



TENDER ENQUIRY FORM  
INDIAN INSTITUTE OF TECHNOLOGY  
Kharagpur - 721302

Department: **ELECTRONICS AND ELECTRICAL COMMUNICATION**

ENQUIRY NO.: IIT/ECE/ENQ/MEMS/14/2018-19

Date: 04/07/2018

**INVITATION FOR TENDER FOR SUPPLY OF EQUIPMENT**

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

**Name of the equipment or item: FUME HOOD**

Please send offers, **ALONG WITH DESCRIPTIVE CATALOGUE/ BROCHURE**. The validity of the bid should be at least four months (120 days) or more from the date of the opening of this tender. Please ensure that your quotation reaches not later than **27.07.2018 at 15:00 Hrs** at the following address:

**Office of the Head**

**Dept. of Electronics and Electrical Communication Engineering**

**Indian Institute of Technology Kharagpur – 721 302, West Bengal, India**

Earnest money of Rs. 20,000/- (Rupees Twenty thousand only) (Refundable) is to be deposited in the form of Account payee Demand Draft from any national/commercial bank in favour of IIT Kharagpur, payable at Kharagpur, India. Any bid which is not accompanied with an EMD shall be summarily rejected. Earnest money deposited will be forfeited if the tenderer withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender. No interest will be paid on the earnest money of the unsuccessful bidders.

Tender Reference	<b>IIT/ECE/ENQ/MEMS/14/2018-19, Dated: 04.07.2018</b>
Price of Tender Document	<b>Rs. 1000</b>
Last Date and Time for submitting the tender document	<b>27.07.2018 at 15:00 Hrs (Indian time)</b>
Time and Date of Opening of Technical Bids	<b>30.07.2018 at 11:30 Hrs (Indian time)</b>
Place of Opening Tender	<b>Department of Electronics and Electrical Communication, Indian Institute of Technology Kharagpur – 721 302, West Bengal, India</b>
Address of Communication	<b>As stated above</b>
Contact Telephone Numbers	<b>+91- 3222 - 28 3554</b>
E-mail	<b>tkb@ece.iitkgp.ac.in</b>

“Anycorrigendum/addendumshallbepublishedonlyinInstituteWebsite and CPPP”

*Chiranjit Bhattacharyya*

## Technical Specifications:

### 'FUME HOOD'

SR.	SPECIFICATION	DESCRIPTION
1	Model and usage	“Inventa - Ex” fume hood for Regular usage
2	Design Basis	<b>American Design Standard: ASHRAE 110-1995</b> All tests including “Tracer gas containment test” passed or better. <b>European Design Standard: EN-14175-2003</b> ‘Inner Plane Containment test’ passed.
3	Design Structure	Aerodynamic, Floor mounted
4	Airflow Type	Low Constant Volume
5	Color Combination	Grey & White
6	Powder coating	Pre-treated with 8 tank chemical processes and powder coated with highly chemical resistant epoxy colors having dry film thickness of 70 to 80 microns or better. Passes all conformity performance tests as per IS standards.
7	Material of Construction of superstructure	Galvanized Iron(GI) as per IS277:2003 standard of 1.0 mm thickness for all sheet metal paneling 1.2 mm for back pillars 1.2 mm for front corner post
8	Front Top Panel	Easily openable hinged Top Panel for easy access to Flow Control Valve and Electrical Lighting fixtures for maintenance.
9	Corner Post	Triangular profiled Corner Post preferably placed on Left and Right Hand Side of the Fume hood and it houses the utility line fittings and electrical receptacles.
10	Construction(Interior)	Chemical & Heat Resistant, Fire Retardant, Smooth Finish, Easily Cleanable Panels made out of durable PRL integral work walls (6 mm thick).ASTM flames spread index< 25.
11	Active Kinetics exhaust system	Interstitial 7- point active kinetics exhaust system (for light, normal & heavy fumes) with baffle to ensure rapid exhaust of fumes.
12	Airfoil	Aerodynamic Design, Horizontal fixed airfoil mounted on the worktop made of SS304 (1.2mm).
13	Worktop	Chemical resistant splash & spillage proof dished Black Granite worktop (18±1 mm thick) or better. Skirting of 15 mm from all sides for no chemical spillage.
14	Sink, Water tap with drain arrangement	Worktop must preferably have sink sealed with silicon sealant for drainage with water tap on left back side of worktop. Sink must have a trap for waste collection.
15	Sash(Shutter)	Vertical rising sash counter-balanced with pulley and counter-weight system Toughened Float Glass sash (4mmthick) or more. Smooth and light sash operation .Clear openable height = 750mm or more .Impact Resistance of the sash (Toughened Glass) must preferably be four times higher than other sash materials(like Safety Glass and Polycarbonate).Breaking Stress value for fully toughened glass(Tempered Glass)=24,000psi.
16	Wet & Dry Service valves	Remotely operated Color coded Brass Needle Valves for fine control over utilities(as per DIN 12920 norms) total 4 nos. service valves with PU plumbing with 6mm internal dia, withstands up to 5kgf pressure or better
17	Maintenance ports	Open-able top panel for easy maintenance of tube light and flow control valve Triangular service panel for maintenance of utility valves and tubing.

