भारतसरकार

Government of India
BHABHA ATOMIC RESEARCH CENTRE
Integrated Fuel Fabrication Facility

Ref No.: BARC/IF3/04/2022/25947R Date: 04/03/2022

To,

Sub: "Design, *fabrication and supply of vacuum degassing chamber*" as per enclosed drawing, specifications and terms & conditions

Dear Sir/ Madam,

For & on behalf of The President of India, sealed offer (on printed letter head) is invited for "***"Design, fabrication and supply of vacuum degassing chamber" as per enclosed drawing, specifications and terms & conditions***". The scope of work, technical requirements and terms & conditions are as per enclosed specifications. GST registration number & PAN number of the firm must be indicated in the quotation without which the quotation is liable to be rejected.

The bidders must quote in **two part tendering system** which means technical specifications and financial terms are to be sent in two separate envelopes superscribed as technical bid and commercial bid. These two separate envelopes (technical bid and commercial bid) will be enclosed in another envelope and then this sealed envelope should be addressed to:

Head, Integrated Fuel Fabrication Facility
Attn: P K Srivastava, SO (E)
South site, BARC, Mumbai. - 400 085

Sealed envelope titled "***"Design, fabrication and supply of vacuum degassing chamber" as per enclosed drawing, specifications and terms & conditions***" and duly marked with above reference no. & due date 08/04/2022 on the envelope should reach us **on or before 08/04/2022.**

Quotation shall be sent by Registered / Speed post only. Courier or Hand delivery of quotation is not acceptable.

Encl: 1. Specifications
2. Drawing

वैज्ञानिक अधिकारी / Scientific Officer
एकिकृत इंधन सविचरन सुविधा / Intergrated Fuel Fabrication Facility
भारत सरकार / Government of India
भाभा परमाणु अनुसंधान केंद्र / Bhabha Atomic Research Centre,
ट्रॉम्बे, मुंबई / Trombay, Mumbai - 400 085.

Praveen 04/03/22

(P K Srivastava)
SO/E, IF3
For & on behalf of President of India

(The scope of work, completion schedule, quantity and technical specifications are as given below)

1. SCOPE OF WORK:

"Design, fabrication and supply of vacuum degassing chamber" as per enclosed drawing, specifications and terms & conditions

2. VACUUM DEGASSING CHAMBER REQUIREMENTS:

Sr. No.	Item	Requirement
1.	Application	Degassing of empty/filled metal tubes held in fixture.
2.	Vacuum Level	10^{-2} mbar or better inside the chamber (holding the vacuum level of 10^{0}-10^{-1} mbar after 24 hours of stopping of vacuum Pump operation)
3.	Temperature	No Heating. Room Temperature.
4.	Gas Filling	Working Pressure of 6 kg/cm^2 (holding pressure for minimum 24 hours with pressure drop less than 1 kg/cm^2)

3. SPECIFICATIONS:

Vacuum degassing chamber will consist of following major component. Schematic drawing of the same is enclosed.

3.1 Vacuum degassing chamber

02 Nos of Cylindrical Vacuum Degassing Chambers are to be made out of SS304L materials with dimensions of 150 mm (Inside Diameter) x 1500mm (Chamber inside Length) with suitable wall thickness. The chambers are to be designed to withstand the requirement of vacuum & pressure as provided in vacuum degassing chamber requirements. Bottom flange is to be fixed to platform with closing clamps and "O" Rings. This platform {max: 350 mm (w) X 600 mm (L)} is to made detachable type (detachable from main platform) with castor wheel and pushing handles for movement of metal tubes fixture inside working area. This platform should also have a provision of electrically driven scissor jack for increasing platform height upto 1 meter. Movement of this platform in both horizontal and vertical direction should be made smooth so that there is not any uncontrolled/sudden jerky movement during operation.

3.2 Chamber movement

UP/DOWN movement of the both the chambers is to be provided independently through Ball Screw or Linear Motion Bearing with Electric Motor Drive. Time required for UP/DOWN movement of 1.5 meter should be less than 5 minutes. Both chambers should be placed on a main platform of minimum possible dimension. Dimension of main platform is to be decided based on the space required to accommodate all the equipment on this platform. Castor wheels and pushing handles is to be provided to the platform for smooth and easy movement of platform.

3.3 Vacuum and gas filling system

A Vacuum Pumping System with Rotary Vane Vacuum Pump, gauges, valves, vent valves and other requirement as listed in scope of supply is to be provided for maintaining the required vacuum (10^{-2} mbar or better). Vacuum pump is also to be installed on main platform. Suitable arrangement for entry of inert gas in the chamber is also to be provided.

