

**Volume – I**

**Tender Notification for**

**Supply of 11 kV, 1000 kVA Reduced Dimension  
Oil Type Distribution Transformer in BRPL**

**CMC/BR/20-21/RS/RJ/913**

**Due Date for Submission of Bids: 06.04.2021**

**BSES RAJDHANI POWER LTD (BRPL)  
BSES Bhawan, Nehru Place, New Delhi-110019  
Corporate Identification Number: U74899DL2001PLC111527  
Telephone Number: +91 11 3009 9999  
Fax Number: +91 11 2641 9833  
Website: [www.bsesdelhi.com](http://www.bsesdelhi.com)**

**SECTION – I**  
**REQUEST FOR QUOTATION**

**Tender Notification: CMC/BR/20-21/RS/RJ/913**

**Supply of 11 kV , 1000 kVA Reduced Dimension Oil  
Type Distribution Transformer in BRPL**

## INDEX

	Page No.
SECTION – I: REQUEST FOR QUOTATION	04
SECTION – II: INSTRUCTIONS TO BIDDER	09
SECTION – III: GENERAL CONDITIONS OF CONTRACT	17-25
1.0 GENERAL INSTRUCTIONS	17
2.0 DEFINITION OF TERMS	18
3.0 CONTRACT DOCUMENTS & PRIORITY	18
4.0 SCOPE OF SUPPLY – GENERAL	19
5.0 QUALITY ASSURANCE AND INSPECTION	19
6.0 PACKING, PACKING LIST & MARKING	20
7.0 PRICE BASIS FOR SUPPLY OF MATERIALS	20
8.0 VARIATION IN TAXES, DUTIES & LEVIES	20
9.0 TAXES & DUTIES ON RAW MATERIALS & BOUGHT OUT COMPONENTS	21
10.0 TERMS OF PAYMENT AND BILLING	21
11.0 PRICE VALIDITY	20
12.0 PERFORMANCE GUARANTEE	21
13.0 FORFEITURE	21
14.0 RELEASE	22
15.0 DEFECTS LIABILITY PERIOD	22
16.0 RETURN, REPLACEMENT OR SUBSTITUTION	22
17.0 EFFECTIVE DATE OF COMMENCEMENT OF CONTRACT	22
18.0 TIME – THE ESSENCE OF CONTRACT	22
19.0 THE LAWS AND JURISDICTION OF CONTRACT	22
20.0 EVENTS OF DEFAULT	22
21.0 CONSEQUENCES OF DEFAULT	23
22.0 PENALTY FOR DELAY	23
23.0 FORCE MAJEURE	23
24.0 TRANSFER AND SUB-LETTING	24
25.0 RECOVERIES	25
26.0 WAIVER	25
27.0 INDEMNIFICATION	25
SECTION – IV: QUANTITY AND DELIVERY REQUIREMENT	26
SECTION – V: TECHNICAL SPECIFICATION OF 11 kV, 1000 kVA DT	27

## SECTION – I: REQUEST FOR QUOTATION

### 1.0 Event Information

BRPL invites sealed tenders against Supply of 11 kV, 1000 kVA Reduced Dimension Oil Type Distribution Transformers in BRPL from the manufacturers. The bidder must qualify the technical requirements as specified in Clause 2.0 stated below. The sealed envelopes shall be duly superscribed as — **“BID FOR SUPPLY 11 KV, 1000 KVA REDUCED DIMENSION OIL TYPE DISTRIBUTION TRANSFORMER IN BRPL, TENDER NOTICE/CMC/BR/20-21/RS/RJ/913 DUE FOR SUBMISSION ON DT. 06.04.2021”**.

Sl. No.	Item Description	Specification	Requirement	Estimated Cost
			Total Qty.	
BRPL, DELHI				
1	Supply of 11 kV, 1000 KVA Reduced Dimension Oil Type Distribution Transformers in BRPL	SECTION V	38 Nos	6.15 Cr

**Note: Quantity may vary to any extent of +/- 30% of above mentioned total quantity.**

The schedule of specifications with detail terms & conditions can be obtained from address given below against demand draft/ Pay Order of **Rs.1180/- with GST-**, drawn in favour of **BSES RAJDHANI POWER LTD**, payable at New Delhi. The sale of tender documents will be issued from **16.03.2021** onwards on all working days upto **31.03.2021**. The tender documents can also be downloaded from the website **“www.bsesdelhi.com”**.

In case tender papers are downloaded from the above website, then the bidder has to enclose a demand draft covering the cost of bid documents as stated above in a separate envelope with suitable superscription —**“Cost of Bid Documents: Tender Notice Ref: CMC/BR/20-21/RS/RJ/913”**. This envelope should accompany the Bid Documents.

Offers will be received upto **1530 Hrs. on dt. 06.04.2021** as indicated earlier and will be opened at the address given below dt. **06.04.2021 at 1600 Hrs.** in the presence of authorized representatives of the bidders. The schedule of specifications with detail terms & conditions are enclosed. It is the sole responsibility of the bidder to ensure that the bid documents reach this office on or before the due date.

**HEAD OF THE DEPARTMENT, 1st FLOOR, ‘C’ BLOCK,  
CONTRACTS & MATERIALS DEPARTMENT, BSES RAJDHANI POWER LTD,  
BSES BHAWAN,  
NEHRU PLACE, NEW DELHI-110019.**

BRPL reserves the right to accept/ reject any or all Tenders without assigning any reason thereof and alter the quantity of materials mentioned in the Tender documents at the time of placing purchase orders. Tender will be summarily rejected if:

- i) Earnest Money Deposit (EMD) @ 1% (One percent) of the Tender value i.e. **Rs. 6,15,000/-** is not deposited in shape of Bank Draft in favour of BSES RAJDHANI POWER LTD, payable at New Delhi or Bank Guarantee executed on favour of BSES RAJDHANI POWER LTD.
- ii) The offer does not contain “FOR, NEW DELHI price indicating break-up towards all taxes & duties”.
- iii) Complete Technical details are not enclosed.
- iv) Tender is received after due time due to any reason.

BRPL reserves the right to reject any or all bids or cancel/ withdraw the invitation for bids without assigning any reason whatsoever and in such case no bidder/ intending bidder shall have any claim arising out of such action time of placing purchase orders.

#### **Qualification Criteria:-**

#### **QUALIFICATION CRITERIA FOR 1000 KVA OILT TYPE DT'S-**

The prospective bidder must qualify all of the following requirements to participate in the bidding process. Bidder who meet following requirements will be considered as successful bidder and management has the right to disqualify those bidders who do not meet these requirements.

1. The bidders must have the manufacturing/Assembly base in India for Distribution Transformers . The bidders must be a manufacturer of 1000 kva Distribution transformer or higher Capacity transformers and must possess valid Type test report carried out at ERDA/CPRI with in last 5 Years from the date of bid opening. In case type test reports are older than five (5) years from the date of bid opening, bidder shall submit the undertaking that there is “since the last type test, the product has not undergone any change in design and the materiel used and the dimensions of the product are the same as the one on which the type test was conducted”.  
. Non submission of type test reports will lead to rejection of the offer. Type test older than ten (10) years shall not be acceptable and bid is liable for rejection.
2. The bidder shall have servicing , repairing, testing & refurbishment facility in INDIA with necessary spares and testing equipment for providing prompt after sales service for 1000 kVA Distribution Transformer. Details of the set-up available shall be brought out in the offer, failing which the offer will be rejected. The bidder shall submit undertaking along with the bid confirming compliance to the qualifying criteria for bidder
3. The bidder should have qualified technical and dedicated QA personnel at various stages of manufacture & testing. Documentary proof such as Quality Mannual, Charts and Undertaking shall be furnished.

4. The bidder should have plant installed capacity to supply of minimum 15-20 nos of 1000 kVA or higher capacity each per month.
5. The Bidder should have supplied at least 150 Nos of distribution transformers of similar capacity or higher to any major utilities/SEB's in last 5 years, out of which 50 Nos of distribution transformers must be in successful operation for at least 2 years for which performance Certificate shall be furnished.
6. Bidder should have Average Annual Sales Turnover of Rs 30 Crores or more in last 3 financial Years (FY 2017-18, 2018-19, 2019-20). Balance sheet shall be submit by Vendor
7. The Bidder must posses valid ISO 9001:2015 certification and must posses valid BIS Licence.
8. In case of new bidders (not enlisted in BSES) , Factory Inspection & evaluation shall be carried out to ascertain bidders manufacturing capabilities and quality procedures. BRPL reserves the right to assess the capabilities /installed capacity
9. The Bidder shall submit an undertaking "No Litigation" is pending for the company.
10. An undertaking (self-certificate) that the bidder has not been blacklisted/debarred by any central/state government institution including electricity utilities.
11. The bidder must have valid PAN No., GST Registration Number, in addition to other statutory compliances. The bidder must submit the copy of registrations and submit an undertaking that the bidder shall comply all the statuary compliances as per the laws/rules etc. before the start of the work.

## Bidding and Award Process

Bidders are requested to submit their questions regarding the RFQ or the bidding process after review of this RFQ. BRPL response to the questions raised by various bidders will be distributed to all participating bidders through website.

### a. Time schedule of the bidding process

The bidders on this RFQ package should complete the following within the dates specified as under:

S.No.	Steps	Activity description	Due date
1	Technical Queries	All Queries related to RFQ	On or before 01.04.2021 1500 Hrs.
2	Technical Offer	Documentary evidence in support of qualifying criteria. Technical Literature/ GTP/ Drawings/ Type test report, if any, etc., Testing facilities, any other relevant document, acceptance to commercial terms & conditions viz. delivery Schedule/ Period, Payment terms, PBG etc. Quality assurance plan, Deviation from the specification, list of plant & machinery and testing equipments Unpriced items.	06.04.2021, 1530 HRS
3	Commercial Offer	Prices for RMU and Break up regarding basic price and taxes. Delivery commitment	06.04.2021, 1530 HRS
4	Opening of technical bid	As per RFQ	06.04.2021, 1600 HRS

This is a two part bid process. Bidders are to submit the bids (a) Technical Bid (b) Price Bid. Both these parts should be furnished in separate sealed covers superscribing with specification no., validity etc, with particulars as **Part-I “Technical Particulars & Commercial Terms & Conditions”** and **Part-II “Financial bid”** and these sealed envelopes should again be placed in another sealed cover which shall be submitted before the due date & time specified.

**Bidders are requested to submit the bid in one original plus one copy in duplicate.**

- **The Part-I (Technical Bid) -** Technical Bid should not contain any cost information whatsoever. In case of Bids where the qualification requirements, technical suitability and other requirements are found to be inadequate, Part-II “Financial Bid” will be returned unopened.
- **The Part-II (Financial Bid) -** Qualified bidders will be intimated after technical evaluation of all the bids is completed. The date and time of same shall be intimated in due course to the qualified bidders. Notwithstanding anything stated above, the Purchaser reserves the right to assess bidder’s capability to perform the contract, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final.

#### **Award Decision**

Purchaser intends to award the business on a lowest bid basis, so suppliers are encouraged to bid competitively. The decision to place Purchase Order / Letter of acceptance solely depends on purchaser on the cost competitiveness across multiple lots, quality, delivery and bidder’s capacity, in addition to other factors that Purchaser may deem relevant.

The purchaser reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without any reason.

BSES reserves the right to split the tender quantity amongst techno commercially qualified bidders on account of delivery requirement in tender, quantity under procurement etc.

Splitting of tender quantity amongst more than one bidder shall be governed by below mentioned guidelines:



- If the quantity is to be split among 2 bidders, it will be done in the ratio of 70:30 on L1 price.
- If the quantity is to be split among 3 bidders, it will be done in the ratio of 60:25:15 on L1 price.
- In case quantity needs to be distributed and order splitting is required, distribution of quantity shall be maximum among three (03) bidders.

In the event of your bid being selected by purchaser (and / or its affiliates) and your subsequent DEFAULT on your bid; you will be required to pay purchaser (and / or its affiliates) an amount equal to the difference in your bid and the next lowest bid on the quantity declared in RFQ.

In case any supplier is found unsatisfactory during the delivery process, the award will be cancelled and BRPL reserves the right to award other suppliers who are found fit.

**Quantity Variation:** The purchaser reserves the rights to vary the quantity by +/- **30%** of the tender quantity.

**Repeat Order:** BRPL reserves the right to place repeat order at the same rates & terms and conditions as per this tender against additional requirement subject to mutual agreement between BRPL & supplier.

**Market Integrity:**

We have a fair and competitive marketplace. The rules for bidders are outlined in the Terms & Conditions. Bidders must agree to these rules prior to participating. In addition to other remedies available, we reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the Terms & Condition. Bidders who violate the marketplace rules or engage in behavior that disrupts the fair execution of the marketplace restricts a bidder to length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace.
- Breach of the terms of the published in Request For Quotation.

