GOVERNMENT OF INDIA DEPARTMENT OF SPACE VIKRAM SARABHAI SPACE CENTRE INDIAN SPACE RESEARCH ORGANISATION THIRUVANANTHAPURAM-695022

Ref No: VSSC/CMSE/EOI/CCDD/2022

Date:

INVITATION FOR "EXPRESSION OF INTEREST"

"Expression of interest for realization of Carbon –Carbon composite products for VSSC/ISRO using VSSC established facilities on Government Owned Contractor Operated (GOCO) mode for Three Years "

Vikram Sarabhai Space Centre, Thiruvananthapuram invites Expression of Interest for <u>r</u>ealization of Carbon –Carbon composite products for VSSC/ISRO using VSSC established facilities on Government Owned Contractor Operated (GOCO) mode for Three Years

Table of Contents

| 1. | EOI OBJECTIVE |
|-----|---|
| 2. | MODE OF OPERATION OF EOI |
| 3. | INTRODUCTION |
| 4. | INSTRUCTIONS TO VENDORS |
| 4.1 | Compliance Matrix to be filled by Vendor |
| 4.2 | EVALUATION CRITERIA |
| | EVALUATION OF EOI OFFER FROM VENDOR |
| | CLARIFICATION CONCERNING EOI |
| 4.5 | SUBMISSION OF PROPOSALS |
| 4.6 | PROPOSED CALENDAR OF EVENTS |
| | PRESENTATION OF PROPOSALS |
| 4.8 | VALIDITY OF PROPOSALS |
| 4.9 | RETENTION OF PROPOSALS / PROPRIETARY INFORMATION / CONFIDENTIALITY 12 |
| 5. | SCOPE OF WORK |
| 6. | LIST OF EQUIPMENTS/FACILITIES |
| 7. | Brief description work involved in furnace operations |
| AN | NEXURE-1 (BIDDER'S PROFILE) |

S

1. EOI OBJECTIVE

VSSC is planning to involve technically suitable and competent vendors for realization of Carbon –Carbon composite products for VSSC/ISRO programs.

The purpose of this Expression of Interest(EoI) is to invite proposals from the potential vendors towards realization of various Carbon – Carbon products by operating and daily up keep of process facilities as mentioned in Section 6.0 through GOCO mode for 3 years. On evaluation of EoI, an RFP will be released to the shortlisted vendors.

2. MODE OF OPERATION OF EOI

The interested vendors are advised to read the EoI documents, terms and conditions and other details relating to the work contemplated in the required operation and daily upkeep of process facilities as mentioned in Section 6 towards realization of Carbon – Carbon composite products and fully acquaint themselves to all conditions and matters which may in anyway affect the work or cost thereof. The vendor shall be deemed to have known the nature, scope and magnitude of the work. Vendor shall express their interest only if they consider themselves eligible and if they are in possession of all requisites as per the EoI. The vendors are required to study EoI document and express interest after carefully examining all instructions, eligibility criteria, forms, terms, standards and specification as per the EoI document with full understanding of its implications.

EoI proposals which are not in compliance with EoI conditions will be rejected, without assigning any reasons thereof. Failure to furnish all requisite information and/or documents shall result in repudiation of the EoI. Notwithstanding the foregoing conditions, Vikram Sarabhai Space Centre [VSSC], Thiruvananthapuram reserves the right to assess the capability of the Vendor to perform the contract

keeping in view the overall interest of VSSC. In the event, the vendor capability and capacity are found to be unsatisfactory; VSSC reserves the right to reject the offer.

Any neglect or omission or failure on the part of the Vendor in obtaining necessary information as stated above or in any other matter affecting the vendor shall not relieve them from any risks or liabilities or the entire responsibility for completion of activity in accordance with the EoI Documents.

