



सीएसआईआर - राष्ट्रीय धातुकर्म प्रयोगशाला
CSIR - NATIONAL METALLURGICAL LABORATORY
(Council of Scientific & Industrial Research)

Burmamines, Jamshedpur - 831 007
Tel: 0657 2345 129/132/128/126, Fax: 0657 2345131
Email: spo@nmlindia.org Website: www.nmlindia.org



21.10.2025

CORRIGENDUM

Tender Reference No. :- PUR/310/HNB/DB/EQM/2025-26

Tender ID :- 2025_CSIR_250245_1

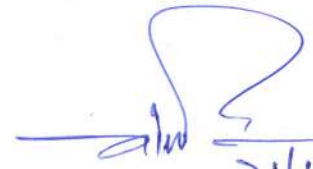
**Item Name :- Supply, Installation & Commissioning of
SERVO HYDRAULIC UNIVERSAL TESTING SYSTEM**

NOTE: The Bids must be submitted in the Central Public Procurement Portal (URL:<https://etenders.gov.in/eprocure/app>) only. Manual/Offline bids shall not be accepted under any circumstances. Bidders should quote in INR only.

Consequent to the Pre-Bid Meeting held on 08.10.2025, the revised technical specifications are attached in Annexure-A

The bidders are requested to submit their bid based on this revised technical specifications as per Annexure-A.

All other terms and conditions shall remain same.


21/10/25
Stores & Purchase Officer,
CSIR-NML, Jamshedpur



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ANNEXURE-A

Servo Hydraulic Universal Testing System
(Quantity: ONE No)

Purpose:

Servo-hydraulic closed loop universal test system is required for conducting ambient temperature static and dynamic tests. The system should be capable for performing high frequency fatigue (ASTM E 466) tests, Fatigue Crack Growth Rate (FCGR) tests (ASTM E647) and Fracture Toughness tests (ASTM E1820).

DETAILED TECHNICAL SPECIFICATIONS

Sr. No.	Parameter	Specification
1.	Load Frame	
1.1.	Load Frame Capacity :	Two Column load frame with Dynamic Fatigue rated capacity ± 100 kN.
1.2.	Dimensions:	Column spacing 500 mm or more. Daylight 1250 mm or more.
1.3.	Frame Stiffness :	350 kN/mm or more at 1m distance from bases to crosshead
1.4.	Crosshead Adjustment :	Hydraulically, using Lift Cylinders
1.5.	Lift Cylinders :	The columns and lift cylinders should be combined / assembled as one unit using hydraulic power from the manifold, and placed adjacent to the columns.
1.6.	Crosshead Clamp :	The Crosshead Clamp should be Hydraulic with active clamping or appropriate locking for clamping should be ensured.
2.	Actuator	
2.1.	Actuator Capacity :	Dynamic Fatigue rated Capacity ± 100 kN or more.
2.2.	Actuator Stroke :	± 50 mm or more (cross-head displacement will not be considered as actuator displacement)
2.3.	Actuator Mounting :	Base Platen
2.4.	Accuracy:	As per ASTM E-2309 or ISO-9513
3.	Load Cell	
3.1.	Load Cell Capacity :	± 100 kN capacity.
3.2.	Load Accuracy	As per ISO 7500-1 Class 0.5
3.3.	Load Cell Type :	Strain Gauge Based ,fatigue rated
4.	Digital Controller System	
4.1.	Digital Control System	Closed loop continuous PID control at rate of 1kHz or better
4.2.	Synchronous Data acquisition and Control loop closure rate	Continuous, synchronous data acquisition on all channels, at 05 (Five) kHz or better
4.3.	Event detector	Programmable event detection and limit set-up



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4.4.	Data Resolution	19 bit data resolution on all channels or better
4.5.	Waveform Resolution	Command waveform generator with 32-bit resolution (for ramp, sine, triangular, trapezoidal and square waveforms) for each transducer
4.6.	Built in Signal Conditioner	Minimum four (4) 'conditioner' should be supplied for Stroke, Load, Strain (COD/ Extensometer) and one configurable for any other transducer.
4.7.	Data Processing	Playback facility of service data or user- defined loading paths as digital command files
4.8.	Control System Tuning	Must have AUTO-TUNING, meaning the system should run a simple waveform and be able to set PID Values in a single step.
4.9.	Protecting the specimen from overloading while Loading	Speciemen protect utility
4.10.	Handset Control	A handset shall be provided with up/down push buttons for coarse actuator positioning and a thumb-wheel for fine actuator positioning.
4.11.	Analogue Input & Output Signal	At least 3 digital I/O and 3 analogue outputs
4.12.	Control Interface	Ethernet /GPIB/IEEE/USB interface for external control and data acquisition
4.13.	Firmware support	Availability of control system firmware version support for at least 5 years
4.14.	Transducer Calibration function	• Transducer excitation, automatic transducer recognition and transducer calibration functions • Manual calibration of third- party transducer when necessary should be possible
5.	Hydraulic Power Pack	
5.1.	Nominal oil Flow	78LPM or Higher
5.2.	Hydraulic Pump	Pressure compensated variable flow pump, heat exchanger, manifold, dump valves, and connecting hoses
5.3.	Electronic Controller :	PLC based controller with digital display for oil pressure and oil temperature.
5.4.	Protection Devices :	Should include protection device for oil temperature, oil pressure, oil level, oil filter condition and motor temperature.
5.5.	Distribution Manifold	Laying Hard line for running the load frames, based on the location of the load frames and the hydraulic power pack.
5.6.	Noise Level	Low noise (typically 65dB or lower)
5.7.	Maximum Dimension	L=2.1m, B= 1.3m and H= 1.8m or less
6.	Ambient temperature CT Clevis & TPB Fixtures	
6.1	One pair 1T CT sample (25.4mm thick x 50.8mm width): 100kN capacity	