**6.0 Supplier Confidentiality**

All information contained in this RFQ is confidential and may not be disclosed, published or advertised in any manner without written authorization from BRPL. This includes all bidding information submitted.

All RFQ documents remain the property of BRPL and all suppliers are required to return these documents to BRPL upon request.

Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

**7.0 Contact Information**

All communication as regards this RFQ shall be made (i) in English, (ii) in writing and (iii) sent by mail, facsimile to:

	<b>Technical</b>	<b>Commercial</b>
Contact Name	Mr. Sheshadri Krishnapura Copy to Mr. Robin Sebastian	Mr. Robin Sebastian
Address	BSES RAJDHANI POWER LTD, 2nd Floor, B Block, Nehru Place, New Delhi – 110019	C&M Deptt. 1st floor, D- Block, BSES Rajdhani Power Limited, BSES Bhawan, Nehru Place, New Delhi -110019
Email-ID	<a href="mailto:sheshadri.krishnapura@relianceada.com">sheshadri.krishnapura@relianceada.com</a>	<a href="mailto:Robin.sebastian@relianceada.com">Robin.sebastian@relianceada.com</a>

**SECTION – II**

**INSTRUCTION TO BIDDERS (ITB)**

**SUPPLY OF 11 KV, 1000 KVA REDUCED  
DIMENSION OIL TYPE DISTRIBUTION  
TRANSFORMER IN BRPL**

**CMC/BR/20-21/RS/RJ/913**

- 1.0** BSES Rajdhani power Ltd, hereinafter referred to as the Purchaser are desirous of implementing the various Systems Improvement/ Repair & Maintenance works at their respective licensed area in Delhi The Purchaser has now floated this tender for procurement of 1000 kVA DT's as notified earlier in this bid document.

**2.0 SCOPE OF WORK**

The scope shall include Design, Manufacture, Testing at works conforming to the Technical Specifications enclosed along with Packing, Forwarding, Freight and Unloading and proper stacking at Purchaser's stores.

**3.0 DISCLAIMER**

This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder/ Bidding Consortium should conduct its own estimation and analysis and should check the accuracy, reliability and completeness of the information in this Document and obtain independent advice from appropriate sources in their own interest.

Neither Purchaser nor its employees will have any liability whatsoever to any Bidder or any other person under the law or contract, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage whatsoever which may arise from or be incurred or suffered in connection with anything contained in this Document, any matter deemed to form part of this Document, provision of Services and any other information supplied by or on behalf of Purchaser or its employees, or otherwise arising in any way from the selection process for the Supply.

Though adequate care has been taken while issuing the Bid document, the Bidder should satisfy itself that Documents are complete in all respects. Intimation of any discrepancy shall be given to this office immediately.

This Document and the information contained herein are Strictly Confidential and are for the use of only the person(s) to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors).

**4.0 COST OF BIDDING**

The Bidder shall bear all cost associated with the preparation and submission of its Bid and Purchaser will in no case be responsible or liable for those costs. Further the purchaser has the right to get sample of Panel tested by any reputed independent test lab (approved by BRPL) at the cost of bidder.

## **B. BIDDING DOCUMENT**

### **5.0 BIDDING DOCUMENTS**

The Scope of Work, Bidding Procedures and Contract Terms are described in the Bidding Documents. In addition to the covering letter accompanying Bidding Documents, the Bidding Documents include:

#### **Volume –I**

- |    |                                   |                 |
|----|-----------------------------------|-----------------|
| a) | Request for Quotation (RFQ)       | - Section – I   |
| b) | Instructions to Bidders (ITB)     | - Section – II  |
| c) | General Conditions of Contract    | - Section - III |
| d) | Quantity and delivery requirement | - Section –IV   |
| e) | Technical Specifications (TS)     | - Section –V    |

#### **Volume – II**

- |    |                               |                  |
|----|-------------------------------|------------------|
| a) | Bid Form                      | - Annexure – I   |
| b) | Bid Format                    | - Annexure – II  |
| c) | Price Schedule                | - Annexure – III |
| d) | Commercial Terms & Conditions | - Annexure - IV  |
| e) | No Deviation Sheet            | - Annexure - V   |
| f) | Qualification Criterion       | - Annexure - VI  |

The Bidder is expected to examine the Bidding Documents, including all Instructions, Forms, Terms and specifications. Failure to furnish all information required by the Bidding documents or submission of a Bid not substantially responsive to the Bidding Documents in every respect will may result in the rejection of the Bid.

### **6.0 AMENDMENT OF BIDDING DOCUMENTS**

At any time prior to the deadline for submission of Bids, the Purchaser may for any reasons, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by Amendment.

The Amendment shall be part of the Bidding Documents, pursuant to Clause 5.01, and it will be notified in writing by Fax/e-mail to all the Bidders who have received the Bidding Documents and confirmed their participation to Bid, and will be binding on them.

In order to afford prospective Bidders reasonable time in which to take the Amendment into account in preparing their Bids, the Purchaser may, at its discretion, extend the deadline for the submission of Bids.

## **C PREPARATION OF BIDS**

### **7.0 LANGUAGE OF BID**

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the Purchaser, shall be written in the English Language. Any printed literature furnished by the Bidder may be written in another Language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.

### **8.0 DOCUMENTS COMPRISING THE BID**

The Bid prepared and submitted by the Bidder shall comprise the following components:

- a) Bid Form ,Price & other Schedules (STRICTLY AS PER FORMAT) and Technical Data Sheets completed in accordance with Clause 9.0, 10.0, 11.0 and Technical Specification;
- b) All the Bids must be accompanied with the required EMD as mentioned in the Section-I against each tender.
- c) Power of Attorney or Authorization letter indicating that the person(s) signing the Bid have the authority to sign the Bid and thus that the Bid is binding upon the Bidder during the full period of its validity, in accordance with clause 12.0.

### **9.0 BID FORM**

The Bidder shall complete an “Original” and another one “Copy” of the Bid Form and the appropriate Price & Other Schedules and Technical Data Sheets.

#### **EMD**

Pursuant to Clause 8.0 (b) above, the bidder shall furnish, as part of its bid, a EMD amounting to 1% of the total bid value (FOR Destination) i.e. Rs. **6,15,000/-**. The EMD is required to protect the Purchaser against the risk of Bidder’s conduct which would warrant the security’s forfeiture.

The EMD shall be denominated in the currency of the bid, and shall be in the following form:

- a) A bank guarantee issued by any scheduled bank strictly as per the form at enclosed and shall be valid for a period of thirty (30) days beyond the validity of the bid.
- b) Bank Draft in favour of BSES RAJDHANI POWER LTD, payable at New Delhi.

Unsuccessful bidders’ EMD will be discharged or returned as promptly as possible as but not later than thirty (30) days after the expiration of the period of bid validity.

The successful bidder’s EMD will be discharged upon furnishing the performance security. The EMD may be forfeited:

- a) If the Bidder:

- i) withdraws its bid during the period of bid validity specified by the Bidder in the Bid Form ; or
- b) in the case of a successful Bidder, if the Bidder fails:
  - i) to sign the Contract, or
  - ii) to furnish the required performance security.

## **10.0 BID PRICES**

Bidders shall quote for the entire Scope of Supply with a break-up of prices for individual items. The total Bid Price shall also cover all the Supplier's obligations mentioned in or reasonably to be inferred from the Bidding Documents in respect of Design, Supply, Transportation to site, all in accordance with the requirement of Bidding Documents. The Bidder shall complete the appropriate Price Schedules included herein , stating the Unit Price for each item & total Price.

The prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during execution of the supply work, breakup of price constituents, should be there. Prices quoted by the Bidder shall be—Firm “and not subject to any price adjustment during the performance of the Contract. A Bid submitted with an adjustable price quotation will be treated as non -responsive and rejected.

## **11.0 BID CURRENCIES**

Prices shall be quoted in **Indian Rupees (INR) only**.

## **12.0 PERIOD OF VALIDITY OF BIDS**

Bids shall remain valid for **120 days** post bid date.

Notwithstanding Clause 12.01 above, the Purchaser may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and the responses thereto shall be made in writing by Fax/e-mail.

## **13.0 ALTERNATIVE BIDS**

Bidders shall submit Bids, which comply with the Bidding Documents. Alternative Bids will not be considered. The attention of Bidders is drawn to the provisions of Clause 22.03 & 22.04 regarding the rejection of Bids, which are not substantially responsive to the requirements of the Bidding Documents.

## **14.0 FORMAT AND SIGNING OF BID**

The original Bid Form and accompanying documents (as specified in Clause 9.0), clearly marked "Original Bid", plus one copy must be received by the Purchaser at the date, time and place specified pursuant to Clauses 15.0 and 16.0. In the event of any discrepancy between the original and the copies, the original shall govern.

The original and copy of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to sign on behalf of the Bidder. Such authorization shall be indicated by written Power-of-Authority accompanying the Bid.

The Bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

## **D SUBMISSION OF BIDS**

### **15.0 SEALING AND MARKING OF BIDS**

Bid submission: One original & one Copy (hard copies) of all the Bid Documents shall be sealed and submitted to the Purchaser before the closing time for submission of the bid.

The Technical Documents and the EMD shall be enclosed in a sealed envelope and the said envelope shall be superscribed with —**Technical & EMD**. The Financial bid shall be inside another sealed envelope with superscription — **Financial Bid**. Both these envelopes shall be sealed inside another big envelope. All the envelopes should bear the Name and Address of the Bidder and marking for the Original and Copy. The envelopes should be superscribed with —**“Tender Notice No, Due date of submission, Tender opening date”**.

The Bidder has the option of sending the Bids in person. Bids submitted by Telex/ Telegram/ Fax will not be accepted. No request from any Bidder to the Purchaser to collect the proposals from Airlines/Cargo Agents etc shall be entertained by the Purchaser.

### **16.0 DEADLINE FOR SUBMISSION OF BIDS**

The original Bid, together with the required copies, must be received by the Purchaser at the address specified not later than **1530 HRS on 06.04.2021**.

The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents in accordance with Clause 9.0, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

### **17.0 ONE BID PER BIDDER**

Each Bidder shall submit only one Bid either by itself, or as a partner in a Joint Venture. A Bidder who submits or participates in more than one Bid will cause all those Bids to be rejected.

### **18.0 LATE BIDS**

Any Bid received by the Purchaser after the deadline for submission of Bids prescribed by the Purchaser, pursuant to Clause 16.0, will be declared "Late" and rejected and returned unopened to the Bidder.



## **19.0 MODIFICATIONS AND WITHDRAWAL OF BIDS**

19.01 The Bidder is not allowed to modify or withdraw its Bid after the Bid's submission.

## **E. EVALUATION OF BID**

## **20.0 PROCESS TO BE CONFIDENTIAL**

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the Purchaser's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

## **21.0 CLARIFICATION OF BIDS**

To assist in the examination, evaluation and comparison of Bids, the Purchaser may, at its discretion, ask the bidder for a clarification of its Bid. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted.

## **22.0 PRELIMINARY EXAMINATION OF BIDS / RESPONSIVENESS**

Purchaser will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order.

Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.

Prior to the detailed evaluation, Purchaser will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.

Bid determined as not substantially responsive will be rejected by the Purchaser and/or the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

## **23.0 EVALUATION AND COMPARISON OF BIDS**

The evaluation of Bids shall be done based on the delivered cost competitiveness basis.

The evaluation of the Bids shall be a stage-wise procedure. The following stages are identified for evaluation purposes: In the first stage, the Bids would be subjected to a responsiveness check. The Technical Proposals and the Conditional ties of the Bidders would be evaluated. Subsequently, the Financial Proposals along with supplementary Financial Proposals, if any, of Bidders with Techno-commercially Acceptable Bids shall be considered for final evaluation.

The Purchaser's evaluation of a Bid will take into account, in addition to the Bid price, the following factors, in the manner and to the extent indicated in this Clause:

- (a) Supply Schedule
- (b) Deviations from Bidding Documents

Bidders shall base their Bid price on the terms and conditions specified in the Bidding Documents. The cost of all quantifiable deviations and omissions from the specification, terms and conditions specified in Bidding Documents shall be evaluated. The Purchaser will make its own assessment of the cost of any deviation for the purpose of ensuring fair comparison of Bids.

Any adjustment in price, which results from the above procedure, shall be added for the purposes of comparative evaluation only to arrive at an "Evaluated Bid Price". Bid Prices quoted by Bidders shall remain unaltered.

## **F. AWARD OF CONTRACT**

### **24.0 CONTACTING THE PURCHASER**

From the time of Bid submission to the time of contract award, if any Bidder wishes to contact the Purchaser on any matter related to the Bid, it should do so in writing.

Any effort by a Bidder to influence the Purchaser and/or in the Purchaser's decisions in respect of Bid evaluation, Bid comparison or Contract Award, will result in the rejection of the Bidder's Bid.

### **25.0 THE PURCHASER 'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

The Purchaser reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at anytime prior toward of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Purchaser's action.

## **26.0 AWARD OF CONTRACT**

The Purchaser will award the Contract to the successful Bidder whose Bid has been Determined to be the lowest-evaluated responsive Bid, provided further that the Bidder has been determined to be qualified to satisfactorily perform the Contract. Purchaser reserves the right to award order other bidders in the tender, provided it is required for progress of project & provided he agrees to come to the lowest rate.

## **27.0 THE PURCHASER'S RIGHT TO VARY QUANTITIES**

The Purchaser reserves the right to vary the quantity i.e. increase or decrease the numbers/quantities without any change in terms and conditions during the execution of the Order.

## **28.0 LETTER OF INTENT/ NOTIFICATION OF AWARD**

The letter of intent/ Notification of Award shall be issued to the successful Bidder whose bids have been considered responsive, techno-commercially acceptable and evaluated to be the lowest (L1). The successful Bidder shall be required to furnish a letter of acceptance within 7 days of issue of the letter of intent /Notification of Award by Purchaser.

## **29.0 PERFORMANCE BANK GUARANTEE**

The successful Bidder shall furnish the Performance Bank Guarantee for an amount of 10% (Ten percent) of the Contract Price in accordance with the format provided. The Performance Bond shall be valid for a period of twenty four months (24) from the date of the commissioning or thirty months (30) from the date of receipt of material (last consignment) at site/stores whichever is earlier plus 3 months towards claim period. Upon submission of the performance security, the EMD shall be released.

## **30.0 CORRUPT OR FRADULENT PRACTICES**

The Purchaser requires that the Bidders observe the highest standard of ethics during the procurement and execution of the Project. In pursuance of this policy, the Purchaser:

- (a) Defines, for the purposes of this provision, the terms set forth below as follows:
  - i) "Corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them ,or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; and
  - ii) "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the Purchaser of the benefits of free and open competition.

- (b) Will reject a proposal forward if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question ;
- (c) Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract.

Furthermore, Bidders shall be aware of the provision stated in the General Conditions of Contract.

**SECTION – III**

**GENERAL CONDITIONS OF CONTRACT (GCC)**

**SUPPLY OF 11 KV, 1000 KVA REDUCED DIEMNSION  
OIL TYPE DISTRBUTION  
TRANFORMER IN BRPL**

**CMC/BR/20-21/RS/RJ/913**

## **GENERAL TERMS AND CONDITIONS**

### **1.0 General Instructions**

All the Bids shall be prepared and submitted in accordance with these instructions.

Bidder shall bear all costs associated with the preparation and delivery of its Bid, and the Purchaser will in no case shall be responsible or liable for these costs.

The Bid should be submitted by the Bidder in whose name the bid document has been issued and under no circumstances it shall be transferred/ sold to the other party.

The Purchaser reserves the right to request for any additional information and also reserves the right to reject the proposal of any Bidder, if in the opinion of the Purchaser, the data in support of RFQ requirement is incomplete.

The Bidder is expected to examine all instructions, forms, terms & conditions and specifications in the Bid Documents. Failure to furnish all information required in the Bid Documents or submission of a Bid not substantially responsive to the Bid Documents in every respect may result in rejection of the Bid. However, the Purchaser's decision in regard to the responsiveness and rejection of bids shall be final and binding without any obligation, financial or otherwise, on the Purchaser.

### **2.0 Definition of Terms**

“Purchaser” shall mean BRPL Limited, on whose behalf this bid enquiry is issued by its authorized representative / officers.

“Bidder” shall mean the firm who quotes against this bid enquiry issued by the Purchaser. “Supplier” or “Supplier” shall mean the successful Bidder and/or Bidders whose bid has been accepted by the Purchaser and on whom the “Letter of Acceptance” is placed by the Purchaser and shall include his heirs, legal representatives, successors and permitted assigns wherever the context so admits.

“Supply” shall mean the Scope of Contract as described.

“Specification” shall mean collectively all the terms and stipulations contained in those portions of this bid document known as RFQ, Commercial Terms & Condition, Instructions to Bidders, Technical Specifications and the Amendments, Revisions, Deletions or Additions, as may be made by the Purchaser from time to time.

“Letter of Acceptance” shall mean the official notice issued by the Purchaser notifying the Supplier that his proposal has been accepted and it shall include amendments thereto, if any, issued by the Purchaser. The “Letter of Acceptance” issued by the Purchaser shall be binding on the “Supplier” The date of Letter of Acceptance shall be taken as the effective date of the commencement of contract.

“Month” shall mean the calendar month and “Day” shall mean the calendar day.

“Codes and Standards” shall mean all the applicable codes and standards as indicated in the Specification.

“Offer Sheet” shall mean Bidder's firm offer submitted to BRPL in accordance with the specification.

“Contract” shall mean the “Letter of Acceptance” issued by the Purchaser.

“Contract Price” shall mean the price referred to in the “Letter of Acceptance”.

“Contract Period” shall mean the period during which the “Contract” shall be executed as agreed between the Supplier and the Purchaser in the Contract inclusive of extended contract period for reason beyond the control of the Supplier and/or Purchaser due to force majeure.

“Acceptance” shall mean and deemed to include one or more of the following as will be stipulated in the specification:

- a) The written acceptance of material by the inspector at suppliers works to ship the materials.
- b) Acceptance of material at Purchaser site stores after its receipt and due inspection/ testing and release of material acceptance voucher.
- c) Where the scope of the contract includes supply, acceptance shall mean issue of necessary equipment / material takeover receipt after installation & commissioning and final acceptance.

### **3.0 Contract Documents & Priority**

Contract Documents: The terms and conditions of the contract shall consist solely of these RFQ conditions and the offer sheet.

Priority: Should there be any discrepancy between any term hereof and any term of the Offer Sheet, the terms of these RFQ shall prevail.

### **4.0 Scope of Supply - General**

The “Scope of Supply” shall be on the basis of Bidder’s responsibility, completely covering the obligations, responsibility and supplies provided in this Bid enquiry whether implicit or explicit.

Bidder shall have to quote for the Bill of quantities as listed in Section – IV of this RFQ.

Quantity variation and additional requirement if any shall be communicated to successful bidder during project execution.

All relevant drawings, data and instruction manuals.

## **5.0 Quality Assurance and Inspection**

Immediately on award of contract, the bidder shall prepare detailed quality assurance plan / test procedure identifying the various stages of manufacture, quality checks performed at each stage, raw material inspection and the Customer hold points. The document shall also furnish details of method of checking, inspection and acceptance standards / values and get the approval of Purchaser before proceeding with manufacturing. However, Purchaser shall have right to review the inspection reports, quality checks and results of suppliers in house inspection department which are not Customer hold points and the supplier shall comply with the remarks made by purchaser or his representative on such reviews with regards to further testing, rectification or rejection, etc.

Witness and Hold points are critical steps in manufacturing, inspection and testing where the supplier is obliged to notify the Purchaser in advance so that it may be witnessed by the Purchaser. Final inspection is a mandatory hold point. The supplier needs to proceed with the work past a hold point only after clearance by purchaser or a witness waiver letter from BRPL.

The performance of waiver of QA activity by Purchaser at any stage of manufacturing does not relieve the supplier of any obligation to perform in accordance with and meet all the requirements of the procurement documents and also all the codes & reference documents mentioned in the procurement document nor shall it preclude subsequent rejection by the purchaser.

On completion of manufacturing the items can be dispatched only after issue of shipping release by the Purchaser.

All testing and inspection shall be done without any extra cost.

Purchaser reserve the right to send any material out of the supply to any recognized laboratory for testing and the cost of testing shall be borne by the Purchaser. In case the material is found not in order with the technical requirement / specification, the charges along with any other penalty which may be levied is to be borne by the bidder. To avoid any complaint the supplier is advised to send his representative to the stores to see that the material sent for testing is being sealed in the presence of bidders representative.

Bidder has to sign quality agreement before supply of the material.

## **6.0 Packing, Packing List & Marking**

Packing: Supplier shall pack or shall cause to be packed all Commodities in boxes and containers and otherwise in such a manner as shall be reasonably suitable for shipment by road or rail to BRPL without undue risk of damage in transit.

Packing List: The contents of each package shall be itemized on a detailed list showing the exact weight and the extreme outside dimensions (length, width and height) of each container or box. One copy of the packing list shall be enclosed in each package delivered. There shall



also be enclosed in one package a master packing list identifying each individual package, which is part of the shipment. On any packaging where it is not feasible to place the packing list inside the container, all pertinent information shall be stenciled on the outside and will thus constitute a packing list.

## **7.0 Prices basis for supply of materials**

Bidders require quoting their prices on Landed Cost Basis and separate price for each item. For Supply to BRPL Delhi the price shall be inclusive of packing, forwarding, GST and freights. The above supply prices shall also include unloading at site stores. Transit and storage insurance will be arranged by BRPL; however bidder to furnish required details in advance for arranging the same by BRPL.

## **8.0 Variation in taxes, duties & levies:**

The total order value shall be adjusted on account of any variations in Statutory Levies imposed by Competent Authorities by way of fresh notification(s) within the stipulated delivery period only. However, in case of reduction in taxes, duties and levies, the benefits of the same shall be passed on to BUYER.

No other Taxes, Duties & Levies other than those specified above will be payable by BUYER except in case of new Levies, Taxes & Duties imposed by the Competent Authorities by way of fresh notification(s) subsequent to the issue of PURCHASE ORDER but within the stipulated delivery period.

Notwithstanding what is stated above, changes in Taxes, Duties & Levies shall apply only to that portion of PURCHASE ORDER not executed on the date of notification by Competent Authority. Further, changes in Taxes, Duties & Levies after due date of Delivery shall not affect PURCHASE ORDER Terms and Value.

PURCHASE ORDER value shall not be subject to any variation on account of variation in Exchange rate(s).

## **9.0 Taxes & Duties on raw materials & bought out components:**

Taxes & Duties on raw materials & bought out components are included in Order Value and are not subject to any escalation or variation for any reason whatsoever.

Taxes & Duties on raw materials & bought out components procured indigenously are included in Order Value and are not subject to any escalation or variation for any reason whatsoever.

## **10.0 Terms of payment and billing**

For Supply of Equipments:

- 100% payment shall be made within 45 days from the date of receipt of material at store/ site against submission of 10 % performance bank guarantee. (Refer 10.01)

Bidder to submit the following documents against dispatch of each consignment:

- i) Consignee copy of LR
- ii) Supplier detailed invoice showing commodity description, quantity, unit price, total price and basis of delivery.
- iii) Original certificate issued by BRPL confirming receipt of material at site and acceptance of the same.
- iv) Dispatch clearance / inspection report in original issued by the inspection authority
- v) Packing List.
- vi) Test Reports
- vii) Guarantee Certificate.
- viii) Insurance policy to be obtained by supplier

#### **11.0 Price Validity**

- 11.01 All bids submitted shall remain valid, firm and subject to unconditional acceptance by BRPL Delhi for 120 days post bid-date. For awarded suppliers, the prices shall remain valid and firm till contract completion.

#### **12.0 Performance Guarantee**

- 12.01 Supplier shall establish a performance bond in favor of BRPL in an amount not less than Ten percent (10%) of the total price of the Contract (the "Performance Bond"). The Performance Bond shall be valid for a period of twenty four months (24) from the date of the commissioning or thirty months (30) from the date of receipt of material (last consignment) at site/stores whichever is earlier plus 3 months towards claim period. It shall be in accordance with one of the following terms:
- a) Depositing pay order /demand draft of the relevant amount directly with BRPL at the address listed above or as otherwise specified by BRPL, either of which shall constitute the Performance Bond hereunder; or
  - b) Bank guarantee from any nationalized bank in favour of BSES RAJDHANI POWER LTD (BRPL). The performance Bank guarantee shall be in the format as specified by BRPL.

#### **13.0 Forfeiture**

Each Performance Bond established under Clause 10.0 shall contain a statement that it shall be automatically and unconditionally forfeited without recourse and payable against the presentation by BRPL of this Performance Bond to the ICICI Bank at Mumbai, or to the relevant company/ correspondent bank referred to above, as the case may be, together with a simple statement that supplier has failed to comply with any term or condition set forth in the Contract.

Each Performance Bond established under will be automatically and unconditionally forfeited without recourse if BRPL in its sole discretion determines that supplier has failed to comply with any term or condition set forth in the contract.

#### **14.0 Release**

All Performance Bonds will be released without interest within seven (7) days from the last date up to which the Performance Bond has to be kept valid (as defined in Clause 10.0) except for the case set forth in Clause 21.0.

#### **15.0 Defects Liability Period**

- 15.01 The bidder to Guarantee the materials / items supplied against any defect of failure, which arise due to faulty materials, workmanship or design for the entire defects liability period. The Defect liability period shall be 60 months from the date of commissioning or 66 months from the date of delivery whichever is earlier. If during the defects liability period any materials / items are found to be defective, these shall be replaced or rectified by the bidder at his own cost within 30 days from the date of receipt of intimation.

#### **16.0 Return, Replacement or Substitution.**

BRPL shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BRPL may in its discretion elect to return defective Commodities to Supplier for replacement, free of charge to BRPL, or may reject such Commodities and purchase the same or similar Commodities from any third party. In the latter case BRPL shall furnish proof to Supplier of the cost of such substitute purchase. In either case, all costs of any replacement, substitution, shipping, labour and other related expenses incurred in connection with the return and replacement or for the substitute purchase of a Commodity hereunder should be for the account of Supplier. BRPL may set off such costs against any amounts payable by BRPL to Supplier. Supplier shall reimburse BRPL for the amount, if any, by which the price of a substitute Commodity exceeds the price for such Commodity as quoted in the Bid.

#### **17.0 Effective Date of Commencement of Contract:**

- 17.01 The date of the issue of the Letter of Acceptance shall be treated as the effective date of the commencement of Contract.

#### **18.0 Time – The Essence of Contract**

- 18.01 The time and the date of completion of the “Supply” as stipulated in the Letter Of Acceptance / Purchase order issued to the Supplier shall be deemed to be the essence of the “Contract”. The Supply has to be completed not later than the aforesaid Schedule and date of completion of supply.

#### **19.0 The Laws and Jurisdiction of Contract:**

The laws applicable to this Contract shall be the Laws in force in India.

All disputes arising in connection with the present Contract shall be settled amicably by mutual consultation failing which shall be finally settled as per the rules of Arbitration and Conciliation Act, 1996 at the discretion of Purchaser. The venue of arbitration shall be at Mumbai in India

## **20.0 Events of Default**

20.01 Events of Default. Each of the following events or occurrences shall constitute an event of default ("Event of Default") under the Contract:

- a) Supplier fails or refuses to pay any amounts due under the Contract;
- b) Supplier fails or refuses to deliver Commodities conforming to this RFQ/ specifications, or fails to deliver Commodities within the period specified in P.O. or any extension thereof
- c) Supplier becomes insolvent or unable to pay its debts when due, or commits any act of bankruptcy, such as filing any petition in any bankruptcy, winding-up or reorganization proceeding, or acknowledges in writing its insolvency or inability to pay its debts; or the Supplier's creditors file any petition relating to bankruptcy of Supplier;
- d) Supplier otherwise fails or refuses to perform or observe any term or condition of the Contract and such failure is not remediable or, if remediable, continues for a period of 30 days after receipt by the Supplier of notice of such failure from BRPL.

## **21.0 Consequences of Default.**

- a) If an Event of Default shall occur and be continuing, BRPL may forthwith terminate the Contract by written notice.
- b) In the event of an Event of Default, BRPL may, without prejudice to any other right granted to it by law, or the Contract, take any or all of the following actions;
  - i) present for payment to the relevant bank the Performance Bond;
  - ii) purchase the same or similar Commodities from any third party; and/or
  - iii) recover any losses and/or additional expenses BRPL may incur as a result of Supplier's default.

## **22.0 Penalty for Delay**

If supply of items / equipments is delayed beyond the supply schedule as stipulated in purchase order then the Supplier shall be liable to pay to the Purchaser as penalty for delay, a sum of 1% (one percent) of the contract price for every week delay or part thereof for undelivered quantities.

The total amount of penalty for delay under the contract will be subject to a maximum of ten percent (10%) of the contract price for undelivered quantities.

The Purchaser may, without prejudice to any method of recovery, deduct the amount for such damages from any amount due or which may become due to the Supplier or from the Performance Bond or file a claim against the supplier.

### **23.0 Force Majeure**

#### **General**

An "Event of Force Majeure" shall mean any event or circumstance not within the reasonable control directly or indirectly, of the Party affected, but only if and to the extent that:

- i) Such event or circumstance materially and adversely affects the ability of the affected Party to perform its obligations under this Contract, and the affected Party has taken all reasonable precautions, due care and reasonable alternative measures in order to prevent or avoid the effect of such event on the affected party's ability to perform its obligations under this Contract and to mitigate the consequences thereof.
- ii) For the avoidance of doubt, if such event or circumstance would not have materially and adversely affected the performance of the affected party had such affected party followed good industry practice, such event or circumstance shall not constitute force majeure.
- iii) Such event is not the direct or indirect result of the failure of such Party to perform any of its obligations under this Contract.
- iv) Such Party has given the other Party prompt notice describing such events, the effect thereof and the actions being taken in order to comply with above clause.

Specific Events of Force Majeure subject to the provisions of above clause, Events of Force Majeure shall include only the following to the extent that they or their consequences satisfy the above requirements:

Mitigation of Events of Force Majeure Each Party shall:

- i) Make all reasonable efforts to prevent and reduce to a minimum and mitigate the effect of any delay occasioned by an Event of Force Majeure including recourse to alternate methods of satisfying its obligations under the Contract;
- ii) Use its best efforts to ensure resumption of normal performance after the termination of any Event of Force Majeure and shall perform its obligations to the maximum extent practicable as agreed between the Parties; and
- iii) Keep the other Party informed at regular intervals of the circumstances concerning the event of Force Majeure, with best estimates as to its likely continuation and what measures or contingency planning it is taking to mitigate and or terminate the Event of Force Majeure.

**Burden of Proof** In the event that the Parties are unable in good faith to agree that a Force Majeure event has occurred to an affected party, the parties shall resolve their dispute in accordance with the provisions of this Agreement. The burden of proof as to whether or not a force majeure event has occurred shall be upon the party claiming that the force majeure event has occurred and that it is the affected party.

Termination for Certain Events of Force Majeure. If any obligation of any Party under the Contract is or is reasonably expected to be delayed or prevented by a Force Majeure event for a continuous period of more than 3 months, the Parties shall promptly discuss in good faith how to proceed with a view to reaching a solution on mutually agreed basis. If a solution on mutually agreed basis cannot be arrived at within a period of 30 days after the expiry of the period of three months, the Contract shall be terminated after the said period of 30 days and neither Party shall be liable to the other for any consequences arising on account of such termination.

Limitation of Force Majeure event. The Supplier shall not be relieved of any obligation under the Contract solely because cost of performance is increased, whether as a consequence of adverse economic consequences or otherwise.

Extension of Contract Period due to Force Majeure event The Contract period may be extended by mutual agreement of Parties by way of an adjustment on account of any period during which an obligation of either Party is suspended due to a Force Majeure event.

Effect of Events of Force Majeure. Except as otherwise provided herein or may further be agreed between the Parties, either Party shall be excused from performance and neither Party shall be construed to be in default in respect of any obligations hereunder, for so long as failure to perform such obligations shall be due to and event of Force Majeure."

#### **24.0 Transfer And Sub-Letting**

24.01 The Supplier shall not sublet, transfer, assign or otherwise part with the Contract or any part thereof, either directly or indirectly, without prior written permission of the Purchaser.

#### **25.0 Recoveries**

25.01 Whenever under this contract any money is recoverable from and payable by the bidder, the purchaser shall be entitled to recover such sum by appropriating in part or in whole by detecting any sum due to which any time thereafter may become due from the supplier in this or any other contract. Should the sum be not sufficient to cover the full amount recoverable the bidder shall pay to the purchaser on demand the remaining balance.

#### **26.0 Waiver**

26.01 Failure to enforce any condition herein contained shall not operate as a waiver of the condition itself or any subsequent breach thereof.

#### **27.0 Indemnification**

27.01 Notwithstanding contrary to anything contained in this RFQ, Supplier shall at his costs and risks make good any loss or damage to the property of the Purchaser and/or the other Supplier engaged by the Purchaser and/or the employees of the Purchaser and/or employees of the other Supplier engaged by the Purchaser whatsoever arising out of the negligence of the Supplier while performing the obligations under this contract.

## SECTION – IV: QUANTITY AND DELIVERY REQUIREMENT

Sl. No.	Item Description	Specification	Requirement	Delivery Schedule	Location
BRPL,DELHI					
1	Supply of with 1000 kVA Oil Type Distribution Transformer in BRPL	SECTION V	38 Nos	2-3 months from the date of Ordering	Stores BRPL Delhi



**Annexure –I**

**BID FORM**

**Supply of 1000 kVA Reduced Dimension Oil Type Distribution Transformer for Various Sites In BRPL**

To

Head of the Department Contracts & Materials BSES Rajdhani Power Ltd BSES Bhawan, Nehru Place New Delhi– 110019

Sir,

We understand that BRPL is desirous of procuring “Supply of 1000 kVA Reduced Dimension Oil Type Distribution Transformers for Various Sites In BRPL” in its licensed distribution network area in Delhi. Having examined the Bidding Documents for the above named works, we the undersigned, offer to deliver the goods in full conformity with the Drawings, Conditions of Contract and specifications for the sum of AS PER RICE BID ENCLOSED or such other sums as may be determined in accordance with the terms and conditions of the contract .The above amounts are in accordance with the Price Schedules attached herewith and are made part of this bid.

If our Bid is accepted, we undertake to deliver the entire goods as per delivery schedule given by you from the date of award of purchase order/letter of intent.

If our Bid is accepted, we will furnish a performance bank guarantee for an amount of 10% (Ten) percent of the total contract value for due performance of the Contract in accordance with the General Conditions of Contract.

We agree to abide by this Bid for a period of 120 days from the date fixed for bid opening under clause 9.0 of GCC, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

We declare that we have studied the provision of Indian Income Tax Law and other Indian Laws for supply of equipments/materials and the prices have been quoted accordingly.

Unless and until Letter of Intent is issued, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.

We understand that you are not bound to accept the lowest, or any bid you may receive.

There is provision for Resolution of Disputes under this Contract, in accordance with the Laws and Jurisdiction of Contract, Clause 19 of GCC .

Dated this.....day of.....20.....

Signature..... In the capacity of.....

.....duly authorized to sign for and on behalf of (IN BLOCK CAPITALS).....



**FORMAT FOR EMD BANK GUARANTEE**

*(To be issued in a Non Judicial Stamp Paper of Rs.50/-purchased in the name of the bank)*  
Whereas [name of the Bidder] (hereinafter called the “Bidder”) has submitted its bid dated [date of submission of bid] for the supply of [name and/or description of the goods] (hereafter called “the Bid”). KNOW ALL PEOPLE by these presents that WE [name of bank]at[Branch Name and address],having our registered office at[address of the registered office of the bank](herein after called —“the Bank”),are bound unto BSES Rajdhani Power Ltd., with its Corporate Office at BSES Bhawan Nehru Place, New Delhi -110019, (herein after called —the “Purchaser”) in the sum of\_\_\_\_\_for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this\_\_\_\_day of\_\_20\_\_.

THE CONDITIONS of this obligation are:

If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form; or

If the Bidder, having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity:

fails or refuses to execute the Contract Form ,if required; or  
fails or refuses to furnish the performance security, In accordance with the Instructions to Bidders/GENERAL CONDITIONS.;

We undertake to pay to the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that is its demand the purchaser will note that amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including thirty (30) days after the period of bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

(Signature of the bank)

Signature of the witness

## **FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT**

(To be signed & stamped by the bidder along-with bid)

BSES Rajdhani Power Ltd (BRPL) intends to use reverse auction through SAP-SRM tool as an integral part of entire tendering process. All bidders who are techno-commercially qualified on the basis of tender requirements shall participate in the reverse auction.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid:-

1. In case of bidding through Internet medium, bidders are advised to ensure availability of all associated infrastructure as required to participate in the reverse auction event. Inability to bid due to telephone glitch, internet response issues, software & hardware hangs/failures, power failures or any other reason shall not be the responsibility of BRPL.
2. In case bidder fails to participate in the reverse auction event due to any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid submitted by them as a part of tender shall be considered as bidder's Final .No Regret offer.Any off-line price bids received from a bidder in lieu of non-participation in the reverse auction event shall be rejected by BRPL.
3. The bidder is advised to understand the auto bid process t safeguard themselves against any possibility of non-participation in the reverse auction event.
4. The bidder shall be prepared with competitive price quotes during the day of reverse auction event.
5. The prices quoted by bidder in reverse auction event shall be on FOR Landed cost BRPL Store/site basis inclusive of all relevant taxes, duties, levies, transportation charges etc.
6. The prices submitted by the bidder during reverse auction event shall be binding on the bidder.
7. The bidder agrees to non-disclosure of trade information regarding bid details e.g.purchase, identity, bid process/technology, bid documentation etc.
8. BRPL will make every effort to make the bid process transparent. However award decision of BRPL will be final and binding on the bidder.
9. The prices submitted during reverse auction event shall be binding on the bidder.
10. No request for Time extension of the reverse auction event shall be considered by BRPL.

### **Seal & Signature of Bidder**

**PRICE FORMAT**

ENQUIRY NO & DATE: NIT: CMC/BR/20-21/RS/RJ/913

**PRICE SCHEDULE**

ITEM DESCRIPTION	QTY AS PER RFQ	UOM	EX- WORKS RATE/ UNIT	CGST (%)	CGST AMT	SGST (%)	SGST AMT	IGST (%)	IGST AMT	FRT	LANDED RATE/ UNIT	TOTAL LANDED COST (INR)
Supply of 11kV , 1000 kVA Reduced Dimension Oil Type Distribution Transformers	38	Nos										

- Note: 1.The prices received without break up of ex works, Freight, GST are liable for rejection  
2. Pls. Indicate the exact percentage of taxes in figures and words.  
3. If there is a discrepancy between the unit price and the total price THE UNIT PRICE shall prevail.  
4. Bidders are requested to attach the covering letter head along with the price bid indicating reference no and date.

Bidders seal & signature

# **Annexure – V**

Enquiry No. : CMC/BR/20-21/RS/RJ/913

## **COMMERCIAL TERMS AND CONDITIONS**

S/NO	ITEM DESCRIPTION	AS PER BRPL	CONFIRMATION OF BIDDER
1	Validity of prices	120 days from date of offer	
2	Price basis	Firm, FOR Delhi store basis, Prices shall be inclusive of all taxes & duties, freight upto Delhi stores. Unloading at stores be in vendor's scope Transit insurance in BRPL scope	
3	Payment Terms	100% payment within 45 days after receipt of material at stores	
4	Delivery schedule	As per Section IV	
5	Defect Liability Period	60 months after commissioning or 66 months from the last date of supply, whichever is earlier.	
6	Penalty for delay	1% per week of delay of undelivered units or part thereof subject to maximum of 10% of total PO value of undelivered units	
7	Performance Bank Guarantee	10% of total PO value for 24 months after commissioning or 30 months from date of supply, whichever is earlier plus 3 months towards claim period	

**ANNEXURE - VI**

ENQUIRY NO: CMC/BR/20-21/RS/RJ/913

**NO DEVIATION SHEET**

SL NO	SL NO OF TECHNICAL SPECIFICATION	DEVIATION, IF ANY

**SIGNATURE & SEAL OF BIDDER**

**NAME OF BIDDER**

**CHECK LIST**

Sl No	Item Description	YES/NO
1	INDEX	YES/NO
2	COVERING LETTER	YES/NO
3	BID FORM (UNPRICED) DULY SIGNED	YES/NO
4	BILL OF MATERIAL (UNPRICED)	YES/NO
5	TECHNICAL BID	YES/NO
6	ACCEPTANCE TO COMMERCIAL TERMS & CONDITIONS	YES/NO
7	FINANCIAL BIDS (IN SEALED ENVELOPE)	YES/NO
8	EMD IN PRESCRIBED FORMAT	YES/NO
9	DEMAND DRAFT OF RS 1180/- DRAWN IN FAVOUR OF	BSES RAJDHANI POWER LTD
10	POWER OF ATTORNEY/ AUTHORISATION LETTER FOR SIGNING THE BID	YES/NO



## Technical Specification

For

**400/630/1000 KVA, 11/0.433 kV**

**Oil filled Distribution Transformer**

Technical Specification no -- SP-TRDU-01-R8

Prepared by:		Checked by :		Approved by:		Rev	Date
Name	Sign	Name	Sign	Name	Sign	R0	17.02.2005
Supriya		Meenakshi Banerji		Kiran Alla		R4	27.07.2015
Seema		Meenakshi Banerji		Kiran Alla		R5	15.03.2015
Seema		Amit Tomar		Vijay Panpalia		R6	19.05.2017
Seema		Amit Tomar		Vijay Panpalia		R7	16.01.2018
Vani	<i>Vani</i> 28/10/19	Amit Tomar	<i>Amit</i>	K. Sheshadri	<i>See</i> 28/10/19	R8	28.10.2019

**Record of Revision**

SI No.	Rev. No	Item/Clause No.	Nature of change	Approved by
1	R1	2.0	Codes & standards updated.	DG/KR
2	R1	4.2.7.1	Transformer oil indicated as per annexure C and sample test included	DG/KR
3	R1	5.21	MOG and terminal box included	DG/KR
4	R1	5.22	Metering box included	DG/KR
5	R1	10.2	Additional description indicated for IR and PI measurement. Temperature rise test included for any lot	DG/KR
6	R1		Annexure C1 included for transformer oil specification	DG/KR
7	R1		Annexure C2 included for additional requirement for hermetically sealed transformer	DG/KR
8	R1		Annexure D updated	DG/KR
9	R1		Annexure D1 data for transformer oil included	DG/KR
10	R2	5.23	Steel support structure for cables added	MDB/KKA
11	R2	CI 25.3 of Annexure C	Length reduced to 2100	MDB/KKA
12	R2	CI 33.0 of Annexure C	Capitalization figure revised	MDB/KKA
13	R2	1.1.5 of Annexure A	Steel support for cables added	MDB/KKA
14	R2	10.5	Customer Hold Points added	MDB/KKA
15	R3	6.0	List of make Approved make updated	MDB/KKA
16	R3	6.2	Current density at all taps included	MDB/KKA
17	R4	2.0	BIS certification required	SR/KKA
18	R4	3.25 & 3.26	Losses revised	SR/KKA
19	R4	10.4	Special tests revised	SR/KKA
20	R4	4.2.5.2 & 4.2.5.3	Core grade & thickness revised	SR/KKA
21	R4	3.37	Noise level specified	SR/KKA
22	R4	4.2.2.4	Silica gel type changed.	SR/KKA
23	R4	4.2.10.5	CT burden revised	SR/KKA
24	R4	10.1.1	Vacuum & pressure test shall be as per IS	SR/KKA
25	R4	10.2	Routine test revised	SR/KKA
26	R5	3.23	990KVA Transformer rating revised to 1000kV	MDB/KKA



27	R5	3.24.1	400 & 630KVA percentage impedance changed to 4.5%	MDB/KKA
28	R5	3.41 & 4.2.11.1	Tapping range revised	MDB/KKA
29	R5	4.2.5.5	Flux density at over fluxing changed	MDB/KKA
30	R6	4.2.7.1	Transformer oil type testing from CPRI/ERDA revised	AT/VP
31	R6	7.2	Testing shall be BSES Standard QAP added	AT/VP
32	R6	10.1.5	Oil testing as per BSES QAP and Specification added	AT/VP
33	R6	10.2	IR values shall not be less than 2000Mohm revised	AT/VP
34	R6	3.2.5 & 3.2.6	Losses revised	AT/VP
35	R6	Annexure G	BSES Standard quality plan added	AT/VP
36	R6	13	Inspection expenses added	AT/VP
37	R7	ANNEXURE-H	CRGO & Testing points added	AT/VP
38	R7	4.11	WTI/OTI Scanner added	AT/VP
39	R7	5.22	Buchholz relay for 1000KVA added	AT/VP
40	R7	5.23	WTI/OTI for 1000KVA added	AT/VP
41	R7	6.14 & 6.15	Buchholz relay & WTI/OTI make added	AT/VP
42	R8	4.2.6.5	Type of LV and HV winding added	AT/KS
43	R8	5.1.5	Rating plate revised	AT/KS
44	R8	10.1.2	Core testing added	AT/KS
45	R8	Annexure -C	Properties of transformer oil revised	AT/KS
46	R8	4.2.7.1 & Annexure -D	Separate containers for extra oil added	AT/KS
47	R8	Annexure-H	Tests to be conducted on core sample added	AT/KS

*Variso of*

*Just*

## INDEX

Record of revision.....	2
1.0 Scope of supply .....	4
2.0 Codes & standards .....	4
3.0 Major Design Criteria & Parameters of the Transformer.....	6
4.0 Construction & Design.....	9
5.0 Fittings and Accessories on Transformer.....	19
6.0 Approved make of components.....	23
7.0 Quality assurance .....	23
8.0 Progress Reporting.....	25
9.0 Submittals.....	25
10.0 Inspection & testing .....	27
11.0 Packing, Shipping, Handling and Storage.....	31
12.0 Deviations.....	32
13.0 Inspection Expenses.....	33
Annexure A Scope of supply .....	34
Annexure B Service Conditions .....	36
Annexure C Technical Specification for transformer oil.....	37
Annexure D Guaranteed Technical Particulars (Data by Seller) .....	39
Annexure E Guaranteed Technical Particulars of Transformer Oil .....	49
Annexure F Recommended Spares (Data by Supplier).....	50
Annexure G BSES Standard Quality Plan .....	50
Annexure H CRGO & Testing Points [R7] .....	50




**1.0 Scope of supply**

For scope of supply, refer annexure – A.

**2.0 Codes & standards**

- a) Materials, equipment and methods used in the manufacture of Transformer shall conform to the latest edition of below mentioned standards.
- b) Vendor shall possess valid BIS Certification.

**IEC Standards**

IEC 60034	Rotating Electrical Machines. (e.g. For Cooler Fan Motors.)
IEC 60071	Co-ordination of Insulation.
IEC 60076	Power transformers.
IEC 60156	Method for Determination of the Electric Strength for Insulating Oils.
IEC 60044	Current Transformers.
IEC 60214	On Load Tap Changers
IEC 60296	Specification for Unused Mineral Insulating Oils for Transformers and Switchgear.
IEC 60354	Loading Guide for Oil-Immersed Power Transformers.
IEC 60445	Basic& Safety principles for man-machine interface, marking and identification, Identification of Equipment Terminals and conductor terminals
IEC 60529	Degrees of Protection Provided by Enclosures (IP Code).
IEC 60551	Determination of Transformer and Reactor Sound Levels.
IEC 60606	Application Guide for Power Transformers.
IEC 60616	Terminal and Tapping Markings for Power Transformers.
IEC 60947	Low-Voltage Switchgear and Control gear.
IEC 60947	Bushing for alternating voltage above 1000V

**British Standard***Naused**Amish*

BS 148	Determination of Transformer and Reactor Sound Levels.
BS 223	Application Guide for Power Transformers.
BS 2562	Terminal and Tapping Markings for Power Transformers.

**Indian Standards**

IS:335	Insulating oil
IS:1271	Thermal evaluation and classification of electrical insulation
IS:2099	Bushing for Alternating voltage above 1000V
IS:2705	Current Transformers
IS:3347	Dimensions for Porcelain Transformer bushing
IS:3637	Gas operated relays
IS:3639	Fitting & Accessories for power transformers
IS:4201	Application guide for CT's
IS:6600	Guide for loading of oil immersed transformers
IS:8478	Application guide for On-load tap changer
IS:8468	On-load tap changer
IS:10028	Code of practice for selection, installation & maintenance of transformers
IS:13947	LV switchgear and Controlgear-Part1
IS 2026	Power Transformers
IS 1180	Outdoor type oil immersed distribution transformer upto and including 2.5MVA,33kV
IS 5561	Electrical Power Connectors
IS 5	Colors for ready mix paints
IS 6272	Industrial cooling fans
IS 325	Three phase induction motors
	Indian Electricity Rules
	Indian Electricity Act
	CBIP manual

In the event of direct conflict between various order documents, the precedence of authority of documents shall be as follows -

*Vanshi*

*Indu*

- i. Guaranteed Technical Particulars (GTP)
- ii. This Specification
- iii. Indian Standards / IEC standards
- iv. Approved Vendor Drawings
- iv. Other documents

### 3.0 Major Design Criteria & Parameters of the Transformer

S. No.	Description	Data by purchaser
3.1	Voltage variation on supply side	+ / - 10 %
3.2	Frequency variation on supply side	+/- 5 %
3.3	Transient condition	- 20 % or + 10 % combined variation of voltage and frequency
3.4	Service Condition	Refer Annexure B
3.5	Insulation level	Class A
3.6	Location of equipment	Generally Outdoor but may be located indoor also with poor ventilation
3.7	Reference design ambient temperature	50 deg C
3.8	Type	Oil immersed, core type, step down
3.9	Type of cooling	ONAN
3.10	Reference standard	IS 2026/IS 1180
3.11	No. of phases	3
3.12	No. of windings per phase	2
3.13	Rated frequency ( Hz )	50 Hz
3.14	Highest system voltage HV side	12 kV
3.15	Highest system voltage LV side	460 volt
3.16	Lightning Impulse withstand voltage , kV peak	
3.16.1	For nominal system voltage of 11 kV	75
3.17	Power Frequency Withstand Voltage kV rms	
3.17.1	For nominal system voltage of 11 kV	28
3.17.2	For nominal system voltage of 415 V	3
3.18	Min Clearances Phase to Phase , mm	
3.18.1	For nominal system voltage of 11 kV	180
3.18.2	For nominal system voltage of 415 V	25
3.19	Min Clearances Phase to Earth , mm	

