



# 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-160-18-19

Date: 31.07.2018

## NOTICE INVITING TENDER

### Subject: Supply and installation of Pipe friction 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 Pipe friction Apparatus (Friction losses in pipe line) (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*



# 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-160-18-19

Date: 31.07.2018

## 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) Being an IITs and equipment will be used for research purpose. Hence, GST may be charged @ 5% as per Institute's notification.
- 5) **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.
- 6) Successful bidder has to submit performance bank guarantee @ 10% of total order value of the purchase order.
- 7) **Educational discount**, if any, should be clearly mentioned.
- 8) You are requested to submit your quotation strictly as per the specifications mentioned in the NIT.
- 9) Your tender must be valid for **minimum 90 days** from the date of opening of tender.
- 10) Please mention warranty/ guarantee in your offer clearly. Material/ equipment to be supplied must have minimum warranty/guarantee of **12 months**.
- 11) *Each page in the bid document must be numbered properly* and duly signed & sealed by the bidder on every page of the bid.
- 12) **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.
- 13) Unloading and installation shall be the complete responsibility of the supplier.
- 14) 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.
- 15) The stores are required to be delivered within 30 days. Late delivery may not be accepted.
- 16) The items offered should be of good quality confirming to BIS standards, wherever applicable.
- 17) **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).
- 18) 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.
- 19) 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.*
- 20) IIT (ISM) reserves the right to accept and/or to reject any/ all tenders without assigning any reason.

Deputy Registrar



# 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-160-18-19

Date: 31.07.2018

Annexure - I

## Technical Specifications:

### Description of Pipe Friction Apparatus

#### Description:

- Resistances and losses in turbulent pipe flow of different diameter and material
- Resistances and losses in turbulent pipe flow due to bend, valve, converging diverging section
- Closed water circuit with tank and pump
- Ideal measurement results through long measuring section with several pressure measuring points

Knowledge of pressure losses in various pipe elements is a key factor in designing pipe systems. The setup should allow the determination by experiment of these important coefficients and the investigation of the pressure curve in typical pipe sections.

The setup should comprises all the following parts: (i) three straight pipe sections made of same material (GI) and with different diameters (1 inch,  $\frac{3}{4}$  inch and  $\frac{1}{2}$  inch) (ii) three straight pipe sections made of different materials (MS, Aluminium, and copper) with same diameter (minimum  $\frac{1}{2}$  inch or higher), length may be less than case i (iii) one pipe (GI) having two consecutive  $90^\circ$  bend (length should be same with previous case ii) (iv) one pipe (GI) fitted with one ball valve and contraction and enlargement section consecutively.

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 HP, suction/ delivery = 1", Head upto 32 m, Discharge upto 3100 LPH
Piping	As discussed above.
Valve	Valve must be present to regulate flow through pipe.
Flow meter	Flow meter to be installed in the pipeline and digital reading should be displayed in a panel. Accuracy $\pm 2\%$ . <b>Or</b> Manual flow measuring device like rotameter may be installed
Delivery tank	Minimum 30 Litres, Material: SS Tank, min 3mm thick
Storage tank	Minimum 75 Litres, Made up SS Tank, min 3mm thick,
Manometer	Transparent acrylic Mercury column
Measurement Accuracy	$\pm 1$ mm in Manometers, Measurement option must be present across each fitting in order to measure <b>each</b> minor and major losses present in the pipe system. Experiment will be done one case at a time, therefore sufficient valves for diversion of the fluid flow



# 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-160-18-19

Date: 31.07.2018

	must be present.
<b>Structural:</b>	
Overall Dimensions	Within 2300mm × 400mm × 1000mm (L × B × H), height is flexible.
Frame	Made of M.S. square tubes & sheets, welded & powder coated. Base frame will be minimum 2 inch above ground with bush.
Piping system Alignment (Optional)	All piping system may be aligned in a wooden wall (or frame) along the z direction (vertical), in order to consume less space and better accessibility of each fitting to be operated during experimentation.

## EXPERIMENTAL CAPABILITIES/ OBJECTIVES

1. Fundamentals of flow measurement
2. Fundamentals of pressure measurement
3. Determination of the friction factor for different pipe materials and diameters
4. Resistance coefficients of pipe bends, enlargements and contractions
5. Pressure losses and opening characteristics of valves and fittings

**Soft and Hardcopy of the Manual of the Pipe Friction 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 Pipe Friction Apparatus is supplied earlier, with photocopy Purchase Order.
2. Catalogue and website references (if available) of the regular Pipe Friction Apparatus supplied to different institution
3. Manual of the Pipe Friction 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'.



# 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-160-18-19

Date: 31.07.2018

Annexure - II

## Format for Financial Bid

NIT No.: Mech-INS-160-18-19

Date:

Bidders Ref: No.

Date:

GSTIN No.:

**Subject: Supply & Installation of Pipe friction Apparatus**

Sl. No.	Full Description of Items with (HSN Code/SAC Code)	Qty.	Rate	Amount
		Packing & Forwarding (if any)		
		<b>Total</b>		
		GST		
		Freight (if any)		
		Installation (if any)		
Amount should be in figure as well as word		<b>Grand Total</b>		

### 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.