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6.2	One pair 1/2T CT samples (12.5mm thickness x 25.4mm width): 50kN capacity	
6.3	Suitable connecting adopters	
6.4	One pair of stud/ adaptor compatible with existing TPB fixtures (Make: Instron) M30RHx2.0, Depth 28mm, Drawing : Annex-1	
7.	Hydraulic Grips	
7.1	Hydraulic Wedge Grips	Dynamic ± 100 kN or more, Suitable for tension and compression including full reverse-stress dynamic testing capability
7.2	Static Load Capacity	120% or more of dynamic capacity
7.3	Side-entry design	Full access for easy specimen insertion from the side or collet type
7.4	Specimen Centring	Adjustable specimen stops on flat faces
7.5	Jaws for Flat Specimen	Min 40mm wide for specimen thickness 1mm or lower to 15 mm or higher.
7.6	Jaws for Round Specimen	Variable type-6mm (or lower) to 16.0 mm (or higher) diameter of specimen
8.	Ambient temperature COD Gauge	
8.1.	Gauge Length :	5.0 mm
8.2.	Measuring Range:	2.5mm or more
8.3.	Type	Fatigue rated
8.4.	Linearity:	0.15% of full-scale measuring range or better
8.5.	Resolution:	0.001mm or better
9.	Ambient Temperature Strain Gauge Extensometer	
9.1.	Gauge Length :	Adjustable 12.5 /25/50 mm
9.2.	Measuring Range:	5mm or more.
9.3.	Type	Fatigue rated
9.4.	Strain Accuracy	$\pm 0.5\%$ of strain or better
9.5.	Resolution	0.001mm or better
10.	Interfacing computer	
10.1.	Visual Monitoring	A suitable colour screen for monitoring and visualization with minimum size of 15 inches.
10.2.	Data transfer	There shall be provision for (i) writing/reading test data into CD-R/CD-RW/DVD-R/DVD-RW, (ii) transfer of files/data via USB flash-drives
10.3.	Interface	Appropriate interface (GPIB/IEEE/Ethernet/USB) card for enabling machine command, control and query
11.	Software	
11.1.	User Programming general purpose software for user-defined tests	
11.1.1.	An user programmable multi-purpose software for performing static or dynamic tests employing pre-defined waveforms such as ramp, sine, triangular, trapezoidal, or user defined waveforms in sequential or block loading mode	
11.1.2.	Continuous synchronous data collection on all or selected channels, at linear, logarithmic or on defined change-in-value intervals	



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11.1.3.	Provision for collecting both complete cycle data and peak-valley data
11.1.4.	Data storage in PC in ASCII or any other form suitable for transfer to spread sheet programmes like MS Excel
11.1.5.	Ability to pause and resume a test
11.1.6.	Control on waveform envelope time
11.1.7.	Real time graphic windows (X-Y, double Y, trend, chart recorder)
11.2.	Software for fatigue crack Growth (FCGR) Test
11.2.1	A user friendly software for conducting FCGR tests as per ASTM E-647 standard
11.2.2	Ability to run FCGR tests under: (a) constant load amplitude, (b) decreasing ΔK (delta K) (c) constant K_{max} envelopes (d) user defined Normalized K-gradient (C)
11.2.3	Crack length measurement using unloading compliance
11.2.4	In-built pre defined compliance relations for various specimen geometries: C(T), SEN(B), SEN(T) etc. And provision for user-defined compliance co-efficient for customized specimen geometry.
11.2.5	Continuous synchronous data collection on all channels at user defined intervals
11.2.6	Automatic calculation of number of cycles, da/dN , ΔK , R- ratio
11.2.7	Provision for on-the-fly modification of controlling test parameters (ΔK , R-ratio, ΔP , frequency)
11.2.8	Both raw data and processed data should be stored in PC in ASCII or any form suitable for transfer to spread sheet programmes like MS Excel
11.2.9	Ability to pause and resume a test
11.2.10	Real time graphic windows (X-Y, trend)
12	General Requirement
12.1	Manuals, Calibration certificates and Tool kit • Manuals (including drawings) for regular maintenance and operation of the system and software(s) should be provided • Calibration certificate for all transducers should be provided • Sets of tools required for routine operation and maintenance of the system should be included • Full stroke performance curve of servo-valve should be provided
12.2	Installation, Commissioning & Training • Delivery within SIX months from the date of Purchase order placement



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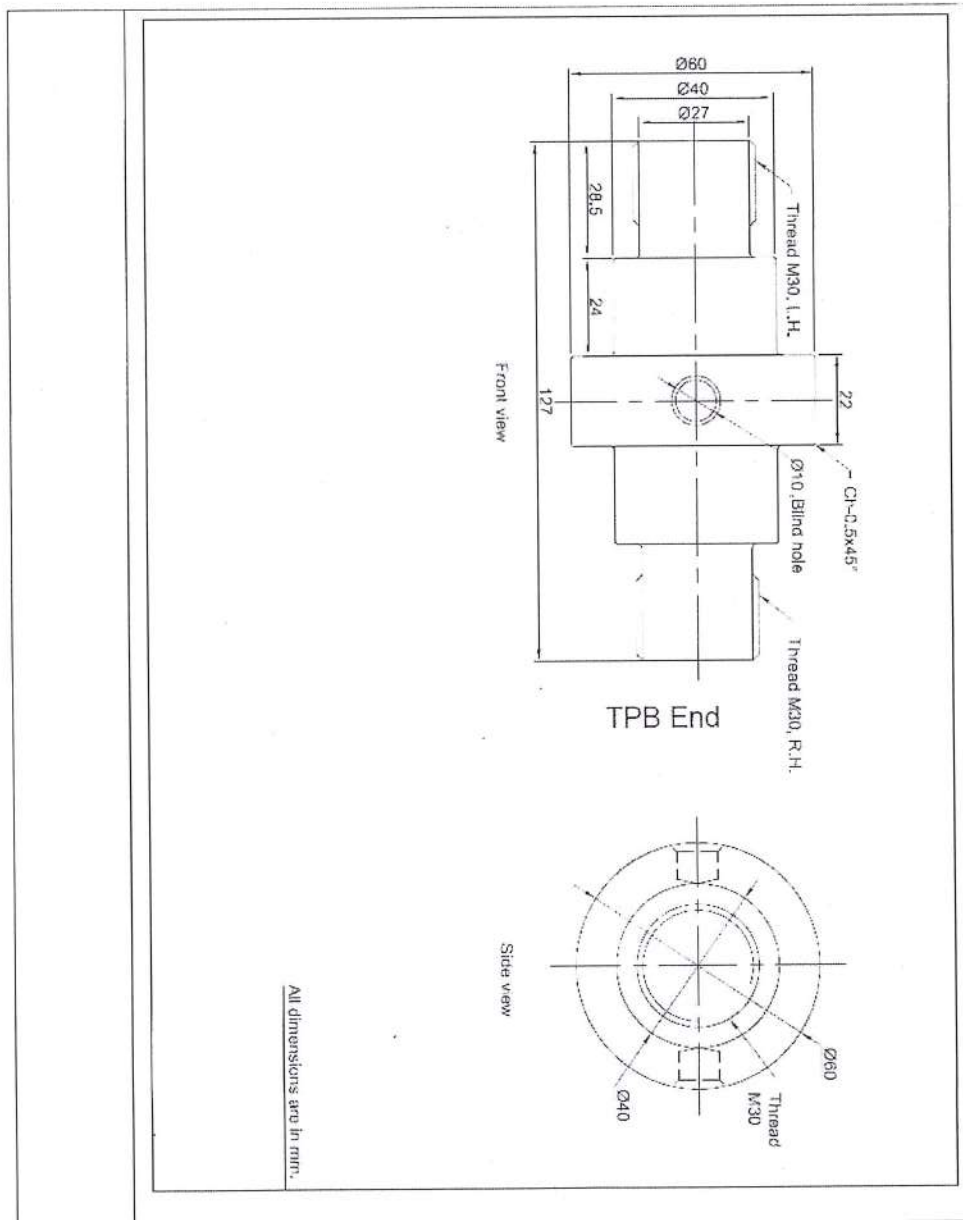


	- The system should be installed, commissioned at the site of CSIR-NML Jamshedpur within ONE month of receiving equipment at CSIR-NML store. - Onsite training for minimum of 02 days for 04 persons
12.3	Warranty
	03 years comprehensive warranty including calibration annually and followed by 02 yrs non-comprehensive AMC which include a) Calibration-1 No b) Breakdown maintenance -1No c) Preventive maintenance – 3nos annually. - The warranty should be effective from the date of issue of satisfactory installation & commissioning certificate at the user laboratory/ institute.
12.4	Eligibility Criteria for Bidders
	- Quotations only from the original manufacturers of the equipment or their authorized agents will be accepted - The bidder should have supplied similar systems in India. Past purchase order copies and contact details of existing users should be provided along with the offer.
12.5	General Terms and Conditions
	- Supplier should ensure the availability of the model quoted against this enquiry until supply. Interim requests to alter the model, even if they are higher versions, will be summarily rejected. The offer should include all technical data/ brochure to support the claim. Mere statement without any supporting document is not acceptable and the offer will be rejected. - Supplier should indicate technical support service available in India and should indicate a minimum guaranteed down time of the equipment once supplied.



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