

**Invitation for Expression Of Interest for
Fabrication, Integration, and Supply of MRI
Cryostat**



**अन्तर-विश्वविद्यालय त्वरक केन्द्र
Inter-University Accelerator Centre**

(विश्वविद्यालय अनुदान आयोग का स्वायत्त केन्द्र)

(An Autonomous Inter-University Centre of UGC)

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October 2019

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The purpose of this EOI is to provide interested parties/applicants/manufacturers with information that may be useful to them in the formulation of their application for qualification and subsequent selection pursuant to this EOI. This EOI is not an offer by IUAC to the prospective Applicant(s) or any other person. This EOI is neither intended nor shall it be construed as creating or requiring any ongoing or continuing relationship or commitment with any party or person. This is not an offer or invitation to enter into an agreement of any kind with any party. Though adequate care has been taken in the preparation of this EOI document, the interested applicants shall satisfy itself that the document is complete in all respects. The information is not intended to be exhaustive. Interested Agencies are required to make their own inquiries and assumptions wherever required. Intimation of discrepancy, if any, should be given to the specified office immediately. If no intimation is received by this office by the date mentioned in the document, it shall be deemed that the EOI document is complete in all respects and firms submitting their interest are satisfied with the EOI Document in all respects. The issue of this EOI does not imply that IUAC is bound to select and shortlist Applicant(s) for the next stage or to enter into any agreement(s) with any Applicant(s). IUAC reserves all right to reject any applications submitted in response to this EOI document at any stage without assigning any reasons thereof. IUAC also reserves the right to withhold or withdraw the process at any stage. Neither IUAC nor its employees and associates will have any liability any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this EOI document or any matter deemed to form part of this EOI document, the information and any other information supplied by or on behalf of IUAC. IUAC accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance/use of any statements/information contained in this EOI by the Applicant. IUAC is not making any representation or warranty, express or implied, as to the accuracy or completeness of any information/statements made in this EOI. The Applicant shall bear all its costs associated with or relating to the preparation and submission of its Application including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by IUAC or any other costs incurred in connection with or relating to its Application. All such costs and expenses will remain with the Applicant and IUAC shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by an Applicant in preparation or submission of the Application, regardless of the conduct or outcome of the EOI.

1. Introduction

Inter-University Accelerator Centre, New Delhi is presently developing a 1.5T superconducting MRI magnet system for a whole-body clinical scanner. The MRI magnet needs a warm bore cryogenic vessel, the so-called cryostat. MRI cryostat consists of vacuum jacket, thermal radiation shield and the helium vessel. The magnet, which is presently under fabrication, will be assembled in liquid helium in the helium vessel having capacity ~ 2000L inside the MRI cryostat.

2. Objective of EOI

The primary objectives of this EOI is to identify the Applicants/Industries who have the technical competence, capability, and experience in (a) *the fabrication of quality cryogenic/vacuum vessel and high precision machining*, (b) *design of high precision tooling* (c) *precision alignment for large scale integration and (c) on-site integration of superconducting magnet* with the cryostat with required precision.

Another objective is to explore the possibility of a suitable industrial partner who can build an MRI magnet and cryostat in India in the future for commercial purposes using the present technology of MRI magnet and cryostat with the help of IUAC.

3. Eligibility criteria

The Applicants must meet the following essential criteria to become eligible for the EOI process

- a) The Applicant i.e. the Applicant or a Consortium of applicants should have manufacturing facility of cryogenic vessel/ SS-Vacuum vessel in India.
- b) The Applicant shall have verifiable experience of manufacturing and supply of at least one large cryogen vessel/SS-vacuum vessel in the last 5 years. They should have successfully fabricated and supplied cryogenic/vacuum vessel in past.
- c) The Applicant must have infrastructure or facility and trained manpower necessary for fabrication, testing the cryogenic /vacuum vessel components at their site. IUAC reserves the right to visit the infrastructure at the applicant's site in India and reject the application on finding the incompetency of the applicants to manufacture such a cryogenic /vacuum vessel.
- d) The applicant must have verifiable experience in high precision machining jobs, precision alignment of mechanical structure, fabrication of mechanical jigs and fixture for alignment.
- e) The applicant must have facility and experience of leak detection on cryogenic / vacuum vessels using MSLD.
- f) The applicant must have ASME qualified welder for Austenitic stainless-steel.

