

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
VIKRAM SARABHAI SPACE CENTRE (VSSC)
THIRUVANANTHAPURAM**

Tender for Fuel Cell Test Module

Bids to be submitted online

Tender No.: VSSC/PURCHASE UNIT III (SPRE)/VS202400470401 dated 15-10-2024

A. Tender Details

Tender No :	VSSC/PURCHASE UNIT III (SPRE)/VS202400470401
Tender Date :	15-10-2024
Tender Classification:	GOODS
Purchase Entity :	PURCHASE UNIT III (SPRE)
Centre :	VIKRAM SARABHAI SPACE CENTRE (VSSC)

Fuel Cell Test Module

This tender is proposed as a DOMESTIC PUBLIC TENDER. This tender is restricted only to Class-I and Class-II Local Suppliers as defined under DPIIT Order dtd 16/09/2020- Preference to Make in India Order-2017 Revision. Non-Local Suppliers need not quote. Foreign OEMs/Agents quoting on behalf of Foreign OEMs are not permitted to quote. High Sea Sales Quotes not permitted. The bids shall be in INR only.

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/Price bid related documents template. Uploading price details anywhere else other than the price-bid/Price bid related documents template shall lead to unconditional rejection of the tender. Please make note of the same.

Technical Bids will be opened at the scheduled due date & time. No further intimation will be sent in this regard. The schedule for price bid opening shown is only indicative. Price bids will only be opened in the case of parties who have been techno-commercially accepted

A.1 Tender Schedule

Bid Submission Start Date :	16-10-2024 16:30
Bid Clarification Due Date :	30-10-2024 14:30
Bid Submission Due Date :	29-11-2024 14:00
Bid Opening Date :	29-11-2024 14:01
Price Bid Opening Date :	11-12-2024 14:00

B. Tender Attachments

NA

Instructions To Vendors

1. PROFORMA FOR INSTRUCTIONS TO TENDERERS AND TERMS & CONDITIONS OF TENDER (IG)

1. (a) All available technical literature, catalogues and other data in support of the specifications and details of the items should be furnished along with the offer.

(b) Samples, if called for, should be submitted free of all charges by the tenderer and the Purchaser shall not be responsible for any loss or damage thereof due to any reason whatsoever. In the event of nonacceptance of tender, the tenderer will have to remove the samples at his own expense.

(c) Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensional details are available the same should also be indicated in your offer.

(d) Specifications: Stores offered should strictly confirm to our specifications. Deviations, if any, should 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 quotations. Test Certificates, wherever necessary, should be forwarded along with supplies. Wherever options have been called for in our specifications, the tenderer should address all such options. Wherever specifically mentioned by us, the tenderer could suggest changes to specifications with appropriate response for the same.

2. (a) All available technical literature, catalogues and other data in support of the specifications and details of the items should be furnished along with the offer.

(b) Samples, if called for, should be submitted free of all charges by the tenderer and the Purchaser shall not be responsible for any loss or damage thereof due to any reason whatsoever. In the event of nonacceptance of tender, the tenderer will have to remove the samples at his own expense.

(c) Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensional details are available the same should also be indicated in your offer.

(d) Specifications: Stores offered should strictly confirm to our specifications. Deviations, if any, should 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 quotations. Test Certificates, wherever necessary, should be forwarded along with supplies. Wherever options have been called for in our specifications, the tenderer should address all such options. Wherever specifically mentioned by us, the tenderer could suggest changes to specifications with appropriate response for the same.

3. 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. (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.

4. As a Government of India Department, this office is exempted from payment of Octroi and similar local levies. Tenderers shall ensure that necessary Exemption Certificates are obtained by them from the Purchase Officer concerned to avoid any payment of such levies.

5. a) Your offer should be valid for 90 days from the date of opening of the tender.

b) 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 sets of units must be furnished.

6. DESPATCH: The Contractor is responsible for obtaining a clear receipt from the Transport Authorities specifying the goods despatched. The consignment should be despatched 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.

7. d) The term "Purchase Order" shall mean the communication signed on behalf of the Purchaser by an Officer duly authorised intimating the acceptance on behalf of the Purchaser on the terms and conditions mentioned or referred to in the said communication accepting the tender or offer of the Contractor for supply of stores or plant, machinery or equipment or part thereof.

