



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

Page
1/2

PHONE :2577629
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: srchandran@bheltry.co.in
Web:

429-002/A

Enquiry No	Enquiry Date	Due Date for Quotation
2661400159 - 75	10.03.2014	02.04.2014
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order		

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	SUPPLY OF 250KVA OIL COOLED TRANSFORMER DESIGN, MANUFACTURE, TEST, SUPPLY, ERECTION & COMMISSIONING OF 250 kVA, 415/240V, 50Hz, 3 PHASE OIL COOLED TRANSFORMER - 2 NOS. TO BHEL - TRICHY AS PER THE SCOPE & SPECIFICATIONS GIVEN IN ANNEXURE ENCLOSED WITH THIS ENQUIRY. NOTE: (1) PART - A CONTAINS (PRE-QUALIFICATION CRITERIA) & PART - B (TECHNICAL SPECIFICATIONS) AND THE VENDOR HAS TO GIVE POINT TO POINT CONFIRMATION FOR ALL THE POINTS IN THEM. (2) ONLY THE OFFERS OF THOSE VENDORS WHO QUALIFY IN PART - A WILL BE EVALUATED FURTHER TECHNICALLY. (3) THE OFFER SHALL BE IN TWO PART - (A) TECHNICAL BID (B) PRICE BID AND BOTH OF THEM SHOULD BE ENCLOSED IN TWO SEPARATE SEALED COVERS.	NO	2.000	2.00	30.04.14

General Note:

1. POINT-BY-POINT CONFIRMATION TO BHEL'S SPECIFICATIONS, COMMERCIAL TERMS & CONDITIONS ARE TO BE PROVIDED BY THE VENDORS IN "ANNEXURE A&B"
2. FILL UP ANNEXURE A. PLEASE ENSURE THAT ALL TERMS & CONDITIONS SHOULD BE INDICATED IN THE UN-PRICED BID TO BE ATTACHED WITH THE TECHNO-COMMERCIAL BID POSITIVELY.
3. VALIDITY OF THE OFFER SHOULD NOT BE LESS THAN 120 DAYS.

LIST OF ATTACHMENTS:

1. ANNEXURE-II TERMS AND CONDITIONS OF THE ENQUIRY. (TWO PART-BID)
2. ANNEXURE-A CHECK LIST FOR COMMERCIAL TERMS CONFIRMATION-TO BE FILLED BY THE SUPPLIER.

The offers should reach us 30 minutes before the time of opening of tenders. The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

Page
2/2
PHONE :2577629
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: srchandran@bheltry.co.in
Web:

2661400159 / 10.03.2014

3. ANNEXURE-B MODEL PRICE BID FORMAT.
4. ANNEXURE-V- CA certificate format to be furnished as per MSMED act 2006, if applicable (For MSE vendors)
5. PART -A PRE-QUALIFYING CRITERIA, PART-B TECHNICAL SPECIFICATION
6. ANNEXURE-VI CHECK LIST TO BE SUBMITTED ALONG WITH OFFER

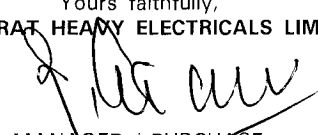
Enclosures:

"LD clause has to be confirmed without fail."

"Payment to vendors will be made only thro E-Payment mode"

The offers should reach us 30 minutes before the time of opening of tenders.
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**


MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

HIGH PRESSURE BOILER PLANT

TIRUCHIRAPPALLI-620 014

TERMS AND CONDITIONS OF THE ENQUIRY (TWO PART BID)

1. The tender will be operated on two part bid basis i.e. (I). *Techno-Commercial Bid* & (II). *Price Bid*.

2. **Techno-Commercial Bid:** Containing Technical details, specifications, commercial terms and conditions like percentage of P&F charges, Freight & Insurance, ED WITH CESS, Taxes (BHEL will not provide "C" form for Non-Production Items), delivery terms, delivery schedule, validity of offer, payment terms (except price details), acceptance for LD clause, RP clause etc. as per ANNEXURE-A (submitted in your company letter head) shall be put in a cover (1) and super scribed as "Techno-Commercial Bid" for Enquiry No:Dt:Due Dt.:

3. **Price Bid:** Containing the price details shall be put in a separate cover (2) and superscribed as "Price Bid" for Enquiry No:Dt:Due Dt.: as per ANNEXURE-B (submitted in your company letter head)

4. You are requested to put the above two envelopes (Techno-Commercial Bid & Price Bid) inside a separate larger sealed envelope and this envelope shall be super scribed as "Techno-Commercial Bid and Price Bid" for Enquiry No:Dt:Due Dt.:

Your Quotations should be sent to:

The Manager,
Purchase Department / CP&SP
Section-ELECTRICAL SPARES /266/75
Materials Management / Raw Materials,
24 Building (4th Floor),
Bharat Heavy Electricals Limited,
Tiruchirappalli - 620 014.

5. Tender should not be addressed to any individual's name but only by designation.

6. Tenders should be free from CORRECTION AND ERASURES. Corrections if any must be attested; all amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall only be considered.

