

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.

Creep Crack Growth Testing 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 **02.05.2018 at 15:00 Hrs** at the following address:

Dr. Rahul Mitra,
Professor and Head, Department of Metallurgical and Materials Engineering,
Indian Institute of Technology Kharagpur – 721 302, West Bengal, India

Earnest money of **Rs. 2,00,000/-** 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/GCM/RM/18-19/EQ-2 Dated: 05.04.2018
Price of Tender Document	NIL
Last Date and Time for submitting the tender document	02.05.2018 at 15:00 Hrs (Indian time)
Time and Date of Opening of Technical Bids	02.05.2018 at 16:00 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 - 28 2280
E-mail	rahul@metal.iitkgp.ac.in

DETAILED TECHNICAL SPECIFICATIONS FOR

Creep Crack Growth Testing Machines

1. Description of the ITEM:

Supply, Installation, Commissioning and Demonstration at user's laboratory and user training of Creep Crack Growth (CCG) testing machines with all controls, softwares and accessories in air environment in accordance with ASTM E 1457 testing standard at IIT Kharagpur as per the detailed specifications given below.

2. Detailed SPECIFICATIONS and Quantity: 02Nos. (At least)

Each Creep Crack Growth Study Unit shall meet the following specifications:

2.1 LOAD FRAME

1. Load frame columns - Hard chromium plated carbon steel columns supporting the cross head with sliding bearings.
2. Testing load capacity – up to 50kN.
3. Load application- screw driven actuation by means of servomotor.
4. Load accuracy $\pm 0.5\%$ of the nominal value or better during the entire test.
5. Cross head speed- 0.001mm/hr to 6000 mm/hr. Speed accuracy - $\pm 0.1\%$ of set speed or better.
6. Alignment of the load frame must be in accordance with ASTM E 1012.
7. There should be provision in entire machine for vibration isolation.

2.2 LOAD CELL

Calibrated Class 1 load cell mounted on the load frame shall be suitable for measuring load in tension or compression on the specimens in the range of 1 kN to 50 kN with step of about 100 N or lower.

2.3 HIGH TEMPERATURE PULL RODS AND MACHINE ADAPTORS

1. Usage temperature - A set of high temperature pull rods (one set is complete with upper and lower pull rods), suitable for prolonged use up to temperature of 850°C.
2. Pull rods capacity - 50kN.
3. Load train - The load train shall be self-aligning.
4. Material - Both pull rods and/or adaptors shall have appropriate ceramic coating to isolate rest of the system electrically. The material for pull rods and adaptors, such as Inconel 718, Hastelloy or Mar 246 in suitably heat treated condition, shall be suitable for high temperature applications. The material details should be clearly indicated in the offer.

2.4 HIGH TEMPERATURE CLEVIS ADAPTORS

1. Set of clevis adaptors and pins, for CT specimen satisfying **ASTM E 1457-15**, Section 1.1.6 criterion, shall be supplied for all machines. The clevis grips shall be suitable for CT specimens of:
 - 1) $W = 50$ mm, $B = 25$ mm (slot 28 mm, pin dia. 12.5 mm), suitable up to 50 kN load (equivalent to **1-CT (ASTM E 1457-15)**).
 - 2) $W = 25$ mm, $B = 6.25$ mm (slot 12 mm, pin dia. 6 mm), suitable up to 30 kN load.
 - 3) **¼-CT (ASTM E 1457-15) i.e $W = 12.5$ mm $B = 6.25$ mm (slot and pin dia. as per ASTM standard) suitable up to 30kN load (Optional accessory)**
2. Materials - All these adaptors shall have common threading to suit the pull rods. The material for the adaptors shall be Inconel 718 or equivalent, for high temperature applications in suitably heat treated condition. The material details should be clearly indicated in the offer.

