



सेन्टर फॉर मेटिरियल्स फॉर इलेक्टॉनिक्स टेक्नोलॉजी (सी-मेट)
CENTRE FOR MATERIALS FOR ELECTRONICS TECHNOLOGY (C-MET)

(Scientific Society, Ministry of Electronics and Information Technology (MeitY), Govt. of India)

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Advt. No. : C-MET/HD/SP-41/EOI(2)/24(2)/2020-21

Invitation of Expression of Interest (EOI)

C-MET invites Expression of interest from eligible parties for the understated work for MeitY sponsored project titled "*Establishment of Centre of Excellence on E-waste Management*".

Sl. No.	Name of the work
1	Design, develop, supply, installation and demonstration of Smelting Unit for printed circuit boards (PCBs)

For details and downloading of the EOI application format & other requisite documents, please visit our website www.cmet.gov.in

Last date for receipt of EOIs: 8th September 2020

Sd/-
DIRECTOR

INVITATION
FOR
EXPRESSION OF INTEREST
FOR:
DESIGN, DEVELOP, SUPPLY,
INSTALLATION AND
DEMONSTRATION OF
SMELTING UNIT FOR PRINTED
CIRCUIT BOARDS (PCBs)

RESPONSE FORM

LAST DATE FOR SUBMISSION: 8th September 2020

INTRODUCTION:

Centre for Materials for Electronics technology (C-MET) has been awarded a project on management of E-waste Ministry of Electronics and Information Technology, (MeitY), Government of India. It involves “Establishment of a Centre of Excellence on E-waste management”, called CoE hereinafter. One of the objectives of the CoE is to drive e-waste recycling and refurbishing to support GoI missions “Swatch Bharat” and “Make in India”. C-MET, Hyderabad has been chosen as the centre for pursuing the objectives of the project. C-MET, Hyderabad has developed the technology in this regard. C-MET, Hyderabad has also set up necessary infrastructure facilities to process the E-waste in an environment friendly manner, on a pilot scale. Another objective of the project is to encourage establishment of start-ups to collaborate/partner C-MET by getting trained in different aspects of the process involved in E-waste management and to commence their own industries in the relevant areas, after they become strong enough to commence their own facilities. The CoE is interested in identifying competent and experienced parties to design, develop, supply, install and demonstrate a Smelting Unit for Printed Circuit Boards (PCBs)

1. OBJECTIVE OF THE EOI:

This EOI is meant for inviting the interested parties to submit their applications for undertaking the aforesaid assignment. Based on the submissions received from the interested parties, most suitable party, which in the opinion of CoE, is capable of handling the assignment, will be chosen.

SCOPE OF WORK:

A gas fired tilting rotary furnace is to be designed and fabricated for the pyrolytic decomposition of the printed circuit boards (PCBs) and recovery of copper and other precious metals as metal fraction and separation of fillers as slag. The system should be robust enough to withstand the various working conditions and operating temperatures. The furnace should be able to use for continuous operations on commercial scale for smelting of various types of shredded PCBs.

Background:

A tilting and rotary furnace is fabricated indigenously and is in use at CMET for the smelting of printed circuit boards and separation of metal fraction and slag. The present furnace capacity is ~30 litre useful volume and uses a refractory with inert lining.

Scope of the present work:

In order to scale up the process, a higher capacity furnace is required. Capacity of indented furnace is ~250 litre useful volume to process ~ 2 tonnes of PCBs/day. Party has to design, develop, install, commission and demonstrate the system.

The system should have following features

- Quick and precise pouring operations
- high thermal efficiency, high heat and mass transfer rates for rapid processing
- simple & quick shell replacing/refurbishing provision

- control of furnace atmosphere by burner stoichiometry, inclined angle, about 25- 30° for firing,
- pivot tilting for movement of port to feeding, firing and pouring stations, rapid rotation to mix reagents with fluxes during smelting phases and to disperse slag and expose metal for oxidation stages
- high refractory wall thickness made by refractory cement/bricks
- gas panel with flow meters, shut off valves, flow control valves and other safety features
- Robust system with mechanical stability, position encoders, fully automatic burner control
- Monitoring and recording of skin temperature, shell temperature, bottom temperature and charge temperature.

Technical requirements

- The furnace should be mounted on skids including the electric control panel and the gas ramp
- Vessel should be designed to take care of mechanical thermal duty during firing, loading and discharging
- Vessel should be able to bolt to the base plate easily
- Vessel should be lined with special refractory cement or bricks. (Party can check the inertness of the refractory by using existing shell available in the plant and has to demonstrate its capability with the proprietary flux combination developed at CMET, prior to use it in the proposed scaled up system).
- The burner is to be provided an air-fuel or air-oxygen-fuel mixture capable to reach temperature of about 1450°C.
- The gas flow should be controlled through mass flow controls and should have the provision to vary through programmes.
- Automatic conveyor feeder mechanism should be provided for continuous addition of shredded PCBs and fluxes.
- System should be completed with all necessary supporting system also
- A set of programmes for standard operations are to be provided

Access to study the features of existing system and further details shall be given to the shortlisted parties, only after they sign the Non-disclosure Agreement.

2. SELECTION CRITERIA:

The parties are expected have the following

- a) Previous experience in designing and supplying of high temperature furnaces for metallurgical application
- b) Personnel having experience / knowledge base in designing top blown furnaces /similar automated mechanical/electrical systems
- c) Experience in designing, fabrication and commissioning of smelters for primary and secondary copper industry
- d) Expertise in automation of the high temperature process systems
- e) Knowledge base/expertise in the tailor made refractory materials for furnace lining

3. SHORTLISTING OF APPLICANTS:

- a. The documents submitted by the applicants in response to the invitation for EOI shall be examined a by an expert committee to be constituted by CoE. The committee shall shortlist the applicants based on the eligibility criteria
- b. The shortlisted parties shall be required to submit their price bids

4. DOCUMENTS TO BE SUBMITTED:

- a. Letter for EOI submission – Annexure I
- b. Profile of the party – Annexure II

- c. Profile of the personnel of the party, who will handle the assignment – Annexure III
- d. Information regarding any conflict of interests as referred to the scope of the assignment – Annexure IV
- e. Details of similar works carried out in the past – Annexure V
- f. Details of different procedures being followed by the party earlier - Annexure VII

5. SUBMISSION OF EOI:

- a. All the requisite documents shall be placed in a sealed enveloped which shall be superscribed “**Expression of Interest – Smelting Unit**”
 - b. The sealed enveloped shall be submitted to Director, C-MET, IDA Phase-III, Chelapally, Hyderabad – 500 051
 - c. The last date for submission is **8th September, 2020.**
6. The party shall bear all costs associated with the preparation of their proposals and C-MET shall not pay or reimburse any expenses in this regard. C-MET is not bound to accept any proposal and reserves the right to cancel the selection process at any time without any liability accruing to it.
7. C-MET reserves the right to accept or reject any or all proposals without assigning any reasons whatsoever and its decision shall be final and binding on all the applicants.
- 8. PRICE BIDS ARE NOT TO BE SUBMITTED AT THIS STAGE. ONLY THE PARTIES SHORTLISTED BY THE EXPERT COMMITTEE SHALL BE REQUIRED TO SUBMIT THE PRICE BIDS. IF PRICE BIDS ARE**

**SUBMITTED ALONG WITH THE EOI, SUCH APPLICATIONS ARE
LIABLE TO BE REJECTED.**

**DIRECTOR
C-MET, HYDERABAD**

ANNEXURE – I

**DRAFT LETTER FOR EOI SUBMISSION TO BE SUBMITTED ON THE
LETTER HEAD OF THE FIRM/APPLICANT**

Ref: No.

Date:

The Director
C-MET
IDA Cherlapally, Phase - III
Hyderabad – 500 051

Dear Sir

We, the undersigned, offer to provide the services as required in your invitation for EOI dated:_____. We are hereby submitting our proposal with all the requisite information and documents.

We hereby certify that all the information and statements made in this proposal are true and accept that any misstatement or misrepresentation in the enclosed documents may lead to our disqualification.

We understand that you are not bound to accept/reject any proposal without assigning any reason.

Yours faithfully

Authorised Signatory
NAME & DESIGNATION

ANNEXURE - II

Profile of the Party

Name of the party			
Year of Registration			
Registered Office address			
Legal status			
Number of employees			
No. of branches, if any			
Turnover (Rs. lakhs)	2019-20	2018-19	2017-18

ANNEXURE - III

**Details of the skilled personnel of the party who will handle the
assignment (one form for each)**

<u>Sl.No.</u>	<u>Particulars</u>	
1	Name of the	
2	Date of Birth	
3	Educational Qualification	
4	Trainings undergone	
5	Work experience of the past 10 years	
6	Special qualifications and assignments Please emphasize those assignments that best illustrate the person's capability to handle the current assignment	
10	Special achievements, if any	
11	Contact details	

Certification from the officer

I the undersigned certify that to the best of my knowledge and belief the above mentioned particulars correct.

Signature of the authorized signatory

ANNEXURE IV

**INFORMATION REGARDING ANY CONFLICTING ACTIVITIES AND
DECLARATION THEREOF**

Is the party engaged in any activities which conflict with the proposed activities of CoE as mentioned in this document?

If yes:

Please furnish information of activities the institution is engaged in, which in your opinion, is of a nature that conflicts with the assignment desired to be awarded by CoE.

If no:

We hereby declare that our organisation is not either directly or indirectly engaged in any activities which can be termed as conflicting activities as mentioned in the EOI document. It is understood that any misrepresentation or misstatement in this regard shall render our organisation to be disqualified from the entire process.

Signature of the authorized signatory

Name

Designation

ANNEXURE - V

Details of similar works carried out in the past 5 years

(Amount Rs. In crores)

[illegible]

Annexure - VI

Details of procedures being followed by the party in similar previous assignments

- a.
- b.
- c.
- d.