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भारत सरकार  
Government of India  
भाभा परमाणु अनुसंधान केन्द्र  
Bhabha Atomic Research Centre  
रिएक्टर इंजीनियरी प्रभाग  
Reactor Engineering Division

Ref. No.: RED/HTRS/KKP/ 333 /2FE/MF/138405 /2017

Date: 03-08-2017

Dear Sir(s),

Sub: **Procurement of materials, predispatch inspection, supply, installation and guarantee of gas tubing, valves and associated items at R5 shed inside BARC campus, meeting the technical requirements as mentioned in specification HTRS/KKP/2017/09.**

Sealed quotations are invited by Head, HTRS, RED, on behalf of the President of India for the execution of the following job:

Procurement of materials, predispatch inspection, supply, installation and guarantee of gas tubing, valves and associated items at R5 shed inside BARC campus, meeting the technical requirements as mentioned in specification HTRS/KKP/2017/09.

**General Notes:**

- 1) The bidder shall take all the necessary safety precautions during work and they shall be responsible for any damage or accidents. No compensation in any case will be paid by the Department to the bidder.
- 2) The work shall be subject to inspection by the purchaser or his authorised representative. Work shall be conducted under their supervision and to the full extent of satisfaction.
- 3) **The work shall be completed within two calendar months from the receipt of work order.**
- 4) The quotations must reach Head, HTRS, RED, Engg. Hall-7 latest by 21/08/2017. Quotations will be opened on 22/08/2017.
- 5) The above mentioned **REFERENCE NUMBER** and **DATE AND TIME OF OPENING OF BIDS MUST BE CLEARLY MENTIONED ON THE SEALED ENVELOPE** containing the quotation. Offers should be sent by **Speed Post only**.
- 6) Payment will be made as per rules, after the completion of the work to purchaser's satisfaction against submission of original bill in triplicate and advance stamped receipt.
- 7) Income tax @2% and Educational cess as applicable will be deducted from the bill.
- 8) Any delay which is attributable to the contractor is liable for penalty @ ½ % per week (Max 5%).
- 9) Bidder shall mention their GSTN, PAN numbers in the quotation.

- 10) The offer shall be kept open for acceptance for a minimum period of 45 days from the date of opening of the quotation.
- 11) Head, RED reserves the right to accept/reject any or all the quotations received without assigning any reason whatsoever.
- 12) The bidder shall furnish the detailed information regarding whether an ex-employee of BARC is working in their organisation or whether any of their relative is working in DAE/BARC or whether he/she is an ex-employee of DAE/BARC. In case of absence of such information, or wrong information the quotation or contract is likely to be rejected or cancelled.
- 13) Guarantee period of at least one year must be provided for material quality and workmanship.

CONFIDENTIALITY CLAUSES:

I. Confidentiality:

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-bidders, consultants, advisers or the employees engaged by the party with equal force.

II. "Restricted information" categories under Section 18 of the Atomic Energy Act, 1962 and "Official Secrets" under Section 5 of the Official Secrets Act, 1923:-

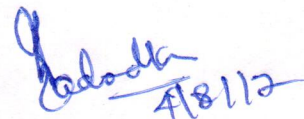
Any contravention of the above-mentioned provisions by any bidder, sub-bidder, consultant, adviser or the employees of a bidder will invite penal consequences under the aforesaid legislation.

III. Prohibition against use of BARC's name without permission for publicity purposes:-

The bidder or sub-bidder, consultant, adviser or the employees engaged by the bidder shall not use BARC's name for any publicity purpose through any public media like Press, Radio, T.V. or Internet without the prior written approval of BARC.

Thanking you,

Yours Sincerely,



(Dr. D.N. Badodkar)

Director RD&DG, Head RED

For and on behalf of the President of India

(The Purchaser)

Enclosures:

Specification (4 pages)

## SPECIFICATION FOR GAS TUBING, VALVES AND ASSOCIATED SYSTEMS

### 1.0 SCOPE

Procurement of materials, fabrication, installation and guarantee of gas tubing, valves and associated items at R5 shed inside BARC campus, meeting the technical requirements as mentioned herewith.

Sl. No.	Item description	Quantity
I	Ball Valve (1/4" Compression Fitting, S.S 316)	10 Nos.
II	Pressure Relief valve (1/4" NPTF, SS316)	2 Nos.
III	Gas Purification Station for Hydrogen	2 Nos.
IV	Double stage High Precision Pressure regulator for hydrogen gas	2 Nos.
V	Glass Tube Type Purge Rotameter	2 Nos.
VI	Tee (1/4" compression fitting, S.S 316)	5 Nos.
VII	Female Run Tee, Female Branch Tee (1/4" S.S 316)	3 Set.
VIII	Union(1/4" compression fitting, S.S 316)	10 Nos.
IX	Adopter (1/4" Compression fitting to 1/2" NPTF & 1/2" NPTM)	10 Set
X	Tube End Cap(10 mm & 1/4", S.S 316)	3 Set
XI	Single line SS clamp for 1/4" tube	10 Set
XII	Nuts & Ferrules Set (1/4" , S.S 316)	20 Set
XIII	Installation of Gas Tubing as per Figure: 1	LS

