

भारत सरकार  
अंतरिक्ष विभाग (अं.वि.)  
द्रव नोदन प्रणाली केंद्र  
वलियमला, तिरुवनंतपुरम  
695547, केरला



GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE (DOS)  
LIQUID PROPULSION SYSTEMS CENTRE  
VALIAMALA  
THIRUVANANTHAPURAM, 695547, KERALA

फोन नं Ph No. 0471-2567 726/813/317/319 / Fax. 091-0472-2800712,0471-2567305 / ईमेल e-mail: head\_ps@lpsc.gov.in

INVITATION TO TENDER

मैसर्स

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हमारी संदर्भ सं.

TM00 2022-036759-01

निविदा अंतिम तिथि

Tender Due at 14:30 hrs IST on 13/12/2022

महोदय

Dear Sirs,

कृपया निम्नलिखित मदों की आपूर्ति के लिए अनुलग्नक (फार्म सं. संलग्न ) में उल्लिखित निबंधन एवं शर्तों के अनुसार संलग्न निविदा प्रपत्र में वर्णनात्मक सूचीपत्र/पैम्फलेट/साहित्य सहित हमारी संदर्भ सं. एवं अंतिम तिथि (मोटे अक्षरों में) ऊपर लिखते हुए अपनी मुहरबंद निविदा प्रस्तुत करें।

Please submit your sealed quotation , in the Tender Form enclosed here along with the descriptive catalogues /pamphlets /literature ,superscribed with Our Ref.No. and Due Date for the supply of the following items as per the terms & conditions mentioned in Annexure(Form No. ENCLOSED )

क्र. सं. Sl. No.	विनिर्देशों सहित मद का विवरण Description of items with Specifications	इकाई Unit	मात्रा Quantity
1	Supply, installation and commissioning of conical flow forming machine including process development and tooling	set	1

सुपुर्दगी स्थल

Delivery At LPSC, Valiamala

प्रेषण की विधि

Mode of Despatch BY ROAD

शुल्क छूट

Duty Exemptions NIL

विशेष अनुदेश

Special Instructions NIL

विशेष निबंधन

Specific Terms ENCLOSED

निविदाकारों को अनुदेश

Instructions to Tenderers

- (1) Note: 1. Scope of work and Terms and Conditions as per Annexure - 1
- (2) 2. Material specification as per Annexure -2
- (3) 3. Terms and Conditions for AMC as per Annexure -3
- (4) 4. Format for compliance matrix for flow forming machine as per Annexure - 4
- (5) 5. General Terms and Conditions as per Annexure 5 and Instructions for TWO PART TENDERS as per Annexure - 6
- (6) 6. A Compliance Statement is attached as Annexure - 7 which shall be duly filled and furnished along with your offer without which your offer will not be considered

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भारत के राष्ट्रपति के लिए एवं ओर से  
For and on behalf of the President of India  
क्रेता / The Purchaser

### Terms & Conditions

#### A General Scope

The scope is to supply, erect and commission a flow forming machine to the specifications below as well as part tryout and supply of tooling for parts Nozzle Divergent 1 & Nozzle Divergent 2.

#### B Specifications

Sl. No	Detail	Specification
B.1	Model	To be specified by OEM so as to suit forming of Nozzle Divergent 1 & 2
B.2	No of rollers	Two
B.3	No of compound rest	Two
B.4	No of axes	Four
B.5	Simultaneous controlled axes	To be specified by OEM
B.6	Roller diameter	To be specified by OEM so as to suit forming of Nozzle Divergent 1 & 2
B.7	Axial offset between rollers	programmable
B.8	Tool changer on both x axis slides	3 station (min) CNC turret with programmable tool changer position
B.9	Max blank diameter	1000 mm
B.10	Height of centers	To be specified by OEM
B.11	Dist. Between centers	1400 mm (min)
B.12	Chuck coupling	To be specified by OEM so as to suit forming of Nozzle Divergent 1 & 2
B.13	Longitudinal stroke (axial)	750 mm (minimum)
B.14	Longitudinal (axial) force	100 kN (minimum)
B.15	Longitudinal feed rate	4 m/min (minimum)
B.16	Transverse stroke (radial)	500 mm (minimum)
B.17	Transverse (radial) force	100 kN (minimum)
B.18	Transverse (radial) feed rate	4 m/min (minimum)
B.19	Tailstock stroke	700 mm
B.20	Tailstock force	50 kN (minimum)
B.21	Tail stock feed rate	4 m/min (minimum)
B.22	Tailstock axial displacement	Hydraulic

Sl. No	Detail	Specification
B.23	Carriage feed drive longitudinal	High precision ball screw driven by servo motor with feedback system
B.24	Carriage feed drive transverse	High precision servo hydraulic cylinder
B.25	Minimum increment in longitudinal & radial axis	0.02 mm
B.26	Tail stock sleeve feed drive	Hydraulic cylinder or AC Servomotor with feedback system
B.27	Position control of carriage	To be specified by OEM
B.28	Main motor power	75kw min.
B.29	Main spindle speed	Up to 1000 rpm. (with 2 speed gear box)
B.30	Hydraulic motor power	To be specified by OEM
B.31	Hydraulic oil cooling	By heat exchanger (to be supplied as part of equipment)
B.32	Hydraulic power unit	To be specified by OEM
B.33	Lubrication	Automatic Centralized lubrication
B.34	Coolant flow	To be specified by OEM
B.35	Coolant tank	to be supplied as part of equipment
B.36	Working thickness of sheet	<ul style="list-style-type: none"> <li>• KC20WN (Haynes 25) – 4 mm</li> <li>• Niobium- 3 mm</li> </ul>
B.37	<b>Construction</b>	
B.38	Bed	To be specified by OEM
B.39	Head stock	To be specified by OEM
B.40	Main shaft bearings	To be specified by OEM
B.41	Carriage Bed way bearing	To be specified by OEM
B.42	Roller holder support slide bearing	To be specified by OEM
B.43	Change of carriage position	Required, method to be specified by OEM
B.44	Tail stock positioning	Hydraulic/ electric servo
B.45	Tailstock pressure	To be specified by OEM
B.46	Main drive	AC servomotor with infinitely variable speed
B.47	Control panel	Mobile panel

## Annexure 1

Sl. No	Detail	Specification
B.48	Accuracy of linear & rotary axes	Accuracies shall be as per ISO 230-2 or VDI/DGQ 3441 Standard. The vendor shall submit a test chart of identical machine supplied, recently.
B.49	Slide positional accuracy	0.025 mm
B.50	Slide repeatability	0.025 mm
B.51	Radial run out spindle	0.025 mm
B.52	Axial run out spindle	0.025 mm
B.53	Roller run out	0.025 mm
B.54	Tailstock axial runout	0.050mm
B.55	Tailstock lateral runout	0.050mm
B.56	Parallelism headstock and tailstock	0.050mm
B.57	Control system	Latest available as per the industrial standard and to be specified by OEM
B.58	Operating system	Latest available as per the industrial standard and to be specified by OEM
B.59	CAM software for Programming	Latest available as per the industrial standard and to be specified by OEM
B.60	Electrical cabinet cooling	Air conditioned
B.61	Enclosure	To be specified by OEM
B.62	Hand held terminal for axis movements	To be supplied
B.63	Envelope	To be specified by OEM
B.64	Machine voltage	3 phase 415 V 50 Hz. All wirings to be tropicalized
B.65	Foundation	Specify foundation requirements
B.66	Machine size	To be specified by OEM
B.67	Machine weight	To be specified by OEM
B.68	Standard warranty	2 years
B.69	Process for Nozzle Divergent 1	Input material 4 mm thick sheet Flow forming in different stages with intermediate heat treatment Final finishing by machining in the same setup

Sl. No	Detail	Specification
B.70	Process for Nozzle Divergent 2	Input material 3 mm thick sheet Flow forming in different stages with intermediate heat treatment Final finishing by machining in the same setup

### C Essential Accessories

- C.1 The vendor shall indicate the standard accessories that will be supplied along with the machine.
- C.2 The vendor shall also indicate the other essential accessories that are to be bought for realizing the parts Nozzle Divergent 1 & Nozzle Divergent 2.
- C.3 The vendor shall also indicate the other accessories available and that are to be bought along with the machine and not possible of being retrofitted.

### D Optional Accessories

Sl. No	Description	Specification
D.1	Blank centering	To be specified by OEM
D.2	Material backup support plate	To be specified by OEM
D.3	Ejecting unit	To be specified by OEM
D.4	Circle shear	To be specified by OEM
D.5	Teach in play back	To be specified by OEM

- D.6 A list of other optional accessories along with a description of their function also is to be quoted.

### E Process development & Job prove out

- E.1 The successful bidder shall be responsible for developing the process and tooling for Nozzle Divergent 1 & Nozzle Divergent 2 as in attached drawing
- E.2 Material for Nozzle Divergent 1 is KC20WN (4 mm thick) and for Nozzle Divergent 2 is Columbium C103 (Niobium) (3 mm thick), specifications for which are given as **Annexure 2**
- E.3 Initial trials are to be done on SS321 sheets and the vendor shall procure SS321 materials required for initial process qualification trials.
- E.4 Final trials are to be done on actual material. The raw material size presently used is 1000 x 1000 x 4 mm for Nozzle Divergent 1 and 500 x 500 x 3 mm for Nozzle Divergent 2. However, the vendor shall confirm the size and number of each blanks required final trials.

