

TENDER (E - PROCUREMENT MODE)

FOR

**SUPPLY & INSTALLATION OF SERVO HYDRAULIC ACTUATORS INCLUDING
HYDRAULIC POWER PACK AND CONTROL ACCESSORIES IN SCHOOL OF
ENGINEERING AT IIT MANDI**



Tender No.: IITMANDI/S&P/PUR-48/2021-22/1970-71

Tender date: 30th July, 2021

Last Date of Submission: 21st August, 2021

**Indian Institute of Technology Mandi (IIT Mandi),
Store & Purchase Section,
2nd Floor, A7 Building, South Campus,
Kamand – 175 075, District – Mandi (H.P), India**

Tel.: 01905-267907/267261/267039/267048

**Email: sandip_saha@iitmandi.ac.in, subhamoy@iitmandi.ac.in &
drsp@iitmandi.ac.in**

Indian Institute of Technology Mandi, Kamand invites online Bids for supply, erection, installation, commissioning, testing, demonstration and training of “**Servo Hydraulic Actuators including Hydraulic Power Pack and Control Accessories**” as per specifications given in the Annexure I attached to the Tender form. All offers should be made in English and should be written in both figures and words. Tender forms can be downloaded from the CPP Portal (<http://eprocure.gov.in/eprocure/app>) & Institute website <http://iitmandi.ac.in/administration/tenderseoi.php>.

The bidders are requested to read the tender document carefully and ensure compliance with all specifications/instructions herein. Non-compliance with specifications/instructions in this document may disqualify the bidders from the tender exercise. The Director, IIT Mandi, Kamand reserves the right to select the item (in single or multiple units) or to reject any quotation wholly or partly without assigning any reason. Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected.

Instruction to bidder:

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 publishing on the CPP Portal.
2. Bidder should take into account any corrigendum published on the tender document before submitting their bids.
3. 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.
4. The tenders will be received online through portal <http://eprocure.gov.in/eprocure/app>. In the Technical Bids, the bidders are required to upload all the documents in .pdf format. All quotation (**both Technical and Financial should be submitted in the E-procurement portal**).
5. Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through <http://eprocure.gov.in/eprocure/app>. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site <https://eprocure.gov.in/eprocure/app> under the link “Information about DSC”.

Instruction for Preparation & Submission of bids:

1. Technical Bids should be submitted in PDF format & Financial Bids should be submitted in Excel format.
2. **In case of Financial bids**, a standard BOQ format has been provided in Excel format. Bidders are required to download the BOQ Excel file and fill their financial offer on the same BOQ format. After filling the same, submit it online in Excel format, without changing the financial template format. However, if bidder wants to modify in its financial offer, then bidder can modify.
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 formats. Bid documents may be scanned with 100 dpi with black and white option.
4. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
5. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
6. **Kindly add scanned PDF of all relevant documents in a single PDF file like, compliance sheet, OEM/Principle Certificate etc.**
7. Bidder should log into the site well in advance for bid submission so that he/she 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.
8. Upon the successful and timely submission of bids, 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.
9. The technical and financial bids should be submitted online through portal <http://eprocure.gov.in/eprocure/app> in original. The financial bid should include the cost of main equipment/item and its accessories. If there is any separate cost for installation etc. that should be quoted separately.
10. Each bidder should be marked with the following reference on the top bids submitted online: **"IITMANDI/S&P/PUR-48/2021-22/1970-71/Item Name, dated 30th July, 2021"**.
11. The printed literature and catalogue/brochure giving full technical details should be included with the technical bid to verify the specifications quoted in the tender. The bidders should submit copies of suitable documents in support of their reputation, credentials and past performance in .pdf format.
12. The rates should be quoted in figures (typed or printed) and cutting should be avoided. The final amount should be in figures as well as in words. If there are cuttings, they should be duly initialed, failing which the bids are liable to be rejected.

13. **Tender Cost:** The bidder should submit a demand draft of **Rs. 1,180 (Tender Fee inclusive GST) in Words Rupees One Thousand One Hundred & Eighty only** towards non-refundable **tender fee, drawn in favour of “The Registrar, IIT Mandi”** payable at Mandi in a sealed envelope super-scribed as **Tender fee & NIT No. “IITMANDI/S&P/PUR-48/2021-22/1970-71/Item Name, dated 30th July, 2021”** on or before last date & time of submission of bids. **In the absence of tender fee, bids for evaluation shall not be accepted. NSIC/MSME exemption certificate shall be considered only against.**

14. **Earnest Money Deposit (EMD):**

EMD amount - Nil.

