



Government of India
Bhabha Atomic Research Centre
Atomic Fuels Division
Technical Services Section

Ref: AFD/TSS/2018/215880

November 12, 2018

Tender Enquiry

To,

Sub: Works Contract for “Design, Fabrication, Supply, Testing, Installation and Commissioning of Ultrasonic-cum-Water Jet-Cleaning Tank with accessories as per specifications, at AFD”.

Sealed quotations are invited for & on behalf of the President of India for Design, Fabrication, Supply, Testing, Installation and Commissioning of Ultrasonic-cum-Water Jet-Cleaning Tank with accessories as per specifications, at AFD. The scope of work, general description and salient terms & conditions are as follow:

1. Scope of Work

The scope of work involves Design, Fabrication & Supply of:

- 1.1 Ultrasonic-cum-Water Jet-Cleaning Tank (***UWJC Tank***)
- 1.2 Control Panel & accessories
- 1.3 Erection & Commissioning of the Tank at site and satisfactory performance trials

All materials, consumables, labour etc shall be in the supplier's scope of work.

2. General Description

This Tailor-made UWJC Tank shall be designed & fabricated as per attached schematic drawings, and is intended for Decontamination as well as cleaning of radioactive components by means of Ultrasonic & pressurised water Jets.

The maximum sizes of components to be cleaned are as under:

- 2.1 For Ultrasonic Cleaning (mm) : 1,000 (L) x 1,000 (W) x 1,000 (H)
- 2.2 Water Jet Cleaning (mm) : 2,000 (L) x 2,000 (W) x 1,000 (H)
- 2.3 Max weight of the components : 20,00 kg

Total Height of the UWJC Tank shall be 2000mm, and equally divided vertically into two compartments, as under:

- 2.4 Bottom Compartment : To be used for cleaning by means of Ultrasonic Transducers
(height = 1000mm)
- 2.5 Top Compartment : To be used for cleaning by means of pressurized Water Jets.
(height = 1000mm)

The ultrasonic Transducers shall be provided on all the four vertical side walls of the bottom compartment, as per attached schematic diagram. Accordingly, there shall be no Transducers on the Bottom of the UWJC Tank. After mounting of Ultrasonic Transducers, the 2mm thick SS 304 metallic casing (with suitable SS 304, ISA40x4mm thick Stiffeners) shall be provided. Top Cover Plate /Lid for the UWJC Tank is not required.

2.6 Operational Sequence

Components having size $\leq 1000 \times 1000 \times 1000$ mm, will be hanged into the bottom compartment, with the help of electric Hoist. The Ultrasonic Cleaning system will be switched ON, and on completion of the cleaning operation, the components will be taken out by the manually operated electric hoist.

Components having size (mm) between **1001x1001x1001 to 2000x2000x1000**, will be placed on the step created at the top of the bottom compartment. Thereafter, the water pump will be switched ON and pressurized water jets will be directed at the component. The suitable water reflector plates (of transparent Polycarbonate materials) are to be provided to contain the water splashes. After cleaning operation, the components shall be taken out by the electric Hoist.

Schematic drawings displaying salient features of the UWJC Tank and General Arrangement of various sub-components are attached. However, the supplier shall prepare his own fabrication drawings and submit them before commencing the work execution.

This UWJC Tank shall be installed into a radioactive environment and hence mandated safety precautions shall have to be adhered by the supplier. The departmental Health Physicist will brief about the safety precautions/ procedures to be observed at site by the supplier's engineers and technicians.

3. Technical Specifications for Ultrasonic-cum-Water Jet Cleaning Tank (UWJC Tank)

3.1	Tentative overall size (mm)	2000 (L) x 2000 (W) x 2000 (H)
3.2	Quantity	1 No.
3.3	MoC for the UWJC Tank (SS304)	3mm thick Plates with suitable ISA50x5mm thick stiffeners
3.4	MoC for the outer Casing (SS304)	1.5mm thick Plate with suitable ISA40x4mm thick stiffeners
3.5	Base (<i>Schematic attached</i>)	Suitably fabricated from Channels -160x65x10.5mm (SS 304)
3.6	Inlet water & Drain water Pipelines (10 meters long each)	40NB sch 40 & 50NB sch 40 respectively with Ball Valves (<i>all components made from SS 304 only</i>)
3.7	Sliding Door	Fabricated in two parts, with suitable Rails (3mm thick SS 304)
3.8	Water Reflector Plates (foldable)	10mm Thick Transparent Polycarbonate Sheets
3.9	Basket for holding of the Components	Suitably designed & fabricated for 2,000kg load (SS304)
3.10	Other desirable features	Float Switch, Overflow water line, 40NB sch 40x10 meter long (<i>all components made from SS 304 only</i>)
3.11	Type of Contamination to be removed	Residual Radioactivity, Grease, Oil, Dust etc
3.12	Cleaning Media	Normal Tap Water
3.13	Cleaning Time (Approx.)	15 minutes
3.14	Type of Ultrasonic Transducers & Nos.	Reputed PZT Sandwich type, ≈ 400 Nos. (approx.)
3.15	Mountings of the Transducers	At the all four vertical sides, and upto the height of 1000mm only, No Transducers at Tank bottom.
3.16	Spares	Ultrasonic Transducers - 20 Nos. and PLC – 1 No.
3.17	Power Rating (gross)	≈ 20 kW, 415 V AC
3.18	Frequency Range	25– 35 kHz, with Pulse Mode
3.19	Control Panel Features	PLC & Microprocessor based control system with digital display of salient process parameters

