

**BHARAT COKING COAL LIMITED****(A Subsidiary of Coal India Limited)****Office of the Chief General Manager(MM)****Materials Management Department****Commercial Block L-III , KoylaBhawan : Koyla Nagar****Dhanbad : 826005(Fax No- 0326-2230183) CIN:U10101JH1972GOU1000918****SUPPLY ORDER NO. BCCL/PUR/313176/POWER TRANSFORMER/13-14/ 98/173****DATE- 29.11.2014****To,****BY REGD POST**

M/S INDUCTION ELECTRIC, MOHAN GHOSH ROAD, (VENDOR CODE: 1/12/M/T/140 & OLD CODE 829956)
RAMACHANDRAPUR, NARENDRAPUR,KOLKATA -700103(WB)

SUB:SUPPLY OF POWER TRANSFORMERS

REF: i) our e tender no. BCCL/PUR/ 313176/POWER TRANSFORMER/13-14/ 98 DATE- 12.12.2013, COVER – I opened on 29.01.2014(Online),Price bid(on line) opened on 21.07.14

ii)Your offer no. INDEL/BCCL/2013-14/78 dated 24.01.14

iii)Our letter no. BCCL/PUR/ 313176/POWER TRANSFORMER/13-14/ 98/213 DATE 15/16.04.14 &2202 DATE 19.07.14 &3018 dated 29.08.14

iv)Your letter no. Induction/office/14-15 dated 08.05.14 &no.nil Dated 10.10.14

Dear Sirs,

With reference to the above, we are pleased to place an order on you for Supply of Transformers at the rates and scope of supply as indicated under as per the technical specification specified in the Annexure-A enclosed and as per the terms and conditions given hereunder alongwith general terms and conditions of NIT.

NIT SI. No.	MATERIAL CODE	ITEM DESCRIPTION	QTY (Nos)	UNIT RATE(RS)	TOTAL VALUE
3	28311991332	POWER TRANSFORMER 500KVA ,Primary Voltage-6.6KV,Secondary Voltage-440V	02	3,35,000.00	
		ED including cess@10.3%.		34,505.00	
				3,69,505.00	
		CST@2% against form "C"		7,390.10	
				3,76,895.10	
		Freight charges as per clause no.1 below .		7200.00	
		FOR Destination Value		3,84,095.10	7,68,190.20
		Pre dispatch inspection charges@1%			7,681.90
		Service tax on Pre dispatch inspection charges @12.36%			949.48
					7,76,821.58

DETAILED TECHNICAL SPECIFICATIONS AS PER ANNEXURE-A ENCLOSED.

(RUPEES SEVEN LAKHS SEVENTY SIX THOUSAND EIGHT HUNDRED TWENTY ONE AND PAISE FIFTY EIGHT ONLY)

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1.PRICES: The above prices are Firm & on FOR destination basis inclusive of Packing& Forwarding and Insurance Charges. However, Freight charges shall be payable extra per unit at actuals against documentary evidence to the maximum ceiling as indicated below for FOR destination supply, the impact of which has been incorporated as above.

NIT Sl. No.	Freight charges per unit (Rs)
3	7,200.00

2.EXCISE DUTY: ED including cess shall be payable extra at actual against documentary evidence as legally leviable within the stipulated delivery period and You shall submit a valid invoice enabling BCCL to avail Cenvat credits per provisions of CENVAT. The present/offered rate is @10.3%, the impact of which has been incorporated as above.

3.SALES TAX: CST shall be payable extra against form "C", as applicable at the time of delivery within the stipulated delivery period. The present/offered rate is @2% against form "C", the impact of which has been incorporated as above.

4.DELIVERY PERIOD: shall be supplied within 4 months from 10th day of issue of order. However, you may improve upon the delivery.

5.PAYMENT TERMS: 100% Payment shall be made within 21 days of receipt and acceptance of the materials or from the date of submission of the bill, whichever is later, against submission of Performance Bank Guaranty. Photocopy of Your bank details/EFT mandate submitted by you along with your offer is enclosed for payment through EFT.

6.CONSIGNEE: Depot Officer, Regional stores, Katras Area, BCCL, Dist; Dhanbad, Jharkhand.

7.ALLOCATION: Katras Area

8.PAYING AUTHORITY: GM(F)MM, BCCL, Koyla Bhawan, Dhanbad.

9.GURANTEE /WARRANTY: The supply shall be covered by the maker's standard guarantee as follows:

The supplier shall warrant that the equipment supplied under the contract / supply order

(a) is new, unused and of current design not likely to be discontinued or become obsolete till the life of the offered equipment.

(b) Is in accordance with the contract specifications.

(c) Shall have no defects arising out of design, materials or workmanship.