The requirements stated herein below are a minimum and VSSC reserves the right to request for any additional information and reserves the right to reject the EoI document of any vendor, if in the opinion of VSSC, the qualification or data is incomplete or if the vendor is found not qualified to satisfactorily perform the Contract. The vendor shall bear all costs and expenses associated with preparation and submission of EoI document including post EoI clarifications, discussions, technical and other presentations and VSSC shall not be responsible or liable for such costs, regardless of the outcome of the EoI process. The vendor shall also not been entitled to claim any costs, charges and expenses incidental to or incurred by them through or in connection with the submission of the EoI or its consideration by VSSC, even though VSSC may prefer to modify or withdraw the Invitation to EoI or not to accept the EoI.

At any time prior to the deadline for submission of EoI, VSSC may for any reason on its own initiative modify the EoI document by amendment. The amendment shall be notified by uploading the same online in VSSC's website. VSSC shall bear no responsibility or liability arising out of non-receipt of the same in time or otherwise. Notwithstanding the above, VSSC may at its discretion extend the deadline for submission of EoI in order to allow reasonable time to Vendor to take into account the amendment in preparing the EoI.

All the EoI must be submitted before the time and date fixed for the receipt of EoI as mentioned in the EoI document. VSSC shall not be responsible for non- receipt

of EoI due to any postal delays/loss of EoI documents in transit and delay due to customs/courier, etc. and it shall be the sole responsibility of the vendor to ensure delivery of the EoI within the time fixed. VSSC reserves the right to accept or reject any of the EoI in full or part. EoI received after stipulated time and date shall be rejected.

EoI document is available in the VSSC website i.e. <u>www.isro.gov.in</u>.Interested vendor may download the EoI document from website and submit their response.

Vendor shall submit EoI document only in sealed envelopes, super scribing the EoI advertisement number and the due date and due time of opening the EoI. The EoI shall be complete in respect of all technical requirements, as per the EoI document. Failure to furnish all information as per the requirements of the EoI document and submission of EoI not substantially responsive to the EoI document shall render the EoI/Vendor liable for rejection. Any/all submission of EoI byway of fax/e-mail shall not be accepted.

If the EoI opening date happens to be on an unidentified Holiday due to any reason, including Force Majeure, EoIs shall be opened on the next working day.

The vendors have to get enrolled in the e-procurement portal to access tender and submit their offer online during RFP stage. Vendor shall comply with the procedures for enrollment/registration as mentioned in the e-procurement portal of ISRO.

3. INTRODUCTION

Vikram Sarabhai Space Centre (VSSC) is involved in development and realization of Carbon-Carbon (C-C) composite products for various ISRO s programs.

To realize Carbon-Carbon products for various applications, VSSC has established various processing facilities as mentioned in Section 6. <u>All these facilities are</u> <u>operated round the clock as per VSSC requirements to meet the scheduled</u> <u>requirements of various ISRO programs.</u>

The objective of this EoI is to identify suitable vendors towards realization of various Carbon-Carbon products by "Operating and daily up keeping of process facilities like a) Hot Iso Static Press facility, b) Chemical Vapour Infiltration (CVI) Furnace, c) Carbonization furnace, d) Vacuum Induction Furnace (VIF) & e) Hot air oven".

4. INSTRUCTIONS TO VENDORS

The following instructions shall be followed by the vendors for submitting proposals in response to this EoI.

4.1 COMPLIANCE MATRIX TO BE FILLED BY VENDOR

Table 1.0 COMPLIANCE STATEMENT

(to be provided by the bidder with EoI on their letter head)

| Sl. No. | Particulars | Yes/No | Remarks |
|------------|---|--------|---------|
| 1. | Whether a copy of the Establishment Registration Certificate is enclosed | | |
| 2. | Whether a copy of PAN Card is enclosed | | |
| 3. | Whether a copy of the AADHAR Card/ Udyog AADHAR Card in enclosed | | |
| 4. | Whether a copy of last 3 years financial statement return filled by the establishment (Form-16) is enclosed | | |

