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

Tender for vacuum furnace

Bids to be submitted online

Tender No.: VSSC/PURCHASE UNIT III (SPRE)/VS202100424001 dated 29-12-2021

A. Tender Details

Tender No :	**VSSC/PURCHASE UNIT III (SPRE)/VS202100424001**
Tender Date :	**29-12-2021**
Tender Classification:	**GOODS**
Purchase Entity :	**PURCHASE UNIT III (SPRE)**
Centre :	**VIKRAM SARABHAI SPACE CENTRE (VSSC)**

CUSTOM BUILT, ERGONOMICALLY DESIGNED FULLY AUTOMODE VACUUM FURNACE

GEM Non-Availability Report ID:- GEM/GARPTS/13122021/UDHRS497RAAR Dtd. 13/12/2021.

IMPORTANT NOTE: This being a Two Part Tender, Cost shall be mentioned in the Price Bid Only. All the documents being uploaded like quote split up details, AMC cost etc should not contain the rates/costs. However a copy of your PRICE BID,AMC quote etc WITHOUT PRICE SHALL BE UPLOADED in the Documents Solicited from the Vendor Field [available in Bid forms] TO KNOW THE PATTERN OF QUOTE.[ENSURE NOT TO MENTION ANY PRICE IN ATTACHED DOCUMENTS,OTHERWISE THE QUOTE WILL BE INVALID.

Other Conditions to note before quoting:-

1)Last minute clarification on tenders will not be entertained.

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

3)Your quotation with details of items being supplied, Split up cost if applicable, detailed terms & conditions shall be mandatory uploaded.

4)Read the clauses regarding Make In India-Purchase Preference Policy, which is mentioned in the Tender Documents. Give the necessary compliance in the relevant field in the Vendor Specified Terms.

5)Foreign vendors are not permitted to quote.

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

7)Quotations directly from foreign OEM/ or from agents quoting on behalf of foreign OEMs are not allowed to participate in this tender.

8)The percentage of local content in the offered product should be specifically mentioned in the offer.

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

A.1 Tender Schedule

Bid Submission Start Date :	**28-12-2021 18:27**
Bid Clarification Due Date :	**11-01-2022 14:00**
Bid Submission Due Date :	**25-01-2022 14:00**
Bid Opening Date :	**25-01-2022 14:01**
Price Bid Opening Date :	**31-01-2022 14:00**

B. Tender Attachments

Technical Write-up/Drawings

Document : Technical specification and terms and conditions

Instructions To Vendors

2. This is a Two-Part tender i.e. Techno-Commercial(Containing Documents Solicited Vendor [available in Bid forms] & Vendor Specified Terms) and Price Bid . Hence all technical &commercial details shall be furnished in the Documents Solicited from Vendor & Vendor Specified Terms Fields while price shall be indicated only in the Price Bid.

3. IMPORTANT NOTE: This being a Two Part Tender, Cost shall be mentioned in the Price Bid Only. All the documents being uploaded like quote split up details, AMC cost etc should not contain the rates/costs. However a copy of your PRICE BID,AMC quote etc WITHOUT PRICE SHALL BE UPLOADED in the Documents Solicited from the Vendor Field [available in Bid forms] TO KNOW THE PATTERN OF QUOTE.[ENSURE NOT TO MENTION ANY PRICE IN ATTACHED DOCUMENTS,OTHERWISE THE QUOTE WILL BE INVALID.

4. Instructions to Vendors

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

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

5. (a) Foreign vendors are not permitted to quote.
(b) Only Class-I and Class-II Local suppliers as per Make in India Policy are eligible to participate in the bid.
(c) Quotations directly from foreign OEM/ or from agents quoting on behalf of foreign OEMs are not allowed to participate in this tender.
d) The percentage of local content should be specifically mentioned in the offer, without which it will be summarily rejected.
e) Preference will be given to Class-I Local Supplier and in their absence, Class-II Local Supplier will be considered.

6. 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: i. Equal to or more than 50%: Class-I local supplier. ii. More than 20% but less than 50%: Class-II local supplier. iii. Less than or equal to 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 SI. 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.

7. Specific Terms and Conditions to Tender

1. CUSTOMS DUTY: We are eligible for concessional payment of Customs Duty vide Notification Ref: 050/2017 CUSTOMS Dtd. 30/06/2017 SI. No. 539(b) as amended by Notification No. 5/2018 dtd.25/01/2018. Please Note.

2. 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.

3. 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.

4. 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. 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 Gurantee towards SD/PBG.

6. Offer Validity:- Please keep and confirm the offer validity minimum 90 days[in case of Single part Tender]from the date of opening of tender/180 days [For Two Part Tenders, 120 Days after opening Part-I and 90 days after opening Part-II].

7. 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.

8. Our standard payment term is 100% within 30 days for indigenous orders.

9. 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.

10. Please quote applicable GST separately.

(a)We are eligible for partial exemption of IGST vide Notification No: 47/2017-Integrated Tax (Rate) dtd 14/11/2017 and 45/2017-Central Tax (Rate) dtd 14/11/2017 issued by Dept. of Revenue, Ministry of Finance. Necessary Exemption Certificates will be issued on demand.
(b)We are eligible for partial exemption of CGST and SGST vide Notification No: 45/2017 dtd 14/11/2017 and No: 169/2017/TAXES dtd 15/11/2017 respectively. Necessary Exemption Certificates will be issued on demand.

