

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
ISRO PROPULSION COMPLEX (IPRC)
MAHENDRAGIRI**

**Tender for Design, Engineering, Fabrication, Supply, Installation and
Commissioning of 86 KL Liquid Hydrogen Tank and Associated
Circuits**

Bids to be submitted online

Tender No.: IPRC/PURGP1/IP202200067201 dated 08-12-2022

A. Tender Details

Tender No :	IPRC/PURGP1/IP202200067201
Tender Date :	08-12-2022
Tender Classification:	GOODS
Purchase Entity :	PURGP1
Centre :	ISRO PROPULSION COMPLEX (IPRC)

Design, Engineering, Fabrication, Supply, Installation and Commissioning of 86 KL Liquid Hydrogen Tank and Associated Circuits

This is a two-part bid. Price details shall NOT be mentioned in technical Bid/attachments, failing which the offer will be considered as invalid.

This is a TWO-PART tender i.e. Techno-Commercial Bid (Part-I) and Price Bid (Part-II) shall be submitted separately. All technical and commercial terms and conditions shall be furnished in the Techno Commercial Bid while price shall be indicated only in the Price Bid.

1.Foreign vendors are not permitted to quote.

2.Only Class-I and Class-II Local suppliers as per Make in India Policy are eligible to participate in the bid.

a. The percentage of local content with documentary should be specifically mentioned in the offer. Format for Self Certification under Preference to "MAKE IN INDIA" Policy is attached, without which it will be summarily rejected.

b. Preference will be given to Class-I Local Supplier and in their absence, Class-II Local Supplier will be considered.

3.MSME Preference is applicable only against the claim of the manufacturer and production of documentary evidence by the manufacturers for the registration of particular item under MSME.

4.Last minute clarification on tenders will not be entertained.

5.This is an E Tender. Hence Postal/Fax/Email tenders will not be accepted.

6.Acceptance of Guarantee / Warranty, PBG, SD & L.D are mandatory.

A.1 Tender Schedule

Bid Submission Start Date : **08-12-2022 17:00**

Bid Clarification Due Date : **19-12-2022 10:00**

Bid Submission Due Date : **09-01-2023 10:00**

Bid Opening Date : **09-01-2023 10:05**

Price Bid Opening Date : **12-01-2023 10:00**

B. Tender Attachments

Technical Write-up/Drawings

Document : Annexure 1- 10

Instructions To Vendors

2. GENERAL TERMS AND CONDITIONS:

1. a) Facility of after sales service to be confirmed with details.
b) Permanent Account Number (PAN) allotted by Income-Tax authorities shall be furnished with documentary proof. Otherwise, documentary proof for having applied for PAN should be provided. Also PAN should be in the name of Company/Firm, if quoted by the Company/Firm and in the name of Individual, if quoted by individual.
c) GST No.
d) Local office in Tirunelveli / Nagercoil is preferable.
Note: (b) to (d) are applicable for Indian Companies only.

2. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail.

3. GST where legally leviable and intended to be claimed should be distinctly shown separately in the tender.

4. Guarantee / Warranty period as applicable shall be indicated, along with the quote. Guarantee/Warranty shall commence from the date of installation and acceptance of the complete equipment supplied under the contract/purchase order.

5. If an Indian agent submits bid on behalf of the Principal/OEM, the same Indian agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product

6. In a tender, either the Indian Agent on behalf of the Principal/OEM or Principal/ OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.

7. In case of imported items (stores), Ex-Works/FOB/FCA prices should be indicated. In case of indigenous stores the quotation should be on FOR-Destination / Door delivery basis.

8. In case the vendor falls in the category of Small Scale Industries (SSIs), who are registered with NSIC, Public Sector Undertakings (PSUs) and Micro & Small Enterprises (MSMEs) the same shall be

mentioned in their quote for evaluation.

9. Indian Agents while quoting on behalf of their principals shall attach necessary authorization letter from their Principals along with the bid.

10. IPRC reserves the right to accept or reject any quotation in full or part thereof by recording the reasons.

11. IPRC shall not be responsible for failure of vendors in submitting bids online caused due to technical reasons at vendor end such as network or power failures, computer failure, internet-browser, mistakes / errors in filling the bids on line by vendor etc.

12. ISRO PROPULSION COMPLEX (IPRC) is exempted from payment of Customs Duty under Notification No. 50/2017-Customs dated 30.06.2017 and as amended by Notification No.5/18 Customs dt:25/1/18. For imported items IPRC will provide Customs Duty Exemption Certificate for availing Concessional CD and IGST.

13. Last minute request for the extension of the due date w.r.t. any technical issue at Vendors/Suppliers side will not be considered. You may submit your quotation online well in advance instead of waiting till the last date to ensure that Internet problem and network condition does not cause problem.

14. LIQUIDATED DAMAGES: Delivery is the essence of the contract. Items shall be delivered within stipulated period. If delivery is delayed beyond the stipulated delivery period mentioned in the purchase order or any extension thereof, an amount equal to 0.5% per week shall be recovered, subject to a maximum of 10% of the order value shall be deducted from your bills due.

15. Offers sent through post, telegram, fax, e-mail, courier will not be considered. Partially completed / incomplete tenders shall not be considered.

16. Only authorized dealers/agents or their accredited representatives for original manufacturers have to submit the quotation with documentary evidence.

17. PAYMENT: 100% through RTGS within 30 days from the date of receipt and acceptance of items at our site is the normal payment for Indigenous supply. In the case of direct Import, normal terms of payment are by Sight Draft / Wire Transfer after receipt of items. However, other terms of payment like establishment of Letter of Credit may be considered by the Purchaser on such terms and conditions as may be agreed upon.

18. PERFORMANCE BANK GUARANTEE :

The Supplier shall guarantee the successful and satisfactory performance/commissioning of

equipment/machinery under the conditions specified in the Purchase Order. As a performance security, the SUPPLIER shall furnish a performance bank guarantee (in the prescribed format) from Nationalized Bank/Scheduled Bank for an amount equal to the sum of 3% of the order value ensuring the due performance of equipment/machinery in accordance with all the specifications and terms specified in the Purchase Order herein valid for the period of two months beyond warranty period. On due performance, the performance bank guarantee shall be automatically cancelled and returned to the Supplier within 30 days after expiry of the Warranty period.

19. SECURITY DEPOSIT : Security Deposit @ 3% of order value shall be submitted in the form of DD/FDR duly endorsed in favour of Accounts Officer, IPRC or by way of Bank Guarantee (in the prescribed format) within 30 days after receipt of order and valid up to the successful execution of the order.

20. The goods or material offered should be strictly as per our specifications. Change(s) in specifications, if any, should be clearly indicated by the supplier in his quotation. The supplier should also indicate make/type No. of the materials or equipment offered. Vague terms such as Best Indian, Best Indigenous and Imported make should not be used.

21. The offer should be valid for a minimum period of 120 days from the date of Technical bid opening & 90 days from the date of Price Bid opening (in case of two-part tender).

22. The purchaser shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portions of the quantity offered and the tenderer shall supply the same at the rates quoted.

23. Wherever the tenderer is asked to submit sample for evaluation of tenders, the same shall be submitted along with your quote.

3. STANDARD TERMS AND CONDITIONS (DOS PM:19)

1. Arbitration in the event of any dispute or difference arising under these terms & conditions or any condition contained in the Purchase Order or in connection with this Contract. (except as to any matter the decision of which is specially provided for by these conditions), the same shall be referred to the sole arbitration of the Head of the Purchase Office or of some other person appointed by him, and the dispute further processed in terms of the Arbitration & Conciliation Act, 1996. There will be no objection that the arbitrator is a Government Servant that he had to deal with matter which the Contract relates to or that in the course of his duties as Government Servant has expressed views on all or any of the matters in dispute or difference. The award of the arbitrator shall be final and binding on the parties of this Contract.

2. Corrections, if any, in the quotation must be attested. All amounts shall be indicated both in

words as well as in figures. When there is difference between the amount quoted in words and figures, the amount quoted in words shall prevail.

3. Guarantee: The stores offered should be guaranteed for a minimum period of twelve months against defective stores design, operation or manufacture. For defects noticed during the guarantee period, replacement/repair should be arranged free of cost within a reasonable period of such notification. In cases where our specifications call for a guarantee period more than 12 months specifically, then such a period shall apply.

4. If the arbitrator is a person appointed by the Head of the Purchase Office, In the event of his denying or neglecting or refusing to act, or resigning or being unable to act, for any reason, shall be lawful for the Head of the Purchase Office either to proceed with the reference himself or to appoint another person as arbitrator in place of the outgoing arbitrator subject, as aforesaid, to the Arbitration and Conciliation Act, 1996, and the rules there under and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceeding under the clause. The Arbitrator shall have the power to extend with the consent of the Purchaser and the Contractor the time for making and publishing the award. The venue of arbitration shall be the place as the Purchaser in his absolute discretion may determine. Work under the Contract shall, if reasonably possible, continue during Arbitration Proceedings.

5. If the arbitrator is the Head of the Purchase Office :

(i) In the event of his being transferred or vacating his office by resignation or otherwise, it shall be lawful for his successor in office either to proceed with the reference himself for to appoint another person as arbitrator, or In the event of his being unwilling or unable to act for any reason, it shall be lawful for the Head of the Purchase Office to appoint another person as arbitrator.

