

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

Tender for Manufacture and supply of 3D Printed PRU Hosuing

Bids to be submitted online

**Tender No.: VSSC/PURCHASE UNIT V (MME PURCHASE)/VS202200117401 dated
05-05-2022**

A. Tender Details

Tender No :	VSSC/PURCHASE UNIT V (MME PURCHASE)/VS202200117401
Tender Date :	05-05-2022
Tender Classification:	GOODS
Purchase Entity :	PURCHASE UNIT V (MME PURCHASE)
Centre :	VIKRAM SARABHAI SPACE CENTRE (VSSC)

Tender for Manufacture and supply of 3D Printed PRU Hosuing

1.This is a Two-Part tender i.e. Techno-Commercial (Part-I) and Price Bid (Part-II). Hence all technical & commercial details shall be furnished in the Techno-Commercial Bid while price shall be indicated only in the Price Bid.

2.This being a two part tender, the tenderers should not attach any documents containing Pricing information along with Technical Bid (Vendor Specified Terms and Supporting Documents from Vendor). We do not open PART-II (Price Bid), if PART-I (Technical & commercial Offer) does not meet with our technical specification requirements. Cost split up, other price details etc. shall be uploaded as a separate document under Commercial Documents Solicited from the Vendor.

3.Our Tender Enquiry contains technical requirements and specification. The detailed technical specification of your offer should be covered in the technical part. The Technical documents need to be attached online as a single PDF file without any price information. Technical bid containing Price details will be treated as unresponsive offers and rejected.

4.The prices are to be mentioned only in the Price Bid form attached. Any price split up regarding the item, sub-systems or other commercial conditions shall be attached as a separate document in the tender. The vendors have to compulsorily submit the compliance statement online; otherwise their offer will not be considered for further evaluation. Before entering the compliance statement, vendors are advised to refer the detailed specification provided.

5.Compliance Matrix showing response to each point in Technical Specification with required supporting documents shall be uploaded in Technical Bid (Part-1)

6.The Technical Specification / Drawing / Product Catalogues / Works carried by vendor / Make offered etc. as a single PDF file without any financial details has to be uploaded online mode by the vendor.

7.Customs Duty: We are availing Customs Duty at a Concessional Rate vide Notification No.50/2017 (Sl. No.539 A) dated 30/06/2017 as amended by Notification No. 5/2018 dated 25/01/2018

8.Where agents participate in a tender;

a.Either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.

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

9.Offer Validity: Minimum 120 days [for Two Part Tender]. Mandatory compliance required. Any offer with lesser validity will be treated as unresponsive and will be excluded from the procurement process.

10.Delivery Period: Delivery of the item should be made as per commercial terms attached in the tender.

11.Delivery Terms (normal): Our standard delivery term is FOR, VSSC Trivandrum. In case any vendors offer delivery term of Ex-Works, Packing & Forwarding charges, if any, should be indicated separately either as a percentage of the quoted rate or as a lump sum amount. FOR Destination (for Indigenous cases) & FOB/ FCA or Ex-works (for Import cases).

12.Payment (normal): Our standard payment term is 100% within 30 days for indigenous order and Sight Draft/LC for foreign orders. All Bank charges shall be on the account of Vendor.For Foreign Vendors,Required Bank details shall be mentioned in the Invoice.

13.Liquidated Damages (mandatory compliance required) - The delivery period mentioned in the order is the essence of the order /Contract. In case of delay in delivery of material as per the delivery schedule mutually agreed and stipulated in the order, Liquidated Damages@0.5% per week (or part thereof on the undelivered portion) subject to a maximum of 10% of the contract value shall be levied. Hence delivery date mentioned in the quotation shall be realistic. Failure to comply shall lead to the rejection of offer.

14.Security Deposit: In the event of placement of order, the successful tenderer/contractor shall submit a Security Deposit equivalent to 3% of the order value, upon receipt of the order, along with the order acknowledgement. The security deposit can be submitted as Bank Guarantee or fixed deposit receipt from any of the Scheduled Banks executed on non-judicial stamp paper of appropriate value, and shall be valid for a period of sixty days beyond the date for completion of the Purchase Order/Contract. This shall be returned after successful execution of the order. Kindly note that submission of SD is a mandatory requirement and this has to be confirmed in the techno-commercial bid. Failure to comply shall lead to the rejection of offer. If any tenderer is eligible for exemption from the payment of SD, necessary copy of the documents should be attached along with the technical bid.

15.LD, SD, clauses are mandatory and offer without acceptance of these clauses will not be considered for evaluation.

16.HIGH SEA SALE CASES: Vendors wish to submit their offer on HIGH SEA SALE (HSS) basis shall mandatorily mention their Import Export Code, Bank Authorisation code and GSTIN in the offer. In the event of award of PO/contract, they have to submit HIGH SEA SALE AGREEMENT and INVOICE pertaining to Indian trader (in INR) and INVOICE from the Foreign supplier (in Foreign currency). Vendors fail to submit the above information / documents will be responsible for the late fee and penalties, if any, levied by the Customs Authorities and any such amount charged on the above reason from the Department will be recovered from the Invoices of the Indian Vendors.

17.Vendors shall provide the name, address, email ID and contact number of Authorised official in order to contact in case of need.

18.PO will be placed on technically and commercially suitable lowest offer basis

19. If any vendor submits forged / false documents along with the tender, offer of such vendors will be summarily rejected and such bidders will be blacklisted for all future tenders.

20.Tender Opening: Generally, the Technical and Commercial Bid [Part-I] will be opened on the first day of the schedule. No further intimation will be sent in this regard. Interested bidders can attend the Technical bid opening to know the details, at their expense. In the event of any technical snag and if the tenders could not be opened on the first day it will be opened on the second day as per the schedule.

21.VSSC has the right to cancel the tender without assigning any reason thereof.

22.VENDORS ARE REQUESTED TO GO THROUGH THE ATTACHMENTS TO THE E-TENDER BEFORE SUBMITTING THEIR OFFERS.

23.Our Bankers: State Bank of India, Thumba Branch, ISRO PO, Trivandrum 695022.

24.Consignee address: Senior Purchase and Stores Officer, Central Stores, RFF, VSSC, ISRO PO, Trivandrum.

25. If a vendor is not able to submit bid against this tender due to any reason, such vendor is requested to post their REGRET message in the e- procurement portal with clear reasons or email to ps01_mme_pur@vssc.gov.in.

26. Prices quoted shall be firm and fixed and no variation in the same shall be allowed.

A.1 Tender Schedule

Bid Submission Start Date :	05-05-2022 16:00
Bid Clarification Due Date :	27-05-2022 12:00
Bid Submission Due Date :	07-06-2022 14:00
Bid Opening Date :	07-06-2022 15:00
Price Bid Opening Date :	14-06-2022 16:00

B. Tender Attachments

NA

Instructions To Vendors

1. INSTRUCTIONS TO TENDERERS AND TERMS & CONDITIONS OF TENDER where the indent value is < `2.00 lakhs for imported stores items

1. I. INSTRUCTIONS TO TENDERERS

1.The Tenderers should submit quotations in duplicate in a sealed envelope, super scribing the Tender No. and due date of opening and complete in all respects with technical specifications, including pamphlets and catalogues.

2.A Proforma Invoice may also be given which should contain the following information:

a)The FOB/FCA value, the C & F value for import by Sea freight / Air freight up to and for air parcel post up to should be separately indicated.

b)Agency Commission: The amount of commission included in the price and payable to the Indian Agent of the Contractor shall be paid directly to the Indian Agent by the Purchaser in equivalent Indian Rupees on the basis of an Invoice from him applying T.T. buying rate of exchange ruling on the date of placement of the Purchase Order and which shall not be subject to any further exchange variations. This payment will be released to the Indian Agent immediately after Customs clearance of the goods in India.

c)The Contractor shall invoice only for the net amount payable to him, after deducting the amount of Agency Commission included in the invoice which will be paid to the Indian Agent directly by the Purchaser. However, the Contractor's invoice should separately reflect the amount of commission payable to his Indian Agent.

d)The earliest delivery period and country of origin of the Stores.

e)Banker's name, address, telephone/fax Nos. & e-Mail ID of the Contractor.

f)The approximate net and gross weight and dimensions of packages /cases.

g)Recommended spares for satisfactory operation for a minimum period of one year.

h) Details of any technical service, if required for erection, assembly, commissioning and demonstration.

3.The FOB/FCA and C & F prices quoted should be inclusive of all taxes, levies, duties arising in the tenderer's country.

4.The offer should be valid for a minimum period of 120 days from the due date of opening of the tender.

5.Samples, if called for, should be sent free of all charges.

6.Late and delayed tenders will not be considered. Quotations by cable must be followed by detailed offers.

7.Offer made by Indian Agents on behalf of their Principals, should be supported by the proforma invoice of their Principals.

- 8.The details of Import Licence will be furnished in the Purchase Order.

- 9.The authority of person signing the tender, if called for, shall be produced.

- 10.Instructions / Operation Manual containing all assembly details including wiring diagrams should be sent wherever necessary in duplicate. All documents / correspondence should be in English language only.

- 11.The Purchaser reserves the right to accept or reject the lowest or any offer in whole or part without assigning any reason.

- 12.It is expressly agreed that the acceptance of the Stores Contracted for is subject to final approval in writing by the Purchaser.

- 13.a) Part shipment is not allowed unless specifically agreed to by us.

- b) As far as possible stores should be despatched by Indian Flag Vessels /Air India through any Agency nominated by us.

2. 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.

- (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.

3. i. Model Certificate for Tenders (For Transitional Cases)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I hereby certify that this bidder is not from such a country and is eligible to be considered.

ii. Model Certificate for Tenders

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

iii. Model Certificates for Tenders for Work involving possibility of sub-contracting

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contracting from such countries; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contract from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered.

C. Bid Templates

C.1 Technical Bid - Manufacture and supply of 3D Printed PRU Hosuing

1. 3D Printing / Additive Manufacturing (Metals , Polymers etc.) Manufacture and supply of 3D printed PRU Housing component as per dwg. No. GY-SM-VS-FB-CM-STR-01-01-06-001(T) Sheet 1 of 2 and Sheet 2 of 2)

Item specifications for 3D Printing / Additive Manufacturing (Metals , Polymers etc.)

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Dwg .No	GY-SM-VS-FB-CM-STR-01-01-06-001(T) Sheet 1 of 2 and Sheet 2 of 2)	Yes / No / Explain		

