



**SATYENDRA NATH BOSE NATIONAL CENTRE FOR BASIC SCIENCES**  
[Funded by the Department of Science & Technology, Government of India]  
BLOCK JD, SECTOR III, SALT LAKE, KOLKATA- 700 098  
PHONE: +91-(0) 33-2335 5706-08, 2335 3057/61, 2335 0312/1313  
FAX: +91-(0) 33-2335 3477/1364  
EMAIL: santosh@bose.res.in

Ref:SNB/ENQ/MP/RGA/15-16/415(WP)

Dated: 25.06.2015.

Dear Sir,

Sealed quotations are hereby invited for the following items in two parts (Technical and Commercial bids). One large envelope containing two smaller envelopes containing Part A: Technical Bid and Part B: Commercial Bid need to be submitted separately. Two smaller envelopes should be super-scribed "**Technical Bid**"/"**Commercial Bid**" as the case may be.

Sl. No.	PARTICULARS	Qty.
01.	Residual Gas Analyser System and related accessories [See attached sheet for detailed technical specification.]	01 no.

**Technical bid** should contain complete technical information/ literature/brochure of the quoted item including user's list and authorization certificate of the principal manufacturer. Users list of the quoted item should include the name, address, ph. no(s), fax and email address in India. **Price Bid** - In case of imported item CIF Kolkata airport price should be mentioned and for indigenous item FOR price up to S. N. Bose Centre may be quoted.

Note: Attached herewith ❖ **Annexure I** ⇒ (Technical Compliance Statement); **Annexure II** ⇒ (Checklist) and **Annexure III** ⇒ (Tender Terms & Conditions) which needs all is to be filled up, duly sealed & signed and submitted with the Technical Bid only. ❖ Offer received without any of the relevant information / certificate / document asked as per Annexure-I, II & III may not be considered for further evaluation. ❖ The Centre reserves the right to accept or reject any or all offer of the tenderer without assigning any reason thereof. ❖ The Centre's decision shall be final and binding on the tenderer. ❖ Attached documents should be duly marked.

Note:-

- 1) The quoted price should be inclusive of delivery and installation charges.
- 2) Validity should be for 90 days from the date of opening.
- 3) Minimum 03 years onsite standard warranty from the date of installation to be mentioned.
- 4) Payment is subject to after delivery and satisfactory installation.
- 5) Delivery period should be mentioned in the quotation.
- 6) Our ref. no. should be mentioned on top of the quotation envelope.
- 7) Quotation for the above item should reach this office on or before **15<sup>th</sup> July' 2015**.
- 8) See reverse for Specific and General Terms & Conditions.

Thanking you,  
Yours faithfully,

S. K. Singh  
AR (Purchase)

**S. N. Bose National Centre**  
**For Basic Sciences**  
**Salt Lake, Calcutta-700 098.**

### **Specific Terms & Conditions for Residual Gas Analyser:**

- Tenderer shall give all Technical details, Specifications and other relevant/additional details, if any, for the above.
- The quotation should include an Earnest money (EMD) for Rs.40,000.00 (Rupees Forty Thousand only) in the form of Demand Draft in favour of “S. N. Bose National Centre for Basic Sciences”, payable at Kolkata. Bid without EMD will not be considered and shall be rejected. *EMD should be submitted along with the Technical Bid only.*
- Performance Guarantee: See Annexure-III, Sl. No.2 under Tender Terms & Conditions.
- PG will be refunded to the supplier without any interest whatsoever after it duly performs and completes the contract in all respects within 60 days of completion of all such obligations under the contract. In case the time for completion of work gets enlarged, the validity period of performance security will get extended accordingly to cover such enlarged time for completion of work.
- **Attached herewith Annexure-I (for Technical Compliance Statement), Annexure-II (for Checklist) and Annexure-III (for Tender Terms & Conditions). All should be duly filled in by the bidder and submitted with the Technical Bid of. Offer received without any of the relevant information / certificate / document asked as per “Annexure I, II & III” may not be considered for further evaluation.**
- The Centre reserves the right to accept or reject offer of the tenderer without assigning any reason thereof. The Centre’s decision shall be final and binding on the tenderer. Attached documents should be duly marked.