| E | Whether a copy of the valid Goods and Service Tax | |
|-----|---|--|
| 5. | Registration Certificate is enclosed | |
| 6. | Whether a copy of the valid Registration /License | |
| 0. | obtained with the Labour Department is enclosed. | |
| | Whether copy of Financial Statements like profits & | |
| 7. | Loss Account, Balance sheet etc., in support of | |
| | financial turnover of the establishment is enclosed | |
| | Whether copy of statement of Bank A/C for the last | |
| 8. | financial year in the name of the Establishment is | |
| | enclosed. | |
| 9. | Whether the Annexure-1(Details of the Bidders | |
| 9. | Establishment) is duly filled in and signed | |
| 10. | Whether the Offer is valid for 180 days from the date | |
| 10. | of opening of the Tender | |

Table 2.0 Compliance Statement to be provided by vendor for assessment

| Sl. No. | Criteria | Compliance (Yes/No) | Details (Documentary proof) |
|------------|---|------------------------|-----------------------------------|
| 1. | The offer can be submitted by Indian company only. An Indian Company would be deemed to be owned by Indian Citizen and by an Indian Company if more than 51 percent of equity interest in the company is beneficially owned by Resident Indian Citizens and Indian Companies that are, in turn, ultimately owned and controlled by Resident Indian Citizens. | | |
| 2. | Vendor shall have sufficient experience in operation and maintenance of High Temperature (150 °C- 2500 °C) and High pressure/vacuum (0-1000 bar) furnace systems or manufacturing of similar systems. | | |
| 3 | Vendor shall have sufficient experience in handling safety critical gases like Methane, Hydrogen and chemicals like IPA, Methyl trichloro silane(MTCS) etc. | | |
| 4 | Vendor shall provide sufficient man power with experience (project manager, Engineers, Supervisors and technicians) to run the facilities round the clock during the entire period of contract | | |

| 5 | The Vendor should be a Public Sector Undertaking / MSME / Company registered under the Companies Act. In case of Companies it should be consistently profit making for the last 3 years. Certified audit copies of the annual financial turnover, IT returns and balance sheet are to be furnished for the previous 3 financial years | |
|----|--|--|
| 6. | Vendor shall submit Past experience in executing similar projects in the field of such Integrated mechanical& chemical systems for ISRO/R&D Institutions/ Government Organizations/ PSU | |

**Compliance to all the above points is required and mandatory, failing which the EoI will not be considered.

Date:..... (Signature of Authorized Signatory with seal)

Place:..... Name in full:

The Government of India has enacted the Micro, Small and Medium Enterprises Development (MSMED) Act, 2006 and the preferences that are extendable to the MSME Units including Women and SC/ST Entrepreneur's as issued by the Government of India from time to time and wherever feasible, will be applicable for this Expression of Interest (EoI). In order to avail the benefits extended by the Government of India to Micro and Small Enterprises, Vendors are requested to submit Entrepreneur Memorandum Part-II duly signed by the General Manager, District Industries Centre or NISIC Registration/UdhyogAaadhar details.However MSMED act can be extended to the vendors who are complying with Vendor Assessment Criteria A, Compliance statement and Technical specifications.

4.2 EVALUATION CRITERIA

The evaluation criteria used by VSSC to determine the acceptability of proposals at any stage and eventual technical discussion with one or more selected vendors will include the following.