7. Please submit point wise compliance to our specifications, terms and conditions. Otherwise it will be presumed that you are accepting BHEL's terms and conditions.

8. Offer/s received after *due date* and time: **02:00 pm** will not be considered under any circumstances.

9. **Validity of quoted rates should be maintained for 120 days from the date of Tender opening for ordering (Technical Bid). The quoted/Finalized rates shall be Firm till completion of the supplies.**

10. The rates are to be quoted on F.O.R. despatching station basis (Inclusive of Packing, Forwarding) and separately Freight & Transit Insurance charges which are payable to supplier. All the items should be supplied at our stores, BHEL / TRICHY-14 at your own cost. Offers with any other delivery conditions is not acceptable .

IMPORTANT NOTE: (I) Delivery condition like Ex-works / Ex-godown / Transportation of materials through transport carriers from your works up to the transport carrier's office at Tiruchy and taking delivery of goods by BHEL from such office of transport carriers is not acceptable to us)

11. Payment Terms (Indigenous)

Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials.

Any deviation in the above payment term will attract loading as mentioned below.

"Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.

Payment through Bank is not preferred. In case of Payment through Bank is opted by Supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of Goods to Site/Stores with Consignee copy attached. In this case Loading will be 3% on the offered value.

Offers of indigenous Suppliers with payment terms as LC/Advance Payment are liable for rejection.

Payment term for supply portion(For import supplies)

BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents, specified in PO, at BHEL bank. Respective bank charges to respective account.

Any deviation in the above payment term will attract loading as mentioned below.

“Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.

- In the case of Usance LCs the loading will be considered @ 1.5% on the offered Value.
- For LC at sight the loading will be considered @ 3.5% on the offered Value.
- Normally CAD at sight and Confirmed LCs are liable for rejection.

Payment terms for Indian agent:

Indian Agency Commission ,if any, shall be clearly specified in the offer and the same will be paid in Indian Rupees against acceptance of the materials

12. Liquidated Damages / Penalty:-

Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.

For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.

Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).

13. If Guarantee / Warranty period is applicable as per tender specification, No deviation permitted and deviated offers are liable for rejection.

14. IMPORTANT NOTE: BHEL WILL CONSIDER THE RANKING AFTER THE LOADING IS APPLIED AS REFERRED ABOVE WHEREVER DEVIATIONS ARE OBSERVED.

15. No revision of prices will be entertained at any circumstances after tenders are opened.

16. If any sales tax is payable as extra to the quoted price it should be specifically stated in quotations along with CST & VAT Number failing which the purchaser will not be liable for payment of sales tax. Our TIN **33243560005 dt.01.01.2007 & CST no 239383 DT, 11.06.1991**

17. On the due date of tender opening, only the technical bids will be opened. Technical bids will be evaluated by us and clarifications required, if any, will be called for from the bidders on technical and commercial points. The price bids of techno-commercially suitable bidders will be opened at a later date with prior intimation to respective suitable bidders.

18. Ranking L-1, L-2 etc. shall be done generally on each individual items for the techno-commercially acceptable offers on landed cost to BHEL, Trichy basis and BHEL reserves the right to place order for individual items with different vendors. At special circumstance ranking shall be done on compatible basis which will be indicated through Enquiry special instruction General Notes.

19. BHEL reserves the right to increase or decrease the tender quantity and split up the tender quantity among more than one vendor at the lowest acceptable price to BHEL and place order accordingly in any proportion at our own discretion.

20. Lowest price received against BHEL tenders need not be the technically acceptable one and in that case BHEL reserves the right not to consider the same. The purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reason whatsoever.

21. BHEL reserves the right to negotiate or refloat the tender opened, if L1 price is not the lowest acceptable price to BHEL due to inter-alia other reasons.

22. PACKING AND MARKING: The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.

23. RISK PURCHASE: Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the previous supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitutes therefore. The new supplier shall be liable for any loss, which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in our LD clause.

24. PREFERENTIAL DELIVERY:(Applicable in the case of BHEL's Enquiry specifies Preferential Delivery in the Special Instructions) It should be noted if a contract is placed on a higher tendered as a result of this invitation to tender in preference to the lowest acceptable offer in consideration of the earlier delivery, the seller will be liable to pay to the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O.R destination, including all elements of freights, Sales tax, duties and other incidents, incidental in case of failure to complete supplies in terms of such contract within the date of delivery specified in the tender and incorporated in the contract, such difference amount in addition to penalty at the rate mentioned in our LD clause.

25. CENVAT CREDIT: If any Excise Duty is payable, the Chapter Head / Sub -head reference and the rate of the duty should be quoted. If the Tenderer is availing CENVAT credit for this input material, the effect of Performa credit should be passed on to the purchaser. Tenderer under "CENVAT" shall be preferred.

26. Any other conditions which might have been quoted by the seller and are in contravention to the terms prescribed in the order and which have not been specifically accepted by purchaser in written will not be applicable to the contract.

27. IF ANY NEW VENDORS (MANUFACTURER ONLY) WILLING TO PARTICIPATE TO THIS ENQUIRY SHOULD FURNISH

THE FOLLOWING DOCUMENTRY PROOF / INFORMATION ALONG WITH OFFER, OTHERWISE YOUR OFFER WILL NOT BE CONSIDERED FOR EVALUATION.