3.19.1	For nominal system voltage of 11 kV	120
3.19.2	For nominal system voltage of 415 V	25
3.20	System Fault Level , HV side	350 MVA
3.21	System Fault Level , LV side	35 MVA
3.22	System earthing	
3.22.1	HV	Solidly earthed
3.22.2	LV	Solidly earthed
3.23	Ratings	400/630/1000 KVA <sup>R5</sup>
3.24	Percentage Impedance at 75 deg C	
3.24.1	400/630 KVA	4.5 % with IS tolerance <sup>R5</sup>
3.24.2	1000 KVA <sup>R5</sup>	5.0 % with IS tolerance
3.25	Max Total losses(No Load+ Load Losses at 75°C) at 50% of the rated load , kW	
3.25.2	400 KVA	1.225[R6]
3.25.3	630 KVA	1.86[R6]
3.25.4	1000 KVA <sup>R5</sup>	2.79 [R6]
3.26	Max Total losses(No Load+ Load Losses at 75°C) at 100% of the rated load , kW	
3.26.1	400 KVA	3.45[R6]
3.26.2	630 KVA	5.30[R6]
3.26.3	1000 KVA	7.70[R6]
3.27	Phase CT Ratio , Amp	
3.27.1	400 KVA	600/5
3.27.2	630 KVA	1000/5
3.27.3	1000 KVA <sup>R5</sup>	1500/5
3.28	HV cable size for all sizes / Conductor size	11 kV (E) grade , A2XCEWY 3C x 150 sqmm
3.29	Tinned Copper Busbar size on HV side for cable termination, mm x mm	50x6
3.30	LV cable size, 650 /1100 V grade , A2XY cable single core 630 sqmm unarmoured (approx cable dia 40 mm)	Cable
3.30.1	400 KVA	2 runs per phase + 2 runs in Neutral



3.30.2	630 KVA	3 runs per phase + 2 runs in Neutral
3.30.3	1000 KVA <sup>R5</sup>	4 runs per phase + 2 runs in Neutral
3.31	Tinned Copper Busbar size on LV side for cable termination, mm x mm	
3.31.1	Phase	100 x 12
3.31.2	Neutral	100 x 12
3.32	Maximum Overall Dimension Acceptable ( length x width x height), mm x mm x mm	
3.32.1	400 KVA	1500X1500X2000
3.32.2	630 KVA	1700X1700X2200
3.32.3	1000 KVA	1900X1900X2500
3.33	Short Circuit withstand Capacity of the transformer	
3.34	Three phase dead short circuit at secondary terminal with rated voltage maintained on the other side	For 3 secs.
3.35	Single phase short circuit at secondary terminal with rated voltage maintained on other side	For 3 secs.
3.36	Overload Capability	As per IS 6600/IEC 60905
3.37	Noise Level	400/630/1000 KVA-56/57/58 Db respectively
3.38	Radio Influence Voltage	Maximum 250 microvolt
3.39	Harmonic suppression	Transformer to be designed for suppression of 3rd, 5th, 7th harmonic voltages and high frequency disturbances.
3.40	Partial Discharge	Transformer to be free from partial discharge upto 120 % of rated voltage as the voltage is reduced from 150 % of rated voltage i.e. there shall be no significant rise above background level
3.41	Tappings <sup>R5</sup>	Off Circuit taps on HV winding , +5% to - 10% in steps of 2.5 % , change of taps by externally operated switch

*Varun*

*list 2*

3.41.1	Rotary tap switch operating voltage	11 kV
3.41.2	Rotary tap switch current rating, Amp.	
3.41.2.1	400 KVA	60 Amp
3.41.2.2	630 / 1000 KVA	100 Amp
3.42	Loss capitalization formulae	As per CBIP manual (see note 1)
3.43	No load Loss capitalization figure	Rs 4,09,979 per kw
3.44	Load loss capitalization figure	Rs 2,26,718 per kw

**Note :** The bidder shall guaranteed No load losses & load loss individually without any positive tolerance , the bidder shall also guarantee losses at 50 % and 100 % load (at rated voltage & frequency & 75 deg. C ) and no positive tolerance shall be allowed on max. Total losses declared by bidder for 50 % & 100 % loading values. In the event of measured loss figures during testing exceeding the guaranteed loss figures of the successful bidder, penalty shall be applied at the rate of 1.25 times the figures mentioned above. The corresponding capitalization figures for load and load losses shall be as Cl. 3.43 and 3.44 above.

#### 4.0 Construction & Design

4.1	Type	Double Copper wound, three phase, oil immersed, with ONAN cooling, with off circuit tap changer
4.2	<b>Major Parts</b>	
4.2.1	<b>Tank</b>	
4.2.1.1	Type	Non-sealed type with conservator as per manufacturer's standard.
4.2.1.2	Material of Construction	Robust mild steel plate without pitting and low carbon content
4.2.1.3	Plate Thickness	Adequate for meeting the requirements of pressure and vacuum type tests as per IS
4.2.1.4	Welding features	i) All seams and joints shall be double welded ii) All welding shall be stress relieved for sheet thickness greater than 35 mm iii) All pipes, radiators, stiffeners,

*Handwritten signature*

*Handwritten initials*



		welded to the tank shall be welded externally
4.2.1.5	Tank features	i) Adequate space at bottom for collection of sediments ii) Stiffeners provided for rigidity and designed to prevent accumulation of water iii) No internal pockets in which gas/air can accumulate iv) No external pocket in which water can lodge v) Tank bottom with welded skid base vi) Tank cover sloped to prevent retention of rain water vii) Minimum disconnection of pipe work and accessories for cover lifting viii) Tanks shall be of a strength to prevent permanent deformation during lifting, jacking, transportation with oil filled. ix) Tank to be designed for oil filling under vacuum x) Tank cover fitted with lifting lug xi) Tank cover bent at all the ends xii) Minimum disconnection of pipe work and accessories for cover lifting
4.2.1.5	Flanged type adequately sized inspection cover rectangular in shape required for	i) HV line bushing ii) LV line bushing iii) LV neutral bushing iv) Core / Winding
4.2.1.6	Fittings and accessories on main tank	See under fittings and accessories.
4.2.2	<b>Conservator for the main tank</b>	
4.2.2.1	Capacity	Adequate between highest and lowest visible levels to meet the requirement of

*Vanessa*

*John*

		expansion of oil volume in the transformer and cooling equipment from minimum ambient temperature to maximum operating temperatures.
4.2.2.2	Conservator oil preservation system	Conventional
4.2.2.3	Conservator features	<ul style="list-style-type: none"> <li>i) Conservator shall be bolted into position so that it can be removed for cleaning / other maintenance purposes</li> <li>ii) Main pipe from tank shall project about 20 mm above conservator bottom for creating a sump for collection of impurities</li> <li>iii) Conservator minimum flow level corresponding to minimum temperature shall be well above the sump level.</li> <li>iv) Conservator to main tank piping shall be supported at minimum two points.</li> </ul>
4.2.2.4	Fittings and accessories on main tank conservator	<ul style="list-style-type: none"> <li>i) Prismatic oil gauge with MINIMUM , NORMAL and MAXIMUM marking</li> <li>ii) End Cover</li> <li>iii) Oil Filling Hole with cap</li> <li>iv) Silica Gel Dehydrating Breather with oil seal and dust filter with clear acrylic single piece clearly transparent cover resistant to UV rays (1kg). Breather shall be of Flanged type in circular shape with 4 no. holes of ½ inches with hardware of M10 bolts.</li> <li>vi) Drain Plug</li> <li>vii) Air release plug as required</li> <li>viii) Pressure/ Vacuum gauge</li> <li>ix) Magnetic Oil Gauge with LOW</li> </ul>

Vani Sood

Sub

		LEVEL ALARM x) Silica gel shall be of round ball type of 2.5mm dia.
4.2.3	<b>Radiators</b>	Detachable type
4.2.3.1	Thickness	Minimum 1.2 mm
4.2.4.2	Features	With lifting lugs, air release plug, drain plug
4.2.5	<b>Core</b>	
4.2.5.1	Material	High grade , non ageing, low loss, high permeability, grain oriented, cold rolled silicon steel lamination
4.2.5.2	Grade	Premium Grade minimum M3 or better
4.2.5.3	Lamination thickness	0.23 mm Max.
4.2.5.4	Design Flux Density at rated conditions at principal tap	As per Manufacturer design.
4.2.5.5	Maximum Flux Density at 12.5 % R <sup>5</sup> over excitation / over fluxing	1.9 T
4.2.5.6	Core Design Features	<ul style="list-style-type: none"> <li>i) Magnetic circuit designed to avoid short circuit paths within core or to the earthed clamping structures</li> <li>ii) Magnetic circuit shall not produce flux components at right angles to the plane of lamination to avoid local heating</li> <li>iii) Least possible air gap and rigid clamping for minimum core loss and noise generation</li> <li>iv) Adequately braced to withstand bolted faults on secondary terminals without mechanical damage and damage/ displacement during transportation and positioning.</li> <li>v) Percentage harmonic potential with the maximum flux density under any condition limited to avoid</li> </ul>

		<p>capacitor overloading in the system</p> <p>vi) All steel sections used for supporting the core shall be thoroughly sand blasted after cutting , drilling, welding</p> <p>vii) Provision of lifting lugs for core coil assembly</p> <p>viii) Supporting framework designed not to obstruct complete drainage of oil from transformer</p>
4.2.6	<b>Winding</b>	
4.2.6.1	Material	Electrolytic Copper
4.2.6.2	Maximum Current Density allowed	3 Amp per sq mm at all taps.
4.2.6.3	Winding Insulating material	Class A, non catalytic, inert to transformer oil, free from compounds liable to ooze out, shrink or collapse.
4.2.6.4	Winding Insulation	Uniform
4.2.6.5	Design features	<p>i) Type of winding [R8]:</p> <p>LV: Spiral/Helical</p> <p>HV: Crossover/Disc</p> <p><b>Note: No foil winding shall be acceptable</b></p> <p>ii) Stacks of winding to receive adequate shrinkage treatment</p> <p>iii) Connections braced to withstand shock during transport, switching, short circuit, or other transients.</p> <p>iv) Minimum out of balance force in the transformer winding at all voltage ratios.</p> <p>v) Conductor width on edge exceeding six times its thickness</p> <p>vi) Transposed at sufficient intervals.</p> <p>vii) Coil assembly shall be suitably supported between adjacent sections by insulating spacers + barriers</p> <p>viii) Winding leads rigidly supported , using guide tubes if practicable</p>

Varisach

Chit

		<p>ix) Winding structure and major insulation not to obstruct free flow of oil through ducts</p> <p>x) Provision of taps as per clause 3.41</p>
4.2.7	<b>Transformer Oil</b>	
4.2.7.1	Type	<p>Should be in accordance with specification as per Annex C of this document</p> <p>One sample of oil shall be drawn from every lot of transformer offered for inspection should be tested at CPRI/ERDA for tests as listed under BSES Standard QAP[R6]. The cost of this testing should be included within the cost of transformer. The results shall be confirming to BSES specification Annex C<sup>R4</sup></p> <p>10% extra oil to be furnished in separate nonreturnable drum with each transformer [R8]</p>
4.2.8	<b>Bushings and Terminations</b>	
4.2.8.1	Type of HV side bushing	Outdoor, Epoxy Resin cast, rated voltage and creepage as per 31mm/kV with voltage class of 12kV respectively
4.2.8.2	Type of LV side bushing	<p>Outdoor, Epoxy resin cast, rated voltage and creepage as per 31mm/kV with voltage class of 1.1 kV respectively</p> <p>Additional neutral bushing shall be provided of porcelain.</p>
4.2.8.2.1	Essential provision for LV side line bushing	It shall be complete with copper palm complete with tinned copper busbar of size 100 x 12 mm for cable connection
4.2.8.2.2	Essential provision for LV side neutral bushing	In case of neutral bushing the stem and busbar shall be integral without bolted, threaded, brazed joints. Busbar size shall be 100 x 12 mm for cable connection.