- E.5 LPSC will supply the one set of material required for Nozzle Divergent 1 and Nozzle Divergent 2 for final trials.
- E.6 Formed parts and unused materials shall be supplied along with the machine.
- E.7 The Flow forming can be carried out in different stages with intermediate heat treatment.
- E.8 Final finishing to the tolerances in the attached drawing can be achieved by machining in the same setup.
- E.9 The tooling cost shall be indicated separately and all tooling shall form part of the supply.
- E.10 Detailed documentation of the process along with the different parameters shall be generated and supplied.
- E.11 LPSC shall have unlimited IP rights over the process and parameters developed

**F AMC Charges**

- F.1 The vendor shall also quote for AMC charges for 3<sup>rd</sup> and 4<sup>th</sup> year beyond the accepted warranty period. The terms and conditions for AMC are given in **Annexure 3**.

**G Spares**

- G.1 The vendors should provide a list of essential mechanical, electrical & electronics spares required for operation of machine on two-shift basis for a period of 2 years with quantity and cost break-up.
- G.2 The vendors shall also provide a list of other recommended mechanical, electrical & electronics spares to be kept in stock along with quantity and cost break-up.
- G.3 The above costs will not be included in cost comparison.

**H Technical Documentation to be submitted along with offer**

- The following information in full shall be submitted along with the offer.
- H.1 Type of the machine, model no and its specifications
  - H.2 Machine layout drawing indicating shop floor space and machine weight.
  - H.3 Foundation plan
  - H.4 Process plan for realizing Nozzle Divergent 1 & Nozzle Divergent 2 including in process & post process heat treatment for parts
  - H.5 Details of similar parts realised
  - H.6 Company profile and website address.
  - H.7 List of customers to whom similar machines have been supplied.
  - H.8 Technical Compliance matrix

**I Technical Documentation to be supplied with the machine**

One set hard copy and soft copy of the following technical documentation in 'English' shall have to be supplied along with the machine:

- I.1 Instruction/ Operational manual
- I.2 Spare parts manual
- I.3 Maintenance manual for mechanical, electrical and electronic systems.
- I.4 Circuit diagram for electrical, electronics, hydraulic & pneumatic
- I.5 Circuit diagram for lubrication & cooling system
- I.6 Lay out and foundation plan
- I.7 Preventive maintenance check list, trouble shooting charts and guidelines.
- I.8 Detailed drawing of the tooling developed for Nozzle Divergent 1 & Nozzle Divergent 2
- I.9 Detailed documentation of the process for realizing Nozzle Divergent 1 & Nozzle Divergent 2 along with the different parameters.

**J Pre delivery inspection (PDI) & Shipment Clearance**

- J.1 PDI shall be carried out by LPSC at manufacturer's site before despatch for its conformance to specification and function as per standard protocol.
- J.2 During PDI the accuracy tests on the machine shall also be performed as per manufacturers test plan.
- J.3 Theoretical and practical training regarding machine operation shall be provided.
- J.4 Demonstration of the forming of 1set of Nozzle Divergent 1 & Nozzle Divergent 2 and the inspection of the formed parts.
- J.5 The equipment shall be despatched only after a despatch clearance given by LPSC

**K Installation and Commissioning**

- K.1 The machine shall be delivered, erected, installed and commissioned at a site nominated by LPSC anywhere in India.
- K.2 Erection, installation and commissioning of the machine shall be carried out by the vendor and this will include preparatory checks, demonstrating the machine and production of Nozzle Divergent 1& Nozzle Divergent 2 already tested at the vendor's works. The vendor shall quote for Erection, installation and commissioning of the machine.
- K.3 Vendor shall train 2 of LPSC's engineers on operation, programming and machine maintenance for two weeks after commissioning of machine at installation site free of cost.

**L Final acceptance at our site**

- L.1 Final acceptance of the machine shall be based on satisfactory completion of the activities mentioned at SI No. K.1 to K.3

**M Other Terms and conditions**

- M.1 Seaworthy/roadworthy packing of machine and its accessories is under vendor's scope. Vendor shall also indicate packing, forwarding & freight charges.
- M.2 The supplied machine shall be warranted for a period of minimum 2 years from the date of machine acceptance at LPSC site.
- M.3 After sales service shall be provided by the vendor for a minimum period of 10 years from date of machine acceptance.
- M.4 Foundation requirements and special requirements like dedicated grounding for the machine including drawings should be communicated to LPSC within one month of ordering so as to ready machine installation site. The foundation will be readied by LPSC as per the drawing supplied by the vendor.
- M.5 If the machine or any part of it is lost or damaged in transit, the replacement of such machine or part shall be effected free of cost.

**N Delivery**

- N.1 The vendor shall deliver the machine site within 12 months from the date of release of purchase order.
- N.2 The vendor shall complete the erection, installation and commissioning including job prove out within 3 months from the date of delivery.

**O Qualification criteria**

- O.1 The vendor should have installed and commissioned three flow forming machines in last five years immediately preceding Mar 2022. Proof of installation and commissioning shall be submitted.
- O.2 Test certificates of the latest supplied identical or similar machines shall be submitted.
- O.3 The vendor shall submit the Annual reports (balance sheet and Profit & Loss Account) for the last three years immediately preceding Mar 2022.



### Instructions for submitting the offers

The suppliers shall submit their offers in two parts separately as under

#### 1. Part-I: Technical and commercial bid

This part, in addition to covering all technical and commercial points, shall specifically contain the following.

- 1.1. Compliance matrix showing each & every tender specifications (**A to O**) and details of offer as per **Annexure 4**. Specific values shall be provided wherever applicable, **simply replying with "complied" or "confirmed" to such clauses will not be accepted.**
- 1.2. This part shall include an un priced copy of the price bid.
- 1.3. The commercial terms of the supply shall also be listed (without prices).
- 1.4. List of spares, standard/essential/ optional accessories along with quantities of each item shall be clearly indicated (without prices).
- 1.5. Offers without compliance matrix and vague details are liable to be rejected.

#### 2. Part-II: Price bid

The price bid shall include complete cost details and shall specifically indicate the following costs separately.

- 2.1. Price for the basic machine
- 2.2. Cost of other essential accessories that are to be bought for realizing the parts Nozzle Divergent 1 & Nozzle Divergent 2.
- 2.3. Cost of other accessories available and that are to be bought along with the machine and not possible of being retrofitted.
- 2.4. Cost of other optional accessories.
- 2.5. Cost of Process development & Job prove out for Nozzle Divergent 1.
- 2.6. Cost of Process development & Job prove out for Nozzle Divergent 2.
- 2.7. Cost of tooling for Nozzle Divergent 1.
- 2.8. Cost of tooling for Nozzle Divergent 2.
- 2.9. Cost breakup for recommended spares.
- 2.10. Cost of erection, installation and commissioning.
- 2.11. AMC charges for 2 years beyond warranty period.
- 2.12. Other costs if any

#### 3. Check list for submission of offers

Sl. No.	Description	Enclosed/ Not enclosed
1	Compliance matrix covering all points from clause <b>A to O</b>	
2	Detailed technical description of machine	
3	Documentation as per clause <b>I</b>	

**Annexure 1**

Sl. No.	Description	Enclosed/ Not enclosed
4	Format of the offered price bid without price	
5	Documents / proofs for qualification criteria as detailed in <b>clause O.</b>	
6	Actual price bid as part of price bid (Offer with cost as part of technical bid will not be considered.)	

## Material Specification

## 1. Niobium (Columbium C103) alloy- ASTM B654

<b>Chemical Composition</b>		
Element	Composition (%)	
Carbon	0.015	
Oxygen	0.025	
Nitrogen	0.010	
Hydrogen	0.0015	
Hafnium	9-11	
Titanium	0.7-1.3	
Zirconium	0.700	
Tungsten	0.500	
Tantalum	0.500	
Niobium	Remaining	
<b>Mechanical Properties at annealed condition</b>		
Ultimate Tensile Strength , Mpa	Yield strength (at 0.2% offset), Mpa	Elongation in 25mm, %
370	260	20

## 2. KC20WN alloy- AMS 5537H

<b>Chemical Composition</b>		
Element	Min, %	Max, %
Carbon	0.05	0.15
Manganese	1.00	2.00
Silicon	-	0.4
Phosphorus	-	0.030
Sulfur	-	0.030
Chromium	19.00	21.00
Nickel	9.00	11.00
Tungsten	14.00	16.00
Iron	-	3.00
Cobalt	Remaining	
<b>Mechanical Properties at annealed condition</b>		
Ultimate Tensile Strength , Mpa	Yield strength (at 0.2% offset), Mpa	Elongation in 50.8mm, %
896	379-552	30

## Terms and Condition for AMC

### 1.0 Scope of work

- 1.1 Non-Comprehensive AMC includes preventive maintenance visits and attending break down maintenance as and when required in the event of malfunction/breakdown of the machine.