- a) Certificate of Registration (copy of Certificate to be submitted).
- b) Banker's Information (copy of Bank Pass Book first Page to be submitted).
- c) MSME Vendor Certificate (if applicable).
- d) Address of your organization (Complete Postal Address with PIN code).
- e) Contact Person/s, Phone No., Mobile No., FAX No., E-mail ID.
- f) Statutory documents – VAT/TIN/EXCISE REGISTRATION/SERVICE TAX REGISTRATION/CST REGN etc. (copy to be furnished)
- g) NSIC/SSI Certificate (if applicable)
- h) ISO Certificate (if applicable)
- i) Experience certificate as proof of supply of similar item to any Govt. agencies/PSU/ Organisation. (copy of POs to be furnished)
- j) Balance Sheet for last three financial years along with Audit Report / IT Return (if applicable)
- k) Agency Agreement with manufacturer (if applicable).
- l) Partnership Deed (if applicable)

28. The bidder may also be an MSE vendor registered as per MSE act. The guidelines issued by government from time to time for engaging MSE vendor, will be applicable.

- a. 20% of the tendered quantity is earmarked for MSE suppliers in this tender.
- b. Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC / ST entrepreneurs.
- c. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.
- d. MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (Two years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed Annexure - V) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.

29. For verification of data submitted towards evaluation of bidder's capability, BHEL may decide to visit the bidder(s) works. Any fact found deviating from submitted data shall make the bidder liable to be disqualified.

30. In the event of more than one vendor becoming L1 for any of the item / items, the enquiry quantity for those item / items will be shared equally among all the L1 vendors.

31. The correspondence between the bidder and BHEL through email is considered as valid document Legally though not signed. It is treated as valid confirmations made on behalf of the respective company and comes under the legal ambit of the business transaction and hence binding on both the parties.

32. Equipment will be inspected and proved at vendor's works prior to dispatch, if applicable as per tender condition. However final inspection and acceptance of equipment will be after installation at BHEL, Trichy.

33. Erection / commissioning charges , if applicable as per tender condition will be clearly mentioned in the

offer or else confirmation that Erection / commissioning shall be done at free of cost is available in the offer.

34. Price shall be quoted item wise.

35. Any warranty replacement during warranty period shall be supplied free of charge on FOR BHEL, Trichy basis

36. The vendor shall provide necessary drawings, Test Certificates and Operating Maintenance Manuals etc., as called for in the Technical Specification, in the required number of copies at no extra cost.

37. Part Shipment or Transshipment is not permissible. (For import supplies)

38. In case of any short shipment in the main equipment / spares, where separate rates are not available in the contract, the customs duty levied on such supplies, shall be borne by the supplier / Indian agent. **(For import supplies)**

39. **Indicate Nearest airport & sea port** .(For import supplies)

40. **Indicate Country of Origin** (For import supplies)

41. Vendors Meeting Our Pre-Qualification Criteria & Technical Specification Will Be Essential For Consideration Of Offer.

42. For The Vendor Willing To Participate In Tender Opening, The Representative Should Have Valid Company ID Proof & Authorization Letter From The Concerned Firm Who Has Submitted The Offer.

43. After Technical Scrutination Of The Offers, Price Bid Of Only Technically Qualified Vendors Will Be Opened With Prior Intimation.

44. If The Due Date Of Tender Opening Happens To Be A Holiday, Those Tenders Will Be Opened On Next Working Days.

45. For any clarification you can contact to srchandran@bheltry.co.in, pgavictor@bheltry.co.in, rravic@bheltry.co.in

46. This Tender Is Hosted Both In Bhel Website And In NIC, PSU Portal And Any Corrigendum May Be Viewed in **BHEL's website <http://www.bhel.com>** (Tender Notification page)
Govt. Tender website **<http://tenders.gov.in>** (Public sector units > Bharat Heavy Electricals Limited Page)

47. Point-By-Point Confirmation To Bhel's Specifications, Commercial Terms & Conditions Are To Be Provided By The Vendors In "Annexure A&B"
Fill Up Annexure A. Please Ensure That All Terms & Conditions Should Be Indicated in The Un-Priced Bid To Be Attached With The Techno-Commercial Bid Positively.

48. The Offer Should Reach Us On Or Before Due Date By 14:00 Hrs. Late Offers Will Not Be Considered.

Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as on
date..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost
excluding land and building and the items specified by the Ministry of Small Scale Industries vide its
notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and
furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED
Act, 2006:
Rs.....Lacs

The above investment of Rs.....Lacs is within permissible limit of
Rs.....Lacs forMicro / Small (~~Strike off which is not applicable~~)
Category under MSMED Act 2006.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant

ANNEXURE -A

ENQ SL NO	BHEL SPECIFICATIONS	YOUR SPECIFICATION	unit	Quantity	Consignment weight against each item separately	whether quoted/ not quoted
10						

KINDLY SPECIFY ALL ENQ SL NOS AS PER BHEL ENQUIRY. (SUBMITTED IN COVER NO: 1)

