

INVITATION FOR TENDER FOR SUPPLY OF EQUIPMENT

Sealed tender offers are invited in two separate sealed covers (Technical and Commercial offers) from eligible manufacturers/suppliers or their direct Indian agents for the supply of the following equipment.

Name of the equipment or item: Single Lever Arm Type CREEP TESTING MACHINE (2 Machines)

Please send offers, ALONG WITH DESCRIPTIVE CATALOGUE/ BROCHURE. The validity of the bid should be at least four months (120 days) or more from the date of the opening of this tender. Please ensure that your quotation reaches not later than **16.01.2017 at 15:00 Hrs** at the following address:

**Dr. Debalay Chakrabarti (P.I.),
Associate Professor, Department of Metallurgical and Materials Engg.,
Indian Institute of Technology Kharagpur – 721 302, West Bengal, India**

Earnest money of **Rs. 15,000/-** is to be deposited in the form of Account payee Demand Draft in favour of IIT Kharagpur, payable at Kharagpur, India. Any bid which is not accompanied with an EMD shall be summarily rejected. Earnest money deposited will be forfeited if the tenderer withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender. No interest will be paid on the earnest money of the unsuccessful bidders.

Tender Reference	IIT/SRIC/MME/IMM/DC/2016-17/EQ-1, Dated: 15.12.2016
Price of Tender Document	NIL
Last Date and Time for submitting the tender document	16.01.2017 at 15:00 Hrs (Indian time)
Time and Date of Opening of Technical Bids	16.01.2017 at 17:00 Hrs (Indian time)
Place of Opening Tender	Department of Metallurgical and Materials Engineering, Indian Institute of Technology, Kharagpur – 721 302, West Bengal, India
Address of Communication	As stated above
Contact Telephone Numbers	+91- 3222 - 283282
E-mail	debalay@metal.iitkgp.ernet.in

DETAILED TECHNICAL SPECIFICATIONS FOR

Single Lever Arm Type CREEP TESTING MACHINE (2 machines)

S/N	TECHNICAL SPECIFICATIONS OF IIT-KHARAGPUR	WHETHER VENDOR MET THE SPECIFICATIONS OR NOT	SPECIFICATIONS OF VENDORS
	(1) The machine should be able to perform creep testing under air environment in accordance with ASTM E139 testing standard .		
	(2) GENERAL SPECIFICATIONS OF THE SYSTEMS.		
2a	The machine should have a loading frame with an integral control cabinet. A load of upto 2000 Kg (or higher) must be possible to apply through the lever arm with a single lever ratio of 1:20 (or better) and a load accuracy of +/- 0.5 % (or better).		
2b	<ul style="list-style-type: none"> • The machine should be equipped with a three zone furnace to carry out the tests at high temperature in the range 100 deg C (473 K) to 1000 deg C (1273 K) (or even higher temperature) with an accuracy of +/- 1 deg C. • The uniform temperature needs to be ensured on the test specimen over a length 150 mm. • High precision, high accuracy temperature controller and power control unit should be employed to achieve the above mentioned temperature accuracy. • Separate controllers needs to be employed to control the temperature of each zone. • The creep tests would generally be running over a longer duration and the furnace needs to perform uninterruptedly during the creep test. 		
2c	Automatic load lever beam leveling device with over travel trips should be given. Provisions should be made to prevent the motorized draw head assembly from exceeding the limits during manual or mechanical operations.		
2d	There should be a provision to manually		

	operate the draw head motor (i.e. the motor and gear assembly to support the creep specimen train) electrically to move it up or down. During the test, it needs to be ensured the draw head motor moves down automatically by the (above said) beam-leveling unit.		
2e	There should be a provision to de-clutch the motor assembly from the gear assembly so that (hand wheel or equivalent) the specimen train assembly can be moved up or down manually.		
2f	The specimen elongation (strain) will be measured by using Digital Dial Gauge during the test.		
2g	Amplifier & Interface card for Digital Dial Gauge & Data Logger must also be provided.		
2h	Continuous temperature and strain measurements and also storage and analyses of data are required through computer controlled data acquisition system.		
2i	There should be a provision to automatically shut off the electrical power to the machine when the specimen breaks.		
2j	The operating power for the whole control cabinet and the furnace should be of 230 volts single phase 50 Hz.		
2k	The main switch and the other switches for temperature controllers, elevator motors etc. must be provided with suitable good quality circuit breaker for the safety reasons.		
2l	Fuses to be used wherever it required and the fuse points must be easily accessible.		
2m	Spirit level must be mounted on top of lever arm in each machine, so that the horizontal position of the beam can be confirmed periodically or as an when required.		
2n	Provision must be there, to put off the power to the furnace, in case of overshooting of temperature due to malfunctioning of any of the temperature controllers.		
2o	Creep testing of both Flat and Round (i.e. cylindrical) specimens should be possible.		
2p	Testing of standard samples with gage lengths of 25 mm as well as, testing of sub-size specimens (half inch or quarter inch		

	gage lengths) should be possible.		
2q	Compression fixture can be given (in one of the machines) for the Compression Creep Testing.		
(3) MECHANICAL SYSTEMS: The mechanical system must be designed, fabricated as per your test requirements. Have following item:			
3a	Load Frame		
3b	Lever Arm (Should made from SOLID BLOCK) Ratio 1 : 20		
3c	Clutch and Draw Head Assembly		
3d	Elevator		
3e	Hand Wheel		
3f	Manual Load Train assembly		
3g	TWO (or more) pairs of adaptors / grippers must be supplied with each machine. Those should be made from Super Alloy Materials like Inconel 718 or equivalent super-alloy material. [any two sizes from the: M6, M8, M10, M12 or M16 with standard pitch] and 1 pair of FLAT Specimens Adaptors Size 0 to 5 mm.		
3h	Clevis and Coupling		
3i	Stud		
3j	High temperature Creep Extensometer with One No. Digital Dial Gauge.		
3k	Weights: Dead Weights of 500 Gms, 1 Kg, 2 Kg. 2 Nos of each sizes.		
3m	Weights of denominations must be suitable to the entire range of 2000 Kgf (Lever Arm is 1:20 so, total weight is 100 Kgs). Scale should also be given in Newtons.		
(4) FURNACE SPECIFICATIONS			
4a	Type: Three-zone vertical cylindrical furnace should be of split construction hinged in the rear. Other end must have provision for locking at the top and bottom using CAMLOC type of assembly or equivalent. Should be supplied with K type Thermocouples.		
4b	Top and bottom finish insulation: Low thermal conducting (low 'K' factor) vacuum cast ceramic fiber insulation to provide minimum heat loss, high temperature capability and for rigid structure.		
4c	Exterior Finish: <ul style="list-style-type: none"> The outer shell should be made by a bright stainless steel sheet of thickness 1.4 mm 		

	<p>or above. It needs to have flanges if required for test.</p> <ul style="list-style-type: none"> • Closures at top and bottom of the furnace should fit snugly around pull bars and reduce the heat loss at these points. • Provisions must be there to seal the top and bottom of the furnace by the compressed cast ceramic fiber insulation. • Clamps or equivalent needs to be provided to keep the tight fitting of the above thermal insulation boards to seal the leakages. • Required Dimensions: (Aprox.) Outer Diameter: 350 mm or more Inner Diameter: 80 mm or more Height: 400 mm 		
4d	Uniform temperature zone at the middle of the furnace should at least be of 150 mm.		
4e	The power supply terminals to the furnace must be kept near the hinges i.e. in the sides of the furnace with the suitable protective covers.		
4f	<p><u>Heating parameters:</u></p> <ul style="list-style-type: none"> • Required Heating Element: Kanthal – A1 • Required Max Temperature: 1000 deg C • Required Operating Voltage: 230 V AC single phase 50 Hz. 		
4g	The rear-hinged part of the furnace will be mounted on the machine frame such that the frame position of the furnace is adjustable vertically.		
4h	<p><i>Special furnace requirements:</i></p> <p>(i) Furnace power: 3.8 amps / 880 watts per zone, 2640 W (or better).</p> <p>(ii) Heating element: Kanthal or equivalent Heating Element.</p> <p>(iii) End Bore: 3 inch in dia.</p> <p>(iv) Temperature measurement: At least Three (3) Thermocouple ports to be located at the middle-length in each zone.</p>		
(5) Requirement of Control Panel Unit for FURNACE:			
5a	PID Temperature Controller: Minimum three numbers are required with each machine (ATONICS Make or equivalent).		
5b	Thyristor Power control units: Minimum three numbers are required with each machine (ATONICS Make or equivalent)		

(6) Requirement of strain measurement system.			
6a	One No. Mititoyo Make Digital Dial Gauge 25 mm GL having 1 micron Least Count must be provided.		
6b	For strain-measurement Least Count of 1 micron or less, and accuracy of 0.5 % or better need to be provided.		
(7) Requirement of data acquisition system			
7a	Programable Eurotherm 12 channel 6100A DATA LOGGER needs to be provided [facility to log LVDT, Thermocouple, load cell etc.]. One data logger should be sufficient to serve minimum 3 machines.		
7b	LVDT with cable and connector, as well as LVDT Signal Conditioner with 0-10 V DC output (or better) and digital display. Facility for calibration of LVDT need to be there.		
(8) Special performance requirement			
8a	The concerned Compnay should have supplied 5 or more machines in one LOT in last 5 years, in INDIA. Since the present project is DAE (Department of Atomic Energy) funded project, the Company needs to prove satisfactory performance of Creep Testing units in DAE units.		
8b	The Concerned Compnay must submit performance test reports of the supplied creep testing machines in Indian Govt. Institutes.		
8c	The Concerned Company should submit the Name and Address of atleast 3 Indian Govt. Institutes, to whom Single Lever Arm Type Creep Testing Machines have been supplied.		
<u>(9) Warranty requirement: Two years (2 years) standard warranty from the date of commissioning at final destination.</u>			

GENERAL TERMS & CONDITIONS

PLEASE SPECIFICALLY INDICATE THE FOLLOWING POINTS IN YOUR QUOTATIONS AND COMPLY THE TERMS AS MENTIONED HEREUNDER:-

1. TENDER ARE INVITED COMPLYING THE REQUIREMENT FOR TENDER AS DETAILED IN THE TENDER SPECIFICATION TO BE SUBMITTED IN THE COMPANY'S / FIRM'S LETTERHEAD NEATLY PRINTED / TYPED DULY SIGNED BY AUTHORIZED PERSON WITH THE SEAL OF THE BIDDERS. ALL ENVELOPS CONTAINING THE TENDER SHOULD BE PROPERLY SEALED. SEPARATE ENVELOPS SHOULD BE USED FOR TECHNICAL AND PRICE BID AND INDICATION TO THEIR EFFECT MAY PLEASE BE SUPERSCRIBED ON THE ENVELOP.

THE FOLLOWING DOCUMENTS ARE REQUIRED FROM THE INDIAN AGENTS OF FOREIGN FIRMS:

- 1.1 FOREIGN PRINCIPAL'S PROFORMA INVOICE INDICATING THE COMMISSION PAYABLE TO THE INDIAN AGENT AND NATURE OF AFTER SALES SERVICE TO BE RENDERED BY THE INDIAN AGENT.
- 1.2 COPY OF THE AGENCY AGREEMENT WITH THE FOREIGN PRINCIPAL INDICATING THE NATURE OF AFTER SALES SERVICES, PRECISE RELATIONSHIP BETWEEN THEM AND THEIR MUTUAL INTEREST IN THE BUSINESS.
- 1.3 PLEASE ENCLOSE THE DOCUMENT(S) RELATED TO THE ENLISTMENT OF THE INDIAN AGENT WITH DIRECTOR GENERAL OF SUPPLIES & DISPOSALS (DGS & R) UNDER THE COMPULSORY REGISTRATION SCHEME OF MINISTRY OF FINANCE.
2. TECHNICAL CATALOGUE/LEAFLET SHOULD BE ENCLOSED WITHOUT FAIL. PROVIDE COMPLIANCE STATEMENT WITH RESPECT TO THE TECHNICAL SPECIFICATIONS MENTIONED ABOVE.
3. PLEASE CONFIRM WHETHER YOU ARE AUTHORISED TO QUOTE ON BEHALF OF YOUR PRINCIPALS AND IF SO, PLEASE ENCLOSE A COPY OF SUCH AUTHORISATION WITH YOUR QUOTATION.
4. **PRICE BIDS FOR FOREIGN FIRMS:** PRICES ARE TO BE QUOTED ON 'EX-WORKS' DULY PACKED OR ON "FCA/FOB" INTERNATIONAL PORT" BASIS AND ALSO INCLUDING AGENCY COMMISSION PAYABLE TO YOUR INDIAN AGENTS, IF ANY SHOWING CLEARLY THE FOLLOWING BREAK UP:-
 - I) EX-WORKS PRICE
 - II) PACKING & FORWARDING
 - III) FREIGHT
 - IV) ANY OTHER RELEVANT EXPENSES.
 - V) TAXES PAYABLE BY THE INSTITUTE

INSURANCE WILL BE PAID BY OUR INSTITUTE SEPARATELY AND SHOULD NOT FORM PART OF THE QUOTED PRICE.

