



DEPARTMENT OF APPLIED MECHANICS
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI – 600036, INDIA

06Aug.2018

Ref. No. ASE/1617/134/MUAYTMMU

Due date: 20Aug.2018

Opening date: 20Aug.2018

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of “**Mass-flow Controller for Gas mixing**” conforming to the specifications given in (Annexure – 1).

Instructions to the Bidder

- (i) Preparation of Bids: The Limited tenders should be submitted under Single bid system. The Tender for supply of “**Mass-flow Controller for Gas mixing**” should be written on the left side of the cover and sealed.
- (ii) Delivery of the tender: The tender shall be sent to the below mentioned addresses either by post or by courier so as to reach the following address before the due date and time specified in our Schedule:

Dr. Satyanarayanan Seshadri, Dept. of Applied Mechanics, IIT Madras, Chennai 600 036

Prices:

The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges to Department of Applied Mechanics. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However, the percentage of tax & duties should be clearly indicated. The price should be quoted without custom duty and excise duty, since I.I.T. Madras is exempt from payment of excise duty, and the custom duty will be paid at concessional rate against duty exemption certificate. In case of import supply, the price should be quoted on EX-WORKS and CIP basis indicating the mode of shipment.

- (iii) Agency Commission:

Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under a circumstances. The details should be

explicitly shown in Tender even in the case of ‘Nil’ commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. The foreign Principal should indicate about the percentage of payment and it should be included in the originally quoted basic price, if any.



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(iv) Terms of Delivery:

The item should be supplied to our Departments as per Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/ Commissioning should be completed as specified in our important conditions.

(v) IIT Madras reserves the full right to accept / reject any tender at stage without assigning any reason.

Yours sincerely,

Dr. Satyanarayanan Seshadri

Email: satya@iitm.ac.in

Phone: [+91] (44) 2257 4078

SCHEDULE

Important Conditions of the tender:

- (1) The due date for the submission of the tender is 20.08.2018, 3:00 pm. The offers / bids should be submitted. Bid should consist of all technical details / specifications; indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes, transportation, packing & forwarding, installation, guarantee, payment terms, pricing terms etc... The Limited Tender for supply of “Mass-flow Controller for Gas mixing” should be written on the left side of the cover and sealed.
- (2) If an Indian agent is involved, the following documents must be closed:
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. Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business. The enlistment of the Indian agent with Director General of Supplies & Disposals under the Compulsory Registration Scheme of Ministry of Finance.
- (3) The offer/bids should be sent only for a machine that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.
- (4) Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the bid.
- (5) Documentary proof for the claimed position and repetition accuracies must be obtained from the principals and submitted along with the relevant pages of the standards.
- (6) Compliance or Confirmation report with reference to the specifications and other terms& conditions should also be obtained from the principal.
- (7) Validity: Validity of Quotation not less than 90 days from the due date of tender.
- (8) Delivery Schedule

The tenderer should indicate clearly the time required for delivery of the item. In case there is any



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deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.

(9) Risk Purchase Clause:

In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.

(10) Payment:

No advance payment is generally admissible. In case of specific percentage of advance payment is paid the Foreign Vendor

(11) On-site Installation:

The equipment or machinery has to be installed or commissioned by the successful bidder within 15 to 20 days from the date of receipt of the item at site of IIT Madras.

(12) Previous Experience:

The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately (for more details please refer our Technical Specifications). The vendor should clearly specify the details of the organizations where such systems have been supplied.

(13) Late offer:

The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.

(14) Acceptance and Rejection:

I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

(15) Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents /Specifications.

(16) Disputes and Jurisdiction:

a. Settlement of Disputes: Any dispute, controversy or claim arising out of or in connection with this PO including any question regarding its existence, validity, breach or termination, shall in the first instance be attempted to be resolved amicably by both the Parties. If attempts for such amicable resolution fails or no decision is reached within 30 days whichever is earlier, then such disputes shall be settled by arbitration in accordance with the Arbitration and Conciliation Act, 1996. Unless the Parties agree on a sole arbitrator, within 30 days from the receipt of a written request by one Party from the other Party to so agree, the arbitral panel shall comprise of three arbitrators. In that event, the supplier will nominate one arbitrator and the Project Coordinator of IITM shall nominate one arbitrator. The Dean IC&SR will nominate the Presiding Arbitrator of the arbitral tribunal. The arbitration proceedings shall be carried out in English language. The cost of arbitration and fees of the arbitrator(s) shall be shared equally by the Parties. The seat of arbitration shall be at IC&SR IIT Madras, Chennai.

b. The Applicable Law: This Purchase Order shall be construed, interpreted and governed by the



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Laws of India, Court at Chennai shall have exclusive jurisdiction subject to the arbitrate on clause.

c. Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in TamilNadu.

- (17) All Amendments, time extension, clarifications etc., will be uploaded on the website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

Acknowledgement:

It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE



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Annexure I

Ref.No.ASE/1617/134/MUAYTMMU

Date: 06 Aug.2018

Due date: 20Aug2018

TECHNICAL SPECIFICATION FOR MASS-FLOW CONTROLLER FOR GAS MIXING

Scope of supply:

Mixing of multiple gases simultaneously for non- intrusive type optical absorption based system.

General Specifications for Mass-flow Controller for Gas mixing:

Mass-flow controller required to control the mass flow rate of different component gases (SO₂, NO₂, NO, N₂) for mixing chamber and able to produce desired level of concentration with high accuracy at the output. The mixed gas concentration range as mentioned below:

- a. SO₂: 0.1 PPM to 500 PPM
- b. NO₂: 0.1 PPM to 500 PPM
- c. NO: 0.1 PPM to 500 PPM
- d. Balance: N₂

This MFC can be able to control directly from PC. Embedded user interface should provide the ability to easily change device range and user gas reducing inventory requirements, monitor device functionality and collect performance data. Input and Output Fittings compatible with Swagelok Connections

Quantity Required: 4 No.

Technical Specifications:

1.	Mass Flow Controller	The mass flow controllers should control the mass flow of both corrosive and non-corrosive gases like Nitrogen, Sulfur Dioxide, Nitric Oxide and Nitrogen Dioxide, Oxygen. Suitable user selectable modes should be available for selecting any specific gas chosen at a time of use.
2.	Full scale flow range	Multi Range(5sccm – 50000sccm) and Configurable
3.	Accuracy at calibration conditions after tare	±0.2% of Full Scale for 2 to 20% Full Scale ±1% of set point for 20 to 100% Full Scale
4.	Repeatability	± 0.3% Full Scale
5.	Resolution	0.1% Full Scale
6.	Operating Range	2% to 100% Full Scale
7.	Typical Response Time	<1 Second
8.	Warm-up Time	<1 Second



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9.	Mass Reference Conditions (STP)	25°C & 14.696 psia
10.	Operating Temperature	10 to +50 °Celsius
11.	Humidity Range (Non-Condensing)	0 to 95%
12.	Maximum Inlet Pressure	145 psig
13.	Proof Pressure	175 psig
14.	Storage Temperature	-20 to +80 °Celsius
15.	Wetted Materials	Standard 316L SS VAR, 316 SS, Elgiloy, Nickel, KM45, Teflon. Material can be changed based on based on type of gas flows.