### 2.0 Preventive maintenance

- 2.1 The preventive maintenance includes the following: -

#### Electrical

- a. Check for CNC memory, Battery and coding arrangement.
- b. Check for proper voltages at test point.
- c. Check for external wiring.
- d. Checking for servo performance, adjust parameters and provide compensation were ever required.
- e. Check and ensure the functions of end limit and emergency circuit.
- f. Tune and adjust the drive parameters for all axes.
- g. Check and ensure the homing sequences.
- h. Check all lamps and meters.

#### Mechanical

- a. Check of Mechanical system of machine and machine options.
- b. Check for smoothness of motion of slide system.
- c. Check for hydraulic lines.
- d. Check for guide way and screw lubrication.
- e. Check for lubrication circuits.
- f. Functioning of proximity sensors.
- g. Functioning of controllers
- h. Function of belts.
- i. Check and correct the source of abnormal sounds.

- 2.2 The preventive maintenance shall be attended between 9 am and 5 pm on all working days (Monday to Friday).
- 2.3 First preventive maintenance shall be carried out immediately on commencement of the contract.
- 2.4 A minimum of 3 visits shall be planned every year. However, the vendor shall indicate the number of preventive Maintenance required.

### 3.0 Break down maintenance

- 3.1 Break down call shall be attended as and when required.
- 3.2 The vendor shall quote the split up of the cost incurred as follows for the breakdown maintenance

Sl.No	Items	Rate in INR	Terms
1	Cost for the first day		Per engineer per day
2	Cost for the subsequent days		Per engineer per day

#### 4.0 Spares

- 4.1 If replacement of any spare is required, necessary spares to be replaced with concurrence of LPSC contact person. The cost of the items replaced shall be paid by LPSC as per the price furnished in the spare list.
- 4.2 In case of replacement of any spares which are not listed in the spare list or any component cannot be repaired at our premises, the same can be replaced/repared as per following procedure.
- 4.2.1 The party shall asses the condition and gets the concurrence of the contact point of LPSC. Base on the assessment, the party shall submit a quote to LPSC. In case, the party is unable to submit the quotation until he receives the equipment at his premises to assess the failure, he shall provide the cost based on the probable causes failure giving details of costing.
- 4.2.2 Based on the offer received, indent shall be raised with all relevant details.
- 4.2.3 LPSC shall place a repair order after necessary processing and approvals.
- 4.3 In case party changes/does any spare parts/extra work while repairing the system at party's premises which are not covered in the said repair order, the party shall intimate LPSC about the additional work/ spare parts required over and above the those included in the order, along with charges for the same and order amendment shall be issued with necessary approvals

#### 5.0 Payment

- 5.1 Pro-rata payment shall be made after satisfactory repair and certification by focal point.
- 5.2 Payment for breakdown calls over and above the scheduled visits shall be made on a per call basis.

#### 6.0 Fall clause

The service charges quoted by you shall in no event exceed the lowest charges at which you service the machines of identical description to any other party during the period of this Contract. If at any time during the said period, you reduce the service charges of such item to any other customers, it shall be forth with done after the date of coming in to force of such reduction of service charges shall stand correspondingly reduced.

#### 7.0 General

- 7.1 All faults /maintenance shall be attended to during the normal working hours (09.00 Hrs. to 17.00 Hrs. from Monday to Friday) of the Centre.

### Annexure 3

- 7.2 Service engineer who are conversant with welding machines having thorough knowledge of electrical, electronic and mechanical areas shall only be deputed.
- 7.3 In the event of any damages to our property or personal injury to our personnel due to the negligence of your personnel, the responsibility shall solely rest with you for rectifying or compensating for the injury to our personnel.
- 7.4 LPSC shall not be responsible for any loss of life or injury of the service personnel while performing the contract at our premises due to natural calamities /accident/explosion etc., Hence insurance of the workers/ staff deployed against such eventualities shall be done by you positively and no compensation shall be paid by us.
- 7.5 You shall go through the operation logs to pin point trouble and advise the contact person how to avoid them in future.
- 7.6 You shall provide any clarifications required by the contact person as technical documentation.
- 7.7 If the machine cannot be made available by us due to workload, the re scheduled date of visit should be mutually agreed upon with the contact person.
- 7.8 Your service person(s) shall strictly comply with our security guidelines.

**Format for Compliance Matrix for  
Flow forming Machine**

**Note: Complied/ Not Complied, Quoted/ Not Quoted & Submitted/Not Submitted;** please delete whichever is not applicable.

Tender Specification			Compliance from the vendor
Sl. No	Detail	Specification	Compliance/ Values
B.1.	Model	To be specified by OEM so as to suit forming of Nozzle Divergent 1 & 2	<b>Please specify the values</b>
B.2.	No of rollers	Two	<b>Please specify the values</b>
B.3.	No of compound rest	Two	<b>Please specify the values</b>
B.4.	No of axes	Four	<b>Please specify the values</b>
B.5.	Simultaneous controlled axes	To be specified by OEM	<b>Please specify the values</b>
B.6.	Roller diameter	To be specified by OEM so as to suit forming of Nozzle Divergent 1 & 2	<b>Please specify the values</b>
B.7.	Axial offset between rollers	programmable	<b>Complied/Not complied and specify the details</b>
B.8.	Tool changer on both x axis slides	3 station (min) CNC turret with programmable tool changer position	<b>Please specify the values</b>
B.9.	Max blank diameter	1000 mm	<b>Please specify the values</b>
B.10.	Height of centers	To be specified by OEM	<b>Please specify the values</b>
B.11.	Dist. Between centers	1400 mm (min)	<b>Please specify the values</b>
B.12.	Chuck coupling	To be specified by OEM so as to suit forming of Nozzle Divergent 1 & 2	<b>Please specify the details</b>
B.13.	Longitudinal stroke (axial)	750 mm (minimum)	<b>Please specify the values</b>
B.14.	Longitudinal (axial) force	100 kN (minimum)	<b>Please specify the values</b>
B.15.	Longitudinal feed rate	4 m/min (minimum)	<b>Please specify the values</b>
B.16.	Transverse stroke (radial)	500 mm (minimum)	<b>Please specify the values</b>

<b>Tender Specification</b>			<b>Compliance from the vendor</b>
<b>Sl. No</b>	<b>Detail</b>	<b>Specification</b>	<b>Compliance/ Values</b>
B.17.	Transverse (radial) force	100 kN (minimum)	<i>Please specify the values</i>
B.18.	Transverse (radial) feed rate	4 m/min (minimum)	<i>Please specify the values</i>
B.19.	Tailstock stroke	700 mm	<i>Please specify the values</i>
B.20.	Tailstock force	50 kN (minimum)	<i>Please specify the values</i>
B.21.	Tail stock feed rate	4 m/min (minimum)	<i>Please specify the values</i>
B.22.	Tailstock axial displacement	Hydraulic	<b>Complied/ Not Complied</b>
B.23.	Carriage feed drive longitudinal	High precision ball screw driven by servo motor with feedback system	<b>Complied/ Not Complied and specify the details</b>
B.24.	Carriage feed drive transverse	High precision servo hydraulic cylinder	<b>Complied/ Not Complied and specify the details</b>
B.25.	Minimum increment in longitudinal & radial axis	0.02 mm	<i>Please specify the values</i>
B.26.	Tail stock sleeve feed drive	Hydraulic cylinder or AC Servomotor with feedback system	<b>Complied/ Not Complied and specify the details</b>
B.27.	Position control of carriage	To be specified by OEM	<b>Please specify</b>
B.28.	Main motor power	75kw min.	<i>Please specify the values</i>
B.29.	Main spindle speed	Up to 1000 rpm. (with 2 speed gear box)	<i>Please specify the values</i>
B.30.	Hydraulic motor power	To be specified by OEM	<i>Please specify the values</i>
B.31.	Hydraulic oil cooling	By heat exchanger (to be supplied as part of equipment)	<b>Complied/ Not Complied</b>
B.32.	Hydraulic power unit	To be specified by OEM	<b>Please specify</b>
B.33.	Lubrication	Automatic Centralized lubrication	<b>Complied/ Not Complied</b>
B.34.	Coolant flow	To be specified by OEM	<i>Please specify the values</i>
B.35.	Coolant tank	To be supplied as part of equipment	<b>Please specify the type</b>



