



GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
BHABHA ATOMIC RESEARCH CENTRE
VISAKHAPATNAM



Computational Analysis Division

Ref: CAD/HEDM/WO/IND/22-23/27

Date: 09/02/2023

Subject: Notice inviting tender for;

“Fabrication and supply of glass fibre reinforced Solenoid coils and Spiral plate electromagnetic coils.”

(See Annexure-1)

1. Quotations are invited for minor fabrication job as per details described below.
2. **Scope of work:** See details in Annexure-1.
3. **General guidelines for submitting tender**
 - You shall send your offer in a **sealed envelope** indicating delivery period, price inclusive of taxes and other relevant information by speed post to:

Head,
CAD, Computational Analysis Division
Bhabha Atomic Research Centre
Village: Maduturu (Sub: P.O.)
Near Nagavaram Junction,
Gajuwaka-Yellamanchilli Highway
Atchutapuram, Visakhapatnam
Andhra Pradesh- 531011

(Kind Attention: Rahulnath P.P., SO/D, CAD, 0891-283-2149/ 8985875318)

- Quotation shall reach us on/or before **01/03/2023 by Speed Post/Courier/ Only.**
- On top left corner of the envelope please indicate Quotation for– **“Fabrication and supply of glass fibre reinforced Solenoid coils and Spiral plate electromagnetic coils”** And due date 01/03/2023
- Overwriting, scratching etc. must be avoided in the quotation. Rewriting the whole figure shall carry out any alteration in the figure. The authorized person from the firm shall countersign such figure.
- The delivery period mentioned in the quotation shall be strictly adhered to. If the contractor fails to supply and secure extension of delivery date before effecting delivery of the supply against the contract, acceptance of such item by the purchaser will in no way prejudice the right of the purchaser to levy liquidated damage nor will it be entitled to the contractor for payment of statutory levies that comes into force after the expiry of the delivery date.
- Minimum Guarantee/Warranty period of the material and workmanship shall be **One Year.**
- **Supplier shall mention clearly the PAN /TAN no. on quotation.**
- **GST number shall be clearly mentioned on Quotation.**
- All the charges and taxes shall be mentioned clearly.
- You may contact us for any clarification before **01/03/2023** (Shri. Rahulnath P.P., 0891-2832149,8985875318, rahulnath@barc.gov.in)

4. **Rates:**

As per Scope of Work.

5. **Place of Delivery/Work:**

Address: Stores Officer, Bhabha Atomic Research Centre, Near Nagavaram Junction, Gajuwaka-Yellamanchilli Highway, Maduturu PO, Visakhapatnam, Andhra Pradesh- 531011.

5. **PAYMENT TERMS:**

- a. Part payment/Advance or against delivery cannot be made.
- b. Payment will be made only after satisfactory completion of work and on production of (along with Delivery Challan):
 - i. Bill/Invoice containing Location of supply, separate tax components along with PAN and GSTN numbers.
 - ii. Advance Stamped Receipt.
 - iii. Bank Account No, Bank and Branch name with IFSC code.
 - iv. Undertaking stating that GST has been promptly deposited with the authorities
- c. It may be noted that:
 - i. Income tax @2% will be deducted from your bill.
 - ii. TDS (under GST) will be deducted as applicable from your bill of taxable goods and/or services, where the total value of such supply exceeds 2.50lakh.
 - iii. Declaration confirming filing of Income Tax Return from immediate two preceding years, in accordance with Section 206 AB of the Income Tax Act 1961, has to be submitted in the prescribed proforma along with necessary acknowledgements in support of declaration. In case the aforesaid declaration is not submitted, TDS/TCS shall be deducted at higher rates as instructed under the provisions of Income Tax Act.

6. **CONFIDENTIALITY CLAUSE:**

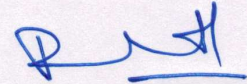
No, party shall disclose any information to any third party, concerning the matters under this contract generally. In particular, any information identified as "Proprietary" in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party.

This clause shall apply to the sub-contractors, consultants, advisers or the employees engaged by a party with equal force.

"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, adviser or the employees of a contractor will invite penal consequences under the aforesaid legislation.

Prohibition against use of BARC's name without permission for publicity purposes. The contractor or sub-contractor, consultant, adviser or the employees engaged by the contractor shall not use BARC's name for any publicity purpose through any public medial like press, radio, T.V. or Internet without the prior written approval of BARC.