4. Fabrication

- 4.1 All fabrication shall be as per ASME Section VIII Div. 1
- 4.2 All welding shall be by SMAW / TIG welding only. Welding procedure and welders shall be qualified as per ASME SECTION IX Prior to production welding.
- 4.3 Prior to actual production, fabrication drawings and welding procedures shall be approved by the purchaser.

5 Inspection & Quality Control

- 5.1 Supplier shall submit the detailed fabrication procedure along with the offer. This shall include:

- 5.1.1 Material Test certificates shall be required w.r.t:
 - 5.1.2 Chemical composition
 - 5.1.3 Ultimate tensile strength, Yield Strength
 - 5.1.4 Bend test
 - 5.1.5 Material test Certificate
 - 5.1.6 All tests shall be arranged by supplier at their own cost.
 - 5.1.7 Fabrication and inspection stages and testing methods in sequence listing all in details.
 - 5.1.8 Procedures for welding and stress relieving.
 - 5.1.9 Weld sequencing and identification.
 - 5.1.10 Identification of witness and hold points in manufacturing plan.
- 5.2 Welding shall be qualified as per ASME boiler and pressure vessel code Section IX. Fabrication and inspection shall be as per ASME section VIII Div-1 and all NDT procedures as per ASME Section V.
 - 5.3 All butt weld joints in Ultrasonic Cleaning tank shall be 100% radio-graphed. Detailed fabrication drawing indicating weld configuration, location, weld joint identification etc shall be submitted prior to taking up the production.
 - 5.4 Purchaser's representative shall have complete access to the works and supplier shall provide all necessary instruments, tools and documents etc. to conduct the checks.
 - 5.5 Time schedule: The firm shall submit time schedule for the following for timely completion of the order.
 - 5.5.1 Fabrication drawings/ Fabrication schedule.
 - 5.5.2 Quality assurance plan & stage wise inspection schedule.
 - 5.5.3 Welding schedule and Welder's qualification.
 - 5.6 The Ultrasonic Cleaning System shall be dispatched after obtaining all clearances from the purchaser. Advance intimation about the readiness of the same for inspection shall be given to the purchaser.

6. QAP (Quality Assurance Plan)

Supplier shall submit a documented procedure for Quality Assurance Plan and get it approved from the purchaser.

7. Welding requirements

- 7.1 Welding procedures and welder shall be qualified as per ASME section IX proper to production weld.
- 7.2 Tungsten electrodes shall be conforming to ASME section-II, part-C, SFA 5.12, EW-Th2.
- 7.3 DP test shall be carried out by on all weld joints to check surface imperfections.

8. General Technical Requirements

- 8.1 Supplier shall carry out actual measurements at site and suggest deviations if any to make necessary changes if required.

- 8.2 Supplier shall prepare its own fabrication drawings as per actual site conditions and should get it approved from concerned authority before commencement of work.
- 8.3 All fabrication work shall be carried out as per approved drawings only.
- 8.4 All material supply is in the scope supplier. Supplier shall use all relevant IS standard material for this work. Material testing reports (Chemical, Mechanical etc.) from govt. approved labs should be submitted for approval. Material identification and stamping shall be witnessed by departmental representative.
- 8.5 Supplier shall have to pass weld qualification and only qualified welders shall perform this work.
- 8.6 In case of any technical doubts, supplier shall contact concerned authority for clarifications.
- 8.7 Supplier shall have to arrange for Arc / TIG welding m/c. along with all consumables (welding electrodes etc) required for this work.
- 8.8 Gas cutting, arc welding, grinding work etc. shall be carried out with utmost care. Supplier shall follow all safety measures while carrying out such work. Department shall provide gas cylinders for gas cutting purpose if required.
- 8.9 Burrs, sharp edges, projections etc. caused due to cutting, welding etc shall be removed to maintain smooth surface. Supplier shall maintain best quality workmanship.
- 8.10 Suppliers shall have to give minimum one year guarantee for workmanship, materials and satisfactory performance of the entire system.