<b>Tender Specification</b>			<b>Compliance from the vendor</b>
<b>Sl. No</b>	<b>Detail</b>	<b>Specification</b>	<b>Compliance/ Values</b>
B.36.	Working thickness of sheet	<ul style="list-style-type: none"> <li>KC20WN (Haynes 25) – 4 mm</li> <li>Niobium- 3 mm</li> </ul>	<b>Noted/Not noted</b>
B.37.	<b>Construction</b>		
B.38.	Bed	To be specified by OEM	<b>Please specify</b>
B.39.	Head stock	To be specified by OEM	<b>Please specify</b>
B.40.	Main shaft bearings	To be specified by OEM	<b>Please specify</b>
B.41.	Carriage Bed way bearing	To be specified by OEM	<b>Please specify</b>
B.42.	Roller holder support slide bearing	To be specified by OEM	<b>Please specify</b>
B.43.	Change of carriage position	Required, method to be specified by OEM	<b>Please specify the method</b>
B.44.	Tail stock positioning	Hydraulic/ electric servo	<b>Complied/ Not Complied and specify the details</b>
B.45.	Tailstock pressure	To be specified by OEM	<b>Please specify the values</b>
B.46.	Main drive	AC servomotor with infinitely variable speed	<b>Complied/ Not Complied</b>
B.47.	Control panel	Mobile panel	<b>Complied/ Not Complied</b>
B.48.	Accuracy of linear & rotary axes	Accuracies shall be as per ISO 230-2 or VDI/DGQ 3441 Standard. The vendor shall submit a test chart of identical machine supplied, recently.	<b>Please specify the values</b>
B.49.	Slide positional accuracy	0.025 mm	<b>Please specify the values</b>
B.50.	Slide repeatability	0.025 mm	<b>Please specify the values</b>
B.51.	Radial run out spindle	0.025 mm	<b>Please specify the values</b>
B.52.	Axial run out spindle	0.025 mm	<b>Please specify the values</b>
B.53.	Roller run out	0.025 mm	<b>Please specify the values</b>
B.54.	Tailstock axial runout	0.050 mm	<b>Please specify the values</b>
B.55.	Tailstock lateral runout	0.050 mm	<b>Please specify the values</b>

<b>Tender Specification</b>			<b>Compliance from the vendor</b>
<b>Sl. No</b>	<b>Detail</b>	<b>Specification</b>	<b>Compliance/ Values</b>
B.56.	Parallelism headstock and tailstock	0.050 mm	<b>Please specify the values</b>
B.57.	Control system	Latest available as per the industrial standard and to be specified by OEM	<b>Please specify the details</b>
B.58.	Operating system	Latest available as per the industrial standard and to be specified by OEM	<b>Please specify the details</b>
B.59.	CAM software for Programming	Latest available as per the industrial standard and to be specified by OEM	<b>Please specify the details</b>
B.60.	Electrical cabinet cooling	Air conditioned	<b>Complied/ Not Complied</b>
B.61.	Enclosure	To be specified by OEM	<b>Please specify</b>
B.62.	Hand held terminal for axis movements	To be supplied	<b>Complied/ Not Complied</b>
B.63.	Envelope	To be specified by OEM	<b>Please specify the details</b>
B.64.	Machine voltage	3 phase 415 V 50 Hz. All wirings to be tropicalized	<b>Please specify value</b>
B.65.	Foundation	Specify foundation requirements	<b>Please specify the details</b>
B.66.	Machine size	To be specified by OEM	<b>Please specify the values</b>
B.67.	Machine weight	To be specified by OEM	<b>Please specify the values</b>
B.68.	Standard warranty	2 years	<b>Please specify the values</b>
B.69.	Process for Nozzle Divergent 1	Input material 4 mm thick sheet Flow forming in different stages with intermediate heat treatment Final finishing by machining in the same setup	<b>Please specify the process details</b>
B.70.	Process for Nozzle Divergent 2	Input material 3 mm thick sheet Flow forming in different stages with intermediate heat treatment Final finishing by machining in the same setup	<b>Please specify the process details</b>
<b>C Essential Accessories</b>			

<b>Tender Specification</b>			<b>Compliance from the vendor</b>
<b>Sl. No</b>	<b>Detail</b>	<b>Specification</b>	<b>Compliance/ Values</b>
C.1.	The vendor shall indicate the standard accessories that will be supplied along with the machine.		<b>Quoted /Not Quoted</b>
C.2.	The vendor shall also indicate the other essential accessories that are to be bought for realizing the parts Nozzle Divergent 1 & Nozzle Divergent 2.		<b>Quoted /Not Quoted</b>
C.3.	The vendor shall also indicate the other essential accessories that are to be bought for realizing the parts Nozzle Divergent 1 & Nozzle Divergent 2.		<b>Quoted /Not Quoted</b>
<b>D Optional Accessories</b>			
D.1.	Blank centering	To be specified by OEM	<b>Quoted /Not Quoted and specify the details</b>
D.2.	Material backup support plate	To be specified by OEM	<b>Quoted /Not Quoted and specify the details</b>
D.3.	Ejecting unit	To be specified by OEM	<b>Quoted /Not Quoted and specify the details</b>
D.4.	Circle shear	To be specified by OEM	<b>Quoted /Not Quoted and specify the details</b>
D.5.	Teach in play back	To be specified by OEM	<b>Quoted /Not Quoted and specify the details</b>
D.6.	A list of other optional accessories along with a description of their function also is to be quoted.		<b>Quoted /Not Quoted</b>
<b>E Process development &amp; Job prove out</b>			
E.1.	The successful bidder shall be responsible for developing the process and tooling for Nozzle Divergent 1 & Nozzle Divergent 2 as in attached drawing		<b>Complied/ Not Complied</b>
E.2.	Material for Nozzle Divergent 1 is KC20WN (4 mm thick) and for Nozzle Divergent 2 is Columbium C103 (Niobium) (3 mm thick), specifications for which are given as <b>Annexure 2</b>		<b>Noted /Not noted</b>
E.3.	Initial trials are to be done on SS321 sheets and the vendor shall procure SS321 materials required for initial process qualification trials.		<b>Complied/ Not Complied</b>

Tender Specification			Compliance from the vendor
Sl. No	Detail	Specification	Compliance/ Values
E.4.	Final trials are to be done on actual material. The raw material size presently used is 1000 x 1000 x 4 mm for Nozzle Divergent 1 and 500 x 500 x 3 mm for Nozzle Divergent 2. However, the vendor shall confirm the size and number of each blanks required final trials.		<b>Please specify the size and number of blanks</b>
E.5.	LPSC will supply the one set of material required for Nozzle Divergent 1 and Nozzle Divergent 2 for final trials.		<b>Complied/ Not Complied</b>
E.6.	Formed parts and unused materials shall be supplied along with the machine.		<b>Complied/ Not Complied</b>
E.7.	The Flow forming can be carried out in different stages with intermediate heat treatment.		<b>Complied/ Not Complied</b>
E.8.	Final finishing to the tolerances in the attached drawing can be achieved by machining in the same setup.		<b>Complied/ Not Complied</b>
E.9.	The tooling cost shall be indicated separately and all tooling shall form part of the supply.		<b>Quoted / Not quoted</b>
E.10.	Detailed documentation of the process along with the different parameters shall be generated and supplied.		<b>Complied/ Not Complied</b>
E.11.	LPSC shall have unlimited IP rights over the process and parameters developed		<b>Complied/ Not Complied</b>
<b>F AMC Charges:</b> The vendor shall also quote for AMC charges for 3rd and 4th year beyond the accepted warranty period. The terms and conditions for AMC are given in Annexure 3.			<b>Please specify the no of preventive maintenance and cost PM &amp; BM given in the format as per annexure 3</b>
<b>G Spares</b>			
G.1.	The vendors should provide a list of essential mechanical, electrical & electronics spares required for operation of machine on two-shift basis for a period of 2 years with quantity and cost break-up.		<b>Please provide the list of spares, quantity and cost breakup</b>
G.2.	The vendors shall also provide a list of other recommended mechanical, electrical & electronics spares to be kept in stock along with quantity and cost break-up.		<b>Please provide the list of spares, quantity and cost breakup</b>

<b>Tender Specification</b>			<b>Compliance from the vendor</b>
<b>Sl. No</b>	<b>Detail</b>	<b>Specification</b>	<b>Compliance/ Values</b>
G.3.	The above costs will not be included in cost comparison.		<b>Noted/not noted</b>
<b>H Technical Documentation to be submitted along with offer</b>			
H.1.	Type of the machine, model no and its specifications Foundation plan		<b>Submitted/Not submitted</b>
H.2.	Machine layout drawing indicating shop floor space and machine weight.		<b>Submitted/Not submitted</b>
H.3.	Foundation plan		<b>Submitted/Not submitted</b>
H.4.	Process plan for realizing Nozzle Divergent 1 & Nozzle Divergent 2 including in process & post process heat treatment for parts		<b>Submitted/Not submitted</b>
H.5.	Details of similar parts realised		<b>Submitted/Not submitted</b>
H.6.	Company profile and website address		<b>Submitted/Not submitted</b>
H.7.	List of customers to whom similar machines have been supplied.		<b>Submitted/Not submitted</b>
H.8.	Technical Compliance matrix		<b>Submitted/Not submitted</b>
<b>I Technical Documentation to be supplied with the machine</b>			<b>One set hard copy and soft copy of the following technical documentation in 'English' shall have to be supplied along with the machine</b>
I.1.	Instruction/ Operational manual		<b>Complied/ Not Complied</b>
I.2.	Spare parts manual		<b>Complied/ Not Complied</b>
I.3.	Maintenance manual for mechanical, electrical and electronic systems.		<b>Complied/ Not Complied</b>
I.4.	Circuit diagram for electrical, electronics, hydraulic & pneumatic		<b>Complied/ Not Complied</b>
I.5.	Circuit diagram for lubrication & cooling system		<b>Complied/ Not Complied</b>
I.6.	Lay out and foundation plan		<b>Complied/ Not Complied</b>
I.7.	Preventive maintenance check list, troubleshooting charts and guidelines.		<b>Complied/ Not Complied</b>