18	Internal nozzles	Brass powder coated fittings must preferably be staggered in the fume hood to avoid the intermingling of the flexible tubes. Also the taps must preferably be tapered in shape to use with flexible tubing of sizes from 1/4" to 1/2" India, to provide greater flexibility to the user. Note:- Our Scope of supply for utility line sends at 1/4 <sup>th</sup> BSP male adopter.
19	Lighting	Fluorescent light (40 watt, 2 Nos.) with vapor-proof fitting for proper illumination .Intensity approx 400 lux at worktop level.
20	Electrical Utilities	3nos. electrical sockets 'North West' make (230V,5/15A,50 Hz), 3nos. 'North West' make MCBs with blower NO/NCs witch with built- in starter & light switch on front fascia .Cables & wires 'Fire Retardant' grade.(All on RHS)
21	Built-in Starter	The electrical wiring should have built-in starter of "Telemechanique" make suitable to blower motor capacity.
22	Cable entering port	For easy access of cables from fume hood to electrical sockets.
23	<b>Chemical Storage Base Cabinet (Ventilated &amp; on castors)</b>	Base cabinet should be ready to receive the fume hood at it stops. It should have following features: Internal special chemical resistant material lining to the cabinet walls. Two exhaust ports connected to the fume hood exhaust system internally. Complete chemical resistant, fireproof pre-lam/chipboard cabinet construction. One removable horizontal partition to store chemicals. PP Trays for chemical storage. Cabinet son castors.
24	Apparatus Holding Grid ( <b>Lattice Assembly</b> )	A grid made up of <b>Duralumin Powder coated rod</b> (Dia.12.7mm) to hold the apparatus. It should cover the entire length of the fume hood and will be built-in at fume hood back side. Installed at the distance of 150 mm from backside of fume hood.
26	AirFlowMonitor <b>AFA1000/1</b>	Model AFA1000/1'. This device is an accessory for Fume hood to indicate the approximate face velocity of airflow with primary purpose of warning when flow condition occurs. Red & green LEDs correspond to low & normal flow rates. When flow decreases from Normal to Low, an audible alarm will also actuate requiring manual acknowledgement for silence. Digital display of face velocity in m/sec or fpm On screen display for Safe and Alarm conditions with Audible alarm and LED indication. Push button calibration and configuration Plug-in connections for power supply and airflow sensor 3 programmable output relays 3 configurable inputs Com port for local or PC network connection
27	Temperature indicator	'PPI make model Zenex /Delta'. Size 48x 48 x 110,mm (Panel cutout – 44 x 44mm) Accuracy±0.25% of reading ±1 LSD, ±1°C Supply Voltage 85 to 264V AC, 50/60Hz User Interface Display: 2 rows of 3digit x 7segment high intensity LED Upper Row : Process Value for PID 1 Lower Row : Process Value for PID 2 KeyBoard :3 front panel keys for settings
28	Level adjusting screws	Made of SS Bolts to adjust the fume hood level by <u>±</u> 10mm.

29	Exhaust Port	Unique exhaust port design ensures that the fumes will be exhausted smoothly without any turbulence at the exhaust port. Also it ensures low noise level.
30	Flow control valve	To regulate airflow.
31	Noise Level	< 70db at 1 meter from fume hood.

**CENTRIFUGAL BLOWER: (For air suction for 1no. Fume hood) - 1No.**

Silent PP+FRP high efficiency remote blower consisting of continuous rating motor and chemical resistant impeller .It satisfies international safe velocity norms.

Sr. No	Specification	Description
1	Construction	SIS W type, chemical & heat resistant PP+ FRP blower with aerodynamically balanced PP impeller, with drain plug.
2	Air Suction Capacity	<b>600 CFM</b> confirming to international face velocity norms and as per safe fume hood airflow pattern.
3	Motor	<b>‘Crompton/LHP/Other Reputed’</b> make, <b>1.8HP Motor</b> 3Phase TEFC, IP55, ClassF, continuous rating .As per IS325.
4	Drive	Direct Drive

**“DUCTING”**

Chemical resistant PP+FRP (**3mm+2mm**) rigid & flexible duct work from Fume hood to exhaust stack point with weather proof canopy. Total ducting with horizontal, vertical members, flanges, and bends, bracketed supports and goose neck exhaust stack

**“INSTALLATION”**

Must be carried out by skilled team with duct work design, fitting, fixing of blower, commissioning & testing of the same.

**TESTING**

All fume hoods must be “factory tested” as per **ASHRAE110:1995** face velocity norms. Also “Onsite Validation” must be carried out to ensure working of fume hood as per international norms. “Tracer gas containment testing’ must be carried out.

