



**भारतीय प्रौद्योगिकी संस्थान पटना**  
**INDIAN INSTITUTE OF TECHNOLOGY PATNA**

बिहटा, पटना-801106, बिहार, भारत  
**Bihta, Patna – 801 106, Bihar, INDIA**

**E-PROCUREMENT MODE**

Tender Reference No.: IITP/R&D/792/AWC-01/2023-24/88  
E-tender for Supply of HVOF + HVOF System+ Acoustic  
Chamber and Robot.

**Documents to be submitted online only**



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Date: 25/09/2023

Indian Institute of Technology Patna is in the process of purchasing following items(s) as per the details as given as under:

<b>Name of the work</b>	Supply of HVOF + HVAF System+ Acoustic Chamber and Robot.
<b>Earnest Money Deposit</b>	₹ 8,10,000 (Rupees Eight Lakh Ten Thousand Only)
<b>Warranty</b>	01 (One) Year
<b>Delivery Schedule</b>	16 Weeks
<b>Online EMD Submission:</b> Bidder can submit their EMD online by visiting below link: <a href="https://www.onlinesbi.com/sbicollect/icollecthome.htm?corpID=1968961">https://www.onlinesbi.com/sbicollect/icollecthome.htm?corpID=1968961</a>	
<b>Note:-</b> Tender (ATE/LTE) Reference Number should be mentioned for the purpose of EMD submission. <b>State-</b> Bihar, <b>Type of Institutions-</b> Educational Institutions, <b>Educational Institutions Name-</b> I I T PATNA RESEARCH AND DEVELOPMENT UNIT, <b>Payment Category-</b> EMD (Research and Development Unit). EMD-MSMEs are exempted from the payment of EMD with submission of proper exemption certificate	
<b>Submission of Bids Online:</b> Interested parties may view and download the tender document containing the detailed terms & conditions from the website: <a href="https://eprocure.gov.in/eprocure/app">https://eprocure.gov.in/eprocure/app</a>	

1. Detailed Tender Documents may be downloaded from Central Public Procurement Portal (<https://eprocure.gov.in/eprocure/app>) and from our website (<https://www.iitp.ac.in/>).
2. All details /document pertaining to the tender such as tender document, pre-bid report, corrigendum and any further updates will be available only on our website & also at CPP Portal.
3. **No manual bid will be accepted. All quotations (both technical & financial) should be submitted in the e-procurement portal only.**
4. IIT Patna shall not be responsible for non-receipt of bid due to internet issues or any other reasons.

**CRITICAL DATES**

Publishing Date	<b>25.09.2023 (05:00PM)</b>
Document Download / Sale Start Date	<b>25.09.2023 (05:00PM)</b>
Bid Submission Start Date	<b>25.09.2023 (05:00PM)</b>
Last Date & Time of Submission of Bids (Technical & Financial Bid)	<b>05.10.2023 (04:00PM)</b>
Opening Date & Time of Technical Bids Online	<b>06.10.2023 (04:30PM)</b>
Address of Communication	The Registrar (for R& D Unit), Indian Institute of Technology Patna Kanpa Road, Bihta, Patna, Bihar-801106 Phone: 06115-233-067
For taking technical assistance regarding bid submission, if any	CPP Portal Website: <a href="https://eprocure.gov.in">https://eprocure.gov.in</a> Help Desk Number 0120-4200462, 4001002, 4001005 and 4001005.

**REGISTRAR, IIT PATNA**

**ANNEXURE-1: TECHNICAL SPECIFICATIONS FOR HVOF+HVOF SYSTEM**

High-Velocity Oxy-fuel (HVOF) and High Velocity Air-Fuel (HVOF) Spray system should comprise the following units:

