



भारतीय प्रौद्योगिकी संस्थान (भारतीय खनि विद्यापीठ), धनबाद

धनबाद, झारखण्ड, भारत, पिन-826004

INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD
DHANBAD, JHARKHAND, INDIA, PIN-826004

(An Institute of National Importance under Ministry of H.R.D., Govt. of India)

STORES & PURCHASE SECTION Phone: (0326) 2235678 || Email : drps@ismdhanbad.ac.in || Website : www.iitism.ac.in

No. Mech-500545-2016-17

Date: April 5, 2017

NOTICE INVITING TENDER

Subject: Supply & Installation of Settling Chamber for roots blower 1000 cfm air discharge at 0.6 bar back pressure along with flow measuring device and Supply & Installation of Settling Chamber for roots blower 1000 cfm air discharge at 0.5 bar back pressure along with flow measuring device

Indian Institute of Technology (Indian School of Mines), Dhanbad invites quotations for the following to be supplied and delivered in Mech Department.

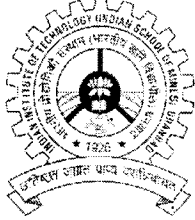
S No	Full Description of items/ store	Qty	Delivery
1	Supply & Installation of Settling Chamber for roots blower 1000 cfm air discharge at 0.6 bar back pressure along with flow measuring device (Detailed Specification is given in Annexure – I)	01 No	At the Earliest /Ex-Stock
2	Supply & Installation of Settling Chamber for roots blower 1000 cfm air discharge at 0.5 bar back pressure along with flow measuring device (Detailed Specification is given in Annexure – II)	01 No	

Tender Schedule

Particulars	Date & Time
Last date for seeking clarification/s (if any)	19.04.2017 at 3:00 P.M.
Last date and time for submission of tenders	25.04.2017 at 3:00 P.M.
Date and time of opening of tenders	25.04.2017 at 4.00 P.M.

1. You are requested to quote your lowest rates for the supply of above items in the attached format for Financial Bid (Annexure – III)
2. Clarification(s) sought after the prescribed date shall not be entertained.
3. You may send your representative in the office of the undersigned at the scheduled date and time of opening of tender.
4. Tender should be submitted in sealed cover only superscribed with Enquiry No. and due date at the following address only:

The Deputy Registrar (P&S)
Indian Institute of Technology (Indian School of Mines),
Dhanbad – 826 004 Jharkhand
P: 0326-2235612
E: drps@ismdhanbad.ac.in



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Terms & Conditions

- 1) The rates should be quoted for each item separately.
- 2) Conditional offer will not be accepted.
- 3) IIT (ISM) does not issue any Form 'C' or 'D' towards sales tax concessional rate. Hence, full rate of sales tax/VAT applicable should be quoted.
- 4) **Educational discount**, if any, should be clearly mentioned.
- 5) You are requested to submit your quotation strictly as per the specifications mentioned in the NIT.
- 6) Your tender must be valid for **minimum 90 days** from the date of opening of tender.
- 7) Please mention warranty/ guarantee in your offer clearly. Material/ equipment to be supplied must have minimum warranty/guarantee of **12 months**.
- 8) *Each page in the bid document must be numbered properly* and duly signed & sealed by the bidder on every page of the bid.
- 9) **The items/ materials shall be required to be delivered at Mech Department/ Section through Purchase & Store Section, IIT (ISM) Dhanbad at the risk and cost of the tenderer.**
- 10) Unloading and installation shall be the complete responsibility of the supplier.
- 11) The stores are required to be delivered within 30 days. Late delivery may not be accepted.
- 12) The items offered should be of good quality confirming to BIS standards, wherever applicable.
- 13) **Advance payment is not admissible.** Payment shall normally be made within 3-4 weeks subject to receipt and acceptance & installation (as per Purchase Order Terms) of the ordered materials/items.
- 14) In the event date on which the tender is opened for acceptance is declared to be a holiday, the tenders shall be deemed to remain open for acceptance till the next working day.
- 15) Please send your offer by Regd.Post/ Speed Post/ Courier along with Courier receipt. Tender/ quotation will be received during IIT (ISM) working hours only (i.e. Monday to Friday). *Late or delayed tenders shall be summarily rejected.*
- 16) Any other information that you may like to obtain, you are free to contact IIT (ISM) before submission of tender.
- 17) IIT (ISM) reserves the right to accept and/or to reject any/ all tenders without assigning any reason.