2	SCOPE OF SUPPLY	<p>a.Manufacture and supply of 3D printed Titanium alloy Ti6Al4V grade SCM Compact PRU Housing components (Qty: 2 nos.) as per drawing No. GY-SM-VS-FB-CM-STR-01-01-06-000 (Sheet 1 of 2 and Sheet 2 of 2) in Annealed condition and 1 set of test coupons also in annealed condition. 3D model of the component in STEP /STL format would be provided on request.</p> <p>b.The entire component has to be printed as a single piece (monolith) through powder fed Directed energy deposition (DED) additive manufacturing (AM) route only. 3D printing of multiple parts of the components and joining of these parts to realize the compact PRU housing as per the drawing is not permitted.</p> <p>c.Machining of the parts and radiographic inspection will be in the scope of the party.</p> <p>Offers of parties offering to print the components in multiple parts and joining the same to realize the final component will not be accepted.</p>	Yes / No / Explain		
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3	GENERAL GUIDELINES:	General guidelines for manufacturing the 3D printed components as specified in AMS 4999A and cross referred international standards will be applicable.	Yes / No / Explain		
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4	PREREQUISITES TO BE SATISFIED BY THE PARTY:	<p>a. Party should have a Powder fed DED machine currently in operation/ regular use.</p> <p>b. Party should have a machine that is capable of 3D printing atleast 750 mm x 600 mm x 400 mm size of components (in 5 axis mode) in Titanium alloy Ti6Al4V.</p> <p>c. Party should have supplied 3D printed components of similar class/ size earlier to Aerospace companies. Photographs of such components in Ti6Al4V have to be sent along with the offer.</p> <p>d. Raw Material: In case of powder and plates procurement is from mills abroad, the source of powder shall be US/ Europe only.</p> <p>e. The Titanium alloy Ti6Al4V powder has to be as per AMS 4999A or equivalent international standard.</p> <p>f. The Titanium alloy Ti6Al4V plate as substrate has to be as per AMS 4911 or equivalent international standard.</p> <p>g. Party has to forward the mill test certificates of the raw materials (powder and plate) and get clearance for production of the part from VSSC.</p> <p>h. Party has to agree to supply the tested samples as per Clause 7b. and test coupons for mechanical property evaluation to VSSC in as-printed +</p>	Yes / No / Explain		
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		<p>annealed condition as per Clause 6 b.</p> <p>i. Party has to agree to carryout qualification of the components, test bars/test coupons through confirmatory tests as per the Terms and conditions specified in Clause 6.</p> <p>j. Party has to confirm that the 3D printed components and test coupons will meet the Chemical composition and mechanical properties specified in AMS 4999A standard.</p> <p>k. In case the party is an Indian agent and they wish to outsource the 3D printing activity, they have to mention the source/ facility at which the 3D printing of components is proposed to be carried out. The facility has to comply to points 4 a-j listed above.</p> <p>Party has to confirm that their offer will comply to points 4a-k mentioned above. Otherwise their offer will not be accepted.</p>		
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5	RAW MATERIAL:	<p>a. Party has to source all the raw materials (Ti6Al4V powder and plates) required for realization and supply of these products.</p> <p>b. VSSC will not supply any consumables required for the 3D printing of components.</p> <p>c. Raw materials (Ti6Al4V powder and plates) have to be from Sources in India/US/ Europe only.</p> <p>d. If any of the above criteria are not met, offer will not be accepted.</p>	Yes / No / Explain		
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6	PROCESSING:	<p>a.The party has to prepare a process plan indicating critical processing check points, test bars/ coupon layout and heat treatment cycle proposed etc., to VSSC for approval before manufacture.</p> <p>b.Test coupons and test samples have to be printed prior to the 3D printing of components using the same build parameters and thickness proposed to be used for 3D printing of components. 1 set (3 nos.) Test coupons to be printed in three different orientations (1 no. each in X, Z and 45° mutual to all three planes XY, YZ, ZX planes. The same have to be supplied to VSSC. Test samples and test coupons shall be in same supply condition as that of the components being delivered. The test coupons should be of 20 mm Thickness x 60 mm Width and 320 mm Length in as printed and annealed condition.</p> <p>c.3D printing of components has to be done with same build parameters as that followed for test coupons and have to meet the dimensional requirements specified in the corresponding STEP file.</p> <p>d.Annealing/ heat treatment of the test coupons, test samples and components have to be carried out together.</p>	Yes / No / Explain		
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7	TESTING AND QUALIFICATION:	<p>a.Chemical Composition: Chemical composition has to be evaluated on 2 nos. samples per component (one sample from each end i.e.- one from top and one frombottom) and on 1 sample per set each representative of test bars and test coupons. Acceptance criteria is AMS 4999A- Table 1 .</p> <p>b.Mechanical Property Evaluation : In addition to 6b, Party has to carry out the mechanical property evaluation (Tensile testing and fracture toughness testing (FTT)) as per ASTM E8M and ASTM E399 respectively on 1 set of samples (1 no. sample representative of each of the three orientations (X, Z and 45 ° to XY, YZ, ZX)- i.e. Total 3 nos. Tensile tests and 3 nos. FT Tests). Mechanical properties (Tensile and Fracture toughness) have to meet the requirements specified in AMS 4999A- Table 2B. Direction of crack propagation in FTT specimens shall be along X, Z and 45° directions respectively.</p> <p>c.Fracture Toughness: In case of invalidity due to thickness, KQ value has to be reported along with the thickness on which it was evaluated. Acceptance criteria</p>	Yes / No / Explain		
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in case of invalidity in thickness is KQ of 66 ksi-in^{1/2}. In case of invalidity due to thickness and crack length (both) or any other invalidity conditions specified in ASTM E399, retest has to be done by the party. The retest values along with initial test values have to be reported.

d. Test coupons: Party has to provide 1 set (3 nos.) of test coupons to VSSC along with the delivery of the components as per clause 6 b.

e. Test Samples: All the destructive tested Tensile and FTT samples have to be preserved with proper identification and have to be delivered to VSSC along with the components.

f. Microstructure: Microstructure has to be evaluated on 1 sample/ component and on 1 sample per set - each representative of test bars and test coupons and has to meet the acceptance criteria specified in Clause 3.6.2 of AMS 4999A standard.

g. Radiographic inspection as per clause 4.3.1.5 of AMS 4999A: Detailed radiographic shooting sketches and inspection plan has to be submitted by the party along with the QAP. The place at which radiography is proposed to be carried out and details thereof has to be indicated in the

		<p>offer.</p> <p>h. Dimensional inspection of components: Dimensional inspection of the components has to be done after completion of all post processing operations i.e. in supply condition.</p> <p>i. Retest philosophy:</p> <p>i. In case any of the mechanical (tensile) properties are not met during the first test, retest has to be carried out on double the no. of samples.</p> <p>ii. Retest philosophy for FTT samples due to invalidity is applicable as per clause 6c. In case the FTT samples do not meet the minimum specified FT values, testing has to be done on double the no. of samples.</p>			
8	DIMENSIONAL TOLERANCES:	Components have to be supplied in finish machined condition as per the drawings.	Yes / No / Explain		
9	INSPECTION:	Party has to carry out all the testing, qualifications and inspection activities as per clause 7 and provide documents as mentioned in Clause 10 herein.	Yes / No / Explain		

10	DOCUMENTATION:	<p>The following details have to be provided along with the components and the test bars being delivered.</p> <p>a.Details of raw materials used including the chemical composition, batch/ lot number.</p> <p>b.Details of the machine used for 3D printing including the 3D printing parameters</p> <p>c.Product stage chemical analysis (of test coupons, test bars and components) including gas content.</p> <p>d.Heat treatment/ Post processing details of the components and test bars/coupons</p> <p>e.Mechanical Property evaluation report.</p> <p>f.Microstructure report of components, representative of test coupons and test bars.</p> <p>g.Radiography inspection report.</p> <p>h.Dimensiona l inspection report of components including all the dimensions mentioned in the drawing.</p> <p>i.Certificate that test coupons/ test bars and components have been 3D printed with same build parameters and same annealing cycle has been followed.</p>	Yes / No / Explain		
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11	DELIVERY:	a. Delivery of the first component and test coupons, tested samples has to be completed within 60 days of P.O placement/ approval of QAP whichever is later. b. Delivery of 2nd component along with test coupons has to be completed within 45 days of production clearance.	Yes / No / Explain		
12	TECHNICAL COMPLIANCE:	Party has to give a Technical Compliance statement against all the Technical terms and conditions specified herein without which their offer can be rejected.	Yes / No / Explain		
13	PROVISION OF 3D MODEL	3D model of the component will be provided by the party based on the confidence that the party would be able to 3D print the component	Yes / No / Explain		

Document : Drawings

Document : Drawings

Common Specifications (Applicable for all items)

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	AMS	4999A	Yes / No / Explain		

Supporting Documents required from Vendor

1. Technical and commercial compliance to terms and conditions

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	3D Printed, Heat treated, machined as per drawing and Radiographically inspected condition	Yes / No / Explain	
2	Delivery Terms: FOR, VSSC	Yes / No / Explain	
3	Delivery Period: a). Delivery of the first component and test coupons, tested samples has to be completed within 60 days of P.O placement/ approval of QAP whichever is later. b). Delivery of 2nd component along with test coupons has to be completed within 45 days of production clearance.	Yes / No / Explain	
4	Payment Term: Our standard payment term is 100 per cent within 30 days of receipt and acceptance of Stores at our site for indigenous orders and Sight Draft or Wire Transfer or Irrevocable LC (without confirmation) for foreign orders. The Bank charges shall be to respective Accounts.	Yes / No / Explain	
5	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	
6	Customs Duty: We are partially exempted from payment of Customs Duty vide Notification No.50/2017 Sl. No. 539A CUSTOMS DTD. 30.06.2017	Yes / No / Explain	
7	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 Indentity Bond in lieu of BG. In the event of non-performance of contractual obligations, SD will be forfeited).	Yes / No / Explain	

8	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	
9	PO Ordering Address with Name and Contact Details of Sales Person concerned (e-mail and phone number).	Yes / No / Explain	
10	Any Other Terms	Yes / No / Explain	
11	Quote Validity:Minimum 120 days from the date of tender opening	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
1	3D Printing / Additive Manufacturing (Metals , Polymers etc.) Manufacture and supply of 3D printed PRU Housing component as per dwg. No. GY-SM-VS-FB-CM-STR-01-01-06-001(T) Sheet 1 of 2 and Sheet 2 of 2)	2.00 Nos.		-		

Common charges (Applicable for all items)

Freight charge	
P&F Charges	