PRICE BIDS FOR INDIAN FIRMS: PRICES ARE TO BE QUOTED ON F.O.R., IIT KHARAGPUR, ON DOOR DELIVERY BASIS CLEARLY SHOWING THE BREAK UP.

5. **PERIOD OF VALIDITY:** BIDS SHALL REMAIN VALID FOR ACCEPTANCE FOR A PERIOD OF 120 DAYS FROM THE DATE OF OPENING.
6. INDIAN AGENTS ADDRESS AND PERCENTAGE OF AGENCY COMMISSION INCLUDED IN ABOVE F.O.B./EX-WORKS PRICE. (THIS WILL BE PAID TO THE INDIAN AGENTS IN INDIAN RUPEES ONLY AND NOT IN FE). PLEASE ENCLOSE COPY OF AGENCY AGREEMENT ENTERED INTO WITH YOUR

PRINCIPALS INDICATING THE NATURE OF AFTER SALES SERVICES OF INDIAN AGENTS, PRECISE RELATIONSHIP & MUTUAL INTEREST IN THE BUSINESS.

7. **MEASUREMENTS/WEIGHT:** NETT/GROSS OF THE CONSIGNMENT. IN CASE OF AN ORDER, YOU SHALL USE AIR WORTHY PACKAGE (AS APPLICABLE) DULY CERTIFIED WITH DOCUMENTS – PLYTO – SANITARY CERTIFICATE (AS PER QUARANTINE ORDER 2003).
8. **SCOPE OF SUPPLY:** SHOULD INCLUDE FREE INSTALLATION AND COMMISSIONING
9. **PAYMENT TERMS FOR FOREIGN FIRMS**
 - A) 100% PAYMENT THROUGH SIGHTDRAFT/FORIGN DEMAND DRAFT/LC (EXCEPTIONAL CASES)/SWIFT TELE TRANSFER AFTER RECEIPT OF STORE IN GOOD ORDER AND CONDITION.
 - B) BANK CHARGES ON LC/SD (WITHIN INDIA APPLICANT ACCOUNT AND OUTSIDE INDIA TO BENEFICIARY ACCOUNT).

PAYMENT TERMS FOR INDIAN FIRMS

- A) 100% PAYMENT THROUGH CROSSED ACCOUNT PAYEE CHEQUE / ELECTRONIC TRANSFER AFTER RECEIPT OF STORE IN GOOD ORDER AND CONDITION.
- B) ENSURE MENTIONING
 - i) BANK DETAILS OF THE BENEFICIARY, VAT NO., SERVICE TAX NO. AND PAN NUMBER
 - ii) FULL NAME AND ADDRESS OF THE BENEFICIARY ON WHOM ORDER HAS TO BE PLACED
10. WHETHER ANY EXPORT LICENCE IS REQUIRED FROM YOUR GOVERNMENT, IF SO, PLEASE CONFIRM WITH DETAILS.
11. COUNTRY OF ORIGIN OF THE GOODS IS TO BE MENTIONED.
12. THE INSTITUTE SHALL PROVIDE THE CONCESSIONAL CUSTOMS DUTY AND EXCISE DUTY EXEMPTION CERTIFICATE AS PER GOVT. NOTIFICATION NO. 51/96 CUSTOMS DATED: 23.07.1996 AND CENTRAL EXCISE DUTY EXCEMPTION IN TERMS OF GOVT. NOTOFICATION NO. 10/97 – CENTRAL EXCISE DATED: 01.03.1997 AS AMENDED FROM TIME TO TIME.
13. **LIQUIDATED DAMAGES:** THE STORES SHOULD BE DELIVERED / DISPATCHED TO DESTINATION AND READY FOR OPERATION NOT LATER THAN THE DELIVERY DATE SPECIFIED. IT THE SUPPLIER FAILS TO DELIVER ANY OR ALL THE STORES OR PERFORM THE SERVICE BY THE SPECIFIED DATE, LIQUIDATED DAMAGES AT 1% PER MONTH OR PART THEREOF IN RESPECT OF THE VALUE OF STORES WILL BE DEDUCTED FROM THE CONTRACT PRICE SUBJECT TO A MAXIMUM OF 5%. ALTERNATIVELY, THE ORDER WILL BE CANCELLED AND THE UNDELIVERED STORES PURCHASED FROM ELSEWHERE AT THE RISK AND EXPENSE OF SUPPLIER.
14. **PATENT RIGHTS:** THE SUPPLIER SHALL INDEMNIFY THE PURCHASE AGAINST ALL THIRD PARTY CLAIMS OF INFRINGEMENT OF PATENT, TRADEMARK OR INDUSTRIAL DESIGN RIGHTS ARISING FROM USE OF THE GOODS OR ANY PART THEREOF IN INDIA.
15. ONLY THOSE BIDDERS WHO'S BIDS HAVE BEEN TECHNICALLY FOUND ACCEPTABLE WILL ONLY BE INVITED FOR PARTICIPATION IN THE PRICE BID.

16. THOSE BIDDERS WHO DO NOT RECEIVE ANY COMMUNICATION FOR PARTICIPATION IN PRICE BID OPENING MEETING MAY PRESUME THAT THEIR BID HAS NOT BEEN ACCEPTED BY THE INSTITUTE.
17. CONDITIONAL OFFER WILL NOT BE ACCEPTED.
18. LATE TENDERS I.E. TENDER RECEIVED AFTER THE DUE DATE AND TIME OF SUBMISSION AS MENTIONED ABOVE SHALL NOT BE ACCEPTED.
19. BIDDERS TO ENCLOSE THE FOLLOWING DOCUMENTS:-

A) CURRENT INCOME TAX AND SALES TAX CLEARANCE CERTIFICATES (VAT No.), SERVICE TAX NO. AND PAN NO.

C) BANKER’S SOLVENCY CERTIFICATE

C) SUMMARY OF AUDITED STATEMENT OF ACCOUNTS FOR THE LAST THREE YEARS TO BE ENCLOSED AND FINANCIAL HIGHLIGHTS AND THE KEY PERFORMANCE DURING THE LAST THREE QUARTERS TO BE ENCLOSED AS PER FORMAT:-

COMPANY’S KEY PERFORMANCE

DESCRIPTION	JAN. TO MARCH	APRIL TO JUNE	JULY TO SEPT.
GROSS REVENUE			
PROFIT BEFORE TAX			
PROFIT AFTER TAX			
RETURN ON INVESTED			
CAPITAL (ROIC)			

D) CUSTOMER SATISFACTION CERTIFICATE FROM ONE SUCH ORGANIZATION IS TO BE ATTACHED WITH THE TECHNICAL BID AND PRICE BID.

E) NAME AND ADDRESS OF MINIMUM THREE CLIENTS TO WHOM SUCH EQUIPMENT HAVE BEEN SUPPLIED SHOULD BE MENTIONED.

20. **WARRANTY / GUARANTEE:** THIS COMPREHENSIVE WARRANTY / GUARANTEE SHALL REMAIN VALID FOR **24 MONTHS** AFTER THE GOODS (OR ANY PORTION THEREOF AS THE CASE MAY BE) HAVE BEEN DELIVERED AND COMMISSIONED TO THE FINAL DESTINATION.
21. THE INSTITUTE DOES NOT BIND ITSELF TO OFFER ANY EXPLANATION TO THOSE BIDDERS WHO’S TECHNICAL BID HAS NOT BEEN FOUND ACCEPTABLE BY THE EVALUATION COMMITTEE OF THE INSTITUTE.
22. ALL TENDERS (UNLESS OTHERWISE SPECIFIED) ARE TO BE SUBMITTED / HANDED OVER TO **DR. Debalay Chakrabarti, Associate Professor, Department of Metallurgical and Materials Engineering, INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR - 721 302** AND ACKNOWLEDGEMENT TO BE OBTAINED.

IMPORTANT

1. IIT Kharagpur authority may accept or reject any or all the bids in part or in full without assigning any reason and does not bind itself to accept the lowest bid. The Institute at its discretion may change the quantity / upgrade the criteria / drop any item or part thereof at any time before placing the Purchase Order.
2. Promptly make arrangements for repair and / or replacement of any damaged item (s) irrespective of settlement of claim.
3. In case of any dispute, the decision of the Institute authority shall be final and binding on the bidders.
4. For any query pertaining to this bid document correspondence may be addressed to **DR. Debalay Chakrabarti, Associate Professor, Department of Metallurgical and Materials Engineering, INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR - 721 302**, at the address mentioned above.

LAST DATE FOR SUBMISSION OF SEALED BIDS: 16.01.2017

- 1) Please Note that the Institute remains closed during Saturdays & Sundays and all specified government holidays.
 - 2) Fax, e-mail Tender will not be accepted.
 - 3) The General Terms and Conditions as stated above relate to supply of stores / equipment /assets etc. and for specific service other terms and conditions of the Institute will apply.
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