**WARRANTY:**

(1+2) years warranty against all manufacturing defects from the date of installation.

**AFTER SALES SERVICE:**

Annual Maintenance Contracts after completion of Warranty period.

**PACKING:**

Wooden packing for fume hood, base cabinet and centrifugal blower. Must have 3 wooden boxes per fume hood set.

**DELIVERY:**

6 – 8 weeks from the date of receipt of valued order with advance payment.

## GENERAL TERMS & CONDITIONS

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

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

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

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

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

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

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

7. **MEASUREMENTS/WEIGHT:** NETT/GROSS OF THE CONSIGNMENT. IN CASE OF AN ORDER, YOU SHALL USE AIR WORTHY PACKAGE (AS APPLICABLE) DULY CERTIFIED WITH DOCUMENTS – PLYTO – SANITARY CERTIFICATE (AS PER QUARANTINE ORDER 2003).
8. **SCOPE OF SUPPLY:** SHOULD INCLUDE FREE INSTALLATION AND COMMISSIONING
9. **PAYMENT TERMS FOR FOREIGN FIRMS**

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

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

B) BANK CHARGES ON LC/SD (WITHIN INDIA APPLICANT ACCOUNT AND OUTSIDE INDIA TO BENEFICIARY ACCOUNT).

**PAYMENT TERMS FOR INDIAN FIRMS**

A) 100% PAYMENT THROUGH CROSSED ACCOUNT PAYEE CHEQUE / ELECTRONIC TRANSFER AFTER RECEIPT OF STORE IN GOOD ORDER & CONDITION AND SUCCESSFUL INSTALLATION & COMMISSIONING.

B) ENSURE MENTIONING

i) BANK DETAILS OF THE BENEFICIARY, GST NO. AND PAN NUMBER

ii) FULL NAME AND ADDRESS OF THE BENEFICIARY ON WHOM ORDER HAS TO BE PLACED

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

16. THOSE BIDDERS WHO DO NOT RECEIVE ANY COMMUNICATION FOR PARTICIPATION IN PRICE BID OPENING MEETING MAY PRESUME THAT THEIR BID HAS NOT BEEN ACCEPTED BY THE INSTITUTE.
17. CONDITIONAL OFFER WILL NOT BE ACCEPTED.
18. LATE TENDERS I.E. TENDER RECEIVED AFTER THE DUE DATE AND TIME OF SUBMISSION AS MENTIONED ABOVE SHALL NOT BE ACCEPTED.
19. BIDDERS TO ENCLOSE THE FOLLOWING DOCUMENTS:-
- A) INCOME TAX RETURN (3 YRS) AND LATEST SALES TAX RETURN (GST No.), AND PAN NO.
- B) BANKER'S SOLVENCY CERTIFICATE
- C) SUMMARY OF AUDITED STATEMENT OF ACCOUNTS FOR THE LAST THREE YEARS TO BE ENCLOSED AND FINANCIAL HIGHLIGHTS AND THE KEY PERFORMANCE DURING THE LAST THREE QUARTERS TO BE ENCLOSED AS PER FORMAT:-

COMPANY'S KEY PERFORMANCE

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

- D) CUSTOMER SATISFACTION CERTIFICATE FROM ONE SUCH ORGANIZATION IS TO BE ATTACHED WITH THE TECHNICAL BID AND PRICE BID.
- E) NAME AND ADDRESS OF MINIMUM THREE CLIENTS TO WHOM SUCH EQUIPMENT HAVE BEEN SUPPLIED SHOULD BE MENTIONED.
20. **WARRANTY / GUARANTEE:** THIS COMPREHENSIVE WARRANTY / GUARANTEE SHALL REMAIN VALID FOR **36 MONTHS** AFTER THE GOODS (OR ANY PORTION THEREOF AS THE CASE MAY BE) HAVE BEEN DELIVERED AND COMMISSIONED TO THE FINAL DESTINATION.
21. THE INSTITUTE DOES NOT BIND ITSELF TO OFFER ANY EXPLANATION TO THOSE BIDDERS WHO'S TECHNICAL BID HAS NOT BEEN FOUND ACCEPTABLE BY THE EVALUATION COMMITTEE OF THE INSTITUTE.
22. 22. ALL TENDERS (UNLESS OTHERWISE SPECIFIED) ARE TO BE SUBMITTED / HANDED OVER TO **Office of the Head, Dept of Electronics & Electrical Communication Engineering, INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR - 721 302** AND FOR ANY TECHNICAL/ SPECIFICATION RELATED QUERY PLEASE CONTACT:

**Prof. T.K. Bhattacharya**  
**Lab. In-Charge, MEMS Lab.,**  
**Department of Electronics and Electrical Communication Engineering,**  
**Indian Institute of Technology, Kharagpur-721302**  
**[Ph.: 03222-283554]**



**IMPORTANT**

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

**LAST DATE FOR SUBMISSION OF SEALED BIDS: 27.07.2018**

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