3.4 Control panel

Control panel is to be provided. This will house all required component such as vacuum pump ON/OFF switch, Movement ON/OFF switch, Mains ON/OFF switch, vacuum gauge indicator, electrical wiring etc. Control panel is also to be mounted on main platform on working height.

3.5 Crucible holding fixture — Qty: 3 nos.

Crucible holding fixture as per drawing is to be fabricated and supply. This will be kept at bottom and metal tubes with crucible will rest on it.

3.6 MS working table — Qty: 2 nos.

2000 mm (L) X 400 mm (W) X 400 mm (H) MS working table is to be fabricated and supply.

Note: Red oxide and epoxy paint is to be done for all support structure, platform, table, side railing/pushing handles etc.

4. DRAWING:

Enclosed drawing is essentially a working schematic of the required Degassing Chamber. Any modification/change without affecting the basic design is under the scope of fabrication.

Party shall prepare detailed fabrication drawings. Any suggestion will be indicated on these drawings. These detailed fabrication drawings shall be submitted to the purchaser for approval. After purchaser's approval only fabrication shall be started.

5. MATERIAL:

1. The material used should be as mentioned in scope of supply.
2. All the material used shall be of recent make & free from defects.
3. Dyepenetrant test is to be performed on each welded joint.

6. FABRICATION:

Workmanship shall be accordance with high-grade practice and adequate to achieve the accuracy & finish.

7. MACHINING:

1. All the sharp corners shall be rounded off.
2. All SS items are to be buffed and electro-polished to bright finish.

8. WELDING:

1. Only gas tungsten arc welding (GTAW/TIG) shall be used.
2. Welding shall be uniform and free from all defects such as cracks, porosity and cavities.
3. Proper care shall be taken to align the various parts and clamp them with suitable fixtures prior to welding to eliminate distortion.
4. All the welds shall have full penetration.

9. INSPECTION:

1. Material identification: Mill test certificate is required. In case of doubt sample dishes will be taken by purchaser for detail inspection.
2. Visual inspection of all parts for dents cracks etc.
3. All the raw material shall be inspected.
4. Dye penetrant test for porosity and cracks will be performed on each part.
5. Pre-dispatch Inspection of the Degassing Chamber will be carried out for ensuring that it is meeting the technical specifications.
6. Vacuum testing and holding of vacuum and pressure performance is to be demonstrated during pre-dispatch inspection and it should be better than that of mentioned in requirement at serial number 2.

10. PLACE OF DELIVERY:

The inspected and accepted items shall be delivered to:

Stores Officer
South site Zonal Stores.
Bhabha Atomic Research Centre
Mumbai- 400 085

11. Scope of BARC: No FIM (free issue material) will be provided by BARC.

12. Supplier's scope: All the materials and machines required for mentioned job are to be arranged by the supplier. The following items will be in Supplier`s scope:

Sr. No.	Item	Quantity
1.	Vacuum Pump of Make: Edwards & Model No. E2M40	1 No.
2.	SS Chamber Size: Inside Diameter = 150 mm and Inside Chamber length = 1500 mm	2 Nos.
3.	SS Chamber Bottom Closing Flange with Toggle Locking Clamps, O-ring and 10 spare O-rings	2 Sets
4.	Chamber UP/DOWN Movement Mechanism with Electric Motor Drive	2 Sets
5.	Digital Pirani Gauge Head & Controller / Indicator at Vacuum Pump Inlet, Make: Edwards & Model No. APG-100 XM (2 Nos.) with Enhanced Active Digital Controller (2 Nos.)	2 Sets
6.	Vacuum Pump to Chamber Connection Pipe	2 Nos.
7.	Vacuum Pump to Chamber Isolation Butterfly Valve	2 Nos.

	(Manual Operated)	
8.	Needle Valve for Gas Inlet, Make: Swagelok	2 Nos.
9.	Compound Dial Gauge with Isolation Needle Valve (Make: Swagelok) mounted on Chamber, Make: Wika & Model: CPG1500	2 Sets
10.	Control Panel	1 No.
11.	Platform for chamber, vacuum pump, control panel and other accessories with wheels and pushing handles	1 No.
12.	Platform with electrically driven scissor jack for metal tube fixture with wheels and pushing handles	1 No.
13.	Piping & Quick Fitting Connections for Inert gas filling inside Chamber	2 Sets
14.	Crucible holding fixture	3 Nos.
15.	Fabrication Drawings, Operation & Maintenance Manual & Manuals of all Standard Bought-Out Parts	1 Set
16.	2000 mm (L) X 400 mm (W) X 400 mm (H) MS working table	2 nos.