COMMERCIAL TERMS CONFIRMATION REQUIRED FROM THE SUPPLIERS (SUBMITTED IN COVER NO: 1)

Sl. NO	DESCRIPTION	BHEL REQUIREMENTS	SUPPLIER CONFIRMATION
1	VALIDITY	120 Days from Date of tender opening	
2	PRICE QUOTED	FOR / DESPATCHING STATION INCLUSIVE OF PACKING & FORWARDING CHARGES.	
3	EXCISE DUTY WITH CESS (Whether inclusive (or) extra) Clearly mention the percentage	SUPPLIER TO QUOTE	
4	VAT % Clearly mention the percentage	SUPPLIER TO QUOTE	
5	CST % against form 'C' Clearly mention the percentage	SUPPLIER TO QUOTE	
6	FREIGHT & INSURANCE CHARGES FOR DELIVERY AT BHEL / TRICHY STORES	SUPPLIER TO QUOTE IN % ONLY	
7	DELIVERY SCHEDULE FROM THE DATE OF PURCHASE ORDER / LETTER OF INTENT	SUPPLIER TO QUOTE IN N.O. OF WEEKS / MONTHS	
8	PAYMENT TERMS	As per Clause 11 of Terms and Conditions of the Enquiry (Two Part Bid)	
9	LIQUIDATED DAMAGES CLAUSE	As per Clause 12 of Terms and Conditions of the Enquiry (Two Part Bid)	
10	RISK PURCHASE CLAUSE	As per Clause 23 of Terms and Conditions of the Enquiry (Two Part Bid)	
11	GUARANTEE / WARRANTY	AS PER TENDER CONDITION	
12	ERECTION / COMMISSIONING	AS PER TENDER CONDITION	
13	Origin of dispatch	SUPPLIER TO QUOTE	
14	Nearest airport & sea port (For import supplies)	SUPPLIER TO QUOTE	
15	Country of Origin (For import supplies)	SUPPLIER TO QUOTE	
16	CONTACT PERSON DETAILS	NAME:	
		MOBILE NO:	
		LAND LINE NO:	
		EMAIL :	
		FAX:	

NOTE: a). -It is confirmed that all the terms and conditions stipulated in the Enquiry have been fully understood by us and all clarifications & details have been obtained.

b).Your specific acceptance to our Payment terms, LD & Risk Purchase Clause are essential for consideration of your offer.

c).No row shall be left blank. Please indicate NA, in case the item is "not applicable"

Full postal Address:

Signature & Office Seal of the vendor

ANNEXURE –B

ENQ SL NO	BHEL SPECIFICATIONS	YOUR SPECIFICATION	unit	quantity	Rate in Rs.	Value in Rs.
10						

PRICE BID FORMAT OF ALL QUOTED ITEMS, IF ANY ITEM YOUR ARE NOT QUOTED SIMPLY YOU SHOULD

MENTION AS “NOT QUOTED” AGAINST THAT ENQ SL NO. (SUBMITTED IN SEPARATE COVER NO: 2

Annexure-VI

CHECK LIST TO BE SUBMITTED ALONG WITH OFFER

SL NO	Documents submitted	Vendor's Confirmation Yes/No
01.	Offer Submitted in 2 part bid system	
02.	Annexure-A	
03.	Annexure-B	
04.	In case of new vendor whether documents attached as per Annexure-II SL.no.27	
05.	For MSME vendors whether documents submitted as per Annexure-II SL.no.28	
06.	Annexure- Pre-Qualification Criteria Submitted	
07.	Documents/technical catalogues /DRAWINGS, (wherever as applicable) submitted as per tender condition	
08.	point to point confirmation provided as per tender condition	

PART - A: PRE - QUALIFYING CRITERIA

Clause No.	Description	BHEL Comments	Vendor's reply
1	Only those vendors who have supplied similar or higher capacity Transformer and working satisfactorily for at least one year after commissioning should quote.	Vendor to confirm	
2	Information about the companies along with the contact details of the concerned persons where similar equipments have been supplied are to be submitted for qualification of the offer.	Vendor to provide the details	
3	Vendors should have successfully conducted Type test as per IS on a transformer of same or higher capacity & voltage class in an approved Test Lab like CPRI/DRDA and copy of the test certificate to be submitted with the offer	Vendor to provide the details	
4	Vendor should possess facilities at the manufacturing works to conduct Routine Test as per IS on the transformer	Vendor to confirm	