*Vandana*
*Shinde*



4.2.8.3	Arcing Horns	Not required
4.2.8.4	Support insulators inside HV cable box if provided	Epoxy resin cast, rated voltage 12 kV
4.2.8.5	Termination on HV side bushing	By bimetallic terminal connectors suitable for ACSR/AAAC conductor / Cable connection through cable box with disconnecting link suitable for 11kV(E) grade, A2XFY 3Cx 150sqmm
4.2.8.6	Termination of LV side bushing	By bimetallic terminal connectors suitable for LV Cable size of 650/1100V Grade, A2XY Cable single core 630sqmm (Approx dia. 40mm)
4.2.8.7	Minimum creepage distance of all bushings and support insulators.	31mm/KV
4.2.8.8	Protected creepage distance	At least 50 % of total creepage distance
4.2.8.9	Continuous Current rating	Minimum 20 % higher than the current corresponding to the minimum tap of the transformer
4.2.8.10	Rated thermal short time current	25 times the rated current for 2 sec
4.2.8.11	Atmospheric protection for clamp and fitting of iron and steel	Hot dip galvanizing as per IS 2633
4.2.8.12	Bushing terminal lugs in oil and air	Tinned copper
4.2.8.13	Sealing washers /Gasket ring	Nitrile cork rubber (RC70C)/ Expanded TEFLON (PTFE) as applicable.
4.2.9	<b>HV &amp; LV cable box</b>	Required
4.2.9.1	Material of Construction	Sheet Steel min. 2.5 mm thick
4.2.9.2	Cable entry	At bottom through detachable gland plate with cable clamps of non magnetic material
4.2.9.3	Cable size for HV	11 kV (E) grade , A2XFY 3C x 150 sqmm
4.2.9.4	Cable size for LV	LV cable size, 650 /1100 V grade ,A2XY cable single core 630 sqmm unarmoured (approx cable dia. 40 mm)
4.2.9.5	Cable size for LV Neutral	LV cable size, 650 /1100 V grade ,A2XY cable single core 630 sqmm unarmoured (approx cable dia. 40 mm)

Vani'sod

JNL

4.2.9.6	Detachable Gland Plate material for HV, LV, LV Neutral box	MS/Al for HV & LV respectively.
4.2.9.7	Gland plate thickness for HV, LV, LV Neutral box	3 /5mm for HV & LV respectively.
4.2.9.8	Cable gland for HV, LV, LV Neutral cables	Nickel plated brass double compression weatherproof cable gland
4.2.9.9	Cable lug for HV, LV, LV Neutral cables	Tinned copper pre insulated Pin, Ring, Fork type as applicable
4.2.9.10	Essential parts	i) Flange type removable front cover with handles min two nos. ii) Tinned Copper Busbar of adequate size for Purchaser's cable termination with busbar supports iii) Earthing boss for the cable box iv) Earthing link for the gasketed joints at two point for each joint v) Earthing provision for cable Armour/ Screen vi) Flanged type inspection cover on top for bushing inspection and maintenance with handle vii) Drain plug viii) Rainhood on gasketed vertical joint ix) Danger / caution plate
4.2.9.11	Terminal Clearances	700mm, Minimum
4.2.9.12	Termination height required for cable termination	1000mm, Minimum
4.2.10	<b>Current Transformers</b>	
4.2.10.1	Provision	On all three phases on LV side
4.2.10.2	Mounting	On LV side bushings on all three phases with the help of fiber glass mounting plate affixed to main tank by nut bolt arrangement
4.2.10.3	Maintenance requirements	Replacement should be possible by removing fixing nut of mounting plate after removal of LT cable without




		disturbing LT bushing
4.2.10.4	Accuracy Class	0.5
4.2.10.5	Burden	10VA
4.2.10.6	Type	Resin Cast Ring type suitable for outdoor use
4.2.10.7	<b>CT ratio</b>	
	400KVA	600/5
	630KVA	1000/5
	1000KVA	1500/5
4.2.10.8	<b>CT terminal Box</b>	
4.2.10.8.1	Size	650 mm height x 450 mm width x 275 mm depth.
4.2.10.8.2	Fixing of instrument / meters within box	On slotted channel 40 x 12 mm size, channel fixed on vertical slotted angle 40 x 40 mm size at two ends
4.2.10.8.3	No of horizontal channels to be provided	Four
4.2.10.8.4	Fixing of terminals within the box	On horizontal slotted channel with the help of C channel available with the terminals
4.2.10.8.5	Location	On tank wall
4.2.10.8.6	Box door design	Openable from outside with antitheft hinge, padlock facility, door fixed by stainless steel allen screw M6 size , door shall have canopy for rain protection
4.2.10.8.7	Terminal strip	Nylon 66 material, minimum 4 sq mm, screw type for control wiring and potential circuit.
4.2.10.8.8	Cables and wires	PVC insulated, extruded PVC inner sheathed, armoured, extruded PVC outer sheathed 1100 V grade control cable as per latest edition of IS 1554 part 1 minimum 2.5 sq mm for signals and 4 sq mm for CT with multi strand copper conductor
4.2.10.8.9	Cable Glands	Nickel plated brass double

Naveen

Joshi



		compression weatherproof cable gland
4.2.10.8.10	Lugs on wires	Tinned copper pre insulated Pin, Ring, Fork type as applicable
4.2.10.8.11	Potential signal in CT box	i) Tapped from main LV busbar ii) Neutral Link and Fuse to be provided by bidder for PT
4.2.10.8.12	Essential provision	Wiring diagram to be fixed on the back of door along with CT spec. on Aluminum engraved plate fixed by rivet.
4.2.11	<b>Off Circuit tap Switch</b>	
4.2.11.1	Range /Step	Off circuit taps on HV winding, +5% to -10% in steps of 2.5%, change of taps by externally operated switch.
4.2.11.2	Type	Rotary type, 3 pole gang operated, draw out type
4.2.11.3	Operating Voltage	11kV
4.2.11.4	Rated Current for tap Switch	400 KVA - 60 Amps 630/1000 KVA - 100 Amps
4.2.11.5	Operating Handle	External at suitable height to be operated from ground level.
4.2.11.6	Essential provision	Tap position indicator, direction changing facility, locking arrangement, and caution plate metallic fixed by rivet.
4.2.12	<b>Pressure Relief Device</b>	
4.2.12.1	Type	Explosion vent
4.2.12.2	Provision on explosion vent	Double diaphragm & sight glass
4.3	<b>Hardware</b>	
4.3.1	External	Stainless Steel
4.3.2	Internal	Cadmium plated except special hardware for frame parts and core assembly as per manufacturer's design
4.4	<b>Gasket</b>	
4.4.1	For Transformer , surfaces interfacing with oil like inspection cover etc.	Nitrile cork rubber RC70C grade
4.4.2	For Cable boxes, Marshalling box, etc.	Neoprene rubber based/ cork nitrile

*Vanessa*
*list*

4.5	<b>Valves</b>	
4.5.1	Material of construction	Brass / gun metal
4.5.2	Type	Both end flanged gate valve / butterfly valve depending on application
4.5.3	Size	As per manufacturer's standard
4.5.4	Essential provision	Position indicator, locking rod, padlocking facility, valve guard, cover plate.
4.6	<b>Cable routing on Transformer</b>	Control cables for accessories on transformer tank shall be routed through perforated GI trays
4.6.1	Control cable specification	PVC insulated, extruded PVC inner sheathed, armoured, extruded PVC outer sheathed 1100 V grade control cable as per latest edition of IS 1554 part 1 minimum 2.5 sq mm for signals and 4 sq mm for CT with multi strand copper conductor
4.6.2	Specification of wires to be used inside marshalling box , OLTC drive mechanism	PVC insulated multi-strand flexible copper wires of minimum 2.5 sq mm size, 1100 V grade as per latest edition of relevant IS
4.7	<b>Terminal Blocks to be used by the vendor</b>	Nylon 66 material, minimum 4 sq mm, screw type for control wiring and potential circuit.
4.7.1	Essential provision for CT terminals	Sliding link type disconnecting terminal block screwdriver operated stud type with facility for CT terminal shorting material of housing melamine/ Nylon66
4.8	<b>Cable glands to be used by the vendor</b>	Nickel plated brass double compression weatherproof cable gland
4.9	<b>Cable lugs to be used by the vendor</b>	
4.9.1	For power cables	Long barrel medium duty Aluminum lug with knurling on inside surface.
4.9.2	For Control Cable	Tinned copper pre insulated Pin, Ring, Fork type as applicable

*Navisod*
*Intk*

4.10	<b>Painting of transformer, Radiator, marshalling box for CT, cable boxes etc.</b>	
4.10.1	Surface preparation	By 7 tank pretreatment process or shot blasting method
4.10.2	Finish on internal surfaces of the transformer	Bright Yellow heat resistant and oil resistant paint two coats. Paint shall neither react nor dissolve in hot transformer insulating oil.
4.10.3	Finish on inner surface of the CT terminal box, HV/LV/LVN cable box	White Polyurethane paint anti condensation type two coats , minimum dry film thickness 80 microns
4.10.4	Finish on outer surface of the transformer, radiator, CT terminal box, HV/LV/LVN cable box	Battle ship Grey shade 632 Polyurethane paint two coats , minimum dry film thickness 80 microns
4.10.5	Frame parts	Battle ship grey shade 632 IS 5, 80 micron minimum insulating oil resistant paint. Paint shall neither react nor dissolve in hot transformer insulating oil.
4.11	<b>Winding /Oil Temperature scanner for 1000KVA DT [R7]</b>	Required
4.11.1	No. of RTD inputs	Five (Three for windings, one for enclosure & one shall be spare) RTD for enclosure temperature monitoring shall be fixed at enclosure Top from inside to give max. Enclosure temp reading & shall be wired up to temp. Scanner to indicate the reading.
4.11.2	Location of winding RTD	At location of winding where maximum Temperature is expected.
4.11.3	No of potential free trip contacts	Two
4.11.4	No of potential free Alarm contacts	Two
4.11.5	Auxiliary Supply	240 V AC, 1 phase, 50 Hz. Tapped from LV side busbar through a MCB located inside box.
4.11.6	Winding Temperature Scanner	Required




	terminal Box	
4.11.7	Size	As per manufacturers standard
4.11.8	Fixing of instrument within box	On side wall of enclosure
4.11.9	Fixing of terminals within the box	On C channel available with the terminals
4.11.10	Location	Within enclosure frame such that Marshalling Box & WTI on same side & free access to all LV side doors.
4.11.11	Terminal Strip	Nylon 66 material, minimum 4 sq mm, screw type for control wiring and potential circuit.
4.11.12	Cables & Wires	PVC insulated, extruded PVC inner sheathed, armoured, extruded PVC outer sheathed 1100 V grade control cable as per latest edition of IS 1554 part 1 minimum 2.5 sqmm for signals and 4 sqmm for CT with multistrand copper conductor & PVC insulated multistrand flexible copper wires of minimum 2.5 sqmm size, 1100 V grade as per latest edition of relevant IS
4.11.13	Cable Glands	Nickel plated brass double compression weatherproof cable gland
4.11.14	Lugs on wires	Tinned copper preinsulated Pin, Ring, Fork type as applicable
4.11.15	Auxiliary supply in box	Tapped from main LV busbars, taken via MCB for isolation and protection of scanner, MCB to be fixed on DIN rail with clamps on two sides.
4.11.16	Essential provision	Wiring diagram to be fixed on the back of door along with brief details of scanner, HV side, LV side door limit switches to be wired up-to Terminal Block, Service socket to be provided with switch, fuse and link.

