to avoid overheating of the rams, integrated in alarms.

One flexible and manually movable job thermocouple measuring up to 1600°C should be given for temperature control and measurement.

8. **SAFETY INTERLOCKS AND GAS CONTROL**

Water flow interlock,

Furnace over pressure relief valve

Current limit (Through SCR/Thyristor)

Inert gas (Argon) & Nitrogen control accessories including panel-mounted valve, process gas flow meters and compound pressure gauge.

9. **Mandatory Accessories**

Vendor should quote the following accessories:

a. O-rings
b. Gaskets
c. Vacuum grease
d. Crucibles of different standard dimensions

(Please quote any other required accessories)

Vendor’s Signature: 

Seal:
SECTION – III

TECHNICAL TERMS AND CONDITIONS

1. Vendor should have prior experience to manufacture and supply such system in near past (at least last 5 years)

2. Vendor has to provide reference of such system with user details (reference should be for analogous to present system only)

3. The test certificates of raw materials used for the fabrication of the furnace chamber has to be provided.

4. 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.

5. 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

6. Only after approval of the engineering drawing by SAMEER, the fabrication will commence.

7. The 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.

8. Two sets of operation instructions manual have to be provided. Training to operate the system should be provided to Engineers / Scientists from SAMEER at SAMEER Site.

9. Service manuals for preliminary servicing of the furnace to a certain extent should be provided.

10. The manual of all components used such as gauges, controllers, valves and vacuum pumps etc. has to be provided.

11. A Complete set of drawing of the system should be provided except manufacturing / fabrication drawings.

12. The electric wiring and pumping schematics should be provided.

13. A detailed list of spare parts, showing the components installed with reference to the drawings in the technical documentation has to be provided.

14. The electrical / electronic circuit drawings should be provided.

15. Delivery and installation and commissioning of the system will be done at SAMEER Centre for HMTCT, Technology Complex, IIT, Guwahati, Assam.

16. The entire system operation has to be demonstrated again at SAMEER Centre for HMTCT, Technology Complex, IIT, Guwahati after the installation.

17. 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- IV

**Commercial & Other Terms and Conditions**

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

<table>
<thead>
<tr>
<th>S.N.</th>
<th>DESCRIPTION</th>
<th>ESSENTIAL CONDITIONS</th>
<th>REMARKS</th>
</tr>
</thead>
</table>
| a.   | PRICES                                    | a. **For Import Order : Prices** quoted should be on FCA *(nearest Intl. Airport at shipper’s country)*, Name of the Airport should be mentioned clearly.  

   **b. For Local Order : Prices** should include delivery charges up to **SAMEER Centre for High Power Microwave Tube and Component Technology, Technology Complex, IIT Guwahati, Guwahati-781039**.

   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. The purchaser will not pay any charges other than the agreed price as per the contract. |         |
| b.   | TAXES , DUTIES AND LEVIES APPLICABLE      | (Existing applicable rates should be mentioned)                                      |         |
|      |                                           | 1.                                                                                   |         |
|      |                                           | 2.                                                                                   |         |
|      |                                           | 3.                                                                                   |         |
|      |                                           | 4.                                                                                   |         |
| 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                     | a. For Local Order: To be arranged by supplier. All the items shall be delivered to Stores Officer, SAMEER, IIT Campus, Powai, Mumbai 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 Powai and shall satisfy the purchaser that adequate measures have been taken for the same.  

   b. **For Import Order**: Will be arranged by SAMEER from FCA International Airport. |         |
| e.   | ANY OTHER CHARGES APPLICABLE              | Supplier To Specify                                                                  |         |

Vendor’s Signature: ___________________________  Seal: ___________________________
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<th></th>
<th>MODE OF DELIVERY</th>
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| f. | a. For Local Order: By road  
|    | b. For Import Order: By Air |   |
| g. | DELIVERY SCHEDULE | 3 months |
| h. | WARRANTY | 3 years from the date of installation and commissioning |
| i. | PAYMENT TERMS | 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.  
|    | b. 75% after delivery followed by inspection balance 25% against Test, Installation & acceptance (whichever is applicable) of material / consignment, at SAMEER. |
| j. | VALIDITY OF QUOTATION | 120 Days Min From The Due Date. |
| k. | Tender Fee | If not paid in cash then by Demand Draft from any commercial bank of India, drawn in favour of “Society for Applied Microwave Electronics Engineering and Research”. If the Tender document is downloaded from website, then the Tender Fee is not applicable. |
| l. | Earnest Money Deposit (EMD) | Earnest Money Deposit (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 “Society for Applied Microwave Electronics Engineering and Research”. For exemption, please refer SECTION I, 2 d |
| 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. |

Vendor’s Signature: 

Seal:
n. **EXEMPTION FOR CUSTOM DUTY AND EXCISE DUTY**

SAMEER is registered with Department of Scientific and Industrial Research (DSIR) for the purpose of availing **custom duty exemption** in terms of Government of India Notification No. 51/96-customs amended to 24/2007-customs dated 1st March 2007. {approx. 5.20 % duty is applicable under his notification (5 % Basic + cess/surcharge )} and **central excise duty exemption** in terms of Government Notification no. 10/97-central excise amended to 16/2007-central excise dated 1st March 2007.

| o. | JURISDICTION | Mumbai |

Vendor’s Signature: Seal:
**SECTION-V**

**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.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
<th>RATE IN INR</th>
<th>PRICE IN INR</th>
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<td>I</td>
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<td>IV</td>
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<td>V</td>
<td>OTHER CHARGES , if any</td>
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<td>1.</td>
<td>TAXES AND DUTIES APPLICABLE ON ITEMS</td>
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<td>2.</td>
<td>FREIGHT from Vendor’s manufacturing facility to SAMEER Center for HMTCT, IIT Guwahati -781039.</td>
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<td>3.</td>
<td>INSURANCE</td>
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<td>4.</td>
<td>ADDITIONAL CHARGES IF ANY</td>
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</table>

**TOTAL AMOUNT**

**TOTAL AMOUNT (IN WORDS)**

Vendor’s Signature: Seal:
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.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
<th>RATE IN (Name of currency)</th>
<th>PRICE IN (Name of currency)</th>
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**ADDITIONAL CHARGES IF ANY**

**FCA CHARGES (Name of the Intl. airport)**
From Vendor’s manufacturing/shipping facility to Manufacturer’s country’s Intl. Airport.

<table>
<thead>
<tr>
<th>TOTAL AMOUNT</th>
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<table>
<thead>
<tr>
<th>TOTAL AMOUNT (IN WORDS)</th>
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Vendor’s Signature: Seal:

S/d
Purchase Officer