<b>TABLE 1: General Specification for HVOF + HVOF Equivalent System</b>	
<b>HVOF</b>	<b>HVOF (or Equivalent)</b>
<ol style="list-style-type: none"> <li>1. Fuel Type: Liquid Fuel only (White Kerosene or Aviation Turbine Fuel)</li> <li>2. Oxidizer Type: Pure Oxygen only (No Air injection into the combustion chamber)</li> <li>3. Powder injection type: Radial injection only, 2 ports minimum</li> <li>4. Powder feed rate capability: 20 to 300 gm/min. Gun Should be capable of upgrading to 500 gm/min (if needed)</li> <li>5. Gun Type: Only guns designed, developed and patented by the OEM shall be offered and the gun model should be clearly specified.</li> <li>6. Gas flow control: Oxidizer and carrier gas shall be Mass Flow Controlled only. Mass Flow meter, Rotameter or manual flowmeter-based system are not acceptable.</li> <li>7. Liquid Fuel control with electric motor driven motor of up to 20 bar and equipped with pulsation compensation damper.</li> <li>8. System Controls: Siemens S7 PLC system or higher shall be used.</li> <li>9. Gun Cooling: Water cooled only</li> <li>10. Hose &amp; Cable Packages of minimum 6 meters shall be included</li> <li>11. User Interface shall be 18” or more capacitive touchscreen.</li> <li>12. Data logging of process parameters should be included.</li> <li>13. Ignition with Sparkplug but without Hydrogen or other supporting gas</li> <li>14. Gun combustion chamber capability of 5 to 18 bars. High pressure chamber mode (&gt;11 bar) is mandatory requirement for HVOF</li> </ol>	<ol style="list-style-type: none"> <li>1. Fuel Type: (one of the following two)               <ol style="list-style-type: none"> <li>a. Gas Fuel: CNG or LPG (Please specify if any other)</li> <li>b. Liquid Fuel: White Kerosene or Aviation Turbine Fuel</li> </ol> </li> <li>2. Oxidizer Type: (one of the two)               <ol style="list-style-type: none"> <li>a. Compressed Air</li> <li>b. Controlled Flow of Oxygen and Nitrogen in varying proportions using mass flow controllers.</li> </ol> </li> <li>3. Powder Injection Type: Axial or Radial, 1 to 4 ports</li> <li>4. Powder feed rate capability: 20 to 300 gm/min. Gun Should be capable of upgrading to 500 gm/min (if needed)</li> <li>5. Gun Type: Only guns designed, developed and patented by the OEM shall be offered and the gun model should be clearly specified.</li> <li>6. Gun Cooling: Water or Air Cooled</li> <li>7. Gas flow control: Oxidizer and carrier gas shall be Mass Flow Controlled only. Mass Flow meter, Rotameter or manual flowmeter-based system are not acceptable.</li> <li>8. Liquid Fuel control with electric motor driven motor of up to 20 bar and equipped with pulsation compensation damper. For Gas Fuel, vaporizers and pressurizing pumps shall be included.</li> <li>9. System Controls: Siemens S7 PLC system or higher shall be used.</li> <li>10. Hose &amp; Cable Packages of minimum 6m shall be included</li> <li>11. User Interface shall be 18” or more capacitive touchscreen.</li> <li>12. Data logging of process parameters should be included</li> <li>13. Ignition with Sparkplug but without Hydrogen or other supporting gas</li> <li>14. Gun combustion chamber capability of 6 to 13 bars.</li> </ol>
<p>Detailed specifications of HVOF and HVOF are provided in Annexure-2A &amp; 2B respectively.</p>	

Additional Notes:

- i. Powder Feeder System:
  - a. Disk type, Volumetric based powder feeders only
  - b. Twin conical hoppers for precise and pulsation free powder feeding of minimum 1.5 liter capacity and operating pressure of up to 3.5 bar
  - c. Ar / N<sub>2</sub> as Carrier gas with mass flow controller and flowrate of up to 20 LPM
  - d. Multiple discs shall be provided for handling different materials and powder feed rates.
  - e. Siemens S7 control system or higher
  - f. Motorized Stirrers for both canisters
- ii. In case of Air-cooled spray system and using Air as Oxidizer following to be included
  - a. Screw compressor with airflow of 400CFM or higher at normal operating pressure of 7.5 bars
  - b. Oil outlet at compressor air end should be < 3ppm
  - c. Air Dryer for 420 cfm @ 8 bar g
  - d. Moisture Separator with Zero loss drain valve
  - e. Cartridge type Air-Oil separator with two stage filtration as follows:
    - i. Stage 1: Combination filter for removal of oil and dust. Outlet oil content 0.01mg/m<sup>3</sup>
    - ii. Stage 2: Carbon activated filter with outlet oil content of 0.003mg/m<sup>3</sup>
- iii. In case of water-cooled spray system following to be included:
  - a. Water chiller with double Plate type Heat Exchangers should be included of minimum 24TR and above. Refrigerant must be R407C only. Hermetic scroll type compressor of reputed make like Bluestar, Emerson or Danfoss.
- iv. Fuel Line:
  - a. For Gas fueled spray system, gas vaporizer and pumping systems shall be included.
- v. Connectors inside the panel shall be of Swagelok make for preventing leakages and better safety
- vi. Gas Regulators directly from the OEM or of reputed make shall be included for all process gasses.
- vii. Same gun capable of spraying in HVOF and HVAF (or HVAF equivalent) mode is acceptable provided all of the conditions stated in Table 1 are complied to.

**Note:** Essential Auxiliary units to make the above system operational (Detailed Specs. in Annexure-3)

**Qualifying Criteria & General conditions:**

1. The basic HVOF core system components (**Table-1**) described above should be supplied from a single source i.e. the principal manufacturer.
2. Vendor shall indicate a brief list of clients all over the globe for our validation
3. Vendor to indicate the after-sales service back up in India.
4. Warranty period should be 1-3 year from the date of installation.
5. Complete HVOF system should be installed and commissioned. Suitable and appropriate training to scientists is to be provided by the vendor for operating of the complete HVOF spray coating facility including auxiliary units.
6. HVOF spray system should be supplied with 2 sets of operation and maintenance manual. Vendor has to provide the compliance statement with proper justifications/booklet, if necessary.
7. Vendor has to supply at least 3 sets of critical spares:
  - 7.6 Nozzles (Various Sizes)
  - 7.7 Combustion Chambers
  - 7.8 Powder Injectors
  - 7.9 Kerosene Injectors
  - 7.10 Powder Injectors Blocks
  - 7.11 Gas Injection Block / Mixing Block
8. Vendor should provide some feed materials like **WC86-Co10-Cr4, CrC-based powders, Hard facing Alloys**, etc. Free of Cost or paid basis for trial.