The supplier shall guarantee for the satisfactory performance of the complete equipment/ stores for a period of 12 months from the date of commissioning or 18 months from the date of receipt and acceptance of the materials, whichever is earlier. In the event of any defects in materials, design and workmanship during the aforesaid period is found due to faulty design or poor workmanship, the defective part or parts will be replaced by the supplier at site free of cost within 30 days of settlement of warranty claims. The supplier will be required to stock spare parts to take care of warranty failures. Spares should be available within 2 weeks of the breakdown being intimated to them.

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The guarantee/composite warranty shall be submitted along with the bill. The warranty shall cover for the total equipment so that the necessity of having to approach different manufacturers of various components/assemblies does not arise and all services under warranty clause shall be the responsibility of the ultimate supplier of the composite equipment. You will also replace the defective parts, if any, during the warranty period free of cost. The responsibility to collect the defective / rejected material will lie with the supplier and the cost for such collection will have to be borne by the supplier.

10. SECURITY DEPOSIT: Exempted being NSIC registered.

11. PERFORMANCE BANK GUARANTEE (PBG)- PBG on schedule/Nationalized Bank in India valid for three months beyond the expiry of Guarantee/Warranty period of the contract (ie valid for 21 months from the date of receipt and acceptance of materials at destination site) for 10% value of the contract ie for Rs 77,683.00 (Rupees Seventy seven Thousand Six hundred and eighty three only) shall have to be submitted to MM Division, BCCL, Koyla Bhawan on or before commencement of supply/ installation/commissioning. The format for PBG enclosed.

The original Bank Guarantee should be sent to the beneficiary directly by the issuing bank under registered post with A.D

12. Inspection and Tests:

i) The purchaser or its authorised representative shall have the right to inspect and/or to test the goods to confirm their conformity to the contract. The purchaser shall notify the supplier in writing of the identity of any representative retained for these purposes.

ii) The inspections and tests may be conducted on the premises of the supplier or its sub-contractors), at point of delivery and/or at the goods final destination when conducted on the premises of the supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production date, shall be furnished to the inspectors at no charge to the purchaser.

iii) Should any inspected or tested Goods fail to conform to the specifications, the purchaser may reject them and the supplier shall either replace the rejected goods or make all alternatives necessary to meet specification requirements free of cost to the Purchaser.

iv) The Purchaser's right to inspect, test and, where necessary, reject the goods after the Goods arrival in the Purchaser's country shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representatives prior to the Goods shipment from the country of origin.

v) Materials are subject to inspection by the purchaser before dispatch. The materials may also be subject to stage inspection by a third party nominated by BCCL for the purpose. Final inspection shall, however, be carried out at the consignee's end.

v) Materials are subject to inspection by the purchaser before dispatch. The materials may also be subject to stage inspection by a third party nominated by BCCL for the purpose. Final inspection shall, however, be carried out at the consignee's end.

vi) Nothing in these documents shall in any way release the supplier from any warranty or other obligations under this contract.

vii) The purchaser shall, at its discretion, have the right to test the ordered material in a Government Test House or in a test house nominated by the purchaser. In case of failure of the material after testing, the cost of tests as well as of the material shall have to be borne by the supplier.


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Final Inspection at destination site shall be arranged by the consignee within one week from the date of receipt of the material. Supplier's technical representative must be available at the time of inspection.

12A. PRE-DISPATCH INSPECTION: Pre-dispatch inspection of each consignment shall be carried out by M/s. Central Mine Planning & Design Institute Ltd (CMPDIL), Ranchi/their Regional Office as per the terms and conditions indicated hereunder:

Pre-dispatch inspection shall be carried out by M/s. CMPDIL (the above firm) as per their methodology. The third Party Inspection shall include examination of raw material, test certificate verification, continuous monitoring of quality assurance by manufacturer which will include regular and surprise visits. In brief, the scope and condition of inspection by M/s. CMPDIL will be as follows :

Checking and approval of test procedures/quality assurance plans.

Verification of records and documents of your works.

Verification of documents and test certificate of bought out items and cross checks.

You shall provide facilities for carrying out all necessary tests as required in the specification at your works else these will be carried out at an independent test house at your cost.

Final testing and checking of materials as per specifications.

M/s. CMPDIL will have full and free access to the premises of manufacturer during the process of manufacturing and during inspection activities.

Inspection fee @ 1% of total consignment billing (plus statutory levies like service tax @ 12.36% etc, as applicable on inspection fee) is to be paid to M/s. CMPDIL along with inspection call letter payable by DD which will be reimbursed subsequently by BCCL together with consignment billing.

Minimum 7 calendar days notice shall be given by the manufacturer to M/s. CMPDIL for arranging inspection within valid delivery period as per contract.

The ultimate responsibility for supply of correct materials as per requirement of relevant specification lies solely with the manufacturer in spite of clearance/acceptance by inspection authority i.e. M/s. CMPDIL. The manufacturer will be required to replace the material free of cost if found defective/unserviceable/not according to relevant specifications.