☆☆☆☆☆☆☆☆

### **General Terms & Conditions:**

- 1) The bid should be submitted in two bid system each of which is to be submitted in separate envelope. One envelope should contain “Technical Bid” i.e., technical specifications, terms and condition, terms of payment except price and another envelope should contain “Price Bid” i.e., price of the quoted item. Both the envelopes should be separately sealed and kept in another large envelope which should be marked with tender reference number, name of the equipment and tender opening date. Separate bid should be submitted for each of the items. Combined bids will not be entertained.
- 2) The tenderer should have high technical, financial reputation with sufficient experience and capable enough for supply, installation & commissioning of similar type of equipment to actual users. Documentary evidence should be submitted in this respect.
- 3) Against such offers, if statutory requirement demands clearance from concerned Governments the tenderers should confirm in their offer that “Export License” in that respect would be arranged by them at their cost.
- 4) Offers should be complete in all respect indicating therein the unit price(s) including manuals, make, model, duties and taxes, delivery period, gross and net weight of the consignment, terms of payment, together with the descriptive leaflet/catalogue/pamphlet/manufacturer’s brochure.
- 5) The offers shall remain valid at least for a period of **90 days. The period starts from the date of closing of tender submission.**
- 6) The Institute shall not be responsible for delay, loss or non-receipt of the tender through post/Air Mail
- 7) The aforesaid Tender is being issued with no financial commitment and purchaser reserves the right to change / vary any items or items thereof at any stage.
- 8) No tenderer shall be entitled for any compensation what so ever for rejection/non consideration of their tender.
- 9) Invitation of tender does not constitute any right or claim for issue of purchase order to the tenderer.
- 10) If any information furnished by the tenderer is found incorrect or false at a later stage he shall be liable to be debarred from ordering / tendering
- 11) For items originating from abroad 80% payment shall be made by letter of credit and the balance 20% payment will be released after successful completion of installation & commissioning at site.
- 12) For indigenous item, payment will be made after satisfactory installation & commissioning of the equipment / instrument at site.

☆☆☆☆☆☆☆☆

**S. N. Bose National Centre  
For Basic Sciences  
Salt Lake, Calcutta-700 098.**

## Detailed Technical Specifications of the components

**Vacuum Pumping System consists of Turbo Molecular Pump backed by Diaphragm Pump with valve along with Residual Gas Analyser controlled by software.**

### Turbo Molecular Pump

**Inlet flange:** - DN 63 CF-F,

**Pumping speed for:** -

Nitrogen, Argon: Approximately 67 l/s, Helium: - Approximately 58 l/s,  
Hydrogen: - Approximately 48 l/s,

**Compression ratio for:** -

Nitrogen, Argon: -higher than  $1 \times 10^{11}$ , Helium: - Approximately higher than  $1 \times 10^7$ ,  
Hydrogen: - higher than  $1 \times 10^5$ ,

**Maximum backing vacuum pressure for N<sub>2</sub>:** - higher than 20 mbar

**Gas throughput for N<sub>2</sub>:** - Approximately 1 mbar l/s,

**Ultimate pressure with Diaphragm Pump:**  $< 5 \times 10^{-7}$  mbar

Computer interface for remote operation of the pump via serial interface RS 485

**Protection category:** - Against Water Spillage

**Mounting Orientation:-** Any

### Diaphragm Pump

Pumping Speed: - 20 liter/min

Ultimate pressure with flushing gas nozzle: - 3 mbar

Ultimate pressure without gas ballast: - 2 mbar

Necessary cable and connecting components in between Turbo Pump and Diaphragm Pump.

### Residual Gas Analyser:-

Detector Type: - C-SEM/ Faraday

Ion Source: - Gas Tight, 2 Filaments

Mass Range: - 1 – 100 amu

Contribution to neighbouring mass (40/41) :-  $< 10$  ppm

Detection limit: minimum: C-SEM:  $< 1$  ppm

Detection limit: Faraday:  $< 1$  ppm

Detection limit:  $< 20$  ppm

Scan Speed: MID: 2 ms/amu – 60 s/amu

Bargraph stair scan: 2 ms/amu – 60 s/amu

Analog scan: 20 ms/amu – 60 s/amu

Bargraph Scan: 20 ms/amu – 60 s/amu

Capillary Gas connection: Material: Stainless Steel

Sample Pressure: - 1000 mbar

Gas flow rate: - 1 – 2 sccm

Length: - 1 meter

## **Chamber of RGA**

Chamber of RGA will be same dimension of Analyser of RGA has 4 Ports.

One Port will connect to Turbo Pump DN 63 CF-F,

Second Port will connect to RGA 40 CF-F.

Third port will connect to Gauge head 40 CF-F.