## Annexure-2A

1.0	<b>Detailed Specification HVOF Gun</b>	
1.1	Power	More than 250kW
1.2	Gas Temp.	2800°C (or more in higher limit)
1.3	Number of injector	2-4
1.4	Deposition efficiency	Up to 80%
1.5	Fuel Gases	Aviation Turbine Fuel (AFT) or White Kerosene
1.6	Gas velocity	>2000m/s
1.7	Carrier Gas	Nitrogen, Argon, etc.
1.8	Feed rate	20 to 300g/min , Upgradable to 600g/min
1.9	Porosity	< 1%
1.10	Processing powder size	Various cuts like -15+5µm, -25+5µm, -45+15 µm, -53+20 µm
1.11	Surface roughness	2 - 6 Ra µm
1.12	Particle Velocities	400 up to 700 m/s
1.13	Powder Injection	radially powder feed within the centre of the flame
1.14	Coating Thickness	20 - 2000µm
1.15	Bond strength	More than 71 MPa
1.16	Combustion chamber pressure	5 - 18 bar. > 11 bar chamber pressures are important to achieve higher velocities for dense coating.
1.17	Gun Hardware	Appropriate hardware to accommodate different types of nozzles & powder ports to spray wide range of thermal spray powders. Fine kerosene atomization fuel injection system. Automatic ignition system, Appropriate cooling of the gun, uniform gas flow at high power level, powder port air jet assembly, and long life.

2.0	<b>HVOF Controlling Unit</b>	
2.1	Function	<ul style="list-style-type: none"> <li>• All gases mass flow control in conjunction with siemens S7 based controller or higher</li> <li>• <math>\lambda</math> (Air Fuel ratio) - Controller</li> <li>• HVOF Parameter – Monitoring, recording and file saving of parameter recipes</li> <li>• Simultaneous display of target vs actual comparison of all media</li> <li>• To ensure the presence of fuel gases, carrier gas of powder feeder and water pressure of cooling water and starting the gas flow to the powder feeder.</li> <li>• Starting the power supply, cooling water and verification of the water is circulating through the gun at the required temperature.</li> <li>• Switching on the fuel gases and ignition of the gun and ramping up to the preset coating parameters and feeding the spray powder.</li> <li>• Online monitoring of fuel and powder carrier gas pressure, and cooling water temperature and pressure. Stopping the system in the event of deviation from the permissible limit.</li> <li>• Shutting down, safely ramping down and shutting off all power, gas flows, etc.</li> <li>• Automatic switching-ON and shutting-OFF the gun.</li> <li>• Starting and stopping powder feed.</li> <li>• Alarm for fault messages.</li> <li>• Stopping the start-up cycle if gas flow is not present after minimum four ignition trials.</li> </ul>
2.2	<b>Specification</b>	
2.3	Controller	Siemens S7 or Higher
2.4	Gas controller	Closed loop mass flow controlled
2.5	Gas warning device	Included
2.6	Controls & Indicators	<ul style="list-style-type: none"> <li>• All Control and Indicators for controlling and monitoring the system should be placed on the front panel of the HVOF control unit.</li> <li>• Necessary gas flow meters should be display on control panel for control of fuel and carrier gases of following capacity should be provided on the control panel,</li> <li>• Necessary control valves/regulators should be provided to set required fuel and carrier gas flow rates and pressure</li> <li>• Unit should be equipped with system operation controls and indicators like start, stop, emergency stop, power on, power off, fault/Alarm, powder feed off/preheat, feed on/spray.</li> </ul>
3.0	<b>Powder feeder Unit</b>	
3.1	Flow rate	0.1 - 300 g/min or more
3.2	Operating pressure	Up to 3.5 bar

3.3	controller	Siemens S7 PLC or higher
3.4	Hopper capacity	Twin Conical hoppers of 1.5 L min, controlled separately
3.5	Powder size	0 – 60 µm
3.6	Carrier gas option	Air, Nitrogen or Argon
3.7	Feed Hoses	2 Hoses, one for each canister
3.8	Gas Hoses	2 Hoses, one for each canister
3.9	Rotameters	2x Mass flow controlled for carrier gas lines
3.10	Motor driven Hopper	2x (1.5L standard)
3.11	Installation Voltage	230 V/50 Hz
4.0	<b>Hose and Cable Unit</b>	
4.1	All necessary, complete cables and hoses should be supplied for HVOF gases, powder feeder, electrical units, gun cooling, etc. for smooth running of the system.	
5.0	<b>Gas Regulators</b>	
5.1	HVOF system should include the compatible gas regulators Heavy duty, multi-stage Nitrogen and Oxygen Regulator – 1 No. each	
6.0	<b>Water Chiller Unit</b>	
6.1	Required net cooling capacity: Min 24TR with 407C Refrigerant. Insulated tank for storing cool water: 200 litres minimum. Water delivery: Minimum 35LPM Hermetic scroll type compressor of reputed make like Bluestar, Emerson or Danfoss.	