8. 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 any other period or as to whether the nature of defects requires renewal or replacement, shall be final, conclusive and binding on the Contractor.

(f) To fulfill guarantee conditions outlined in (a) to (e) above, the Contractor shall, at the option of the Purchaser, furnish a Bank Guarantee (as prescribed by the Purchaser)

9. 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.

10. Preference will be given to those tenders offering supplies from ready stocks and on the basis of FOR destination/delivery at site.

11. 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.

12. REJECTED STORES:

Rejected stores will remain at destination at the Contractor's 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.

13. Sales Tax and/or other duties/levies legally leviable and intended to be claimed should be mentioned in the price bid template. If nothing is mentioned, then it will be presumed that the rate quoted is inclusive of all taxes/duties.

14. SECURITY DEPOSIT: Wherever, the Purchase Order value is Rs. 5.00 Lakhs or more, on acceptance of the tender, the Contractor shall, at the option of the Purchaser and within the period specified by him, deposit with him, in cash or in any other form as the Purchaser may determine, security deposit not exceeding ten percent of the value of the Contract as the Purchaser shall specify. If the Contractor is called upon by the Purchaser to deposit, 'Security' and the Contractor fails to provide the security within the period specified, such failure shall constitute a breach of the Contract, and the Purchaser shall be entitled to make other arrangements for the re-purchase of the stores Contracted at the risk of the Contractor in terms of Sub-Clause (ii) and (iii) of clause regarding Delivery. (b) hereof and/or to recover from the Contractor, damages arising from such cancellation.

15. TERMS & CONDITIONS OF TENDER

16. TEST CERTIFICATE: Wherever required, test certificates should be sent along with the despatch documents.

17. The authority of the person signing the tender, if called for, should be produced.

18. The Purchaser reserves the right to place order on the successful tenderer for additional quantity up to 25% of the quantity offered by them at the rates quoted.

19. 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 tenderers shall supply the same at the rates quoted.

20. The tenderer should supply along with his tender, the name of his bankers as well as the latest Income-Tax clearance certificate duly countersigned by the Income-Tax Officer of the Circle concerned under the seal of his office, if required by the Purchaser.

21. The term Contractor shall mean, the person, firm or company with whom or with which the order for the supply of Stores is placed and shall be deemed to include the Contractor's successors, representative, heirs, executors and administrators unless excluded by the Contract.

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

23. The term "Stores" shall mean what the Contractor agrees to supply under the Contract as specified in the Purchase Order including erection of plants & machinery and subsequent testing, should such a condition is included in the Purchase Order.

2. PPP Make in India(Non- Divisible Items-Class I & II Local Suppliers Only)

1. In line with Public Procurement (Preference to Make in India), Order 2017 & its amendments issued by Govt. of India from time to time with a view to support the Indian industries, ISRO has implemented "Purchase Preference Policy". The "Purchase Preference" is applicable for the "Class-I Local Supplier" for the goods/ services/ works covered in this tender, subject to the following terms & conditions:-
2. a) The subject item falls under Non-divisible category. b) The offers sought only from Class-I & Class-II local suppliers
3. Definitions: A supplier or service provider, whose goods, services or works offered for procurement, has local content: a) Equal to or more than 50% : Class-I local supplier. b) Minimum 20% but less than 50% : Class-II local supplier. c) Less than 20% : Non-local supplier.
4. 'Local content' means the amount of value added in India (i.e. indigenous items/services added in the offered products/ services/ works) be the total value of the item offered (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties/IGST) as a proportion of the total value (excluding net domestic indirect taxes), in percent.
5. The margin of Purchase Preference shall be up to 20%.
6. 'Margin of purchase preference' means the maximum extent to which the price quoted by the "Class-I local supplier" above the L1 (landed cost).
7. 'L1' means the lowest technically accepted tender / bid / quotation (i.e. lowest landed cost including duties, taxes and freight & Insurance).
8. Works means all works as per Rule 130 of GFR- 2017, and will also include 'turnkey works'. Works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.
9. Purchase Preference Policy:- Goods/Works which are not divisible (ie., required quantity is 1 or as a package) and Services:
 - a) If L1 is from a 'Class-I local supplier', the contract will be awarded to L1 bidder.
 - b) If L1 is not from a 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price subject to local supplier's quoted price falling within the margin of purchase preference (i.e. 20%) and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price (inclusive of duties, taxes and freight & insurance).
 - c) In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on, and order/contract shall be awarded accordingly. In case where none of the 'Class-I local supplier' within the margin of purchase preference agree to match the L1 price, then the order/contract shall be awarded to the original L1 Bidder.