The charges for third party inspection and the cost of materials that would be required for destructive tests, if any, shall be reimbursed by BCCL together with the consignment billing. Such cost shall be reimbursed only if it is duly certified by M/s. CMPDIL.

Inspection call to M/s. CMPDIL, Ranchi/ their Regional. Office must be given.

Final inspection shall be arranged by the consignee after receipt of the material at our destination.

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The purchaser shall, at its discretion, have the right to test the ordered material in a Government Test House or in a test house nominated by the purchaser. In case of failure of the material after testing the cost of tests as well as of the material shall have to be borne by the supplier.

13. TRANSIT INSURANCE: Shall be arranged and covered by you for safe arrival of the materials to the consignee end at your cost and risk.

14. PENALTY FOR FAILURE TO SUPPLY IN TIME: Liquidated Damage(LD) Clause/Risk Purchase clause: The delivery of stores stipulated in Purchase order shall be deemed to be of the essence of the contract and delivery of the stores must be completed by the date specified. No materials should be supplied beyond the specified delivery period, unless specific approval has been obtained from the purchaser.

In the event of failure to deliver the stores within the stipulated date/ period in accordance with the samples and/or specification mentioned in the supply order, and in the event of breach of any terms and conditions mentioned in the supply order. Bharat Coking Coal Limited reserves the right:

a) To recover from successful tenderer, as agreed liquidated damages, a sum not less than 0.5% (half percentage) of the price of the stores which successful tenderer has not been able to supply (for this purpose part of a unit supplied will not be considered) as aforesaid for each week or part of a week during which the delivery of such stores may be in arrears limited to 10%. Where felt necessary the limit of 10% can be increased to 15% at the discretion of Head of the Materials Management Division .

b) To purchase elsewhere, after due notice to the successful tenderer on the account and at the risk of the defaulting supplier the stores not supplied or others of a similar description without cancelling the supply order in respect of consignment not yet due for supply or

c) To cancel the supply order or a portion thereof, and if so desired to purchase the store at the risk and cost of the defaulting supplier and also

d) To extend the period of delivery with or without penalty as may be considered fit and proper. The penalty, if imposed shall not be more than the agreed liquidated damages referred to in clause (a) above.

e) To encash any Bank guarantee which is available for recovery of the penalty or

f) To forfeit the security deposit full or in part.

g) Whenever under the contract a sum of money is recoverable from and payable by the supplier, BCCL shall be entitled to recover such sum by appropriating, in part or whole by deducting any sum or which at any time thereafter may be due to the successful tenderer in this or any other contract with Bharat Coking Coal Ltd. or any subsidiary of Coal India Ltd. Should this sum be not sufficient to cover the full amount recoverable, the successful tenderer shall pay BCCL on demand the remaining amount. The supplier shall not be entitled to any gain under this clause.

15. PRICE FALL CLAUSE:

i) The prices charged for the stores supplied under the contract by the supplier shall in no event exceed the lowest price at which the supplier offer to sell the stores of identical description to any other organization from date of offer till completion of supply under the contract.

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ii) If at any time during the said period the supplier offers lower sale price of such stores to any other organization at a price lower than the price chargeable under this contract, the supplier shall forthwith notify such reduction or sale to the consignee concerned under intimation to GM(MM), Bharat Coking Coal Limited, Commercial Block, Level -III, Koyla Bhawan, Koyla Nagar, Dhanbad and the price payable under the contract for the stores supplied after the date of coming into force of such reduction or sale, shall stand correspondingly reduced. The above stipulated will not, however apply to exports by the supplier.

A certificate to this effect shall be submitted by you alongwith the supply bill.

16. SUBMISSION OF BILL: Pre-receipted stamped original bill for 100% value in four copies along with delivery challan in original, Guarantee/ Warranty certificate, and other relevant documents as indicated elsewhere in the order should be submitted to the Paying Authority through Consignee only.

17. PACKING: Consignment shall be supplied in suitable standard proper packing.

18. FORCE MAJEURE CLAUSE: If the execution of the supply order is delayed beyond the period stipulated in the supply order as a result of out-break of hostilities, declaration of an embargo / curfew or blockade or fire, flood, acts of nature or any other contingency beyond the supplier's control due to act of God then BCCL may allow such additional time by extending the delivery period, as it considers to be justified by the circumstances of the case and its decision shall be final.

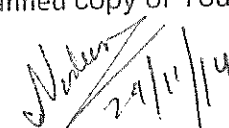
19. ISSUE OF ROAD PERMIT: Road Permit if required may be obtained directly from the Consignee under intimation to this office.