<b>Tender Specification</b>			<b>Compliance from the vendor</b>
<b>Sl. No</b>	<b>Detail</b>	<b>Specification</b>	<b>Compliance/ Values</b>
I.8.	Detailed drawing of the tooling developed for Nozzle Divergent 1 & Nozzle Divergent 2		<b>Complied/ Not Complied</b>
I.9.	Detailed documentation of the process for realizing Nozzle Divergent 1 & Nozzle Divergent 2 along with the different parameters.		<b>Complied/ Not Complied</b>
<b>J Pre delivery inspection (PDI) &amp; Shipment Clearance</b>			
J.1.	PDI shall be carried out by LPSC at manufacturer's site before despatch for its conformance to specification and function as per standard protocol		<b>Complied/ Not Complied</b>
J.2.	During PDI the accuracy tests on the machine shall also be performed as per manufacturers test plan.		<b>Complied/ Not Complied</b>
J.3.	Theoretical and practical training regarding machine operation shall be provided		<b>Complied/ Not Complied</b>
J.4.	Demonstration of the forming of 1set of Nozzle Divergent 1 & Nozzle Divergent 2 and the inspection of the formed parts		<b>Complied/ Not Complied</b>
J.5.	The equipment shall be despatched only after a despatch clearance given by LPSC		<b>Complied/ Not Complied</b>
<b>K Installation and Commissioning</b>			
K.1.	The machine shall be delivered, erected, installed and commissioned at a site nominated by LPSC anywhere in India.		<b>Complied/ Not Complied and Quoted/ Not Quoted</b>
K.2.	Erection, installation and commissioning of the machine shall be carried out by the vendor and this will include preparatory checks, demonstrating the machine and production of Nozzle Divergent 1& Nozzle Divergent 2 already tested at the vendor's works. The vendor shall quote for Erection, installation and commissioning of the machine.		<b>Complied/ Not Complied</b>

Tender Specification		Compliance from the vendor
Sl. No	Detail	Specification
		Compliance/ Values
K.3.	Vendor shall train 2 of LPSC's engineers on operation, programming and machine maintenance for two weeks after commissioning of machine at installation site free of cost.	<b>Complied/ Not Complied</b>
<b>L Final acceptance at our site</b>		
L.1.	Final acceptance of the machine shall be based on satisfactory completion of the activities mentioned at Sl. No. K.1 to K.3	<b>Complied/ Not Complied</b>
<b>M Other Terms and conditions</b>		
M.1.	Seaworthy/roadworthy packing of machine and its accessories is under vendor's scope. Vendor shall also indicate packing, forwarding & freight charges.	<b>Complied/ Not Complied</b>
M.2.	The supplied machine shall be warranted for a period of minimum 2 years from the date of machine acceptance at LPSC site.	<b>Complied/ Not Complied</b>
M.3.	After sales service shall be provided by the vendor for a minimum period of 10 years from date of machine acceptance.	<b>Complied/ Not Complied</b>
M.4.	Foundation requirements and special requirements like dedicated grounding for the machine including drawings should be communicated to LPSC within one month of ordering so as to ready machine installation site. The foundation will be readied by LPSC as per the drawing supplied by the vendor.	<b>Complied/ Not Complied</b>
M.5.	If the machine or any part of it is lost or damaged in transit, the replacement of such machine or part shall be effected free of cost.	<b>Complied/ Not Complied</b>
<b>N Delivery</b>		
N.1.	The vendor shall deliver the machine site within 12 months from the date of release of purchase order.	<b>Please specify the delivery period</b>

Tender Specification		Compliance from the vendor
Sl. No	Detail	Specification
		Compliance/ Values
N.2.	The vendor shall complete the erection, installation and commissioning including job prove out within 3 months from the date of delivery.	<b>Please specify the completion period</b>
<b>O Qualification criteria</b>		
O.1.	The vendor should have installed and commissioned three flow forming machines in last five years immediately preceding Mar 2022. Proof of installation and commissioning shall be submitted.	<b>Submitted / not submitted</b>
O.2.	Test certificates of the latest supplied identical or similar machines shall be submitted.	<b>Submitted / not submitted</b>
O.3.	The vendor shall submit the Annual reports (balance sheet and Profit & Loss Account) for the last three years immediately preceding Mar 2022.	<b>Submitted / not submitted</b>

#### Check list for submission of offers

Sl. No.	Description	Enclosed/ Not enclosed
1	Compliance matrix covering all points from clause <b>0 to O</b>	<b>Enclosed/ Not enclosed</b>
2	Detailed technical description of machine	<b>Enclosed/ Not enclosed</b>
3	Documentation as per clause <b>I</b>	<b>Enclosed/ Not enclosed</b>
4	Format of the offered price bid without price	<b>Enclosed/ Not enclosed</b>
5	Documents / proofs for qualification criteria as detailed in <b>clause O.</b>	<b>Enclosed/ Not enclosed</b>
6	Actual price bid as part of price bid (Offer with cost as part of technical bid will not be considered.)	<b>Enclosed/ Not enclosed</b>



**General Terms and Conditions:****1) Instruction to Foreign Suppliers:-**

- a) Payment term shall be **SIGHT DRAFT / 80%** by irrevocable Letter of Credit and balance 20% by wire transfer after receipt & acceptance of the ordered item. Please confirm acceptance in your offer. If you insist for L/C, and all bank charges shall be to your account. Confirm acceptance.
- b) We are eligible for Customs Duty Concession vide Notification No. 050/2017 539 A-CUSTOMS DTD. 30.06.2017 and necessary Customs Duty Exemption Certificate will be provided on request.
- c) Please specify whether any export clearance is required in case of an order on you.
- d) Warranty/Guarantee applicable for the item shall be mentioned in your offer.
- e) Special Certification for packing Material : as per Plant Quarantine (Regulation of Control into India) Order 2003, Articles packed with packing material of plant origin viz., hay, straw, wood shavings, wood chips, saw dust, wood waste, wooden pallets, Dunn age Mats, wooden packages, coir pith, pear or sphagnum moss etc., will be allowed entry by Customs only with a Phytosanitary Certificate. In case if a Purchase Order, if you propose to us any of the above material for packing such a certificate issued by your local Plant Quarantine Authority shall be furnished.
- f) Confirm whether any Export License is required and for which End User Certificate is to be provided by us, in case of an Order on you. (Enclose format for EUC, if applicable)
- g) Either Indian Agent on behalf of the foreign principles or the foreign principal directly can quote against this order, but not both. In either case an Indian *agent* cannot represent more than one principal against the same tender.
- h) High Sea Sales**  
In case any bidder is submitting their offer on High Sea Sale (HSS) basis, the Indian Trader shall submit the following documents **mandatorily** along with the offer. It will be the responsibility of the Party to clear the items from Customs and deliver to us on FOR LPSC, Valiamala basis
  - The Import Export Code of the Indian Trader.
  - Bank Authorisation Code of the Indian Trader.
  - GSTIN of the Indian Trader.

**2) Delivery Terms:**

FOR : LPSC, VALIAMALA

In case of Foreign vendors : Ex-works (place)/ FOB (port of despatch)

**3) Payment Term**

- (a) 100% payment shall be made through RTGS within 30 days of receipt and acceptance of the item at our site.
- (b) In case of Foreign orders, Payment term shall be **SIGHT DRAFT / 80% BY IRREVOCABLE LETTER OF CREDIT AND BALANCE 20% BY WIRE TRANSFER AFTER RECEIPT & ACCEPTANCE OF THE ORDERED ITEM.**

**4) Warranty**

Warranty for the offered item shall be from the date of installation/acceptance of the item at our site for a minimum period of one year or as specified in the tender document.

5) Please specify IGST percentage, if any, in your offer.

**6) Liquidated Damages:**

If the ordered items are not supplied within the delivery schedule, LD shall be levied from your bill @ 0.5% per week for the undelivered items subject to a maximum of 10% of the order value for the delayed period.

**7) Performance Bank Guarantee**

Vendor has to submit a PBG from a Nationalised / Scheduled Bank (from a bank of international repute in case of foreign vendors) for 3% of the order value towards the performance of the system at the time of supply valid till the completion of warranty period plus 60 days as per the format provided by the Department.

OR

3% OF THE ORDER VALUE SHALL BE WITH HELD TILL THE COMPLETION OF WARRANTY PERIOD PLUS 60 DAYS.

**8) Security Deposit (only for order value above INR 5 Lakh)**

Vendor has to furnish a Bank Guarantee for 3% of the order value (from a bank of international repute in case of foreign vendors) within 10 days of receipt of Order towards the faithful execution of the order valid till the completion of the scope of work as per order plus sixty days. (This will be returned to you immediately on execution of the order satisfactorily as per order terms. In case of non-performance / poor performance, the amount will be forfeited).