10. The 'Class-I & II local supplier' should provide a "Self Certification" along with technical offer indicating that the item offered meets the minimum local content [as per Sl. No.(3)] as called for in the tender and provide the percentage of local content along with details of the location(s) at which the local value addition is made. In case of two bid tenders, it is mandatory to indicate compliance to MLC(minimum Local Content) in technical bid zone.

11. The ink-signed certificate shall be provided on vendors letter head along with the offer (in case of online tender, copy of ink-signed certificate shall be uploaded along with your offer under concerned tab. Original in Hard copy shall be produced on request). In case of non-submission of certificate, the purchase preference shall not apply.

12. A committee (with an external expert from a practicing cost accountant or practicing chartered accountant, if required) constituted for independent verification shall verify the self-declarations & auditor's / accountant's certificates on random basis, as per the requirements.

13. In cases the quoted price is in excess of Rs.1000 Lakhs (including duties, taxes and freight & Insurance) the 'Class-I & II local supplier shall provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in case of suppliers other than companies) giving the percentage of local content.

14. In case of a complaint received from any local supplier indicating a need for review / verification of Local content of successful vendor / awarded vendor, for accepting a complaint from such complainant (w.r.t the false declaration given by the successful vendor on the local content), a complaint fee of Rs.2Lakhs or 1% of the locally manufactured items being procured (subject to a maximum Rs. 5Lakhs), whichever was higher, to be paid by demand draft by the complainant. In case, the complaint is found to be incorrect, the complaint fee shall be forfeited. In case, the complaint is upheld and found to be substantially correct, deposited fee of the complainant would be refunded without any interest.

15. False declarations will be in breach of code of the integrity for which a bidder or its successor's will not be eligible/debarred for purchase preference from further tenders / pending tenders for two years along with other actions as may be applicable.

16. The Public Procurement (Preference to Make in India), Order 2017 issued by Govt. of India indicates that if there are any general or specific restrictive clauses to restrict participation of Indian companies in those countries procurement tenders, reciprocity clause need to be invoked as per the order. Hence, if ISRO or Govt. of India come across that Indian suppliers of an item are not allowed to participate and / or compete in procurement by your government, the bid submitted by you will be not be considered and excluded from eligibility for procurement. Please note this point.

3. Specific Terms and Conditions to Tender

1. (I) Please quote applicable GST separately.
2. (II) Our standard delivery term is FOR, VSSC. In case any vendor offers delivery term of Ex-works, Packing and Forwarding charges if any should be indicated separately either as a percentage of the quoted rate or as a Lumpsum amount.
3. (III) Our standard payment term is 100% within 30 days after receipt and acceptance of the items at our site (after installation and commissioning in cases where installation and commissioning is required).
4. (IV) Liquidated Damages: The delivery period quoted should be realistic. The delivery period so quoted and mentioned in the order is the essence of the order/contract. In case of delay in delivery of material as per the delivery schedule, Liquidated Damage @ 0.5% per week or part thereof on the undelivered portion subject to a maximum of 10% of the contract value shall be levied. Wherever, installation and commissioning is also involved, the supply will be deemed to have been completed only when the entire Stores is supplied, installed and accepted.
5. (V) Performance Bank Guarantee: Wherever products offered carry warranty, the warranty should be for one year or as per manufacturers standard warranty term. Against such cases, please confirm submission of Performance Bank Guarantee. The Performance Bank Guarantee should be for 3% of the order value covering the warranty period obtained from any Scheduled Bank on Rs.200/- Non Judicial Stamp Paper and should be valid beyond 2 months from the completion of the warranty period. Alternately vendors can request for withholding 3% payment till completion of the warranty period.
6. (VI) Security Deposit: Wherever the offer value is Rs. 5.00 Lakhs or above, the successful tenderer should submit Security Deposit @ 3% of the order value by way of Bank Guarantee / FD Receipt. The Bank Guarantee shall be obtained from any Scheduled Bank on Rs.200/- Non Judicial Stamp Paper and should be valid beyond 2 months from the completion of all contractual obligations. If the Contractor is called upon by the Purchaser to deposit, Security and the Contractor fails to provide the security within the period specified, such failure shall constitute a breach of the Contract, and the Purchaser shall be entitled to make other arrangements for the re-purchase of the stores Contracted at the risk of the Contractor. In case if Security Deposit is submitted and the contractor fails to execute the order, then the security deposit will be forfeited.
7. (VII) Note: SD, LD and PBG clauses are mandatory and offers of the vendors who have not agreed for the above conditions will be excluded from the procurement process. Micro and Small Vendors are not exempted from the submission of Security Deposit. Only Govt Departments/PSUs/PSEs can submit Indemnity Bond instead of Bank Guarantee towards SD/PBG.
8. (VIII) Please upload the Technical Details / Catalogue / Data Sheets (wherever applicable)

9. (IX) The offer should be valid for a period of minimum 90 days from the date of opening of Tender and 180 Days for PT Two Part (120 Days for Technical Bid and 60 Days for Price Bid from the date of opening) by default or as mentioned in the Commercial terms in the tender enquiry, if different from above .
10. (X) In order to avail of the benefits extended to by Govt. of India to the Micro and Small Sectors, please submit attested copy of the valid Entrepreneur Memorandum Part-II signed by the General Manager, District Industries Centre / Udyog Adhar / NSIC Registration Certification along with your offer.
11. (XI) If any bidder submits forged / false document along with the tender, offer of such vendors will be summarily rejected and such bidders will be blacklisted for all future tenders.
12. (XII) Wherever samples are required to be submitted along with the quotation, offer without sample will not be considered.
13. (XIII) The other attached forms are our standard terms and conditions, which are to be complied with. If any conflict arise between the specific terms and standard terms, then in those cases, the specific terms will prevail over the standard terms.
14. (XIX) Purchase preference to eligible vendors are applicable as per extant notifications issued by the Government of India.
15. (XV) Foreign OEMs/Agents quoting on behalf of Foreign OEMs are not permitted to quote. High Sea Sales Quotes not permitted. The bids shall be in INR only.
16. (XVI) Definitions: A supplier or service provider, whose goods, services or works offered for procurement, has local content: a)Equal to or more than 50% : Class-I local supplier. b)Minimum 20% but less than 50% : Class-II local supplier. c) Less than 20% : Non-local supplier.
17. (XVII) Local content means the amount of value added in India (i.e. indigenous items/services added in the offered products/services/works) be the total value of the item offered (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties/IGST) as a proportion of the total value (excluding net domestic indirect taxes), in percent. Indicate extent of Minimum Local Content in offered product/service and location of such value additions.
18. (XVIII) The Class-I & II local supplier should provide a Self Certification along with your offer in PDF format indicating that the item offered meets the minimum local content as called for in the tender as mentioned above and provide the % of local content along with details of the location(s) at which the local value addition is made. In case of two part tenders, it is mandatory to indicate compliance to

MLC(minimum local content) in technical bid itself.

19. (XIX) The Class-I/Class-II Local suppliers, at the time of submitting their offer, shall also indicate percentage of local content and provide self-certification that the item (s) offered meets the local content requirement for Class-I/Class-II Local Suppliers as the case may be. They shall also give details of location (s) at which the local value addition is made.

20. (XX) In cases if the item(s) offered exceed Rs. 10 Crores, the Class-I/Class-II Local Suppliers shall provide a Certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

21. (XXI) False Declarations will be in breach of the Code of Integrity under Rule 175 (1) (i) (h) of the General Financial Rules 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.

22. (XXII) Purchase Preference Policy:- Goods/Works which are divisible in nature (required quantity is greater than 1 or not a package basis): i. If L1 is 'Class-1 local supplier', the order/contract for full quantity shall be awarded to L1 bidder. ii. If L1 bid is not from a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference (i.e. 20%) and contract for that quantity shall be awarded to such Class-I local supplier subject to matching the L1 price (inclusive of duties, taxes and freight & insurance). iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In cases where none of the 'Class-I local supplier' within the margin of purchase agree to match L1 price, in such cases 100% quantity shall be ordered on original L1 bidder. iv. In case no offers are received from 'Class-I local supplier' or none of the 'Class-I local supplier' falls within the margin of purchase preference of 20%, the order shall be processed on L1 vendor. v. In case L1 bidder (not a 'Class-I local supplier') is not accepting splitting of order on 50:50 basis, in that case the order/contract shall be awarded to such 'Class-I local supplier' for full quantity subject to matching the L1 price. vi. Regarding MSEs (Indian vendors): a) The following additional aspect as indicated below would be applicable for procurement which are falls under divisible category (i.e., not applicable for indivisible category), in case of participation of MSEs in the tendering who are also complying to the Minimum Local Content (MLC) stipulated in the tender. b) If any Indian vendor satisfies the requirement of MSEs stipulation and also falls within the purchase preference margin as called for in MSME policy (in case of matching L1 price) will be considered for ordering 25% of tendered quantity, the balance quantity / works will be considered for distribution amongst all bidders (including MSEs) as per the purchase preference policy. c) In case no MSEs

qualifies for purchase preference or do not match with L1 price then the total tendered quantity will be distributed amongst all bidders as per the purchase preference policy.

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

1. Any bidder from a country which shares a land border with India will be eligible to bid in this tender, only if the bidder is registered with the Competent Authority.

Competent Authority for the purpose of registration shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).

2. 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.

3.

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 - Fuel Cell Test Module

1. FUEL CELLS TEST MODULE

Item specifications for FUEL CELLS

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Test module configuration	Test module shall be realized in line with P&I diagram provided. However, minor changes in the P&I diagram can be carried out with clearance from VSSC. Electronic load is not in the scope of party, VSSC shall supply the electronic load. For details please refer annexure-II	Yes / No / Explain		
2	Gas inlet pressure to test module	Up to 5 bar for both anode, cathode and inert gas (N2) line.	Yes / No / Explain		
3	Anode mass flow controller (MFC)	Specifications vide SI No 4 to 7	Yes / No / Explain		
4	Anode MFC Type	Electronic/Digital MFC compatible to GH2	Yes / No / Explain		
5	Anode MFC Flow rate range	0-5 SLPM and control accuracy of ± 0.50 SLPM	Yes / No / Explain		
6	Inlet to Anode MFC	Upto 5 bar GH2	Yes / No / Explain		
7	Anode MFC Preferred make	Alicat, Bronkhorst, Burkert, Horiba	Yes / No / Explain		
8	Cathode MFC	Specifications vide SI No 9 to 12	Yes / No / Explain		
9	Cathode MFC Type	Electronic/Digital MFC compatible to GO2	Yes / No / Explain		
10	Cathode MFC Flow rate range	0-10 SLPM and control accuracy of ± 1.0 SLPM	Yes / No / Explain		

11	Inlet to Cathode MFC	Upto 5 bar GO2	Yes / No / Explain		
12	Cathode MFC Preferred make	Alicat, Bronkhorst, Burkert, Horiba	Yes / No / Explain		
13	Humidification module (for entire range of 0-10 SLPM)	Specifications vide SI No 14 to 21	Yes / No / Explain		
14	Humidifier type	Bubbler type for both anode & cathode gas line	Yes / No / Explain		
15	Material of construction	SS316 L	Yes / No / Explain		
16	Operating temperature range	Room temperature to 90 °C with accuracy of ± 3 °C	Yes / No / Explain		
17	Relative humidity control and accuracy	95 ± 3 %	Yes / No / Explain		
18	Humidity measurement/display	RH shall be displayed on the GUI. Displayed value shall be calculated based on dew point temperature of humidifier/bubbler.	Yes / No / Explain		
19	Water Level indicator and feedback	Lower and upper level indication and water auto filling from reservoir with software alarm	Yes / No / Explain		
20	Water reservoir capacity	10 lit (minimum)	Yes / No / Explain		
21	Dry gas bypass	Required for Hydrogen and Oxygen	Yes / No / Explain		
22	Water feed pump	Specifications vide SI No 23 to 25	Yes / No / Explain		
23	Type	Peristaltic pump	Yes / No / Explain		
24	Capacity	100 - 200 ml/min for fixed duration to avoid over flow due to failure of upper limit level sensor	Yes / No / Explain		
25	Pump enclosure	Pumps shall be provided with separate enclosure to isolate them from the test module environment to avoid interaction with hydrogen gas in case of any leakage	Yes / No / Explain		

26	Back pressure module	Specifications vide SI No 27 to 31	Yes / No / Explain		
27	Back pressure Regulator	0-4 bar pressure with setting accuracy of ± 0.1 bar or better	Yes / No / Explain		
28	Moisture trap	Moisture trap for the exhaust gas with solenoid valve for condensate removal (refer P&I diagram)	Yes / No / Explain		
29	Pressure Sensor/Transducer	0 - 5 bar range	Yes / No / Explain		
30	Pressure Sensor/Transducer (Make)	Wikai, Danfoss, Baumer	Yes / No / Explain		
31	Flash back arrester	For hydrogen exhaust line	Yes / No / Explain		
32	Line heaters for hydrogen and oxygen gas/Air lines	Specifications vide SI No 33 to 34	Yes / No / Explain		
33	Controls	PID based	Yes / No / Explain		
34	Operating range	RT to 90°C with temperature control accuracy of $\pm 2.0^\circ\text{C}$ for both anode & cathode gas lines	Yes / No / Explain		
35	Temperature Sensors	Specifications vide SI No 36 to 38	Yes / No / Explain		
36	Sensors type	K-type with measuring accuracy of $\pm 0.2\%$	Yes / No / Explain		
37	Preferable Make	Tempsense, Honeywell, Emerson, Omron	Yes / No / Explain		
38	Quantity and location	8 Nos. (2 Nos for Humidifiers, 2 Nos for gas inlet line, 2 Nos for cell & 2 Nos for coolant line)	Yes / No / Explain		
39	Features of the test setup control software	Specifications vide SI No 40 to 47	Yes / No / Explain		
40	Graphical User Interface	LABVIEW based intuitive graphical user interface (GUI) with real-time data visualization and control	Yes / No / Explain		

41	Integration of electronic load	Interfacing with programmable electronic load from reputed brands (e.g. Prodigit, ET system, Kikusui, BK precision or equivalent) Electronic load broad specifications: • Voltage Range: 0-10 V • Current Range: 0-200 A • Power Range: 1.5 kW Note: DC electronic load with booster power supply will be used for operating electronic load down to zero volt	Yes / No / Explain		
42	Operation mode	Constant current, constant voltage and power control mode	Yes / No / Explain		
43	Mass flow control	Gas flow rates for anode and cathode independently Note: During the operation of the test module, if both the gas flow stoichiometry and flow rate values are set in the GUI, then flow stoichiometry shall supersede the flow rate	Yes / No / Explain		
44	Purging operation	Purge gas switching for anode and cathode of cell	Yes / No / Explain		
45	Humidifier control	RH % (Anode & cathode independently)	Yes / No / Explain		
46	Inline Heater	Temperature control for inline heater (Anode & cathode independently)	Yes / No / Explain		
47	Test article definition	Individual cell active area Number of cells in the stack	Yes / No / Explain		
48	Features to be displayed in GUI	Specifications vide SI No 49 to 61	Yes / No / Explain		
49	Emergency stop	Button on GUI	Yes / No / Explain		
50	Solenoid Valve operation	Separate on and off buttons for anode & cathode gases	Yes / No / Explain		