6. Late Tenders will not be considered.

7. Packing and Forwarding: The Contractor will be held responsible for the stores being sufficiently and properly packed for transport by rail, road, sea or air, to withstand transit hazards and ensure safe arrival at the destination. The packing and marking of packages shall be done by and at the expense to the Contractor.

8. Payment terms are full payment within 30 days from the date of receipt and acceptance of material ordered. Our Bankers are State Bank of India, Mahendragiri.

9. Prices are required to be quoted according to the units indicated in the annexed tender form. When quotations are given in terms of units other than those specified in the tender form, relationship between the two systems of unit must be furnished.

10. Quotation should be valid for at least 90 days from the date of opening of the tender.

11. Sales Tax and/or other duties/levies, where legally leviable and intended to be claimed, should be distinctly shown separately in the tender.

12. Specifications: Stores offered should strictly conform to Purchaser's specifications. Deviations, if any, shall be clearly indicated by the tenderer in his quotation. The tenderer should also indicate the Make/Type number of the stores offered and provide catalogues, technical literature and samples, wherever necessary, along with the quotation. Test certificate, wherever necessary, should be forwarded along with supplies. Wherever options are called for in our specifications, the tenderer should address all such options, wherever specifically mentioned by us, and the tenderer could suggest changes to specifications with appropriate response for the same. Even in such case, the tenderer should state why he cannot meet our specifications and why he is suggesting the change.

13. Successful tenderer will have to furnish in the form of a Bank Guarantee or in any other form as called for by the Purchaser towards adequate security for the materials/property provided by the purchaser for the due execution for the Contract.

14. TERMS AND CONDITIONS OF TENDER:

Price quoted should be on the basis of FOR IPRC, Mahendragiri or delivery at site

The Purchaser will not pay separately for transit insurance, and the risk and cost during transit shall be exclusively the responsibility of the Contractor and the purchaser shall pay only for such stores as are actually received in good condition in accordance with the Contract.

15. The Contractor shall at all times indemnify the Purchaser against all claims which may be in respect of the stores for infringement of any right protected by Patent, Registration or design or Trade Mark and shall take all risks of accidents or damage which may cause a failure of the supply from whatever causes arising and the entire responsibility for the sufficiency of all means used by him for the fulfillment of the Contract.

16. The Purchaser reserves the right to accept or reject any quotation fully or partly without assigning any reason thereof.

17. The time for and the date of delivery of the stores stipulated in the Purchase Order shall be deemed to be the essence of the Contract and delivery must be completed not later than the date specified therein, and failure to do so, without adequate justification, may involve cancellation of the Contract at the discretion of the Purchaser.

18. Where counter terms and conditions/printed or cyclostyled conditions of sale have been offered by the tenders, the same shall not be deemed to have been accepted by the Purchaser unless the Purchaser's specific written acceptance thereof is obtained.

4. STANDARD TERMS AND CONDITIONS (DOS PM: 20)

1. ACCEPTANCE OF STORES:

(a) The stores shall be tendered by the Contractor for inspection at such places as may be specified by the purchaser at the Contractor's own risk, expense and cost.

(b) It is expressly agreed that the acceptance of the stores Contracted for, is subject to final approval by the purchaser, whose decision shall be final.

(c) If, in the opinion of the purchaser, all or any of the stores do not meet the performance or quality requirements specified in the Purchase Order, they may be either rejected or accepted at a price to be fixed by the purchaser and his decision as to rejection and the prices to be fixed shall be final and binding on the Contractor.

(d) If the whole or any part of the stores supplied are rejected in accordance with Clause No. 1 (c) above, the purchaser shall be at liberty, with or without notice to the Contractor, to purchase in the open market at the expense of the Contractor stores meeting the necessary performance and quality Contracted for in place of those rejected, provided that either the purchase, or the agreement to purchase, from another supplier is made within six months from the date of rejection of the stores as aforesaid.

2. DELIVERY:

(a) The time for and the date of delivery of the stores stipulated in the Purchase Order shall be deemed to be the essence of the Contract and delivery must be completed on or before the specified dates.

(b) Should the Contractor fail to deliver the stores or any consignment thereof within the period prescribed for such delivery, the purchaser shall be entitled at his option either.

(i) to recover from the Contractor as agreed liquidated damages and not by way of penalty, a sum of 0.5% per week of the price of any stores which the Contractor has failed to deliver as aforesaid or during which the delivery of such store may be in arrears subject to a minimum of 10%, or

(ii) to purchase from elsewhere, without notice to the Contractor on the account and at the risk of the Contractor, the stores not delivered or others of a similar description (where others exactly complying with the particulars, are not, in the opinion of the purchaser, readily procurable, such opinion being final) without cancelling the Contract in respect of the consignment (s) not yet due for delivery, or

(iii) to cancel the Contract or a portion thereof and if so desired to purchase or authorise the purchase of stores not so delivered or others of a similar description (where others exactly if complying with the particulars are not, in the opinion of the purchaser, readily procurable, such opinion final) at the risk and cost of the Contractor.

In the event of action being taken under sub-clause (ii) & (iii) of clause 2 (b) above, the Contractor shall be liable for any loss which the purchaser may sustain on that account, provided that the re-purchase or if there is an agreement to re-purchase then such agreement is made within six months from the date of such failure. But the Contractor shall not be entitled to any gain on such re-purchase made against default. The manner and method of such re-purchase shall be at the discretion of the purchaser, whose decision shall be final. It shall not be necessary for the purchaser to serve a notice of such re-purchase on the defaulting Contractor. This right shall be without prejudice to the right of the purchaser to recover damages for breach of Contract by the Contractor.

3. DISPATCH:

The Contractor is responsible for obtaining a clear receipt from the Transport Authorities specifying the goods dispatched. The consignment should be dispatched with clear Railway Receipt/Lorry Receipt. If sent in any other mode, it shall be at the risk of the Contractor. Purchaser will take no responsibility for short deliveries or wrong supply of goods when the same are booked on "said to contain" basis. Purchaser shall pay for only such stores as are actually received by them in accordance with the Contract.

4. ERECTION OF PLANT & MACHINERY:

Wherever erection of a plant or machinery is the responsibility of the Contractor as per the terms of the Contract and in case the Contractor fails to carry out the erection as and when called upon to do so within the period specified by the purchaser, the purchaser shall have the right to get the erection done through any source of his choice. In such an event, the Contractor shall be liable to bear any additional expenditure that the purchaser is liable to incur towards erection. The Contractor shall, however, not be entitled to any gain due to such an action by the purchaser.

5. EXTENSION OF TIME:

As soon as it is apparent that the Contract dates cannot be adhered to, an application shall be sent by the Contractor to the purchaser. If failure, on the part of the Contractor, to deliver the stores in proper time shall have arisen from any cause which the purchaser may admit as reasonable ground for an extension of the time (and his decision shall be final) he may allow such additional time as he considers it to be justified by circumstances, of the case without prejudice to the purchaser's right to recover liquidated damages under clause 2 thereof.

6. GUARANTEE & REPLACEMENT:

- (a) The Contractor shall guarantee that the stores supplied shall comply fully with the specifications laid down, for material, workmanship and performance.
- (b) For a period of twelve months after the acceptance of the stores, if any defects are discovered therein or any defects therein found to have developed under proper use, arising from faulty stores design or workmanship, the Contractor shall remedy such defects at his own cost provided he is called upon to do so within a period of 14 months from the date of acceptance thereof by the purchaser who shall state in writing in what respect the stores or any part thereof are faulty.
- (c) If, in the opinion of the purchaser, it becomes necessary to replace or renew any defective stores such replacement or renewal shall be made by the Contractor free of all costs to the purchaser, provided the notice informing the Contractor of the defect is given by the purchaser in this regard within the said period of 14 months from the date of acceptance thereof.
- (d) Should the Contractor fail to rectify the defects, the purchaser shall have the right to reject or repair or replace at the cost of the Contractor the whole or any portion of the defective stores.
- (e) The decision of the purchaser notwithstanding any prior approval or acceptance or inspection thereof on behalf of the purchaser, as to whether or not the stores supplied by the Contractor are defective or any defect has developed within the said period of 12 months or as to whether the nature of the defects requires renewal or replacement, shall be final, conclusive and binding on the Contractor.
- (f) To fulfill guarantee conditions outlined in clause 6 (a) to (e) above, the Contractor shall, at the option of the purchaser, furnish a Bank Guarantee (as prescribed by the purchaser) from a Bank approved by the purchaser for an amount equivalent to 10% of the value of the Contract along with first shipment documents. On the performance and completion of the Contract in all respects, the Bank Guarantee will be returned to the Contractor without any interest.
- (g) All the replacement stores shall also be guaranteed for a period of 12 months from the date of arrival of the stores at purchaser site.
- (h) Even while the 12 months guarantee applies to all stores, in case where a greater period is called for by our specifications then such a specification shall apply in such cases the period of 14 months referred to in para 6 (b) & (c) shall be the guarantee period plus two months.