PART - B : TECHNICAL SPECIFICATIONS

Clause No.	Specification	BHEL Comments	Vendor's offer
1	SCOPE : Design, manufacture, test and supply of 415/230V, 250KVA Outdoor & Indoor type ONAN Distribution Transformers as per the details furnished in the subsequent clauses.	Vendor to note	
2	LOCATION : The transformers may be installed outdoor/indoor in shop floor	Vendor to note	
3	STANDARDS : (1) Transformers covered by this specification shall, unless otherwise specified be built to conform to the latest Indian Electricity Rules, wherever applicable and the requirements of latest issue of ISS:1180 and ISS 2026, CBIP Standards and other IS(all as per latest issues) (2) In the event of a conflict between the above standard and the specification the latter shall govern.	Vendor to note	
4	RATING AND GENERAL DATA FOR DISTRIBUTION TRANSFORMERS : (1) Core Type, three phase oil immersed step down two winding distribution transformers for indoor / outdoor installation (2) Rating: 250 kVA. (3) Number of phase : three (4) Frequency: Transformer shall be suitable for continuous operation with a frequency variation of +3% from normal 50 c/s without exceeding the specified temperature rise. (5) Type of cooling : ONAN (6) Voltage Ratio : 415 / 240V (7) Vector group reference : Dyn11 (8) Approximate dimensions (in mm): L - 1500, W - 1300, H - 1700	Vendor to note	
5	CONNECTIONS : The primary (HV) winding shall be connected in delta and the secondary (L.V) winding in star to form vector group Dyn11. The size (Cross section) of the neutral connection conductors and jumpers must be of same size as that of the phase connecting conductors and jumpers which shall be properly supported and insulated.	Vendor to note	
6	TEMPERATURE RISE : For winding 40 deg C (measured by resistance) and for top oil 35 deg C (measured by thermometer) when tested in accordance with clause 4.0 of I.S.2026-1977 (latest) Pt-II. Temperature Rise Test for Transformers will be conducted at the lowest tap position corresponding to losses at that tap.	Vendor to provide the details	
7	Suitable size cable end box with Non magnetic gland plate shall have to be provided at both HV & LV side of transformer. The terminal arrangement shall be suitable terminating the following cables: (1) HV side: 3.5C x 185 Sq.mm Al. armored - 1 run (2) LV side: 3.5C x 185 Sq.mm Al. armored cable - 2 runs (The above terminal arrangement may change during detailed engineering while approval of drawing)	Vendor to note & provide the details of terminal arrangement	
8	OFF Circuit tap changing switch should be provided on HV side. Tapping + 5% to - 5% in steps of 2.5%. Provision shall be made for locking the tapping switch handle in position. Suitable aluminium anodized plate shall be fixed for tap-changing switch to know the position no of tap.	Vendor to confirm	
9	LEADS : All leads of the windings, connection of the windings or their wires to one another to terminal bushing or to a tap changer shall be properly insulated and covered with insulation sleeves. The soldering materials shall have higher melting temperature above 300 deg C and preferably above 400 deg C for better thermal endurance and mechanical strength. The tenderer shall specifically mention the method and materials to be used by them for lead connection.	Vendor to confirm & provide details	
10	TANK: (1) Tank wall must be fabricated from quality mild steel sheets of thickness 4 mm. Top and bottom plate of the tank must be of 5 mm thick. It should be shaped so as to make welding to a minimum. All welding shall be done electrically and relieved of welding stresses. Seams shall be double welded where practicable and found necessary by the manufacturer/ fabricator for proper oil tightness. The tank wall shall be provided with stiffner of structural steel for general rigidity and to dampen transformer noise. (2) Tank design shall be such that the core and winding assembly can be tanked or de-tanked freely and easily. (3) Inside wall of the tank and the M.S. Core Channel shall be painted with varnish or with hot oil resistance paint. (4) Stiffner shall be continuously welded on the tank wall. (5) The tank cover shall be bolted on to flanged rim of the tank with a weather proof, hot/cold oil resistant, resilient gasket in between for oil tightness. (6) The tank cover as a whole shall shed of all rain water. The tank cover should have downward 90° bent edges on all sides so that the gasket under the top cover is protected from direct exposure to weather. (7) Gasket used between top cover and tank flange shall be of rubberized cork sheet of 5 mm thick and shall be provided with water tight compound between the tank flange and the gasket. (8) G.I. nuts, bolts, flat washers, spring washers shall be used and suitably spaced to press the tank cover.	Vendor to confirm	