## Annexure-2B

<b>1.0</b>	<b>Specification HVOF or HVOF Equivalent System</b>	
1.1	<ul style="list-style-type: none"> <li>• Equipment having injection of Air OR injection of Oxygen and Nitrogen in metered conditions is considered as HVOF. All non-flammable gasses injected into the combustion chamber must be Mass flow controlled.</li> <li>• Oxidizer could be either compressed and oil free air or mix of pure Oxygen and Nitrogen.</li> <li>• In case of injection of Nitrogen and Oxygen separately, the mixing ratios could be altered in real time from the operator HMI to achieve desired flame properties.</li> <li>• The combustion chamber shall be capable of handling parameters with pressure ranging from 6 to 13 bars</li> <li>• Fuel can be either Gas (LPG or CNG) or Liquid (White Kerosene)</li> <li>• Gun cooling mechanism could be either Air cooled or Water cooled</li> </ul>	
2.0	<b>Process Control System</b>	
	The control system features an intuitive touch screen interface, that provides a single point of control for the entire spray operation.	
2.1	Feature required	<ul style="list-style-type: none"> <li>• Intuitive Touch Screen Interface</li> <li>• Fast Start Up with Start Up Control</li> <li>• Complete Process Monitoring with Auto Shut-Off</li> <li>• Full-featured Data Logging</li> <li>• Recipe storage</li> </ul>



		<ul style="list-style-type: none"> <li>• Integrated Control of Powder Feeder with twin hoppers and Mass Flow Controlled Carrier gas flow</li> <li>• Remote Diagnostics and Monitoring</li> <li>• ATEX or equivalent Compliance</li> </ul>
3.0	<b>Hose and Cable Unit</b>	
3.1	All necessary, complete cables and hoses should be supplied for gases, powder feeders, electrical units, gun cooling, etc. for smooth running of the system.	
4.0	<b>Gas Regulators and Gas Vaporizers</b>	
4.1	<p>System should include the compatible gas regulators Air, Nitrogen, Oxygen, Argon and flammable gasses as applicable</p> <p>Vaporizers for fuel gas and pumping equipment (if any), required for operation of the spray process, shall be included</p>	
5.0	<b>Compressed Air Supply</b>	
5.1	<p>In case of Air cooled system with Air injected in the combustion chamber, A screw air compressor of following spec to be included with the machine</p> <ol style="list-style-type: none"> <li>a. Screw compressor with airflow of 400CFM or higher at normal operating pressure of 7.5 bars</li> <li>b. Oil outlet at compressor air end should be &lt; 3ppm</li> <li>c. Air Dryer for 420 cfm @ 8 bar g</li> <li>d. Moisture Separator with Zero loss drain valve</li> <li>e. Cartridge type Air-Oil separator with two stage filtration as follows: <ol style="list-style-type: none"> <li>i. Stage 1: Combination filter for removal of oil and dust. Outlet oil content 0.01mg/m<sup>3</sup></li> <li>ii. Stage 2: Carbon activated filter with outlet oil content of 0.003mg/m<sup>3</sup></li> </ol> </li> </ol>	
6.0	<b>Water Chiller</b>	
6.1	<p>Only applicable if the gun is water cooled.</p> <p>Water chiller with double Plate type Heat Exchangers should be included of minimum 24TR and above. Refrigerant must be R407C only. Hermetic scroll type compressor of reputed make like Bluestar, Emerson or Danfoss.</p> <p>Common chiller for HVOF and HVOF Equivalent system is acceptable provided the specs are suitable for both processes.</p>	



**(2) Technical Specs for the Acoustic Chamber**

<b>Technical Specs for the Acoustic Chamber</b>	
<b>Dimensions</b>	<b>Outside Dimensions:</b> 12 feet or more (Length) x 9 feet (Width) or more x 8 feet (Height) or more
	<b>Inside Dimension :</b> 11 feet or more (Length) x 8 feet (Width) or more x 7.5 feet (Height) or more
	<b>Illumination :</b> 150 Watts, Metal Halide Lamps
<b>Walls of Acoustic Chamber</b>	<b>Wall Thickness :</b> 100 mm or more filled with rock wool
	<b>Outside wall:</b> 16 gauge steel sheet
	<b>Inside wall:</b> 18 gauge galvanized Perforated steel sheet
	<b>Stiffeners :</b> 14 gauge Steel Channels
	Joints Intermitted welded
	<b>Acoustic filler:</b> Inert, Non-combustible & Vermin proof wool
	<b>Vision Window:</b> 800 mm x 600 mm On both Side Wall – 2 Nos. UV Resistant Film
<b>Front Door (For Job/Operator’s Entry/Exit):</b>	Opening : 4 feet (width) Minimum x 6 feet (Height) minimum
	Quantity : 1 Pair Hinged Type
	Wall Thickness : 100 mm or more filled with Rock wool
	Vision Window: 1 No. (300-400) mm or more x (300-400) mm or more
<b>Personal Door (For Operator’s Entry/Exit):</b>	Opening : 800 mm [W] x 2000 mm [H]
	Quantity: 1 Nos Hinged Type
	Wall Thickness :100 mm filled with Rock wool
	Vision Window : 1 No. 350 mm x 350 mm
<b>Interlocking of both the doors</b>	Above mentioned both the door should be interlocked with spray operation to ensure the proper Isolation of spraying operation from the external environment so as to avoid any accidental hazards.
<b>Acoustic Air Inlet Box</b>	Suitable air inlet box fabricated from 16 gauge steel sheet is provided to facilitate proper air flow. The wall thickness of the inlet box is 75 mm filled with Rock wool.
	Caged Inlet for protection against the suction of any big item into the acoustic chamber