Table 3 – Vendor Assessment Criteria - A

| Sl. No. | Criteria | | Mark (min. for Qualifying) | % Weight |
|------------|--|---|-------------------------------|----------|
| 1. | Manufacturer/ Past experience in manufacturing / operation of Temperature composite processing equipm (150 °C- 2500 °C) and High pressure (0- bar) processing equipments. Experience of ten years or more 10 Experience of five years 9 Experience of three years 6 | -1000 ore 0 | 6 | 34% |
| 2 | Past experience in the handling of hazar process gases and chemicals like Met Hydrogen and chemicals like IPA, M trichloro silane(MTCS) etcExperience of ten years or more10 Experience of five yearsExperience of five years9 Experience of three years | hane, Iethyl ore 0 | 6 | 33% |
| 3 | Past experience in executing similar projectthe field of such Integrated mechanchemical systems for ISRO/R&D InstitutionGovernment Organizations/ PSU (FSector Government Undertaking)induring last ten financial years (2011-2021).SectorThree projects or more executed10Two projects executed9One project executed6Vendor shall submit relevant Work (C | ical& ions/ Public India ore 0 0 0 0 0 0 0 0 0 | 6 | 33% |

4.3 EVALUATION OF EOI OFFER FROM VENDOR

4.3 a Method of Conversion of Marks into Percentile for Criteria-A:

- Vendors securing minimum qualifying mark against each requirement (SL no 1 to 3) of table 3.0 are only considered for Percentile calculation.
- Mark scored against SL.No. 1 is multiplied by 3.40 and against Sl. No. 2
 & 3 are multiplied by 3.33 and all are added to get the Percentile of the vendor.
- 4.3 b Vendor meeting all the requirements in compliance matrix of table 1.0, table
 2.0 and securing 60% or above in Criteria-A will be considered to take part in
 RFP. However, based on the Vendors responses VSSC holds the final decision on the evaluation process.
- 4.3.c These guidelines have been prepared to assist vendors in generating the proposals in response to the VSSC Expression of Interest (EoI). **VSSC** reserves the right to revise the requirements based on interaction with vendors during evaluation of EoI.
- 4.3.d Pre-RFP meeting will be held at Vikram Sarabhai Space Centre, Thiruvananthapuram only to the vendors meeting the assessment criteria.
- 4.3.e RFP if issued will be given only to the vendors who will participate in pre-RFP meeting.

4.4 CLARIFICATION CONCERNING EOI

4.4.a Clarifications concerning the EoI may be submitted by e-mail to the VSSC contact point indicated below.

Sr.Purchase and Stores officer, Purchase unit No VI Vikram Sarabhai Space Centre, Thumba CMSE, Vattiyoorkavu Thiruvananthapuram – 695013, India 4.4.bVendors shall not contact VSSC for information on the progress or possible outcome of the evaluation.

4.5 SUBMISSION OF PROPOSALS

4.5.a Complete proposals must be received by the VSSC at the address given below, not later than the date and time specified in the EoI cover letter.

Sr.Purchase and Stores officer, Purchase unit No VI Vikram Sarabhai Space Centre, Thumba CMSE, Vattiyoorkavu Thiruvananthapuram – 695013, India

4.5.b Proposal of the vendor must also include the name of the point of contact, together with the designation, appropriate contact number and e-mail address.

4.6 **PROPOSED CALENDAR OF EVENTS**

| Sl. No. | Event | Time line to complete activities |
|---------|--|----------------------------------|
| 1 | EOI release | ТО |
| 2. | Last date for submission of EoI | T0 + 4 weeks |
| 4. | Finalization of vendors for RFP | T0 +5 weeks |
| 5. | Pre-RFP meeting with identified vendors (separately) | T0 +6 weeks |
| 6 | Release of RFP to finalized vendors | T0 + 10 weeks |

Table 4.0 Time line to complete activities

4.7 PRESENTATION OF PROPOSALS

4.7.a Proposals in response to this EoI shall be submitted in electronic form along with two set of hard copies.

- 4.7.b Vendors are also requested to provide a transmittal letter, signed by an authorized company official, with respect to the technical commitments made in the proposal.
- 4.7.c All parts of the proposal and communications shall be in English.

4.8 VALIDITY OF PROPOSALS

The proposals shall remain valid for a period of 6 months from the due date for submission of proposals.