**9) Resolution of Disputes**

Any dispute, disagreement or question arising out of or relating to or in consequence of the contract or to its fulfillment, or the validity of enforcement thereof which cannot be settled mutually, or the settlement of which is not herein specifically provided for, shall within 30 (thirty) days from the date either party informs the other in writing that such dispute or disagreement exists be referred to arbitration by the sole arbitrator. The Arbitrator shall be appointed "As per the Indian Arbitration and Conciliation Act 1996" and proceedings will be conducted in Trivandrum. The Arbitration proceedings shall be conducted in accordance with and subject to the Arbitration and Conciliation Act 1996 (Act 26 of 1996) as amended from time to time and the decision of the Arbitrator shall be final and binding on the parties thereto. Each party shall bear its own cost of preparing and presenting its case. The cost of Arbitration including the fees and expenses of the Arbitrator shall be shared equally by the parties unless the award provides otherwise. Subject to provisions of this clause, the courts at Kerala shall have exclusive jurisdiction. Performance under this Contract shall, however continue during Arbitration proceeding and no payment due or payable by the parties hereto shall be withheld unless any such payment is/or forms a part of the subject matter of the Arbitration proceedings.

**10) Offer Validity**

(a) The validity of the offers should be 90 days (in case of single part tender) from the date of opening of the tenders.

(b) The validity of the offers should be 120 days (in case two part tender) from the date of opening of the tenders.

Note :- Tenders having shorter offer validity will not be considered for evaluation.

11) We only accept offers which are signed by hand. Offers received through fax or email will not be considered.

**INSTRUCTIONS FOR TWO PART TENDERS**

1. We invite your offer duly signed, in TWO parts as follows:-

(a) **PART- I : TECHNICAL & COMMERCIAL** (Other than Price)

(b) **PART -II : PRICE BID**

**1.1 PART-I : TECHNICAL & COMMERCIAL**

1.1.1 **TECHNICAL:** The detailed Technical Specification and Commercial Terms such as delivery date, taxes, duties payable, place of delivery, payment term, validity, guarantee etc and scope of supply shall be covered in this part. Please enclose a copy of the details indicated in price quotation (**WITHOUT PRICES OR BY MASKING THE PRICE**) mainly to know the items/ specifications for which you have indicated prices in price bid. **This part should not contain prices.** The Technical and commercial part of the offer should be kept in a sealed envelope superscribing the following details.

**QUOTATION AGAINST TENDER NO TM00 2022 036759 01  
DUE ON 13.12.2022 at 14.30 hrs IST  
OPENING ON 14.12.2022 at 10.30 hrs IST  
FOR SUPPLY, INSTALLATION AND COMMISSIONING OF A CONICAL FLOW  
FORMING MACHINE - 1 SET  
PART I - TECHNICAL & COMMERCIAL**

The cover should indicate "SENDER'S" address.

**1.2. PART -II : PRICE BID**

1.2.1. This part shall contain **PRICE** details only.

1.2.2. The price for the item should be indicated item wise in this part. All the items/ specifications mentioned in the Technical Part should come here and prices indicated against each. The break-up for each item of supply or services should be indicated.

1.2.3. Whenever options are quoted, the same should also be indicated with quantity and unit rate separately. The prices are to be mentioned both in figures and in words. This part should also be kept in a sealed cover superscribing as follows:-

**QUOTATION AGAINST TENDER NO TM00 2022 036759 01  
DUE ON 13.12.2022 at 14.30 hrs IST  
FOR SUPPLY, INSTALLATION AND COMMISSIONING OF A CONICAL FLOW  
FORMING MACHINE - 1 SET  
PART II - PRICE BID**

THE TWO SEALED COVERS PREPARED AS ABOVE SHOULD BE KEPT IN ANOTHER ENVELOPE, SEALED AND SUPERSCRIBED AS UNDER:-

"Quotation against Tender No. TM00 2022 036759 01 due on 13.12.2022, 14.30 hrs IST for SUPPLY, INSTALLATION AND COMMISSIONING OF A CONICAL FLOW FORMING MACHINE - 1 SET containing TWO SEPARATE COVERS PART-1 & PART -II and addressed to:

SR.PURCHASE & STORES OFFICER  
Liquid Propulsion Systems Centre  
Valiamala (PO)  
Thriuvananthapuram- 695 547.

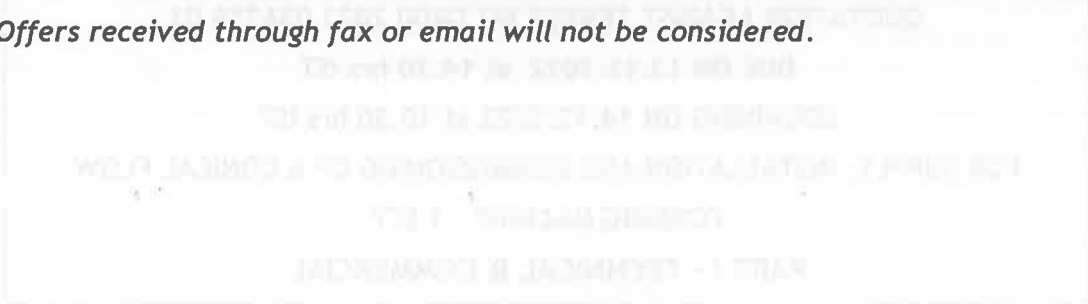
The cover should indicate "SENDER'S " address

For any clarification you may contact us at following phone Nos.

Telephone : 0471 2567726/0471 2567727

Your offer should reach us on or before the due date and time i.e. 13<sup>th</sup>, DECEMBER 2022 at 14.30 hrs IST. **Offers received after the due date and time will not be considered.**

**Offers received through fax or email will not be considered.**



**COMPLIANCE STATEMENT FOR COMMERCIAL TERMS**

Sl. No. (1)	Description (Commercial terms & conditions) (2)	Compliance to Col. (2) [YES/NO] (3)	Remarks (4)
1.	P & F charges, if any, (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column)..		
2.	Whether applicable GST percentage mentioned in offer (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column).		
3.	ISRO is eligible for Customs Duty Concession vide Notification No. NO. 050/2017 539 A-CUSTOMS DTD. 30.06.2017  [We will provide Customs Duty Concession Certificate for bought out items being imported for manufacturing the ordered items (List of items to be imported with quantities to be enclosed along with offer) OR for Orders placed on Foreign Vendors OR for High Sea Sale orders OR vendors from SEZ]		
4.	<ul style="list-style-type: none"> <li>● Installation Charges, if any,</li> <li>● Third Party Inspection (TPI) charges if any, as per tender.</li> </ul> (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column).		
5.	<b>Delivery Term :-</b> <ul style="list-style-type: none"> <li>● FOR : LPSC, VALIAMALA</li> <li>● In case of Foreign orders: Ex-works (place)/ FOB (port of despatch)</li> </ul>		
6.	Freight charges, if any. (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column).		
7.	Delivery Period (If any specific delivery period is mentioned in the tender, please comply the same. If not agreed, please mention your delivery period in remarks column OR if already mentioned in your quote please mention as "already furnished in the quote")		
8.	<b>Payment Term :-</b> (a) 100% payment shall be made through RTGS within 30 days of receipt and acceptance of the item at our site. (b) In case of Foreign orders, Payment term shall be SIGHT DRAFT / 80% BY IRREVOCABLE LETTER OF CREDIT AND BALANCE 20% BY WIRE TRANSFER AFTER RECEIPT & ACCEPTANCE OF THE ORDERED ITEM.		
9.	<b>Liquidated Damages (LD) :-</b> If the ordered items are not supplied within the delivery schedule, LD shall be levied from your bill @ 0.5% per week for the undelivered items subject to a maximum of 10% of the order value for the delayed period.		

Sl. No. (1)	Description (Commercial terms & conditions) (2)	Compliance to Col. (2) [YES/NO] (3)	Remarks (4)
10.	<b>Warranty :-</b> Warranty for the offered item shall be from the date of installation/acceptance of the item at our site for a minimum period of one year or as specified in the tender document.		
11.	<b>Security Deposit (SD) :- (only for order value above Rs.5 Lakh)</b> You have to furnish a Bank Guarantee for 3% of the order value (from a bank of international repute in case of foreign vendors) within 10 days of receipt of Order towards the faithful execution of the order valid till the completion of the scope of work as per order plus sixty days. (This will be returned to you immediately on execution of the order satisfactorily as per order terms. In case of non-performance / poor performance, the amount will be forfeited).		
12.	<b>Performance Bank Guarantee (PBG) :-</b> You have to submit a PBG from a Nationalised / Scheduled Bank (from a bank of international repute in case of foreign vendors) for 3% of the order value towards the performance of the system at the time of supply valid till the completion of warranty period plus 60 days as per the format provided by the Department. OR 3% OF THE ORDER VALUE SHALL BE WITH HELD TILL THE COMPLETION OF WARRANTY PERIOD PLUS 60 DAYS.		
13.	In case, if parties are unable to provide two separate BGs, i.e., one for SD and one for PBG, they can submit a combined BG for SD & PBG within 10 days of receipt of order for 3% of order value valid till the completion of total contractual obligation (i.e., supply period + warranty period + 60 days) as per the format provided by the Department.		
14.	<b>Insurance :-</b> Being a Govt. Of India Dept., Insurance is not required at our cost. Please ensure the safe delivery of the ordered item with proper AIR / SEA / ROAD worthy packing		
15.	<b>Validity of Offer :-</b>  (a) The validity of the offers should be 90 days (in case of single part tender) from the date of opening of the tenders. (b) The validity of the offers should be 120 days (in case two part tender) from the date of opening of the tenders.  <b>Note :- Tenders having shorter offer validity will not be considered for evaluation.</b>		

Sl. No. (1)	Description (Commercial terms & conditions) (2)	Compliance to Col. (2) [YES/NO] (3)	Remarks (4)
16.	<p>In case of foreign orders,</p> <p>(a) Please specify whether any Export clearance is required. If it is required please provide End User Certificate format along with offer.</p> <p>(b) Please specify whether any Agency Commission is involved or not. If 'YES' mention the percentage of Agency Commission. [Agency Commission shall be claimed by the Indian Agent through an Invoice. The Agency Commission shall be paid to the Indian Agent in Indian Rupees worked out on the basis of Telegraphic Transfer buying rate of exchange prevailing on the date of placement of the Purchase order/Contract and within 30 days from the date of satisfactory acceptance of the item at our site. Distributors are not eligible for Agency Commission]</p>		
17.	<p><b>Special conditions against Indian Agents submitting quotations in Foreign Currency.</b></p> <p>(a) Foreign Principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after sales service to be rendered by the Indian Agent.</p> <p>(b) Copy of Agency agreement with the Foreign Principal, precise relationship between them and their mutual interest in the business.</p>		

GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE  
**LIQUID PROPULSION SYSTEM CENTRE**  
PURCHASE DIVISION  
VALIAMALA P.O. THIRUVANANTHAPURAM

Tender No:TM00 2022 036759 01  
Due on: 13.12.2022  
Tenders Ref. No: .....  
Date: .....

**TENDER FORM**

From :

.....  
.....  
.....

To: The Purchase & Stores Officer,  
Liquid Propulsion Systems Centre  
Valiamala P.O.  
Thiruvananthapuram – 695 547

Dear Sir,

I/We hereby offer to supply the stores detailed below at the price hereunder quoted and agree to hold this offer open till.....I/We shall be bound to supply the stores hereby offered upon the issue of the Purchase Order communicating the acceptance there of on or before the expiry of the last mentioned date. You are at liberty to accept any one or more of the items of stores tendered for or any portion of any one or more of the items of such stores. I/We notwithstanding that the offer in this tender has not been accepted in whole, shall be bound to supply to you such items and such portion or portions of one or more of the items as may be specified in the said Purchase Order communicating the acceptance:

Sl. No.	Description	Quantity	Unit	Rate Rs.	Delivery Date
---------	-------------	----------	------	----------	---------------

NOTE: All the rates should be given both in figures and words.

Place at which delivery will be made: .....  
Date by which the ordered items will be supplied:.....

2.I/We have understood the items of the tender annexed to the invitation to tender and have thoroughly examined the specification/drawing and / or pattern quoted or referred to herein and /are fully aware of the nature of the stores required and my/our offer is to supply the stores strictly in accordance with the requirements subject to the terms and conditions stipulated in the enquiry and contained in the purchase order communicating the acceptance of this tender either in whole or in part.

Signature of Tenderer  
Date.....  
(Seal)



## INSTRUCTIONS TO TENDERERS

1. The Tenderers should submit quotations in duplicate in a sealed envelope, superscribing 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 90 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. Offers 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.
14. Inspection / Test Certificate should be provided for the goods after testing it thoroughly at the Contractor's works. If any inspection by Lloyds or any other testing agency is considered necessary, it shall be arranged by Contractors.
15. Where erection or assembly or commissioning is a part of the Contract, it should be done immediately on notification. The Contractor shall be responsible for any loss/damage sustained due to delay in fulfilling this responsibility.
16. For items having shelf life, those with maximum shelf life should be supplied if order is placed

## I. TERMS AND CONDITIONS

1. DEFINITIONS:
  - a. The term 'Purchaser' shall mean the President of India or his successors or assignees.
  - b. 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, representatives, heirs, executors and administrators unless excluded by the Contract.
  - c. The term 'Purchase Order' shall mean the communication signed on behalf of the Purchaser by an officer duly authorized 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 of plant, machinery or equipment of part thereof.
  - d. The term 'Stores' shall mean what the Contractor agrees to supply under the Contract as specified in the Purchase Order.

2. **PRICES:**  
Tenders offering firm prices will be preferred. Where a price variation clause is insisted upon by a tenderer, quotations 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 variations.
3. **TERMS OF PAYMENT:**
  - 3.1. Being a Department of the Government of India, the normal terms of payment are by Sight Draft. However other terms of payment like establishment of Letter of Credit may be considered by the Purchaser on such terms and conditions as may be agreed upon.
  - 3.2. The Sight Draft / Letter of Credit will be operative on presentation of the under mentioned documents:
    - a) Original Bill of Lading / Airway Bill
    - b) Commercially certified invoices describing the stores delivered, quantity, unit rate and their total value, in triplicate. The invoice should indicate the discounts, if any, and Agency Commission separately.
    - c) Packing List showing individual dimensions and weight of packages.
    - d) Country of Origin Certificate in duplicate.
    - e) Test Certificate.
    - e) Declaration by the Seller that the contents in each case are not less than those entered in the invoices and the quality of the Stores are guaranteed as per the specifications asked for by the Purchaser.
    - f) Warrantee and guarantee Certificate/s vide Clause 20 herein below
4. **IMPORTANT LICENCE:**  
Reference to Import License No. & date and Contract number & date shall be prominently indicated in all the documents vide para 3.2
5. **DEMURRAGE:**  
Supplier shall bear demurrage charges, if any, incurred by the purchaser due to delayed presentation of shipping documents as prescribed in para 3.2 to the bankers within a reasonable time (say within 10-12 days) from the date of bill of lading for sea consignments and within 3-4 days from the date of Air Way Bill for air consignments.
6. **ADDRESS OF INDIAN AGENTS:**  
.....  
.....
7. **GUARANTEED TIME DELIVERY:**  
The time for and the date of delivery stipulated in the Purchase Order shall be deemed to be the essence of the Contract. Delivery must be completed within the date specified therein.
8. **INSPECTION AND ACCEPTANCE TEST:**
  - 8.1. The Purchaser's representatives shall also be entitled at all reasonable times during manufacture to inspect, examine and test on the Contractor's premises the material and workmanship of all stores to be supplied under this Contract and if part of the said stores is being manufactured on other premises, the Contractor shall obtain for the purchaser's representative permission to inspect, examine and test as if the equipment were being manufactured on the Contractor's premises. Such inspection, examination and testing shall not release the Contractor from the obligations under this Contract.
  - 8.2. For tests on the premises of the Contractor or of any of his sub-Contractors, the Contractor shall provide free of cost assistance, labour, material, electricity, fuel and instruments as may be required or as may be reasonably needed by the purchaser's representative to carry out the tests efficiently.
  - 8.3. When the stores have passed the specified test, the purchaser's representative shall furnish a certificate to the effect in writing to the Contractor. The Contractor shall provide copies of the test/s certificates to the purchaser as may be required.
9. **MODE OF DESPATCH:**  
Generally, stores should be despatched through Indian Flagged Vessel / Air India or through any other Agency nominated by the purchaser. A copy of the invoice and packing list should invariably be kept inside each of the packages.
10. **PORT OF ENTRY:**  
Thiruvananthapuram/Chennai/Mumbai/Hyderabad/Bangalore/
11. **CONSIGNEE:**  
Purchase & Stores Officer, Stores, (Valiamala, Thiruvananthapuram)
12. **SHIPPING MARKS.**  
The mark on the shipping documents such as invoice, bill of lading and on the packages should be as follow:

PURCHASE ORDER NO. ....

DATED .....

GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE  
LIQUID PROPULSION SYSTEM CENTRE  
DESTINATION: THIRUVANANTHAPURAM / MADRAS / BANGALORE  
PORT OF ENTRY: THIRUVANANTHAPURAM / MADRAS / BANGALORE

13. INSURANCE OF THE STORES:

The necessity or otherwise of insurance will be as indicated in the Purchase Order.

14. CONTRACTOR'S DEFAULT LIABILITY:

4.1. The purchaser may upon written notice of default to the Contractor terminate the Contract in whole or in part in circumstances detailed hereunder:

- a) If in the judgment of the Purchaser the Contractor fails to make delivery of Stores within the time specified in the Contract/agreement or within the period for which extension has been granted by the Purchaser to the Contractor.
- b) If in the judgment of the Purchaser the Contractor fails to comply with any of the other provisions of this Contract.