2.5 FURNACE AND FURNACE TEMPERATURE CONTROLLER

1. Three zone furnace – Three zone automatic temperature controlling furnace, for prolonged use up to temperature of 900°C.
2. Split type furnace– Furnace with stainless steel shell, suitable ports for Force line Displacements Gages (FLD), leads for DCPD and three thermocouples fixed to the specimen.
3. Uniform heating zone- The furnace shall be large enough heating zone to accommodate standard CT specimen $B = 25$ mm & $W = 50$ mm (as per ASTM E 1457-15).
4. Dimension -Height of each zone - 100mm (min.) and inner dia. – 125 mm (min.).
5. Temperature control - The specimen temperature shall be uniform, and controlled to within $\pm 2^\circ\text{C}$ of the set temperature, or better up to 850°C, during the entire test period typically up to 10,000 hours.
6. Heating rate – $5^\circ\text{C}/\text{min}$ (average), with pull rods, CT specimen and FLD gages.
7. Furnace position - The furnace shell shall be positioned (offset) such that the CT specimen width ($W = 50$ mm) will be aligned with the center of the furnace.
8. Furnace controller - Suitable microprocessor based temperature controller shall be provided and integrated to the machine controller software such that set temperature, allowable deviation, heating rate, cooling rate, etc. can be controlled suitably, at various phases of the test, through the software.
9. A user defined temperature overshoot/undershoot, power break provision should be provided
10. Thermocouples – specimen 3 nos. (top, middle, bottom). Furnace – 3 nos. (3 zones).
11. Display
 - i. Temperatures of 3 furnace zones and specimen's top, middle and bottom.
 - ii. The furnace controller shall display individual zone power (current), set temperature and specimen's temperature.

12. Safety – Over-temperature trip, over-loading trip and other malfunctioning compromising equipment's safety. Manual setting of temperature control.

2.6 HIGH TEMPERATURE FORCE LINE DISPLACEMENT GAUGES

1. Rod and tube type extensometer - A transducer of type ASTM E83-06 class A/ class B suitably adapted for use with CT specimen (ASTM E 1457-15 section 7.6.4) loaded with pin and clevis arrangement meeting ASTM E 1457-15 section 1.1.6.
2. Operating temperature – up to 850°C.
3. Gage length – 8 mm
4. Travel range – 5 mm min **and preferable up to 10mm**
5. Material - The rod and tube shall be made of identical and thermally stable material. The material of construction shall be indicated.

2.7 DIRECT CURRENT POTENTIAL DROP (DCPD) UNITS

1. Crack size resolution- DCPD units for measuring average crack size to a resolution of ± 0.01 mm or better, suitable for online crack growth measurement during creep crack growth tests at temperatures up to 850°C for extended periods (up to 10,000 hrs).
2. Consistent with ASTM E 1457 – 15, section 7.7, Annex A4 and ASTM E-647 annex guidelines.
3. Operating mode - Facility to operate in continuous or pulsed mode, selectable through CCG test software. Operations and troubleshooting manuals shall be provided.
4. Current source - Adjustable constant current source up to 20 A, variable in steps of 10 mA, and stability at least 0.01% of the set value, analogue output for the DC signal and digital display.
5. Measurement leads - To apply input current and to tap voltage during CCG testing.

2.8 CRACK MOUTH OPENING DISPLACEMENT GAUGE (Optional)

1. CMOD Gauges for application up to 850°C
2. The CMOD gauge should have 12 mm gauge length, + 10 mm traverse, linearity 0.15% of full scale.
3. The adaptor for the CMOD gauge should be in following Appendix A1 of ASTM E-1457

2.9 CONTROL AND DATA ACQUISITION UNITS

Each machine shall be equipped with a work station with the requisite hardware to control the machine and CCG test software for setting up and conducting the CCG test, data acquisition and analysis.

1. Control modes – To operate the machine in Load, stroke and strain (or displacement) modes.
2. Record and display - Displacement measured by the FLD gage, crack length measured by the DCPD units and temperatures at six locations (three on the CT specimen and other three of three zones of the furnace) against Time. Data exporting / backing up at preset time intervals during the test.
3. Storage - Raw data in ASCII format, for later retrieval of CCG test data

4. Channels- In addition to temperature, crack length and displacement channels, 2 input channels for synchronous sampling of any other parameters, input ± 10 Volts full scale shall be provided.
5. Sampling rate- To define the sampling rate as intervals in time, FLD and/or load. Provision should exist to change the sampling interval during the test.
6. User-defined tests-The software should permit manual setting up of tests with graphical/script mode programming to carry out user-defined tests with combination of functions like ramp, hold and cycle segments. The parameters of these functions should be definable by the user.
7. Configuration–The workstation should have at least these basic:
 - i. Minimum two serial ports.
 - ii. One Ethernet connection.
 - iii. Min 4 GB RAM
 - iv. Windows 7 or higher version, 64 bit.
 - v. DVD drives
 - vi. Min. two USB 2.0/3.0 ports
 - vii. Min. display size (screen) –23 inch (approx.)
 - viii. The detailed configuration of the work station, its peripherals, operating system, Controller bit rate, etc. shall be given in the quote.
8. DCPD control - The unit shall be integrated with the CCG test software so that the constant set current pulsing intervals can be changed/controlled through the test programme and the voltage signal from the CT specimen can be monitored and saved along with other test data periodically. The software should permit online change of the mode of operation (continuous or pulsed) and the pulsing interval during the test. The CCG test software shall have provision to calibrate the crack length of any given CT specimen with the corresponding voltage output during the test and to correct the readings with the actual crack lengths measured on the specimens after the test.

2.10 OPERATION AND MAINTENANCE

2.10.1 Operation and Maintenance Manual

- 1) Operation and maintenance manual shall be supplied for each machine in original form comprising the calibration certificates of load cell, FLD gauges, thermocouples, etc. of the respective machine.
- 2) The manual shall contain at least following instructions or guide lines in English: Safety instructions, general arrangements drawing identifying main components and showing overall dimensions, weight and duty, testing procedure, instruction for routine and periodical maintenance, instruction for operation, error message manual, preventive maintenance manual, troubleshooting manual, electrical and electronic circuit diagrams, complete list of parts with identification numbers.

- 3) Full technical description of the equipment, except for standard commercial equipment for which manufacturers handbooks shall be supplied.
- 4) Power supply – Available power supply at user’s site is 3 phase, 440 V, 50Hz. Power supply and connectivity details (for ex. 3phase-3phase, 3phase-1phase, power rating, Max ampere current for furnace etc.) required for the safe operation the equipment shall be mentioned clearly in the offer.

2.10.2 Tool Kit

A complete set of tools normally required for the operation and maintenance of the machines shall be included, specifically, any special spanners/tools etc.

2.10.3 Trained Manpower

The supplier shall make available a trained engineer at the user’s site to operate and maintain the equipment for 3 years. The amount for the same shall be indicated in the offer/ quotation. The resident engineer should make his own arrangements for stay, food and transport etc.

2.11 SPARES & ACCESSORIES

The quotation shall include the rates of following items as accessories:

- 1) Force line displacement gauges as specified in 2.6 above: 2 nos.
- 2) Set of heating elements, complete for one furnace: 2 sets
- 3) Spare thermocouples, complete for one furnace, with suitable connectors: 2 sets.
- 4) Spare thermocouples (one set – 3 Nos.) for CT specimens with suitable connectors: 3 sets.
- 5) A set of any special fuses required for the system.

2.12 INSPECTION, TRAINING, INSTALLATION & COMMISSIONING

- 1) The quoted cost should include installation, integration of all subsystems, functional testing and commissioning of the equipment with all accessories at user’s site.
- 2) Installation– The supplier should provide details of necessary arrangements (for ex. - any specific kind of floor in Lab., machinery/ tools required for unloading, transporting/moving of equipment, erection of the equipment), if required, for the mounting/installation, of the equipment at the user’s site.
- 3) The supplier should demonstrate the performance of following components in PDI (Pre-Dispatch Inspection) :
 - i. Load cell and its calibration
 - ii. Furnace and furnace temperature controller
 - iii. Rod and tube type extensometer and its calibration.
 - iv. DCPD unit and its calibration

- v. Creep crack growth testing &Data acquisition – The supplier should conduct CCG trial tests to check the overall functionality of CCG equipment. The test program should acquire the test parameters like time, load, load-line displacement, crack size, differential voltage etc. during test.
- 4) The supplier shall demonstrate all the functions of the Creep Crack Growth Unit according to the specifications.
- 5) Training: During installation and commissioning, at least three personnel (faculty/ Research Students /Supporting Staff) from user’s laboratory shall be trained in the basic operations of the equipment and the software.

2.13 CERTIFICATES

2.13.1 Calibration

Force verification certificate from internationally recognized authorities for the load train and calibration certificate for the displacement measurement systems should be provided.

2.13.2 Material

Test Certificates (including chemical composition and mechanical properties) from manufacturers for materials used, specifically for high temperature pull rods, grips, and extensometer fabrication must be supplied.

2.14 ADDITIONAL REQUIREMENTS

The quotation should accompany

- Packing and protection requirement for transit.
- Installation requirements (civil, electrical, air conditioning, etc.).
- Complete set of service manuals in English.
- A list of laboratories in India where same/similar models are already in use.

2.15 BIDDERS ELIGIBILITY CRITERIA

1. Quotation from the original manufacturers of the equipment or their authorized agents only shall be entertained.
2. The bidder should have executed orders for similar systems with the main accessories such as furnace, load line displacement gage, DCPD based crack growth monitoring, testing software with major features specified here. The contact details of existing users shall be provided along with the offer.
3. If the bidder has not supplied similar CCG systems, then they shall demonstrate one complete CCG testing system, at their site, with all the features in the specifications for the purpose of bidder evaluation during the technical part evaluation of the tender.
- 4.

2.16 GENERAL CONDITIONS

1. **Guarantee**: Complete equipment must be guaranteed for free repairs and replacements of all parts of equipment, for a period of 24 months from the date of installation and commissioning.

The bidder shall indicate the delivery schedule in the quotation.

2. **ACCEPTANCE CRITERIA**: The *final acceptance* of the machine will be based on the successful demonstration of at least one user-defined test on each machine. The trial tests will be done on CT specimens at two different temperatures (500 °C or 600°C) and on different sized CT specimens for duration ranging from few days to 1 week. Load drift, temp. control, data acquisition, DCPD functioning, displacement measurement etc. will be checked.

3. **After sales service**: The supplier should indicate the type of maintenance required for the system and quote for non-comprehensive annual maintenance contract (AMC) if required for a period of 5 years, applicable after guarantee/warranty period.

QUANTITY: At least *two* units

GENERAL TERMS & CONDITIONS

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

1. TENDERS 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**

The offer will be made on a single currency and only one PO will be issued for the entire scope of the supply.

A) 90% PAYMENT THROUGH SIGHTDRAFT/FORIGN DEMAND DRAFT/LC (EXCEPTIONAL CASES)/SWIFT TELE TRANSFER AFTER RECEIPT OF STORE IN GOOD ORDER AND CONDITION AND 10% AFTER SUCCESSFUL INSTALLATION & COMMISSIONING.

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 & CONDITION AND SUCCESSFUL INSTALLATION & COMMISSIONING.

B) ENSURE MENTIONING

i) BANK DETAILS OF THE BENEFICIARY, GST 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) INCOME TAX RETURN (3 YRS) AND LATEST SALES TAX RETURN (GST No.), AND PAN NO.

B) 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 **PROF. RAHUL MITRA, 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 **Prof. Rahul Mitra**, at the address mentioned above.

LAST DATE FOR SUBMISSION OF SEALED BIDS: 02.05.2018

- 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.
-