

Government of India
Bhabha Atomic Research Centre
Electromagnetic Applications & Instrumentation Division

Ref No: EmA&ID/2021/SSR/39/12659

Date: 3/11/2021

-----To whom so ever it may concern-----

Sub: Fabrication, testing and supply of heat exchangers for closed loop testing of magnet components along with its accessories

Dear Sir/Madam,

1. Quotations are invited for fabrication, testing and supply of jigs for vacuum brazing system along with its accessories.
2. Bidder shall quote for above job inclusive of raw material
3. Taxes and Excise Duties shall be quoted separately. Form AF / H whichever is applicable shall be provided, if required.

The quotation must reach The Head, Electromagnetic Application & Instrumentation Division by 19.11.2021 and must be sent in a sealed envelope super scribed with the reference number & the due date given above only through India Ordinary Post/Speed Post.

4. The address on the envelop should read: The Head,
Electromagnetic Application & Instrumentation
Division,
RCnD Bldg., North Site
BARC, Trombay,
Mumbai - 400 085.
(Kind Attn: S.Sundar Rajan, SO/G)
5. The bidder shall complete the job within 2 months from the date of firm work order issued to the bidder.
6. Head, Electromagnetic Application & Instrumentation Division reserves the rights to accept / reject any or all quotations without assigning any reason.
7. Quotation must also indicate the validity of offer. Quotation must also indicate the GST No and PAN number of the supplier.
8. The quotation has to be signed by authorized person with company seal.
9. Payment will be made by EFT only after satisfactory completion of work on production of bill, delivery challan and advance stamped receipt. Income tax as applicable will be collected at the time of payment.
10. In case of any technical clarifications, the supplier may kindly contact the indenting officer through Email only. (Email ID:sundara@barc.gov.in)

Encl.: Technical Specification Sheet no: EmA&ID/EMAS/SCM/21/39 dated 2.11.2021

S.Sundar Rajan
S.Sundar Rajan
SO/G,EmA&ID

Technical specification

Document no.	Revision no.	Date of Issue	No of pages
EmA&ID/EMAS/SCM/21/39	0	2.11.2021	5

Fabrication, testing and supply of heat exchangers for closed loop testing of magnet components along with its accessories

1.0 SCOPE

Tender is invited for fabrication, testing and supply of heat exchangers for closed loop testing of magnet components along with its accessories. The complete job shall be carried out strictly as per requirements, specifications and its compliance standards as detailed in this document. In this specification the supplier shall be referred to as the “supplier” and Bhabha Atomic research Centre shall be referred to as the “buyer”.

The supplier shall arrange for required raw materials and tools required to complete the above job. The supplier shall be qualified as per Para 11.0 of this document. The brief description of contents of the tender specification document is as described below.

Para 2.0 gives the details of deliverables.

Para 3.0 gives the job description details.

Para 4.0 gives general requirements

Para 5.0 gives engineering requirements

Para 6.0 gives documentation requirements.

Para 7.0 gives the requirement of raw material procurement.

Para 8.0 gives the requirement of manufacturing and workmanship.

Para 9.0 gives the requirements of quality assurance.

Para 10.0 gives the requirements of packaging and delivery

Para 11.0 gives the requirements of supplier qualifications.

Para 12.0 gives the requirements of price and delivery schedule.

Para 13.0 gives the requirements of confidentiality.

2.0 DETAILS OF DELIVERABLES

The scope of supply is tabulated in table below

S.No	Description	Nos
1	Fabrication, testing and supply of heat exchangers for closed loop testing of magnet components along with its accessories	5 Nos

3.0 JOB DESCRIPTION

3.1 3mm SS tube (SS316L) must be brazed to OFHC Copper rod for cryogenic heat exchanger application. Suitable grooves must be machined in the rod to firmly support the SS tube. The complete setup shall be vacuum brazed with AWS approved grade compatible for vacuum brazing filler material.

3.2 The drawing of the heat exchanger is enclosed in Annexure-A..

4.0 GENERAL REQUIREMENTS

4.1 The supplier shall workout a detailed design to meet fabrication requirements and work description, quantity and main fabrication material. He shall submit along with the offer dimensional drawing giving all the salient features, material details of individual items and assembly view of the fixtures.

4.2 The Supplier shall indicate in detail the standards adopted for the materials and processes and the quality control procedures followed by them.

4.3 Supplier can suggest the color, aesthetics, and other details as suitable. Supplier must offer best quality/IS certified material only.

4.4 Supplier should have similar work experience and along with the offer, shall submit the details of past experience with documentary proof.

4.5 The supplier shall incorporate minor changes in the design as required at the time of execution of work at no extra cost.

5.0 ENGINEERING REQUIREMENTS/APPROACH

5.1 Machining, deburring and polishing

5.1.1 The machining coolant shall be sulfur free to reduce outgassing.

5.1.2 Deburring may be with file, deburring knife or using abrasives. Deburring by abrasive vibrating or tumbling may be avoided.

5.2 Cleanliness

5.2.1 The contamination of the copper plates material shall be avoided. Surfaces shall be cleaned as fabrication is progressing.

