

Vendor Enlistment

Performance Testing /Energy Audit of Power Generating Stations

1.0 **Brief Scope of work:**

- 1.1. Boiler Performance Testing: Measurement of parameters of Boiler for efficiency calculation, APH performance calculation, flue gas oxygen mapping etc. with offline test instruments meeting ASME standards.
- 1.2. Turbine Performance Testing: Measurement of parameters of TG cycle for Heat rate calculation , Heaters performance calculation , Condenser Performance calculation with offline test instruments meeting ASME standards.
- 1.3. Performance testing of Cooling Tower: Measurement of Cooling tower test parameters with offline test instruments meeting CTI standards.
- 1.4. ESP performance Test: Measurement of ESP emission test parameters with offline test instruments meeting USEPA standards.
- 1.5. Energy Audit/APC Audit: All parameters as specified with the objective to assess performance of the equipment/system/cycle in thermal power station.

2.0 **Intent:** The intent is to select qualified vendors to provide instruments and skilled manpower for onsite measurement associated with the scope of work.

3.0 **Coverage**

- 3.1. Power Generating units of 20 MW and above, Steam Generating Units of 100 TPH or above.
- 3.2. Geographical Location: Anywhere in India.

4.0 **Validity of Enlistment:** The enlistment shall be valid for a period of 3 years. Subsequent to enlistment NTPC Consultancy may enter into rate contract for the job with the enlisted vendors.

5.0 **Scope of Work:**

- 5.1. Measurement of various parameters such as:
 - a. Flow, pressure, temperature ,
 - b. Electrical parameters like energy, power, power factor, speed of drives etc,
 - c. Flue gas parameters like O₂/ CO₂/ CO etc.
 - d. Measurement of ambient parameters like RH, DBT& WBT etc.
- 5.2. Data collection through data loggers/manual reading
- 5.3. Providing the data in soft formats.

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- 5.4. The scope includes complete mobilization of instrument and manpower, including transportation to site, installation of the instruments, validation, data collection, demobilization after completion of test.
- 5.5. The test instruments should meet the specified accuracy.
- 5.6. The measuring instruments to have valid calibration certificate from an accredited laboratory on the date of testing.
- 5.7. Tentative duration of onsite measurement for one unit is approximately 1 week. However, there is possibility of variation of 2 to 3 days in certain cases.
- 5.8. After completion of work vendor must demobilize all instrument, manpower from site.
- 5.9. Indicative list of Instruments.

S.No	Name of instrument	Minimum Numbers	Indicative Accuracy
1.	Data Logger of 60 Channel	2	0.05%
2.	Dry-Wet bulb thermometer	2	0.5%
3.	Flue Gas Analyzer O ₂ , CO ₂ , CO	2	0.5%
4.	3 Ph Power analyzer	02	0.5%
5.	3 Phase AC/DC clamp on power meter with current transformer	3	0.5%
6.	Non-contact type stroboscope	01	0.5%
7.	Non-contact type IR temperature indicator	01	0.5%
8.	Mechanically aspirated psychrometer (with precision RTDs) Wet bulb Temperature Dry Bulb Temperature	03 each	0.1%
9.	Precision 4 wire Platinum RTDs (0-100 °C) with cables	08	0.05 °C
10	Thermometers	02	0.1 °C
11	Ultrasonic flow meter (0- 50,000 Cu.M/Hr)	01	1%
12	Anemometer	01	0.5 m/sec
13	RTDs, K Type Thermocouples	As per Requirement	0.4 °C
14	Pressure Transmitters, Differential Pressure Transmitters.	As per Requirement	0.1%

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**QR for Enlistment of vendors for hiring of instruments for Performance Testing/
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6.0 Qualifying requirement:

Bidder should meet the Qualifying Requirement either at Sl. no. 1.0 and 3.0 OR Sl no. 2.0 and 3.0 as mentioned below

Sl.no	Qualifying Requirement	Submission requirement
1.0	<p>Agency should have carried out following works in Coal Based Thermal Power unit of 200 MW or above capacity units in the preceding 7 years as on the last date of submission of documents.</p> <p>1.0 Supplied Offline Test Instruments as specified below for any two of the following tests.</p> <ul style="list-style-type: none"> i. Portable Flue Gas Analyzer and Thermocouples for Boiler Efficiency Test. ii. Data logger, Power Analyzer Pressure Transmitters and Temp sensors for Heat rate Test of Steam Turbine. iii. Pitot Tube, Precision RTDs, Thermometers, Psychrometer for Performance Test of Cooling Tower. iv. Power Analyzer and Ultrasonic Flow Meter for Audit of Auxiliary Power Consumption. v. Isokinetic sampling kit for Performance Test of ESP. 	<ul style="list-style-type: none"> 1. Copy of Purchase order with scope of work. 1. Proof of work completion(Client certificate)
2.0	<p>Agency should have carried out following works in Coal Based Thermal Power unit of 200 MW or above capacity units in the preceding 7 years as on the last date of submission of documents.</p> <p>1.0 Conducted Performance Tests with Offline Test Instruments for any two of the following tests.</p> <ul style="list-style-type: none"> i. Boiler Efficiency Test 	<ul style="list-style-type: none"> 1. Copy of Purchase order with scope of work. 2. Proof of work completion(Client certificate)

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Sl.no	Qualifying Requirement	Submission requirement
	<ul style="list-style-type: none">ii. Heat rate Test of Steam Turbineiii. Performance Test of Cooling Tower.iv. Audit of Auxiliary Power Consumption.v. Performance Test of ESP.	
3.0	Average Annual Turnover for last 3 year of the company should not be less than INR 50 lakhs.	Annual reports*

*In case where audited results for the last financial year as on the last date of submission of documents are not available, the financial result certified by a practicing Chartered Accountant shall be acceptable. In case, bidder is not able to submit the certificate from practicing Chartered Accountant certifying its financial parameters, the audited result of three consecutive financial years preceding the last financial year shall be considered for evaluating the financial parameters. Further, a Certificate would be required from the CEO/CFO as per the format enclosed in the bidding documents stating that the financial results of the company are under audit as on the last date of submission of documents and the certificate from the practicing Chartered Accountant certifying the financial parameters is not available.