



**NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA-769008 (ODISHA)**

An Institute of National Importance under Ministry of Education, GOI

NOTICE INVITING TENDER

Tender Notification No: NITR/PW/ME/2020/220

Dated: 28/12/2020

The National Institute of Technology, Rourkela invites bids from the eligible bidders for procurement and installation of **A COMPLETE UNIT OF FRANCIS TURBINE TEST RIG** at NIT Rourkela.

Last date of Submission of Bid : **25/01/2021 by 11:00 AM**

Date of opening of techno-commercial Bid : **27/01/2021 at 11:00 AM**

For Details:

https://nitrkl.ac.in/OldWebsite/Jobs_Tenders/9Equipment/Default.aspx

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Bidding through: <https://eprocure.gov.in/eprocure/app>

**Sd/-
REGISTRAR**



**NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA-769008, ODISHA**

(OPEN TENDER NOTICE NO.: NITR/PW/ME/2020/220

Dated: 28/12/2020)

(PROCUREMENT OF A COMPLETE UNIT OF FRANCIS TURBINE TEST RIG.)

Item No	Description	Quantity
1	A Complete unit of Francis Turbine Test Rig. (As per the specification mentioned in Documents)	1 Unit

1. Quantity required : **As mentioned above (All information regarding technical specification provided in A Complete unit of Francis Turbine Test Rig.)**
2. Delivery : Within **90 days** from the date of the purchase order
3. **Last date of submission of bid : 25/01/2021 at 11:00 AM**
4. **Date of opening of techn-commercial bid : 27/01/2021 at 11:00 AM**
5. The firm should not have been black listed at any time.
6. The submission of the following bids by the tenderer should be through <https://eprocure.gov.in/eprocure/app> Please follow the guidelines as per the portal.

Procurement and installation of a Complete unit of Francis Turbine Test Rig
(Tender Notice No.: NITR/PW/ME/2020/220 Dated: 28/12/2020)
Due on 25/01/2021 at 11:00 AM

7. **The Liquidated damage clause** will be charged for any delay in the supply of goods.
8. The validity of the tender shall be **90 days** from the date of opening of the bids.
9. Detailed advertisement, including all tender documents, is also available on our website at http://nitrkl.ac.in/OldWebsite/Jobs_Tenders/9Equipment/Default.aspx .
10. NIT reserves the right to qualify or deny prequalification of any or all applicants without assigning any reasons.

(REGISTRAR)
NIT, Rourkela
Fax No- 0661-2462022
Ph. No -0661-2472021

Specifications of the Complete unit of Francis Turbine Test Rig

Technical Specification

The main aim is to effectively understand the performance characteristics of a Francis Turbine Test Rig. The other objective is to effectively understand the construction and operation of a Pelton Wheel Turbine. The turbine should be powered by a centrifugal pump, which should be driven electrically. The turbine output should be measured by a dynamometer. A water tank, piping, and other required accessories must be supplied with the test rig. Self-explanatory operating manuals must be provided with each system. Detailed theory, as well as practical exercises, should be included in the manual.

A compact, comprehensive set of Francis Turbine Test Rig is required for the

1. Study of the construction and operation of a Francis Turbine
2. Determination of constant head characteristics curve
3. Determination of constant speed characteristics curve
4. Determination of constant efficiency curve

The setup must have the following components

1. Francis Turbine unit
2. Centrifugal pump to run the turbine
3. Electrical motor to run the pump
4. Dynamometer unit to measure the turbine output
5. Pressure measurement unit
6. Flow measurement unit
7. Water tank
8. Additional unit for PC Operation of the test rig

Minimum specification:

A Francis turbine test rig of almost 1 HP output is required. Horizontal type Francis turbine of size almost 75 mm, should develop about 1 HP output. It should be made of cast iron spiral casing, bearing housing and aerofoil shaped gunmetal guide vane and gunmetal runner. It should have a transparent outlet pedestal with stainless steel draft tube. It should have the cast iron external bearing pedestal for longer bearing life. It should also have a cast iron base plate and a slotted dead weight for conducting experiments in metric units. Pressure gauge for head measurement should have the facility to measure in meters. A water-cooled cast iron brake drum of 200 mm dia, should be mounted on the main shaft with bearings for the load test. The head of the turbine should be at least 10 meters at the discharge of about 1000 LPM.

The test rig should include a 1 HP supply pump set (of almost 75 mm in size) with a discharge of almost 1000 LPM at 10 meters head for supplying water to the above turbine. The supply pump should operate using 400 volts 3 phase 50 cycles AC mains.

The switch and DOL Starter should be suitable for the above centrifugal pump set and mounted on a panel board.

The complete piping system consisting of pipes, valves, fittings for the test rig should be supplied.

Flow measuring unit should consist of a suitable orifice meter, pressure gauges, and dynamometer unit.

The sump should be made of the fiberglass lined MS, and the size of the sump should be at least 1550 x 950 x 500 mm to store sufficient water for independent circulation through the unit for experimentation. The sump and water supply section should be arranged within the floor space of the main unit.

Rigid MS framework compactly fitted with all the above items as a self-sufficient package unit (suitable for operation without any foundation) should be supplied.

Installation and Training: A 2-day installation post-training should be provided by the bidder.

Other Qualification Criteria:

1. Complete technical specification of the instrument and its necessary parts and accessory items required for running the instrument
2. Scanned copy of the technical brochure and website reference of the same must be included in the bid.
3. There must be a local maintenance center with the availability of the spares in India. The registered address of the local maintenance center should be provided.
4. A declaration from the Principal stating that the spares will be made available for the equipment for at least 5 years from the date of installation.
5. The average turnover of the bidder in the last 3 Financial Years should be at least Rs. 2.0 crores. Relevant documents to be provided.
6. The bidder should have proven track record in Govt. Sector at least for 7 years. POs in favor of the bidder to be provided as proof.
7. A duly signed detailed User List (at least 5) with the concerned person's valid contact details, in India where the instruments are still in the operational condition must be provided for each of the instrument.
8. Copies of at least 5 POs/installation certificates of similar or higher specifications than the quoted instrument from Govt. organizations/ labs/ institutes should be provided. The POs/installation certificate should not be older than 5 years.
9. A copy of the Authorization Certificate issued by the Principal in favour of the Indian agent along with a certified copy of the Agency Agreement between the foreign Principal and Indian agent. Both these certificates must be up-to-date.
10. In case of imported items, a letter in the official letterhead of the principal declaring the Indian agent as their authorized agency to bid. The letter must contain the official tender enquiry number as depicted in the e-portal, must be included with the technical bid. (This must not be clubbed with Authorization Certificate)
11. A duly signed separate compliance sheet of the specification (at every point) mentioned in the technical part along with the deviation (if any). This compliance sheet will not be considered as the technical specification of the instrument.
12. Profit and loss statements and balance sheets of the financial year 2018-2019 (as on year ended, i.e., 31.03.2020) must be provided along with the technical bid.
13. Income tax return (ITR) of the assessment year 2018-2019 must be provided along with the technical bid.
14. Dealership Certificate and Proprietary Nature Certificate (If applicable) must be provided along with the technical bid.
15. Price should include installation.