Assistant Registrar

Specifications of Settling chamber setup:

1. Plenum Chamber:

- i) Made up of Mild Steel in Cylindrical shape to handle high pressure (5 bar or more) and High Temperature (200°C. or more)
- ii) 1 m³ Capacity
- iii) Semi Sphere ends for uniform flow
- iv) Fitted with digital Pressure Gauge, Temperature Gauge of established make
- v) Stand with Shock Absorber
- vi) Suitable inlet and outlet

2. Settling Chamber

- i) Conical Diffuser and Effuser made up of Mild Steel sheet
- ii) Turbulence Intensity should be less than 0.05% (supporting mathematical calculations & simulation results etc. needs to be provided)
- iii) Honey Comb structure made up of Silicon Composites of 200mm thick and 6mm dia hole to work between -5°C to 200°C.
- iv) Appropriate stainless steel wire mesh sections

3. Velocity Measurement

- i) Digital Anemometer to measure the velocity more than 100m/s at temperature more than 100°C with accuracy $\pm 0.08\%$ or better
- ii) Software with USB cable to acquire the data and plot graph

4. Test Section

- i) Test section should have 4 divisions of dia 40mm with honey comb structure
- ii) The flow must be uniform with turbulence intensity less than 0.05%
- iii) Facility to measure the velocity and temperature in 4 sections

SPECIFICATIONS OF FLOW MEASURING DEVICE/Digital Anemometer

Accuracy (Combined Linearity, Hysteresis and Repeatability): $\pm 0.08\%$ BSL or better

Storage Temperature: -40 to 108°C (-40 to 226°F) or better

Operating Temperature: -18 to 120°C (0 to 248°F) or better

Thermal Effects (Over Operating Range):

Zero Balance:

Ranges 10 inH₂O to 1 psi: $\pm 1\%$ span

Ranges >1 psi: $\pm 0.5\%$ span

Span:

Ranges 10 inH₂O to 1 psi: $\pm 1\%$ span

Ranges >1 psi: $\pm 0.5\%$ span

Minimum Resistance Between Transducer Body and Any Wire: 100M Ω @ 50 Vdc

Pressure Cycles: 1 million min

Long Term Stability (1-Yr.): $\pm 0.1\%$ FS or better

Analog Output: User selectable 0 to 5 Vdc, 0 to 10 Vdc or 4 to 20 mA (with external 24 Vdc power supply)

Note: Analog output is independently scalable

Analog Output Cable: more than 2.7m with ferrite core

Analog Output Accuracy: 0.08% typical (0.15% max in RF field @ 10V/m)
Static Pressure: 500 psi max applied to both sides simultaneously
Display: 4-digit LCD with user selectable backlighting
Sample/Display Rate: User selectable from 0.25 to 10 sec (preset to 1/sec)
Computer Interface: USB connection for set-up with suitable cable
Enclosure Material: 316 Stainless Steel and ABS center gasket
Enclosure Environmental Rating: Weatherproof, NEMA 4X (IP65)
Sensor Wetted Parts: 316L Stainless Steel
Pressure Connection: 1/4-18 NPT male
Connection Location: Lower

Front Panel Functions:

Backlight: Manually turns backlight on/off

Min/Max: Recalls min/max values

Zero/Clear: Zeros display or clears min/max

Software Settings (via USB)

Update Rate: 4 options, 10, 5, 2, 1 times per second

Units: psi, inHg, inH₂O, bar, mbar, hPa; must be specified at time of order

Lock: Allows the lock-out of front panel functions

Alarms: User selectable "High" and "Low" alarm limits (open collector)

Analog Output: User Selectable 0 to 5 Vdc, 0 to 10 Vdc, or 4 to 20 mA

Backlight: On/Off, 10 sec, 30 sec, 1 min, 5 min

Wireless Transmitter: Channel number, transmission rate, alarms, sensor offset, chart recording, data logging

Calibrate: Zero and span

Overrange Indication: " _ _ _ _ "

WIRELESS OPTION

Transmit Sample Rate: User programmable from 1 sample/2 min to 1 sample/2 sec

Radio Frequency (RF)

Transceiver Carrier: ISM 2.4 GHz

RF Output: 10 dBm (10 mW)

Range of RF Link: Up to 120 m (400') outdoors (line of sight); Up to 40 m (130') indoors/urban

Internal Battery: Two 3.6V lithium 8.4 Ah capacity (C-cell) included

Data Transmission to Host: Pressure reading, ambient temperature reading, RF transmit strength and battery level

Specifications of Settling chamber setup:

1. **Plenum Chamber:**
 - i) Made up of Mild Steel in Cylindrical shape to handle high pressure (5 bar or more) and High Temperature (200°C. or more)
 - ii) 1 m³ Capacity
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 - v) Stand with Shock Absorber
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2. **Settling Chamber**
 - i) Conical Diffuser and Effuser made up of Mild Steel sheet
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 - iv) Appropriate stainless steel wire mesh sections
3. **Velocity Measurement**
 - i) Digital Anemometer to measure the velocity more than 100m/s at temperature more than 100°C with accuracy $\pm 0.08\%$ or better
 - ii) Software with USB cable to acquire the data and plot graph

SPECIFICATIONS OF FLOW MEASURING DEVICE/Digital Anemometer

Accuracy (Combined Linearity, Hysteresis and Repeatability): $\pm 0.08\%$ BSL or better

Storage Temperature: -40 to 108°C (-40 to 226°F) or better

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Minimum Resistance Between Transducer Body and Any Wire: 100M Ω @ 50 Vdc

Pressure Cycles: 1 million min

Long Term Stability (1-Yr.): $\pm 0.1\%$ FS or better

Analog Output: User selectable 0 to 5 Vdc, 0 to 10 Vdc or 4 to 20 mA (with external 24 Vdc power supply)

Note: Analog output is independently scalable

Analog Output Cable: more than 2.7m with ferrite core

Analog Output Accuracy: 0.08% typical (0.15% max in RF field @ 10V/m)

Line/Static Pressure: 500 psi max applied to both sides simultaneously

Display: 4-digit LCD with user selectable backlighting

Sample/Display Rate: User selectable from 0.25 to 10 sec (preset to 1/sec)

Computer Interface: UBS connection for set-up with suitable cable

Construction Material: 316 Stainless Steel and ABS center gasket
Pressure Environmental Rating: Weatherproof, NEMA 4X (IP65)
Sensor Wetted Parts: 316L Stainless Steel
Pressure Connection: 1/4-18 NPT male
Connection Location: Lower

Front Panel Functions:

Backlight: Manually turns backlight on/off

Min/Max: Recalls min/max values

Zero/Clear: Zeros display or clears min/max

Software Settings (via USB)

Update Rate: 4 options, 10, 5, 2, 1 times per second

Units: psi; inHg, inH2O, bar, mbar, hPa; must be specified at time of order

Lock: Allows the lock-out of front panel functions

Alarms: User selectable "High" and "Low" alarm limits (open collector)

Analog Output: User Selectable 0 to 5 Vdc, 0 to 10 Vdc, or 4 to 20 mA

Backlight: On/Off, 10 sec, 30 sec, 1 min, 5 min

Wireless Transmitter: Channel number, transmission rate, alarms, sensor offset, chart recording, data logging

Calibrate: Zero and span

Overrange Indication: " _ _ _ _ "

WIRELESS OPTION

Transmit Sample Rate: User programmable from 1 sample/2 min to 1 sample/2 sec

Radio Frequency (RF)

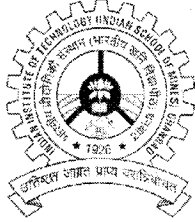
Transceiver Carrier: ISM 2.4 GHz

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Internal Battery: Two 3.6V lithium 8.4 Ah capacity (C-cell) included

Data Transmission to Host: Pressure reading, ambient temperature reading, RF transmit strength and battery level



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Annexure - III

Format for Financial Bid

NIT No.: Mech-500545-2016-17

Dated:

Bidders Ref: No.

Dated:

Subject: Supply & Installation of Settling Chamber for roots blower 1000 cfm air discharge at 0.6 bar back pressure along with flow measuring device and Supply & Installation of Settling Chamber for roots blower 1000 cfm air discharge at 0.5 bar back pressure along with flow measuring device

Sl. No.	Full Description of Items	Qty.	Rate	Amount
			Packing & Forwarding (if any)	
			Total	
			CST/VAT (if any)	
			Freight (if any)	
			Installation (if any)	
	Amount should be in figure as well as word		Grand Total	

Note:

- 1) All the details must be provided as per prescribed format only
- 2) Prices quoted by the bidders should include all local taxes, VAT, service tax, duties, livies, transportation cost and insurance costs etc. if any
- 3) All the rates must be quoted in Indian Rupees.

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