



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-248-18-19

Date: 10-10-2018

NOTICE INVITING TENDER

Subject: Supply and installation of Pump characteristics for parallel and series configuration

Sir,

Indian Institute of Technology (Indian School of Mines), Dhanbad invites quotations for the following to be supplied and delivered in Pump characteristics for parallel and series configuration Department.

S No	Full Description of items/ store	Qty	Delivery
1	Supply & Installation of Pump characteristics for parallel and series configuration (Detailed Specification is given in Annexure – I)	1	At the Earliest

Tender Schedule

Particulars	Date & Time
Tender Fee	Rs. 590/- (Rs. Five Hundred Ninety only)
Bid Security or Earnest money deposit	Rs 16000 (Sixteen Thousand Only)
Last date and time for submission of tenders	05.11.2018 at 1:00 P.M.
Date and time of opening of tenders	05.11.2018 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-248-18-19

Date: 10-10-2018

Terms & Conditions

- 1) The rates should be quoted for each item separately.
- 2) Conditional offer will not be accepted.
- 3) **Tender Cost:** Cost of the tender document is to be paid by way of online only through the link: <https://www.onlinesbi.com/prelogin/collecthome.htm?corpID=272342> . Tender cost is **non-refundable and non-transferable**. Alternatively, intending tenderers may download the complete set of tender document from IIT (ISM) website (www.iitism.ac.in).
- 4) IIT (ISM) does not issue any Form 'C' or 'D' towards sales tax concessional rate. Hence, full rate of GST applicable should be quoted.
- 5) Being an IITs and equipment will be used for research purpose. Hence, GST may be charged @ 5% as per Institute's notification.
- 6) **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.
- 7) The successful bidder has to submit performance bank guarantee @10% of total order value within one week from the date of purchase order as per rule.
- 8) **Educational discount**, if any, should be clearly mentioned.
- 9) You are requested to submit your quotation strictly as per the specifications mentioned in the NIT.
- 10) Your tender must be valid for **minimum 90 days** from the date of opening of tender.
- 11) Please mention warranty/ guarantee in your offer clearly. Material/ equipment to be supplied must have minimum warranty/guarantee of **12 months**.
- 12) *Each page in the bid document must be numbered properly* and duly signed & sealed by the bidder on every page of the bid.
- 13) **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.
- 14) Unloading and installation shall be the complete responsibility of the supplier.
- 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 payment is not admissible.** Payment shall normally be made within 3-4 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) Any other information that you may like to obtain, you are free to contact IIT (ISM) before submission of tender.
- 21) IIT (ISM) reserves the right to accept and/or to reject any/ all tenders without assigning any reason.

Assistant Registrar (P&S)



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-248-18-19

Date: 10-10-2018

Annexure – I

Technical Specifications:-

Pump characteristics for parallel and series configuration

Description:

- Operation of centrifugal pumps in parallel and series configuration
- Identification of pump and system characteristics

Parallel pump configurations offer increased flow rate in a piping system. In series configuration pumps with equal flow rates are arranged in a row. This arrangement allows the bridging of large heads and is often more cost-effective than the use of a single pump with large head. This experimental setup should allow determining performance of both configurations in the piping system. This experimental setup must have the provision to measure analogue and digital reading of all components.

The setup should comprises all the following parts: (i) trainer with 2 centrifugal pumps which are operated in series or parallel configuration (ii) closed water circuit (iii) drive motors with adjustable speed (iv) motor with pendulum bearing, torque measurement via lever arm and force sensor (5) inductive speed sensor on the motor (6) electromagnetic flow meter (7) digital displays for power consumption, torque, speed, pressure and flow rate (8) Software for data acquisition via USB under Windows 7, 8.1, 10