*(**Note** : The items which are not mentioned in BARC scope or in supplier scope, if required in the execution of the above mentioned work, will be in supplier`s scope. Supplier should be ready to accommodate minor modifications.*

TERMS AND CONDITIONS:

Confidentiality Clause:

1. **Confidentiality:** No party shall disclose any information to any third party concerning the matters under this contract generally. 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 other third party without the prior consent of the original disclosing party.
2. **"Restricted information" categories under section 18 of the Atomic Energy Act., 1962 and "Official Secrets" under section 5 of the Official Secrets Act 1923:**

   Any contravention of the above mentioned provisions by any contractor, sub-contractor, consultant, advisor or the employees of a contractor will invite penal consequences under the aforesaid legislation.
3. **Prohibition against use of BARC's name without permission for publicity Purposes:-** The contractor, sub-contractor, consultant, advisor or the employees engaged by the contractor shall not use BARC's name for any publicity purpose through any media like press, radio, TV or internet without prior written approval of BARC.

VENDOR EVALUATION CRITERIA: Vendor must furnish details of recently executed Work Contracts of similar nature, particularly in the field of Vacuum Chambers in the technical bid. Moreover, if required visit shall be made to the factory site of the vendor for evaluating their technical capability and the manufacturing facilities they possess.

PRICE: Offered cost shall be valid for the entire scope of work.

VALIDITY: Offer should be firm and valid for next three months.

TAX: As applicable shall be indicated clearly and separately.

GST CONCESSIONAL CERTIFICATE: The goods proposed to be fabricated vide this work order are meant for research purpose of a public funded research institute under Department of Atomic Energy and may attract concessional rate of GST i.e. 5% as per CGST notification no. 45/2017 and 47/2017. GST Exemption certificate may be issued by the purchaser to the supplier to avail the above mentioned concessional rate of GST.

GUARANTEE / WARRANTY: Guarantee / Warranty for Vacuum Degassing Chamber inclusive of all its components shall be provided for at least one year.

COMPLETION PERIOD: **4 Months (Maximum)** from the date of the releasing the work order. The work completion schedule should be strictly adhered with. Any delay which is attributable to the contractor is liable for penalty @ 0.5% per week (max 5 %) on total work order value. In case extension in work completion period is required, request for it with proper and valid justification is to be sent to us positively before the expiry of work completion period.

INCOME TAX: Income Tax @2% and GST TDS @ 2%will be deducted from vendor's bill.

PAYMENT: Payment: 100% payment including taxes will be made after delivery of material, successful completion of work and submission of following documents:

a. Original bill
b. Advance stamped receipt
c. Guarantee Certificate
d. Supplier's Bank Account Details
e. GST undertaking form

Advance / Part payment or against delivery cannot be made. Proposed payment terms by the tenderer cannot be accepted.

For any clarification regarding the specifications or any queries supplier/bidder may contact P. K. Srivastava (Tel. 022-2559 4473, email: kpraveen@barc.gov.in) during office hours