20. DOCUMENTS: Following Documents will have to be submitted at the time of supply :

- 1) The manufacturer shall carry out all routine standard tests in accordance with IS:2026 on each transformer and a copy to be submitted.
- 2) Operation & maintenance manual
- 3) Manufacturer test certificate

This contract is concluded with the issuance of this order. Two copies of the order are being sent to you. You are advised to acknowledge the receipt and acceptance of the order by returning one copy duly signed and stamped to this office within 10 days, failing which this order shall be deemed to have been accepted by you for execution.

Enclosure: 1 Annexure-A-Detailed technical specifications and Technical Data sheet Technical particulars (General & Special)-containing eight pages
2. scanned copy of Your bank details/EFT mandate


(Nadeem Khan)
AM(MM)

Yours faithfully,


(C R Samantray)
Chief Manager(MM)

For & on behalf of Bharat Coking Coal Ltd.

INDENT AND BUDGET REFERENCE:

Indent reference	Budget Certification no. &dt., & FC No.&dt.
1.Indentno.BCCL/CGM/E&M/F-CENTRAL INDENT(ELECTRICAL)/13-14/01 Dated 26.08.13 for 4080 qtrs at five colonies .MMD IR no:313176 dated 03.10.13	Against master plan against BC provided vide no.01/04 dated 10.07.13).(For Value: Rs 57,59,600/- for two items,given by Chief Manager(F)P&P,BCCL & Additional BC provided vide no.10/19 dated 20.11.2014 For Value: Rs 8,70,027.01 for two items,given by Chief Manager(F)P&P,BCCL FC given by CM(F) P&P,BCCL vide e-FC No.10/20 dated 26.11.2014 for Rs 66,29,627.01 Against master plan

COPY:

1.GM(E&M)I/C, KoylaBhawan

2. GM(F),MM , KoylaBhawan:HOD(Env),while giving FC,has indicated that the expenditure is to be booked against Master plan ie not capitalized in the books of BCCL.Moreover,to make payment fund is to be arranged from CIL against Master plan,which shall require approval of BCCL Board as per modalities of release of fund ref. no.CIL/Env/MP/10-11/3056 Dated 13.10.2010

3. HOD(Env), KoylaBhawan

4.CHIEF MANAGER(F)C&B, BCCL HQ, Dhanbad.

5. Depot Officer,CentralStores,BCCL,EKRA,Dist:Dhanbad, Jharkhand,India .

6.CGM(E&M),CMPDIL,GondwanaPlace,KankeRoad,Ranchi

✓7.MM(Tech Cell), MM Div, KoylaBhawan.

8. IEM:Naresh Chaturvedi,IAS(Retd.),CL-14,Sector-II,Salt Lake,Kolkata – 700 091

9.GM(MM)CIL/CCL/SECL/ECL/NCL/WCL/MCL/NECL

10.MF/Office Copy

Naresh
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AM(MM)

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Chief Manager(MM)

ANNEXURE-A (EIGHT PAGES)

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TECHNICAL SPECIFICATIONS OF POWER TRANSFORMER

NIT SL NO	MATERIAL DESCRIPTION /RATED CAPACITY
3	POWER TRANSFORMER 500KVA, Primary Voltage-6.6KV, Secondary Voltage-440V

<p>1. TECHNICAL SPECIFICATION OF POWER TRANSFORMER (500KVA 6.6KV/440V)</p> <p>This specification broadly covers design, manufacture, supply and other requirements of power transformers to be used for power supply to coal mines. This shall meet all the technical requirements of IS 2026 and relevant standards.</p> <p>The transformer shall be of proven design for giving satisfactory and reliable performance in heavily coal dust laden atmosphere unit ambient temperature of 45°C and other service condition prevalent in coalfield areas of BCCL.</p> <p>The power transformer shall be of indoor type, vector group DY11, naturally oil cooled, copper wound of suitable class of insulation and shall be suitable for 3 phase, 50 HZ, ac power supply system. Continuous operated at rated KVA within $\pm 10\%$ variation of voltage. Temp. rise limited to the following values:</p> <table border="1"> <tr> <td>Cooling</td><td>Oil</td><td>Winding</td></tr> <tr> <td>ONAN</td><td>45°C</td><td>55°C</td></tr> </table>		Cooling	Oil	Winding	ONAN	45°C	55°C	AGREE
Cooling	Oil	Winding						
ONAN	45°C	55°C						
<p>Mechanical features:</p> <p>a) The transformer shall withstand the electro-dynamic stress due to thermal short circuit of the LV side assuming the HV side fed from an infinite bus. All leads and windings in cores shall be properly supported, clamped and tightened after vacuum drying to ensure the short circuit withstand ratings. The short circuit withstand duration shall be minimum 2 sec.</p> <p>b) The Transformer shall be so designed as to minimize any undue noise and vibration.</p>		AGREE						
<p>Constructional details:</p> <p>Core</p> <p>a) The transformer core shall be made of high grade non-ageing grain oriented cold rolled steel sheets of low hysteresis loss and high permeability. The core structure shall be securely grounded to prevent electrostatic potential. Lifting eyes and lugs shall be provided on the limbs and coils assembly. Preferably no bolt shall be used in the cores. Clamping shall be done externally to the limb.</p> <p>b) The design of the magnetic circuit shall be such as to avoid static discharges, development of short circuit paths within itself or to the earthed clamping structure and the production of flux component at right angles to plane of lamination which may cause local heating.</p>		AGREE						
<p>c) Core and windings shall be capable of withstanding shocks during transport, installation & service and adequate provision shall be made to prevent movement of core & winding relative to tank during these conditions.</p> <p>d) All steel sections used for supporting the core shall be thoroughly sand blasted after cutting, drilling and welding.</p> <p>Tanks</p> <p>a) Tanks shall be of welded construction and fabricated from boiler steel plates of adequate thickness. The weld procedure and performance shall be in line with ASME BPV-IX.</p> <p>b) All seams and joints those are not required to be opened at site shall be factory welded and wherever possible shall be double welded.</p> <p>c) Tanks stiffness shall be provided for general rigidity and these shall be designed to prevent retention of water.</p>		AGREE						
<p>d) The tanks shall be designed to withstand – Mechanical shocks during transportation, Vacuum filling of oil & short circuit force.</p> <p>e) Adequate space shall be provided at the bottom of the tank for settlement of sediments.</p> <p>f) Suitable guides shall be provided in the tank for positioning the core & coil assembly.</p> <p>g) The tanks shall be suitable for movement in both direction during shipment & each tanks shall be provided with Lifting lugs suitable for lifting the complete transformer and a minimum of four jacking pads.</p>		AGREE						
<p>Tank cover</p> <p>a) The tank cover shall be sloped to prevent retention of rain water and shall not distort when lifted.</p> <p>b) At least two adequately sized inspection covers one at each end of the tank shall be provided for easy access to bushing and earth connection. The inspection covers shall have suitable lifting arrangement.</p> <p>c) The tank covers shall be fitted with thermometer pockets. The thermometer pocket shall be fitted with a captive screwed top to prevent ingress of water.</p>		AGREE						

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<p>Mounting arrangement The transformers shall be provided with two nos. bi-directional skids and pulling eyes integral with tank body for fixing the transformer tank on foundation.</p>	AGREE
<p>Conservator tank a) The conservator tank shall have adequate capacity to accommodate oil preservation system and volumetric expansion of the total cold oil volumetric expansion of the total cold oil volume in transformer and radiators for a change in temperature from minimum ambient air temperature of 5°C to 110°C. b) The conservator shall be bolted into position so that it can be removed for cleaning purpose. c) The conservator tank, shall be fitted with a silica gel filter breather. d) The conservator of transformers shall be fitted with plain oil level gauge with two independent low level electrically insulated alarm contacts. The oil level at 30°C shall be marked on the gauge.</p>	AGREE
<p>Explosion vent a) The transformers shall be provided with the single diaphragm type of explosion vent with air release device. b) An equalizer pipe shall be connected to explosion vent from the conservator.</p>	AGREE
<p>Buchholtz Relay A double float type buchholtz relay conforming to IS 3637 shall be provided. All gas evolved in the transformer shall be collected in this relay. The relay shall be provided with a test cock suitable for a flexible pipe connection for checking its operation. A copper tube shall be connected from the gas collector to a valve located about 1200 mm above ground level to facilitate sampling with the transformer in the service. The device shall be provided with two potential free contacts, one for alarm on gas accumulation and the other for tripping on rise of pressure.</p>	AGREE
<p>Temperature indicator Oil temperature indicator (OTI) The transformers shall be provided with a 150 mm dial type thermometer for top oil temperature indication. The thermometer shall have adjustable, potential free alarm and trip contacts, maximum reading pointer and resetting device and shall be mounted on tank cover. A temperature sensing element located in a pocket in the top oil shall be furnished. This shall be connected to the OTI by means of capacity tubing. Accuracy class of OTI shall be 2° C or better. The OTI shall have full scale deflection of at least 240° C and shall have linear graduation to read every 2° C.</p>	AGREE
<p>Winding • The conductors shall be of electrolytic grade copper free from scales & burrs. • All winding shall be fully insulated. • Coil assembly and insulation spacers shall be so arranged as to ensure free circulation of oil and to reduce the hot spot of winding. • All bus bars and leads shall be adequately supported in insulated cleats or frames shall be effectively locked.</p>	AGREE
<p>Insulation materials • Class "A" insulating materials specified in IS 1271 or latest version shall be used. Wood insulation, where used, shall be well seasoned and treated. • Insulating oil: The new insulating oil shall conform to IS 335. No inhibitors shall be used in the oil. The manufacturer shall dispatch the transformer filled with oil. Ten percent extra oil shall be supplied for topping up, in non returnable sealed containers suitable for outdoor storage.</p>	AGREE
<p>Earthing Terminals Two earthing terminals suitable for connecting 50 x 8 mm mild steel flat shall be provided at position close to the two diagonally opposite bottom corners of tank. These grounding terminals suitable for bolted connection. Two earthing terminals shall also be provided on marshalling box and any other equipment mounted separately.</p>	AGREE
<p>Cable boxes and disconnecting chambers Cable boxes of suitable sizes shall be provided to accommodate cable termination. Cable boxes shall have terminals connectors of adequate size and bolt holes to receive cable lugs. Cable boxes shall have degree of protection IP-52 as per IS 2147. Disconnecting chamber will be as per standard norms & practice.</p>	AGREE
<p>Off circuit Tap changer switch The tap change switch shall be three phase, hand operated, for simultaneous switching of similar taps on the three phases by operating an extra handle. Arrangement shall be made for securing and pad locking the tap chamber in each of the working position. An indicating device shall be provided to show tap in use.</p>	AGREE
<p>Radiators: The radiators shall be detachable type, mounted on the tank. Each radiator shall be provided with the following: a) A drain valve at the bottom b) An air release plug at the top c) Shut off valve</p>	AGREE

Fittings : The following fittings shall be provided with all the transformers :

1. Rating and diagram plate
2. Terminal marking plate
3. Two earthing terminals
4. Lifting lugs
5. Jacking lugs
6. Drain valve with plug of 50mm size
7. Dehydrating breather
8. Buchholtz relay with alarm and trip contacts with one shut off valve on 50mm conservator side
9. Plain oil level indicator
10. Off load tap changing switch
11. Oil filling hole with cover
12. Conservator
13. OTI
14. Explosion vent with air release device
15. Skids and pulling eyes on both sides
16. Rollers
17. Filter valve
18. Inspection cover

AGREE

TESTS

The manufacturer shall carry out type tests in accordance with IS : 2026 for each transformer . The manufacturer shall submit copies of type test in accordance with IS :2026 at CPRI for similar or above than similar rating during last 5 years .

AGREE

TECHNICAL DATA SHEET OF TRANSFORMERS

1. Rated capacity / quantity :-

AGREE

SL.NO.	KVA	PRIMARY VOLTAGE(KV)	SECONDRY VOLTAGE(KV)	Quantity (NOS)	
3	500	6.6	0.44	2	AGREE

2. No. of phases : 3

AGREE

3. Frequency : 50 HZ +8%,- 5%

AGREE

4. Location : Indoor

AGREE

5. Type of cooling : ONAN

AGREE

6. Type of oil : Mineral oil

AGREE

7. Impedance voltage at rated current : 6.5%± 10%

AGREE

8. Tap changer type : Off circuit

AGREE

9. Tapping : ±2.5%,±5%,±7.5%,0

AGREE

10. Temp. rise (over ambient) in oil : 45°C

AGREE

11. Temp. rise (over ambient) in Winding : 55°C

AGREE

12. Earthing of neutral terminals : Required for LV winding

AGREE

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13. Method of system earthing	Star – solid (LV winding)	AGREE
TECHNICAL PARTICULARS		
A) GENERAL		
a) Name of manufacturer :		Induction Electric
b) Service		Indoor oil cooled
c) Rating		
Rated KVA	KVA	500
Rated voltage of HV	KV	6.6
Rated voltage of LV	KV	0.44
Thermal class of Insulation		Class "A"
Type of Transformer		Copper wound
Temperature rise in oil :°C		55/45
Temperature rise in winding :°C		55/45
Rated frequency		50 Hz
d) Number of phases		3
e) Connection		
HV		Delta
LV		Star
Vector group		Dy I
f) Tapping		Type of tap changer: Offload Tap changer, Tap steps on the primary side:2.50 %, Tap range on the primary side: +/- 7.50%, No of tap on the primary side:7
h) No load loss at rated voltage & frequency : KW		0.75
i) Load loss at rated current at 75°C : KW		6.8

j) Impedance at rated current & frequency at 75°C : Percent	5%
k) Reactance at rated current & frequency : Percent	
l) Efficiency at 75°C winding temperature. :	
At full load : Percent	98.51%
At 3/4 full load : Percent	98.79%
At 1/2 full load : Percent	99.03%
l) Efficiency at 75°C at 0.8 p.f. :	
At full load : Percent	98.30%
At 3/4 full load : Percent	98.52%
At 1/2 full load : Percent	98.79%
Load in percentage of full load and power factor at which maximum occurs	33.210558 21
m) Regulation at full load at 75°C	
At unity p.f. : Percent	1.36
At 0.8 p.f. lagging : Percent	3.69
n) No load current in percentage of rated current referred to H.V & 50Hz	Below 1% of f.l current
o) Approximate weights :	
Core & winding : kg	950
Tank & fitting : kg	500
Oil : kg	650
Total weight : kg	2100
p) Approx quantity of oil : Ltr.	730
q) Approx overall dimensions :	
Length : mm	1900
Breadth : mm	1800
Height : mm	2100
r) Terminal arrangement :	
HV	Pocellai n Bushin g
LV	Pocellai n