15. In the event the Purchaser terminates the Contract in whole or in part as provided in Clause 14 the Purchaser reserves the right to Purchase, upon such terms and in such a manner as he may deem appropriate, stores similar to that terminated and the Contractor shall be liable to the Purchaser for any additional costs for such similar stores and/or for liquidated damages for delay as defined in Clause 19 until such reasonable time as may be required for the final supply of stores.

15.1. If this Contract is terminated as provided in Clause 14 the Purchaser in addition to any other rights provided in this Article, may require the Contractor to transfer title and deliver to the Purchaser under any of the following clauses in the manner and as directed by the Purchaser:

- a) Any completed stores.
- b) Such partially completed stores, drawing, information and Contract rights (hereinafter called manufacturing material) as the Contractor has specifically produced or acquired for the performance of the Contract as terminated. The Purchaser shall pay to the Contractor the Contract price for completed stores delivered to and accepted, by the purchaser and for manufacturing material delivered and accepted.

15.2. In the event the Purchaser does not terminate the Contract as provided in Clause 14, the Contractor shall continue the performance of the Contract in which case he shall be liable to the purchaser for liquidated damages for delays set out in Clause 19 until the stores are accepted.

16. REPLACEMENT:

If the stores or any portion thereof is damaged or lost during transit, the Purchaser shall give notice to the Contractor setting forth particulars of such stores damaged or lost during transit. The replacement of such stores shall be effected by the Contractor within a reasonable time to avoid unnecessary delay in the intended usage of the Stores. In case the purchaser agrees, the price towards replacement items shall be paid by the purchaser on the basis of original price quoted in the tender or as reasonably worked out from the tender.

17. REJECTION :

In the event that any of the stores supplied by the Contractor is found defective in material or workmanship or otherwise not in conformity with the requirements of the Contract specifications, the purchaser shall either reject the stores or request the Contractor, in writing, to rectify the same. The Contractor, on receipt of such notification, shall either rectify or replace the defective stores free of cost to the purchaser. If the Contractor fails to do so, the purchaser may at his option either –

- a) replace or rectify such defective stores and recover the extra cost so involved from the Contractor, or
- b) terminate the Contract for default as provided under clause 14 above, or
- c) Acquire the defective stores at a reduced price considered equitable under the circumstances. The provision of this article shall not prejudice the Purchaser's rights under clause 19.

18. EXTENSION OF TIME:

If the completion of supply of stores is delayed due to reason of *force majeure* such as acts of god, acts of public enemy, acts of Government, fires, floods, epidemics, quarantine restriction, strikes, freight embargoes, etc., the Contractor shall give notice within 15 days to the purchaser in writing of his claim for an extension of time. The purchaser on receipt of such notice after verification, if necessary, may agree to extend the Contract delivery date as may be reasonable but without prejudice to other terms and conditions of the Contract.

19. DELAY IN COMPLETION / LIQUIDATED DAMAGES:

If the Contractor fails to deliver the stores within the time specified in the Contract or any extension thereof, the purchaser shall recover, from the Contractor as liquidated damages a sum of one-half of one percent (0.5 percent) of the Contract price of the undelivered stores for each calendar week of delay. The total liquidated damages shall not exceed ten percent (10 percent) of the Contract price of the unit or units so delayed. Stores will be deemed to have been delivered only when all their component parts are also delivered. If certain components are not delivered in time, the stores will be considered as delayed until such time as the missing parts are delivered.

20. 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 are found to have developed under proper use arising from faulty materials, 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 parts thereof are faulty.
- c) If in the opinion of the purchaser it becomes necessary to replace or renew any defective stores, such replacements or renewals 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 defects has developed within the said period of 12 months or as to whether the nature of the defects requires renewal or replacement shall be final, conclusive and binding on the Contractor.
- f) To fulfill guarantee conditions outlined in Clause 20 (a) to (e) above, the Contractor shall, at the option of the purchaser, furnish a Bank Guarantee (as prescribed by the purchaser - Bank Guarantee format enclosed) from a Bank approved by the purchaser for an amount equivalent to 3% of the value of the Contract along with first shipment documents. On the performance and completion of the Contract in all respects, the Bank Guarantee will be returned to the Contractor without any interest.
- g) All the replacement stores shall also be guaranteed for a period of 12 months from the date of arrival of stores at purchaser's site.
- h) Even while the 12 months guarantee applies to all stores, in case where a greater period is called for by our specifications, then such a specification shall apply, and in such cases, the period of 14 months referred to in Clause 20 (b) and (c) shall be asked for guarantee period plus two months.

21. REQUIREMENT OF ADDITIONAL NUMBERS OF THE STORES/SPARE PARTS ORDERED:

The Contractor shall also undertake the supply of additional number of items covered by the order as considered necessary by the purchaser at a later date, the actual price to be paid shall be mutually agreed to after negotiations.

22. PACKING:

- a) The Contractor wherever applicable shall pack and crate all stores for sea / air shipment as applicable in a manner suitable for export to a tropical humid climate, in accordance with internationally accepted export practices and in such a manner so as to protect it from damage and deterioration in transit by road, rail or sea for space qualified stores. The Contractors shall be held responsible for all damages due to improper packing.
- b) The Contractor shall ensure that each box / unit of shipment is legible and properly marked for correct identification. The failure to comply with this requirement shall make the Contractor liable for additional expenses involved.
- c) The Contractor shall notify the purchaser of the date of shipment from the port of embarkation as well as the expected date of arrival of such shipment at the designated port of arrival.
- d) The Contractor shall give complete shipment information concerning the weight, size, content of each packages, etc.
- e) Transshipment of equipment shall not be permitted except with the written permission of the purchaser.
- f) Apart from the despatch documents negotiated through Bank, the following documents shall also be airmailed to the purchaser within 7 days from the date of shipment by sea and within 3 days in case of air-consignments:
  - Commercial Bill of Lading / Air Way Bill / Post parcel Receipt. (Two non-negotiable copies)
  - Invoice (3 copies)

- Packing List (3 copies)
- Test Certificate (3 copies)
- Certificate of Origin.

The Contractor shall also ensure that one copy of the packing list is enclosed in each case

23. Resolution of Disputes:

Any dispute, disagreement or question arising out of or relating to or in consequence of the contract or to its fulfillment, or the validity of enforcement thereof which cannot be settled mutually, or the settlement of which is not herein specifically provided for, shall within 30 (thirty) days from the date either party informs the other in writing that such dispute or disagreement exists be referred to arbitration by the sole arbitrator. The Arbitrator shall be appointed "As per the Indian Arbitration and Conciliation Act 1996" and proceedings will be conducted in Trivandrum. The Arbitration proceedings shall be conducted in accordance with and subject to the Arbitration and Conciliation Act 1996 (Act 26 of 1996) as amended from time to time and the decision of the Arbitrator shall be final and binding on the parties thereto. Each party shall bear its own cost of preparing and presenting its case. The cost of Arbitration including the fees and expenses of the Arbitrator shall be shared equally by the parties unless the award provides otherwise. Subject to provisions of this clause, the courts at Kerala shall have exclusive jurisdiction. Performance under this Contract shall, however continue during Arbitration proceeding and no payment due or payable by the parties hereto shall be withheld unless any such payment is/ or forms a part of the subject matter of the Arbitration proceedings.

24. LANGUAGE AND MEASURES:

All documents pertaining to the Contract including specification, schedule, notice, correspondence, operating and maintenance instructions, drawings or any other writings shall be written in English language. The metric system of measurement shall be used exclusively in the Contract.

25. INDEMNITY:

The Contractor shall warrant and be deemed to have warranted that all Stores supplied against this Contract are free and clean of infringement of any patent, copyright or trade mark and shall at all times indemnify the purchaser against all claims which may be made in respect of stores for infringement of any right protected by Patent, Registration of design or Trade Mark, and shall take all risk of accident or damage which may cause a failure of the supply from whatever cause arising and the entire responsibility for the sufficiency of all the means used by him for the fulfillment of the Contract.

26. COUNTER TERMS AND CONDITIONS OF SUPPLIERS:

Where counter terms and conditions/printed or cyclostyled conditions have been offered by the supplier, the same shall not be deemed to have been accepted by the purchaser unless specific written acceptance thereof is obtained.

27. SECURITY INTEREST:

On each item to be delivered under this Contract, including an item of work in progress in respect of which payments have been made in accordance with the terms of the Contract, purchaser shall have a security interest in such items which shall be deemed to be released only at the time when the applicable deliverable item is finally accepted and delivered to the purchaser in accordance with the terms of the Contract. Such security interest of the purchaser shall constitute a prior charge as against any other charge or interest created in respect of such items by any entity.

28. BANK CHARGES:

While the purchaser shall bear the bank charge payable to his Bankers (State Bank of India), the Contractor shall bear the Bank charges payable to his Bankers including the cheques towards advising amendment commissions.

29. TRAINING:

The Contractor shall, if required by the purchaser, provide facilities for the practical training of Purchaser's engineering / technical personnel from India and for their active association on the manufacturing processes throughout the manufacturing period of the Contract / stores, number of such personnel to be mutually agreed upon.

30. APPLICABLE LAW:

The Contract shall be interpreted, construed and governed by the laws of India.