- g) The applicant shall be a profit-making company with a minimum average annual financial turnover of Rs 4Cr during the last three years.
- h) The applicant should have executed at least one job of fabrication of cryogenics vessel/vacuum vessel for any govt R&D institute / public sector/ industry in India worth more than 30 lakhs in last five years.

The applicant needs to give technical bid presentation at IUAC during the evaluation of their technical bid for a duration not exceeding more than 30 min. The presentation shall contain the company's organizational structure, previous project on the large cryostat, vacuum vessel, high precision machining and fabrication job, precision alignment and integration, and expertise in designing jigs and fixtures. **The presentation by the applicants will be held at IUAC council room at 11: 00am on 11th Nov'2019.**

4. EOI submission procedure

- a) Interested applicants are requested to submit the application, in a sealed and signed envelope to *Mr. M.B. Joseph, Administrative Officer (S&P), Inter-University Accelerator Centre, Aruna Asaf Ali Marg, New Delhi 110067.* **The last date of submission of the application is 8th Nov, 2019.**
- b) Prior to submission of the EOI, the applicant may visit IUAC (or send email) for technical clarification. The applicant is requested to contact *Mr. M.B. Joseph, Administrative Officer (S&P) (joseph@iuac.res.in)/ Dr. Soumen Kar (kar.soumen@gmail.com)* for any queries related to EOI.
- c) Along with the application of the EOI, the applicants are requested to submit following documents:
 - 1. Brief Company profile
 - 2. Financial details of annual turnover
 - 3. Signed copy of self-declaration certificate (Annexure-I)
 - 4. Previous experience related to present job
 - 5. Facilities available with the Applicant along with manpower expertise
 - 6. Copy of PO more than 30lakh of previously executed jobs in cryogenic/ vacuum vessel.
 - 7. Engineering design capabilities
 - 8. Outsource Facilities/Activities
 - 9. Challenges perceived in the present project
 - 10. Present practices in QA/QC

7. Evaluation procedure of the EOI :

On receipt of the EOI documents, an evaluation committee will shortlist a set of potential applicants based on the eligibility criteria of EOI and the presentation made by each applicant. A hard copy of presentation needs to be submitted during presentation. The selected applicants will be issued the tender for final bidding.

9. Brief Scope of the Work

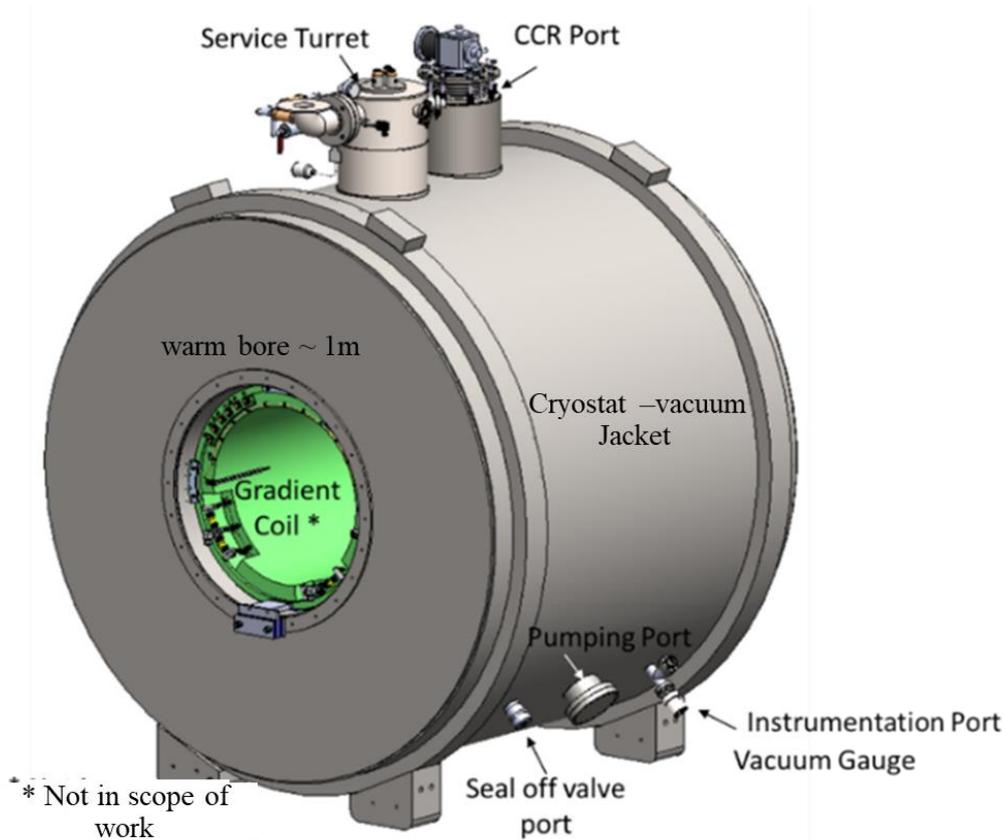


Figure 1. 3-D CAD model of the MRI cryostat.

- a) Fabrication and supply of MRI cryostat consisting of Vacuum Vessel (SS304L), thermal radiation shield (Aluminium alloys), Helium vessel (SS304L), Service turret and Cryocooler port (SS304L), support system (GFRP, CFRP, SS304), thermal block and Flexible thermal link (Cu), jigs and fixture for integration of magnet with cryostat at IUAC site. [*Please refer the drawings given at the end of EOI for scale of job*]
- b) Procurement of materials for the cryostat along with material test certificate
- c) Fabrication drawing of all components of the cryostat
- d) Design and fabrication of jigs and fixture for the final integration of the magnet with the cryostat
- e) Precision alignment and positioning of the MRI magnet (~ 2 ton) with the cryostat during its final assembly using jigs and fixtures.
- f) Design, fabrication, testing and welding, brazing of components as per standard codes and standards along with ASME certification.
- g) Procurement of instrumentation of the cryostat
- h) Testing (pressure, leak testing using MSLD etc) of components, subassemblies assembly at various stages of the fabrication of the cryostat
- i) Quality management and control

Annexure-I

Self-declaration certificate

[Take a print on Company's letter head]

Ref: No. Date:

To

The A.O. (S&P)

Inter-University Accelerator Centre

New Delhi-110067

India

With reference to my/our expression of interest of IUAC, it is hereby declared that *(name of the company)* was not declared ineligible for corrupt & fraudulent practices either indefinitely or for a particular period by any Govt. or other agency. (Name of Applicant) also, declare that there are no contractual restrictions or legal disqualifications or other obligations which will prohibit me/us from submitting the application for the EOI.