Clause No.	Specification	BHEL Comments	Vendor's offer
11	<p>CONSERVATOR: The conservator shall be liberally dimensioned such that with the lowest temperature and no load on the transformer the oil level shall not reach the lowest level and with the highest ambient temperature and permissible overload on the transformer, the oil will not spill into the breather pipe or to the exterior to waste. The conservator shall be provided with oil level indicator with level marking as per ISS. The pipe connecting the conservator to the main tank shall be projected into the conservator and is approx. 20 mm above the bottom of the conservator. Conservator shall be provided with drain plugs. Filling hold with cover shall be provided as usual. Conservator pipe shall be welded on the top cover. Explosion vents shall be welded on the top cover. Air release plug should be provided in the explosion vent. Detachable type conservator and explosion vent will also be acceptable. The conservator pipe hole fitted to tank cover should be provided with a suitable slanted plate, so that while pouring oil into the transformer through the conservator oil does not fall directly on the winding. Care should be taken so that free oil flow is not impeded</p>	Vendor to confirm	
12	<p>CORE : (1) The magnetic core shall be built of low loss Silicon steel, cold rolled grain oriented steel. Core shall be of stack type. (2) The materials used for insulating the sheets, shall have high inter-lamination resistance and rust inhibiting property. It shall not be deteriorated by ageing from hottest operating temperature and clamped pressure. Quality of core should not dis-integrate due to mechanical modes of core vibration nor to have the least tendency to absorb moisture or to react with the dissolved particles in the insulating oil thus accelerating sludge formation. (3) The assembled core shall be securely clamped in the lines and in the uniform pressure so as to minimise the noise from the core. (4) The core-clamping frame shall be provided with lifting eyes for the purposes of tanking and unclamping of the live part of the transformers. The whole core shall be electrically connected by copper strip of adequate section to the core frame at two separate points for being eventually earthed through the tank to drain off electrostatic potential that may be built up. Core top and bottom of yoke shall be supported with M.S. Channel of proper size and properly bolted together for stack type core. For wound type cores suitable M.S. clamping device should be used to hold together core laminations firmly to prevent vibration or noise. (5) The supporting framework of the cores shall be so designed so as to avoid the presence of pockets that would otherwise prevent complete emptying of tank through the drain valve or cause trapping of air during filling. (6) Adequate provision shall be made to prevent movement of the core and winding relative to the tank during transport and installation or while in service. (7) The cores shall conform to : IS : 3024 - 1965 Electrical sheet steel & IS : 649 - 1083 method of test steel sheet. (8) Successful bidder will offer for core for inspection and/or approval by the purchaser during the manufacturing stage.</p>	Vendor to confirm & provide details	
13	<p>WINDING : Transformer shall be provided with the requisite number of windings and shall be designed to withstand the electromechanical stress exerted under short circuit conditions as per ISS:2026 – 1977. Class "A" insulation shall be used. Paper insulation shall be dry and uniform and free from punctures and other defects. Solid insulation shall be of best quality. Wooden supports, if used, shall be well seasoned and compatible with hot transformer oil. The test certificate of the raw materials shall be made available by the Transformer manufacturer on request during Inspection & Testing. The winding shall be so designed to reduce to a minimum the out of balance forces in the transformer at all voltage ratings. The winding shall also be designed such that all coil assemblies of identical voltage rating shall be interchangeable and repairing of the winding can be made readily without special equipments. BRACING OF WINDINGS: (1) The windings and connections of all transformers shall be braced to withstand shocks which may occur during transport or due to switching/ short circuit and other transient conditions during service. (2) Coil clamping rings, if provided, shall be of steel or of suitable insulating material. Axially laminated material other than bakelite paper shall not be used.</p>	Vendor to confirm	
14	<p>WINDING AND CLEARANCE INSIDE THE TANK(For Stack type core)CONSTRUCTION: The winding shall be assembled on the core co-axially for magnetic balance and symmetrically for electrical balance. Liberal ducts shall be provided for oil circulation and lowering hot spot temperature in the winding. Spacers, wedges shall be robust & hard insulations are so fitted in the winding that they will neither move, nor permit any relative movement of any part of the winding during normal service and under a terminal short circuit, with out causing mechanical injury to any insulation in the windings. (1) The transformer shall have separate H.V. and L.V. windings made of electrical grade hard drawn Copper Wires as specified conforming to relevant I.S.S. of latest edition. (2) HV and LV winding shall be wound from Double paper covered copper conductor/foil winding.</p>	Vendor to confirm	

Clause No.	Specification	BHEL Comments	Vendor's offer
15	<p>Conformation to IS standards relating of conductors and insulation. The following Indian standards specification shall govern the quality of conductor, covering insulation such as enamel, paper and insulating barrels.</p> <p>1) IS:7404(Pt.I & II)1974:Paper covered copper conductor(round & rectangle). 2) IS: 1397-1967: Kraft paper 3) IS: 335-1983 : New insulating oil. 4) IS: 1576-1967 IEC: (B-2.1, B-3.1 & B -4.3) Solid Press Board for electrical purposes.</p> <p>Bushing: The bushings shall conform to IS: 2000-1968(latest): Bushing for Alternating voltage above 1000 Volts and IS 7421-1974(latest) for bushing upto and including voltage up to 1000 volts. The dimensions of bushings of the following voltage classes shall conform to Indian Standard mentioned against them.</p>	Vendor to confirm	
16	The Height of the HV bushings relative to the oil level gauge should be such that the top of the HV bushings are immersed in the oil when the oil level of the oil level gauge is at minimum position.	Vendor to confirm	
17	<p>The clearances in air between live and conductive parts and live conductive part to earthed structures shall be as follows:</p> <p>(1) Phase to Phase: 85mm without cable end box (2) Phase to earth: 45mm without cable end box</p>	Vendor to provide details	
18	<p>COOLING ARRANGEMENT:</p> <p>(1) The transformer shall be suitable for loading of 100% continuous maximum rating with "ONAN" cooling without exceeding the thermal limit. (2) The transformer shall be fitted with round or elliptical cooling tubes bent and welded to tank or radiators consisting of a series of separate circular or elliptical tubes, or a pressed steel plate assembly formed into elliptical oil channels, welded at their top and bottom to the tank. (3) The round cooling tubes shall be made of mild steel(ERW) having a minimum wall thickness of/ 1.50 mm and a clean bright internal surface free from rust and scale. They shall be suitably branched to protect them from mechanical shocks normally met in transportation and to damp the modes of vibration transmitted by the active part of the transformer in service. The elliptical tubes or elliptical oil channels of pressed steel plate at least of 18 SWG (or 1.25mm Thickness).</p>	Vendor to provide details	
19	<p>PAINTING:</p> <p>(1) The surface to be painted shall be completely cleaned & made free from all rust, scale or foreign adhering matter on grease. The cleaning & de-rusting can be done by sand blasting or other approved method. (2) All steel surface in contact with insulating oil as far as accessible shall be painted with heat resistant, oil insoluble, insulating varnish or paint. (3) All steel surface exposed to weather, shall be given a primary coat of Zinc chromate and two coats of dark admiral gray paints. (IS 104 & IS 2932) OR Powder coating painting as specified by CEA (4) All paints shall be carefully selected to withstand tropical heat and extremities of weather. The paint shall not scale off or wrinkle or be removed by abrasion due to normal handling. (5) All nuts and bolts used in the transformer for external fittings shall be galvanized or zinc passivity and painted with body paint.</p>	Vendor to confirm & provide details	
20	<p>OVER FLUXING:</p> <p>Over fluxing in the core shall be limited to 12.5% so that the flux density in the core does not exceed 1.9. Tesla (19000 lines/sq.cm) The maximum flux density in any part of the core under such condition shall not exceed 19000 lines/Sq.cm. on the basis of M4, M5 & M6 grades as per BS 601: Part-2: 1973 (Specification for sheet and for magnetic circuits of electrical apparatus oriented Steel)</p>	Vendor to provide details	
21	<p>TRANSFORMER OIL:</p> <p>The supply of oil is in the scope of the Vendor. The oil shall be as specified in IS:335-1980 and it shall be free from moisture and have uniform quality throughout.</p>	Vendor to confirm	
22	<p>INTERNAL EARTHING ARRANGEMENT:</p> <p>All metal parts of the transformer with the exception of the individual core laminations, core bolts and associated clamping plates shall be maintained at some fixed potential and core should be earthed at two points.</p>	Vendor to confirm	
23	<p>The following fittings shall be provided with the transformers</p> <p>i) Name, Rating & Terminal Marking Plates ii) Steel drain-cum-sampling valve- wheel/screw type- iii) Earthing Terminal – 2 nos iv) Filter Valve wheel/screw type v) Lifting Lugs – 2 nos. vi) Explosion vent with air release plug vii) Bi-Directional Plain Rollers. viii) Silicagel type breather ix) Bucchoz relay with (A&T) contact(630KVA) x) L.V.bushing for phases & Neutral xi) Isolating valve betn. conservator& Bucchoz relay</p>	Vendor to confirm	

Clause No.	Specification	BHEL Comments	Vendor's offer
24	Percentage Impedance: Around 4%	Vendor to quote	
25	A rating plate bearing the data specified in the relevant clauses of IS:2026 including connection diagram ,Vector Group, Voltages LV & HV, LV & HV current ,Percentage Impedance ,loss figure, makers name , serial no. are to be provided along with the transformer.	Vendor to confirm	
26	Two earthing terminals capable of carrying the full amount of lower voltage, short circuit current of transformer continuously for a period of 5 Sec. shall be provided.	Vendor to confirm	
27	<p>TESTS TO BE CONDUCTED: Both the transformers shall be subjected to routine tests at the manufactures works. The following tests are to be carried out (All charges for carrying out such tests, have to be borne by the manufacturer) :</p> <p>a) Measurement of winding resistance. b) Ratio, polarity and phase relationship c) Impedances voltage d) Load losses e) No load loss and no load current. f) Insulation resistance. g) Induced over voltage withstand. h) Separate source voltage withstand. i) Characteristic requirement of oil sample will be as per IS:1866-1983 amended upto 1987. j) Unbalance current : The maximum value of unbalance current in transformer shall not exceed 2% of full load current as per CBIP for transformer. k) Magnetizing current at rated voltage & frequency & 112.5% of rated voltage & frequency should not exceed the limit as per IS:1180 (Part-I) 1989 cl.22.6 up to 100 KVA and magnetizing current at rated voltage & frequency & 112.5% of rated voltage in respect of 160 KVA DTR should not exceed 2.25% & 4.5% respectively of full load current. l) Magnetizing current at rated voltage & frequency and 110 % & 112.5% of rated voltage.</p>	Vendor to confirm	
28	The manufacturer shall offer the transformers for witnessing the tests mentioned above and for that the manufacturer shall give intimation well in advance.	Vendor to confirm	
29	<p>DRAWINGS & MANUALS: The following drawings and manuals shall be furnished along with tender.</p> <p>i) General Arrangement outline drawing with plan, elevation and end view showing various dimension of transformer and its vital equipment including height of the bottom most portion of bushing from the bottom of base channel and also indicating thereon physical center line & position of center of gravity. ii) Cross sectional drawing showing various parts, including Core- coil assembly. iii) Sketches for rating plate, complete list of fittings, Net weight of core, winding, tank, oil, total weight, fixing arrangement of transformer in structures.</p>	Vendor to confirm	
30	<p>DRAWINGS TO BE SUBMITTED AFTER L.O.I / P.O. FOR APPROVAL BEFORE MANUFACTURING:</p> <p>1. Drawings as stated in Sl.No.:29 above 2. Cross sectional details with Plan, Elevation, End view showing all internal clearance. 3. Drawing of Name & rating plates.</p>	Vendor to confirm	
31	<p>Along with the offer, the following technical parameters of the offered transformer has to be furnished for evaluation:</p> <p>(1) Magnetising current referred to H.V. at rated frequency (a) At 90% rated voltage (in Amps) (b) At 100% rated voltage (in Amps) (c) At 112.5% rated voltage (in Amps) (d) At 110% rated voltage (in Amps)</p> <p>(2) Power factor of magnetizing current at 100% rated voltage & frequency (3) No load current at rated voltage and rated frequency (in Amps) (4) Maxm.No load loss in watt at rated frequency & voltage (5) Maxm.Load loss in Watt at 75 Deg.C. at rated output and frequency (6) Total Loss (including NLL & FLL) at 100% loading & rated condition (7) Percentage Regulation at full load at 75 Deg.C. (a) At unity power factor (b) At 0.8 power factor lagging (8) Efficiencies at 75 Deg.C. (in percentage) (a) At full load (i) At unity power factor (b) At ¾ full load (i) At unity power factor (ii) At 0.8 power factor lagging (c) At ½ full load (i) At Unity power factor (ii) At 0.8 Power factor lagging (9) Impedence voltage on rated kVA base at rated current and frequency at 75 Deg.C (in percentage)</p>		

Clause No.	Specification	BHEL Comments	Vendor's offer
32	<p>(10) Withstand time without injury for three phase dead short circuit at terminal (in seconds)</p> <p>(11) Short time current rating for short circuit with duration</p> <p>(a) H.V. Winding (in K Amps)</p> <p>(b) L.V. Winding (in K Amps)</p> <p>(c) Duration in seconds)</p> <p>(12) Core :</p> <p>(a) Material Type</p> <p>(b) Whether stack core/wound core Type</p> <p>(c) Flux density of Core and yoke</p> <p>(i) At rated voltage at 50 HZ (in line/sq cm)</p> <p>(ii) At 112.5% rated voltage at 50 HZ (in line/sq cm)</p> <p>(iii) Thickness of Stampings (in mm)</p> <p>(iv) Type of Insulation between core lamination</p> <p>(13) Winding:</p> <p>(a) Material of the winding conductor</p> <p>(i) High Voltage :</p> <p>(ii) Low Voltage :</p> <p>(b) Conductor Area</p> <p>(i) High voltage (in sq.mm)</p> <p>(ii) Low Voltage (in sq.mm)</p> <p>(c) Current density of winding at rated KVA</p> <p>(i) High Voltage (Amp per sq.cm)</p> <p>(ii) Low voltage (Amps per Sq.cm)</p> <p>(d) Insulating material used for</p> <p>(i) High Voltage Winding</p> <p>(ii) Low Voltage Winding</p> <p>(e) Insulating material used between</p> <p>(i) High voltage and low voltage winding</p> <p>(ii) Low Voltage winding and Core</p>		
33	<p>(14) Insulation withstand test voltages:</p> <p>(i) Lightning Impulse withstand test voltage (KV Peak)</p> <p>(ii) Power frequency withstand test voltage (in KV rms for 1 mtn)</p> <p>(iii) Induced over voltage withstand test voltage (in KV rms)</p> <p>(15) (a) Current in the winding at rated KVA</p> <p>(i) Low voltage (in Amps)</p> <p>(ii) High Voltage (in Amps)</p> <p>(16) Voltage per turn (KV per turn)</p> <p>(17) Ampere turn</p> <p>(18) Number of turns</p> <p>(i) Low Voltage</p> <p>(ii) High Voltage</p>	Vendor to confirm	
34	If required, the vendor can visit BHEL - Trichy and study the application and location details before submitting the offer	Vendor to note	
35	The vendor shall be ready to offer the transformer for Pre-dispatch inspection at his work before dispatch.	Vendor to confirm	
35	BHEL will arrange to unload the transformers at shop. The vendor shall send experienced persons for joint inspection of transformers and also to supervise the erection & commissioning activities of the transformer. The Vendor has to make his own arrangement for boarding & lodging for their service personals.	Vendor to note & confirm	
36	For Erection & Commissioning of the transformers, BHEL will arrange the required man power, tools & tackles and crane facilities..	Vendor to note	
37	<p>The following activities are to be carried at BHEL - Trichy after erection of the transformers to declare successful commissioning of the transformers:</p> <p>(1) Measurement of Insulation resistance of primary & secondary side as per provided spec.</p> <p>(2) Powering up the transformer and measurement of no-load voltage at Primary & secondary as per spec.</p> <p>(3) Measurement of No load current at Primary side as per provided speci.</p> <p>(4) Measurement of voltage at secondary side in Full load condition as per the provided spec.</p> <p>(5) Measurement of currents at Primary & secondary side in Full load condition as per provided spec.</p> <p>(6) Vibration / humming noise level, temperature rise at continuous full load operation</p>	Vendor to confirm	