9. Final acceptance criterions

- 9.1 Physical verification of all items as per the technical specifications.
- 9.2 Satisfactory performance trials at site as per the standards. The standard procedure to measure the intensity & penetration power of the ultrasonic cleaning system shall be as under:

“An aluminum foil specimen [300mm (L) x 300mm (W) x 11μ (Th)] will be hanged inside the UWJC Tank. The ultrasonic cleaning system shall be switched ON and after the passage of 30 seconds, 50% of the specimen surface area should become perforated (i.e. holes should be created by the ultrasonic waves)”

- 9.3 Supplier shall clear off all left out material at the end of the work and ensure clean work site before handing over.

10. Suppliers having knowledge and experiences of preparing above mentioned documentations, BARC procedures, standard welding procedures, safety procedures, material testing and inspection facilities, calibrated equipments etc. shall be preferred for the work contract.

11. Terms & Conditions

- 11.1 The work completion period is 3 months from the date of issue of the work order.
- 11.2 The offer validity must be minimum 90 days; otherwise it is liable to be rejected.

- 11.3 The offer should also contain the work completion period.
- 11.4 Taxes, if any, shall be specified separately. As this work is intended for R&D, therefore 5% GST will be paid. The necessary GST exemption certificate will be issued by the purchaser.
- 11.5 The installation charges applicable respectively may also be specified.
- 11.6 Any delay which is attributable to the contractor is liable for penalty @ ½ % per week (max. 5%) to be imposed on the contractor.
- 11.7 In case of delay in work completion, supplier may send request letter to concerned authority for extension in work completion period with proper justification for delay in work. Concerned authority may or may not give extension with or without penalty depending on the justification for delay.
- 11.8 Income tax @2% will be deducted from the Suppliers bill.
- 11.9 Contractor may furnish their PAN no. & copy of GST Registration Certificate.
- 11.10 100% payment will be arranged after satisfactory completion of work at AFD and on submission of:

i) Bills in triplicate ii) Advanced stamped receipt iii) Delivery Challan iv) Guarantee Certificate

- 11.11 Min. two workers & a supervisor shall be present at site during the work. During erection & commissioning of the furnace. The supervisor shall be experienced enough for safety (fire & personal) to oversee the site activities.
- 11.12 The upkeep of area is the responsibility of contractor. Any unwanted or extra materials shall be kept at designated area which will be shown by departmental supervisor. For elevated jobs proper Safety Belts shall be used by all workers.
- 11.13 Contractor shall obtain police verification certificate (PVC) for all his employees including his supervisors and workers engaged in the work.
- 11.14 Supplier shall obtain Medical Fitness certificates for all his workers involved in this work.

12. Confidentiality clause

- No party shall disclose any information to any third party concerning the matters under this contract generally. In particular, any conformation identified as “Proprietary” in nature by the disclosing party shall be kept strictly confidentiality 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 of sub-contractor, consultant, adviser or the employees engaged by the

contractor shall not use BARC's name for any publicity purpose through any public media like Press, T.V. or Internet without the prior written approval of BARC.

13. Site Visit

13.1 The contractor shall have to visit the site to comprehend the scope of work. The same will be arranged by the undersigned. The site can be visited from 27/11/2018 to 28/11/2018 between 10.00 hrs to 14.00 hrs on working days only. However, for site visit, prior intimation of at least two working days is necessary for arranging the entry permits.

13.2 **Supplier should have the previous experience of Design, Fabrication, Erection and Commissioning of Ultrasonic Cleaning Systems along with quality assurance plan and shall have to provide documentary evidence for the same while requesting for the site visit. The quotations submitted without site visit and documentary evidences of relevant experience will not be considered under any circumstances.**

13.3 Contractor shall have to carry valid Photo identity card (Driving license, passport, Aadhaar card) while visiting this premises. Failing to bring valid identity cards, vendors will not get access into our premises. Further, entry permits will not be arranged for next dates if vendors unable to visit the site on permitted dates for any reasons. Contractor should not carry any type of electronic items such as mobile, pen drive, camera etc with him/her at the time of visit.

For preparing entry permit, you can contact the undersigned on ph. No. 25594927 or can mail to hsharma@barc.gov.in giving complete details of Firm, name of visitors, occupation/designation, identity proof, PVC details, probable date of visit etc.

14. Quotations are to be on printed letter head / quotation format which should consists of GST number registered with local authority, PAN of the firm etc. The quotation must separately indicate the basic cost, any other changes and applicable taxes. Quotations that are received in computer generated form will be considered as invalid & rejected.

15. Sealed quotations must be forwarded by Registered Post or Speed Post ONLY. Quotations forwarded through any other routes will not be considered.

16. Sealed quotations should be super scribed on the envelope with the reference number of this letter, and should be addressed to and reached by 03/12/2018 (16.00 hrs) to:

Shri Hariom Sharma

TO/D, Technical Services Section,

Atomic Fuels Division

Bhabha Atomic Research Centre,

Trombay, Mumbai-400085

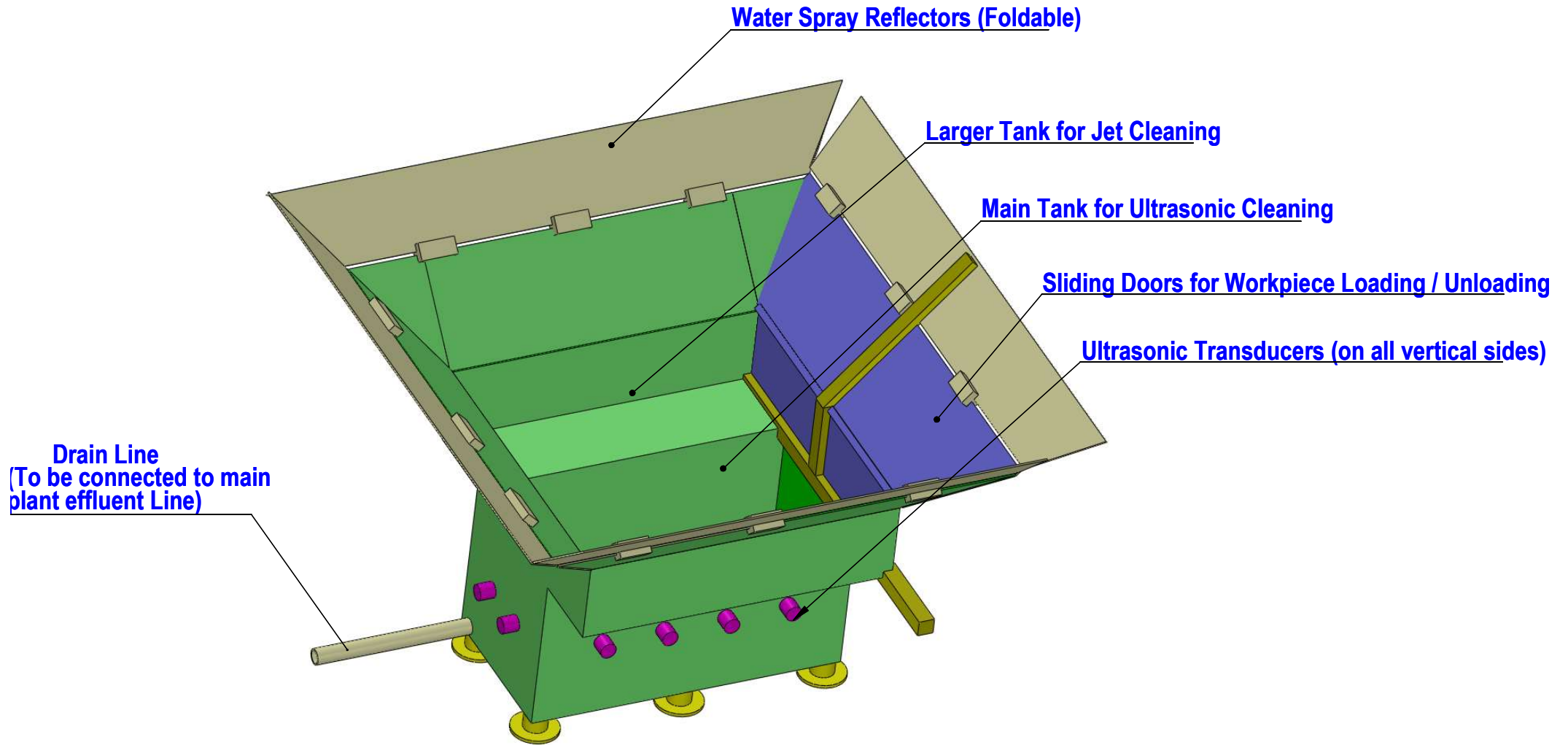
email: hsharma@barc.gov.in

Phone No. – (022) - 25594927

(Hariom Sharma)
TO/D, TSS, AFD

(Surendra Kumar)
SO/H, TSS, AFD
(for & on behalf of The President of India)

encl: as above



Decontamination Tank