Fourth Port will connect to 40 CF flange with Capillary outside  $\phi$  1/16",  $\phi$  0.125 mm and Inlet Valve for Capillary.

Capillary operating temperature: 200 °C

Inlet valve control through Front Panel and/or software

## **Pressure Gauge:-**

Flange: - DN 40 CF

Pressure range: - 1000 mbar to  $5 \times 10^{-9}$  mbar

Complete Pumping Station should have provision to analysis the gas of pressure measuring: 500.....1000 mbar (Measuring Gas)

User control: 5 Analog input:  $5x \pm 10$  V/ 12 Bit

4 Analog output:  $4 \times 0 \dots 10$  V/ 12 Bit

4 Digital Input: 4 external protections

7 Digital Output: 7 x sink, optical isolated, 24 V

Pump Status: Digital output channel 1, 1 relay, switching contact, NC, NO, COM

Connectors: 15 pin D sub (USER I/O), and 25 –pin Dsub (Aux I/O)

☆☆☆☆☆☆☆☆☆☆

Annexure – I

**Compliance Sheet for Vacuum Pumping System consisting of Turbo Molecular Pump backed by Diaphragm Pump with valve along with Residual Gas Analyser controlled by software.**

Requirement	Compliance	Supportive documents/ data sheet provided
<b>Turbo Molecular Pump</b>		
<b>Inlet flange:</b> DN 63 CF-F		
<b>Pumping speed for:</b> - Nitrogen, Argon: Approximately 67 l/s, Helium: Approximately 58 l/s, Hydrogen: Approximately 48 l/s,		
<b>Compression ratio for:</b> - Nitrogen, Argon: higher than $1 \times 10^{11}$ , Helium: Approximately higher than $1 \times 10^7$ , Hydrogen: higher than $1 \times 10^5$ ,		
<b>Maximum backing vacuum pressure for N<sub>2</sub>:</b> higher than 20 mbar		
<b>Gas throughput for N<sub>2</sub>:</b> Approximately 1 mbar l/s,		
<b>Ultimate pressure with Diaphragm Pump:</b> < 5 X $10^{-7}$ mbar Computer interface for remote operation of the pump via serial interface RS 485		
<b>Protection category:</b> Against Water Spillage		
<b>Mounting Orientation:</b> Any		
<b>Diaphragm Pump</b>		
<b>Pumping Speed:</b> 20 liter/min		
<b>Ultimate pressure with flushing gas nozzle:</b> 3 mbar		
<b>Ultimate pressure without gas ballast:</b> 2 mbar		
<b>Residual Gas Analyser:</b>		
<b>Detector Type:</b> C-SEM/ Faraday		
<b>Ion Source:</b> Gas Tight, 2 Filaments		
<b>Mass Range:</b> 1 – 100 amu		
<b>Contribution to neighbouring mass (40/41) :</b> < 10 ppm		
<b>Detection limit: minimum: C-SEM:</b> < 1 ppm		
<b>Detection limit: Faraday:</b> < 1 ppm		

<b>Detection limit:</b> < 20 ppm		
<b>Scan Speed:</b> MID: 2 ms/amu – 60 s/amu Bargraph stair scan: 2 ms/amu – 60 s/amu Analog scan: 20 ms/amu – 60 s/amu Bargraph Scan: 20 ms/amu – 60 s/amu		
<b>Capillary Gas connection:</b> Material: Stainless Steel		
<b>Sample Pressure:</b> 1000 mbar		
<b>Gas flow rate:</b> 1 – 2 sccm		
<b>Length:</b> 1 meter		
<b>Chamber of RGA</b>		
Chamber of RGA will be same dimension of Analyser of RGA and has 4 Ports		
One Port will connect to Turbo Pump DN 63 CF-F		
Second Port will connect to RGA 40 CF-F		
Third port will connect to Gauge head 40 CF-F		
Fourth Port will connect to 40 CF flange with Capillary outside $\phi$ 1/16", $\phi$ 0.125 mm and Inlet Valve for Capillary		
<b>Capillary operating temperature:</b> 200 °C		
Inlet valve control through Front Panel and/or software		
<b>Pressure Gauge</b>		
<b>Flange:</b> DN 40 CF		
<b>Pressure range:</b> 1000 mbar to $5 \times 10^{-9}$ mbar		
<b>Complete Pumping Station should have provision to analysis the gas of pressure measuring:</b> 500.....1000 mbar (Measuring Gas)		
<b>User control:</b> 5 Analog input: $5x \pm 10$ V/ 12 Bit 4 Analog output: $4 \times 0 \dots 10$ V/ 12 Bit 4 Digital Input: 4 external protections 7 Digital Output: 7 x sink, optical isolated, 24 V Pump Status: Digital output channel 1, 1 relay, switching contact, NC, NO, COM Connectors: 15 pin D sub (USER I/O), and 25 –pin Dsub (Aux I/O)		

Please submit this compliance statement with the technical bid after filling up all details, duly sealed & signed.