Nodun
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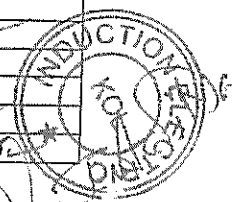
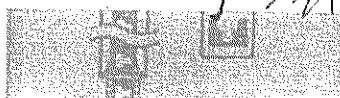
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	Bushing
s) Reference standard :	IS 2026
t) Remarks	
A) Special	
1) Approximate maximum flux density at rated voltage & frequency : CGS Line/cm ²	1.6
2) Efficiency at 75°C at 0.8 p.f. lagging	
At full load : Percent	98
At 3/4 full load : Percent	98.52
At 1/2 full load : Percent	98.75
3) Load at which maximum Efficiency occurs : Percent full load	33.2
4) Maximum efficiency : Percent	99.09
5) Impulse level	
HV	60 KVp
LV	NA
6) No load loss at 110% rated voltage & frequency : KW	0.85
7) No load current at 110% rated voltage & frequency : Percent	0.015
8) Type of winding :	
HV	CrossOver
LV	Helical
9) Insulating materials	
Turn insulation HV	DPC
Turn insulation LV	DPC
Insulation core to LV	Press Board duct and Cylinder
Insulation HV to LV	Press Board duct and Cylinder
10) Clearances :	
Minimum clearance between phases	
a) In oil : mm	10
b) Out of oil : mm	180
Minimum clearance HV to earth in oil : mm	25

GTP ANALYSIS			
SL.NO	Description	Unit	To be filled by bidder
1	Manufacturer		INDUCTION ELECTRIC
2	Applicable standard		IS-2026
3	Type		INDOOR OIL Cooled
4	Winding/Phase		3
5	Cooling		ONAN
5a	Thermal Class of Insulation		CLASS 'A'
6	Rating		
7	Rated KVA	KVA	500
8	Rated Voltage		
8.1	Primary	KV	6.6
8.2	Secondary	KV	0.44
9	No of Phases		Three
10	Rated Frequency	Hz	50
11	Type of Transformer		COPPER WOUND
12	Temperature rise		
12.1	Temperature rise above 50 deg C ambient		
	In Winding /Oil	deg C	55/45
13	Connection		
13.1	High Voltage		Delta
13.2	Low Voltage		Star
14	Vector Group		Dyn11
15	Taps		
15.1	Type of tap changer		OFF LOAD TAP CHANGER
15.2	Tap steps On The Primary Side		2.50%
15.3	Tap range On The Primary Side		± 7.5%
15.4	No of Tap On The Primary Side		7
16	Guaranteed Losses		
16.1	No load losses at rated voltage and frequency	KW	0.75
16.2	Load losses at rated current and at 75°C	KW	6.8
17	Impedence volt at rated current and frequency	%	5
	at 75 deg C		
18	Efficiency at 75 deg C winding temperature		
18.1	At 100% Load		98.51%
18.2	At 75% Load		98.79%
18.3	At 50% Load		99.03%
18a	Efficiency at 75 deg C winding temperature at 0.8p.f		
18.1a	At 100% Load		98.30%
18.2a	At 75% Load		98.52%
18.3a	At 50% Load		98.79%
19	Load in percentage of full load and power-factor at which max occurs		33.21055821
20	Regulation at full load and 75 deg C		
20.1	At unity Power-Factor		1.36
20.2	At 0.8 Power-Factor		3.69
21	No load current in percentage of rated current referred to H.V and 50Hz		below 1% of f.l current
22	Insulation Level	KV p	60
23	Power frequency withstand volt (1 min rms)		
23.1	Primary	kV	20
23.2	Secondary	kV	3
24	Core and coil	kg	950
25	Tank and fitting	kg	500
26	Oil in ltr	ltr	730
27	Mass of oil	kg	650
28	Total weight	kg	2100
29	Height/Length/Width of TRANSFORMER	mm	2100/1900/1800

NOTE: IS TOLERANCE WILL BE APPLICABLE FOR LOSSES, IMPEDENCE, & WEIGHT



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FORMAT OF PERFORMANCE BANK GUARANTEE

1. Messers ----- a company having Regd. Office /its office at ----- hereinafter called the Seller has entered into a Contract No. ----- dt. ----- (hereinafter called the said Contract) with Bharat Coking Coal Limited having its Regd. Office (address to be given -----) (hereinafter called, the Purchaser) to supply equipment on the terms and conditions in the said Contract.