Praveen 04/03/22

(P K Srivastava)
SO/E, FPF&AS, IF3

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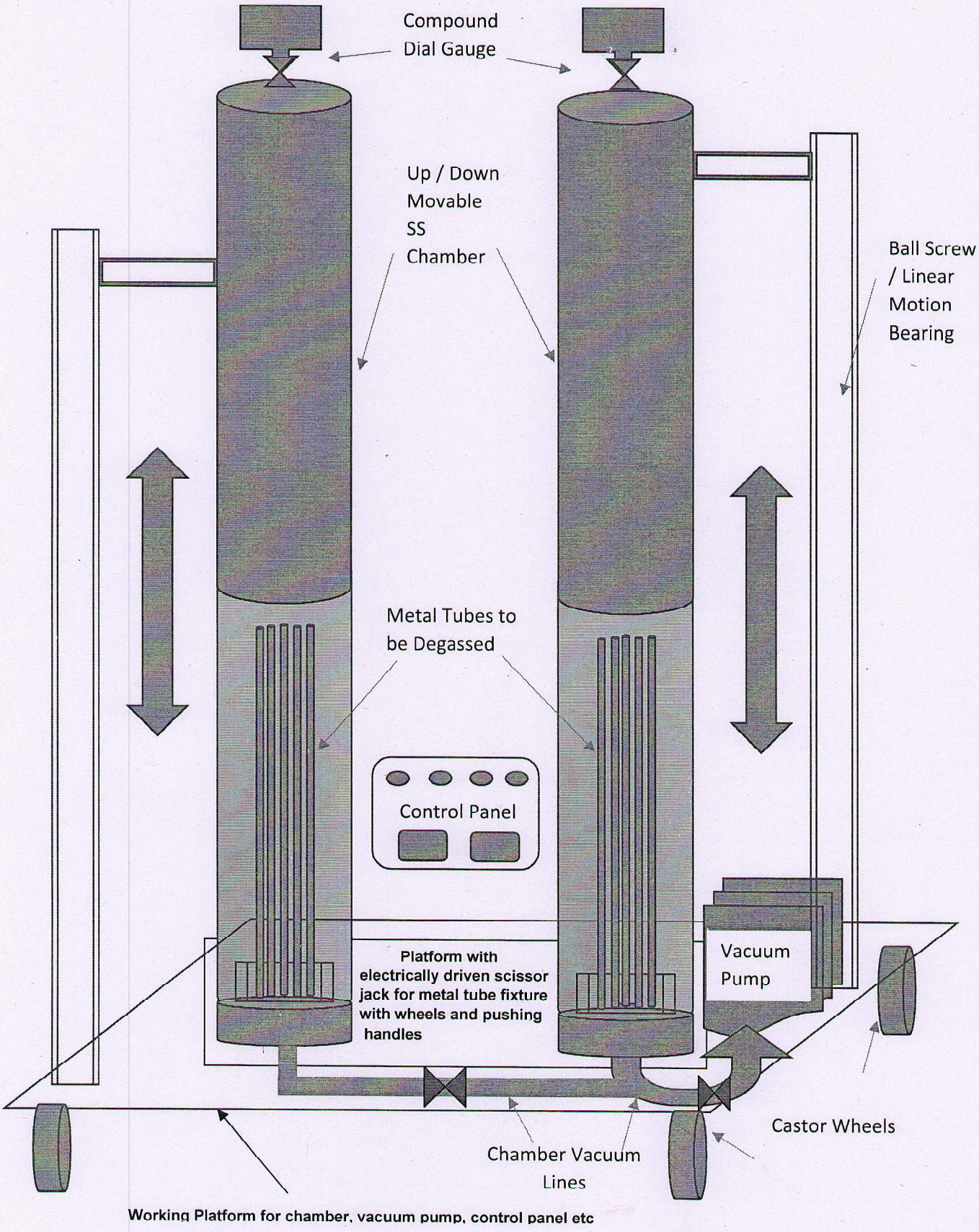
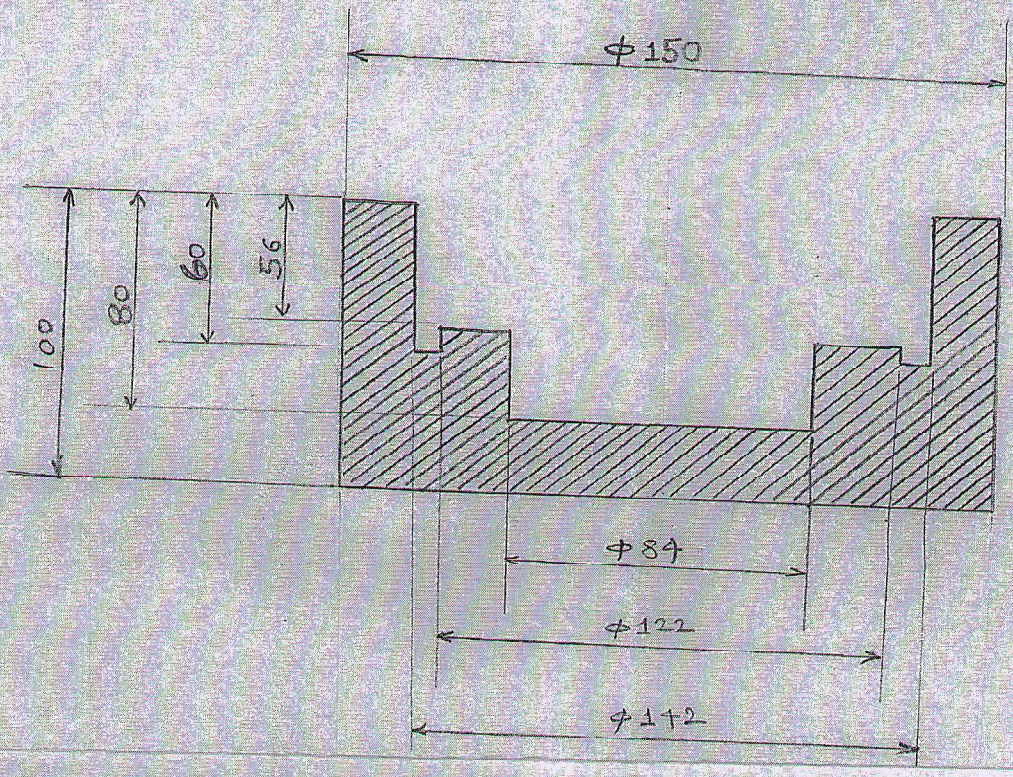


Drawing: Schematic of *vacuum degassing chamber*

Drawing : Circular Crucible holding fixture

Required quantity = 3

Material = SS

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