Annexure – II

- The following form should be submitted with the technical bid duly filled and signed.  
 ➤ **Relevant documents must be enclosed with the technical bid as per Sl. no. 01 to 18.**

S/N	PARTICULARS	Yes/No	REMARKS
01	Technical bid & Price bid duly sealed & signed enclosed in separate envelopes as instructed.		
02	<u>Contents of Technical bid</u> (a) Technical details as per specification enclosed with technical bid ⇨ (b) Technical Compliance Statement (as per Annexure – I) to be furnished and any deviation should mentioned specifically in a separate sheet. ⇨ (c) Literature/Manual of the offered item ⇨ (d) Current Authorization Certificate from the Principal Manufacturer ⇨ (e) Name, address, email & ph. no. of users in India. ⇨ (Preferably Research laboratories) (f) Copy of P.O. and installation certificate with the same specification from at least one user ⇨		
03	Delivery charges on F.O.R basis up to S. N. Bose Centre, Kolkata for indigenous items with detailed break-up of cost		
04	All applicable tax (VAT/CST/Sales/Service tax) should be mentioned		
05	Whether the price quoted is without excise duty, as the centre is fully exempted from payment of excise duty		
06	Copy of Trade License, VAT, PAN, Service Tax Registration no. enclosed with the technical bid.		
07	Installation charges included (if any) to be mentioned		
08	03 years Standard warranty from the date of installation to be mentioned		
09	Payment after installation of material at site		
10	Payment mode should be mentioned		
11	Delivery/installation time from the date of PO to be mentioned		
12	Enquiry no. should be mentioned on top of all quotation envelopes		
13	Validity of Quotation should not be less than 90 days from the date of submission		
14	Maintenance procedure of the offered item to be mentioned		
15	Contact details of after sales service centres in Kolkata to be mentioned		
16	Bank details of the beneficiary to be mentioned		
17	In case of any defect found after receipt of material or in case of any deviation from the specifications or in case of any operational defect found during the warranty period, any part or the entire material is to be replaced by the supplier at no extra cost to the Centre.		
18	Whether your company has been blacklisted by any Central/State Govt. organization.		

**Note:** Offer received without any of the relevant information / certificate / document asked in the above sl. nos. 01 to 18 may not be considered. The Centre reserves the right to accept or reject offer of the tenderer. The Centre's decision shall be final and binding on the tenderer. Attached documents should be duly marked.

Annexure – III

TENDER TERMS & CONDITIONS

**1. Earnest Money Deposit (EMD)**

- a) Tenderer are requested to submit an Earnest Money Deposit (EMD) in the form of Demand Draft in favour of “S. N. Bose National Centre for Basic Sciences”, payable at Kolkata. Bid without EMD will not be considered and shall be rejected. EMD should be enclosed with the technical bid only.
- b) EMD of unsuccessful bidder will be refunded without any interest whatsoever within 30 days after issue of purchase order to the successful bidder. EMD of the successful bidder will be returned without any interest whatsoever after receipt of Performance Guarantee of requisite amount.
- c) EMD 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 including extended period if any. Further, if the successful tenderer fails to furnish the required Performance Guarantee within the specified period, its EMD will be forfeited.

**2. Performance Guarantee (PG)**

- a) In case Purchase Order is placed in foreign currency, equivalent amount in INR @5% of P.O. value is to be submitted through Demand Draft.
- b) In case Purchase Order placed in INR, 5% of P.O. value is to be submitted through Demand Draft.
- c) The Demand Draft should be in favour of “**S. N. Bose National Centre for Basic Sciences**”, payable at Kolkata. PG is to be furnished within 21 days from the date of issue of purchase order. PG will cover the period of warranty/guarantee and will remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty/guarantee obligations.
- d) PG will be refunded to the supplier without any interest whatsoever after it duly performs and completes the contract in all respects within 60 days of completion of all such obligations under the contract. In case the time for completion of work gets enlarged, the validity period of performance security will get extended accordingly to cover such enlarged time for completion of work.
- e) PG will be forfeited and credited to the Centre’s account in the event of a breach of contractual obligations by the supplier.

