



॥ सा विद्या या विमुक्तये ॥

भारतीय प्रौद्योगिकी संस्थान धारवाड
Indian Institute of Technology Dharwad

EXPRESSION OF INTREST

No. IITDh/GA/CRF/2018-2019/04

**EXPRESSION OF INTEREST (EoI) FOR PROCUREMENT
of
UNIVERSAL TESTING MACHINE (100 kN)
AS PER ANNEXURE-I**

1. Introduction

IIT Dharwad is an Institute of National Importance created by an Act of Parliament in 2016. IIT Dharwad has been steadily establishing its operations in its transit campus. Simultaneously, the institute is employing bright young and accomplished faculty. A number of unique research and development programs are on the anvil. The institute now needs to raise the levels of the capacity with the best of the facilities and infrastructure. This will provide highly talented and accomplished faculty to pursue not only their research but also think of innovative way of introducing instructional/teaching/learning solutions to practical problem of the students.

2. Objective

The objective of this invitation of Expression of Interest (EoI) is to seek responses from eligible Vendors for SUPPLY, INSTALLATION, COMMISSIONING, DEMONSTRATION and TRAINING OF **UNIVERSAL TESTING MACHINE (100 kN) AS PER ANNEXURE-I**

3. Timelines

3.1 Major activities in the procurement process will be as given below: -

SI No	Activity	Remarks
(a)	Pre-Bid Meeting	<ul style="list-style-type: none">To clarify the issues/ queries raised by interested firms facilitate submission of bids.
(b)	Deadline for submission of EoI	<ul style="list-style-type: none">Till 10.00 Hrs on 03/10/2018
(b)	Issue of Tender Document	<ul style="list-style-type: none">Only to the vendors who submit the response to the EoI. Link for downloading the tender document to such vendors will be sent via e-mail on 03/10/2018
(c)	Submission of Tender Documents	<ul style="list-style-type: none">Deadline for bid submission 17/10/2018, 16.30 hrs based on updated specifications and tender document
(d)	Evaluation of Technical Bids	About 3 weeks (Tentative)
(e)	Opening of Commercial Bids	<ul style="list-style-type: none">The shortlisted bidders will be intimated by e-mail the schedule of opening of the commercial bids
(f)	Award of Contract	<ul style="list-style-type: none">The selected vendor will be awarded the contract.

4. MATERIAL DESCRIPTION

UNIVERSAL TESTING MACHINE (100 kN) as per specifications described below in Annexure-I

4.1

Annexure-I

4.1.1 Technical Specification: 100 kN UTM

Load frame assembly

1. Fatigue rated 100 kN load frame with stiffness of the frame sufficient to perform tests as mentioned in Table 1.
2. 100 kN fatigue rated actuator mounted on the bottom crosshead with minimum position accuracy of 0.1 microns.
3. The actuator should be configured with suitable servo valves to perform Tensile test as per (ASTM E8, ASTM E9, ASTM D3039), LCF test as per ASTM E606, Fracture toughness test as per (ASTM E1820, ASTM E399) and Fracture mechanics test and Fatigue Crack Growth Properties test as per ASTM E647.
4. 100 kN dynamic capacity load cell,
 - A. Overload capacity:150% of read capacity.
 - B. Non-linearity: $\pm 0.3\%$ of full scale.
 - C. Accuracy: IS07500-1 Class 0.5.
 - D. Resolution :0.02% of Full Scale Reading.
5. Alignment of the frame to be verified as per ASTM E1012. Alignment correction and verification Kit to be supplied.
6. Cross Head
 - a. The top cross head movement is hydraulically operated to position it with different grips and specimen length before starting the test.
 - b. Hydraulically operated de-clamp cylinder which has to be enabled to move the top crosshead.
7. Touch screen operated console for basic operations of the machine —
 - a. switching the power pack On/Off.
 - b. Clamp and De-Clamp of the top cross head.
 - c. Moving the crosshead up and down.
 - d. Moving actuator up and down to mount the specimen.
 - e. Automatic specimen mounting feature for easy mounting with hydraulic tensile grip.

Power Pack:

1. Capacity suitable for performing tests on specimens mentioned in Table 1.
2. Touch screen based console to be used for power pack operation.
3. Return line filter with electric interlock.
4. Sensors to continuously monitor oil pressure and temperature.
5. All the safety interlocks on the power pack to be monitored on the touch screen panel.
6. All the accessories like hoses, oil filling pump and hydraulic oil to be included in the supply.
7. Suitable chiller unit to be provided along with the system.

Controls:

1. Digital control system including/ensuring:
 - a. Digital actuator position measurement.
 - b. Analog inputs with suitable signal conditioners:
 - i. Load cell input
 - ii. Strain input for Crack Opening Displacement transducer and extensometer.
 - iii. Minimum 4 and Maximum 16 channels
 - c. Minimum 4 DAC Channels
 - d. Continuous Data acquisition of minimum 6 kHz per channel
 - e. 24-bit signal conditioning
 - f. Adequate number of input and Output digital channels.
 - g. Auto identification and calibration of transducers.

Software package includes:

- a. Basic Application Software:
 - i. Performs Fatigue Test, Static, Multistep
 - ii. programming and Time History (Custom Waveform) generation.
 - iii. Test can be done in Stroke, Load, COD/Extensometer and Dual control modes.
 - iv. Adaptive waveform control for Mean and Amplitude.
 - v. Display meters for current readouts, max-min readouts, peak valley readouts, set point and cycle counters. Display of time history graph and X-Y plots.
 - vi. Muti-channel option available.
 - vii. Option to program safety interlock for load, displacement and COD/Extensometer.
 - viii. Data recording collects time and/or peak-valley data to binary formats. Data is then exported to MS Excel/text format where report generation and graphs are available with play back option.
 - ix. Data reduction options available in real time data logging and also during data exporting. Tensile and Compression test application software as per ASTM E 8M and ASTM E9
- b. Tensile and Compression test application software as per ASTM E 8M and ASTM E9
- c. Fracture toughness for K1c, J1 c & CTOD Application software as per ASTM E1820, ASTM E 399
- d. Fracture mechanics application software as per ASTM E647
- e. LCF testing application software as per ASTM E606
- f. Remote monitoring of test and test parameters through IOT

Grips and Fixtures along with Transducers:

Suitable grips, fixtures and different types of transducer for carrying out Static, Dynamic and Cyclic Testing as per ASTM Standards listed below

- ASTM E8
- ASTM E9
- ASTM E1820
- ASTM E399
- ASTM E647
- ASTM E606

Computer for system control:

Computer with monitor: 24" Wide Screen Monitor with LED Back Light:

Processor: Intel (R) Core(TM) i5-3570 Processor

RAM: 4GB

Hard drive: 1

TB USB Optical

Mouse USB

Entry Keyboard

Software: Windows 10 Professional 32bit Media Kit.

Microsoft Windows 10 Professional operating environment and MS-Office basic edition

Safety features:

The system should be configured for uninterrupted mechanical testing in the event of Power Failure.

Uninterrupted Power Supply for Control console and Hardware.

Remote health monitoring of the system through IOT

Special Requirements

1. Remote service support through 10T.
2. Service support within 24 hrs.
3. One trained/skilled operator for routine operations/maintenance of the machine for a minimum period of one year.
4. Demonstration of the performance of similar machines is a requirement for technical evaluation
5. Computer specification to be equal or better than the specified one

Table 1

Test Requirements

Test type	Material	Test condition	Test type		Standard	Specimen range
Static	Metal	RT	Tension	Smooth	ASTM E8	5 to 16 mm diameter
				Flat	ASTM E8	3 to 12 mm thickness
				threaded	ASTM E8	M8, M10, M12, M16
			Compression	Cylindrical	ASTM E9	Diameter: 12.7 mm to 20 mm L/D = 1.5 to 2
			Flexure test	3-point bend	ASTM E399	Span: Minimum 50 to 300 mm
Dynamic	Metal	RT	LCF	Threaded	ASTM E 606	M8, M10, M12, M16,
			HCF	Flat		3mm, 6mm
				threaded		M12,
Fracture Mechanics	CT	ASTM E 1820	1. W=25.4 & THK=6.35/12.7mm 2. W=50.8 mm & B=12.7mm			

Take referrals as steel specimens

Table specifies the minimum dimensions to be accommodated in 100kN system

DETAILS OF PRE-BID MEETING

To clarify the issues/queries raised by interested firms and to facilitate in submission of bids, the pre-bid meeting would be held as follows:

Place	Time	Date
Board Room, Admin Building, IIT Dharwad	11.00 hrs	03/10/2018

PROCEDURE FOR SUBMISSION OF RESPONSE TO THE EoI

The response to the EoI should reach IIT Dharwad on or before 03/10/2018 by 10.00 hrs on the following address:

The Officer on Special Duty
(Admin, Finance & Contracts)
P.B. Road, Near High Court, Dharwad-580011

Or can be forwarded by e-mail at pro@iitdh.ac.in on or before 03/10/2018 by 10.00 hrs.

For any queries, you may reach us at 0836-2212839

Please acknowledge the receipt of this invitation for EoI

Sd/-
Officer on Special Duty
(Admin, Finance & Contracts)
IIT Dharwad