4.9 RETENTION OF PROPOSALS / PROPRIETARY INFORMATION / CONFIDENTIALITY

- 4.9.a All documents submitted in response to the EoI shall become the property of VSSC. Any information in such documents, which is proprietary to the vendor, should be specifically identified as such. Proprietary information shall not be deemed to include information that is obtainable from another source or available in the public domain. Notwithstanding the foregoing, VSSC may disclose proposals, including proprietary information, to appropriate personnel selected by VSSC for evaluation purposes.
- 4.9.b All information contained in this EoI is proprietary information of VSSC and is protected under Indian law.
- 4.9.c All the information contained in this EoI is confidential and cannot be disseminated to third vendors or used by any recipient of this EoI for any purpose other than answering to this EoI. No public statement or press release shall be issued by the recipient regarding this EoI, the information contained within, or the EoI process without the prior written authorization of VSSC.

5. SCOPE OF WORK

The scope-of-work includes operation of various manufacturing equipment / facilities as mentioned in Section 6.0 towards realization of C-C products namely 2D C-C & 4D C-C composites. Typical process cycle followed for realization of 4D C-C and 2D C-C products are as follows.

a) Process cycle for realization of 4D C-C components



All the processes which includes CVI Coating, Resin infusion, Curing, carbonization, HIPIC & Graphitization operations shall be carried out by the vendor as per the process recipe given by VSSC. Whereas Pitch impregnation and preform fabrication is under the scope of VSSC.

b) Process cycle for realization of 2D C-C components



Out of the above mentioned processes Curing, carbonization, HIPIC, CVI densification, Graphitization & SiC coating operations shall be carried out

by the vendor as per the process recipe given by VSSC and other process operations will be under the scope of VSSC.

Total no of components nominally to be realized during the contract period (3 years) from the date of signing the contract as per the specifications and launch manifest/ requirements of VSSC using VSSC facilities are mentioned below

Table 5.0 and Table 6.0 brings out typical process cycles required for realization of each of the above C-C products. Table 7.0 brings out the total number of process cycles nominally planned in the next three years towards realization of C-C products. Table 8.0 brings out the minimum assured no. of components to be processed per month . Table 9.0 & Table 10.0 brings out the man power deployment for each furnace and their essential qualifications

| Table 5.0 Nominal work content (| 3 years)involved in realization o | f C-C products |
|----------------------------------|-----------------------------------|----------------|
| | | |

| S.No | Description | Qty |
|------|--|-------|
| | | (nos) |
| 1. | 4D C-C blocks for CES motors of gaganyaan | 300 |
| 2. | 4D C-C blocks for Leading edges for HAVA & RLV-ORV | 110 |
| 3. | 2D C-C shaped components for RLV - ORV (Thin shells) | 20 |
| 3. | 2D C-C shaped components for RLV – ORV (Thick shells/Nose cap) | 5 |
| 5. | CVD SiC coating on C-C leading edges | 135 |
| 6. | CVD SiC coating on C-C/ SiC components for space mirror | 20 |

| | | | | products | | | | |
|---|--|-------------|--------------------------|--|-------------------|---------------------------------|---------------------|------------------------------|
| | Typical process cycles required for realizing each product | | | | | | | |
| Product | Pyro | CVI (CVI | Curing (Hot air Oven) | Carbonization (Carbonization furnace) | HIP | Graphitization (VIF Furnace) | SiC coating (CVI | SiC coating (VIF Furnace) |
| Туре | carbon | furnace) | (riot an over) | (Carbonization furnace) | (HIP facility) | (vii rainaco) | Furnace) | |
| | coating (CVI /VIF furnace) | | | | | | | |
| 4D C-C | 1 | _ | 1 | 1 | 4 | 4 | _ | _ |
| (CES motors) | - | | 1 | - | | | | |
| 4D C-C | 1 | _ | 1 | 1 | 4 | 4 | 1 | _ |
| (HAVA) | 1 | | 1 | 1 | • | | 1 | |
| 2D C-C (thin) (RLV-ORV) | - | 5 | 3 | 1 | - | 1 | - | 1 |
| 2D C-C (thick/nosecap) (RLV-ORV) | - | - | 8 | 1 | 3 | 3 | - | 1 |
| SiC coating (Space mirror/ leading edges) | - | _ | - | - | | - | 1 | - |