It has been agreed that hundred percentage(100%) payment of the value of the equipment will be made to the seller in the terms of the said Contract on the seller furnishing to the Purchaser a Bank Guarantee for the sum of ----- equivalent to 10 % of the value of each equipment and accessories dispatched by the seller as security for the due and faithful performance of the terms of the said contract and against any loss or damage caused to or would be caused to or suffered by the purchaser by reason of any of the terms or conditions contained in the said contract.

The ----- Bank having its office at ----- has at the request of seller agreed to give the guarantee herein after contained.

2. We, ----- (Name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur merely on a demand from the purchaser stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the purchaser by reason of any breach by the said seller of any of the terms or conditions contained in the said contract or by reason of the seller's failure to perform the said contract. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. We shall not withhold the payment on the ground that the seller has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between purchase and the seller regarding the claim. However, our liability under this guarantee shall be restricted to an amount not exceeding -----.

3. We, ----- (Name of the Bank) further agree that the guarantee herein contained shall come into force from the date hereof and shall remain in full force and effect during the period of the said contract and that it shall continue to be enforceable till all the dues of the purchase under or by virtue of the said contract have been fully paid and its claim satisfied or purchase certified that the terms and conditions of the said contract have been fully and properly carried out by the said seller and accordingly discharged the guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the ----- (date to be given ----- period of contract + 90 days from the date of Bank Guarantee) we shall be discharged from all liability under this guarantee thereafter.

4. We, (Name of the Bank) further agree with the purchaser, that the purchaser, shall have the fullest liberty without our consent and without affecting in any manner no obligations hereunder to vary any of the terms and conditions of the said contract or to extend time of performance by the said seller(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the purchaser, against the said seller and to forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relived from our liability by reason or any such variation or extension being granted to the said seller or for any forbearance act or omission on the part of the purchaser, or any indulgence by the purchaser to the said seller by any such matter or thing whatsoever which under the law relating to sureties would be for this provision have effect of an relieving us. The Bank further agrees that in case this guarantee is required for a longer period and it is not extended by the bank beyond the period specified above, the bank shall pay to this purchaser the said sum of ----- or such lesser sum as may than be due the purchaser and as the purchaser may demand.

5. We, ----- (Name of the Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the purchaser, in writing.

6. The Bank has under its constitution power to give this guarantee and Mr. ----- Manager, who has signed it on behalf of the Bank has authority to do so.

7. This Bank Guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

[In case the BGs are from outstation branch of Dhanbad then BG shall be encashable at Dhanbad/Kolkata branch of issuing bank with address and location of the said branch at Dhanbad/Kolkata will be as under :

Name of the Bank :

Name of the Branch :

Location & address :

The BG shall be subject to the jurisdiction of the Civil courts Dhanbad District only.]

Date ----- Day of ----- 20

For ----- Bank

Signature of the authorised person

for and on behalf of the Bank, Emp. Code.

N. Kumar
29/11/14

[Signature]
[Signature]

1	VENDOR/SUPPLIER/CONTRACTOR/CUSTOMER'S NAME & ADDRESS: (With Telephone No. & Fax No.)	INDUCTION ELECTRIC Mohan Ghosh Road Rajnagar, Kolkatta-103
2	PARTICULARS OF BANK ACCOUNT:	03332016444
	A. BANK NAME:	STATE BANK OF INDIA
	B. BRANCH NAME: (Including RTGS Code)	NARENDRAPUR BRANCH SBIN0012341
	ADDRESS:	KOLKATA-700103
	C. 9-DIGIT CODE NUMBER OF THE BANK & BRANCH (Appearing on MICR Cheque Issued on the Bank) Or 5-DIGIT Code Number of SBI	700002366
	D. ACCOUNT TYPE: (S.B. Account/Current Account Or Cash Credit with Code 10/11/13)	Current Account
	E. LEDGER NO./LEDGER FOLIO NUMBER:	
	F. ACCOUNT NUMBER (CORE BANKING) & STYLE OF ACCOUNT (As appearing on the Cheque Book)	31307412735

3. Date of Effect: I hereby declare that the particulars given above are correct and complete. If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold the user institution responsible. I have read the option invitation letter and agree to discharge responsibility expected of me as a participant under the scheme. Any bank charges levied by the bank of such e-transfer shall be borne by us.

Date:

INDUCTION ELECTRIC
Signature of the Customer
Vendor/Supplier/Contractor
Proprietor

Certified that the particulars furnished above are correct as per our records.

Signature of the Authorized
Officials from the Bank

29/11/14