11. Please upload the Technical Details / Catalogue / Data Sheets (wherever applicable)

12. 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.

13. 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. Wherever samples are required to be submitted along with the quotation, offer without sample will not be considered.

8. PROFORMA FOR INSTRUCTIONS TO TENDERERS AND TERMS & CONDITIONS OF TENDER where the indent value is Rs. 2.00 lakhs & above for indigenous stores items

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.
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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 outilined 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.

C. Bid Templates

C.1 Technical Bid - vacuum furnace

1. VACUUM FURNACE

Item specifications for VACUUM FURNACE

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Scope of work	Design, fabrication, supply, installation and commissioning of a custom built, ergonomically designed fully automode vacuum furnace to carry out Vacuum Brazing and Heat Treatment of metallic components/materials	-		
2	Furnace : Type	Horizontal Orientation & Front loading	-		
3	Furnace : Working hot zone size	400 mm diameter (minimum) x 600 mm depth (minimum) Party shall mention chamber size based on above working hot zone size. Chamber size shall be limited to minimum.	-		
4	Furnace:Maximum temperature	1300 C	-		
5	Furnace : Clean up cycle	The Furnace shall be operated for 30 min at design temperature for clean-up cycle	-		
6	Furnace : Operating temperature (Range)	300 C 1200 C	-		
7	Furnace: Continuous operating time at maximum operating temperature	Continuous operation up to 8 Hours at 1000 oC. Continuous operation up to 2 hours at 1200 oC	-		

8	Furnace :Temperature control and measurement accuracy	± 0.1 % of operating temperature of 300 C to 1200 C	-		
9	Hot zone temperature uniformity	Temperature uniformity ± 5 C or better in the entire hot zone from 500 C to 1200 C.	-		
10	Furnace : Heating rates (range)	1 C/ min to 30 C/min (controlled & programmable)	-		
11	Furnace:Cooling rates (Fully variable, controlled & programmable	Controlled cooling (heater on condition): 1 to 10 C per minute shall be ensured. A typical cooling curve for natural vacuum cooling shall be given	-		
12	Furnace : Cooling/ Quenching mode	Vacuum cooling/ Gas cooling – static/ forced gas quenching shall be fully variable/controlled/ programmable. Gas : Argon / Nitrogen Furnace shall be able to quench at 900 degree C (maximum) . The feature shall be in manual and programmable mode. The furnace shall be designed with suitable heating elements and support materials to withstand the thermal shock due to gas quenching.	-		
13	Maximum charge load (Job + fixture/Moly basket)	30 kgs (minimum)	-		
14	Material used for brazing / heat treatment	Stainless Steels, Copper alloys, brazing alloys , Titanium, Super alloys, etc.	-		

15	Hot zone : Heating elements, radiation shields	Heating element : Heating Elements shall be made with Lanthanum doped Molybdenum. Cylindrical hot zone shall be designed to ensure the uniform temperature across the effective hot zone area. The source of heating element shall be from reputed manufacture like Plansee, Austria. Test certificate (OEM) of the heating element material shall be provided. Supports for heating element shall be made of high strength, shock resistant, high purity ceramic material/high temperature metallic materials. Radiation shields/heat shield: It shall be provided by minimum 6 layers of radiation shields comprising of layers of Molybdenum (3 layers) and SS sheets (3 layers) on all sides to minimize heat loss. The thickness of the molybdenum sheet shall be of 0.3 mm thick (min). Calculation for the numbers of shields shall be provided. Inner most layer shall be made of Lanthanum doped Molybdenum. All end joints shall be properly designed to minimize heat loss. The insulation shall be designed to ensure that the temperature at outer wall of vacuum chamber	-		

		does not exceed 45 °C during operation at maximum furnace temperature and soaking time. Suitable spacers shall be provided between each layers of heat shield to ensure uniform and correct clearance and avoid deformation leading to a mechanical contact between shields during operation. Integration of heat shield shall be made for easy maintenance and replacement of heating elements. The schematic representing the design of heat insulation shall be provided for technical evaluation of offer. The source of Molybdenum for radiation shall be shall be from reputed manufacture Plansee, Austria. Test certificate (OEM) of the heat shield material shall be provided. Party may also suggest improved design with justification for better performance. General : Gap between working hot zone & heating elements shall be 50 mm (min). Safe gap between the working zone and Front & rear side shall be provided. Safe gap between the radiation shield assembly & Inner chamber wall shall be provided. Party			

		shall give the furnace chamber cross section schematic. Furnace power calculation with details shall be provided.			
16	Thermocouples for temperature monitoring and control of hot zone	"R" type shall be used with following specification: Pt: Pt 13% Rh and Molybdenum Sheathed or Recrystallized Alumina as insulation material Qty : 2 Nos shall be provided for temperature control and over temperature protection Additional 3 ports shall be provided for calibration purposes.	-		
17	Thermocouple for job (work) temperature measurement (flexible)	"R" type shall be used with following specification: Pt: Pt 13%Rh and Molybdenum Sheathed or Recrystallized Alumina as insulation material Qty : 3 Nos. shall be provided for job (work) temperature measurement. 3 Nos. of K" type thermocouple with Molybdenum/ Recrystallized Alumina Sheathed shall be provided to use in the same feed through.	-		
18	Work load holding setup inside the hot zone	Suitable hearth/base plate for placing the job directly or with Molybdenum baskets. Hearth/Base plate dimension and location shall be manufacture specified.	-		

19	Standalone Trolley for loading and unloading of job	The standalone trolley shall be used for smooth loading of the job to the hearth/base plate inside the hot zone and unloading from the same after completing the process. Setup shall be designed ergonomically to carry a load of 50 kg. The trolley material shall be stainless steel. Trolley base shall have caster wheel with locking mechanism. Necessary safety feature shall be provided during loading and unloading of job.	-		
20	Molybdenum Basket	Detachable type Molybdenum baskets/Tray shall be provided with following specification & quantity Type 1 : 200 mm Length, 200 mm Breadth, 75 mm Height. – 3 layers – 2 set Type 2 : 300 mm Length, 300 mm Breadth , 100 mm Height. –2layers, - 2 set	-		

21	Vacuum chamber design	Horizontally mounted front loading type double walled with water cooling; design as per ASME unfired pressure vessel code section VIII, Division II, chamber material. The Outer wall temperature (furnace chamber & door) shall not exceed beyond 45 C at maximum temperature and load.	-		
22	Furnace Shell Material	It shall be fully Metallic. Inside: Stainless Steel 304 L or 316 L – polished & buffed/electro-polished for maintaining low out gassing rates. Outside : Stainless Steel 304 L or 316 L Suitable Insulation shall be provided such that outer wall temperature shall not exceed 45 C. (Avoid Nonmetallic materials inside the furnace including graphite and paints)	-		
23	Chamber Construction Design and fabrication as per ASME section VIII, Division-II (unfired pressure vessel code)	Cylindrical, double walled with suitable insulation in between with ports for vacuum pumping, Vacuum Gauges & Survey thermocouples, 1 view port of suitable diameter on chamber door (so that that job could be viewed from outside). Dimension of Inner wall thickness, outer wall thickness shall be provided.	-		

24	Chamber Front door	Front door to allow complete access to the hot zones with necessary locking arrangement and appropriate sealing to achieve leak tightness/ vacuum levels. Front door shall be opened manually by suitable hinge lock mechanism. Ensure door shall not hang down during continues usage. Material for door shall be similar to furnace chamber. (pre polished stainless steel SS304L). High temperature resistance Viton O-rings shall be provided to ensure complete sealing. Chamber door shall have one view port. Suitable safety interlock shall be provided for ensuring door lock before evacuation.	-		
25	Working medium	Vacuum/ Inert atmosphere (Nitrogen/ Argon)	-		
26	Chamber ports	Shall contain all necessary ports of ISO type	-		
27	Chamber ports for thermocouple	Shall be provided with vacuum-tight feed through glands	-		
28	Ports for Job thermocouples	A separate flanged port with a feed through plate	-		

29	Leak Rate	Global leak rate (system level) < 1x10-3 mbar lit/s & the individual level leak rate < 1x10-8 mbar lit/s. Party shall demonstrate the leak rate for each joint during Pre delivery inspection.	-		
30	Support structure	Shall be made of box type structure made of Stainless steel.	-		
31	Painting	The outer shell of the vacuum chamber shall be applied with suitable primer and then finished with powder coated.	-		
32	Vacuum system : Ultimate Vacuum level	Better than 5x10-6 mbar within 30 min of clean, cold and empty chamber	-		
33	Vacuum system : Operating Vacuum level	1x10-5 mbar within 15 minutes	-		
34	Vacuum system :Programmable Vacuum level	1x10-2 mbar to 1x10-5 mbar (controlled/program mable)	-		
35	Vacuum system: Vacuum Pumping system	Automatic vacuum system Vacuum system shall consist of Rotary pump, Roots booster pump, Diffusion pump/Turbo molecular pump and backing pump for diffusion pumps/Turbo molecular pump. Parties shall specify the pumping speed, relevant details. Pumps shall be fitted with Oil mist filters. Party shall give the details of the vacuum level 1x10-5 mbar and time calculation and how they have reached the capacity.	-		

36	Vacuum system : Vacuum Pumping system (General)	All pumps shall be from Edwards/Pfeiffer/Leybold . Make and Model shall be specified in the quote. Vacuum measurement shall be measured by Pirani/Penning/Wide range gauge.The brand shall be Edwards/ Pfeiffer/ Leybold, Vacuum level shall be displayed in the HMI display unit. Operated using PLC with sequence mode shall be provided interlock for safe operation All plumbing lines shall be metallic bellow shall be reputed brand (Mewaza/ Edwards/Pfeiffer/Leybold). All flanges and fittings shall be as per ISO standard with Viton O-ring seal Additional port shall be provided (as per ISO standards) in the backing line for Helium leak test. All pumps must be provided with first charge of proper oil/ fluids. Required fittings, valve & Gauges shall be provided with schematic diagrams. All necessary cables, valve and lines shall be provided.	-		

37	Vacuum system: Vacuum Valves	All vacuum valves including roughing, Fore-line, Hi vacuum, holding, backfill etc. shall be electro- Pneumatic and stainless steel. All valves shall be branded, Pfeiffer/ Edwards/ Leybold/ Agilent	-		
38	Vacuum system: Vacuum plumbings and bellows	All Plumbing and metallic bellow shall be made of stainless steel and designed for appropriate size.	-		
39	Vacuum system: Vacuum Instrumentation	Vacuum controller with one cold cathode/inverter magnetron sensor and two pirani inputs with alarms/ switching at high and low setting (cross over) for all channels. (one pirani for holding vacuum, 2nd pirani for rough vacuum and cold cathode/ inverter). One additional port shall be provided for one vacuum sensor for attaching standard sensor for furnace vacuum system calibration. One mechanical gauge shall be provided on the chamber to seal the rough vacuum. Dial Analog type mechanical vacuum gauge for 4” dia having a measuring range from 0 - 760mm of Hg shall be provided in the furnace chamber. (Controller and Sensors from Edwards/ Pfeiffer/ Leybold)	-		

40	Vacuum system : Additional vacuum sensor ports shall be provided	One port each of 25 mm for vacuum monitoring in between roughing pump and booster pump, booster pump & DP/TMP and DP/TMP& High vacuum valve	-		
41	Gas quenching system :	Quenching gas : Nitrogen/Argon Quench Pressure: 5 bar (abs) (maximum)	-		
42	Gas quenching system: Quenching rate (Range)	25 C/min or more (controlled /programmable)from 900 C to 550 C. Vacuum cooling or gas cooling – Static/forced gas quenching shall be fully variable /controlled / programmable. Shall provide design calculation for heat exchange, blower	-		
43	Gas quenching system: Inert gas circulation or recirculation in the hot zone	Gas blowing system with proper valves and heat exchanger shall be provided	-		
44	Gas quenching system :Blower and heat exchanger location	These systems shall be located externally to the chamber. Blower and heat exchanger shall be water cooled	-		
45	Gas quenching system: Isolation of gas quenching system from the chamber	Isolation by gate valve shall be provided	-		
46	Gas quenching system : Gas flow meters	Shall be provided at appropriate places in gas storage system	-		

47	Electrical system :Power system for heating elements	415 V± 10 % ,3 phase, 50 Hz. Party shall provide a suitable air cooled, compact type transformer for meeting the required specification. The configuration of transformer shall be mentioned in the quote	-		
48	Electrical system :Power controller	Three phase thyristor power controller shall be provided with latest version. The brand shall be EUROTHERM/YOKOGAWA/SIEMENS/AEG/Honeywell.	-		
49	Electrical system :Electrical Panel	Free standing panel, confirming to IP54 (Rittal/ President/ Valrack make) with full opening front doors for housing all control instrumentation, PLC, push buttons ,lights ,alarms ,motor starters, relays and power meters etc.	-		
50	Electrical system :Control panel cooling	Shall be provided with panel air conditioner	-		
51	Electrical system :Current and voltage display requirements	Provisions shall be made in the electrical panel to measure and display the current and voltage of hot zone heating element.	-		
52	Electrical system :Wiring requirements	Electrical and instrumentation panel shall be wired as per international standards	-		

53	Instrumentation & control system : Control console/Panel	Control console shall be branded (Rittal/ President/ Valrack make) housing for the following: Segments with power panel, vacuum panel and heating & cooling control panel It shall house all the control instruments and switches for operation of the various systems (Viz) Auto/Semi auto or Manual selected switches, furnace start – stop switches with indicator lamps, utility failure indications etc. The panel shall also house all the control switches and instrumentations like temperature programmer controller, over temperature controller, power controller, ammeter, voltmeter and status indicator etc. The control panel shall also provide with a large red mushroom style emergency stop button which will turn off heater power, close all valves(except inert gas) and bring the unit to safe operating conditions (ie. isolate vacuum pumping system, if the emergency is applied during vacuum sequence stage and bring the unit up to the atmospheric pressure) Control panel shall have indication about the status of	-		

		the power supply and its auxiliaries. All the electrical switch gears (control transformers, contactors, relays, fuses, timers and motor starters etc.) shall be mounted on a plate and fitted vertically for convenience of maintenance. Control console shall have full opening back door for easy approach of internal components. The electrical items like MCBs, relays, contactors etc shall be of Siemens/Allen Bradley/ ABB/Schneider/ L&T make. The electrical wiring of the panel shall confirm to the accepted international standards. The control panel shall have audio-visual alarm for alarm/fault indicate any failure in safety systems, auxiliaries, power supply etc.			

54	Instrumentation & control system : Instrumentation and Control	PC based data acquisition and control system with SCADA software shall be provided. An industrial PC system with i7 or higher processor, 16 GB RAM, 1TB HDD, 23” Touch screen monitor. The PC operating system shall be Windows 10 or latest at the time of releasing of Purchase order. Monitoring, recording and controlling of various parameters shall be provided. A laser color printer shall be provided for taking the plots. A suitable Table shall be provided housing the PC system, touch screen and printer near to the control panel.	-		

55	Instrumentation & control system : Auto/ Semi Auto/Manual Controller	Following control instrumentation shall be provided in the system: Auto mode: System shall operate in fully automatic mode based on the programme loaded. All safety and monitoring system shall be enabled. Semi Auto mode: The system shall operate in semi auto mode, in which provision shall be there to change or edit the process variable parameters on line to aid in process development. These parameters shall be used for auto mode operations. All safety and monitoring system shall be enabled Manual mode: The System shall operate in fully manual mode with push buttons and controllers. This mode shall ensure that the process can be completed in case of control system failures. All essential safety and monitoring system are to be enables. The thyristor control output shall be controlled by potentiometer for the manual control mode. An auto vacuum controller shall be provided for complete automation of vacuum pumping system with fully manual over riding facility using vacuum gauges, set point controller and	-		

		programmable logic controllers (PLC). These shall be incorporate vacuum flow chart, manually operated push button switch, status indication LEDs, valves, logic controllers, mode selector switch and utility failure indication with an operator call alarm.			
56	Instrumentation & control system : Temperature programmable controller	Microprocessor based PID controllers of reputed make Siemens/ Eurotherm/ Yokgawa/ Honeywell shall be provided for temperature programming and controlling. Standby PID controller also shall be provided in the system. This programmer controller shall be capable of storing 99 programmes (min). Each programme shall have minimum 50 segments to meet various temperature profiles. This programmer or controller shall be interfaced with power controller for controlling the power to the heating elements. PID temperature controllers: Accuracy ±1 Degree Celsius of full scale input. Make: Siemens/ Eurotherm/ Yokgawa/ Honeywell	-		

57	Instrumentation & control system : Over temperature controller	PID temperature controllers: Accuracy : ±1 Degree Celsius of full scale input Make : Siemens/ Eurotherm/ Yokgawa/ Honeywell An independent over temperature controller of make like Siemens/ Eurotherm/ Yokgawa/ Honeywell with separate thermocouple in each zone shall be provided to cut off the power the Thyristor controller in case of any control loop failure and thereby temperature overshoot.	-		
58	Instrumentation & control system : Programmable logic controller (PLC)	PLC of reputed make Siemens/ ABB/ Allen Bradley/ Honeywell/ GE-FANUC make shall be provided in the system for complete automation of vacuum cycle, gas flow and temperature cycle in conjunction with temperature programmer controller, other process controllers(vacuum cooling and gas flow etc.) and also to achieve various interlocks in the system.	-		
59	Instrumentation & control system : Instrumentation and Control system mimic diagram	A mimic diagram of the system with status indicator, furnace functions/events shall be available to allow the operator to monitor the status through touch screen.	-		

60	Instrumentation & control system : SCADA system	The SCADA system shall be provided an user friendly and graphical user interface to the operator. It shall have an active mimic diagram of the furnace as a whole and separate mimic for the sub system. The mimic diagram shall be active with live process parameter indicators. The SCADA programme shall enable profile programming having different types of events and various parameters, which can be stored and recalled from the PC. Graphical plotting of all parameters shall be provided. The SCADA system shall provide following operations 1. Vacuum, Vacuum heat and natural (Vacuum) cool 2.Vacuum, Vacuum heat , Gas cool (Static) 3. Vacuum , Vacuum heat, Gas cool (Forced) 4. Vacuum, Gas heat (Static) Natural (Vacuum) cool 5. Vacuum, Gas heat (Static) Gas (static) cool 6. Vacuum, Gas heat (static), Gas cool (Forced) Real time plotting of all the process parameters shall be available. The control system shall be designed in such a way that the process shall be completed even if the SCADA front end	-		

		fails. High and low limit of each parameter shall be programmable in the recipe/profile. Audio visual alarms shall be generated in the control panel if the process goes out of the set boundaries. Suitable corrective actions/safety measures shall be enabled automatically. The SCADA system shall have a detailed error reporting system for easy maintenance. All the I/O conditions shall be monitored through the software. A maintenance mode shall be provided to aid in easy maintenance/ fault finding of the system. Remote diagnosis feature shall be provided in the system. Uploading/downloading of PLC software, Auto Diagnostic for Maintenance shall be provided.			

61	Instrumentation & control system : Softwares	All software provided shall be licensed to VSSC. Licensed version software CD and replaceable hard disk installed with all the software shall be included. Maintenance, Enhancement, automatic up-gradation, and Support for two years for all software. One re-installation CD for the PC.	-		
62	Instrumentation & control system : Calibration of sensors and equipment	All vacuum and temperature sensors and instruments shall be calibrated in accredited lab and certificate shall be furnished.: Temperature range : 500 to 1200 degree centigrade.	-		
63	Instrumentation & control system : Online UPS	Online UPS (reputed brand) shall be provided of adequate rating with 30 min backup for PC, PLC another control instrumentation to monitor the parameter during power failures and also bring the system to safe condition during power failure. The model, power rating shall be mentioned in the quote.	-		

64	Safety features : Power failure	In the event of power failure all the process valve in the system shall immediately go to the closed position. The system shall continue to admit the cooling water from the over head water tank for chamber/ auxiliary cooling. When the power resumes, the process should restart from the beginning/or from the existing process temperature point.	-		
65	Safety features : Over temperature protection	In the event of over temperature, it should switch off heater power with indicator light and alarm sound.	-		
66	Safety features : Overload protection	All the motors shall be fixed with the overload protection to protect the rotary, roots pump motors and other motors from drawing excessive current due to over load	-		

67	Safety features : Cooling water failure	Water lines for different systems of the furnace shall be taken from a central manifold distributing them in to various circuits providing each with a control valve for independent operations. Similarly the outlet water from different systems of the furnace shall be connected to a common outlet manifold. Water flow switches shall be provided on the outlet of each system so that the water flow rate of each of the system shall be since and OK. Signal shall be given to operate the control system. In case of water supply failure or reduced rate of water flow, these switches de-energized the electrical circuits and give alarm showing the status of the system through indicators. In the event of low water flow to critical circuits like chamber, electrodes etc., the control shall shut down heater power, indicator light and alarm sound shall be activated and shall automatically switch over to the emergency the over head tank. There shall be indicator light and alarm sound in case of water failure from over head tank also.	-		

68	Safety features : Alarms	All alarms shall have audio visual, display/indication with logging of valves (if applicable). The visual display shall, be made in such a way that the fault shall be displayed/ diagnosed in the PC screen itself and suitable cases of alarm and the remedies shall be taken to remove the alarms shall be made. Alarms shall be provided for 1.Low water pressure/flow for pumps and furnace chamber. 2.Diffusion pump/TMP temperature: high/low 3.Roughing pump temperature: High 4.Ground fault: job touching the heating element etc. 5.Pneumatic pressure: High/Low 6.Cycle complete indication 7.And for all necessary safety interlocks	-		

		Closed loop water cooling system as standalone system shall be provided by the party. System design shall be based on the configuration of furnace and detailed specification shall be provided in the technical bid. The system shall use a refrigeration system for cooling the water, utilized for cooling the furnace chamber, furnace door and vacuum pumps etc, with the following elements. Inlet and outlet water manifolds with distribution lines for various water circuits and temperature sensors			
69	Safety features : Closed loop water-cooling system	At the inlet of the water line, isolation valve pressure relief valves, pressure gauge shall be provided (depending upon number of circuits, required number of isolation valves shall be provided) An over pressure safety relief valve and pressure gauge shall be provided at inlet manifold to protect the chamber in case of over pressure than the set values. All water pipe lines shall made of stainless steel to prevent corrosion Party shall provide a cooling plant bypass system for Diffusion pumps/TMP and chamber cooling	-		

		during power failure.			
70	Safety features : Pressure switches	Two pressure switches on in pneumatic line and the other in the process gas line shall be connected to alert the operator by alarm in case of the gas supply pressure drops below the required operating level.	-		
71	Safety features : Vacuum controller	Out gassing alarm: vacuum gauge controller shall be interlocked with process parameter such that in the event of pressure raise due to out gassing from the article, it should give generate an output signal with audio , visual temperature alarm warning and later to switch of heater or reduce heating power. Proximity switch : The high vacuum valve shall be fitted with proximity switches to provide the signal on the valve fully closed position so that even if the electrical signal gives any wrong signal , the proximity switches will not allow other operations shall be carried out.	-		
72	Safety features : Door closer interlocks	This shall prevent heater power to the furnace unless the door is shut	-		

73	Safety features : Interlocks	Interlocks to avoid manual errors like failure to close the door, operations of manual valves shall be provided. Water, air and vacuum fail interlocks shall be provided. There shall have indications as well as audio alarm provided on the front panel	-		
74	Safety features : Pneumatic supply	Pneumatic supplies to all the valves shall be from pneumatic manifold fabricated with stainless steel material. This manifold at the inlet shall have isolation valve, pressure gauge, filters, lubricators and regulator. A pressure switch shall also be incorporated on the manifold give an alarm, which alerts operator if the pressure becomes low. Check valves shall be provided at critical locations	-		

75	Safety features : Safety interlocks	a.Electrical power fails/restarts on resuming power (manually selectable) b.Water- pressure, flow reduction, temperature- rise, pneumatic pressure failure, etc. c.Furnace opening minimum temperature d.Ensure ambient pressure to open furnace e.Any vacuum pump failure, protection of pumps from over heating f.Safety against quenching motor power failure g.Ground fault (job touching on the heating element) alarm/ switch off heating h.Over temperature alarm / switch off i.Program end control and not to restart any system j.Ensure holding pump and valve k.Door closing confirmation l.All other necessary interlocks for the health of the furnace and job m. Vacuum level controls of heating and switching operations	-		

76	Technical documentation	The following documents (in English) shall be provided along with the furnace: Instruction manual – 2 sets Maintenance manual – 2 sets Diagrams for all mechanical assemblies with parts lists Mechanical, Electrical and Electronic circuit diagrams. Technical documentation (in English) for the brought out items. One soft copy of all the manuals and diagrams in PDF format, as well as the specific programs (PLC) in CD. Calibration certificate for all the vacuum gauges , thermocouples shall be provided. Metric system of measurement shall be used in the system documentation, specifications drawings, manuals etc.	-		
77	Spares and consumables for 2 years of operation (quote as optional)	The party shall supply adequate quantity of spares including electronics spares, vacuum components, gauges, Spare hot zone, etc and also adequate quantity of consumables required for 2 years of operation of the furnace on two shift basis. The list of spares and consumables with quantities shall be clearly indicated in Technical bid. Price breakup shall be provided in price bid.	-		

78	List of spares & consumables for the operation of furnace (quote as optional)	Parties shall quote separately all the spares, consumables for the operation of the furnace. This includes electronic, electrical items& mechanical items, vacuum pumps& accessories, control system& PCB required for trouble free operation for 10 years. Price breakup shall be provided in price bid.	-		
79	Essential Accessories	Voltage stabilizer with transformer for the furnace working zone from reputed supplier like BRANSON/equivalent reputed make	-		
80	Terms & conditions : Credentials	The party shall have supplied similar vacuum furnaces to government organizations and aerospace industry. Address and details of the company (year of supply, commissioning date & customer feedback) where they have supplied shall be mentioned in their offer.	-		

81	Terms & conditions : Documents shall be submitted along with quotation	Party shall provide all details like model number make and specifications of all the temperature /pressure controllers /sensors, thermocouples, etc as well as for the sub systems and accessories used in the furnace. Lay out plan: General arrangement of furnace lay out details with drawings and necessary building plan. Utilities required: party shall clearly indicate the details of power and compressed air pressure Party shall give supporting documents for design calculations for i.Power ii.Heat shields iii.Chamber wall thickness iv.Vacuum pumping v.Blower and heat exchanger .	-		

82	Configuration review	It shall be arranged within short time of placement of supply order, in which every aspect of the work with proper drawings shall be explained to our engineers. Necessary changes suitable for improvement of the system performance/functionality within the scope of supply as suggested by VSSC engineers shall be incorporated. Drawings and design must be approved by VSSC engineers before commencing the proposed work. Party shall submit the list of bought out items with brand and model. List of materials of fabricated items shall be provided separately.	-		

83	Terms & conditions : Pre Delivery Inspection	Following test shall be carried out by a reputed third party (having necessary accreditation for performing the test). DP test of all weld joints, Radiography of welds exposed to vacuum.Hydro testing of the chamber shell before assembly. Performance validation of the furnace shall be carried out in the presence of VSSC representatives at the supplier's site. The furnace has to be fully assembled and erected for this purpose. It should meet all technical specification mentioned in the Technical description, Sl.No 1 to 75. Following reports/ certificates shall be provided by the party to VSSC representatives at the time of PDI. Test certificates for all the materials used in fabrication of vacuum furnace and its sub systems. Test certificate and traceability of molybdenum shall be provided. Following test shall be carried out in presence of VSSC PDI representative a) Leak testing of the whole unit. b) Vacuum level testing of the completely assembled furnace at room temperature.	-		

		(Pumping down time & Ultimate vacuum achieved) c) Testing of automatic operation of vacuum system from cold start to vacuum ready indication. d) Testing of heating system of furnace. Operation of furnace under Vacuum/ Argon gas to mutually agreed heating cycle. e) Testing of gas control system /gas quenching. f) Testing of the unit completely with safety devices, interlocks and mechanical accuracy wherever specified. Certificate of calibration of all indicating and control instruments, thermocouples shall be provided from calibrating agencies those have traceability to national standards Dispatch clearance shall be provided by VSSC representatives based on satisfactory pre-dispatch inspection and testing at OEM site.			

84	Terms & conditions : Packing & Delivery schedule	The supplier shall provide faultless seaworthy packing of the goods as is required to prevent their damage or deterioration during transit to their final destination. The delivery of the furnace shall be completed within 6 months after the approval of design drawings submitted by the party to VSSC. The design drawings shall be submitted within a month after placement of PO.	-		

85	Terms & conditions : Installation, Commissioning and acceptance	The supplier shall undertake the full responsibility for the dispatch and delivery of the furnace at the identified site, its successful installation and commissioning at VSSC, Trivandrum. The furnace shall be inspected for the following after installation and commissioning: •Furnace operation with various parameters. •Demonstration of vacuum level and time. •Running of mutually agreed cycles to demonstrate various capabilities of the furnace. •Minimum of 3 successful heating trials to maximum operating temperature with full load followed by maximum quenching rate shall be demonstrated Two VSSC personnel shall be trained for the operation and maintenance of the furnace at the time of final inspection and commissioning of the furnace at VSSC. Final acceptance shall be signed only after satisfactory erection of the entire system, complete integration, testing, commissioning and training at VSSC site	-		

86	Terms & conditions : Utilities	Electric power supply to the furnace shall be provided by VSSC at installation site as per the following specifications: 1.Voltage: 415±10%, Three phase and Neutral 2.Power: kVA shall be specified by supplier 3.Frequency : 50Hz ± 1% 4.Earth: 2W. Pneumatic supply will be provided, supplier to indicate pressure and flow requirements.	-		
87	Terms & conditions : Standard warranty/Guarantee	The complete system and its associated hardware / software shall have a warranty of 24 months from the date of installation, commissioning and acceptance of the furnace at VSSC Maintenance/ repair /replacement of any hardware or software component of the system during warranty period shall be done free of cost (including expenses of Engineer from OEM). Any software upgradation / modifications required during warranty shall be done free of cost.	-		
88	Terms & conditions : Extended Warranty	Extended Warranty (Optional): It shall be quoted separately. The terms and conditions shall remain same as that for standard warranty	-		

89	Terms & conditions : After Sales service	Guarantee for supply of spares & Service support: The supplier shall guarantee supply of spares, service and extend AMC support for a period of 10 years from the date commissioning and acceptance of the machine.	-		
90	Terms & conditions : AMC	The party shall undertake non-comprehensive AMC for a period of five years, after the expiry of warranty period. The quote for AMC is mandatory and shall be in Indian Rupees since it is envisaged that the Non-Comprehensive AMC is to be carried out by the authorized Indian Service Provider of the manufacturer. The scope shall be for two preventive maintenance visits per year. For each preventive maintenance, duration shall be of 3 days per visit. The scope shall also include any number of breakdown visits. In case of any major breakdowns which would need the intervention of original equipment manufacturer (OEM), the quote shall include per visit cost for the same. AMC shall be quoted separately.	-		

Document : vacuum furnace specification

Supporting Documents required from Vendor

1. Cateloge of similar furnace

2. Credential of party. and documents related to similar items supplied

3. data sheet

4. Your Detailed Quotation in PDF Format, WITHOUT ANY PRICE DETAILS/MASKING ALL PRICE DETAILS

5. Local Content Declaration

6. Any other documents

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	Sea worthy packing	Yes / No / Explain	
2	Pre-delivery inspection before dispatch of furnace to VSSC	Yes / No / Explain	
3	Party shall install and demonstrate the furnace at VSSC	Yes / No / Explain	
4	Ignore the Condition "Sea Worthy Packing" as mentioned above or wherever its appears in the Tender Documents. Its not applicable to this Tender as items as per Make In India policy only is acceptable against this Tender. Note and Confirm.	Yes / No / Explain	
5	Foreign vendors are not permitted to quote. Only Class-I and Class-II Local suppliers as per Make in India Policy are eligible to participate in the bid. Note & Confirm.	Yes / No / Explain	
6	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	
7	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	

8	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	
9	IMPORTANT NOTE: This being a Two Part Tender, Cost shall be mentioned in the Price Bid Only. All the documents being uploaded like quote split up details, AMC cost etc should not contain the rates/costs. However a copy of your PRICE BID, AMC quote etc WITHOUT PRICE SHALL BE UPLOADED in the Documents Solicited from the Vendor Field[available in Bid forms] TO KNOW THE PATTERN OF QUOTE.[ENSURE NOT TO MENTION ANY PRICE,OTHERWISE THE QUOTE WILL BE INVALID. NOTE/CONFIRM.	Yes / No / Explain	
10	Taxes and other costs, if any . [Note: VSSC is a Public Funded Research Institution under the administrative control of Department of Space and is eligible for partial exemption of IGST @5% vide Notfn No. 45/2017, 47/2017 dt 14.11.2017 respectively. Necessary IGST EXEMPTION CERTIFICATE shall be issued.]	Yes / No / Explain	
11	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 Indenity Bond in lieu of BG. In the event of non-performance of contractual obligations, SD will be forfeited).	Yes / No / Explain	
12	Standard Warranty Period	Yes / No / Explain	

13	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	
14	Delivery Terms.	Yes / No / Explain	
15	Please indicate Delivery Period as per following milestones:- a) Time required for Submission of Design Drawings to VSSC from the date of receipt of P.O. b) Time required for Manufacturing the item & offering for PDI, from the date of receipt of Design Drawings clearance from VSSC. c) Time required for Delivery of items at VSSC from the date of receipt of Despatch clearance from VSSC, after PDI. d) Time required for Installation,Commissioning & Completion of Training, from the date of receipt of Site Readiness/Installation intimation from VSSC.	Yes / No / Explain	
16	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	
17	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	
18	Extended Warranty Details, if applicable. [Note: Dont Mention any price details here]	Yes / No / Explain	
19	AMC Details. [Note: Dont Mention any price details here]The rate should be mentioned in the Price Bid Only. T&C shall be uploaded in Documents Solicited from Vendor Fields[available in Bid forms].	Yes / No / Explain	

20	You have to submit the duly filled compliance matrix of the Technical Specification of the Machine [as per our attached specification & terms and condition document] along with the offer and shall bring out any deviations in detail, without fail. The duly filled Compliance matrix shall be uploaded in the Documents Solicited from the Vendor Filed[available in Bid forms].	Yes / No / Explain	
21	Offer Validity.[After opening of Part- 120 Days, After opening of Part-II-60 Days]. Confirm.	Yes / No / Explain	
22	Your Bank details like Account No., IFSC Code etc & GST Reg. No.	Yes / No / Explain	
23	PO Ordering Address with Name and Contact Details of Sales Person concerned (e-mail and phone number).	Yes / No / Explain	
24	Country of origin of the offered product	Yes / No / Explain	
25	Any other terms	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
1	VACUUM FURNACE	1.00 Nos.		-		

Common charges (Applicable for all items)

Cost of Spares and Consumables for 2 Years	
Voltage Stabiliser with Transformer cost.	
Installation and Commissioning Charges	
Extended Warranty Charges, if applicable.	
NC-AMC Charges for 5 Years,excluding Taxes	
P&F Charges	
Documentation & Hadnling charges	

Transportation Charges	