Table 6.0 Process cycles required for realization of each of the above C-C products

Table 7.0 Total number of Process cycles required for realization of C-C products

| S. No | Activity | Curing | Curing Carboniz HIP Graphiti CVI SiC c | | SiC co | oating | | |
|----------|--|-----------|--|---------------|--------------|---------------|-----|-----|
| | | | | | | | CVI | VIF |
| 1 | 4D C-C blocks for CES motors of gaganyaan | 30 Cycles | 30 Cycles | 120 Cycles | 60 Cycles | NA | _ | _ |
| 2 | 4D C-C blocks for Leading edges for HAVA & RLV-ORV (VTLE) | 11 Cycles | 11 cycles | 22 cycles | 22 cycles | NA | 55 | 18 |
| 3 | 2D C-C shaped components for RLV – ORV (Thin) | 60 cycles | 20 cycles | NA | NA | 100 cycles | _ | 17 |
| 4 | 2D C-C shaped components for RLV – ORV (Thick/nosecap) | 40 Cycles | 5 | 3 | 3 | NA | - | |
| 5 | CVD SiC coating on C-C/SiC components for space mirror | NA | NA | NA | NA | NA | 20 | _ |

| | per monur. | |
|------------------|---|--------------------|
| Process facility | Minimum assured no. of products per month to be | Expected minimum |
| | processed | process cycles per |
| | | month to process |
| | | minimum number |
| | | of components |
| HIP facility | 4D C-C blocks - 12 nos (or) | 2 |
| | 2D C-C (Nose cap/Leading edges) – 2 nos | |
| | Graphitization of 4D C-C blocks 12 nos | 2 |
| VIE | (And) | |
| VIF | Pyro carbon coating of 4D C-C blocks – 12 nos (or) | |
| | SiC coating of leading edges 4 nos (or) SiC coating | |
| | of nose cap -1 no | |
| CVI Furnace | SiC mirror – 3 nos (or) 2D C-C Nose cap (and) | 3 |
| | 4D/2D C-C leading edges – 3 nos | |
| Carbonization | 4D C-C blocks - 12 nos (or) | 2 |
| furnace | 2D C-C (Nose cap/Leading edges) – 2 nos | |
| | | |
| Hot air oven | 4D C-C blocks - 16 nos (or) | 8 |
| | 2D C-C (Nose cap/Leading edges) – 8 nos | |

Table 8.0 Details of **minimum assured no. of components** to be processed per month.

Table 9.0 Man power deployment for each process operation

| Process facility | Expected nominal duration of each process cycle <u>(considering round the clock</u> <u>operation)</u> | #Man power deployment/shift |
|---------------------------|--|--|
| HIP facility | 7 days | 1 engineer + 2 Diploma+4 Technician |
| VIF furnace | 12 days | 1 engineer + 1 Diploma+4 Technician |
| CVI furnace | 7days | 1 engineer + 1 Diploma+4 Technician |
| Carbonization furnace –I | 16days | 2 Technician 1 Diploma |
| Carbonization furnace –II | 16days | 2 Technician common to these |
| Hot air oven | 4 days | 2 Technician three facilities |

#Three shift basis operation as per requirements. In addition,

<u>1. One project manager to co-ordinate all the operations and overall</u> <u>supervision in general shift</u>