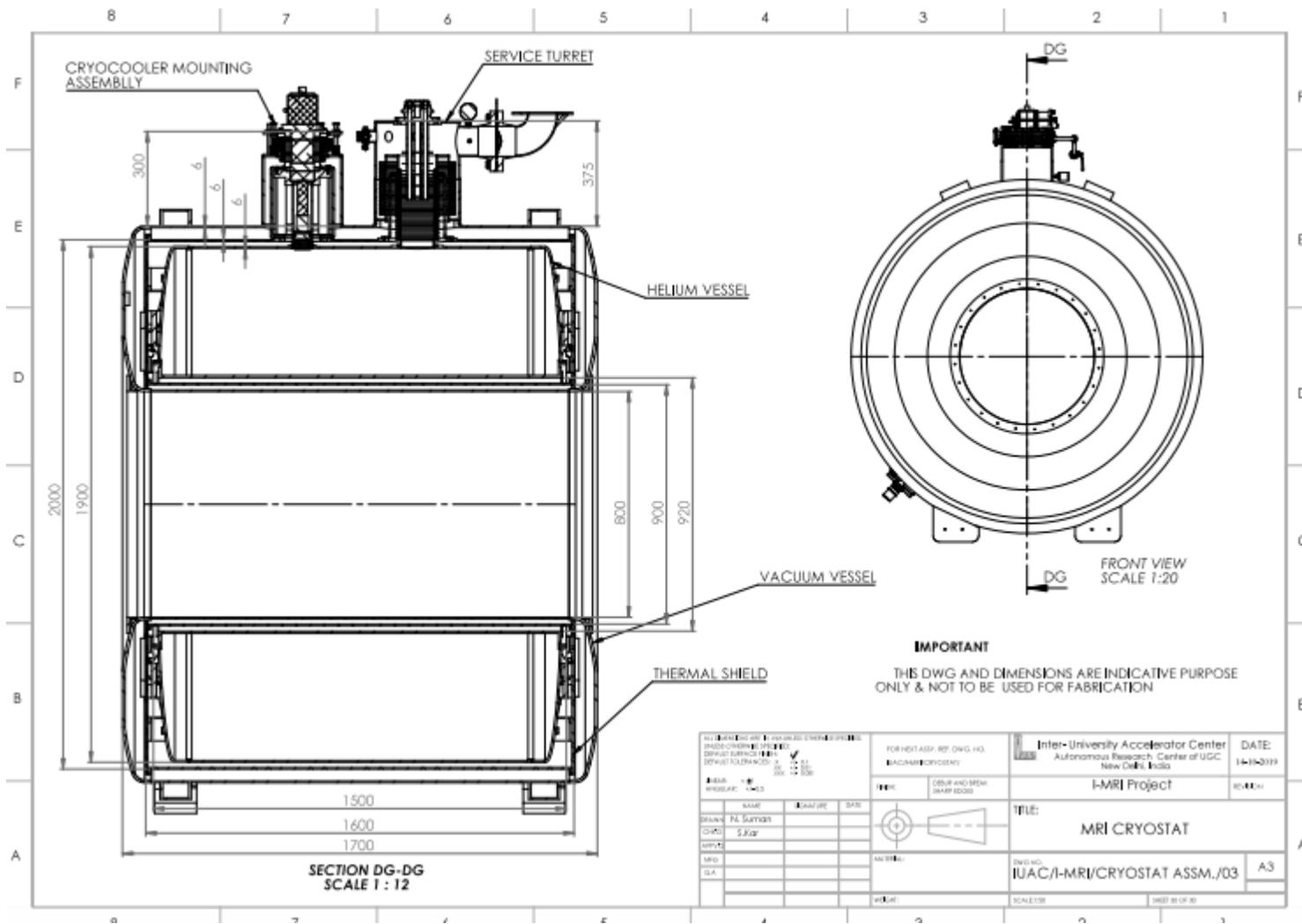
Signature of the Applicant:

Designation

Name of the Applicant

Date:

(seal)



IUCAC/AMC/03 PROJECT NO. 03 DATE: 14-10-2019	FOR NEXT LAY: REF. DWG. NO. IUCAC/CRYOSTAT	Inter-University Accelerator Center Autonomous Research Center of UGC New Delhi, India	DATE: 14-10-2019
NAME: S. Jaiswal DESIGNER: S. Jaiswal CHECKER: S. Jaiswal APPROVED: S. Jaiswal M.D.: S. Jaiswal S.A.: S. Jaiswal	TITLE: MRI CRYOSTAT	I-MRI Project	104401
DWG. NO.: IUCAC/I-MRI/CRYOSTAT ASSM./03	SCALE: 1:12	SHEET NO. OF 10	A3