### 2.0 TECHNICAL REQUIREMENTS

**2.1 Ball Valve:** Material: Stainless Steel-304 with end connection 1/4" compression fitting actuation

**2.1.1** It should have following features.

Features	Description
Inlet & Outlet Connection	1/4" Compression Fitting with SS nut & SS Ferrules
Gas type	H <sub>2</sub> Services
Material	SS304
O Ring & Seat	Teflon, Body : SS 304 Forged/Investment casting
Leakage class	ANSI B 16.104 Class IV
Inspection / testing of valves	API 598
Standard Practice for Leaks Using Bubble Emission Techniques	ASTM E 515

**2.1.2** All the valve parts material & inspection test report should be furnished by the supplier.

**2.2 Pressure Relief valve (SS 316):**

**2.2.1** It should have following features.

Features	Description
Type	Spring Loaded PRV
Connection	1/4" Compression Fitting with SS nut & SS Ferrules
Gas type	H <sub>2</sub> Services
Material	SS 316
Cracking Pressure	5 bar(g)
Cracking Pressure Tolerance	± 5%
Maximum Flow	3 LPM
Seal Material	PTFE suitable for temperature of

	operation
Qualification Certificate	ASME SEC VIII & API 527

2.2.2 Material & relief pressure test certificate should supply.

**2.3 Gas Purification Station for Hydrogen:** The Gas Purification and Controller system is designed to remove moisture, hydrocarbons, oil and other foreign materials form gas streams.

2.3.1 It should contain Moisture Trap: A combination of Indicating Silica gel and Molecular Sieve – for drying the gas in acrylic tube (self – Indicating type)

2.3.2 The system eliminated noise and unaccepted signals of gases in order to obtain peak resolution and peak tailing in the analysis.

2.3.3 The hydrogen gas passes through moisture and hydrocarbons removal filters.

2.3.4 All gas streams are controlled by a constant pressure regulator, the inlet & outlet pressure being displayed on gauge.

2.3.5 The system is wall mounted.

**2.4 Double stage gas regulator for hydrogen gas:**

2.4.1 It should have following features.

Features	Description
Inlet pressure gauge range	16 bar
working pressure (Inlet)	10 bar
Outlet pressure gauges range	5 bar
working pressure (Outlet)	2 bar
Connection port	1/4" NPTF
Precision	0.01 bar

2.4.2 Supplier should furnish calibration test report for hydrogen gas.

**2.5 Glass Tube Type Purge Rotameter:**

2.5.1 It should have following properties:

Properties	Description
Measuring Range	0.1 to 1 LPM
Calibration gas	Nitrogen
End fitting	1/4" Compression fitting with built in flow controller

2.5.2 Supplier should furnish calibration test report for hydrogen gas.

**3.0 PRE DISPATCH INSPECTION REQUIREMENTS**

3.1 Acceptability condition: The supplier will test leak tightness of ball Valve at 8 bar(g) from both side with class IV requirements as per ANSI B 16.104.

3.2 The supplier would test the relief capacity of pressure relief valve at the cracking pressure with tolerance  $\pm 5\%$  .

3.3 All the tests would be carried out in the presence of the purchaser’s representative. Dispatch of the item shall be carried out only when inspection is successfully completed. All items and supplies required for successful inspection is required to be provided by the supplier.

**4.0 Packing and forwarding:** Packing and forwarding amount should not exceed 3% of the basic cost or else original proof for payment of entire charges needs to be furnished. All items will be packed such that the items don’t get damaged during delivery. Any damaged item should be replaced by the supplier free of cost.

4.1 At the time of delivery, the following documents must me provided along with the item:

- 4.1.1 Warranty Certificate (for one year)
- 4.1.2 Delivery challan
- 4.1.3 Tax invoice
- 4.1.4 Advance Stamped Receipt
- 4.1.5 Particulars of bank account of supplier for ECS payment

## **5.0 INSTALLATION REQUIREMENTS**

- 5.1 The item is to be delivered and installed at Lab. Room No.: 76, R-5 shed, Opposite to the BARC Co-operative society located inside BARC campus within 30 days of WO.
- 5.2 Installation of the item requires routing of tubing and other associated details like installation of clamps, purification unit and other equipments and connections as per Figure-1. Tube will be supplied by BARC.
- 5.3 After installation soap bubble leak tightness check will be carried out for each line.
- 5.4 Installation & testing should be finished within 7 working days.

**6.0 GUARANTEE:** One year

## **7.0 NOTE TO BIDDER**

- 7.1 The bidder shall provide item-wise quotation for the items mentioned in article 1.0. Prices on a per piece basis should also be included. If the bidder mentions aggregate price without mentioning the prices for individual pieces on a per piece basis, the bids will be rejected. The bids may also be rejected if the quotation does not mention the prices of all the items.
- 7.2 All the taxes, duties and other government levies shall be clearly mentioned in the offer. The testing, inspection, packing-forwarding-freight and delivery charges if any should be mentioned in the offer.
- 7.3 The bidder must mention the make and product details of the item being offered in their quotation.
- 7.4 **Proof of ability:** The bidder shall provide, along with the quotation, adequate proof of show their capability to execute the job such as copies of the previous purchases orders placed on the executed by the party for the reputed firms (Indian and international). Specific mention should be made of previous supplies made to BARC, along with names and contact details of indenting officers and the purchase order numbers.
- 7.5 As a part of the offer, the bidder shall confirm point by point their acceptance of the various requirements and deviations if any from the specification.
- 7.6 **Delivery date:** Bidders must provide their earliest delivery date after placement of order on them. Offers with shorter delivery periods shall be preferred.
- 7.7 **Order quantity:** The purchaser reserves the right to increase or decrease the order quantity, at the time of placing the purchase order.
- 7.8 Quotations found incomplete in any respect and also deficient in clarity about technical and commercial terms will be summarily rejected.

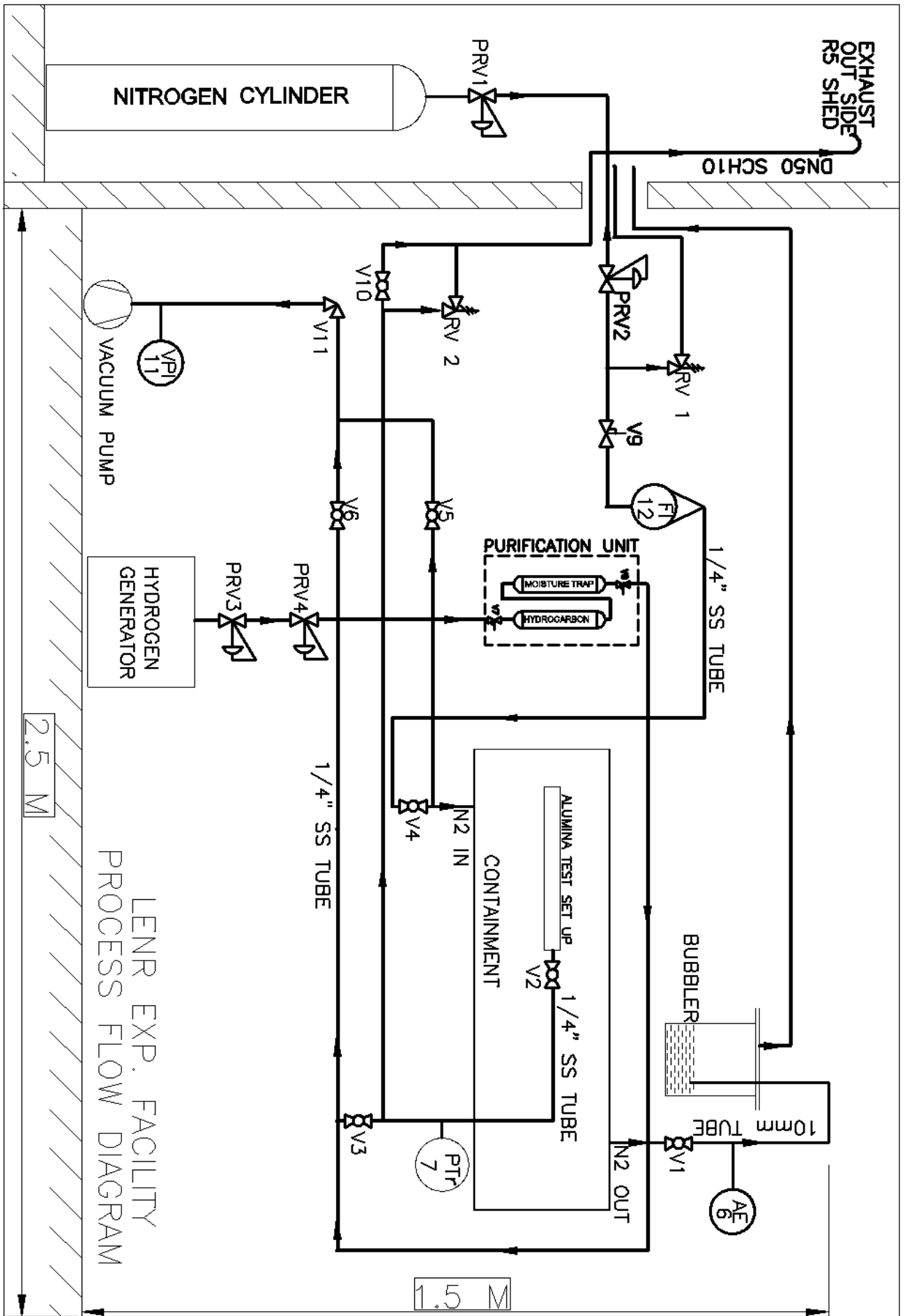


Figure -1: LENR Exp. Facility Process Flow Diagram