51	Purge gas control	On/Off button	Yes / No / Explain		
52	Inlet gas pressure	Actual value	Yes / No / Explain		
53	Flow rate	Anode & cathode set and actual value	Yes / No / Explain		
54	Stoichiometric flow rate	Anode & cathode	Yes / No / Explain		
55	Line heater	Set and actual value for Anode & cathode	Yes / No / Explain		
56	Back pressure	Set and actual value for Anode & cathode	Yes / No / Explain		
57	Cell temperature	Actual value	Yes / No / Explain		
58	Humidifier	Set and actual temperature with % RH value	Yes / No / Explain		
59	Current, Voltage and Power	Set & actual value	Yes / No / Explain		
60	Display of real time graphs	Time vs parameter (Current, Voltage, Power, temperature, pressure, flow rates, RH)	Yes / No / Explain		
61	Alerts /popup	shall be provided for user defined critical operation	Yes / No / Explain		
62	Data acquisition	Specifications vide SI No 63 to 67	Yes / No / Explain		
63	Sampling rate	Up to 1 kHz	Yes / No / Explain		
64	Internal storage	1TB SSD	Yes / No / Explain		
65	Data Export Formats	CSV, Excel	Yes / No / Explain		
66	Interface communication	Ethernet, LAN	Yes / No / Explain		
67	PC configuration	Display Screen: 26 inch OS: Windows -11 RAM: 16 GB Internal Storage: 1 TB SSD	Yes / No / Explain		
68	Safety Features	Specifications vide SI No 69 to 76	Yes / No / Explain		

69	Overvoltage Protection	Configurable upper and lower software limits with alarm and shutdown	Yes / No / Explain		
70	Over current Protection	Configurable upper and lower software limits with alarm and shutdown	Yes / No / Explain		
71	Overpressure Protection	Configurable upper and lower software limits with alarm and shutdown	Yes / No / Explain		
72	Temperature Limits	Configurable upper and lower software limits with alarm and shutdown	Yes / No / Explain		
73	Gas Leak Detection	Integrated sensors for hydrogen with 0-100% LEL with audio-visual alarms, and system shutdown	Yes / No / Explain		
74	Emergency Shutdown	Sequence of operation for emergency shutdown: load and heaters off, inlet reactant gas isolation from the system & venting followed by nitrogen gas purging. Manual emergency shutdown button shall be provided	Yes / No / Explain		
75	System enclosure with exhaust	System shall be placed inside enclosure and exhaust lines shall be routed outside the building	Yes / No / Explain		
76	Compliance to standards	CCOE, PESO & IP-65	Yes / No / Explain		
77	Input power	220/240 V AC, 50/60 Hz	Yes / No / Explain		

Document : Annexure-I

Document : annexure-II

Common Specifications (Applicable for all items)

SI No	Specification	Value	Compliance	Offered Specification	Remark
-------	---------------	-------	------------	-----------------------	--------

1	MOC for Tubes and fittings	All the tubes and fittings used for realization of the test module shall be of MOC SS316L	Yes / No / Explain		
2	Tube specification	SS tube shall be of ¼ inch (6 mm) diameter with a minimum wall thickness of 0.8 mm	Yes / No / Explain		
3	Colour coding	Labeling, color coding of gas lines, hazard warning to be mentioned on the system	Yes / No / Explain		
4	Tube-to-tube joints	Tube to tube joints shall be avoided, if essential shall be done via TIG welding	Yes / No / Explain		
5	Component interconnection	Joints which cannot be TIG welded due to functional requirements shall be connected using swage fittings	Yes / No / Explain		
6	Tubes and fittings	Fittings from reputed brand such as Swagelok, Parker, Hamlet, Dk-lok, FITOK only shall be used for test module.	Yes / No / Explain		
7	Sapres	Party shall provide detailed list of spares viz. heaters, sensors, MFC, valves along with cost.	Yes / No / Explain		
8	warranty	Party shall provide minimum 03 years warranty for the equipment and AMC quotation for 05 years subsequent to warranty period.	Yes / No / Explain		
9	AMC	AMC for 05 years shall consist of 01 preventive and 01 breakdown maintenance visit per year. Preventive maintenance shall be convertible to breakdown maintenance.	Yes / No / Explain		
10	Training	Detailed training shall be given to VSSC personnel for operation, basic troubleshooting and maintenance of the system.	Yes / No / Explain		

11	Pre-delivery Inspection (PDI) and supply	Party shall realize the item and arrange for pre-delivery inspection at party's site. Item shall be supplied to VSSC after PDI clearance. Part payment can be made after PDI and delivery.	Yes / No / Explain		
12	Installation and Commissioning at VSSC	Programmable DC electronic load shall be integrated with single fuel cell test module and commissioning of the overall system shall be carried out within 5 weeks after intimation of site readiness from VSSC. Balance payment shall be made on successful installation and commissioning of the fully integrated system at VSSC.	Yes / No / Explain		

Supporting Documents required from Vendor

1. Party shall provide the P& I diagram for the test module
2. Party shall provide the AMC quotation and spares list with cost (Price Bid Related)
3. Party shall provide cost split up for the test module (Price Bid Related)
4. Manufacturer's letter of authorization / certificate shall be submitted by the supplier, if equipment is not supplied by the OEM.
5. Party shall provide details of previous work orders executed for application in the area of proton exchange membrane fuel cell test system.