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 3 phase, 220 V, 6 Amps will be provided
MCB and indicator	ISO certified make
Piping and Pumping components:	
Pump	Centrifugal Pump - 02 Nos., Make: Kirloskar/Sulzer/Blagdon Pump, 3-phase, 1 kW, suction/ delivery minimum 0.5", Head upto 19.5 m, Discharge upto 18.4 m ³ /h
Motor	Two drive motor, Make: Kirloskar/Siemens/Crompton, Power output: 1kW, Speed: 0-1500 rpm,
Piping	ISO certified make GI Pipe. 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 (it is Optional).
Valve	ISO certified make Valve must be present to regulate flow through pipe. Suitable valves must be there to generate/measure head at delivery lines of the pumps with different opening. Opening/closing of the valve may be done manually and automatic both. Provision of measurement of the opening/closing of the valve must be present with analogue and digital system.



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-248-18-19

Date: 10-10-2018

Storage tank	Minimum 95 Litres, Made up SS Tank, min 3mm thick,
Measurements:	
Pressure	Pressure sensor with digital display in the main display panel with analogue pressure gauge (glycerine filled) (ISO certified make: Japsin Instrumentation/ Hi Tech Instruments / Tufit/ Stewarts/Perma-cal/) with accuracy $\pm 2\%$. Measuring range: At inlet: (minimum) Pump 1: 1-0.6 bar Pump 2: 1-3.0 bar At outlet: (minimum) Pump 1: 1-2.5 bar Pump 2: 1-3.0 bar
Flow meter	<i>ISO certified make</i> Flowmeter to be installed in the pipeline and digital reading should be displayed in a panel with accuracy $\pm 2\%$. and <i>ISO certified make</i> Manual flow measuring device like rotameter will be installed (range – 0-450 lit/min)
Dynamometer / Torque measuring device	<i>ISO certified make</i> . To measure shaft power with digital display in the control panel. (Range of 0-30 kW). Detachable from the setup.
Display/Control Panel	<i>ISO certified make</i> Separate Controller and display panel must be there with roller facility so that it can move and can be separated from the main setup. Minimum ISI approved make. Speed regulation provision of the motor must be there (like any % of the rated speed). Separate display panel for all measurement must be there so that data (head and discharge) corresponding to the different speed, different shaft power and different electricity power may be obtained simultaneously together. Range of speed: 0-1500 rpm, with values one digit after decimal Range of power: 0-30kW, with values two digit after decimal Range of voltage : 0-230V, 6 Amps, , with values one digit after decimal
Structural:	
Overall Dimensions	Within 2100mm \times 1000mm \times 1800mm (L \times B \times 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 roller arrangement so that it can move.
Table/Platform	Necessary Tables and platform of all the components/accessories must be supplied. The whole setup must have roller installed so that it can move.

EXPERIMENTAL CAPABILITIES/ OBJECTIVES

1. Investigate behaviour of centrifugal pumps in operation



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-248-18-19

Date: 10-10-2018

2. Recording pump characteristics
3. Recording system characteristics
4. Determining efficiency of the system
5. Investigation of series and parallel configuration of pumps
6. Starting up and shutting down pump systems

Soft and Hardcopy of the Manual of the 'Pump characteristics for parallel and series configuration' 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 including masonry, foundation, power supply switch (if required) of the setup.

Document to be provided during submission of Quotation:

1. List of Institutes, where 'Pump characteristics for parallel and series configuration' is supplied earlier, with photocopy Purchase Order.
2. Catalogue and website references (if available) of the regular 'Pump characteristics for parallel and series configuration' supplied to different institution
3. Manual of the 'Pump characteristics for parallel and series configuration' supplied to different institution.
4. Please mention the **make and model** of each and every part of the experimental setup, if make is not available, please mention it as 'local made'. Please don't mention "or equivalent" term, otherwise the item will be considered as "non-complied".



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-248-18-19

Date: 10-10-2018

Annexure - II

Format for Commercial Bid

Our NIT No.: Mech-INS-248-18-19

Date:

Bidders Ref: No.

Date:

Sub: Supply and installation of Pump characteristics for parallel and series configuration

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.