2. One Quality manager to verify/ensure compliance to quality protocols in general shift .

Table 10.0 Essential qualification required for the manpower deployed for the above operations

| Sl. No. | Designation | Qualification & Experience | |
|------------|----------------------|---|--|
| 01 | Project Manager | B-Tech (Mechanical / Electrical / ElectronicsEngg.) with minimum 5 years of experience in similar equipment / operations / processes | |
| 02 | Quality Manager | B-Tech (Mechanical / Chemical Engg.) with 3 years experience in similar equipment / operations / processes | |
| 02 | Shift Engineer | B.E/ B.Tech (Mechanical/ Chemical engineering). Experience in operation of similar equipments/furnaces is preferable. | |
| 03 | Technical Assistants | Diploma in a)Electrical / Electronics b) Mechanical /Chemical engineering. Experience in operation of similar equipments/furnaces is preferable. | |
| 04 | Technicians | ITI with experience in operation of similar equipments/furnaces preferable. | |

During the initial 5 cycles of processing after signing the contract, VSSC will handhold the production team towards familiarising them with the operation of each of identified process facilities

6. LIST OF EQUIPMENTS/FACILITIES

The list of various manufacturing equipment / facilities for realization C-C composites are as follows

| a) Hot Iso-Static Press (HIP) for infiltration of pitch into pores. | | | |
|---|-------------------------|--|--|
| Working zone | Ø 1500 mm x 1500 mm (h) | | |
| Maximum Allowable Working Pressure | Upto 1000 bar | | |
| Maximum Allowable Working Temperature | Upto 800°C (Max) | | |

b) Vacuum Induction Furnace (VIF) used for Graphitization of C-C composites /SiC coating on C-C products

| Working Zone | \emptyset 2100mm × 2100mm |
|---------------------------------------|-----------------------------|
| Pressure | 10- 3mbar |
| Maximum Allowable Working Temperature | Upto2500°C (Max) |

| c) Chemical Vapour Infiltration Furnace (VIF) for SiC coating | | |
|---|-----------------------|--|
| Working Zone | Ø800mm × 1200mm | |
| Pressure | 10 ⁻³ mbar | |
| Maximum Allowable Working Temperature | Upto 1700°C (Max) | |
| | | |

d) Carbonization Furnace for pyrolysis of polymer to carbon

| Working Zone | Ø 2 m x 2 m class, $Ø 1.2 m x 1 m class$ |
|---------------------------------------|--|
| Pressure | 1 bar |
| Maximum Allowable Working Temperature | Up to 1000°C (Max) |

e) HOT AIR Oven

| Working Zone | 3m × 3mx 3m |
|---------------------------------------|-------------------|
| Pressure | 1 bar |
| Maximum Allowable Working Temperature | Up to 200°C (Max) |

7. Brief description work involved in furnace operations

- Health checking of furnace, sub systems of the furnace and its accessories, preparatory works like Stitching of graphite felt, thermocouple fixing, connection of gas admission tubes, position of graphite packing & foils etc.
- Operation of Furnace and related works as per the process recipe provided by VSSC.
- Program the cycle in HMI panel as per process recipe provided by VSSC
- Monitor and record the process parameters like pressure, furnace temperature, water inlet temperature, water outlet temperature, water flow rate, gas flow rate, gas pressure at manifold side, power, frequency, voltage etc for every process cycle.
- Loading appropriate gas cylinder as and when it is required and unload the empty gas cylinders from gas manifold.
- Material handling activities like loading of cylinders/fabric /consumables & products from store area to the furnace and back shall be carried out.

- Clean the furnace exhaust line filters thoroughly to remove carbon dust particles and assemble back.
- Cleaning of MTCS pumping lines with cyclohexane before and after every process cycle.
- During each shift of operations mentioned above, Technicians under the supervision of Engineers/Technical Assistants from vendors side shall be present for executing the work.
- In case of any deviation in the process, inform the Engineer in charge immediately and shall take appropriate corrective action as suggested by VSSC Engineers.