<b>Spray Suction Hood</b>	Suction hood should be provided at back wall of the chamber with grills at front to have uniform suction throughout the face of suction hood. Size of each suction hood should be minimum 3 feet x 2.5 feet [H]. should be fabricated from 1.6 mm M.S Sheet and is connected to the inlet ducting of dust
<b>Emergency Stop</b>	A suitable arrangement for Emergency Stop is provided inside the Acoustic chamber so that the system can be immediately stopped in case of any emergency

### (3) Technical Specs for Dry Filter Cartridge Element type Dust Collector

<b>Technical Specs for Dry Filter Cartridge Element type Dust Collector</b>	
Dimensions	6.5 feet or more (Length) x 7 feet (Width) or more x 13 feet (Height) or more
No. of Cartridges	12-16 Numbers
Fan Motor	20 HP, 415V/3P/50 Hz
Fan Capacity	7000 CFM
Exhaust fan	Ground mounted
Filter Area	208 Sq. mtr.
Composition of Micro Fibers	Blend of cellulose fibers with a moisture resistant silicone treatment for optimum dust release characteristics
Fractional Efficiency	99.999% on 0.5 Micron particles Polytech Flame Retardant Ultra High Efficiency with a micro fiber synthetic melt blown surface laminate
Construction Pans	Galvanized steel liners
Gasket	Polyisoprene molded closed cell gasket
Air Permeability	11-15 cfm/sq. ft. per 0.5" w.c
Temperature	150 Deg. F max operating temperature
Compressed air required	20 Cfm at 80 Psi
Dust Emission level	3 mg/ cub. Mtr.
Type of cleaning	Pulsejet through solenoid valves
Pulse duration and frequency	Adjustable
Pressure gauge, Air Filter	Provided one each
Discharge	Cam lock dust bin

Noise level of exhaust air	Below 90 dBA (Exhaust fan should be provided with anti vibration pad)
Pressure Drop across the filter cartridges	Should be present
Explosion Vent	Should be present in order to avoid any severe damage to the dust collector upon any blast
Ducting	Suitable size of ducting is connected from suction hood to dust collector and from dust collector to exhaust fan
ELECTRIC CONTROL PANEL	A motor control panel shall be a centralized control panel housed with switchgear items. Individual MCB and thermal overload relay shall be mounted for motor below 12.5 HP  exhaust fan motor, Star Delta starter with MCB and thermal overload relay shall be mounted. Single unit digital display of ampere, voltage and frequency (suitable size and accuracy) shall be mounted for total load. Phase preventor for incoming supply shall also be mounted. Individual supply shall be connected with indicating light. The panel with ventilation fan and lighting is provided.
Safety Arrangements	<ol style="list-style-type: none"> <li>1. Suitability of the pressure parts should be as per IS / International standards.</li> <li>2. Machine should have adequate and reliable safety interlocks/devices to avoid damage to the machine, work piece and the operator due to malfunctioning or mistakes.</li> <li>3. All pipes, cables etc, on the machine should be supported and protected and should not create hindrance of operator's movement.</li> <li>4. All the rotating parts used on machine should be statically &amp; dynamically balanced to avoid undue vibrations.</li> <li>5. Emergency switches at suitable locations should be provided.</li> </ol>

#### (4) Tilting Turntable with Variable Rotational Speed

<b>Tilting Turntable with Variable Rotational Speed</b>	
Turntable Diameter	600 mm (Horizontal)
Height	775 mm from floor
Load Capacity	150 Kg. (max.)
Speed	25 – 300 RPM variable
Drive	1.5 HP Variable Geared Motor
Tilting Angle	0 to 90 Degree from Horizontal

**(5) Temperature monitoring device:** Handheld Infrared Thermometer of 0 to 500 Deg°C range to be included for checking temperature of the part being coated

**(6) Demonstration / Acceptance Criteria of Spray system**

The following specimens (at least 2 specimens at each condition) are required as a part of acceptance of coating quality with Spray system and the process parameters employed for the generating the coatings

- Cr<sub>3</sub>C<sub>2</sub>-NiCr with DENSE microstructural features (not less than 99%) at parameter settings of their choice on flat geometry and cylindrical tubes, HVAF must.
- WC-10Co-4Cr with DENSE microstructural features (not less than 99%) at parameter settings of their choice on flat geometry and cylindrical tubes, HVAF must.
- NiCoCrAlY with DENSE microstructural features (not less than 99%) at parameter settings of their choice
- Ni based self-fluxing alloy with DENSE microstructural features (not less than 99%) at parameter settings of their choice
- Co-28.5Mo-9Cr-3Si (Triballoy 400) with DENSE microstructural features (not less than 99%) at parameter settings of their choice

**INSTRUCTIONS TO THE TENDERERS**

The tender shall be submitted in accordance with these instructions and any tender not conforming to the instructions as under is liable to be rejected. These instructions shall form the part of the tender and the contract.

1. For Online Bid Submission as per the directives of Department of Expenditure, this tender document has been published on the Central Public Procurement Portal (URL:<http://eprocure.gov.in/eprocure/app>). The bidders are required to submit copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates.
2. More information useful for submitting the online bids on the CPP Portal is available/ obtained at [URL:http://eprocure.gov.in/eprocure/app](http://eprocure.gov.in/eprocure/app)
3. For Registration, Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL:<http://eprocure.gov.in/eprocure/app>) by clicking on the link. Enrollment on the CPP Portal is free of charge.
4. Foreign Bidders have to refer “DSC details for foreign Bidders” for Digital Signature Certificate requirements which comes under Download Tab at <http://eprocure.gov.in/eprocure/app?page=Standard Bidding Documents &service=page> and the remaining part is same as above and below.
5. While submitting the tender, if any of the prescribed conditions are not fulfilled or are incomplete in any form, the tender is liable to be rejected. If any tenderer stipulates any condition of his own, such conditional tender is liable to be rejected.
6. IIT Patna reserves the right to reject any tender/bid wholly or partly without assigning any reason.
7. The technical committee constituted by the IIT Patna shall have the right to verify the particulars furnished by the bidder independently.
8. Tenderer shall take into account all costs including installation, commissioning, cartage etc. for giving delivery of material at site i.e. IIT Patna before quoting the rates. In this regard no claim for any extra payment for any reason shall be entertained.
9. The item should be delivered at IIT Patna, Kanpa Road, Bihta, Patna-801106, Bihar, INDIA and the supplier shall be responsible for any damage during the transit of goods.
10. All the tender documents & price bid to be uploaded as per this tender are to be digitally signed by the bidder.
11. Interested bonafide and reputed manufacturers/India agents (on behalf of their foreign principals) may submit Online bids for each of the above equipment along with all requisite documents and scanned copy of Tender Fee / EMD submission reference.
12. The Bidder(s) may note that ONLINE BIDS will ONLY be accepted. All the requisite supporting documents mentioned in the bid document should and must be uploaded On-line <http://eprocure.gov.in/eprocure/app>. The Bids sent through FAX, E-mail, by hand and/or by post shall not be accepted/ processed, in any case.
13. The bidders may submit duly filled and completed bidding document ONLINE as per instruction contained in the bidding documents. Incomplete bid shall be rejected. The conditions of tender shall be governed by the details contained in complete bid document.
14. In case, holiday is declared by the Government on the day of opening the bids, the bids will be opened on the next working day at the same time. IIT Patna reserves the right to accept or reject any or all the tenders.
15. The detailed instruction for Online submissions of bid(s) through e-Procurement module of Central Public Procurement of NIC, the bidder(s) may visit the following link:- <http://eprocure.gov.in/eprocure/app?=HelpForContractors&service=page> .

**INSTRUCTIONS FOR ONLINE BID SUBMISSION**

*(Department User may attach this Document as an Annexure in their Tender Document which provides complete Instructions for on line Bid submission for Bidders)*

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at: <https://eprocure.gov.in/eprocure/app>.

**REGISTRATION**

1) Bidders are required to enrol on the e-Procurement module of the Central Public Procurement Portal (URL: <https://eprocure.gov.in/eprocure/app>) by clicking on the link “Online bidder Enrolment” on the CPP Portal which is free of charge.

2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.

3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.

4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.), with their profile.

5) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.

6) Bidder then logs in to the site through the secured log-in by entering their user ID/ password and the password of the DSC / e-Token.

**SEARCHING FOR TENDER DOCUMENTS**

1) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.

2) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective ‘My Tenders’ folder. This would enable the CPP Portal to intimate the bidders through SMS / e- mail in case there is any corrigendum issued to the tender document.

3) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.



## **PREPARATION OF BIDS**

- 1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- 2) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
- 3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
- 4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “My Space” or “Other Important Documents” area available to them to upload such documents. These documents may be directly submitted from the “My Space” area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

Note: My Documents space is only a repository given to the Bidders to ease the uploading process. If Bidder has uploaded his Documents in My Documents space, this does not automatically ensure these Documents being part of Technical Bid.

## **SUBMISSION OF BIDS**

- 1) Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- 2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- 3) Bidder has to select the payment option as “offline” to pay the tender fee/ EMD as applicable and enter details of the instrument.
- 4) Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.
- 5) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.
- 6) The server time (which is displayed on the bidders’ dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- 7) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128-bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is

subjected to asymmetric encryption using buyers/bid opener's public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

8)The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

9)Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

10)The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

### **ASSISTANCE TO BIDDERS**

1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

2) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk.

**GENERAL TERMS AND CONDITIONS**

01. **Rates:** Rates quoted for indigenous items must be on F.O.R basis for IIT Patna, on DOOR DELIVERY Basis, with break up as per details given in BoQ.
02. **Validity:** The validity period of the offer should be clearly specified. It should be at least for 120 days from the last date of submission of quotations.
03. **Warranty/Guarantee:** The material is quoted with a minimum onsite Warranty/Guarantee period of 01 years after the date of installation and acceptance at final destination.
04. **EMD:** EMD should be submitted in the Institute's Account using i-Collect of SBI. The link is given below:  
(<https://www.onlinesbi.com/sbicollect/icollecthome.htm?corpID=1968961>)
05. **Delivery:** Unless otherwise stated delivery of goods shall be at IIT Patna and will have to be effected maximally within **16 weeks** from the date of issue of the Purchase Order. All aspects of safe delivery shall be the exclusive responsibility of the vendor.
06. **PAN, GST Certificates & TDS:** Scanned copy of PAN along with PAN of partners/owners (if applicable) and GST Registration Certificate in Form REG-06 must be uploaded with technical bid. Appropriate tax deduction at source will be applicable.
07. **Dealership Certificate:** Dealership certificate (in case of authorised dealers) and standard Technical literature on the offered products must be uploaded with technical bid.
08. **Performance Guarantee:** 3% in the form of Bank Guarantee/ Fixed Deposit of the total order value needs to be submitted for such period as to cover two months beyond the warranty period for any order for equipment's of more than Rs.1 Lakh. In case of non-submission of BG/FD, an equivalent amount will be retained while payment till the above mentioned duration.
09. **Late and delayed quotation:** Late and delayed quotations will not be considered. In case any unscheduled holiday occurs on prescribed closing/opening date, the next working day shall then automatically be the prescribed date of closing/opening of the quotation with no change in timing.
10. **Ground for Rejection of Quotation:**
  - (i) The quotations are liable to be rejected if the foregoing conditions are not complied with. The quotation should be complete in all respects if a firm quotes NIL charges / consideration, the bid shall be treated as unresponsive and will not be considered. The quotations shall be rejected if the information is not provided as per the tender documents
  - (ii) Either OEM or its sole representative is allowed to bid. In case both have bid, the bid of OEM will be valid.
  - (iii) If at any time of tender, cartelization is found, the bidding firms would be liable for legal action as per Anti-Competitive Practices (CCI).
11. **Payment:** Payment will be made within 30 days from the date of submission of Invoice after successful delivery and installation of goods at IIT Patna (successful installation in case of machinery, equipments or the likes) generally through RTGS / FUND TRANSFER. Following information must be clearly written in the uploaded bank details for RTGS / FUND TRANSFER: -
  - a) Name of the Firm with complete postal address
  - b) Name of the Bank with Branch where the Account exist
  - c) IFSC CODE
  - d) ACCOUNT No
  - e) PAN
  - f) GST No.
12. The bidders can quote only those products in the bid which are not obsolete in the market and has atleast 03 years residual market life.

13. **Liquidated Damage:** If a firm accepts an order and fails to execute the order in part or in full, as per the terms and conditions stipulated in the Purchase Order, it will be open to the institute to recover the liquidated damages from the firm at the rate of 0.5% per week of the order value subject to a maximum of 10% of the order value. It will also be open to the institute alternatively, to arrange procurement of the required stores from any other source at the risk and expense of the defaulter firm/vendor, which accepted the order but failed to execute the order according to the stipulated agreed upon. Defaulter vendor(s)/ firm(s) are also liable for blacklisting.
14. **Termination for default:** Default is said to have occurred
- If the supplier fails to deliver any or all of the goods/ items/ services within the time period(s) specified in the purchase order or any extension thereof granted by IIT Patna.
  - If the supplier fails to perform any other obligation(s) under the contract
  - If the vendor, in either of the above circumstances, does not take remedial steps within a period of 30 days after receipt of the default notice from IIT Patna (or takes longer period in spite of what IIT Patna may authorize in writing), IIT may terminate the contract / purchase order in whole or in part. In addition to above, IIT Patna may at its discretion also take the following actions: IIT Patna may procure, upon such terms and in such manner, as it deems appropriate, goods similar to the undelivered items/products and the defaulting supplier shall be liable to compensate IIT Patna for any extra expenditure involved towards goods and services to complete the scope of procurement.
15. **Applicable Law:**
- The contract shall be governed by the laws and procedures established by Govt. of India, within the framework of applicable legislation and enactment made from time to time concerning such Commercial dealings / processing, as may be applicable upon IIT Patna.
  - All disputes are subject to exclusive jurisdiction of Competent Court and Forum in Patna, India only.
  - Any dispute arising out of this purchase shall be referred to the Registrar IIT Patna, and if either of the parties hereto is dissatisfied with the decision, the dispute shall be referred to the decision of an Arbitrator, who should be acceptable to both the parties, (to be appointed by the Director of the Institute). The decision of such Arbitrator shall be final and binding on both the parties.
16. The acceptance of the quotation will rest solely with the **Director**, IITP, who in the interest of the Institute is not bound to accept the lowest quotation and reserves the right to himself to reject or partially accept any or all of the quotations received without assigning any reason(s).
17. **Important:** The **Director** may accept or reject any or all the bids in part or in full without assigning any reason and doesn't bind himself to accept the lowest bid. The institute at its discretion may change the quantity / upgrade the criteria / drop any item, at any time before placing the Purchase Order.
18. **Force Majeure:** The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
- For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
  - If a Force Majeure situation arises, the Supplier shall promptly notify IIT Patna in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
19. The in general Printed conditions of supply of the firm, if any, will not be binding on the Institute.
20. The bidders can quote only items with not less than 20% domestic value additional/local content. Local content means the amount of value added in India which shall be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, in percent. The bidders are required to furnish a self-certificate regarding the items meeting local content requirement, mandatorily mentioning following:
- Percentage of Local Content (exclusive of services such as transportation, insurance, installation, commissioning, training and after sales services support like AMC/CMC etc.)
  - Location(s) at which the local value addition is made

21. This tender is being invited in compliance with Rule 144 (xi) of GFR Rules, 2017 as under:

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority
- II. Bidder (including the term ‘tenderer’, ‘consultant’ or ‘service provider’ in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- III. “Bidder from a country which shares a land border with India” for the purpose of this order means.
  - a) An entity incorporated, established or registered in such a country; or
  - b) A subsidiary of an entity incorporated, established or registered in such a country; or
  - c) An entity substantially controlled through entities incorporated, established or registered in such a country; or
  - d) An entity whose beneficial owner is situated in such a country; or
  - e) An Indian (or other) agent of such entity; or
  - f) A natural person who is a citizen of such a country; or
  - g) A consortium or joint venture where any member of the consortium or joint venture falls under any of the above
- IV. The beneficial owner for the purpose of (iii) above will be as under:
  1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means. Explanation
    - a.) “Controlling ownership interest” means ownership of or entitlement to more than twenty-five percent of share or capital or profits of the company;
    - b.) “Control” shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
  2. In case of partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
  3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capitals or profits of such association or body of individuals;
  4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
  5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- V. An agent is a person employed to do any act for another, or to represent another in dealings with third person.

The registration shall be valid at the time of submission of bid and at the time of acceptance of bid.

22. “Class-I local supplier” shall get purchase preference over ‘Class-II local supplier’ as per instructions contained in **Public Procurement (Preference to Make in India) Order 2017**, as amended from time to time. The margin of purchase preference shall be 20%.

**TENDER ACCEPTANCE LETTER**  
**(To be given on Company Letter Head)**

To,  
 The Registrar,  
 (for Research & Development Unit)  
 Indian Institute of Technology Patna  
 Kanpa Road, Bihta, Patna, Bihar-801106  
 Phone: 06115-233-067  
 Email: dr\_rnd@iitp.ac.in

**Sub: Acceptance of Terms & Conditions of Tender.**

**Tender Reference No.:** \_\_\_\_\_

**Name of Tender / Work:-**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Dear Sir/Madam,

1. I / We have downloaded / obtained the tender document(s) for the above mentioned "Tender / Work" from the website(s) namely:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 as per your advertisement, given in the above mentioned website(s).
2. I / We hereby certify that I / We have read the entire terms and conditions of the tender documents from Page No. \_\_\_\_\_ to \_\_\_\_\_ (including all documents like annexure(s), schedule(s), etc.), which form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.
3. I/We have read the clause 21 of general terms and conditions, regarding restrictions on procurement from a bidder outside the country; I/We certify that this bidder is from India. I/We hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered.
4. The corrigendum(s) issued from time to time by your department / organizations too have also been taken into consideration, while submitting this acceptance letter.
5. I / We hereby unconditionally accept the tender conditions of above mentioned tender document(s) / corrigendum(s) in its totality / entirely.
6. I / We do hereby declare that our Firm has not been blacklisted / debarred by any Govt. Department / Public Sector Undertaking.
7. I / We certify that all information furnished by our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department / organization shall without giving notice or reason thereof may summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including forfeiture of the full said EMD absolutely.

**Yours Faithfully,**

**(Signature of the Bidder, with Official Seal)**

**LIST OF DOCUMENTS TO BE UPLOADED WITH TECHNICAL BID**

1. Scanned copy of bank details for NEFT/ RTGS on letter head.
2. Scanned copy of self-declaration of original manufacturer or authorized dealership certificate from OEM.
3. Scanned copy of certificate of GST and PAN.
4. Scanned copy of tender acceptance letter. (Annexure-E)
5. Scanned copy of printout of EMD submission or exemption certificate for the same.
6. Scanned copy of detailed technical specification and brochure (if any).
7. Scanned copy of self-certificate regarding the items meeting local content requirement as mentioned in clause 20 of general terms and condition.

**(Please note that no indication of the rates/ amount be made in any of the documents submitted with the technical bid)**

**INSTRUCTION RELATED PRICE BID****PRICE BID – Schedule of price bid in the form of BOQ format:****A. Schedule of price bid in the form of BOQ format:**

1. The below mentioned Financial Proposal / Commercial bid format is provided as BOQ along with this tender documents at <https://eprocure.gov.in/eprocure/app>
2. **Bidders are advised to download this BOQ.xls** as it is and quote their offer / rates in the permitted column and upload the same in the commercial bid.
3. Bidder shall not tamper / modify the downloaded price bid template in any manner. In case if the same is found to be tampered/ modified in any manner, tender will be completely rejected and EMD shall be forfeited.
4. Any element of cost, taxes, duties levies etc. not specifically indicated in the BOQ, shall not be paid by the purchaser. **If GST amount is not quoted in the BOQ (Financial Bid), the total cost will be treated as inclusive of GST. No further communication will be entertained later or else the EMD will be forfeited.**
5. The tender shall remain valid for acceptance for **120 days**, from the date of tender opening.

**B. Break-up of price in PDF format**

1. The break-up of price for each item should be given in PDF format (signed scanned copy) with details of components with individual prices for (1) HVOF + HVAF System + Acoustic Chamber and Robot (2) Post warranty period year wise AMC charges (comprehensive & Non-comprehensive) and (3) Optional accessories, if any in separate sheets/tables. The point (2) & (3) will not be considered for price bid comparison.

Signature of the Tenderer

Name of the Firm:

Contact No.:

Email:

Seal: