

**DOCUMENT**

**Open Competitive Bid (OCB)**

**For**

**Supply and Installation of  
Corrosion and Environmental Degradation  
Laboratory Equipments to the**

**Metallurgical & Materials Engineering Dept.  
at the three campuses of**

**Rajiv Gandhi University of Knowledge  
Technologies**

**Proprietary & Confidential**



**RAJIV GANDHI UNIVERSITY OF KNOWLEDGE  
TECHNOLOGIES**

**Ground Floor, Vindhya C4 Building,  
IIIT-H Campus, Gachibowli  
HYDERABAD- 500 032**

**Phone: 040-23001830**

**Proprietary & Confidential**

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## Contents

| <b>Description</b>                              | <b>Page No.</b> |
|---|-----------------|
| Newspaper advertisement                         | 4               |
| Time Schedule                                   | 5               |
| Tender Form                                     | 6               |
| Statement of important limits and values of bid | 7               |
| Eligibility                                     | 9               |
| Requirement & Technical Specifications          | 11-16           |
| Note  | 17              |

## News paper advertisement

### Short Tender Notice



**RAJIV GANDHI UNIVERSITY OF KNOWLEDGE  
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**Ground Floor, Vindhya C4 Building, IIIT-H campus,  
Gachibowli, HYDERABAD- 500 032**

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Separate Sealed Tenders are hereby invited from reputed Manufacturers or Authorised dealers for supply and installation of equipments for the following labs of Metallurgical & Materials Engineering Departments at the three campuses of RGUKT located at Basar (Adilabad District), Nuzvid(Krishna District and RK Vally (YSR Kadapa District) of Andhra Pradesh:

- i) Materials Testing Laboratory
- ii) Heat Treatment Laboratory
- iii) Corrosion and Environmental degradation Laboratory

**Last date of submission of tender along with EMD as specified in the bid document is on [07.07.2012](#) before **03.00 pm**.**

**Interested parties can collect the Tender document for each Laboratory separately from the office of the RGUKT from 28.06.2012 to 06.07.2012 against payment of Rs. 5,000/- towards the cost of Tender document fee (non-refundable) through D.D. payable to REGISTRAR, RGUKT at Hyderabad. For further details visit our website [www.rgukt.in](http://www.rgukt.in)**

**Date:**[28.06.2012](#)

**Sd/-  
Registrar**

Time schedule of various Short tender related events

|                                 |                                  |
|---------------------------------|----------------------------------|
| Bid calling date                | 28.06.2012                       |
| Last date for sale of document  | 06.07.2012 at 05:00 P.M          |
| Pre bid meeting                 | 02.07.2012 at 03.30PM            |
| Bid closing date/time           | 07.07.2012 at 03:00 P.M.         |
| Technical Bid Opening date/time | 07.07.2012 at 04:00 P.M.         |
| Price Bid opening date/time     | 09.07.2012 at 04:00 P.M.         |
| Bid Document fee                | Rs.5,000/-                       |
| Contact person                  | Registrar, RGUKT                 |
| Reference No                    | RGUKT/Proc/MME/CEDL/T<br>13/2012 |

Registrar,  
RGUKT

## TENDER FORM

### Not transferable

Reference: No. RGUKT/Proc/MME/CEDL/T 13/2012

Dated:28.06.2012

**Subject:** Invitation of Tenders for Supply, installation and commissioning of Corrosion and Environmental Degradation Lab Equipments to the Metallurgical and Materials Engineering Departments at three campuses of RGUKT located at Basara (Adilabad Dist), Nuzvid (Krishna Dist) and RK Valley (YSR Kadapa Dist) of Andhra Pradesh.

Last date and time for submission of the TENDER AT RGUKT, Vindhya-C4, IIIT Campus, Gachibowli, HYDERABAD is **07.07.2012 up to 3:00PM**

Dear Sir/Madam,

- A. RGUKT invites sealed tenders comprising technical bid and price bid separately from reputed manufacturers (or) authorized dealers for three RGUKT IIITs located at Basara (Adilabad Dist), Nuzvid (Krishna Dist) and R K Valley (Kadapa Dist) of Andhra Pradesh.
- B. The Tender form consists of 31 pages of which pages from 6 to 23 are instructions and page No.24 contains the format for financial bid. The duly completed Technical Bid together with a copy of the bid document (this tender) signed on all pages by the Bidders authorized signatory and the Price Bid should be kept in separate sealed covers. These sealed covers must be submitted in a sealed master envelope super scribed "Tender for Supply , Installation & Commissioning of Corrosion and Environmental Degradation Laboratory Equipments to the Metallurgical and Materials Engineering Department at the three campuses of RGUKT. The last date for submission of bid is **07.07.2012 and closing time is 03:00 PM.**
- C. The Sealed Tenders should be deposited in the Tender box kept in the office of Registrar, RGUKT, Hyderabad up to **03:00 P.M. on 07.07.2012.**

For any clarification and further details on the above tender please contact by Telephone No: 040-23001830 or Contact in Person during office hours.

Thanking you

Yours faithfully,

Registrar,  
RGUKT

**STATEMENT OF IMPORTANT LIMITS/VALUES RELATED TO BID**

| <b>Item</b>  | <b>Description</b>   |
|--|--|
| EMD  | Rs.1,50,000/-  |
| Bid Validity Period                                | 60 days from the date of opening of commercial bid   |
| EMD Validity Period                                | 60 days from the date of opening of commercial bid   |
| Warranty Period                                    | 3 years  |
| Variation in quantities/ number of residents       | <u>± 40 %</u>  |
| Period for furnishing Performance Security Deposit | Within 10 days from date of receipt of award   |
| Delivery Schedule                                  | Bidder must be prepared to deliver and install the enclosed list of Equipment within 75 days from the date of award of the contract. |
| Performance security value                         | 5% of contract value   |
| Performance security validity period               | 38 months from award of contract ( including 30 days of installation period)   |
| Period for signing the order Acceptance            | Within 7 days from date of receipt of notification of award  |

|  |   |
|--|---|
| <b>Payment terms</b>                           |   |
| On delivery at user site                       | <p>Payment for goods and services shall be made in Indian rupees as follows.</p> <ol style="list-style-type: none"><li>1. 80% of payment will be paid after installation, commissioning</li><li>2. Balance 20% will be paid after 3 months after obtaining the satisfactory certificate from the Director, RGUKT IITs.</li></ol>  |
| Maximum Liquidated Damages for late deliveries | <p>For delays:- If the supplier fails to deliver any (or) all of the goods or perform the services within the time period specified in the contract the purchaser shall without prejudice to its other remedies under the contract deduct from the contract price as liquidated damages a sum equivalent to 0.25% of the contract value per day until actual delivery or performance up to a maximum deduction of 10% of the delayed goods or services contract price. Once the maximum deduction is reached, the purchaser may consider the termination of the contract duly forfeiting the performance security etc.,</p> |



## ELIGIBILITY CRITERIA

1. This bid is open to all business establishments registered within India, and those Foreign firms which have distributor/ authorized dealer agencies in India are eligible to do business under relevant Indian Laws as in force at the time of bidding. However all firms must meet the pre-qualifications criteria. They should provide a List of customers of previous supply of similar/ same items to IITs, NIT's or Central Universities or any Academic Institute of National Repute with contact details. Copies of orders received from the reputed firms on bidding firm need to be submitted.
2. The bidder should have Servicing facility or work shop with in India so the provision of service is possible at a short notice and without incurrance of delay.
3. The Bidding firm should have minimum turnover as follows:

| <b>Bid Value offered against the tender call</b> | <b>Last financial year's business turnover</b> |
|--|--|
| 50 lakhs   | 1 crore  |
| 50-100 lakhs                                     | 2 corers                                       |
| Greater than 100 lakhs                           | 3 Crores                                       |

5. The bidder should furnish satisfactory performance certificate from the parties concerned to whom bulk supplies were effected of same or similar items, in case such supplies were already made. RGUKT may contact any such parties to elicit details.
6. Bidder should have been registered under Sales/ VAT Act/CST Act with the relevant State Sales Tax Authorities. He should furnish along with the bid document, the relevant VAT/CST Registration Document and PAN / TAN Card copies. Copies of the latest VAT/CST returns of bidding firm should be submitted.
7. Each and Every equipment's supplied should be conform to standard specification of ISI or equivalent international standards agencies. All bidders shall also include the following information and documents with their tenders ( in the Technical bid cover)

- 6.1. Copies of original documents defining the constitution or legal status, place of registration, and principal place of business of the bidding firm/entity; written power of attorney of the signatory of the firm to commit the Bidding.
  - 6.2. Machinery/equipment owned by the bidder and number of employees.
  - 6.3. Latest Income Tax Saral form / Return that was filed.
  - 6.4. List of Present Clientele with contact addresses & telephone numbers
7. All the certificates furnished along with technical bids should be attested by a Gazetted Officer, counter signed by bidder along with their seal.

The bidders must submit all relevant documentary evidence to support their claim for eligibility in placing bid. **The tenders received without the above documents will be rejected.**

## Requirement

### Corrosion and Environmental Degradation Laboratory Equipments Specifications:-

| S.No | Name of the equipment     | No of items required |
|------|---------------------------|----------------------|
| 1    | Flat Cell Kit model K0235 | 6                    |
| 2    | Salt Spray Chamber        | 3                    |
| 3    | Potentiostats/Galvanostat | 3                    |

### Technical Specifications for each equipment

#### 1) Flat Cell Kit Model K0235

- It must accommodate a wide range of electrode sizes, eliminating the need for machining or special mechanical procedures. It must disassemble quickly and easily, operates with a 250 mL sample volume and must simplify electrochemical corrosion measurements.
- The Flat Cell may be constructed of a Pyrex glass cylinder body with polypropylene end caps.
- Virtually any size specimen shall be capable to be used, provided it is flat and less than 3/8 in. (9.5 mm) thick.

#### **Specifications**

##### Dimensions

Cell Volume - 250 mL

Working to Counter Electrode Distance - 80 mm

Working Electrode Area - 1 cm<sup>2</sup> (standard)

Luggin Well Dimensions - 12 mm diameter x 60 mm deep

Luggin Well Volume - 5 mL

##### Characteristics

pH range - 2 to 9

Temperature Limit - 80°C

Working Electrode Area - 1 cm<sup>2</sup> (standard)

Luggin Well Dimensions - 12 mm diameter x 60 mm deep

Luggin Well Volume - 5 mL

##### Materials

Glass Cylinder - Pyrex  
End Plates - Polypropylene  
Sealing Gaskets - Viton  
Luggin Capillary - Teflon  
Reference Electrode - Ag/AgCl  
Reference Electrode Filling Solution - sat AgCl/ sat KCl  
Counter Electrode - Platinum mesh  
Sample Gasket - Teflon

## **2) Salt Spray Chamber**

### **TECHNICAL SPECIFICATIONS OF SALT SPRAY CHAMBER**

#### **Chamber**

Capacity : 100 liters.

Tank Temperature : Ambient to +50° C.

Saturator Temperature : Ambient to +65° C.

Temperature accuracy : +/- 1° C.

Temperature resolution : 0.1° C.

Humidity range : Above 90% RH non measurable.

Inner chamber material : FRP non-metallic tank.

Outer chamber material : Non - metallic, non corrosive, recyclable material polyethylene.

#### **Atomizer**

Provides Laminar spray with fine fog of 20-30 micron droplet size

Shall be made of non corrosive material

Heating system

Shall be by Tape heaters provided all round of the FRP tank.

#### **Saturator system**

Saturator tank provided for generating the steam.

Saturator :

- a. Must be non corrosive, and its temperature shall be controlled
- b. Automatic water level controller shall be ///provided
- c. Saturator shall be heated by Immersion heater.

#### **Salt Solution spray:**

Individual salt solution tank should be provided. The steam and salt solution may mix in the atomizer.

#### **Solution reservoir :**

Built in reservoir with accessibility and drain facility for maintenance.

Temperature Controller : Microprocessor PID controller for setting of tank temperature & saturator temperature with digital display.

- a. Display of set value & actual value of temperature.
- b. Temp. Sensor : PT 100 RTD sensor

### **Safety provisions**

1. High temperature safety has to be provided with audiovisual warning signal for the protection of the specimen.
2. Over temperature protection both of the test space & saturator.: Must be there
3. Protection against electrical surge & spikes : Must be there

## **3) Potentiostats/Galvanostat**

### **Technical Specifications of Potentiostat/Galvanostat**

General overall features/Capabilities which are a must

#### **Hardware**

1. An experimental setup that can automatically sequence the potentiostatic, galvanostatic and impedance measurement capabilities
2. Voltage and current vs. time strip chart display.

#### **Software**

1. Full storage and retrieval facilities allow straight-forward comparison of current and stored data
2. DC data analysis and fitting routines including line, Tafel and polarization resistance
3. Data output in text format into other applications for further analysis and report generation
4. Line and circle fitting for basic EIS data analysis, for estimation of cell parameters such as solution resistance and polarization resistance
5. Comprehensive EIS analysis and fitting techniques

#### **Technical features**

**1. Configuration**

- (i) Cell connections: 4 terminal plus ground

**2. Data acquisition**

- (i) Data acquisition: 3 x 16-bit 500k samples per second ADCs synchronized -(voltage / current / auxiliary)
- (ii) Time base resolution (minimum): 10 $\mu$ s (100k samples / second)
- (iii) Automatic noise filters : Enabled / disabled

**3. Power amplifier (CE)**

- (i) Voltage compliance: upto  $\pm 20$ V at maximum current
- (ii) Current compliance:  $\pm 2000$ mA
- (iii) Potentiostat bandwidth: 1 MHz
- (iv) Stability settings: high-speed, high-stability
- (v) Slew rate:  $\geq 8$ V per  $\mu$ s typical (no load)
- (vi) Rise time (-1.0V to +1.0V): <350ns (no load)

**4. Voltage control (potentiostat mode)**

- (i) Applied voltage range:  $\pm 10$ V
- (ii) Applied Voltage resolution : 4 Ranges (Say for  $\pm 10$ mV signal =300nV, for  $\pm 100$ mV signal = 3 $\mu$ V; for  $\pm 1$ V signal = 30 $\mu$ V; for  $\pm 10$ V signal =300 $\mu$ V)
- (iii) Applied voltage accuracy:  $\pm 0.2\%$  of value  $\pm 2$ mV
- (iv) Maximum scan rate: 5000Vs<sup>-1</sup> (50mV step)
- (v) Maximum scan range / resolution:  $\pm 10$ V / 300 $\mu$ V

**5. Current control ( in galvanostat mode)**

- (i) Applied current range:  $\pm$  full scale (depending on range selected)  $\pm 2$ A
- (ii) Applied current resolution:  $\pm 1/32,000$  x full scale
- (iii) Applied current accuracy:  $\pm 0.2\%$  of reading,  $\pm 0.2\%$  of range
- (iv) Maximum current range / resolution:  $\pm 650$ mA / 60 $\mu$ A
- (v) Minimum current range / resolution:  $\pm 200$ nA / 6pA

**6. Electrometer**

- (i) Max input range:  $\pm 10$ V
- (ii) Bandwidth:  $\geq 10$ MHz (3dB)
- (iii) Input impedance:  $\geq 10^{12}\Omega$  in parallel with  $\leq 5$ pF (typical)
- (iv) Leakage current:  $\leq 5$ pA at less than 25°C
- (v) CMRR: 60dB at 100kHz (typical)

**7. Voltage Measurement**

- (i) Voltage range:  $\pm 10$ V
- (ii) Minimum resolution: 6 $\mu$ V or better
- (iii) Voltage accuracy :  $\pm 0.2\%$  of reading,  $\pm 0.2\%$  of range

**8. Current measurement**

- (i) Current ranges : Auto-ranging (minimum 8 ranges) (650mA to 200nA in 8 ranges)
- (ii) Current resolution 6pA (200nA range) or better
- (iii) Current accuracy (DC)  $\pm 0.2\%$  of reading,  $\pm 0.2\%$  of range
- (iv) Bandwidth : 1MHz (signal  $\geq 2$ mA range typical)
- (v) Bandwidth limit filter : Yes required

**9. IR Compensation**

(i) Positive feedback : Yes required

(ii) Dynamic IR : Yes required

**10. Impedance (EIS) in both Modes ( Potentiostatic / Gavanostatic)**

(i) Frequency range: 10 $\mu$ Hz to 1MHz

(ii) Minimum AC voltage amplitude: 0.1mV RMS

(iii) Sweep : Linear or Logarithmic

**11. Interfaces (Should include as standard)**

(i) Digital inputs / outputs : 5 TTL logic outputs, 2 TTL logic inputs

(ii) Auxiliary voltage input : Measurement shall be synchronized to V and I  $\pm$ 10V range, input impedance 10k $\Omega$  Filter: off, 1kHz, 200kHz BNC connector

(iii) DAC voltage output: ( Must be provided as standard)  $\pm$ 10V range, output impedance 1k $\Omega$  BNC connector (for stirrers, rotating disk electrode etc.)

**12. Testing and evaluation software**

(i) Window based software for performing & analyzing potentiostatic, galvanostatic, single frequency, hybrid and Mott Schottky EIS, electrochemical frequency modulation and Electrochemical noise and other tests.

**13. PC/ Software**

(i) Communications interface to potentiostat/Galvanostat: Universal Serial Bus (USB)

(ii) Operating system: Windows 7/ Windows 8 (64-bit & 32-bit)

(iii) Latest Intel i7CPU, NVidia High Speed 3D Graphics card, High end mother board, SATA/500GB Hard disk,

(iv) Integrated Audio with internal speaker, Pre-loaded Manageability tools, 8 GB DDR-3 High speed memory, 52 X DVD-RW drive. 126 keys multimedia keyboard, Optical mouse and pad (wireless keyboard and mouse), 6USB Ports, 1 serial port, 2 parallel ports, Window 7 / 8 OS, Antivirus - with CDS, Spike guard with 4 points, 22 inch TFT monitor, 1 years comprehensive onsite warranty for computer and printer.

(v) LaserJet printer of latest makes, preferably HP laser jet P 2015dn or higher version.

(vi) Transparent dust covers for the all above including instruments.

**14. UPS :** 30 min combined backup for Instrument, Computer, Monitor and Printer from reputed company of adequate power rating.

**15. Spares:**

Necessary spares including cables in duplicate, dummy cells, standard samples for DC and AC measurements to be included in quotation.

**16. General Working conditions for the instrument**

(i) Operating Voltage range : 90 to 250V Ac, 50-60Hz

(ii) Operating temperature range: Tropical range ( 10 $^{\circ}$ C to 50 $^{\circ}$ C )

(iii) Humidity Maximum 80% non-condensing

(iv) Ambient Temperature (specified) 25 $^{\circ}$ C

**17. Warranty :** 3 years on site and assurance for five years of AMC for the instrument and software upgrades.

**18. Customer training.**

Trained technicians or product engineers should install and demonstrate the operation of the instrument. They should provide onsite training on how to use the hardware/ software to operate multi channel potentio / galvanostat use corrosion and other experiments, including high speed data acquisition , offline data processing such as producing the summary and validation reports and as well as trouble shooting

**19. Optional accessories**

Provision for upgrading to 16 channels.



## **NOTE**

A complete set of bidding documents may be purchased by interested bidders from the RGUKT contact person upon payment of the bid document price which is non-refundable. Payment of bid document price should be by demand draft / cashier's cheque or certified cheque drawn in favor of "Registrar , Rajiv Gandhi University of Knowledge Technologies " and payable at Hyderabad (India).