General instructions to vendor :

- The vendor shall arrange necessary Personnel Protective Equipments (PPEs) for their staff working at VSSC premises. The PPEs includes Gloves, Mask, Face Shields, Safety Shoes, Protective Guards and any other item required for the safety of personnel. No reimbursement of cost / material shall be given by VSSC in this regard.
- 2) Vendor has to follow VSSC safety policy and all persons working in the plant should be made aware on the safety aspects and should follow safety rules as laid down by VSSC. VSSC shall not be responsible for any injury or loss of life, which may take place while on job. Any compensation or expenditure towards treatment for such injury or loss of life shall be the sole responsibility of the vendor.
- VSSC representatives are authorized to check all the process data and calibration records. Vendor shall co-ordinate with the department personnel and inspection agencies.
- Process consumables required for process operations shall be provided by VSSC.

- 5) Trained people retention is the responsibility of vendor. VSSC will not provide any further training beyond first 5 process cycles as mentioned in section 5 above.
- 6) Calibration/AMC of equipments will be under the scope of VSSC.
- Vendor shall be solely responsible for causing any damage to product or equipment /facilities/infrastructure while carrying out the process operations.

Payments will be made to the qualified vendor (after P.O placement) as per the following details on a pro-rata basis for each cycle of operation completion. The expected nominal no. of products to be realized in 3 years is tabulated below

| | | _ |
|---|--|-------|
| S.No | Description | Qty |
| | | (nos) |
| 1.4D C-C blocks for CES motors of Gaganyaan | | 300 |
| 2. | 4D C-C blocks for Leading edges for HAVA | 110 |
| | & RLV-ORV | |
| 3. | 2D C-C shaped components for RLV - ORV | 20 |
| (thin) | | |
| 4 | 2D C-C shaped components for RLV - ORV | 5 |
| | thick / nose cap | |
| 5. | CVD SiC coating on C-C leading edges | 135 |
| | | |
| 6. | CVD SiC coating on C-C/ SiC components | 20 |
| | for space mirror | |

Table 11. Nominal work content (3 years)involved in realization of C-C products

It is proposed to offer the GOCO as a package for carrying out all the activities as mentioned in this EoI document. Evaluation of vendor will be for this whole scope of the work as detailed in EoI. Incomplete or partial offers will not be considered.

| Sl. No. | Details Requested | Bidder's Response |
|---------|---|-------------------|
| 1. | Name of the Company /Firm and Address : | |
| 2. | Year of Establishment: | |
| | Status of the firm: | |
| 3. | (Whether Pvt. Ltd. Company / Public Ltd. | |
| | Company / Partnership Firm/etc.): | |
| 4. | Name of the Chairman / Managing Director | |
| | /CEO (as the case may be): | |
| | Whether registered with the Registrar of | |
| 5. | Companies / Registrar of Firms in India? If so, | |
| 5. | mention number and date and enclose | |
| | Registration Certificate copy: | |
| | Name and address of Bankers: | |
| 6. | A) | |
| | B) | |
| | Financial Turnover of the Company/ Firm in | |
| | 2019-20, 2020-21 and 2021-22: | |
| _ | (Please attach a copy of audited Profit & Loss | |
| 7. | Account for the above three years): | |
| | 2019-20: | |
| | 2020-21: | |
| 0 | 2021-22: | |
| 8. | Goods and Service Tax Registration Certificate: | |
| 9. | Permanent Account Number (Furnish Copies of | |
| | Income tax clearance certificates): | |
| 10 | Under which Act/ Rule the service | |
| 10. | Provider/Bidder / Tendering Company / Firm / | |
| | Agency is registered | |

ANNEXURE-1 (BIDDER'S PROFILE)

Note: - 1. If any of the above columns are kept unfilled and not supported by documentary proof, such EoIs will be summarily rejected by the Service Receiver.

DECLARATION

I/We hereby declare that the information furnished above are true and correct to the best of my / our knowledge and belief

Date:....

(Signature of Authorized Signatory with

seal)

Place:....

Name in full: