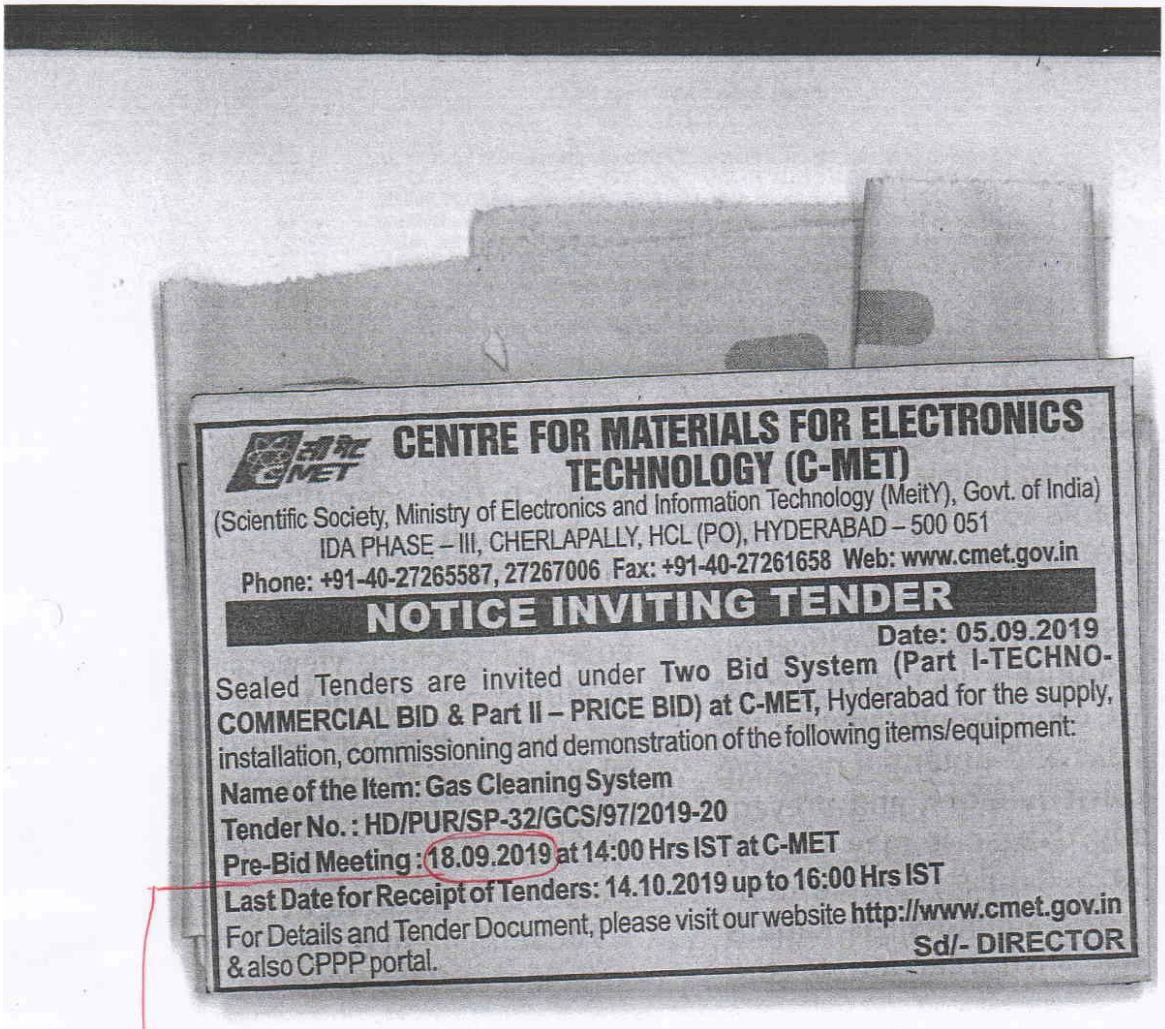


CENTRE FOR MATERIALS FOR ELECTRONICS TECHNOLOGY (C-MET)

(Scientific Society, Ministry of Electronics and Information Technology (MeitY), Govt. of India)
IDA PHASE – III, CHERLAPALLY, HCL (PO), HYDERABAD – 500 051
Phone: +91-40-27265587, 27267006 Fax: +91-40-27261658 Web: www.cmet.gov.in

NOTICE INVITING TENDER

Date: 05.09.2019

Sealed Tenders are invited under **Two Bid System (Part I-TECHNO-COMMERCIAL BID & Part II – PRICE BID) at C-MET,** Hyderabad for the supply, installation, commissioning and demonstration of the following items/equipment:

Name of the Item: Gas Cleaning System

Tender No. : HD/PUR/SP-32/GCS/97/2019-20

Pre-Bid Meeting : 18.09.2019 at 14:00 Hrs IST at C-MET

Last Date for Receipt of Tenders: 14.10.2019 up to 16:00 Hrs IST

For Details and Tender Document, please visit our website **http://www.cmet.gov.in** & also CPPP portal.

Sd/- DIRECTOR

THE HINDU

Dt. 05-09-2019

REVISED
PRE-BID MEETING : 24-09-2019 at 14:00 Hrs. IST at C-MET.

Venkatm
06/09/2019

G. K. VENKATESAN
Administrative Officer
Head of Office
Centre for Materials for Electronics Technology (C-MET)
Ministry of Electronics & Information Technology (MeitY), Govt. of India
IDA Phase – III, Cherlapally, HCL (P.O.)
Hyderabad - 500 051, Telangana State, India

सेन्टर फॉर मेटिरियल्स फॉर इलेक्ट्रॉनिक्स टेक्नोलाजी (सी–मेट)
CENTRE FOR MATERIALS FOR ELECTRONICS TECHNOLOGY (C-MET)
(Scientific Society, Ministry of Electronics and Information Technology (MeitY), Govt. of India)
IDA PHASE – III, CHERLAPALLY, HCL (PO), HYDERABAD – 500 051
Phone: +91-40-27265587, 27267006 Fax: +91-40-27261658 Web: www.cmet.gov.in

No. HD/PUR/SP-32/GCS/97/2019-20/11247 Date:30.08.2019

Centre for Materials for Electronics Technology (C-MET), Hyderabad invites Tenders against Tender No. HD/PUR/SP-32/GCS/97/2019-20/11247, dated 30.08.2019. Closing Date/Time **14.10.2019 at 16:00 Hrs**. Bidders will be able to submit their original/revised bids upto closing date and time only.

2. ITEM: **GAS CLEANING SYSTEM**

Supply, Installation and Commissioning of Gas Cleaning System and Post Warranty Annual Maintenance Contract for the Item.

Tender Type	:	**OPEN TENDER**
Pre-Bid Meeting	:	**24.09.2019 at 14:00 Hrs.**
Closing time	:	**14.10.2019 at 16:00 Hrs**.
Earnest Money Deposit (EMD)	:	**₹2,10,000/-**

Note: Bidders who downloaded tender documents from our web site shall send an email to venkatesan@cmet.gov.in immediately giving the tender reference number, date of downloading, your full address and contact details. This will help us post any corrigendum or addendum to the tender taken place after the bidder downloaded it. Addendum/corrigendum will be posted in our website as well as in CPP portal only. It will also be sent to bidder who had informed after downloading of the document from our website.

Pre-Bid Meeting:

The Pre-bid tender meeting will be held on date & time and specified above in the Laboratory premises. Interested firms are requested to attend the pre-bid meeting and inform their attendance to the e-mail id: *venkatesan@cmet.gov.in*. The clarifications/queries, if any in this regard, should reach the lab on or before 12.09.2019 at 17:00 Hrs to discuss the same in the pre-bid meeting.

NOTE:

(i) **The Technical bid & Financial bid should be in separate sealed covers**
(ii) **The quotation should be submitted in the enclosed format only.**
(iii) **The Enquiry Letter No. & date should be clearly indicated in the quotation, otherwise quotation will be rejected.**
(iv) Firms or their authorized representatives are requested to attend the opening of **Technical** bids **on 15.10.2019 at 12:00 hours.** If there is any delay in opening of technical bids will be intimated to the bidder.
(v) These details are also available in our website: **http://www.cmet.gov.in & CPP Portal**

(vi) The offer should be valid for a period of **90 days** from the date of opening of Tender.

(vii) C-MET is registered under Department of Scientific and Industrial Research (DSIR) and eligible for concessional GST rates @ 5% for Research Institutions as per Notification No 45/2017-Central Tax (Rate) dated 14.11.2017 and Notification No. 10/2018-Integrated tax (Rate) dated 25.01.2018. The requisite certificate for availing concessional GST Rate along with documents will be provided.

3. Earnest Money Deposit (EMD)

B*idders from Micro and Small Enterprises (MSEs)as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organization or the concerned Ministry or Department or Startups as recognized by Department of Industrial Policy & Promotion (DIPP) are exempted from payment of EMD @ ₹2,10,000/- as per this tender document.*

FOR OTHERS IT IS ₹2,10,000/- (Rupees Two lakhs and ten thousand only)

E.M.D or Bid Security should be deposited by the bidders, in any one of the following forms, along with the Technical bid:-

(a) Call Deposit Receipt duly endorsed in favour of C-MET or Pay Order or Demand Draft in favour of C-MET, Hyderabad.

(b) Fixed Deposit Receipt issued by Nationalized banks endorsed in favour of C-MET Hyderabad.

(c) Bank Guarantee from a Nationalized Bank in favour of C-MET - irrevocable and operative till the expiry of forty days after the validity of offer.

In case the vendor/supplier/contractor would like to submit EMD by Bank guarantee (BG), then the original BG shall be routed through the banker to C-MET Hyderabad by registered post with acknowledgment due. In case the BG is handed over to the vendor/supplier/contractor by the bank for any genuine reasons, the BG issuing branch shall immediately send an unstamped duplicate copy of the BG directly to C-MET Hyderabad by registered post with acknowledgment due with the covering letter to verify the BG issued by us and confirm that it is in order. The vendor/supplier/contractor shall comply this provision meticulously.

(d) The EMD shall be put in a separate envelope super- scribing tender reference no. as such on it and put in the envelope containing technical bid. In the absence of EMD the Bid will not be accepted.

(e) The Earnest Money Deposit will be returned along with necessary endorsement for payment to the bidder (without interest) whose offers are not acceptable to C-MET after placing the final order.

(f) The EMD shall also be forfeited:

(i) if a Bidder withdraws its bid or increases rates during the period of Bid validity specified by the Bidder on the Bid Form ;

(ii) or in case of a successful Bidder, if the Bidder fails:

(a) to accept the Purchase Order or refusal to execute the tender after it has been awarded or obligations under the same are not fulfilled; or

(b) to furnish the performance security deposit in accordance Purchase order.

4. SUBMISSION OF BIDS

(i) Sealing and Marking of Bids

(i) The Bidders shall seal the two envelopes in separate inner envelopes, duly marking the envelopes as Technical Bid and Commercial Bid. Tender Reference No. and name and address of the Bidder should be marked on each of Technical Bid Envelope and Commercial Bid Envelope. These two envelopes should be placed inside an outer envelope. The outer envelope shall be sealed and indicate Tender Reference No. and name and the name and address of the bidder.

(ii) The inner and outer envelopes shall be addressed to the Administrative Officer, Centre for Materials for Electronics Technology, IDA Phase-III, Cherlapally, HCL (Post), Hyderabad-500 051, Telangana State, INDIA.

(iii) The inner envelope shall also indicate the name and address of the Bidder to be returned unopened in case it is declared "LATE".

(iv) If the outer envelope is not sealed and marked as specified, C-MET will assume no responsibility for Bid's misplacement of premature opening.

(v) E-mail, FAX bids will be rejected.

(ii) CLARIFICATION OF BIDS

During evaluation of bids, C-MET, at its discretion, may ask the Bidder for a clarification of its bid. The request for a clarification and the response shall be in writing and no change in prices or substance of the bid shall be sought, offered or permitted. However, No post bid clarification at the initiative of the bidder shall be entertained.

5. Deadline for Submission of Bids

(i) Bids must be received by C-MET at its address mentioned above not later than **16:00 Hrs. on 14.10.2019.** Bids may be sent through courier/speed post or dropped in the Tender Box available in the Laboratory. In the event of the specified date for the submission of Bids being declared as a Holiday for C-MET, the bids will be received upto the appointed time on the next working day.

(ii) C-MET may, at its discretion, extend this deadline for submission of bids by amending the tender document, in which case all rights and obligations C-MET and Bidders will thereafter be subject to the deadline as extended.

6. Late Bids

Any bid inadvertently received by C-MET after the deadline for submission of bids prescribed by C-MET, will not be considered and returned unopened to the Bidder.

7. Contacting C-MET

No Bidder shall contact C-MET, Hyderabad on any matter relating to its bid, from the time of the bid opening to the time of contract is awarded. If he wishes to bring additional information to the notice of C-MET, it should do so in writing. C-MET reserves its right as to whether such additional information should be considered or otherwise.

Any effort by a Bidder to influence C-MET in its decision on bid evaluation, bid comparison or contract award shall result in disqualification of the Bidders Bid and also forfeiture of his EMD amount.

IN CASE OF ANY LEGAL DISPUTE THE JURISDICTION WILL BE HYDERABAD (INDIA) ONLY.

CLARIFICATION ON BIDDING DOCUMENTS

A prospective Bidder requiring any clarification of the bidding documents may notify to

Administrative Officer
IDA Phase-III
Cherlapally, HCL (Post),
Hyderabad-500 051
TELANGANA STATE, INDIA
Tel No.:+91-40 27265587 / 27267006
Fax: +91-40-27261658

8. TERMS AND CONDITIONS

F.O.R: C-MET, HYDERABAD

Delivery Period

The firm should submit the drawings for approval within 10 working days from the date of receipt of PO and concurrence will be conveyed within 5 working days from the date of submission of drawings. The System should be supplied within 12 (Twelve) Weeks from the date of approved drawings.

LIQUIDATED DAMAGES: – The delivery period quoted should be realistic. The delivery period so quoted and mentioned in the order is the essence of the order/contract. In case of delay in delivery of material as per the delivery schedule, Liquidated Damage @ 0.5% per week or part thereof on the undelivered portion subject to a maximum of 10% of the contract value shall be levied. Wherever, installation and commissioning is also involved, the supply will be deemed to have been completed only when the entire stores is supplied, installed and accepted.

9. PERFORMANCE SECURITY DEPOSIT (PSD)

Within 10 working days of the receipt of notification of award of purchase order /contract from C-MET, the Bidder shall furnish a Performance Security Deposit equivalent to 10% of the contract value in anyone of the forms as given below:

(a) Call Deposit Receipt duly endorsed in favour of C-MET or Pay Order or Demand Draft in favour of C-MET.

(b) Bank Guarantee from a Nationalized Bank in favour of C-MET - irrevocable and operative for the entire period starting from acceptance of the contract ending 60 days after completion of the warranty period or 30 months, whichever is longer.

(c) In case the vendor/supplier/contractor would like to submit security performance security Deposit by Bank guarantee (BG), then the original BG shall be routed through the banker to C-MET Hyderabad directly by registered post with acknowledgment due. In case the BG is handed over to the vendor/supplier/ contractor by the bank for any genuine reasons, the BG issuing branch shall immediately send an unstamped duplicate copy of the BG directly to C-MET Hyderabad by registered post with acknowledgment due with the covering letter to verify the BG issued by us and confirm that it is in order. The vendor/supplier/contractor shall comply this provision meticulously.

(d) Fixed Deposit Receipt issued by Nationalized banks endorsed in favour of C-MET Hyderabad.

(e) The Performance Security Deposit is required towards fulfillment of the Purchase order / Contract obligations. This Security Deposit will be forfeited in case the successful Bidder fails to execute the Purchase order/ Contract.

10. PAYMENT TERMS

Our standard payment term is 100% payment within 30 days against receipt, inspection and acceptance of material in good condition by NEFT/RTGS. However, in deserving cases it will be considered as per Rule 172 (1) of GFR-2017 by the competent authority.

Special Condition: The stipulated delivery date for completion of all activities to be performed by the supplier under contractual obligations i.e., supply of equipment/machinery and erecting & commissioning including all the civil, electrical works, if any under the contract.

S. No.	Description
1	The tenderer shall quote the rate by taking into account all the existing statutory duties/taxes up to the date of opening of tender and provide details in respect of this break up at the time of tendering. Any New Import or revision in the duties, taxes during the original currency of the contract will be to the purchasers account subject to production of Govt. notification and documentary evidence. This will also be applicable for the relevant quantity supplied during the extended delivery period, if such extension is on purchase's account. However, if the extension of delivery period is on account of failure of supplier, no compensation shall be made towards upward revision or imposition of any new taxes. Any benefit on account of downward revision

	of duty either in original Delivery Period or during extended Delivery Period shall be passed on by the supplier to C-MET.

11. STATUTORY VARIATION CLAUSE:

3.1	Statutory Variation in taxes and duties, or fresh imposition of taxes and duties by State/Central Governments in respect of te items stipulated in the contract (and not the raw materials thereof), within the original delivery period stipulated in the contract, or last unconditionally extended delivery period shall be to C-MET's account. Only such variation shall be admissible after the submission le which takes place after the submission of bid. No claim on account of statutory variation in respect of existing tax/duty will be accepted unless the tenderer has clearly indicated in his offer the rate of tax/duty considered in his quoted rate. No claim on account of statutory variation shall be admissible on account of misclassification by the supplier/contractor

12. Standard Governing Conditions

S. No.	Description
1	Tenderer's must accept the C-MET conditions of contract, Instructions to the Tenderer's, General Conditions and Special conditions of contract

13. CONDITIONS FOR ELIGIBILITY OF TENDERER

S. No.	Description	Confirmation Required
5.1	The tenderer must have supplied the same or similar items/Equipments to other organizations and documentary evidence must be furnished alongwith their offer evidencing the execution of such Purchase Orders. Tenderer's with past performance of satisfactory execution of contracts before the date of tender opening as mentioned above for the supply of the subject or similar items in last five years from date of tender opening may be considered as responsive to C-MET requirements for placement of regular order.	YES

14. (i) The Tenderer shall furnish along with his offer the details of past performance of the machines, same or similar to those offered in the tender in the following proforma during the last 3 years:

S. No.	Name of Machine	Name of customer	Purchase Order No. & Dt.	Delivery due date as per PO	Actual date of delivery	Whether customer's certificate in respect of past performance of the machine is enclosed
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(ii) Certificates from the customers to whom such machines have been supplied in the past, regarding performance of the machines shall be enclosed with the above information failing which the offer shall not be considered. Certificates from Central/State Govt. Departments & Public Sector Undertaking only shall be accepted, and performance from at least two such customers should be submitted. Same/Similar refers to function and capacity within reasonable range.

(iii) If the tenderer is not a manufacturer, but only an agent/trader, a certificate from the manufacturer authorizing him as agent shall be attached with the offer failing which the offer shall not be considered.

(iv) The tenderer shall submit with his offer particulars plant and machinery installed at his works as well as equipment for ensuring quality control and inspection. Details like make, capacity, quality, horse power of all plant and machinery shall be given. In case of an agent/dealer, the above details of their principal manufacturer shall be given.

(v) The tenderer shall submit with his offer details of man-power available with him showing the designation, no. of men, qualification & experience separately for each section like management, shop floor, inspection and quality control etc.,

(vi) C-MET has the option to verify the above information by physical inspection or otherwise by any authorized representative of C-MET at any time.

15. ELEMENT OF FREIGHT FOR INDIGENOUS PURCHASE

a) In case where the consignees are more (say more than 4 or so), Tenderer's are required to quota for the FOR station of dispatch prices with an average freight for all consignees, which will be added to FOR station for dispatch price to get FOR destination prices.

b) In case where the consignees are 4 or less, Tenderer's are required to quota FOR station of dispatch price with an actual freight for each individual consignee, which will be added to FOR station for dispatch price to get FOR destination prices for each individual consignee.

16. TIMELY COMMISSIONING:

In the event of contractors failure to have commissioned by the time or times respectively specified in the letter of acceptance or contract, purchaser shall levy Liquated damages for the delay:

S.No.	Description	Confirmation Required
1	**GAS CLEANING SYSTEM** Technical Specifications is to be read before quoting	YES

17. COMPLIANCE CONDITIONS

Commercial-Compliance

S.No.	Description	Confirmation Required
1	Please enter the percentage of local content in the material being offered. Please enter 0 or fully imported item, and 100 for fully indigenous items. The definition and calculation of local content shall be in accordance with the Make in India policy as incorporated in the tender conditions	

18. SUBMISSION OF BID

1	**Technical Bid**	**Documents should be serially arranged as per CHECK LIST WITH PAGE NUMBERING. This will be opened on 15.10.2019 at 12:00 hours**
2	Commercial Bid (Price Bid)	Should contain only Price Bid. There are two formats viz (a) Main system (Furnace) and (b) Optional accessories. Date of opening of Price bid will be informed to those whose bid technically qualified.

PRE-DESPATCH INSPECTION OF FURNACE: C-MET will nominate a person to visit the suppliers site for pre-despatch inspection and clearance for dispatching the furnace. Any suggestion/modification suggested during the inspection should be incorporated before its dispatch.

CRITERIA FOR PRE-QUALIFICATION OF TENDER AND NEGOTIATIONS

Specifications conforming to the requirement or better than that, Past Performance, Financial Soundness, Technical Competence, Total Cost and Organizational Capability of the Tenderer to provide installation, commissioning, after sale service and spare parts supply shall be some of the crucial parameters for pre-qualification of Tenderer's.

RE-TENDERING

On finding inadequate response to Tender Notice or if the Prices quoted are substantially high and negotiations with the Tenderer's have not resulted in any positive response C-MET may accept or order Re-tendering.

In case a ring is suspected, re-tendering will normally be resorted to.

CORRUPT OR FRAUDULENT PRACTICES

C-MET requires that the bidders/suppliers/contractors under this tender, observe the highest standards of ethics during the procurement and execution of such contracts.

In pursuance of this policy, the following is defined for the purposes of this provision, the terms set forth as follows:

a) "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of the public official in the procurement process or in contract execution and

b) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or an execution of a contract to the detriment of C-MET, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive C-MET of the benefits of the free and open competition;

c) Will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

C-MET will declare a firm ineligible, either indefinitely or for a stated period of time to be awarded a contract if it at any time determines that the firm has engaged in corrupt and fraudulent practices in competing for, or in executing, a contract.

INTERPRETATION OF THE CLAUSES IN THE TENDER DOCUMENT

In case of any ambiguity in the interpretation of any of the clauses in Tender Document , the interpretation of the Director, C-MET shall be final and binding on all parties.

IN CASE OF ANY LEGAL DISPUTE THE JURISDICTION WILL BE HYDERABAD (INDIA) ONLY.

C-MET shall have the right to issue addenda to tender documents to clarify, amend, modify, supplement or delete any of the conditions, clauses or delete any of the conditions clauses or items stated therein. Each addendum so issued shall form part of **ORIGINAL INVITATION TO THE TENDER**.

FORCE MAJEURE

The Supplier shall not be liable for forfeiture of its performance security, penalty or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

For purposes of this clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

If a Force Majeure situation arises, the Supplier shall promptly notify C-MET in writing of such conditions and the cause thereof. Unless otherwise directed by C-MET in writing, the Supplier shall continue to perform its obligations under the Supply as

far as it is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure.

CANCELLATION OF ORDER

C-MET reserves the right to cancel the order without any liability in case the stores/goods/equipments is not supplied within the stipulated period and for non-fulfillment of specifications**.**

ARBITRATION

Any dispute between the parties on the purchase would be settled by arbitration. The Place of arbitration proceedings shall be at the place decided by C-MET. Applicable laws shall be laws of Union of India.

(in the company letter head)

CHECK LIST
Documents to be submitted along with the bids
(TECHNICAL BID)

S No	Description	Yes/No	Page No
1	Covering/introduction letter from the Firm referring to C-MET's tender enquiry No and date **towards participation in the tender.**		
2	Details of EMD (attach relevant documents)		
3	Acceptance of terms & conditions of tender enquiry		
4	Signed copy of tender enquiry		
5	Price Reasonability Certificate		
6	Bid form and Price schedule with **commercial terms WITHOUT PRICE**		
7	Previous experience details alongwith documents like PO/WO etc. (not more than 3 years old)		
8	Undertaking and declaration		
9	Technical compliance statement with/without deviation		
10	Technical brochure of the Product offered or drawings		
11	GST Registration certificate or No		
12	Bank details for NEFT/RTGS		
13	Warranty		

Documents to be submitted alongwith Commercial bids
(PRICE BID)
(Separate sealed cover)

S No	Description	Page No
1	Bid form and Price schedule with commercial terms **WITH PRICE**	

(in the company letter head)

BIDDER'S DETAILS

1	Name of the supplied/party/firm	
2	Name of the authorized representative	
3	Communication address	
4	Telephone Nos.	
5	Mobile Nos.	
6	Fax and e-mail address	
7	Web address	
8	Bank details for payment through NEFT/RTGS	
9	Name of Bank	
	Branch	
	Account No	
	IFSC No	
	MICR No	
	Cancelled cheque for verification of above details	

Signature of Tenderer_____

Name_____

Business Address_____

Seal of the Tenderer_____

(in the company letter head)

PREVIOUS EXPERIENCE DETAILS
(LAST 3 YEARS)
{01.09.2016 to 31.08.2019}

S. No.	Name of System	Name, address, e-mail and mobile no.	Purchase Order No. & Dt.	Delivery due date as per PO	Actual date of delivery	Date of installation and commissioning
(1)	(2)	(3)	(4)	(5)	(6)	(7)

Signature of Tenderer _____

Name_____

Seal of the tenderer_____

(in the company letter head)

PRICE REASONABILITY CERTIFICATE

It is certified that the rates quoted _____ are not more than as charged to other Govt. /PSU's for similar supplies made in recent past. Copies of the supply orders received from other Govt/PSU's are enclosed alongwith the technical bid.

Signature of Tenderer_____

Name_____

Business Address_____

Seal of the Tenderer_____

(TO BE SUBMITTED ALONG WITH TECHNICAL BID)

(in the company letter head)

UNDERTAKING/ DECLARATION

I/We having our office at ……... declare that I/we have never been blacklisted by any State Government/Central Government or any State/Central PSU.

2. I/We, …… hereby declare that the particulars furnished by me/us in this offer are true to the best of my/our knowledge and I/We understand and accept that, if at any stage the information furnished by me/us are found to be incorrect or false, I/We am/are liable for disqualification from this tender and also liable for any penal action that may arise due to the above, besides being black listed.

3. I/We _____ hereby accept to provide warranty/ guarantee and Free Service for a period of minimum one year from the date of supply/ installation of the materials.

4. I/We …… of ……. hereby agree on the acceptance of this tender by Director, C-MET to _____, in accordance with the terms and conditions of contract and at the rates or price specified in financial bid (BOQ).

5. This is also certified that the rates quoted in the financial bid are not more than the rates charged from any other Institution/Department/ Organization in the last six months. No Other charges would be payable by the Institute.

6. I/We _____ have gone through the terms and conditions and will abide by them as laid down above. I hereby undertake that the information provided above and elsewhere in the tender is true and the tender is liable to rejection if the same is found to be false or the information is found to have been suppressed by me.

Name & Signature of the Supplier/Contractor/
Authorized signatory with Official stamp/seal

(TO BE SUBMITTED ALONG WITH TECHNICAL BID)
(in the company letter head)

To,

Date:

The Administrative Officer
C-MET, IDA Phase III
Cherlapally,
Hyderabad 500 051

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No. _____ dated _____

Name of the Tender/Work:

Sir/Madam,

I/We have downloaded/obtained the tender document(s) for the above mentioned 'Tender/Work' for the web site(s) namely:

_____

as per your advertisement, given in the mentioned website(s)/enquiry letter.

2. I/we hereby certify that I/we have read the entire terms & conditions of the tender documents from Page No. _____ to _____ (including all documents like Annexure(s), schedules(s), etc.) which form part of the contract agreement and I/We shall abide hereby by the terms/conditions/clauses contained therein.

3. The corrigendum(s) issued from time to time by your department/organization too have all been taken into consideration, while submitting this acceptance letter.

4. I/We hereby unconditionally accept the tender conditions of above mentioned tender document (s)/Corrigendum(s) in its totally/entirely.

5. In case any provisos of this tender are found violated, then your Department/Organizations shall without prejudice to any other right or remedy be at liberty to reject this tender/bid including the forfeiture of the full said earnest money deposit absolutely.

Yours faithfully,

Name & Signature of the Supplier/Contractor/
Authorized signatory with Official stamp/seal

CENTRE FOR MATERIALS FOR ELECTRONICS TECHNOLOGY (C-MET)
HYDERABAD

Technical Specifications of Gas Cleaning System

A gas cleaning system confirming to CPCB norms and guidelines is required for treating the organic vapors and pollutants generating during the thermal treatment of printed circuit boards and other e-waste materials containing dioxins, furans, chlorinated and brominated compounds. These contaminants collected via a smoke chute should be destructed in a combustion chamber at temperatures 1200°C with minimum residence time of 3sec and fast cooling between 700°C to 200°C to avoid reformation of dioxins. These gases finally containing destructed products of dioxins and furans should be scrubbed with alkali and the clean gases are released to atmosphere. The system has to be designed, fabricated and installed at C-MET as per the following requirements and specifications.

Gas cleaning system and all equipment involved in the system shall be designed to treat the flue gases generated from the incinerator when 100 kg spent printed circuit boards/hour is incinerated on continuous basis.
Major assumption: ~40kg organic vapour is generated during incineration of 100kg PCB.
Stipulated emission limits of cleaned gases are in terms of

Particulates	: 50 mg/Nm^3
HX (Cl,Br, F)	: 50 mg/Nm^3
SO_2	: 200 mg/Nm^3
CO	: 100 mg/Nm^3
Total Organic Carbon	: 20 mg/Nm^3
NO_X	: 400 mg/Nm^3
Dioxins & Furans	: 0.1ng TEQ/Nm^3

PROCESS:
Gases from incinerator are passed through a combustion chamber to destruct the organic pollutants and then passed through a hot cyclone separator for arresting particulates. The cleaned gas is quenched in two stage quencher and followed by absorber. This gas is then subjected for neutralization using alkali solution (sodium hydroxide) in two stage wet scrubbing system. The scrubbed gases confirming to the stipulated norms of Telangana State Pollution Control Board are finally released to atmosphere through 30 M high chimney. For effective scrubbing of flue gases the scrubbing solution needs to be always alkaline. To this effect, continuous dosing of alkali to scrubbing solution is required.

SCOPE:
Scope includes detailed designing of the system as per CMET schemes, preparation of fabrication drawings, fabrication, installation and commissioning of system at CMET Hyderabad.

The proposed gas cleaning system shall be a combination of combustion, quenching and wet scrubbing for increased effectiveness in cleaning and exhausting a very clean air to the atmosphere through chimney. Major systems

are smoke chute, refractory lined duct, combustion chamber, cyclone separator, quencher, absorber, scrubber, chimney, hot oil unit, associated systems and instrumentation.

- Suction hood for collecting fumes from incinerator
- Refractory lined duct for carrying flue gases to combustion chamber (secondary burner)
- Combustion chamber for destructing organic pollutants contained in the flue gases at temperature >1200°C, residence time 3sec.
- Cyclone separator for arresting bulk of the particulates from the flue gases.
- Flue gas quenching system (radiative heat exchanger and convective heat exchanger) to sudden quenching of temperature from 700°C to < 100^0C to avoid reformation of dioxin and furan.
- ID fan for providing required suction in the line
- Two stage alkali scrubbing connected in series and comprising of packed towers and well designed spray nozzles for uniform spraying of scrubbing solution (alkali).
- Chimney for releasing clean air to atmosphere at a height stipulated in the SPCB guidelines.
- Associated sub systems, instrumentation

<u>DETAILED SPECIFICATIONS OF EQUIPMENT OF GAS CLEANING SYSTEM:</u>

A. Combustion chamber:

Dimensions:

Flue gases from the duct are passed through a heating chamber where temperature is maintained at >1200°C and the residence time is ~ 3 sec Chamber should be lined with refractory to withstand corrosive gases and high temperature, 1400°C. System should be designed to take care of easy maintenance, thermal shock absorption and skin temperature should not be more than 30°C than ambient conditions. Quote should be completed with MoC, thickness of refractory etc. Any required supporting structure should be a part of quote.

Burner: LPG-air-oxygen, Make: Wesman or Riello or equivalent make gas fired high temperature burner , Capacity: to achieve the required temperature under the suction rate and required residence period. (Party should design the capacity and quote in any way it should be >200kW (Also quote for a dual burner which canwork in both LPG and LDO as optional)

Gas control panel and other accessories such as LPG gas filter, pre regulator, pressure indictors, valves etc should be included. Sequence controller, solenoid valve with On/Off controller, air pressure switch, ignition transformer and flame sensing device for safety. Interlock should be provided to stop LPG admission once power is shut down.

Temperature uniformity: ± 20°C throughout the heating zone of the chamber (maintain the required temperature and residence time as per CPCB norms)

Refractory lined duct to connect to hot cyclone separator also should be included in the quote.

B. Cyclone separator:

Hot cyclone separator for collecting all the soot or dust particles carried along with the flue gases is to be quoted. Outlet temperature of the cyclone separator should be >700°C. Refractory lining inside the cyclone and ducts should ensure that temperature is maintained and skin temperature should not be more than 30°C above ambient. Facility for collecting dust from the bottom of cyclone should be provided.
(Detailed specs of MoC of shell, refractory, thickness etc should be quoted)

C. Quenching system:

The dust free flue gases with temperature >700°C from cyclone separator is quenched to <100°C in heat exchangers to avoid recombination of dioxins. Temperature of outlet gases should be <100°C on continuous operation. Systems has to be designed to meet the requirements. However it should meet the minimum specs as follows

a) Radiative heat exchanger:

MOC: SS 316
Seamless tube
Duty >85000 Kcal/hr
Area >35 m^2

b) Convective heat exchanger

MOC: SS 316
Seamless tube
Duty >60000 Kcal/hr
Area >20 m^2

D. Coolant tower:

Required coolant tower is to be quoted. Capacity should match the requirement of quencher. System should be complete with cooling tower water circulation pumps (1S + 1 w), piping, valves, connections for water to quencher and return hot water to cooling tower). (Details of hot water tank, cold water tank, by pass lines, hot and cold water lines, Pump capacities etc should be included in the quote)

E. Scrubber:

Flue gases will be scrubbed in two stages in series using packed columns. Gases to be scrubbed and scrubbing solution are passed in counter current direction in each column. The columns are packed with pall rings to have good mass transfer area with low pressure drop facilitating easy flow of gases upward and scrubbing solution towards downwards direction. Scrubbing is mainly involved neutralization of flue gases

containing hydrogen chloride with alkali solution of sodium hydroxide. Chemical reaction between hydrogen chloride and sodium hydroxide is being first order chemical reaction associated with absorption, the efficiency of scrubbing shall be more than 95%. However, liquid to gas ratio to be maintained is 2.2 for effecting scrubbing/neutralization of flue gases. An impinge type mist eliminator to be provided in second column at the exit point of scrubbed gases.

Approximate sizing of packed columns are given below: (Sizing and capacities should be designed as per the load, however it should not be lower than the following specs)

Diameter of each column	500 mm
Packing Height	750 mm
Packing material	Pall rings
Free Board in each column	600 mm
Nozzle for gas entry/exit	150 mm
Packing support from bottom of column	400 mm
Number of spray nozzles in each column	80
Diameter of scrubbing solution inlet pipe	50 mm
Drain pipe of scrub solution	75 mm
Circulation rate of scrubbing solution	15 M^3/h
MOC of packing material	PP
MOC of columns	PP/FRP

1. Scrubbing Solution Tank:

Diameter of Tank	1200 mm
Height of tank	1600 mm
Shape	Flat bottom, cylindrical top cone with vent.
Volume	1.5 KL
Construction	Inlet and outlet nozzles, level gauges, nozzle for alkali dosing and instrumentation

2. Alkali Dosing Tank: capacity 500 L cylindrical and conical bottom tank equipped with agitator and top lid. Nozzles for water inlet and outlet. MOC of tank is SS 304L.

3. SCRUBBER WATER RECIRCULATION SYSTEM: Centrifugal pump with semi open impeller for circulation of scrubbing solution at the rate of 15 M^3 per hour. Head: 20 M Water column. MOC of pump: SS 316L or Ultra High Molecular Weight Polyethylene (UHMWPE). Number of pumps required are :Two (1 working + 1 standby)

4. Mist Eliminator: Wet flue gas after scrubbing from the second packed column is passed through a mist eliminator to remove the wetted dust particles and water carry over to avoid damage to ID fan blades. The ash and water are drained to the tank through a drain piping.

Type - Baffle – Impingement Type
Material of construction – SS 316L

F. ID FAN: Two numbers ID fans (1W + 1S) shall be provided at the end of system to provide necessary draft in the system. Fan shall be of low speed high efficiency fan. The fan casing and blades of impellers shall be of stainless steel (SS 316).

ID Fan Capacity – 3500Nm^3/hr
Suction pressure - 200 mm WC
Gas temperature - 70 to 90 °C
Motor rating - >7.5 HP

G. CHIMNEY: One, self supported chimney confirming to the design of IS 6533 standard with required stiffeners and fittings. The chimney shall have the required ladders and landing platforms positioned at 12mts and 28mts elevation respectively. Chimney shall be provided with flue gas monitoring facility as per CPCB norms. The chimney shall be provided with proper copper lightning arrestors with required earthing strips. The chimney shall be provided with aviation lamp. Chimney cylindrical shell diameter at bottom - 500 mm and top is 300 mm. Height of chimney is 30 M. MOC: FRP/ carbon steel.

H. Control Panel:

A stand alone PLC control panel is to be provided for the operation of the system. It should be complete with all necessary indicators, controllers, switches etc of reputed make. Switching on and off of burners, motors and controlling of the speed of ID fan etc should be able to conduct with control panel. However, inaddition to the switches in control panel, emergency switches should be provided near the motors.

<u>OPTIONAL ITEMS:</u>

I. Suction hood

A suction hood is required for collecting the flue gases from the incinerator as per the drawing.
MoC: SS 310
Hood size: 1700 X1200 mm,
Height: 700 mm

J. Refractory lined duct:

A duct for joining the chute to combustion chamber is required
Length: ~10m (please quote per m, length may change as per site conditions, consider necessary bends and flanges in the quote)
MoC: MS
OD: 400 mm, tk:6mm
Refractory lining thickness: high alumina refractory should withstand temperature as high as 1400°C and temperature of 1200°C on continuous basis. Skin temperature should not be more than 30°C above ambient. (type of refractory, thickness etc should be clearly described in the quote)

K. ALKALI DOSING SYSTEM:

To maintain alkalinity of scrubbing solution in circulation tank, continuous monitoring of pH is required. To this effect alkali dosing is required as and when required to the scrub solution. This shall work within preset pH conditions by means of automated instrumentation. The total system set up consists of an alkali tank, dosing pump, piping, valves, pH sensor and indicating controller. The pH of the scrubbing solution shall be continuously sensed by the pH sensor, the output shall be fed to the indicating controller. The ON/OFF output from the indicator shall switch ON/OFF the dosing pump. The hardware in the system shall be alkali tank with an agitator for mixing of alkaline medium, dosing pump for dosing of the same. The complete arrangement shall be mounted in a skid with interconnecting piping and valves.

pH sensor - 1 no.
pH indicating controller - 1 no.
Alkali storage tank capacity - 0.5 KL
Agitator – 1No.
Dosing pump – 1N0.
(Quote with detailed specs & capacities)

Other specifications:

- Party should quote the system with full specifications, for comparison; provide a technical compliance sheet along with the quote.
- Sophisticated instrumentation and control system with digital temperature indicators/ controllers for effective and safe operation with requisite safety interlocks.
- The system should have all the sensors required for the equipment safety and environmental safety as well as for the requisite process variables. Party should provide all the details along with the bid
- Necessary Plumbing and instrumentation for efficient operation of gas cleaning system.
- The system should follow all the safety precautions prescribed in the standard guidelines. Party should submit the compliance certificates.
- The basic system should be quoted inclusive of all essential accessories to run the equipment such as cables, gas panels, compressor gas lines, etc.
- Full descriptive manuals including component layout diagrams for all the main systems / sub systems must be supplied at the time of the delivery of the main equipment for trouble shooting after completion of warrantee period.
- The equipment and other accessories should be painted completely with rust proof paints; high temperature paints etc wherever required.
- Party should quote separately for the AMC of the equipment for subsequent years after the warranty period.
- Party should clearly indicate the specifications of any sub-systems/bought out items, required.
- Party should ensure that spares of the system should be available for at least next 10 years
- List of furnaces supplied by the party during the last five years to be enclosed along with technical bid.

Inspection, Installation and Training

Party should allow free access to C-MET during fabrication stages. Party should submit detailed design drawings for C-MET approval after receiving P.O. It should arrange a pre delivery inspection before despatching the items. Party has to inform well in advance to C-MET so that scientists shall visit the fabrication unit and inspect the system and on completion of inspection and satisfaction of demonstration trial, give clearance of the delivery.
Party should convey well in advance the installation requirements such as foundation, electrical supply, utilities etc.

Training on operation, and maintenance to be given to C-MET scientists. Party has to demonstrate the capability of the systems such as suction rate, temperature, Thermal efficiency, etc.

Acceptance criteria:

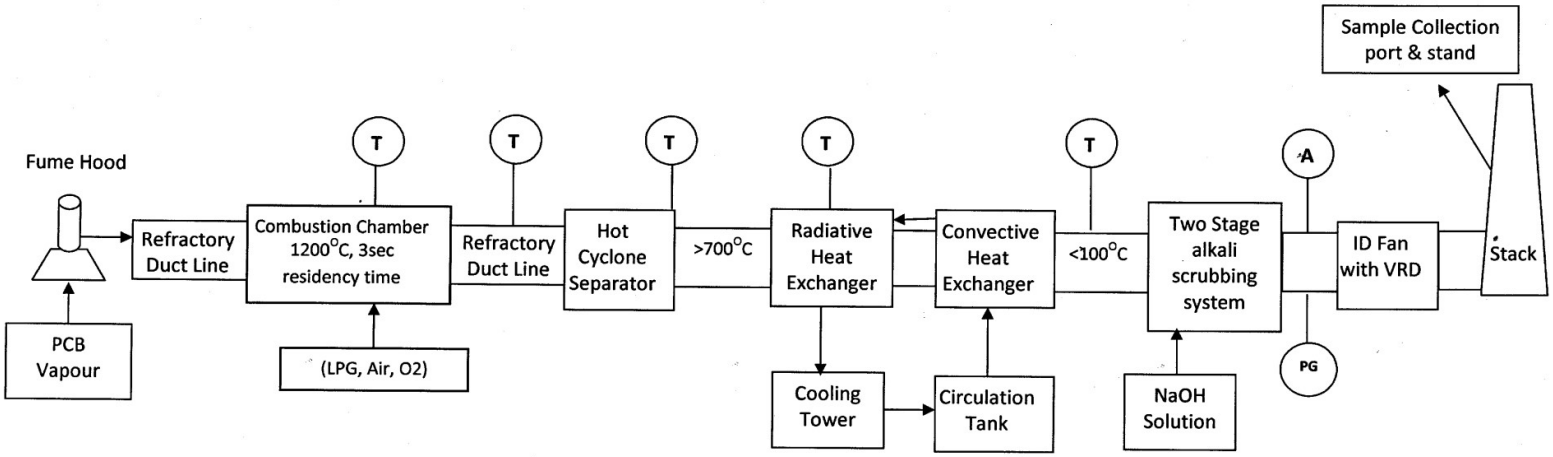
Party should demonstrate the capability of the system while running the incineration of 100kg PCB/hr capacity. Gas analysis by a third party shall be arranged by CMET.

Warranty: one year after installation and commissioning or 18 months after delivery.

CMET shall provide

1. **LPG/air/oxygen lines: Connection from the existing lines can be drawn to gas cleaning system.**
2. **Electrical: Electrical connections be drawn from the existing DB**
3. **Civil foundations: as per the drawings and specs furnished by supplier**
4. **Housing for panels and equipments: However system has to be erected outside the building and hence protection for the systems should be taken care by party.**

Schematic diagram of Gas Cleaning System:



Note:

- T= Thermocouple
- A= Anemometer
- PG= Pressure Gauge

18. GENERAL INSTRUCTIONS

S. No.	Description	Confirmation Required
1	All conditions shall be as per tender document	
2	The bidder confirms that Rates and other financial terms quoted in relevant columns of financial bid will only be ruling terms for acceptance, and such terms quoted anywhere else should be ignore.[Denial of this condition not recommended]	
3	The bidder agrees to supply the tendered stores at the rates quoted by him in accordance with C-MET conditions of Contract and [OR] Special Conditions and [OR] other Conditions specified/attached with the tender	
4	Pre-despatch Inspection - By nominated C-MET official at Destination	
5	In case the date of bid opening falls on a gazette holiday or is subsequently declared as such, the bids will be opened on the next working date at the appointed time	

19. SPECIAL CONDITIONS

S. No.	Description	Confirmation Required
1	Taxes/Duties 1. Tenderer should clearly indicate Basic rate and applicable rate of GST 2. Tenderer's should ensure that they are GST compliant and their quoted tax structure/rates are as per GST law. Tenderer should clearly indicate Basic rate and applicable rate of GST. 3. In case the successful tenderer is not liable to be registered under CGST/IGST/UTGST/SGST Act, C-MET shall deduct the applicable GST from his/their bills under reverse charge mechanism [RCM] and deposit the same to the concerned tax authority 4. While submitting offer, it shall be the responsibility of the bidder to ensure that they quote correct GST rate and HSN number. 5. Wherever the successful bidder invoices the goods at GST rate or	

	HSN number which is different from that incorporated in the Purchase Order, payment shall be made as per GST rate which is lower of GST rate incorporated in the Purchase Order or billed. 6. Any amendment to GST rate or HSN number in the contract shall be as per the contractual conditions and statutory amendments in the quoted GST rate and HSN number. 7. Vendor is informed that he/she would be required to adjust his/her basic price to the extent required by higher tax billed as per invoice to match the all inclusive price as mentioned in the Purchase Order.	
2	Quantity Variation Clause: The Purchaser reserves the right to vary the quantity mentioned in the schedule of requirements by Plus 30%. The Purchaser also reserves the right to increase the contract quantity by a maximum of 30% after the placement of order within a year from the date of placement of order keeping the overall quantity increase within 30% of the bid quantity.	
3	Bidders are requested to refer Special Conditions of Contract while submitting their offers	

20. DOCUMENTS ATTACHED WITH TENDER

S. No.	Document Name	Document Description
1	Technical Specifications	Gas Cleaning System

21. RESPONSIVENESS

S. No.	Description
1	Validity of the Offer: No deviation from the offer validity period stipulated in the tender is permitted
2	Payment Terms: No deviation from the Payment Terms stipulated in the tender is permitted.

(in the company letter head)

BID FORM AND PRICE SCHEDULE

Tender Reference No. : ENQ. NO.: HD/PUR/SP-32/GCS/97/2019-20/
Date: 30.08.2019

Name of the Stores/ Goods/Equipment : SUPPLY, INSTALLATION AND COMMISSINING OF **GAS CLEANING SYSTEM**

Sl. No.	Description	HSN/SN CODE	Qty.	Amount(₹)
1	SUPPLY, INSTALLATION AND COMMISSIONING OF **GAS CLEANING SYSTEM** as per 'Annexure'		1 No.	
	Freight charges			
	Insurance			
	Installation charges			
	Taxable value			
	GST			
	GRAND TOTAL			

1. Payment Terms:
2. Bid Validity:
3. Delivery Schedule:
4. Place of delivery: C-MET, HYDERABAD
5. Warranty, if applicable:
6. Any other relevant information:

Signature of Tenderer _____

Name_____

Seal of the Tenderer_____

(in the company letter head)

ANNEXURE TO BID FORM & PRICE SCHEDULE

Sl. No.	Description	HSN/SN CODE	Qty.	Amount(₹)
A	Combustion chamber			
B	Cyclone separator			
C	Quenching system			
	a) Radiative heat exchanger			
	b) Convective heat exchanger			
D	Coolant tower			
E	Scrubber (with scrubber solution tank, recirculation system etc.)			
	Mist Eliminator			
F	ID fans			
G	Chimney			
H	Control Panel			
	OPTIONAL ITEMS:			
I	Suction hood			
J	Refractory lined duct: Length: ~10m (please quote per m)			
K	Alkali dosing system with dosing tank			

Signature of Tenderer _____

Name_____

Seal of the Tenderer_____

(TO BE SUBMITTED ALONG WITH TECHNICAL BID)

(in the company letter head)

Technical compliance statement in r/o GAS CLEANING SYSTEM

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
GENERAL	A gas cleaning system confirming to CPCB norms and guidelines is required for treating the organic vapors and pollutants generating during the thermal treatment of printed circuit boards and other e-waste materials containing dioxins, furans, chlorinated and brominated compounds. These contaminants collected via a smoke chute should be destructed in a combustion chamber at temperatures 1200°C with minimum residence time of 3sec and fast cooling between 700°C to 200°C to avoid reformation of dioxins. These gases finally containing destructed products of dioxins and furans should be scrubbed with alkali and the clean gases are released to atmosphere. The system has to be designed, fabricated and installed at C-MET as per the following requirements and specifications.				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	Gas cleaning system and all equipment involved in the system shall be designed to treat the flue gases generated from the incinerator when 100 kg spent printed circuit boards/hour is incinerated on continuous basis. Major assumption: ~40kg organic vapour is generated during incineration of 100kg PCB. Stipulated emission limits of cleaned gases are in terms of Particulates : 50 mg/Nm^3 HX (Cl,Br, F) : 50 mg/Nm^3 SO_2 : 200 mg/Nm^3 CO : 100 mg/Nm^3 Total Organic Carbon : 20 mg/Nm^3 NO_X : 400 mg/Nm^3 Dioxins & Furans : 0.1ng TEQ/Nm^3 PROCESS: Gases from incinerator are passed through a combustion chamber to destruct the organic pollutants and then passed through a hot cyclone separator for arresting particulates. The cleaned gas is quenched in two stage quencher and				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	followed by absorber. This gas is then subjected for neutralization using alkali solution (sodium hydroxide) in two stage wet scrubbing system. The scrubbed gases confirming to the stipulated norms of Telangana State Pollution Control Board are finally released to atmosphere through 30 M high chimney. For effective scrubbing of flue gases the scrubbing solution needs to be always alkaline. To this effect, continuous dosing of alkali to scrubbing solution is required. SCOPE: Scope includes detailed designing of the system as per CMET schemes, preparation of fabrication drawings, fabrication, installation and commissioning of system at CMET Hyderabad. The proposed gas cleaning system shall be a combination of combustion, quenching and wet scrubbing for increased effectiveness in cleaning and exhausting a very clean air to the atmosphere through chimney. Major systems are smoke chute, refractory lined duct, combustion chamber, cyclone				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	separator, quencher, absorber, scrubber, chimney, hot oil unit, associated systems and instrumentation. • Suction hood for collecting fumes from incinerator • Refractory lined duct for carrying flue gases to combustion chamber (secondary burner) • Combustion chamber for destructing organic pollutants contained in the flue gases at temperature >1200°C, residence time 3sec. • Cyclone separator for arresting bulk of the particulates from the flue gases. • Flue gas quenching system (radiative heat exchanger and convective heat exchanger) to sudden quenching of temperature from 700°C to < 100^0C to avoid reformation of dioxin and furan. • ID fan for providing required suction in the line • Two stage alkali scrubbing connected in series and comprising of packed towers and well designed spray nozzles for uniform spraying of scrubbing solution (alkali).				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	• Chimney for releasing clean air to atmosphere at a height stipulated in the SPCB guidelines. • Associated sub systems, instrumentation				
DETAILED SPECIFICATIONS OF EQUIPMENT OF GAS CLEANING SYSTEM:					
Combustion chamber	Dimensions: Flue gases from the duct are passed through a heating chamber where temperature is maintained at >1200°C and the residence time is ~ 3 sec Chamber should be lined with refractory to withstand corrosive gases and high temperature, 1400°C. System should be designed to take care of easy maintenance, thermal shock absorption and skin temperature should not be more than 30°C than ambient conditions. Quote should be completed with MoC, thickness of refractory etc. Any required supporting structure should be a part of quote. Burner: LPG-air-oxygen, Make: Wesman or Riello or equivalent make gas fired high temperature burner , Capacity: to achieve the required temperature under the suction rate and required residence period. (Party should design the capacity				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	and quote in any way it should be >200kW (Also quote for a dual burner which canwork in both LPG and LDO as optional) Gas control panel and other accessories such as LPG gas filter, pre regulator, pressure indictors, valves etc should be included. Sequence controller, solenoid valve with On/Off controller, air pressure switch, ignition transformer and flame sensing device for safety. Interlock should be provided to stop LPG admission once power is shut down. Temperature uniformity: $\pm$ 20°C throughout the heating zone of the chamber (maintain the required temperature and residence time as per CPCB norms) Refractory lined duct to connect to hot cyclone separator also should be included in the quote.				
Cyclone separator	Hot cyclone separator for collecting all the soot or dust particles carried along with the flue gases is to be quoted. Outlet temperature of the cyclone separator should be >700°C. Refractory lining inside the cyclone and ducts should ensure that temperature is maintained and skin temperature should not be more				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	than 30°C above ambient. Facility for collecting dust from the bottom of cyclone should be provided. (Detailed specs of MoC of shell, refractory, thickness etc should be quoted)				
Quenching system	The dust free flue gases with temperature >700°C from cyclone separator is quenched to <100°C in heat exchangers to avoid recombination of dioxins. Temperature of outlet gases should be <100°C on continuous operation. Systems has to be designed to meet the requirements. However it should meet the minimum specs as follows a) Radiative heat exchanger: MOC: SS 316 Seamless tube Duty >85000 Kcal/hr Area >35 m^2 b) Convective heat exchanger MOC: SS 316 Seamless tube Duty >60000 Kcal/hr Area >20 m^2				
Coolant tower	Required coolant tower is to be quoted. Capacity should match the requirement of quencher. System should be complete				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	with cooling tower water circulation pumps (1S + 1 w), piping, valves, connections for water to quencher and return hot water to cooling tower). (Details of hot water tank, cold water tank, by pass lines, hot and cold water lines, Pump capacities etc should be included in the quote)				
Scrubber	Flue gases will be scrubbed in two stages in series using packed columns. Gases to be scrubbed and scrubbing solution are passed in counter current direction in each column. The columns are packed with pall rings to have good mass transfer area with low pressure drop facilitating easy flow of gases upward and scrubbing solution towards downwards direction. Scrubbing is mainly involved neutralization of flue gases containing hydrogen chloride with alkali solution of sodium hydroxide. Chemical reaction between hydrogen chloride and sodium hydroxide is being first order chemical reaction associated with absorption, the efficiency of scrubbing shall be more than 95%. However, liquid to gas ratio to be maintained is 2.2 for effecting scrubbing/neutralization of flue gases. An impinge type mist eliminator to be				

<table>
<tr><th>Technical Requirement</th><th>Technical Specification</th><th>Specifications of quoted Model</th><th>Compliance whether "YES" OR "NO"</th><th>Deviation, if any, to be indicated in unambiguous terms</th><th>Remarks</th></tr>
<tr><td></td><td>provided in second column at the exit point of scrubbed gases.

Approximate sizing of packed columns are given below: (Sizing and capacities should be designed as per the load, however it should not be lower than the following specs)

<table>
<tr><td>Diameter of each column</td><td>500 mm</td></tr>
<tr><td>Packing Height</td><td>750 mm</td></tr>
<tr><td>Packing material</td><td>Pall rings</td></tr>
<tr><td>Free Board in each column</td><td>600 mm</td></tr>
<tr><td>Nozzle for gas entry/exit</td><td>150 mm</td></tr>
<tr><td>Packing support from bottom of column</td><td>400 mm</td></tr>
<tr><td>Number of spray nozzles in each column</td><td>80</td></tr>
<tr><td>Diameter of scrubbing solution inlet pipe</td><td>50 mm</td></tr>
<tr><td>Drain pipe of scrub solution</td><td>75 mm</td></tr>
<tr><td>Circulation rate of</td><td>15 M^3/h</td></tr>
</table></td><td></td><td></td><td></td><td></td></tr>
</table>

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	<table><tr><td>scrubbing solution</td><td></td></tr><tr><td>MOC of packing material</td><td>PP</td></tr><tr><td>MOC of columns</td><td>PP/FRP</td></tr></table> 1. Scrubbing Solution Tank: <table><tr><td>Diameter of Tank</td><td>1200 mm</td></tr><tr><td>Height of tank</td><td>1600 mm</td></tr><tr><td>Shape</td><td>Flat bottom, cylindrical top cone with vent.</td></tr><tr><td>Volume</td><td>1.5 KL</td></tr><tr><td>Construction</td><td>Inlet and outlet nozzles, level gauges, nozzle for alkali dosing and instrumentation</td></tr></table> 2. Alkali Dosing Tank: capacity 500 L cylindrical and conical bottom tank equipped with agitator and top lid. Nozzles for water inlet and outlet. MOC of tank is SS 304L. 3. SCRUBBER WATER				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	RECIRCULATION SYSTEM: Centrifugal pump with semi open impeller for circulation of scrubbing solution at the rate of 15 M^3 per hour. Head: 20 M Water column. MOC of pump: SS 316L or Ultra High Molecular Weight Polyethylene (UHMWPE). Number of pumps required are :Two (1 working + 1 standby) 4. Mist Eliminator: Wet flue gas after scrubbing from the second packed column is passed through a mist eliminator to remove the wetted dust particles and water carry over to avoid damage to ID fan blades. The ash and water are drained to the tank through a drain piping. Type - Baffle – Impingement Type Material of construction – SS 316L				
ID FAN	Two numbers ID fans (1W + 1S) shall be provided at the end of system to provide necessary draft in the system. Fan shall be of low speed high efficiency fan. The fan casing and blades of impellers shall be of stainless steel (SS 316). ID Fan Capacity – 3500Nm^3/hr Suction pressure - 200 mm WC				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	Gas temperature - 70 to 90 °C Motor rating - >7.5 HP				
CHIMNEY	One, self supported chimney confirming to the design of IS 6533 standard with required stiffeners and fittings. The chimney shall have the required ladders and landing platforms positioned at 12mts and 28mts elevation respectively. Chimney shall be provided with flue gas monitoring facility as per CPCB norms. The chimney shall be provided with proper copper lightning arrestors with required earthing strips. The chimney shall be provided with aviation lamp. Chimney cylindrical shell diameter at bottom - 500 mm and top is 300 mm. Height of chimney is 30 M. MOC: FRP/ carbon steel.				
Control Panel	A stand alone PLC control panel is to be provided for the operation of the system. It should be complete with all necessary indicators, controllers, switches etc of reputed make. Switching on and off of burners, motors and controlling of the speed of ID fan etc should be able to conduct with control panel. However, inaddition to the switches in control panel, emergency switches should be provided near the motors.				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
OPTIONAL ITEMS:					
Suction hood	A suction hood is required for collecting the flue gases from the incinerator as per the drawing. MoC: SS 310 Hood size: 1700 X1200 mm, Height: 700 mm				
Refractory lined duct	A duct for joining the chute to combustion chamber is required Length: ~10m (please quote per m, length may change as per site conditions, consider necessary bends and flanges in the quote) MoC: MS OD: 400 mm, tk:6mm Refractory lining thickness: high alumina refractory should withstand temperature as high as 1400°C and temperature of 1200°C on continuous basis. Skin temperature should not be more than 30°C above ambient. (type of refractory, thickness etc should be clearly described in the quote				
Alkali Dosing System	To maintain alkalinity of scrubbing solution in circulation tank, continuous monitoring of pH is required. To this effect alkali dosing is required as and when required to the scrub solution. This shall work within preset pH conditions by				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	means of automated instrumentation. The total system set up consists of an alkali tank, dosing pump, piping, valves, pH sensor and indicating controller. The pH of the scrubbing solution shall be continuously sensed by the pH sensor, the output shall be fed to the indicating controller. The ON/OFF output from the indicator shall switch ON/OFF the dosing pump. The hardware in the system shall be alkali tank with an agitator for mixing of alkaline medium, dosing pump for dosing of the same. The complete arrangement shall be mounted in a skid with interconnecting piping and valves. pH sensor - 1 no. pH indicating controller - 1 no. Alkali storage tank capacity - 0.5 KL Agitator – 1No. Dosing pump – 1N0. (Quote with detailed specs & capacities)				
Other specifications	• Party should quote the system with full specifications, for comparison; provide a technical compliance sheet along with the quote. • Sophisticated instrumentation and control system with digital temperature indicators/ controllers for effective and safe operation				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	with requisite safety interlocks. • The system should have all the sensors required for the equipment safety and environmental safety as well as for the requisite process variables. Party should provide all the details along with the bid • Necessary Plumbing and instrumentation for efficient operation of gas cleaning system. • The system should follow all the safety precautions prescribed in the standard guidelines. Party should submit the compliance certificates. • The basic system should be quoted inclusive of all essential accessories to run the equipment such as cables, gas panels, compressor gas lines, etc. • Full descriptive manuals including component layout diagrams for all the main systems / sub systems must be supplied at the time of the delivery of the main equipment for trouble shooting after completion of warrantee period. • The equipment and other accessories should be painted completely with rust proof paints;				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	high temperature paints etc wherever required. • Party should quote separately for the AMC of the equipment for subsequent years after the warranty period. • Party should clearly indicate the specifications of any sub-systems/bought out items, required. • Party should ensure that spares of the system should be available for at least next 10 years List of furnaces supplied by the party during the last five years to be enclosed along with technical bid.				
Inspection, Installation and Training	Party should allow free access to C-MET during fabrication stages. Party should submit detailed design drawings for C-MET approval after receiving P.O. It should arrange a pre delivery inspection before despatching the items. Party has to inform well in advance to C-MET so that scientists shall visit the fabrication unit and inspect the system and on completion of inspection and satisfaction of demonstration trial, give clearance of the delivery.				

Technical Requirement	Technical Specification	Specifications of quoted Model	Compliance whether "YES" OR "NO"	Deviation, if any, to be indicated in unambiguous terms	Remarks
	Party should convey well in advance the installation requirements such as foundation, electrical supply, utilities etc. Training on operation, and maintenance to be given to C-MET scientists. Party has to demonstrate the capability of the systems such as suction rate, temperature, Thermal efficiency, etc.				
Acceptance criteria	Party should demonstrate the capability of the system while running the incineration of 100kg PCB/hr capacity. Gas analysis by a third party shall be arranged by CMET				
Warranty	**one year after installation and commissioning or 18 months after delivery**				

BANK GUARANTEE FORM FOR BID SECURITY/EMD

Whereas _____ (hereinafter called the "Tenderer") has submitted its quotation dated _____ for the supply of _____ (hereinafter called the "tender") against the purchaser's tender enquiry No._____
Know all persons by these presents that we_____ of _____
(Hereinafter called the "Bank") having our registered office at _____ are bound unto _____ (hereinafter called the "Purchaser) in the sum of_____ for which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this _____ day of _____ 20____. The conditions of this obligation are:

(1) If the Tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.

(2) If the Tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity:-
a) fails or refuses to furnish the performance security for the due performance of the contract.
or
b) fails or refuses to accept/execute the contract.
or
c) if it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition(s).

This guarantee will remain in force for a period of forty-five days after the period of tender validity and any demand in respect thereof should reach the Bank not later than the above date.

(Signature of the authorized officer of the Bank)
Name and designation of the officer
Seal, name & address of the Bank and address of the Branch

BANK GUARANTEE FORM FOR PERFORMANCE SECURITY DEPOSIT

To

The Administrative Officer
C-MET, IDA Phase-III
Cherlapally, HCL Post
Hyderabad – 500 051
TELANGANA STATE
INDIA

WHEREAS _____ (Name and address of the supplier) (Hereinafter called "the supplier") has undertaken, in pursuance of contract no_____ dated _____ to supply (description of goods and services) (herein after called "the contract").

AND WHEREAS it has been stipulated by you in the said contract that the supplier shall furnish you with a bank guarantee by a scheduled commercial bank recognized by you for the sum specified therein as security for compliance with its obligations in accordance with the contract;

AND WHEREAS we have agreed to give the supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total of. _____ (Amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid up to ……. (In words) months from the date of Notification of Award i.e up to ---------- (indicate date)

…….
(Signature with date of the authorized officer of the Bank)
…….
Name and designation of the officer
…….
Seal, name & address of the Bank and address of the Branch

(in the company letter head)

PRICE SCHEDULE FOR COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT AFTER WARRANTY PERIOD

FOR "GAS CLEANING SYSTEM"

{No. of Visits: AS AND WHEN REQUIRED BUT MINIMUM 2-3 VISITS PER ANNUM}

C-AMC AFTER WARRANTY PERIOD I.E. 1 YEAR [12 MONTHS] FROM THE DATE OF INSTALLATION

1	2	3				4	5	6
Name of the equipment	Quantity	Comprehensive Annual Maintenance Contract * **(without GST)**				Total Annual Maintenance Contract Cost for 4 Years (3a+3b+3c+3d)	Applicable GST on the date of opening of tender	Per visit charges after the warranty period if C-AMC not entered (without GST). Quoted rate should be valid for 24 months after warranty period
		1st (2nd year)	2nd (3rd year)	3rd (4th year)	4th (5th year)			
		a	b	c	d			
GAS CLEANING SYSTEM MAKE: MADEL	1							

*** QUOTE C-AMC CHARGES WITHOUT GST**

NOTE:-

1. In case of discrepancy between unit price and total prices, THE UNIT PRICE shall prevail.
2. The cost of C-Annual Maintenance Contract (C-AMC) which includes preventive maintenance, operational manual and labour, after satisfactory completion of 1 year warranty (12 months).
3. The cost of C-AMC may be quoted along with taxes applicable on the date of Tender Opening.
4. Cost of C-AMC will not be added for price evaluation purpose for the purpose of awarding the tender.
5. The uptime warranty will be 98 % on 24 (hrs) x 7 (days) x 365 (days) basis or as stated in Technical Specification of the TE document.
6. The supplier shall keep sufficient stock of spares required during C-Annual Maintenance Contract period

Signature of Tenderer _____

Name_____

Business Address_____

Place: Seal of the tenderer_____

Date: Seal of the Tenderer_____