(Rahulnath P.P.)

SO/E, CAD

Phone: 0891-2832149,

Email: rahulnath@barc.gov.in

Scope of work

Fabrication and supply of glass fibre reinforced Solenoid coils and Spiral plate electromagnetic coils.

Item to be fabricated;

The following coils types are to be fabricated:

Sl. No.	Coil type	Dimension	Quantity
01	Solenoid Coil	Inner diameter:24.6mm Length=80mm Layer=2	30Nos.
02	Spiral Plate coil	Plate Size:250x250mm Spiral: 5 rounds	10Nos.

I. The following procedure has to be followed for fabrication of solenoid coils. Typical dimension and fabrication technique is described below; (see Drg.No.1 for details)

A. Fabrication of former

The former is a hollow cylindrical tube of inner diameter 24.6mm, thickness 2mm and length 80mm. This has to be made with glass fibre/epoxy with an angle of 60° with the longitudinal axis. Fibre used must be of 2400Tex value. Inner surface of the former must be tolerance limit of $24_{+0.00}^{+0.025}$. Volume fraction of 60-65% is preferable.

Note:

1. Inner surface has to be precisely machined to 24.6mm with tolerance +0.05mm.
2. Length of the former will be equal to the length of coil for each type of coil.
3. Dimension of each coil is tabled under description of each Coil Type.

B. First layer of winding

OFHC copper round enamelled conductor of diameter 3.2mm has to be wound over the above former with a pitch of 4.4mm. First winding should start at 15mm from one of the ends of former. 11 turns of windings has to be made over the former. Just after the 11th turn, conductor has to be taken elliptically out through quarter half of the plane with sufficient length of conductor behind for another layer of coil. It has to be ensured that a minimum of 25mm length has to be provided outside the coil.

C. Reinforcement above the first layer

Once the first layer of conductor is wound over the former, Kevlar fibre reinforcement has be made up to a diameter of 38.4mm(i.e. up to 2mm thickness above the surface of first layer of conductor winding). 65° winding angle and a pre-stress of 1.5kgf must be provided while winding. Kevlar fibre must be of 1000dtex value. Volume fraction of 60-65% should be ensured.

D. Second layer of winding

After 2mm thick fibre winding is made over the conductor second layer of winding is to be made. This has to be done in the reverse way along the axis. The pitch of winding should be 4.4mm and number of turns should be $10\frac{3}{4}$.

E. Reinforcement above the second layer

Once the second layer of conductor is wound, fibre/epoxy reinforcement has to be made up to 70mm diameter. 65° winding and pre-stress value of 1.5kgf has to be ensured while winding the fibre. 1000dtex fibre has to be used. Volume fraction of 60-65% should be ensured.

Details of solenoid coils are tabled below;

Title: Solenoid Coil

Quantity: 30Nos.

Type: A (Drg.No.1)	Material	Winding Angle	Tex	Pre-stress	Volume fraction
Former	Glass Fibre	60°	2400 Tex	Not-required	60-65%
Reinforcement	Glass Fibre	65°	600 Tex	1.5kgf	60-65%
No. of layers	2 layer				
No. of turns	11 turns on each layer				
Inner Dia.(mm)	24.6mm(Former of inner diameter 24.6mm and thickness 2mm)				
Conductor	OFHC Copper enamelled (3.2mm)				
Diameter(mm)	70mm				
Length(mm)	80mm				
Quantity	30Nos.				
Drg.No.01					

II. The following procedure has to be followed for fabrication of Spiral Plate coils. Typical dimension and fabrication technique is described below;(see Drg.No.2 for details)

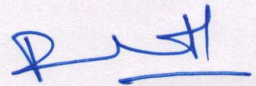
1. Plate is to be of G10 (FR-4) material.
2. Size of plate: 250x250x25mm.
3. Spiral of rectangular cross-section have to be made on the surface as mentioned in the drawing.
4. Copper conductor of 5mm diameter has to be made in spiral form as shown in drawing no.2 and inserted in the groove provide in G10 plate.
5. The conductor has to be attached to the G10 plate by epoxy filler.
6. **Quantity: 10Nos.**

Note to the vendor

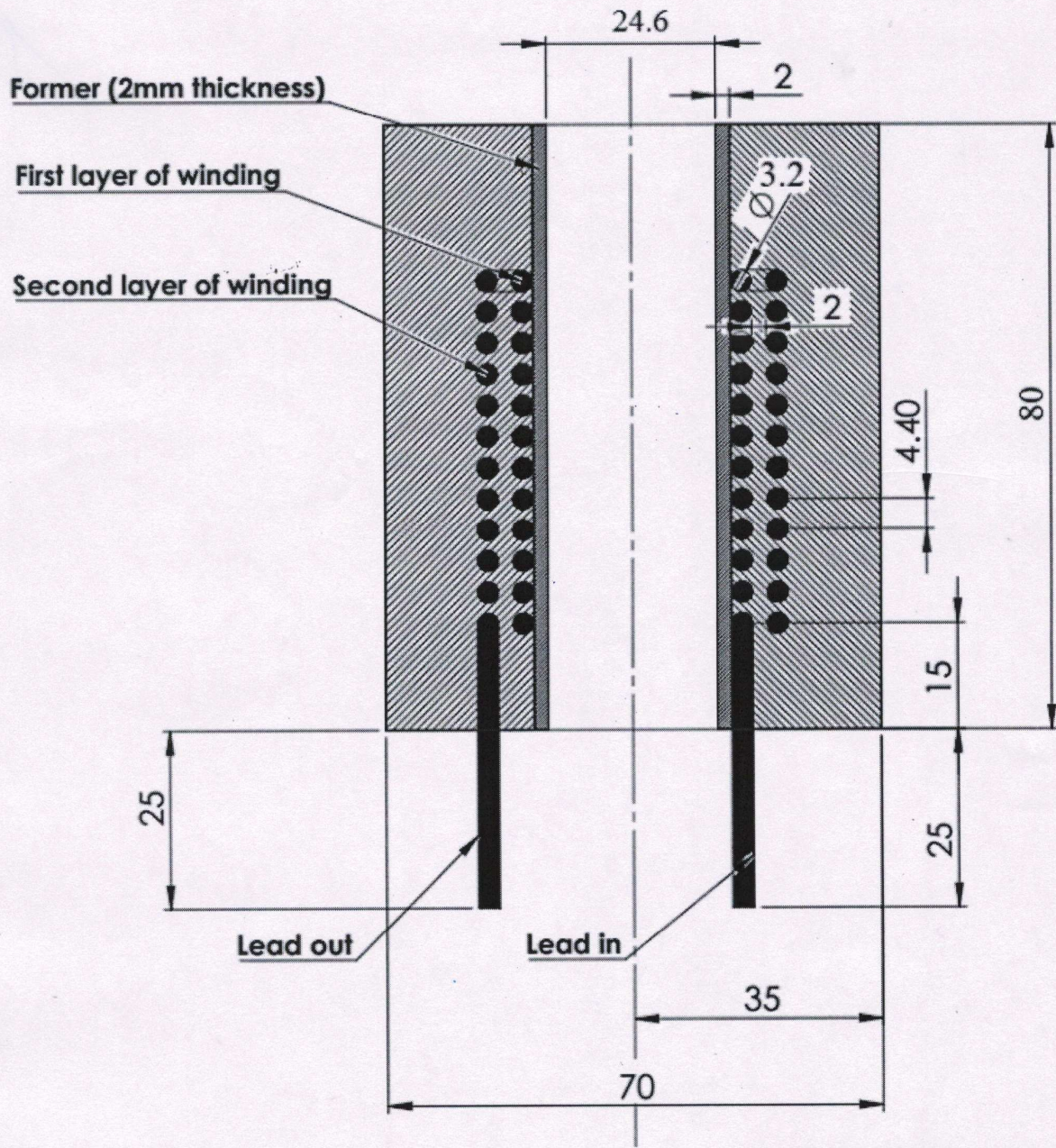
- a. All machined components must adhere to dimension as mentioned in the drawing.
- b. No loose components are to be made.
- c. The vendors are encouraged to hold prior discussions with the indenter for any clarifications.
- d. The cost of transportation/delivery if any should be mentioned in the quotation.
- e. It is mandatory to mention prices of **each item separately**.
- f. Single order will be placed for all the above items and no partial work is permitted.
- g. Minimum Guarantee/**Warranty period** of the raw material and workmanship shall be **One Year**.

Contact Persons:

- a) **Shri. Rahulnath P.P.**, Computational Analysis Division, BARC
Contact details: rahulnath@barc.gov.in
Phone: 0891-283-2149, 8985875318



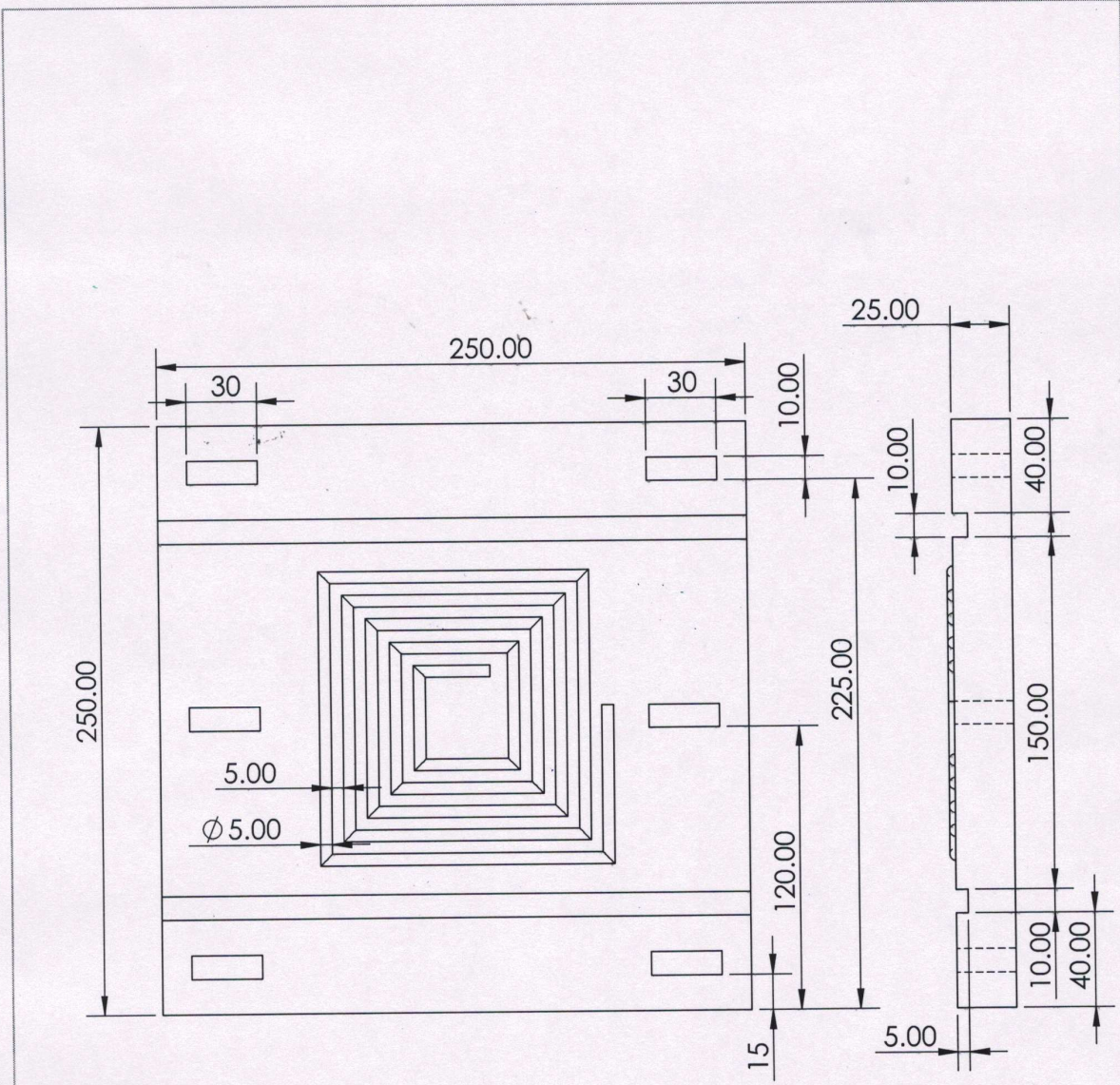
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SO/E, CAD



All dimensions are in mm

Drg. No.1: Electromagnetic Coil_Type A

[Handwritten signature]



Spiral Plate

DRG.NO : 01	All Dimensions are in mm		
Quantity: 10	Scale :	Material:	
Date : 15/02/2023	MF_22-23/27	Name&Sign : Rahulnath <i>Rahulnath</i>	