

Special Terms and Condition for Tender

- 1) *PAYMENT- Firm Payment*
- 2) *DELIVERY TERMS - FOR Direct to Site Basis (Ramagundam, Panki, Bhusawal & Kahalgaon) total quantity shall be distributed to above sites actual quantity for each unit will be specified at later stage vendor to quote accordingly , All the items to be dispatched in Non-Returnable second hand Containers.*
- 3) *REVERSE AUCTION (R/A) - Same shall be decided at the time of tender opening*
- 4) *CEBG - Applicable in line with annexure B*
- 5) *RATE CONTRACT - Price shall be firm and valid up to 1 year from PO placement (FOR Details refer annexure of rate contract)*
- 6) *PERFORMANCE BANK GAURANTEE (10% of PO Value) – Applicable*
- 7) *PQR (PRE QUALIFICATION CRITERIA)- As per annexure attached*

- 8) *Tentative type of panel type hopper heater assumed eight type as mentioned below. Each type of heater quantity assumed as 5 SQ Mtr for evaluation purpose, however actual quantity for each type of heater shall be specified later. Total tentative heating area are 2147.28 SQ Mtr (Tentative Sets 438 Numbers).*

- 9) *METHOD OF TENDER EVALUATION- tender shall be evaluated as follows-*
 - a) *Panel Type Hopper Heating Element shall include all the accessories such as (PTHE (1 Set) + Mounting Channel (1 Set) + Mounting Studs (1 Set) + Spacer for heating mounting (1 Set) + Nuts for heating mounting (1 Set) + Washer for heating mounting (1 Set) + Lead Wire (0.5 Mtr).*
 - b) *Offer shall be evaluated separately individual item basis*
 - c) *Bidder shall quote price for cost of panel type hopper heating element per sq. MTR of heating area and cost of wrap wound heater for 10 KW and 15 KW separately.*
 - d) *Suppliers to quote the price as per below matrix in price bid format.*
 - e) *L1 Shall be arrived as follows*
((minimum price on each category x Actual area for the particular project) + (cost of total number of Wrap wound heaters))
 - f) *End customer approval is applicable, for each project only customer approved sources price shall be considered for ranking.*
 - g) *These requirements pertaining to four projects as mentioned below*
 - 1) **NTPC KAHALGAON 144 SETS**, 2) **NTPC RAMAGUNDAM R&M (Tentative heater area per set 5 Sq Mtr) 78 Sets** 3) **UPRUVNL Panki (Tentative heater area per set 5 Sq Mtr) 108 Sets** 4) **MAHAGENCO BHUSHAWAL (Tentative heater area per set 5 Sq Mtr) 108 Sets**
 - h) *End customer approval is applicable for the current requirement. Quantity shall be allotted in following manner*

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- 1) NTPC PROJECT QTY 222 SETS and NON NTPC PROJECT QTY 216 SETS
- 2) In the event of NTPC Approved supplier is becoming L1 than all the quantity (222 + 216 Sets) shall be ordered on L1 supplier.
- 3) In the event of NON NTPC approved supplier is becoming L1 than all the NON NTPC Project quantity (216 SETS) may be ordered on L1 supplier (Subject to end customer approval). NTPC Project quantity (222 Sets) shall be counter offered to NTPC approved source in the order of ranking.
- 4) NON-NTPC approved sources shall be taken up with the end customer for their approval. In case customer is not approving the supplier their price bid shall not be considered for opening.
- 5) All the PTHE and Wrap wound heater shall be procured from single for each project.

PO will be placed in terms of PTHE SET, SET shall be calculated as follows

$$1 \text{ SET PRICE} = \frac{\text{TOTAL MINIMUM HEATING AREA REQUIRED}}{\text{Number of SET required}}$$

Suppliers to Quote Rate per Sq. Mtr (Total Minimum Heating Area excluding non-heating area of heaters)		
	Heater Capacity	
	10 KW/Hopper	15 KW / Hopper
22 Minimum heater for Each Hopper		
24 Minimum heater for Each Hopper		
26 Minimum heater for Each Hopper		
28 Minimum heater for Each Hopper		
Unit price Wrap wound heater		
Stud Locating Template		

10) TYPE OF BID - Two Part Bid

11) CUSTOMER APPROVAL - Customer approval is applicable

Annexure-C**PAGE 01 of 01****I – Rate Contract Terms and Conditions**

(i) This Enquiry is for entering into Rate Contract for the procurement of PTHE for various projects. Contractual period shall be one year (twelve months) from the date of LOI/PO.

(ii) Separate addendum will be issued against firm requirement as and when requirement arises.

(iii) The rate contract quantity indicated is tentative only. The quantity indicated are not guaranteed requirement. It may increase / decrease. Also Delivery date indicated in the Enquiry is tentative.

(iv) Rates shall be firm till completion of supplies and shall be valid for ordering for a period of twelve months from the date of Letter of Intent. This means the order can be released on the last date of the Contract period.

(v) *Delivery is essence of the contract.* Vendor shall indicate the start-up period of the delivery from the date of Letter of Intent.

(vi) Vendor shall offer their prices on F.O. R. respective BHEL SITE mentioned in SCC i.e. price shall be inclusive of all i.e. P&F and Freight & Insurance.

II - Special Terms and Conditions

(i) Suppliers shall enclose notarized MSE copy (in original) along the Chartered accountant letter (in original) to validate the MSE status. for MSE vendor who have submitted the above documents shall be considered for 45 days after SRV payment term, and for remaining all other vendor's it shall be 90 days.

PRE QUALIFICATION CRITERIA

The prospective supplier should meet the following Pre-Qualification requirements:

- 1) supplier shall be manufacturer of Panel Type Hopper Heater (Details of manufacturing facility and testing facility to be submitted).
- 2) Following are the specific requirements

CONSTRUCTION REQUIREMENTS OF PANEL TYPE HOPPER HEATERS:

- 6.1.0 The heating module shall be of FMRC/CSA certified design
- 6.2.0 The construction of heating module shall comply with FMRC/CSA certificate.
- 6.3.0 The heating module shall be of proven design for coal based thermal power plant ELECTROSTATIC PRECIPITATOR application.
- 6.4.0 The HEATERS shall be of low wattage density (less than 3 watts / square inch of heater area) PANEL TYPE to avoid hot spot and to have more uniform distribution of heat.
- 6.5.0 The HEATERS shall be of BHEL / NTPC approved.
- 6.6.0 These heaters shall have high reliability by connecting multiple parallel circuits (not less than six), thereby ensuring that burn out of one element does not affect the other heater element.
- 6.7.0 Heating element shall be INCONEL or NICHROME. Brass or Aluminum alloys shall be avoided.
- 6.8.0 These heaters shall be able to with stand the thermal cycling as well as dynamic forces such as hopper poking, vibration, sledge hammering to the hopper wall or hopper anvil.
- 6.9.0 The HEATERS shall be low wattage density heating panels to spread the available heat over the largest surface area, to operate at the lowest surface temperature of the heater module.
- 6.10.0 The HEATERS shall be modular and unitized in design to simplify installation.
- 6.11.0 The HEATERS shall be resistant to natural and induced vibration plus shock loading that will be encountered during the normal operation
- 6.12.0 The heaters resistance variation shall be as per the heater design.
- 6.13.0 Two numbers earthing terminals M6 stud with nut & washer shall be provided in each heater.
- In case, the vendors are not able to provide Two no's, minimum one no. earthing terminal shall be provided in each heaters. Additional one no. earthing provision in mounting channel shall be provided.
- 6.14.0 Each heater shall be provided with 1/2"NPT (M) fitting to accommodate flexible metallic conduit, for routing the lead wire.
- 6.15.0 The heating module components and lead wire shall not be damaged or deformed electrically and physically when the thermostat fails or when the preceding Air Pre heater (heat exchanger) fails (the air heater failure will results in flue gas temperature of 400°C at the hoppers). The heater mechanical design shall consider maximum flue gas temperature of 400°C when the air heater is out of service.
- 6.16.0 The heating modules, lead wire, jointing kit etc, should not be damaged (electrically & physically) when the preceding air heater fails.
- 6.17.0 The design life of the heater shall be minimum 25 years during operation. For this the type tests listed in point no.4 & 5 of C1.6.21.0 shall be conducted on sample heater and certificated shall be produced for verification.

6.18.0 The INSULATION RESISTANCE value of each heating module at a voltage of 500 volts

DC applied between each live conductor and earth point of the heating module for a period of one minute shall be at least one Mega ohm. This is corresponding to a leakage current value of 500 micro amperes at 500 V dc.

6.19.0 Two sets of heaters pertaining to two hoppers, each having one thermostat will be paralleled.

Hence the power to both hoppers will be cut off, only when the temperature of both hoppers, reaches 140°C. In view of this the heater of the hopper, whose temp has reached 140°C will also be heated continuously until the other hopper temperature reaches 140 °C. During this time there shall be no damage to the heaters, lead wires and accessories.

6.20.0 The heater design shall take care that there shall not be any moisture ingress during Storage/transportation.

6.21.0 TYPE TESTS:

1 Dielectric test as per IEEE 515-2011 / CSA 22.2 no 72-10/ CSA22.2 no 130-03

2. Elevated temperature test at 537°C for two weeks /as per IEEE515-2011

3. Impact test as per CSA 22.2-72-10 / IEEE 515-2011

4. Thermal ageing test / Thermal endurance test/ Thermal performance benchmark test as per CSA 22.2 no72-10 / IEEE 515-2011 / CSA 22.2-130-03.

5. Vibration Test : 2g/50Hz for 94 hours with energization at vertical position

6. Vibration Test : 8g/50Hz: a.144 hours without energization at vertical position

b. 23 hours 30 minutes with energization at vertical position

c. 15 minutes with energization in other two axis.

After vibration test and after cool down to room temperature the heater module shall pass the following tests:

1. Conductor Resistance (CR)

2. Insulation Resistance (IR) before High Voltage (HV) test

3. High voltage test at 2.2 KV for 1 min

4.. IR test after HV test

All the above test 1to 5 shall be conducted in FM lab/CSA lab/ Indian Government lab and certified by FM/CSA.

Test no 6 shall be conducted by Indian government lab and certificate to be produced or it not

government lab the test shall be witnessed by BHEL/NTPC.

The validity of type test certificate shall be less than 20 years. In case of any change in design

or material, type tests shall be conducted again

DEEPAK KUMAR PAL

Digitally signed by DEEPAK KUMAR PAL
DN: c=IN, o=SHRIKANT HEAVY ELECTRICALS LIMITED, postalCode=632406, st=Tamil Nadu,
2.5.4.20=a456181766d32559a2360e07701c0e083bdc873ac8a2d05ad0d901046,
cn=DEEPAK KUMAR PAL
Date: 2018/05/12 11:21:11 +05'30'