**3. Delivery & Installation:** The whole work should be completed within 08 weeks from the date of P.O. Thereafter compensation for both delay in delivery of material and delay in installation and commissioning of work will be applicable.

**4. Compensation for delay:** If the supplier fails to deliver any or all the goods or to perform services like installation, erection, testing, commissioning or other allied works on or before specified time period mentioned in the purchase order or extended date of completion time granted by the Centre if any, he shall, without prejudice to any other right or remedy available under the law to the Centre on account of such breach, pay as agreed compensation the amount calculated at the rate stipulated below:

Compensation for delay of deliver, installation testing, commissioning or other allied works	0.5% of delivered price of delayed goods (or services) for each week or part thereof subject to maximum 10% of contract value.
--	--



## TENDER TERMS & CONDITIONS

### 9. **Arbitration:**

- a) In case of any dispute, difference, question or disagreement or matter whatsoever, shall, before and after completion or abandonment of work or during extended period, hereafter arises between the parties, as to the meaning, operation or effect of the contract or out or relating to the contract or breach thereof, shall be referred to Soul Arbitrator to be appointed by the Director of the Centre at the time of dispute.
  - b) It is a term of the contract that the party invoking arbitration shall specify all disputes to be referred to arbitration at the time of invocation or arbitration under the clause.
  - c) It is a term of the contract that the cost of arbitration will be borne by the parties themselves.
  - d) The venue of the arbitration shall be at KOLKATA.
  - e) Subject to as aforesaid the provisions of the Arbitrations and Conciliation Act 1996 and any statutory modification or reenactment thereof rules made hereunder and for the time being in force shall apply to the arbitration proceeding under this clause.
10. The contract shall be deemed to have been entered at Kolkata and all causes of actions in relation to the contract will, therefore, be deemed to have arisen within the Ordinary Original Jurisdiction of High Court, at Kolkata, and shall be deemed to have taken effect from (date) when the purchase order for the goods was issued to the contractor.

### 11. **Termination of Contract for Default:**

- (i) The purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, terminate the contract in whole or in part:
  - (a) If the supplier fails to deliver any or all of the goods within the time period specified in the contract or any extension thereof granted by the purchaser; or
  - (b) If the supplier fails to perform any other obligation under the contract within the period specified in the contract or any extension thereof granted by the purchase.
- (ii) In the event the purchaser terminates the contract in whole or in part; the purchaser may take recourse to any one or more of the following action:
  - (a) the performance security is to be forfeited;
  - (b) the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods similar to those undelivered, and the supplier shall be liable for all available actions against it in terms of contract.
  - (c) however, the supplier shall continue to perform the contract to the extent not terminated.

### 12) **Termination of Contract for Insolvency:**

If the supplier becomes bankrupt or otherwise insolvent, the purchase may, at any time, terminate the contract, by giving written notice to the supplier, without compensation to the supplier provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.

## TENDER TERMS & CONDITIONS

13) **Force Majeure:**

- (i) For the purpose of this clause, Force Majeure means an event or situation beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable. Such events may include, but are not restricted to, acts of the purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, strikes, lockouts, and freight embargoes.
- (ii) If a Force Majeure situation arises, the supplier shall promptly notify the purchaser in writing of such conditions and the cause thereof within 21 days of occurrence of such event. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
- (iii) If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding 60 days, either party may at its option terminate the contract without any financial repercussion on either side.

14) **Extension of Time:**

- (i) The supplier shall deliver the goods and complete performance of service on or before specified time period mentioned in purchase order.
- (ii) If, at any time during the contract period, supplier encounters situation impeding timely delivery of goods and timely completion of service, it will promptly notify the purchaser in writing of the fact of delay, its likely duration and its cause. After receipt of supplier's notice, the purchaser will evaluate the situation and may, at its discretion, extend time for completion of work with or without penalty as per clause 9. If the purchaser agrees to extend time for delivery of goods or time for performance of service, the same may be done by issue of amendment letter with suitable amendment of the contract.
- (iii) Other than situation mentioned in clause 14 and clause 15 (ii), clause 9 will be imposed for delay in delivery of goods or for delay in completion of service.

- 15) Centre reserves the right to reject any or all bids without assigning any reason thereof.

☞ Please submit this with tender document duly sealed and signed as an acceptance of the above mentioned terms & conditions.

\_\_\_\_\_  
*Seal, Signature of bidder with date*