

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

Ref No: EmA&ID/SSR/34/2021/10835

Date: 25/10/2021

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

Sub: Fabrication, machining and supply of custom High Temperature Superconductor current lead development system

Dear Sir/Madam,

1. Quotations are invited for fabrication, machining and supply of custom High Temperature Superconductor current lead development system conforming to technical specifications EmA&ID/EMAS/SCM/21/34 dated 22.10.2021.
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 5.11.2021 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/21/34 dated 22.10.2021

  
S.Sundar Rajan  
SO/G,EmA&ID

Technical specification

Document no.	Revision no.	Date of Issue	No of pages
EmA&ID/EMAS/SCM/21/34	0	22.10.2021	3

Fabrication, machining and supply of custom High Temperature Superconductor (HTS) current lead development system

1.0 Scope of work

Tender is invited for fabrication, integration, testing and supply of custom high temperature superconducting current leads. In this specification the seller shall be referred to as the “Supplier” and Bhabha Atomic Research Centre shall be referred to as the “Buyer”.

Supplier shall arrange required raw material, facilities, infrastructure, jigs for fabrication, integration, testing and supply of the current leads. Suppliers recommended changes to the drawings will be evaluated and approved prior to fabrication to ensure that the proposed changes don't adversely impact any functional requirements.

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 general description and construction details.

Para 4.0 gives the job execution requirements.

Para 5.0 gives the inspection and testing requirements.

Para 6.0 gives the suppliers qualification requirements.

Para 7.0 gives the packaging and safe delivery requirements

Para 8.0 gives the price and delivery schedule requirements.

Para 9.0 gives confidentially clause.

2.0 Details of deliverables

S.No	Component	Nos
1.	Fabrication, machining and supply of custom High Temperature Superconductor current lead development system	1 Set

3.0 General description and construction details

3.1 The custom made superconducting current leads consist of high temperature superconducting strips.

3.2 The specification of the required HTS strips are listed below

Wire technology	2G HTS
Critical current	300 A @ 77K
Stabilizer material	Copper of 40um thickness
Width	12 mm
Thickness	0.1 mm
Substrate Thickness	50 µm Hastelloy C-276

Substrate shall be non-magnetic	
Length of the wire	50 mm

3.3 The edges of the HTS strips shall be brazed to copper termination to provide wiring connection.

3.4 The brazing shall be carried out in vacuum and suitable jigs shall be developed to carry out the brazing. The complete procedure of the brazing shall be approved by BARC before developing the final 02 Nos of the current leads.

3.5 The complete current lead except the terminals shall be vacuum pressure molded to achieve the required final dimensions.

3.6 The critical current shall be measured at 77K and the same shall be reported for approval of the same.

#### 4.0 Job execution requirements

4.1 The supplier shall provide detailed 3D drawing of the current lead along with the QA/QC document for approval of the feed through/qualification procedure before initiating the fabrication.

4.2 The testing of the leads shall be witness by BARC representatives.

#### 5.0 Inspection and testing requirements

5.1 QA/QC documents: The supplier shall develop detailed QA/QC document of various fabrication process, inspection and testing requirements. The minimum required documentation is listed below. The QA/QC document shall be mutually agreed upon and signed by authorized persons of the supplier and purchaser.

5.2 Material certification: The supplier shall provide material certification/documents of all the materials

#### 6.0 Requirements of supplier qualifications

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

6.2 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.

6.3 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.

6.4 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.

6.5 Supplier shall clearly mention the vacuum helium leak test facility available with them.

#### 7.0 Packaging and safe delivery requirements

7.1 The vessel shall be engraved with a unique identification marking composed of the corresponding drawing number followed by a serial number. The engraving shall be made such as to remain readable after assembly. Its placement shall be agreed between the buyer and Bidder.

7.2 The Bidder shall develop detailed procedure for handling and shipping the magnet. The container shall be constructed such that they can be handled by forklift and no palletized load shall exceed 2 MT.

7.3 Each component shall be marked with Bidder's identification as well as the identification indicated in drawing in such a way that the markings can be conveniently read and cannot get destroyed during handling, cleaning, etc.

7.4 Bidder shall make necessary arrangements for all components using a suitable PVC cover or molded thermocol. Proper care should be taken while handling the component during fabrication, inspection, testing and packing. Acceptance of the magnet will be made only after the vacuum integrity is tested at buyer's premises.

7.5 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 buyer 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.

7.6 The Bidder shall be responsible for proper and safe delivery. The Bidder shall provide support for the installation of the magnet inside buyer's premises.

7.7 The delivery of the magnet shall be made at BARC, Trombay, Mumbai, 400094, India.

#### 8.0 Price and delivery schedule requirements

8.1 The delivery of the vessel with its relevant technical documentation is expected within 6 months from date of placement of purchase order.

8.2 The Bidder shall detailed break up cost with delivery schedule. However only overall cost will be compared.

#### 9.0 Confidentiality clause

9.1 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.

9.2 . "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.

9.3 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)