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	Taxes and other costs,	Yes / No / Explain	
2	Security Deposit (Applicable if Offer Value is Rs. 5 Lakhs or above. MSME/NSIC Units are NOT EXEMPTED from the payment of SD. Bank Guarantee @ 3% of Order Value valid till 60 days from the date of supply to be submitted. Mandatory compliance required. Only Government Bodies/PSUs/PSEs can submit Indemnity Bond in lieu of BG. In the event of non-performance of contractual obligations, SD will be forfeited).	Yes / No / Explain	
3	Delivery Terms.	Yes / No / Explain	
4	Delivery Period	Yes / No / Explain	
5	Liquidated Damages (Applicable beyond the delivery period mentioned in this tender @ 0.5% per week or part thereof on the undelivered portion subject to a maximum of 10% of the contract value. Mandatory compliance required).	Yes / No / Explain	
6	Warranty(Min 3 years)	Yes / No / Explain	
7	Performance Bank Guarantee (PBG) Bank Guarantee @ 3% of Order Value valid till the completion of warranty period plus 2 months claim period to be submitted. Mandatory compliance required. Only Government Bodies/PSUs/PSEs can submit Indemnity Bond in lieu of BG. In the event of non-performance of warranty obligations, PBG will be forfeited).	Yes / No / Explain	

8	Payment Term: (Our Default payment term: For indigenous orders: 100% within 30 days after receipt and acceptance of item at our site. NOTE: CONSEQUENT TO COVID 19 PANDEMIC AND AS PER EXTANT GUIDELINES FROM DEPARTMENT OF SPACE, NO ADVANCE PAYMENT IS PAYABLE TO THIS TENDER).	Yes / No / Explain	
9	Definitions: A supplier or service provider, whose goods, services or works offered for procurement, has local content: a) Equal to or more than 50% : Class-I local supplier. b) More than 20% but less than 50% : Class-II local supplier. c) Less than or equal to 20% : Non-local supplier. Mention your category.	Yes / No / Explain	
10	Local content means the amount of value added in India (i.e. indigenous items/services added in the offered products/services/works) be the total value of the item offered (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties/IGST) as a proportion of the total value (excluding net domestic indirect taxes), in percent. Indicate extent of Minimum Local Content in offered product/service and location of such value additions.	Yes / No / Explain	
11	The Class-I & II local supplier should provide a Self Certification along with your offer in PDF format indicating that the item offered meets the minimum local content as called for in the tender as mentioned above and provide the % of local content along with details of the location(s) at which the local value addition is made. In case of two part tenders, it is mandatory to indicate compliance to MLC(minimum local content) in technical bid itself. Confirm attachment of Self declaration along with the offer.	Yes / No / Explain	
12	PO Placement Address (with Name and Contact Details of sales person concerned).	Yes / No / Explain	
13	Any Other Terms	Yes / No / Explain	
14	Offer Validity	Yes / No / Explain	

15	AMC(5 years): Scope of AMC shall be 1 preventive and 1 breakdown maintenance visit per year. Preventive maintenance can be convertible to breakdown maintenance.	Yes / No / Explain	
16	Bank Account details	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
1	FUEL CELLS TEST MODULE	1.00 Nos.		-		

Common charges (Applicable for all items)

P&F Charges	
Freight charge	
AMC Charges for 1st Year after warranty period	
AMC Charges for 2nd Year after warranty period	
AMC Charges for 3rd Year after warranty period	
AMC Charges for 4th Year after warranty period	
AMC Charges for 5th Year after warranty period	
Any Other Charges	
Other Charges (If any)	