



भारतीय प्रौद्योगिकी संस्थान (भारतीय खनि विद्यापीठ), धनबाद

धनबाद, झारखण्ड, भारत, पिन-826004

(मानव संसाधन विकास मंत्रालय, भारत सरकार के अधीन राष्ट्रीय महत्व का एक संस्थान)

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 : purchase@iitism.ac.in || Website : www.iitism.ac.in

No.: Mech-INS-159-18-19

Date: 31.07.2018

NOTICE INVITING TENDER

Subject: Supply and installation of Bernoulli's Theorem Apparatus

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

S. No	Full Description of items/ store	Qty	Delivery
1	Supply & Installation of Bernoulli's Theorem Apparatus (Detailed Specification is given in Annexure – I)	1	At the Earliest

Tender Schedule

Particulars	Date & Time
Bid Security or Earnest money deposit	Rs. 8000.00
Last date and time for submission of tenders	29.08.2018 at 1:00 P.M.
Date and time of opening of tenders	29.08.2018 at 3.00 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 – II)
2. You may send your representative in the office of the undersigned at the scheduled date and time of opening of tender.
3. 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



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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.
- 4) ***Bid Security or Earnest money deposit (EMD)***: should be submitted in form of A/c payee demand draft drawn in favor of Registrar, IIT (ISM) Dhanbad and payable at any other bank/branch located in Dhanbad.
- 5) Successful bidder has to submit performance bank guarantee @ 10% of total order value of the purchase order.
- 6) ***Educational discount***, if any, should be clearly mentioned.
- 7) You are requested to submit your quotation strictly as per the specifications mentioned in the NIT.
- 8) Your tender must be valid for **minimum 90 days** from the date of opening of tender.
- 9) Please mention warranty/ guarantee in your offer clearly. Material/ equipment to be supplied must have minimum warranty/guarantee of **12 months**.
- 10) *Each page in the bid document must be numbered properly* and duly signed & sealed by the bidder on every page of the bid.
- 11) **The items/ materials shall be required to be delivered at Mech. Engg. Department/ Section through Purchase & Store Section, IIT (ISM) Dhanbad** at the risk and cost of the tenderer.
- 12) Unloading and installation shall be the complete responsibility of the supplier.
- 13) IIT(ISM), Dhanbad is entitled for Excise Duty Exemption under Govt. of India notifications and is registered with DSIR, Govt. of India for this purpose. This may be taken into consideration while quoting minimum possible rate. Exemption Certificates can be issued in favour of manufacturers only, if it is mentioned in the bid. It will not be issued any Indian Agent/dealer or distributor at any circumstances. IIT(ISM) will provide only custom duty exemption certificate for availing concessional custom duty. IIT(ISM) will not pay any extra custom duty other than duty exemption certificate.
- 14) The stores are required to be delivered within 30 days. Late delivery may not be accepted.
- 15) The items offered should be of good quality confirming to BIS standards, wherever applicable.
- 16) ***Advance or part payment is not admissible***. Payment shall normally be made within 4-6 weeks subject to receipt and acceptance & installation of the ordered materials/items and submission of bills, PBG, followed by its verification etc. (as per Purchase Order Terms).
- 17) 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.
- 18) 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*.
- 19) IIT (ISM) reserves the right to accept and/or to reject any/ all tenders without assigning any reason.

Deputy Registrar



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Annexure - I

Technical Specifications:

Description of Bernoulli's Theorem Apparatus

Description:

- Investigation and verification of Bernoulli's principle
- Static pressures and total pressure distribution along the Venturi nozzle
- Determination of the flow coefficient at different flow rates

Bernoulli's principle describes the relationship between the flow velocity of a fluid and its pressure. An increase in velocity leads to a reduction in pressure in a flowing fluid, and vice versa. The total pressure of the fluid remains constant. Bernoulli's equation is also known as the principle of conservation of energy of the flow.

Following are the salient features to be present in the setup:

Electrical components:	
Power (W)	Less than 500 Watt
Voltage (V)	~230V, SUPPLY wire for 1 ph, 220 V, 6 Amps will be provided
MCB and indicator	Branded make
Piping and Pumping components:	
Pump	Make: Kirloskar, Mono-block , 1-phase 1/2 HP, suction/ delivery = 1", Head upto 24 m, Discharge upto 1800 LPH
Piping	PVC piping with valves.
Valve	Valve must be present to regulate flow through pipe.
Flow meter	Flowmeter to be installed in the pipeline and digital reading should be displayed in a panel. Accuracy $\pm 2\%$. with Manual flow measuring device like rotameter
Delivery tank	Minimum 10 Litres, Material: SS Tank, min 3mm thick
Feed Tank	Minimum 15 Litres, Material: SS Tank, min 3mm thick
Storage tank	Minimum 70 Litres, Made up SS Tank, min 3mm thick,
Venturi nozzle	The experimental unit includes a pipe section with a transparent Venturi nozzle and a Pitot tube for measuring the total pressure. The Pitot tube (if required, movable) should be located within the Venturi nozzle and should have the capability to measure every point where manometer is fitted within ventury. The position of the Pitot tube can be observed through the Venturi nozzle's transparent front panel. Arrangement should be such, so that necessary data can be recorded to plot pressure and velocity curve



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	in a the venturi nozzle.
Multi tube Manometer , Material (Acrylic)	The Venturi nozzle should be equipped with pressure measuring points to determine the static pressures. The pressures are displayed on the minimum five tube manometers. The total pressure is to be measured by the Pitot tube and displayed on another single tube manometer.
Measurement Accuracy	± 1 mm in Manometers
Structural:	
Overall Dimensions	Within 800mm X 600mm X 800mm (L x B x H), height is flexible
Frame	Made of M.S. square tubes & sheets, welded & powder coated. Base frame will be min 2 inch above ground with bush.

EXPERIMENTAL CAPABILITIES/ OBJECTIVES

1. Energy conversion in divergent/convergent pipe flow
2. Recording the pressure curve in a venturi nozzle
3. Recording the velocity curve in a venturi nozzle
4. flow measurement through venturi nozzle and determining the flow coefficient
5. Recognising friction effects

Soft and Hardcopy of the Manual of the Bernoulli's Apparatus needs to be supplied with the setup.

Service to be Provided during supply and installation: Transit, unloading and erection of equipments at the site (Department of Mechanical Engg., IIT(ISM) Dhanbad) and any other items not mentioned above for full installation, functioning and commissioning of the setup.

Document to be Provided during submission of Quotation:

1. List of Institutes, where Bernoulli's Theorem Apparatus is supplied earlier, with photocopy Purchase Order.
2. Catalogue and website references (if available) of the regular Bernoulli's Apparatus supplied to different institution
3. Manual of the Bernoulli's Apparatus supplied to different institution.
4. Please mention the make of each and every part of the experimental setup, if make is not available, please mention it as 'local made'.



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Annexure - II

Format for Financial Bid

NIT No.: Mech-INS-159-18-19

Date:

Bidders Ref: No.

Date:

GSTIN No.:

Subject: Supply & Installation of Bernoulli's Theorem Apparatus

Sl. No.	Full Description of Items with (HSN Code/SAC Code)	Qty.	Rate	Amount
		Packing & Forwarding (if any)		
		Total		
		GST		
		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 GST, HSN Code, SAC Code, duties, livies, transportation cost and insurance costs etc. if any
- 3) All the rates must be quoted in Indian Rupees.