However, As per GOI guidelines (OM No. F.9/4/2020-PPD, dated 12.11.2020) bidders are required to submit ‘Bid Security Undertaking’ in lieu of EMD (Annexure-II)

➤ **Note: Both (tender fee & EMD- Bid Security Undertaking) envelopes should be placed in another sealed envelope and address to:**

**“Dy. Registrar, Stores and Purchase”
Indian Institute of Technology Mandi (IIT Mandi),
S & P Section, 2nd Floor, A7 Building, South Campus,
Kamand – 175 075, Distt. – Mandi (H.P), India”**

This envelop having tender fee & EMD (Bid Security Undertaking) should reach on or before last date time of submission of bid.

General Terms & Condition:

1. While sending rates, the firm shall give an undertaking to the effect that ***“the terms/conditions mentioned in the enquiry letter/Tender Notice against which the rates are being given are acceptable to the firm.”*** in .pdf format. In case the firms do not give this undertaking, their rates will not be considered.
2. If the supplier/firm is original equipment manufacturer (OEM)/authorized dealer/sole distributor of any item, the certificate to this effect should submit in .pdf format.
3. **Local Content:**

As per GOI guidelines (Order no. P-45021/2/2017-PP (BE-II) dated 04.06.2020 issued by DPIIT, Ministry of Commerce and Industry, Govt. of India. (It is mandatory Submit duly filled Annexure III for the same).
4. The quantity shown against the item is approximate and may vary as per demand of the Institute at the time of placing order.
5. Any bids received after **03:00 P.M. on 21st August, 2021**, shall not be considered.
6. The Technical Bids will be opened on **23rd August, 2021 at 03:00 P.M.** The date & time for opening of Financial Bids will be informed later on to the technically qualified bidders.
7. The tenders will be received online through portal <http://eprocure.gov.in/eprocure/app>. All tender documents received after the specified date and time shall not be considered.

For any correspondence regarding tenders is on below address:

“Dy. Registrar, Stores and Purchase”

**Indian Institute of Technology Mandi (IIT Mandi),
S & P Section, 2nd Floor, A7 Building, South Campus,
Kamand – 175 075, Distt. – Mandi (H.P), India”**

8. **Arbitration Clause:** In the event of any dispute or difference(s) between the vendee Institute (IIT Mandi) and the vendor(s) arising out of non-supply of material or supplies not found according to specifications or any other cause whatsoever relating to the supply or purchase order before or after the supply has been executed, shall be referred to “The Director, IIT Mandi”, Kamand who may decide the matter himself or may appoint arbitrator(s) under the arbitration and conciliation Act,1996. The decision of the arbitrator shall be final and binding on both the parties.
 - a) In case of a dispute between the purchaser and a foreign supplier, the dispute shall be settled by arbitration in accordance with provision of sub-

clause above. But if this is not acceptable to the supplier then dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.

- b) The venue of the arbitration shall be the place from where the order is issued.
 - c) The place of arbitration and the language to be used in arbitral proceedings shall be decided by the arbitrator.
 - d) All disputes shall be subject to Mandi Jurisdiction only.
9. All tenders in which any of the prescribed conditions is not fulfilled or any condition is put forth by the tenderer shall be summarily rejected.
10. The bidders or their authorized representatives may also be present during the opening of the Technical Bid, if they desire so, at their own expenses.

Note: Price bids of only those bidders will be opened whose technical bids are found suitable by the committee appointed for the purpose. Date and time of opening of price bids will be decided after technical bids have been evaluated by the committee. Information in this regard will be intimated only to the technically qualified bidders. In exceptional situation, an authorized committee may negotiate price with the qualified bidder quoting the lowest price before awarding the contract.

11. **Clarifications:**

In case the bidders requires any clarification regarding the tender document, they are requested to submit their queries on the e-mail i.e. sandip_saha@iitmandi.ac.in, subhamoy@iitmandi.ac.in, & drsp@iitmandi.ac.in on or **before 16.08.2021**.

12. **Assistance To Bidders:** Any queries relating to the tender document and the terms & conditions contained therein should be addressed to tender Inviting Authority for a tender or relevant contact person indicated in the tender.

13. **Pre – Qualification Criteria (to be read along with the general conditions mentioned in the Annexure I):**

- Bidders should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) on the same and specific to the tender should be enclosed.
- An undertaking from the OEM is required stating that they would facilitate the bidder on a regular basis with technology/product updates and extend support for the warranty as well.

- OEM should be internationally reputed Branded Company.
- Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between bidder specification and supporting documents etc. may lead to rejection of the bid.
- The Vendors who have earlier supplied the equipment to any of the IITs, IISc, IISERs and other Scientific Institute of National Repute should only tender. The details of such institutions and the cost with name of equipment may also be supplied with the bids.
- **In the tender, either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.**
- **If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf another Principal/OEM in the same tender for the same item/product.**
- **Furnishing of wrong/ambiguous information in the compliance statement may lead to rejection of bid and further black listing of the bidder, if prima-facie it appears that the information in the compliance statement was given with a malafide/fraudulent intent.**

14. Prices:

Note: Bidder must quote financial bids in INR if Foreign Firm is quoting either through Their Existence in India or through their Indian Agent. Such Bids not Received in INR Shall Not be considered for further Evaluation.

- The Prices quoted should be inclusive of basic price of an item, custom duties, packing, forwarding, freight, insurance, delivery and commissioning etc. at destination site (IIT Mandi, Mandi/Kamand). IIT Mandi is registered with DSIR, Govt. of India and is exempted from Custom /GST Exemption Certificate to this effect will be issued by IIT Mandi. **Hence, Customs/Excise Duty exempted price should be quoted.** The rates shall be firm and final. Nothing extra shall be paid on any account.
- **In case of imports/foreign supplier, the price should be quoted on ex-work price/FOB/FCA basis only. Under special circumstance (e.g. perishable chemicals), when the item is imported on CIP/CIF, please indicate CIF/CIP charges separately upto Delhi indicating the mode of shipment. IIT Mandi will make necessary arrangements for the clearance of imported goods at the Airport/Seaport.**
- In case of imported equipment(s)/item(s), the agency commission, if any, payable in Indian rupees should be mentioned separately. **IAC shall be paid after satisfactory installation & commissioning of the goods at**

the destination. For imported equipment, the Letter of Credit will be opened for the amount excluding agency commission in Indian Rupees. The firm should clearly mention the address of foreign bank in the financial bid.

- **In case of indigenous item, the vendor should clearly mention the final FOR IIT Mandi, Kamand Campus Price, as applicable in their bid.**

15. **Validity:**

The bid should be valid for acceptance up to a period of 180 Days. The Bidders should be ready to extend the validity, if required without any additional financial implications.

16. **Delivery:**

The Equipment should be delivered and installed within the period as specified in the purchase order and be ready for use within 8-12 weeks of the issue of purchase order unless otherwise prescribed. If the bidder fails to deliver and place any or all the Equipment or perform the service by the specified date, penalty at the rate of 1% per week of the total order value subject to the maximum of 10% of total order value will be deducted.

17. **Installation, Training & Demonstration:**

Bidders need to provide adequate training to the nominated persons of IIT Mandi at their cost. IIT Mandi will not bear any training expenditure. The supplier is required to done the installation and demonstration of the equipment within **15 days** of arrival of materials at the IIT Mandi site of installation, otherwise the penalty clause will be the same as per the supply of material.

In case of any mishappening/damage to equipment and suppliers during the carriage of suppliers from the origin of equipment to the installation site, the supplier has to replace to it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience. IIT Mandi will not be liable to any type of losses in any form.

18. **Insurance:** For delivery of goods at the purchaser's premises, the Insurance shall be obtained by the supplier on **"All Risk"** basis. The insurance shall be valid for a period of not less than 3 months after installation and commissioning. **In case of order placed on FOB/FCA basis, the purchaser shall arrange insurance. If order placed on CIF/CIP basis, the insurance should be up to New Delhi, the supplier shall arrange insurance.**

19. **Warranty Declaration:**

Bidders must give the comprehensive on-site warranty as required from the date of successful installation of Equipment against any manufacturing defects and also give the warranty declaration that *“everything to be supplied by us hereunder shall be free from all defects and faults in material, workmanship and shall be of the highest quality and material of the type ordered, shall be in full conformity with the specification and shall be complete enough to carry out the experiments, as specified in the tender document.*

Any deviation in the material, and the specifications from the accepted terms may liable to be rejected and the bidders need to supply all the goods in the specified form to the satisfaction/specifications specified in the order / contract and demonstrate at their own cost.

- The Purchaser Shall Promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall immediately within **Ten Days** arrange to repair or replace the defective goods or parts thereof free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie to the Purchaser for the replacement parts/goods thereafter. The period for correction of defects in the warranty period is **Ten Days**. If the supplier having been notified fails to remedy the defects within **Ten Days**, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expenses without prejudice to any other rights, which the purchase may have against supplier under the contract.
- The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned. The comprehensive warranty will commence from the date of the satisfactory installation/commissioning of the equipment against the defect of any manufacturing, workmanship and poor quality of the components.
- After the warranty period is over, Annual Maintenance Contract (AMC)/Comprehensive Maintenance Contract (CMC) should be started. The AMC/CMC Charges will not be included in computing the total cost of the equipment.

20. **Performance Bank Guarantee:** A performance bank guarantee from a scheduled bank in India for an amount equal to 3% of the price for duration of two months beyond the expiry of warranty period will be taken from the supplier or Indian agent.

21. **Terms of Payment:** Payment will generally be made only after delivery and satisfactory installation, testing, commissioning etc. **This must be specified in the tender/quotation.**

- In case of imported supplies, payment (excluding Indian agency commission, if any) will be made through irrecoverable Letter of Credit in two installments. 80 % of the money will be released on submission of shipping of documents. Remaining 20 % will be released after successful installation of the instrument and submission of a performance bank guarantee for 3% of the order value from scheduled bank in India, valid for 2 months beyond the expiry of the warranty. All the bank charges within India will be borne by the Institute and outside India will be borne by the Supplier.
- In case of required item quoted in INR, 80% payment will be made through E-payment after receipt of material in good condition and Remaining 20% will be released on successful installation of the instrument and on submission of a performance bank guarantee for 3% of the order value from scheduled bank in India, valid for 2 months beyond the expiry of the warranty.

22. **Tender expenses and documents:** All costs incurred by the bidder in the preparation of the tender shall be at the entire expense of the bidder.

23. **Tender Evaluation Criteria:** The technical bids will be opened and evaluated by a duly constituted committee. After evaluation of the technical bid, the financial bid for only those offers which have qualified in the evaluation of technical bid will be opened.

24. **Manual and documentation:** All the manuals necessary for operating and servicing the equipment (including details of electronic circuits) will have to be provided along with the instrument.

25. The IIT Mandi reserves the right to cancel the tender at any stage (point of time) without assigning any reason.

26. Bidders should go through the tender terms, conditions and specifications carefully and fill in the attached compliance statement accurately and unambiguously. They should ensure that all the required documents are furnished along with the bid.

Sd/-
Dy. Registrar
Stores & Purchase

BID PARTICULARS

1. Name of the Supplier :
2. Address of the Supplier :
3. Availability of demonstration of equipment: Yes / No
4. Tender cost enclosed: : Yes/No if yes
D.D. No. _____ Bank _____ Amount _____
5. Bid Security Undertaking in lieu of EMD enclosed: Yes /No

6. Name and address of the Officer/contact person to whom all references shall be made regarding this tender enquiry.

Name :

Address :

Telephone No. :

Fax No. :

Mobile No :

e-Mail :

Web :

< Organization Letter Head >>
DECLARATION SHEET

We, _____ hereby certify that all the information and data furnished by our organization with regard to this tender specification are true and complete to the best of our knowledge. I have gone through the specification, conditions and stipulations in details and agree to comply with the requirements and intent of specification. This is certified that our organization has been authorized (Copy attached) by the OEM to participate in Tender. We further certified that our organization meets all the conditions of eligibility criteria laid down in this tender document. Moreover, OEM has agreed to support on regular basis with technology / product updates and extend support for the warranty.

We, further specifically certify that our organization has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.	NAME & ADDRESS OF THE Vendor/ Manufacturer / Agent
1 Phone	
2 Fax	
3 E - mail	
4 Contact Person Name	
5 Mobile Number	
6 TIN Number	
7 PAN Number	
8 GST No.	
9 Kindly provide bank details of the bidder in the following format:	
a) Name of the Bank	
b) Account Number	

Ref:-ENQUIRYNO:- IITMANDI/S&P/PUR-48/2021-22/1970-71/Item Name, dated 30th July, 2021.

Technical Specifications of Servo Hydraulic Actuators including Hydraulic Power Pack and Control Accessories:

Table 1: Short Description of the Items to be purchased

Sl. No.	Short Description	Quantity
1	Servo Hydraulic Actuator Assembly (Capacity-100kN) with Accessories	1
2	Servo Hydraulic Power Pack with Accessories	1
3	Hydraulic Service Manifold with Accessories	1
4	Digital Servo Controller (including Control Panel)	1
5	Computer and Necessary Software	1

Detailed Specifications:

1: Scope of Work: Supplying, installation and commissioning of Servo Hydraulic Actuator systems.

2: General condition

- 2.1 The bidder should have supplied similar kind of servo-controlled hydraulic actuators with control system for structural testing purpose having force rating 100 kN or above reputed academic/research institutes/laboratories in last five years. The necessary testimonials (including performance certificate) with contact details of the indenter must be submitted.
- 2.2 The bidder must be accredited by NABL or equivalent international accreditation authority/agency and must have sufficient calibration capacity for the equipment and parts.
- 2.3 The bidder should be in a position to respond to the service requests and attend the site, if required, within a window of ten days.
- 2.4 Technical support and hardware/software with necessary spares for the equipment must be provided for minimum 10 years after installation and commissioning.
- 2.5 If the authorized dealer is quoting on behalf of a manufacturer (OEM), a copy of certificate from the OEM must be enclosed with following declaration: the equipment being quoted by the bidder is on behalf of concerned OEM and the OEM undertakes the responsibility to provide the after sale support and maintenance of the equipment.
- 2.6 The bidder should give an undertaking that they will provide all technical input/details and accessories required for system integration with loading frame. Details of the reaction/loading frame, if any, will be made available to the supplier in advance.
- 2.7 The supplier should provide the technical training to the personnel involved in the use of the equipment at the IIT Mandi premises, immediately after completing the installation of the equipment for a minimum period of three days at the supplier's cost.

- 2.8 The bidder/firm should supply at least two sets of operation and maintenance manuals along with all necessary diagram /drawings that may be useful in case of repairing of any items of complete hydraulic actuator system should be supplied along with the equipment. The bidder/firm should also enclose all the relevant technical documents and catalogues for all the components included in the technical. Proposals without proper technical documents and catalogues will be rejected.
- 2.9 The bidder should provide comprehensive on-site warranty for a minimum period of one years from the date of satisfactory installation and commissioning.
- 2.10 The bidder should include 3 years AMC as an optional item in the bid.
- 2.11 Site Preparation: The supplier shall inform to the Institute about the site preparation, if any, needed for the installation of equipment, immediately after the receipt of the purchase order. The supplier must provide complete details regarding space and all the other infrastructural requirements needed for the equipment, which the Institute should arrange before the arrival of the equipment to ensure its timely installation and smooth operation thereafter. The supplier shall visit the Institute and see the site where the equipment is to be installed and may offer his advice and render assistance to the Institute in the preparation of the site and other pre-installation requirements.
- 2.12 **Downtime:** During the warranty period not more than 5% downtime will be permissible. For every day exceeding permissible downtime, penalty of 1/365 of the 5% order value will be imposed. Downtime will be counted from the date and time of the filing of complaint within the business hours.

3: Detailed Technical Specifications

3.3.1 Servo-Controlled Hydraulic Actuator (Capacity: 100 kN)

Sl. No.	Technical Specification	Details of Technical Specifications
i.	Type of Actuator	<ul style="list-style-type: none"> Fatigue rated, double acting and double ended with equal piston area in tension and compression, recommended for static and dynamic applications. The design should allow balanced dynamic performance and robust side-load tolerance to maximize data fidelity. The actuator should be hysteresis-free in quasi-static and cyclic operations with alternating forces up to nominal value Provided piston rod must have special coating to increase service life over regular chromium plated piston rod.
ii.	Load Capacity	+/- 100 kN
iii.	Dynamic Force Rating	Minimum 90% of static force capacity for dynamic performance
iv.	Bearing Type	Hydrostatic type for high side-load tolerance
v.	Stroke Capacity	Usable stroke: 250 mm (+/- 125 mm)
vi.	Load Cell	<ul style="list-style-type: none"> Fatigue rated load cell (capacity: +/- 100 kN) fitted with actuator Overload capability (without calibration change): 150%

		<p>full scale</p> <ul style="list-style-type: none"> • Temperature range 10° - 50 °C • Accuracy: 0.05% of full scale or +/-0.5% of measured value whichever is better • Hysteresis: ±0.15% of full scale or lower (no calibration change) • Nonlinearity: 0.15% of full scale or lower • Calibration certificate and chart to be included
vii.	Displacement Transducer	<ul style="list-style-type: none"> • Integrated Linear Variable Differential Transducer (LVDT) co-axially mounted with actuator for accurate measurement of stroke position (usable stroke ±125 mm). • Accuracy: 0.5 % of measured value or better <p>or</p> <ul style="list-style-type: none"> • Digital encoder with 0.1 micron accuracy • Calibration certificate to be included
viii.	Servo Valve	Suitable servo valve to meet performance specifications as per point xi below. Actuator with for proportional or servo-proportional valves will not be accepted.
ix.	Swivel Assembly at Rod and Base Ends	<ul style="list-style-type: none"> • Fatigue rated maintenance-free adjustable swivels at rod and base ends. • Dynamic force capacity should be at least 1.6 times of the static force capacity of the actuator. • Should have high axial stiffness for high frequency testing. • Swivel angle; +90°, -80°; Tilt angle: min +/-15°. • Should have non-metallic bearings to reduce friction without requirement of lubrication. • Should have adjustable bearing/washers to minimize backlash, for use on cyclic, reversing load applications. • Attachment kit must include high strength threaded bolt/washer/springs and other accessories for the requirement of swivel assembly.
x.	Lifting Arrangement	Lifting shackles configured for balanced lifting of actuator.
xi.	Performance Requirement	<p>Performance curve of the actuator must be enclosed and should at least satisfy the following:</p> <ul style="list-style-type: none"> • 1 Hz frequency, 40 mm displacement at No Load • 10 Hz frequency, 8 mm displacement at No Load • 1 Hz frequency, 25 mm displacement at 80 kN Load • 10 Hz frequency, 7 mm displacement at 80 kN Load

3.3.2 Hydraulic Power Pack (HPP)

Sl. No.	Technical Specification	Details of Technical Specifications
i	Delivery	<ul style="list-style-type: none"> • Hydraulic Power Pack (HPP) should be suitable to use the actuator at full capacity. • Minimum flow of 100 LPM at 210 bar.

		<ul style="list-style-type: none"> Should have provision for future upgradation by adding more HPP's to increase the total flow.
ii	Operating Pressure	210 bar/21 MPa.
iii	Operating Temperature and Cooling	<ul style="list-style-type: none"> The HPP should be equipped to be operated in ambient temperature of 5°C – 40°C. If required, separate offline recirculating pump circuit to be provided for oil cooling and filtration. Equipped with corrosion resistant copper oil to water heat exchanger must be designed for cooling water inlet at 35° C. Cost of appropriate external cooling unit and all accessories should be provided separately.
iv	Type and Number of Pump	<ul style="list-style-type: none"> High pressure variable volume pump in required number to develop at least 210 bar/21 MPa pressure. Should be submersible type in hydraulic tank.
v	Tank capacity	Minimum 340 litre.
vi	Type of Oil	First fill of oil to be provided. Suitable brands oil available in India should be used.
vii	High Pressure Filter	3 micron filtration on pressure line and low pressure 10 micron filter on offline pump/return line.
viii	Noise Level	Should be less than 70 dB at operation condition.
ix	Hydraulic Service Manifold (HSM)	<p>One Hydraulic Service Manifold (HSM) should be included along with suitable distribution stations to controls minimum up to 2 independent outlet stations/actuators with operating pressure 210 bar. It should have following functions:</p> <ul style="list-style-type: none"> Each station should be able to deliver flow of 185 LMP. Must maintain smooth, controlled transitions of oil flow. Suitable accumulators kit on HSM should be provided to minimize the pressure fluctuations. Provisions to minimize rapid application and removal of high-pressure unloading features.
x	Other Features	<p>The HPP should have:</p> <ul style="list-style-type: none"> Pressure gauge Pressure control valve Temperature trip mechanism Temperature dependent water saving control valve Digital display for operator control Surge Suppressor Cabinet with lockable cover for noise reduction and features for prevention of tampering of controls Indicators for power on, low oil level, over temperature, and dirty filter warnings
xi	Remote Control	Should be able to control the HPP from the control room. Necessary cable of required length must be included.
xii	Emergency Stop	<ul style="list-style-type: none"> Minimum one emergency stop units with cable, in the test lab area (including control room) should be included.
xiii	Flexible Hoses	<ul style="list-style-type: none"> The flexible hose pipes should be of good quality synthetic

		<p>rubber based with steel reinforcement as per the relevant code of standard.</p> <ul style="list-style-type: none"> • The hoses with its end fitting must be able to bear required pressure with adequate factor of safety developed during the dynamic testing of structures. • Following minimum length of suitable flexible hoses (pressure, return, drain/pilot) of suitable diameter should be provided. <ul style="list-style-type: none"> – One set of HPP to HSM – Minimum 4.5 m – One set of HSM to Actuator – Minimum 9 m. <p>This minimum length will be considered for the financial comparison purpose. However, the actual length of the hoses needs to be provided based on the site requirements during the commissioning. Nevertheless, effect of length of the hoses and connectors on the HPP's/actuator's performance must be negligible.</p>
xiv	Signal Cable/ Electrical Cable	The length of all signal cable/ electrical cable from controller – actuator/ controller – HSM – actuator/ HPP – controller will be decided by the supplier on the basis of actual site condition. However, a length of each type of cable up to 15 m will be used for comparing of financial bid.
xv	Provision for Lifting and Movement	The HPP should have the facility to lift by forklift or moved on rollers, or slung from a crane

3.3.4 Digital Servo Controller

Sl. No.	Technical Specification	Details of Technical Specifications
i	Type	Modular type flexible digital compact controller, versatile, and easy-to-use servo controller. It should provide real-time closed-loop control, with transducer conditioning and function generation to drive various types of servo-actuators for general testing applications in dynamic/quasi- static conditions.
ii	Number of control stations/ Actuators	Suitable for controlling 2 actuators at present with provision to control up to 4 actuators, provision to add additional control cards in future.
iii	Control and Data Acquisition Features	<p>Controller should have following features</p> <ul style="list-style-type: none"> • Provide digital servo control, function generation, data acquisition, hydraulic control, and digital input/output. • The digital electronic controller should be able to conduct tests in stroke, strain and load control modes. Inclusion of other calculated variables for controlling will be added advantage. • The controller should be expandable up to 4 actuators. • Controller must be able to control or acquire data at 6 kHz or faster rate. • Continuous synchronous data acquisition at user selectable

		<p>sampling rate up to 6 kHz on all internal and external channels.</p> <ul style="list-style-type: none"> • Signal conditioner data sample rate: 100kHz or faster. • It must be able to generate static/dynamic/cyclic/function generator with 32bit resolution waveform at 0.001Hz-600Hz or better. • Ability to generate following waveforms: sine, triangle, square, haversine, ramp, dual ramp, random. • Support for time history record playback. • The controller should adapt for peak/valley control, zeroing of al channels without additional programming. • Control loop update should be 6 kHz or faster. Loop closure rate should not be affected by number of control channels. • Programmable automatic mode changing to any transducer connected to the machine which has been selected for control. • Hydraulics-on mode-switching of control parameters. • Automatic control for bump-less test initiation. • Control loops should be tuned manually or automatically with tuning PIDF with forward loop filter. • Ability to save and restore PID tuning settings. • Controller shall have programmable display meters, providing the user the flexibility of programming the parameters to be displayed on the meters. • All test templates that support testing against standards can be modified by the user using the graphical interface (no requirement to change source code). • Programmable display scope: Providing the user the flexibility of programming the parameter to be displayed on X and Y axis. User should be able to adjust the scaling and trace time based on the requirement. The scope should have user selectable and auto scaling features. The scope should be able to plot one channel versus another channel. • It must be capable to capture the data or multiple block of data at high speed from all the feedback channels and then transfer it to the computer for processing and storage. • Should have facility to transfer all test data, including time history data, to ASCII format.
iv	Signal Conditioning (for each control channel)	<p>Must include minimum eight digital universal conditioners to support a wide range of transducers with following features:</p> <ul style="list-style-type: none"> • Supports one AC or DC transducer • Software control of range • Designed for full range calibrations • Excitation sensing ensures that the desired voltage is applied to the transducer, regardless of cable length. • Variable excitation frequencies.
v	Other Requirements	<ul style="list-style-type: none"> • Set of control cables to actuator and HPP of length 15 meters or more. • Remote handset to be provided for the proposed test with

		<p>the following features:</p> <ul style="list-style-type: none"> - Digital Display of Force Displacement / Deformation (if extensometer is connected). - Performing fine adjustment of actuator manually during setup. - Test start/stop and hydraulic on/off - Emergency Button
--	--	---

3.3.5 Computer and Necessary Software

Sl. No.	Technical Specification	Details of Technical Specifications
i.	Software	<ul style="list-style-type: none"> • Suitable software suit with multi-window graphical user interface (GUI) to interact with the full functionality of the servo controller as mentioned in Section 3.3.4. • The setup software should include actuator operating parameters and safety, drive signal definition, calibration factors, test annotation and run sequencing with facility to save each user defined set-ups which can be recalled, modified and archived. • Software and hardware should be capable of carrying out periodic signal data acquisition for all available transducer channels. • Capability to produce drive files suitable to simulate given acceleration time history signals. • All data should be saved in ASCII format. Preferably with direct saving option as MS Excel/Spreadsheet file.
ii.	Computer	<ul style="list-style-type: none"> • A computer desktop/laptop with 23" LCD/HD screen. • Suitable mouse and keyboard. • Intel Core i7 processor, 8 GB memory, 1 TB Hard Disk, Windows 10 or latest version, 64 bit, MS Office, Or better configuration. • Compatible with the provided controller and should be able to run all the necessary software/packages. • A suitable UPS of minimum 2.2KVA should be provided for smooth functioning of the controller

BID SECURITY UNDERTAKING

(To be issued by the bidder on company's letterhead in lieu of EMD)

To,

The Registrar,
I.I.T. Mandi,
Kamand, - 175 075,
District - Mandi, Himachal Pradesh, India

We, M/s _____ (Name of the Firm), with ref. to Tender No. **IITMANDI/S&P/PUR-48/2021-22/1970-71/Item Name, dated 30th July, 2021 for the supply & installation of Servo Hydraulic Actuators including Hydraulic Power Pack and Control Accessories**, hereby undertake that:

- 1) We accept all terms and conditions of the tender document.
- 2) We accept that, we will not modify our bid during the bid validity period and will honour the contract after the award of contract.
- 3) In the event of any modification to our bid by us or failure on our part to honour the contract after final award, our firm may be debarred from participation in any tender/ contract notified by IIT Mandi for a period of one year. We undertake that we shall not appeal against such debarment in any court of law.

Yours faithfully,

(signature)

Name:

Date:

Office Seal:

Declaration of Local Content

(To be given on Company Letter Head)

To

The Registrar,
I.I.T. Mandi,
Kamand, – 175 075,
District – Mandi, Himachal Pradesh, India

Tender Ref. No: IITMANDI/S&P/PUR-48/2021-22/1970-71/Item Name, dated 30th July, 2021 for the Supply & Installation of Servo Hydraulic Actuators including Hydraulic Power Pack and Control Accessories.

We, M/s _____ (Name of the Firm), hereby undertake that:

1. Country of Origin of Goods being offered: _____.
2. We hereby declare that items offered has _____% local content.

“Local Content” means the amount of value added in India which shall, be the total value of the item being offered minus the value of the imported content in the item (including all customs duties) as a proportion of the total value, in percent.

“*False declaration will be in breach of Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.”

Yours faithfully,

(signature)

Name:

Date:

Office Seal:

**COMPLIANCE STATEMENT FOR THE TENDER SPECIFICATION
INDIAN INSTITUTE OF TECHNOLOGY MANDI
SOUTH CAMPUS, KAMAND - 175 075, DISTRICT - MANDI, HIMACHAL PRADESH**

Ref:-ENQUIRYNO:- IITMANDI/S&P/PUR-48/2021-22/1970-71/Item Name, dated 30th July, 2021.

Sr. No.	Check list of documents/ Undertakings?	YES/ NO	Remarks (Give explanation if answer is No)
1	Is Tender fees attached?		
2	Is Bid Security Undertaking in lieu of EMD attached? (if applicable)		
3	Is the bidder original equipment manufacturer (OEM)/authorised dealer?		
4	If authorised dealer, recent dated Certificate to this effect from OEM, attached or not?		
5	Undertaking from OEM regarding technical support & extended warranty period		
6	Validity of 180 days or not?		
7	Undertaking from bidder regarding acceptance of tender terms & conditions		
8	Whether list of reputed users (along with telephone numbers of contact persons) for the past three years specific to the instrument attached.		
9	Whether special educational discount for Indian Institute of Technology (IIT) Mandi (H.P) given.		
10	Whether training of operator and research students without any charges offered.		
11	Does the instrument comply with all the required specifications as per annexure 1. IMPORTANT: Attach a separate sheet highlighting Point-by-point compliances with the specifications and explanations thereto if the equipment varies from the requested specifications.		
12	Whether free Installation, Commissioning and Application Training offered.		
13	Whether warranty as per requirement offered		
14	Whether Annual maintenance after expiry of comprehensive onsite warranty quoted separately as optional.		