7. PACKING FORWARDING & INSURANCE:

The Contractor will be held responsible for the stores being sufficiently and properly packed for

transport by rail, road, sea or air to withstand transit hazards and ensure safe arrival at the destination. The packing and marking of packages shall be done by and at the expense of the Contractor. The purchaser will not pay separately for transit insurance, all risks in transit being exclusively of the Contractor and the Purchaser shall pay only for such stores as are actually received in good condition in accordance with the Contract.

8. PRICES:

Tender offering firm prices will be preferred. Where a price variation clause is insisted upon by a tenderer, quotation with a reasonable ceiling should be submitted. Such offers should invariably be supported by the base price taken into account at the time of tendering and also the formula for any such variation/s.

9. REJECTED STORES:

Rejected stores will remain at destination at the Contractor risk and responsibility. If instructions for their disposal are not received from the Contractor within a period of 14 days from the date of receipt of the advice of rejection, the purchaser or his representative has, at his discretion, the right to scrap or sell or consign the rejected stores to Contractor's address at the Contractor's entire risk and expense, freight being payable by the Contractor at actuals.

10. SECURITY DEPOSIT(SD):

The Supplier shall provide Bank Guarantee for an amount equivalent to the 3% (Three PERCENT) of the total Order value towards Security Deposit for the due performance of the Purchase Order. The Security Deposit can be submitted in the form of Bank Guarantee (format enclosed) or Fixed Deposit receipt obtained from any Nationalized/ Scheduled Bank and it shall be kept valid for a period of sixty days beyond the date of completion of the Purchase Order. This Security Deposit will be returned to the Supplier only upon successful completion of all the contractual obligations or shall be adjusted/ forfeited against non-fulfilment of any of the contractual obligations. The Security Deposit shall be submitted within 30 days from the date of receipt of Purchase Order.

11. TEST CERTIFICATE:

Wherever required, test certificates should be sent along with the dispatch documents.

12. The Purchaser shall mean the President of India or his successors or assigns.

5. Format for Self Certification under Preference to MAKE IN INDIA Policy CERTIFICATE

1. In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017,

as amended from time to time and as applicable on the date of submission of tender, we hereby certify that we M/s. _____(supplier name) are local supplier meeting the requirement of minimum percentage of Local content _____ (class I/Class II) as defined in above orders for the materials against Tender No. _____

2. Details of locations at which local value addition will be made is as follows:

3. We also understand, false declarations will be in breach of the Code in Integrity under Rule 175(1) (i) (h) of the General Financial Rule for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

4. Seal and Signature of Authorized Signatory

6. Conditions for BIDDER FROM A COUNTRY WHICH SHARES LAND BORDER WITH INDIA

1. Any false declaration and non-compliance of the above would be a ground for immediate rejection of offer or termination of the contract and further legal action in accordance with the laws.

2. As per the Rule 144(xi) of General Financial Rule, 2017, any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the competent authority ie., Department for Promotion of Industry and Internal Trade (DPIIT).

3. Hence, Vendors or Agents of a Vendor (Indian or others) from a country sharing border with India shall submit copy of valid registration made with Department for Promotion of Industry and Internal Trade (DPIIT), Government of India along with the tender mandatorily, without which the offer will be treated as invalid.

4. Model Certificate for Tenders

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered

5. Validity of Registration: Registration should be valid at the time of submission of bids and should be valid at the time of placement of order.

C. Bid Templates

C.1 Technical Bid - Design, Engineering, Fabrication, Supply, Installation and Commissioning of 86 KL Liquid Hydrogen Tank and Associated Circuits

1. Cryogenic Tank : Design, Engineering, Fabrication, Supply, Installation and Commissioning of 86 KL Liquid hydrogen tank and its flow components and Instruments as per drawing no CTF/TCT/LH2/RTK295/01 enclosed as pdf in Annexure - 1

Item specifications for Cryogenic Tank

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Tag number	RTK 295	Yes / No / Explain		
2	Inner Vessel details		-		
3	Fluid medium	Liquid Hydrogen (LH2)	Yes / No / Explain		
4	Gross geometrical volume	86 m3	Yes / No / Explain		
5	Net useable volume	To be specified by supplier during detailed engineering review.	Yes / No / Explain		
6	Maximum allowable working pressure (MAWP)/ Design pressure	1.6 MPa (a)	Yes / No / Explain		
7	Expected operating pressure range	13 KPa (a) to 1.5 MPa (a)	Yes / No / Explain		
8	Operating temperature range	15 to 350 K	Yes / No / Explain		
9	Design temperature	310K (310K shall be taken for the design calculation of plate thickness)	Yes / No / Explain		
10	Type of thermal insulation	Super insulation (Double-walled construction with evacuated multi layer insulation in the annular jacket)	Yes / No / Explain		
11	Leak tightness across inner and outer vessels	Better than $1E-8$ Pa.m3/s	Yes / No / Explain		

12	Expected periodicity of evacuation of jacket	5 years	Yes / No / Explain		
13	Vacuum pressure in the jacket (at atmospheric temperature)	< 5 Pa	Yes / No / Explain		
14	Design code	Section VIII, Division 1 of Boiler & Pressure Vessel (BPV) code of American Society of Mechanical Engineers (ASME) Cold Stretching /Pressure strengthening is not permitted.	Yes / No / Explain		
15	Allowable external pressure on inner vessel	0.15 MPa (a)	Yes / No / Explain		
16	Safety system to prevent inner vessel from overpressure due to loss of vacuum in jacket and fire engulfed condition	Supplier shall suitably size the safety relief devices and the three ways manual valve RVM 298 as per code and specify during Detail engineering review. The Supplier will separately procure and install the safety relief devices at the Purchaser's site before commissioning. The size of the nozzle mentioned in the specification for installing safety relief devices shall be verified by results of calculations during Detail engineering review.	Yes / No / Explain		
17	Flow rate of LH2 expelled	≤11 kg/s	Yes / No / Explain		
18	Pressurant GH2 flow rate at 300 K	1.2 kg/s. (Diffuser in the tank shall be designed for this flow rate)	Yes / No / Explain		
19	Outer Vessel details		-		

20	Design Code of outer vessel	Compressed Gas Association CGA or Equivalent (To be specified in the offer)	Yes / No / Explain		
21	External pressure (on outer vessel)	0.14 MPa(a)	Yes / No / Explain		
22	Allowable internal pressure of the outer vessel	0.15 MPa(a)	Yes / No / Explain		
23	Permissible evaporation loss rate of the tank	0.8 % per day	Yes / No / Explain		
24	Design temperature of outer vessel	344K (344K shall be taken for the design calculation of plate thickness)	Yes / No / Explain		
25	Design Collapse pressure	0.04 MPa (g)	Yes / No / Explain		
26	Safety system to prevent vacuum jacket from overpressure	Supplier shall be suitably size the rupture disc device and install in the outer vessel	Yes / No / Explain		
27	Wind speed	Survival: 200 km/h with 3 s gust Operating: 120 km/h	Yes / No / Explain		
28	Seismic zone	Zone 3 of IS 1893	Yes / No / Explain		
29	Acceleration load Note: The design consideration regarding dynamic loads shall account for the horizontal mode transportation of vertical tanks. The speed limit for road transportation on trailer shall be defined.	0.7 g in vertically upward direction 1.7 g in vertically downward direction 0.3 g in transverse(horizontal) direction 2 g in longitudinal (horizontal) direction	Yes / No / Explain		
30	MATERIAL OF CONSTRUCTION		-		
31	Inner vessel	ASTM A 240 304L/ 316L/ 321	Yes / No / Explain		
32	Outer vessel	ASTM A 515/ ASTM A 516 Gr 55/ 60/ 65/ 70	Yes / No / Explain		
33	Pipes	ASTM A 312 TP 304L/ 316L	Yes / No / Explain		

34	Pipe fittings	ASTM A 403 WP 304L/ 316L	Yes / No / Explain		
35	Flanges	ASTM A 182 F 304L/316L/321	Yes / No / Explain		
36	Bolts	ASTM A 193 B8/ ASTM A320 B8	Yes / No / Explain		
37	Nuts	ASTM A 194 8	Yes / No / Explain		
38	Quality Assurance Plan (QAP):	Provisional QAP is given in Table 1.1, 1.2 & 1.3. QAP shall be finalized during detail Engineering review.	Yes / No / Explain		
39	Confirm	Confirm compliance with the Technical specification as per Annexure 1 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 1 to this Tender Enquiry.	Yes / No / Explain		

Document : Annexure-1

2. Cryogenic Tank : Pneumatically Actuated Cryogenic Globe valves (Vacuum Jacketed and Extended Stem)

Item specifications for Cryogenic Tank

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Tag No	As given in Table 2.1	Yes / No / Explain		
2	Quantity	As given in Table 2.1	Yes / No / Explain		

3	Pattern	Globe	Yes / No / Explain		
4	Fluid medium	As given in Table 2.1	Yes / No / Explain		
5	Working temperature range	As given in Table 2.1	Yes / No / Explain		
6	Nominal Size	As given in Table 2.1	Yes / No / Explain		
7	MAWP/pressure rating	As given in Table 2.1	Yes / No / Explain		
8	Application	Shut-off/ isolation/ on-off	Yes / No / Explain		
9	Type	As given in Table 2.1: VJ -Vacuum Jacket, ES - Extended Stem, BS-Bellow sealed.	Yes / No / Explain		
10	Valve coefficient	11d*d for ≤ 900 class, where d is valve diameter in inch. To be specified by the bidder in the quotation	Yes / No / Explain		
11	Actuation	Electro - Pneumatic Actuator.	Yes / No / Explain		
12	Permissible leakage rate across body	1E-07 Pa-m3/s for bellows-sealed globe valves.	Yes / No / Explain		
13	Permissible leak rate across seat	1E-06 Pa-m3/s for resilient-seated globe valves	Yes / No / Explain		
14	Guaranteed cycles of operation	5,000	Yes / No / Explain		
15	End connection	As given in Table 2.1. The acronyms shall be read as follows: BW: Butt welding ends as per ASME B 16.9/ 16.25. In case of valves with resilient seat, pipe stubs as per ASME B 36.19/ 36.10 of 150 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding.	Yes / No / Explain		

16	Style of construction:		-		
17	Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
18	Bonnet	Bolted or screwed to body with spring-energized seals (Such as Helicoflex, Enerseal, etc).	Yes / No / Explain		
19	Stem	Non-rotating, rising stem	Yes / No / Explain		
20	Stem (dynamic) seal	By double gland packing with tell-tale indicator pressure gauge between the 2 packings for the valves for Hydrogen/ Helium medium Bellows sealed valves: Bellows as primary seal gland packing as secondary seal. Also appropriate stopper for protection against excess torque shall be provided.	Yes / No / Explain		
21	Plug	Renewable (replaceable) from stem	Yes / No / Explain		
22	Seat	Renewable from body with seat insert. (Alternatively, seat may be integral with body provided that it is harder than the plug insert.)	Yes / No / Explain		
23	Flow direction	Flow to open and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
24	Material of construction:		-		
25	Body and Bonnet	a) ASTM A 182 F 304L/ 316L/ 321 for nominal size \leq DN 40 b) ASTM A 351 CF 3/ 3M for nominal size \geq DN 50	Yes / No / Explain		

26	Stem, plug, seat	ASTM A479 304L/ 316L/ 321	Yes / No / Explain		
27	Bellows	Stainless steel 316L/ 316Ti/ 321/ Hastealloy C 276/ Inconel 600/ 625/ Incoloy	Yes / No / Explain		
28	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/ PCTFE (Kel-F)	Yes / No / Explain		
29	Plug and seat inserts	a) PCTFE (Kel-F) / Poly-carbonate/ Vespel/ PEEK for MAWP ≤ 20 Mpa b) ASTM A 479 304L/ 316L with # 6 stellite for MAWP > 20 MPa.	Yes / No / Explain		
30	Pipe stub	ASTM A 312 TP Grade same as that of the body for stainless steel valves	Yes / No / Explain		
31	Bolts	ASTM A 320 B 8	Yes / No / Explain		
32	Nuts	ASTM A 194 8	Yes / No / Explain		
33	Note	1. The valves shall be either inherently anti-static or provided with anti- static features. 2. Dual grade (SS304/304L or 316/316L) or duplex is also acceptable wherever applicable.	Yes / No / Explain		
34	Design code	BS 5352/ BS 6364/ API 6-D/ ASME B16.34	Yes / No / Explain		
35	Test code	BS 6755/ BS5155/API598/ API 607/ ASME B16.34	Yes / No / Explain		
36	ACTUATOR:		-		
37	Type of Actuator	Linear actuator, piston/ diaphragm type, single acting, spring return, fail- safe	Yes / No / Explain		
38	Normal position	As given in Table 2.1	Yes / No / Explain		

39	Command gas	Gaseous Nitrogen at 0.6 to 0.7 MPa(g) (Shall be specified by the bidder in case of deviation)	Yes / No / Explain		
40	Response time (for both opening and closing strokes)	As given in Table 2.1 If required, flow (volume) booster and quick exhaust valve shall be incorporated to achieve the specified response time.	Yes / No / Explain		
41	End connection for command gas	DN 8 (1/4") NPT (F) as per ASME B 1.20.1.	Yes / No / Explain		
42	Material	Carbon steel (enamel-painted)	Yes / No / Explain		
43	Test	The response time taken for opening and closing of the valve shall be evaluated.	Yes / No / Explain		
44	STATUS SWITCHES	The valve shall be provided with a pair of non-contact type proximity status switches to indicate the "opened/ closed" status of the valve. The status switches shall be mounted on the valve with such proper arrangement that does not require any adjustment/ alignment for the specified cycles of operation of the valve.	Yes / No / Explain		
45	Type of status switch	Inductive type, 3-wire configuration	Yes / No / Explain		
46	Rated operating distance	5 mm	Yes / No / Explain		
47	Operating voltage	10 to 30 V DC	Yes / No / Explain		
48	Switching frequency	800 Hz	Yes / No / Explain		
49	Reverse polarity protection	To be provided	Yes / No / Explain		
50	Short circuit protection	By pulsing	Yes / No / Explain		

51	Voltage drop	3 V	Yes / No / Explain		
52	Operating current	0 to 200 mA	Yes / No / Explain		
53	No-load supply current	≤ 20 mA	Yes / No / Explain		
54	Indication of the switching state	By all-direction LED	Yes / No / Explain		
55	Connection	2 m long PVC cable	Yes / No / Explain		
56	Housing material	Austenitic stainless steel 304L/ 316L/ 304/ 316/ 321	Yes / No / Explain		
57	Protection class	IP 67	Yes / No / Explain		
58	Hazardous area certification	The switches shall be intrinsically safe for Hydrogen environment in conformance with Ex ia IIC T1, Zone 1 of IEC/ ATEX. The certificate of conformance to this effect from the accredited agency shall be provided.	Yes / No / Explain		
59	Make and model	To be specified by the bidder in the quotation	Yes / No / Explain		
60	Suggested make	a. Rockwell Automation, USA b. Omron, USA c. Longvale Ltd, England d. Euroswitch, England e. Pepperl + Fuchs, Germany	Yes / No / Explain		
61	Quality assurance plan:	Provisional QAP is given in Table 2.2. QAP shall be finalized during detail Engineering review.	Yes / No / Explain		
62	Spares:	a) Two sets of spares like gaskets, seals and `o' rings shall be provided for each valve. b) One set of valve stem assembly with bellows for each size shall be provided.	Yes / No / Explain		

63	Confirm	Confirm compliance with the Technical specification as per Annexure 2 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 2 to this Tender Enquiry.	Yes / No / Explain		
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Document : Annexure - 2

3. Cryogenic Tank : Smart absolute Pressure transmitters, Smart absolute Vacuum transmitters, Smart differential pressure transmitters, Pressure Gauge, level gauge and Electrical connectors

Item specifications for Cryogenic Tank

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Confirm	Confirm compliance with the Technical specification as per Annexure 3 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 3 to this Tender Enquiry.	Yes / No / Explain		

Document : Annexure-3

4. Cryogenic Tank : Manual Globe valve (Bellow Sealed)

Item specifications for Cryogenic Tank

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Tag No	As given in Table 4.1	Yes / No / Explain		
2	Fluid medium	As given in Table 4.1	Yes / No / Explain		
3	Working temperature range	As given in Table 4.1	Yes / No / Explain		
4	Nominal Size	As given in Table 4.1	Yes / No / Explain		
5	MAWP/ pressure rating	As given in Table 4.1	Yes / No / Explain		
6	Application	Isolation	Yes / No / Explain		
7	Type	As given in Table 1 : BS-Bellow sealed	Yes / No / Explain		
8	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
9	Actuation	Hand operated (manual)	Yes / No / Explain		
10	Permissible leakage rate across body	1E-07 Pa-m ³ /s for bellows-sealed globe valves.	Yes / No / Explain		
11	Permissible leak rate across seat	1E-06 Pa-m ³ /s for resilient-seated globe valves	Yes / No / Explain		
12	Guaranteed cycles of operation	5,000	Yes / No / Explain		

13	End connection	As given in Table 1. The acronyms shall be read as follows: BW: Butt welding ends as per ASME B 16.9/ 16.25. In case of valves with resilient seat, pipe stubs as per ASME B 36.19/ 36.10 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding.	Yes / No / Explain		
14	Style of construction:		-		
15	Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
16	Bonnet	Bolted or screwed to body with spring-energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non-rotating type.	Yes / No / Explain		
17	Stem (dynamic) seal	Bellows sealed valves: Bellows as primary seal gland packing as secondary seal. Also appropriate stopper for protection against excess torque shall be provided.	Yes / No / Explain		
18	Plug	Renewable (replaceable) from stem	Yes / No / Explain		
19	Seat	Renewable from body with seat insert (Alternatively, seat may be integral with body provided that it is harder than the plug insert.)	Yes / No / Explain		
20	Flow direction	Flow to open.	Yes / No / Explain		
21	Shut off	Bi- directional	Yes / No / Explain		
22	Material of construction:		-		

23	Body and Bonnet	ASTM A 182 F 304L/ 316L/ 321	Yes / No / Explain		
24	Stem, plug, seat	ASTM A479 304L/ 316L/ 321	Yes / No / Explain		
25	Bellows	Stainless steel 316L/ 316Ti/ 321/ Hastelloy C 276/ Inconel 600/ 625/ Incoloy	Yes / No / Explain		
26	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/ PCTFE (Kel-F) /BAM certified graphite	Yes / No / Explain		
27	Plug and seat inserts	PCTFE (Kel-F) / Poly-carbonate/ Vespel/ PEEK for MAWP ≤ 20 MPa	Yes / No / Explain		
28	Pipe stub	ASTM A 312 TP Grade same as that of the body for stainless steel valves	Yes / No / Explain		
29	Bolts	ASTM A 320 B 8	Yes / No / Explain		
30	Nuts	ASTM A 194 8	Yes / No / Explain		
31	Design code	BS 5352/ BS 6364/ API 6-D/ ASME B16.34	Yes / No / Explain		
32	Test code	BS 6755/ BS5155/API598/ API 607/ ASME B16.34	Yes / No / Explain		
33	Quality Assurance Plan:	Provisional QAP is given in Table 4.2. QAP shall be finalized during detail Engineering review.	Yes / No / Explain		
34	Spares:	a) Two sets of spares like gaskets, seals and o' rings shall be provided for each valve b) One set of valve stem assembly with bellows for each size shall be provided.	Yes / No / Explain		

35	Confirm	Confirm compliance with the Technical specification as per Annexure 4 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 4 to this Tender Enquiry.	Yes / No / Explain		
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Document : Annexure-4

5. Cryogenic Tank : Manual Cryogenic Globe Valve (Vacuum jacketed and Extended Stem)

Item specifications for Cryogenic Tank

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Tag No	As given in Table 5.1	Yes / No / Explain		
2	Fluid medium	As given in Table 5.1	Yes / No / Explain		
3	Working temperature range	As given in Table 5.1	Yes / No / Explain		
4	Nominal Size	As given in Table 5.1	Yes / No / Explain		
5	MAWP/Pressure rating	As given in Table 5.1	Yes / No / Explain		
6	Application	Isolation	Yes / No / Explain		
7	Type	As given in Table 5.1 BS – Bellow sealed ES- extended stem	Yes / No / Explain		
8	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
9	Actuation	Hand operated (manual)	Yes / No / Explain		

10	Permissible leakage rate across body	1E-07 Pa-m3/s	Yes / No / Explain		
11	Permissible leak rate across seat	1E-06 Pa-m3/s for resilient-seated globe valves	Yes / No / Explain		
12	Permissible leak rate from atmosphere to jacket in case of vacuum-jacketed globe valves	1E-08 Pa-m3/s	Yes / No / Explain		
13	Guaranteed cycles of operation	5,000	Yes / No / Explain		
14	Length of stem extension	As per BS 6364	Yes / No / Explain		
15	Allowable heat in-leak rate referred to the condition of LN2	0.9 W for DN 15 2.0 W for DN 25 4.2 W for DN 40 6.1 W for DN 50 9.3 W for DN 65 13.1 W for DN 80 18.8 W for DN 100 27.1 W for DN 125 36.5 W for DN 150 58.5W for DN 200	Yes / No / Explain		
16	End connection	As given in Table 5.1. The acronyms shall be read as follows: BW: Butt welding ends as per ASME B 16.9/ 16.25. In case of valves with resilient seat, pipe stubs as per ASME B 36.19/ 36.10 of 150 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding.	Yes / No / Explain		
17	Style of construction:		-		
18	Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		

19	Bonnet	Bolted or screwed to body with spring-energized seals (Such as Helicoflex, Enerseal, etc) The body-bonnet joint shall be located on top of the stem extension such that the seal experiences near-ambient temperature. The vacuum jacket collar shall be located below the body-bonnet joint (to preclude the possibility of vacuum in the jacket collapsing due to leakage of process fluid through body-bonnet joint). The stem extension shall be as per design Code. The stem shall be of non-rotating type.	Yes / No / Explain		
20	Stem (dynamic) seal	Bellows sealed valves: Bellows as primary seal gland packing as secondary seal. Also appropriate stopper for protection against excess torque shall be provided.	Yes / No / Explain		
21	Plug	Renewable (replaceable) from stem	Yes / No / Explain		
22	Seat	Renewable from body with seat insert (Alternatively, seat may be integral with body provided that it is harder than the plug insert.)	Yes / No / Explain		
23	Flow direction	Flow to open and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
24	Shut off	Bi- directional	Yes / No / Explain		
25	Material of construction:		-		
26	Body and Bonnet	ASTM A182F304 L/316L/321	Yes / No / Explain		

27	Stem, plug, seat	ASTM A479 304L/ 316L/ 321	Yes / No / Explain		
28	Bellows	Stainless steel 316L/ 316Ti/ 321/ Hastealloy C 276/ Inconel 600/ 625/ Incoloy	Yes / No / Explain		
29	Gland packing	PTFE/ Glass-filled PTFE	Yes / No / Explain		
30	Plug and seat inserts	PCTFE (Kel-F) / Poly-carbonate for MAWP ≤ 20 MPa	Yes / No / Explain		
31	Vacuum jacket pipe	ASTM A 312 TP 304L/ 316L/321	Yes / No / Explain		
32	Pipe stub	ASTM A312 TP 304L/ 316L	Yes / No / Explain		
33	Bolts	ASTM A 193 B 8	Yes / No / Explain		
34	Nuts	ASTM A 194 8	Yes / No / Explain		
35	Design code	BS 5352/ BS 6364/ API 6-D/ ASME B16.34	Yes / No / Explain		
36	Test code	BS 6755/ BS5155/ BS 6364/ API598/ API 607/ ASME B16.34	Yes / No / Explain		
37	Quality Assurance Plan:	Provisional QAP is given in Table 5.2. QAP shall be finalized during detail Engineering review.	Yes / No / Explain		
38	Spares	a) Two sets of spares like gaskets, seals and `o` rings shall be provided for each valve b) One set of valve stem assembly with bellows for each size shall be provided.	Yes / No / Explain		

39	Confirm	Confirm compliance with the Technical specification as per Annexure 5 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 5 to this Tender Enquiry.	Yes / No / Explain		
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Document : Annexure-5

6. Cryogenic Tank : Non-return Valves

Item specifications for Cryogenic Tank

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Tag number	As given in Table 6.1	Yes / No / Explain		
2	Quantity	As given in Table 6.1	Yes / No / Explain		
3	Fluid medium	As given in Table 6.1	Yes / No / Explain		
4	Working temperature range	As given in Table 6.1	Yes / No / Explain		
5	Nominal size	As given in Table 6.1	Yes / No / Explain		
6	Pressure rating	As given in Table 6.1	Yes / No / Explain		
7	Cracking pressure (Minimum pressure required to open the valve along intended flow direction)	As given in Table 6.1	Yes / No / Explain		

8	End connection	BW: Butt welding ends as per ASME B 16.9/ 16.25. In case of valves with resilient seat, pipe stubs as per ASME B 36.19/ 36.10 of 150 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding.	Yes / No / Explain		
9	Permissible leakage rate across body	1E-7 Pa-m ³ /s for valves for fluid medium of liquid Hydrogen, liquid Oxygen, liquid Nitrogen, gaseous Hydrogen and gaseous Helium	Yes / No / Explain		
10	Permissible leakage rate across seat at a pressure differential of 50 % of the cracking pressure along flow (forward) direction	No Bubbles (Test Duration As per API 598)	Yes / No / Explain		
11	Permissible leakage rate across seat at a pressure differential of 0.2 MPa(d) along non-flow (reverse) direction	1E-7 Pa-m ³ /s for valves for fluid medium of liquid Hydrogen, liquid Oxygen, liquid Nitrogen, gaseous Hydrogen and gaseous Helium As per API 598 or Rate A as per BS 6755 Part 1	Yes / No / Explain		
12	Style of construction:		-		
13	Lift mechanism	Lift plug type, globe pattern	Yes / No / Explain		
14	Cover	Screwed or bolted to body with suitable seals	Yes / No / Explain		
15	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
16	Material of construction		-		
17	Body, cover	ASTM A 182 F 304L/ 316L/ 321	Yes / No / Explain		
18	Stem, plug	ASTM A 479 304L/ 316L/ 321	Yes / No / Explain		

19	Plug insert/ trim	For pressure rating class ≤ 1500 : PCTFE (Kel-F)/ Poly-carbonate (for working temperature < 75 K), Vespel	Yes / No / Explain		
20	Bolts	ASTM A 320 B 8	Yes / No / Explain		
21	Nuts	ASTM A 194 8	Yes / No / Explain		
22	Body seals	(Kel-F)/ Poly-carbonate (for working temperature < 75 K), PTFE, Vespal or Helicoflex	Yes / No / Explain		
23	Quality Assurance Plan:	Provisional QAP is given in Table 6.2. QAP shall be finalized during detail Engineering review.	Yes / No / Explain		
24	Spares	a) Two sets of spares like gaskets, seals and `o` rings shall be provided for each valve. b) One set of valve assembly with bellows/ springs for each size shall be provided.	Yes / No / Explain		
25	Confirm	Confirm compliance with the Technical specification as per Annexure 6 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 6 to this Tender Enquiry.	Yes / No / Explain		

Document : Annexure-6

7. Cryogenic Tank : Super Insulated (SI) Piping with Cryogenic Filter

Item specifications for Cryogenic Tank

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Configuration of SI piping	Super insulated (SI) pipelines as per P&I diagram CTF/TCT/LH2/ RTK295/01 which is attached as pdf in Annexure -1.	Yes / No / Explain		
2	Insulation	Evacuated multi-layer Super Insulation (SI) with Aluminised or silverised Mylar /Aluminum foil with Glass fibre. Spacers, suspensions shall be of suitable low-thermal-conductivity materials.	Yes / No / Explain		
3	Service fluid	As per Table 7.1	Yes / No / Explain		
4	Working temperature	As per Table 7.1	Yes / No / Explain		
5	Max. Allowable Working Pressure	As per Table 7.1	Yes / No / Explain		
6	Design code	ASME B 31.3 (Process Piping Code)	Yes / No / Explain		
7	Heat-in leak rate from ambient to fluid through insulation in straight pipe section (referred to conditions of Liquid Nitrogen (LN2) in inner pipe line)	Pipeline size : Heat Influx (W/m length) DN 15 : 0.5 DN 25 : 0.6 DN 50 : 1 DN 150 : 3.5 The detailed design calculation for Heat-in-leak rate for each segment shall be provided by the supplier	Yes / No / Explain		
8	Nominal size and schedule of inner pipe	As per Table 7.1	Yes / No / Explain		

9	Nominal size and schedule of jacket (outer) pipe	The size of outer pipe for S.I pipe line segments shall be designed and specified by the supplier. The outer pipe shall be designed for 2 bar (a) external pressure with full vacuum inside.	Yes / No / Explain		
10	Approximate Length (Exact length shall be finalized during detail Engineering review)	As per Table 7.1	Yes / No / Explain		
11	The relief pressure of vacuum pump out port cum seal off valve in the vacuum jacket of the each piping segment	> 0.15 MPa (a)	Yes / No / Explain		
12	Pipes & Pipe fittings	Seamless for size \leq DN250 For the outer jacket, Seamless \leq DN250 shall be selected for straight lengths. Other outer jackets may be of seam-welded type.	Yes / No / Explain		
13	Helium Leak Tightness		-		
14	I) Individual joints/bellows of SI pipe lines:		-		
15	a) Inner pipe & Jacket pipe weld joints	$\leq 1 \times 10^{-8}$ Pa m ³ /s	Yes / No / Explain		
16	b) Thread / flange joint, etc (other than weld joint)	$\leq 1 \times 10^{-6}$ Pa m ³ /s	Yes / No / Explain		
17	c) Bellows	$\leq 1 \times 10^{-8}$ Pa m ³ /s	Yes / No / Explain		
18	II) Global leak of each pipe line segment (Each vacuum cavity):		-		
19	a) Atmosphere to vacuum jacket	$\leq 1 \times 10^{-8}$ m ³ Pa/s	Yes / No / Explain		
20	b) Inner pipe to vacuum jacket	$\leq 1 \times 10^{-8}$ m ³ Pa/s	Yes / No / Explain		

21	c) Stabilized vacuum level in jacket (insulation) at atmospheric temp.	<1 Pa	Yes / No / Explain		
22	Material of construction:		-		
23	Pipes (Core and jacket pipes)	ASTM A 312 TP 304 L / 316L / 321	Yes / No / Explain		
24	Bellows	SS 321/316 Ti /Hastalloy /Inconel	Yes / No / Explain		
25	Bellow Sleeves, pipe stubs	SS304L / 316L/ 321	Yes / No / Explain		
26	Butt weld fittings	ASTM A 403 WP 304 L / 316L	Yes / No / Explain		
27	Flanges and socket weld fittings	ASTM A 182 F 304 L / 316L	Yes / No / Explain		
28	Bolts	ASTM A 320 B 8	Yes / No / Explain		
29	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
30	Dimensional standards:		-		
31	Pipes	ASME B 36.19	Yes / No / Explain		
32	Flanges	ASME B 16.5	Yes / No / Explain		
33	Socket weld pipe fittings	ASME B 16.11	Yes / No / Explain		
34	Butt weld pipe fittings	ASME B 16.9	Yes / No / Explain		
35	Quality Assurance Plan:	Provisional QAP is given in Table 7.2 & 7.3. QAP shall be finalized during detail Engineering review.	Yes / No / Explain		

36	Spares	<p>a) Two sets of spares like gaskets, seals and `o` rings shall be provided for each valve.</p> <p>b) Two numbers of vacuum valve & vacuum seal off valves of each size used shall be provided.</p> <p>c) Two numbers of bellows for each pipe size of inner and outer pipe lines shall be provided.</p> <p>d) Aluminised or silverised Mylar /Aluminum foil with Glass fibre. Spacers, suspensions shall be provided for servicing of SI pipe lines for next five years.</p>	Yes / No / Explain		
37	Confirm	<p>Confirm compliance with the Technical specification as per Annexure 7 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 7 to this Tender Enquiry.</p>	Yes / No / Explain		
38	TECHNICAL SPECIFICATION OF VACUUM-JACKETED CRYOGENIC FILTERS		-		
39	Tag number	As given in Table 9.1	Yes / No / Explain		
40	Quantity	As given in Table 9.1	Yes / No / Explain		
41	Fluid medium	As given in Table 9.1	Yes / No / Explain		

42	Working temperature range	As given in Table 9.1	Yes / No / Explain		
43	Nominal inlet and outlet pipe size	As given in Table 9.1	Yes / No / Explain		
44	Maximum allowable working pressure	As given in Table 9.1	Yes / No / Explain		
45	Degree of filtration (absolute)	As given in Table 9.1	Yes / No / Explain		
46	Nominal inlet temperature	As given in Table 9.1	Yes / No / Explain		
47	Nominal inlet pressure	As given in Table 9.1	Yes / No / Explain		
48	Nominal flow rate	As given in Table 9.1	Yes / No / Explain		
49	Permissible pressure drop at working flow rate with 50% clogging condition	As given in Table 9.1	Yes / No / Explain		
50	Filtration area	To be specified by the bidder in the quotation along with the relevant calculations for 50% clogging condition	Yes / No / Explain		
51	End connection	BW: Butt welding ends as per ASME B 16.9/ 16.25	Yes / No / Explain		
52	Permissible leakage rate across the body (external)	1E-7 Pa-m ³ /s	Yes / No / Explain		
53	Insulation of Cryogenic Filter	Double-walled construction with multi-layer (Aluminised or Silverised Mylar) vacuum insulation. Safety device, vacuum seal-off valve for measurement and evacuation shall be provided separately for dome portion. Shell portion's vacuum cavity shall be connected to pipe-stub.	Yes / No / Explain		
54	Permissible heat in-leak rate referred to the standard condition of liquid Nitrogen	size : Heat influx (W/m length) DN 50 : 6.1 DN 1002.5 DN 1503.5	Yes / No / Explain		

55	Style of construction:		-		
56	Body	<p>Y or T type with access to replace the filter element cartridge without removing the filter en-masse from pipeline. The vacuum jacket of filter assembly shall be provided with a suitable flange for access to filter element.</p> <p>Filters are preferred in bi-directional type.</p>	Yes / No / Explain		
57	Filter element	Sintered wire mesh type, supported on perforated cartridge	Yes / No / Explain		
58	Material of construction of Cryogenic Filter:		-		
59	Body material	<p>ASTM A182F 304 L / 316L / 321 ASTM A351 CF3 /CF3M</p> <p>a. Pipes of size \leq DN 300 shall be seamless and sizes \geq DN 350 shall be of welded or seamless.</p> <p>b. The parent/ raw materials (pipes, caps, pipe fittings, etc) used shall be subject to 100 % ultrasonic test.</p> <p>c. The welding joints (including longitudinal seam joint of welded pipes) shall be subject to 100 % radiographic test.</p> <p>d. The drawings are to be specifically reviewed the Department before fabrication.</p>	Yes / No / Explain		
60	Mesh	Stainless steel 304L/ 316L/ 321	Yes / No / Explain		

61	Internal seals	PCTFE/ Poly-carbonate for filters with lower limit of working temperature range < 75 K Viton for top dome for vacuum sealing	Yes / No / Explain		
62	Pipes for Filter	ASTM A312 TP 304L/ 316L/321	Yes / No / Explain		
63	Bolts for Filter	ASTM A 320 B 8	Yes / No / Explain		
64	Nuts for Filter	ASTM A 194 8	Yes / No / Explain		
65	Quality Assurance Plan for Cryogenic Filter:	Provisional QAP is given in Table 9.2. QAP shall be finalized during detail Engineering review.	Yes / No / Explain		
66	Spares for Cryogenic Filter	a) Two sets of spares like gaskets, seals and `o` rings shall be provided for each filter. b) One set of filter assembly shall be provided.	Yes / No / Explain		
67	Confirm for Cryogenic Filter	Confirm compliance with the Technical specification as per Annexure 9 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 9 to this Tender Enquiry.	Yes / No / Explain		

Document : Annexure- 7&9

8. Cryogenic Tank : Safety Relief Valves & Rupture Discs

Item specifications for Cryogenic Tank

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Tag number	As given in Table 8.1	Yes / No / Explain		
2	Quantity	As given in Table 8.1	Yes / No / Explain		
3	Fluid medium	As given in Table 8.1	Yes / No / Explain		
4	Working temperature range	As given in Table 8.1	Yes / No / Explain		
5	Set pressure	As given in Table 8.1	Yes / No / Explain		
6	Flow temperature	As given in Table 8.1	Yes / No / Explain		
7	Minimum required gas flow capacity	As given in Table 8.1	Yes / No / Explain		
8	Orifice designation (area)	As given in Table 8.1	Yes / No / Explain		
9	Type	As given in Table 8.1 (Conventional spring loaded/ balanced bellows/ pilot operated)	Yes / No / Explain		
10	Extent of lift	Full lift	Yes / No / Explain		
11	Over-pressure	≤ 10 % of set pressure	Yes / No / Explain		
12	Blow-down	≤ 7 % of set pressure	Yes / No / Explain		
13	Permissible leakage rate across seat	As per API 527	Yes / No / Explain		
14	End Connection		-		
15	Flanged	Raised Face (RF) flanges with serration for Pressure rating class ≤ 1500 as per ASME B 16.5.	Yes / No / Explain		
16	Material of construction:		-		
17	Body, bonnet	ASTM A 351 CF3/3M/8/8M (for conventional & bellow balanced valves)	Yes / No / Explain		

18	Nozzle	ASTM A182F304/304L/316/316L	Yes / No / Explain		
19	Disc insert	PCTFE/ Vespel (for set pr.< 15 MPa & op. temp. <75 K)	Yes / No / Explain		
20	Disc	ASTM A182F304/304L/316/316L	Yes / No / Explain		
21	Guide	ASTM A 297 Gr HE	Yes / No / Explain		
22	Bellows (for valves of balanced bellow construction)	Stainless steel 316L/316Ti/ 321/	Yes / No / Explain		
23	Spring	Stainless steel 316L	Yes / No / Explain		
24	Bolts	ASTM A 320 B 8	Yes / No / Explain		
25	Nuts	ASTM A 194 8	Yes / No / Explain		
26	Design code	API 526/ ASME Section VIII, Division /CGA-S-1.2, 2009	Yes / No / Explain		
27	Quality Assurance Plan:	Provisional QAP is given in Table 8.2. QAP shall be finalized during detail Engineering review	Yes / No / Explain		
28	Spares:	a) Two sets of spares like gaskets, seals and `o` rings shall be provided for each valve.	Yes / No / Explain		
29	Technical Specification of Rupture Discs		-		
30	Tag number of Rupture Disc	As given in Table 8.3	Yes / No / Explain		
31	Quantity of Rupture Disc	As given in Table 8.3	Yes / No / Explain		
32	Size	As given in Table 8.3	Yes / No / Explain		
33	Fluid medium of Rupture Disc	As given in Table 8.3	Yes / No / Explain		
34	Working temperature range of Rupture Disc	As given in Table 8.3	Yes / No / Explain		
35	Burst pressure	As given in Table 8.3	Yes / No / Explain		

36	Flow temperature of Rupture Disc	As given in Table-8.3	Yes / No / Explain		
37	Type of Rupture Disc	Scored metal, pre-torqued, rupture disc devices, with hinge design to withstand full vacuum, along with safety heads, studs and nuts. Safety head should be capable of placing between standard ASME flanges.	Yes / No / Explain		
38	Mode of buckling	To be specified by the bidder in the quotation (forward/reverse)	Yes / No / Explain		
39	Minimum required flow gas capacity of Rupture Disc	As given in Table-8.3	Yes / No / Explain		
40	Orifice diameter of Rupture Disc	To be sized and specified by the bidder in the quotation	Yes / No / Explain		
41	Manufacturing range	0%	Yes / No / Explain		
42	Burst tolerance	± 5 %	Yes / No / Explain		
43	Operating pressures / Burst pressure(OP/BP ratio)	90%	Yes / No / Explain		
44	Material of construction of Rupture Disc:		-		
45	Disc of Rupture Disc	Austenitic Stainless Steel/ Inconel	Yes / No / Explain		
46	Safety head of Rupture Disc	ASTM A 182 F 304L/ 316L/ 321	Yes / No / Explain		
47	Studs of Rupture Disc	ASTM A 320 B 8	Yes / No / Explain		
48	Nuts of Rupture Disc	ASTM A 194 8	Yes / No / Explain		
49	Quality Assurance Plan for Rupture Discs:	Provisional QAP is given in Table 8.4. QAP shall be finalized during detail Engineering review	Yes / No / Explain		

50	Accessories:	The outlet flange of the safety head shall be provided with a tell tale indicator provision required for checking in-situ the burst disc integrity. The end connection of the tell tale indicator shall be 1/4" NPT (F). A bourdon type pressure gauge with suitable range of dial size 50 mm shall be provided in the tell-tale port.	Yes / No / Explain		
51	Spares for Rupture Discs:	a) One set of safety head, studs & nuts for each size shall be provided.	Yes / No / Explain		
52	Confirm	Confirm compliance with the Technical specification as per Annexure 8 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 8 to this Tender Enquiry.	Yes / No / Explain		

Document : Annexure-8

9. Cryogenic Tank : Pneumatic Actuated Globe valve (Bellow Sealed)

Item specifications for Cryogenic Tank

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Tag No	As given in Table 10.1	Yes / No / Explain		
2	Quantity	As given in Table 10.1	Yes / No / Explain		

3	Pattern	Globe	Yes / No / Explain		
4	Fluid medium	As given in Table 10.1	Yes / No / Explain		
5	Working temperature range	As given in Table 10.1	Yes / No / Explain		
6	Nominal Size	As given in Table 10.1	Yes / No / Explain		
7	MAWP/pressure rating	As given in Table 10.1	Yes / No / Explain		
8	Application	Shut-off/ isolation/ on-off	Yes / No / Explain		
9	Type	As given in Table 10.1	Yes / No / Explain		
10	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
11	Actuation	Electro - Pneumatic Actuator.	Yes / No / Explain		
12	Permissible leakage rate across body	1E-07 Pa-m3/s for bellows-sealed globe valves.	Yes / No / Explain		
13	Permissible leak rate across seat	1E-06 Pa-m3/s for resilient-seated globe valves	Yes / No / Explain		
14	Guaranteed cycles of operation	5,000	Yes / No / Explain		
15	End connection	As given in Table 10.1.	Yes / No / Explain		
16	Style of construction:		-		
17	Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
18	Bonnet	Bolted or screwed to body with spring-energized seals (Such as Helicoflex, Enerseal, etc).	Yes / No / Explain		
19	Stem	Non-rotating, rising stem	Yes / No / Explain		

20	Stem (dynamic) seal	Bellows sealed valves: Bellows as primary seal gland packing as secondary seal. Also appropriate stopper for protection against excess torque shall be provided.	Yes / No / Explain		
21	Plug	Renewable (replaceable) from stem	Yes / No / Explain		
22	Seat	Renewable from body with seat insert. (Alternatively, seat may be integral with body provided that it is harder than the plug insert.)	Yes / No / Explain		
23	Flow direction	Flow to open and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
24	Material of construction:		-		
25	Body and Bonnet	ASTM A 182 F 304L/ 316L	Yes / No / Explain		
26	Stem, plug, seat	ASTM A479 304L/ 316L/ 321	Yes / No / Explain		
27	Bellows	Stainless steel 316L/ 316Ti/ 321/ Hastelloy C 276/ Inconel 600/ 625/ Incoloy	Yes / No / Explain		
28	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/ PCTFE (Kel-F)	Yes / No / Explain		
29	Plug and seat inserts	PCTFE (Kel-F) / Poly-carbonate/ Vespel/ PEEK ASTM A 479 304L/ 316L with # 6 stelliting ASTM A 479 304L/ 316L with # 6 stelliting	Yes / No / Explain		
30	Pipe stub	ASTM A 312 TP Grade same as that of the body for stainless steel valves	Yes / No / Explain		
31	Bolts	ASTM A 320 B 8 for stainless steel valves	Yes / No / Explain		

32	Nuts	ASTM A 194 8 for stainless steel valves	Yes / No / Explain		
33	Note:	1. The valves shall be either inherently anti-static or provided with anti-static features. 2. Dual grade (SS304/304L or 316/316L) or duplex is also acceptable wherever applicable.	Yes / No / Explain		
34	Design code	BS 5352/ BS 6364/ API 6-D/ ASME B16.34	Yes / No / Explain		
35	Test code	BS 6755/ BS5155/API598/ API 607/ ASME B16.34	Yes / No / Explain		
36	ACTUATOR:		-		
37	Type of Actuator	Linear actuator, piston/ diaphragm type, single acting, spring return, fail-safe	Yes / No / Explain		
38	Normal position	As given in Table 10.1	Yes / No / Explain		
39	Command gas	Gaseous Nitrogen at 0.6 to 0.7 MPa(g) (Shall be specified by the bidder in case of deviation)	Yes / No / Explain		
40	Response time (for both opening and closing strokes)	As given in Table 10.1 If required, flow (volume) booster and quick exhaust valve shall be incorporated to achieve the specified response time.	Yes / No / Explain		
41	End connection for command gas	DN 8 (1/4") NPT (F) as per ASME B 1.20.1.	Yes / No / Explain		
42	Material	Carbon steel (enamel-painted)	Yes / No / Explain		
43	Test	The response time taken for opening and closing of the valve shall be evaluated.	Yes / No / Explain		

44	STATUS SWITCHES	The valve shall be provided with a pair of non-contact type proximity status switches to indicate the "opened/ closed" status of the valve. The status switches shall be mounted on the valve with such proper arrangement that does not require any adjustment/ alignment for the specified cycles of operation of the valve.	Yes / No / Explain		
45	Type of Status Switches	Inductive type, 3-wire configuration	Yes / No / Explain		
46	Rated operating distance	5 mm	Yes / No / Explain		
47	Operating voltage	10 to 30 V DC	Yes / No / Explain		
48	Switching frequency	800 Hz	Yes / No / Explain		
49	Reverse polarity protection	To be provided	Yes / No / Explain		
50	Short circuit protection	By pulsing	Yes / No / Explain		
51	Voltage drop	3 V	Yes / No / Explain		
52	Operating current	0 to 200 mA	Yes / No / Explain		
53	No-load supply current	≤ 20 mA	Yes / No / Explain		
54	Indication of the switching state	By all-direction LED	Yes / No / Explain		
55	Connection	2 m long PVC cable	Yes / No / Explain		
56	Housing material	Austenitic stainless steel 304L/ 316L/ 304/ 316/ 321	Yes / No / Explain		
57	Protection class	IP 67	Yes / No / Explain		

58	Hazardous area certification	The switches shall be intrinsically safe for Hydrogen environment in conformance with Ex ia IIC T1, Zone 1 of IEC/ ATEX. The certificate of conformance to this effect from the accredited agency shall be provided.	Yes / No / Explain		
59	Make and model	To be specified by the bidder in the quotation	Yes / No / Explain		
60	Suggested make	a. Rockwell Automation, USA b. Omron, USA c. Longvale Ltd, England d. Euroswitch, England e. Pepperl + Fuchs, Germany	Yes / No / Explain		
61	Quality assurance plan:	Provisional QAP is given in Table 10.2. QAP shall be finalized during detail Engineering review.	Yes / No / Explain		
62	Spares:	a) Two sets of spares like gaskets, seals and `o' rings shall be provided for each valve. b) One set of valve stem assembly with bellows for each size shall be provided.	Yes / No / Explain		
63	Confirm	Confirm compliance with the Technical specification as per Annexure 10 to this Tender Enquiry. Deviation, if any, from the Tender Enquiry specification shall be explicitly spelt out in the Remarks column. In the absence of such remark, it will be presumed that the Bidder agrees to comply with each and every aspect of Technical specification as per Annexure 10 to this Tender Enquiry.	Yes / No / Explain		

Common Specifications (Applicable for all items)

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	As per technical Specification of Annexure 1 to Annexure 10		-		
2	Confirm the procurement of components and instruments from the specified vendors in the tender documents.		-		
3	Details of flow components decided by the supplier shall be explicitly mentioned in the quotation.		-		

Supporting Documents required from Vendor

1. Catalogue of all flow components and instruments from the approved subvendors related to the procured items shall be provided along with the quotation.

2. Bidder should have carried out design, fabrication, testing & supply of super-insulated cryogenic tanks for Liquid hydrogen service with at least 40 m3 volume and 0.8 MPa inner vessel design pressure.

3. The bidder shall provide details of previous purchase orders/ TPI reports/client acceptance reports as evidence for previous supply of Super insulated Cryogenic tanks and super insulated circuits.

4. Bidder shall provide the clientele specifying the clients to whom the vendor has supplied similar cryogenic tanks indicating their address, telephone, fax, email, contact person, etc.

5. A completed technical description of the tank offered shall be furnished. Technical deviations, if any, from the tender specification shall be explicitly indicated in the quotation.

6. Wall thicknesses of the shells and dished ends of the inner and outer vessels of the tank

7. Overall dimensions (outside diameter and length of the inner and outer vessels)

8. Approximate mass of the tank

9. Thermal mass of the tank for chill-down

10. A detailed profile of the bidder, in terms of the design and engineering expertise, machineries for fabrication, infra-structure, quality management system, human resources inventory, financial soundness, etc shall be provided in the quotation.

11. The list of sub-vendors from whom the raw materials and bought-out flow components and instruments are sourced.

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	Before transportation, all the nozzles shall be kept closed using blind flanges and the tank to be kept pressurized at 0.10 MPa (g) with Gaseous Nitrogen.	Yes / No / Explain	
2	Validity of Offer (specify)	Yes / No / Explain	
3	Delivery Period (specify)	Yes / No / Explain	
4	Delivery Terms: Normal delivery terms - FOR Destination (i.e., IPRC, Mahendragiri)	Yes / No / Explain	
5	Payment Terms: 100% within 30 days after receipt and acceptance of items (No advance payment is acceptable). Specify your Payment Terms.	Yes / No / Explain	
6	Security Deposit: The Supplier shall provide Bank Guarantee for an amount equivalent to the 3% (THREE PERCENT) of the total Order value towards Security Deposit for the due performance of the Purchase Order. The Security Deposit can be submitted in the form of Bank Guarantee or Fixed Deposit Receipt obtained from any Nationalized/ Scheduled Bank and it shall be kept valid for a period of sixty days beyond the date of completion of the Purchase Order. This Security Deposit will be returned to the Supplier only upon successful completion of all the contractual obligations or shall be adjusted/ forfeited against non-fulfilment of any of the contractual obligations. The Security Deposit shall be submitted within 30 days from the date of receipt of Purchase Order.	Yes / No / Explain	
7	Confirm: Conditions for BIDDER FROM A COUNTRY WHICH SHARES LAND BORDER WITH INDIA	Yes / No / Explain	

8	Liquidated Damages: The delivery period / completion period shall be the essence of the Purchase Order. If the Supplier fails to meet delivery date within the time specified above or any extension thereof, the Department will recover from the Supplier as Liquidated Damages (LD) a sum of 0.5% of the total order value for each calendar week of delay subject to a maximum of 10% of the total order value. Confirm your acceptance.	Yes / No / Explain	
9	Name of PRINCIPAL, Address, Contact No, E-mail Id etc. (specify):	Yes / No / Explain	
10	Name of INDIAN AGENT, Address, Contact No, E-mail Id etc. (specify):	Yes / No / Explain	
11	Currency quoted (specify)	Yes / No / Explain	
12	Warranty / Guarantee Period: (specify)	Yes / No / Explain	
13	Taxes and other costs, if any: (Specify).	Yes / No / Explain	
14	Performance Bank Guarantee: Performance Bank Guarantee (PBG) for 3% of the order value shall be submitted along with your Invoice/prior to final payment. It shall be valid till the warranty/ guarantee period and shall have an additional claim period of 60 days.	Yes / No / Explain	
15	Percentage of Local Content with documentary proof: (specify)	Yes / No / Explain	
16	If MSME, provide documentary proof: (specify)	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
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1	Cryogenic Tank : Design, Engineering, Fabrication, Supply, Installation and Commissioning of 86 KL Liquid hydrogen tank and its flow components and Instruments as per drawing no CTF/TCT/LH 2/RTK295/01 enclosed as pdf in Annexure - 1	1.00 Nos.				
2	Cryogenic Tank : Pneumatically Actuated Cryogenic Globe valves (Vacuum Jacketed and Extended Stem)	1.00 Lumsm				
3	Cryogenic Tank : Smart absolute Pressure transmitters, Smart absolute Vacuum transmitters, Smart differential pressure transmitters, Pressure Gauge, level gauge and Electrical connectors	1.00 Lumsm				
4	Cryogenic Tank : Manual Globe valve (Bellow Sealed)	1.00 Lumsm				

5	Cryogenic Tank : Manual Cryogenic Globe Valve (Vacuum jacketed and Extended Stem)	1.00 Lumsm		-		
6	Cryogenic Tank : Non-return Valves	1.00 Lumsm		-		
7	Cryogenic Tank : Super Insulated (SI) Piping with Cryogenic Filter	1.00 Lumsm		-		
8	Cryogenic Tank : Safety Relief Valves & Rupture Discs	1.00 Lumsm		-		
9	Cryogenic Tank : Pneumatic Actuated Globe valve (Bellow Sealed)	1.00 Lumsm		-		

Common charges (Applicable for all items)

P & F	
Freight	
TPI charges (%)	
Testing charges (%)	
Other charges if any (%)	
3. Other Charges in Price (If any)	
1. Other Charges in Price (If any)	

D. Free Issue Material (FIM) Details

FIM Readiness Date : 20-12-2022

SI No	FIM Item Name	Size if applicable	Unit	Quantity	Value
1	SURFACE TEMPERATURE SENSORS	TP-018	Nos.	4.00	80000.00
2	FLUID TEMPERATURE SENSORS	TP-198	Nos.	7.00	350000.00