5.2.2 Internal surfaces shall be cleaned to remove all trace of oil, grease and other chemical contaminations. Visual examination shall demonstrate the absence of all contaminants and if at all any defects such as dirt, metal chips and sharp edges.

6.0 DOCUMENTATION REQUIREMENTS

6.1 Before commencing manufacturing, supplier shall furnish the following for purchaser's approval:

6.1.1 The fabrication drawing shall be submitted for approval.

6.2 The supplier shall submit a quality assurance (QA) plan to the buyer for acceptance. The plan shall ensure that each item offered for acceptance conforms to the requirements herein.

6.3 The following inspection and test procedure documents shall be supplied

6.3.1 Measured RRR value of the copper sheets prior to and after annealing.

7.0 RAW MATERIAL PROCUREMENT

The raw material used by supplier for the manufacturing of these components shall confirm to their following standards and QA plan specified in drawings.

7.1 The following materials shall be used

7.1.1 OFHC Grade high quality copper plates/sheets conforming to ASTM standard.

8.0 REQUIREMENTS OF MANUFACTURING AND WORKMANSHIP

8.1 The manufacturing process and workmanship shall be consistent with high grade industrial practice and shall be adequate to achieve the accuracies for intended requirements. Manufacturing process shall ensure the interchangeability of parts.

8.2 If supplier wants to use any jigs and fixtures for the manufacture, same shall be approved by the purchaser. Before commencement of production, supplier shall prepare quality control sheets for various stage of manufacturing and same shall be approved by the purchaser and will be used by third party/ BARC QS.

9.0 REQUIREMENT OF QUALITY ASSURANCES

Quality surveillance and expediting, relating to all the aspects of the contract will be carried out by the purchaser or his authorized representative for which purpose the supplier and his subcontractor shall

9.1 Allow access at all reasonable times during manufacture, assembly and testing to the premises in which the work is being carried out.

9.2 Furnish the latest drawings and/or tooling, gauges, instruments, testing equipment etc. required for inspecting the jobs. Prints of all the latest required drawings and approved procedures shall be made available for inspection and retention, if so desired.

9.3 Produce an inspection plan to the purchaser's satisfaction and notify when checkpoints on the plan are imminent so that the purchaser's representative may be present, if it is so desired.

9.4 Obtain acceptance of the components in the form of a shipping release from the purchaser's representative before the shipment.

9.4.1 The address of the purchaser's authorized quality surveillance representative will be intimated by the purchaser after award of contract.

9.4.2 The supplier shall be responsible for the inspection of the components that is subcontracted by him.

9.4.3 Waiving of quality surveillance by the purchaser's or acceptance of the items by the purchaser or his authorized agent, shall not relieve the supplier from the responsibility for supplying the items in accordance with specification requirements of this document and purchase order.

10.0 REQUIREMENT OF PACKAGING AND SAFE DELIVERY

10.1 Protective covers: Supplier shall make necessary arrangements for all components using a suitable PVC cover or moulded thermocol. Proper care should be taken while handling the component during fabrication, inspection, testing and packing.

10.2 Packaging: After completion of all testing and identifying the components, the components shall be packed suitably for shipment, so that no damage occurs in transit. The purchaser shall subject the packing procedure to prior approval. At least one copy of packing list shall be kept in the package for quick and easy verification.

11.0 REQUIREMENTS OF SUPPLIER QUALIFICATIONS

11.1 Human resources: The supplier must give the details of human resources including Engineers, Draftsman, Electrical, Welder, assembly mechanic, quality control inspector, machinist etc.

11.2 Infrastructure: The supplier must give the details of infrastructure suitable for this job such as Manufacturing Machines, welding machining, electrical testing equipment, winding machine, Assembly room and other tools & tackles, Inspection facilities etc.

11.3 Past experience: The supplier must give their past three-year turnover and job executed by them with reference, volume of work and completion schedule, present commitments and anticipated commitments inside and outside India.

11.4 Sub contract: Supplier should list the jobs, which they want to sub-contract. They should also produce the list of sub-contractors and their infrastructures and facilities.

11.5 Supplier shall clearly mention the source of purchase of the copper plates and the annealing cycle details along with the offer. Offer received without the above mentioned technical details will be out rightly rejected.

12.0 REQUIREMENTS OF PRICE AND DELIVERY SCHEDULE

12.1 The supplier shall give a lump-sum price with delivery schedule.

13.0 CONFIDENTIALITY CLAUSE

13.1 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 disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party. This clause shall apply to sub-contractors, consultants, advisors or the employees engaged by a party with equal force.

13.2 . "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 the contractor will invite penal consequences under the aforesaid legislation.

13.3 Prohibition against the use of BARC's name without permission for publicity purpose. The contractor or sub-contractors, consultants, advisors or the employees engaged by a party shall not use BARC's name for publicity purpose through any public media like: press, radio, TV or Internet without any prior approval of BARC (wide circular ref.: 2/Misc-9/Lgl/2001/92 date 30/04/2001)

Annexure-A