*Vani 509*

*[Signature]*

**5.0 Fittings and Accessories on Transformer**

5.1	Rating and Diagram Plate	Required
5.1.1	Material	Anodized aluminum 16SWG
5.1.2	Background	SATIN SILVER
5.1.3	Letters, diagram & border	Black
5.1.4	Process	Etching
5.1.5	Rating and Diagram Plate details	<p>Following details shall be provided on rating and diagram plate as a minimum</p> <ul style="list-style-type: none"> <li>i) type/kind of transformer with winding material</li> <li>ii) standard to which it is manufactured</li> <li>iii) manufacturer's name;</li> <li>iv) transformer serial number;</li> <li>v) month and year of manufacture</li> <li>vi) rated frequency in Hz</li> <li>vii) rated voltages in kV</li> <li>viii) number of phases</li> <li>ix) rated power in KVA</li> <li>x) type of cooling (ONAN)</li> <li>xi) rated currents in A</li> <li>xii) vector group connection symbol</li> <li>xiii) 1.2/50<math>\mu</math>s wave impulse voltage withstand level in kV</li> <li>xiv) power frequency withstand voltage in kV</li> <li>xv) impedance voltage at rated current and frequency in percentage at principal, minimum and maximum tap</li> <li>xvi) Max. Total losses at 50 % rated load</li> <li>xvii) Max. Total losses at 100 % rated load</li> <li>xviii) Load loss at 50% &amp; 100% rated load</li> <li>xix) No-load loss at rated voltage and frequency</li> </ul>

*Verified*

*[Signature]*

		xx) Energy efficiency level. xxi) continuous ambient temperature at which ratings apply in deg C xxii) top oil and winding temperature rise at rated load in deg C; xxiii) winding connection diagram with taps and table of tapping voltage, current and power xxiv) transport weight of transformer xxv) weight of core and windings xxvi) Weight of core <b>[R8]</b> xxvii) Weight of winding <b>[R8]</b> xxviii) total weight xxix) volume of oil xxx) weight of oil xxxi) name of the purchaser xxxii) PO no and date xxxiii) Guarantee period
5.2	Terminal marking Plate for Bushing, anodized aluminium black lettering on satin silver background both inside cable boxes near termination and on cable box cover (all fixed by rivet)	Required
5.3	Company Monogram Plate fixed by rivet	Required
5.4	Lifting Lug to lift complete transformer with oil	Required
5.5	Lifting lug for top cover	Required
5.6	Lashing Lug	Required
5.7	Jacking Pad with Haulage hole to raise or lower complete transformer with oil	Required
5.8	Detachable Bidirectional flat roller Assembly	Required
5.8.1	Roller center to center distance	Minimum 900 mm on the side of HV and LV cable box

*Vanit sand*
*hish*



		Maximum 800 mm on the other side (perpendicular to HV, LV cable box).
5.8.2	Essential provision	Roller dia 150 mm min., roller to be fixed in such a way so that the lowermost part of the skid is above ground by at least 100 mm when the transformer is installed on roller.
5.9	Pockets for ordinary thermometer on tank cover with metallic identification plate fixed by rivet.	Required
5.10	Drain valve (gate valve) for the main tank with cork above ground by 150mm minimum with padlocking and valve guard with metallic identification plate fixed by rivet.	Required
5.11	Filter valve (gate valve) at top with padlocking and valve guard with metallic identification plate fixed by rivet.	Required
5.12	Air Release Plug on tank cover with metallic identification plate fixed by rivet.	Required
5.13	Equalizer pipe connection between conservator and explosion vent	Required
5.14	Earthing pad on tank for transformer earthing complete with non ferrous nut, bolt, washers, spring washers etc. with metallic identification plate fixed by rivet	Required
5.15	Rainhood for vertical gasketed joints, in cable boxes, Conservator	Required Not required as per Annexure A Scope of supply
5.16	Earthing bridge by copper strip jumpers on all gasketed joints at at least two points for electrical continuity	Required
5.17	Skid base welded type with	Required

*Vanis*
*12*

	haulage hole	
5.18	Core , Frame to tank Earthing	Required
5.19	Danger plate made of Anodized aluminum with white letters on red background on Transformer, cable boxes (all fixed by rivet)	Required
5.20	Caution plate for Off Circuit tap changer fixed by rivet.	Required
5.21	MOG with auxiliary contact wired up to Terminal Box	Required
5.22	Buchholz relay with auxiliary contact wired up to Terminal Box for 1000KVA DT [R7]	Required
5.23	WTI/OTI Scanner with auxiliary contact wired up to Terminal Box for 1000KVA DT [R7]	Required

#### 6.0 Approved make of components

6.1	CT	Pragati / ECS / Kappa
6.2	Bushings	Baroda Bushing/CJI/Jaipur Glass
6.3	Tap Changer	Alwaye /Paragon
6.4	MOG	Sukrut/Atvus
6.5	Valves	Newman
6.6	CRGO	Nippon/JFE/Posco
6.7	Copper	Birla copper/Sterlite
6.8	Pre compressed Pressboard	Raman Board, Mysore/Senapathy Whiteley
6.9	Laminated Wood	Permali Wallance / Rochling Engineers
6.10	Oil	Apar/Savita/Raj
6.11	Steel	TATA/Jindal/SAIL
6.12	Lugs/Glands	Jainson/Dowells/Comet
6.13	Radiators	CTR/Hi-Tech Radiators /Tarang Engineers
6.14	Buchholz Relay [R7]	Sukrut/Atvus
6.15	WTI/OTI Scanner [R7]	Pecon/Precimeasure

Note – Any other make of component to be approved by purchaser

*VaniSocel*

*list*



**7.0 Quality assurance**

7.1	Quality Assurance program	<p>To be submitted before contract award.</p> <p>Program shall contain following</p> <ul style="list-style-type: none"> <li>i) The structure of the organization</li> <li>ii) The duties and responsibilities assigned to staff ensuring quality of work.</li> <li>iii) The bidder should have qualified technical &amp; dedicated QA personnel at various stages of manufacture &amp; testing.</li> <li>iv) Factory inspection of bidder may be carried out to ascertain the quality system and process in place at manufacturing facility. The same is applicable to bidders not approved with BSES.</li> <li>v) The system for purchasing, taking delivery and verification of materials</li> <li>vi) The system for ensuring quality of workmanship</li> <li>vii) The system for control of documentation</li> <li>viii) The system for the retention of records</li> <li>ix) The arrangements for the Supplier's internal auditing</li> <li>x) A list of the administration and work procedures required to achieve and verify Contract's quality requirements. These procedures shall be made readily available to the Purchaser for inspection on request</li> </ul>
7.2	Quality Plan	<p>To be submitted by the successful bidder for approval. Plan shall contain following as a minimum</p> <ul style="list-style-type: none"> <li>i) An outline of the proposed work and programme sequence</li> <li>ii) The structure of the Supplier's organization for the contract</li> <li>iii) The duties and responsibilities assigned to staff ensuring quality of work for the contract</li> <li>iv) Inspection Hold and notification points mutually agreed.</li> </ul>

*Unisoal*

*Shall*

		<ul style="list-style-type: none"> <li>v) Submission of engineering documents required by the specification</li> <li>vi) The inspection of materials and components on receipt</li> <li>vii) Reference to the Supplier's work procedures appropriate to each activity</li> <li>viii) Inspection during fabrication/construction</li> <li>ix) Stage &amp; Final inspection and testing shall be carried out as per BSES standard QAP Annexure-G.[R6]</li> <li>x) Successful bidder shall include submittal of Mills invoice, Bill of lading, Mill's test certificate for grade, physical tests, dimension, specific watt loss per kG for the core material to the purchaser for verification in the quality plan suitably</li> </ul>
--	--	---

## 8.0 Progress Reporting

8.1	Outline Document	To be submitted for purchaser approval for outline of production, inspection, testing, packing, dispatch, documentation programme
8.2	Detailed Progress report	To be submitted to Purchaser once a month containing <ul style="list-style-type: none"> <li>i) Progress on material procurement</li> <li>ii) Progress on fabrication</li> <li>iii) Progress on assembly</li> <li>iv) Progress on internal stage inspection</li> <li>v) Reason for any delay in total programme</li> <li>vi) Details of test failures if any in manufacturing stages</li> <li>vii) Progress on final box up</li> <li>viii) Constraints</li> <li>ix) Forward path</li> </ul>

## 9.0 Submittals

9.1	Submittals required with bid	<ul style="list-style-type: none"> <li>i) Completed technical data schedule</li> <li>ii) Descriptive literature giving full technical details of equipment offered;</li> </ul>
-----	------------------------------	--

*Vanisach*

*lib*

		<ul style="list-style-type: none"> <li>iii) Outline dimension drawing for each major component, general arrangement drawing showing component layout and general schematic diagrams;</li> <li>iv) Type test certificates, where available, and sample routine test reports;</li> <li>v) Detailed reference list of customers already using equipment offered during the last 5 years with particular emphasis on units of similar design and rating;</li> <li>vi) Details of manufacturer's quality assurance programme and ISO 9000 series or equivalent national certification;</li> <li>vii) Deviations from this specification. Only deviations approved in writing before award of contract shall be accepted;</li> <li>viii) Recommended spare parts and consumable items for five years of operation with prices and spare parts catalogue with price list for future requirements</li> <li>ix) Transport / Shipping dimension and weights, space required for handling parts for maintenance</li> <li>x) Write up on oil preservation system</li> <li>xi) Write up on OLTC</li> <li>xii) Quality Assurance Program</li> </ul>
9.2	Submittals required after award for Approval (A), Reference (R), and subsequent distribution	<ul style="list-style-type: none"> <li>i) Programme for production and testing (A)</li> <li>ii) Guaranteed Technical Particulars (A)</li> <li>iii) General description of the equipment and all components, including brochures (R)</li> <li>iv) Calculations to substantiate choice of electrical, structural, mechanical component size/ratings (A)</li> <li>v) Detailed loading drawing to enable the Purchaser to design and construct foundations for the</li> </ul>

*Vani Singh*

*Indu*

		<p>transformer (R)</p> <p>vi) Transport / shipping dimensions with weights, wheel base details, untanking height etc (R)</p> <p>vii) Terminal arrangements and cable box details (A)</p> <p>viii) Flow diagram of cooling system showing no of cooling banks (A)</p> <p>ix) Drawings of major components like Bushing , CT etc (A)</p> <p>x) PT fixing arrangement</p> <p>xi) List of makes of all fittings and accessories (A)</p> <p>xii) Statement drawing attention to all exposed points in the equipment at which contact with or in close proximity to other metals and stating clearly what protection is employed to prevent corrosion at each point (A)</p> <p>xiii) Detailed installation and commissioning instructions</p> <p>xiv) Quality Plan.</p>
9.3	Submittals required at the final hold point prior to dispatch	<p>i) Inspection and test reports carried out in manufacturer's works (A)</p> <p>ii) Test certificates of all bought out items</p> <p>iii) Operation and maintenance Instruction as well as trouble shooting charts/ manual</p>
9.4	Drawing and document sizes	Standard size paper A1, A2, A3, A4
9.5	No of drgs /Documents required at different stages	As per Annexure A Scope of Supply

## 10.0 Inspection & testing

10.1	Inspection and Testing during manufacture	Only type tested equipment shall be acceptable
10.1.1	Tank and Conservator	<p>i) Check correct dimensions between wheels demonstrate turning of wheels through 90 deg and further dimensional check.</p> <p>ii) Check for physical properties of materials for lifting lugs, jacking pads etc. All load bearing welds,</p>

*Varisat*

*Asst*

		<p>including lifting lug welds shall be subjected to required load tests.</p> <p>iii) Leakage test of the conservator.</p> <p>iv) Certification of all test results.</p> <p>v) Oil leakage test.</p> <p>vi) Vacuum and Pressure test on tank as type test as per IS</p>
10.1.2	Core	<p>i) Sample testing of core material for checking specific loss, bend properties, magnetization characteristics and thickness.</p> <p>ii) Check on the quality of varnish if used on the stampings.</p> <p>a) Measurement of thickness and hardness of varnish on stampings.</p> <p>b) Solvent resistance test to check that varnish does not react in hot oil.</p> <p>c) Check over all quality of varnish by sampling to ensure uniform hipping colour, no bare spots. No ever burnt varnish layer and no bubbles on varnished surface.</p> <p>iii) Check on the amount of burns.</p> <p>iv) Bow check on stampings.</p> <p>v) Check for the overlapping of stampings. Corners of the sheet are to be apart.</p> <p>vi) Visual and dimensional check during assembly stage.</p> <p>vii) Check on complete core for measurements of iron-loss and check for any hot spot by exciting the core so as to induce the designed value of flux density in the core.</p> <p>viii) Check for inter laminar insulation between core sectors before and after pressing.</p> <p>ix) Visual and dimensional checks for straightness and roundness of core, thickness of limbs and suitability of clamps.</p> <p>x) High voltage test (2 KV for one minute) between core and clamps.</p> <p>xi) Certification of all test results.</p>

*Vamsi*

*[Signature]*

		xii) One sample of CRGO to be sealed for testing at ERDA/CPRI. Tests to be conducted in accordance with annexure H [R8]
10.1.3	Insulating Materials	i) Sample check for physical properties of materials. ii) Check for dielectric strength. iii) Visual and dimensional checks. iv) Check for the reaction of hot oil on insulating materials. v) Certification of all test results.
10.1.4	Windings	i) Sample check on winding conductor for mechanical properties and electrical conductivity. ii) Visual and dimensional check on conductor for scratches, dept. mark etc. iii) Sample check on insulating paper for PE value, Bursting strength, Electric strength. iv) Check for the reaction of hot oil on insulating paper. v) Check for the bending of the insulating paper on conductor. vi) Check and ensure that physical condition of all materials taken for winding is satisfactory and free of dust. vii) Check for absence of short circuit between parallel strands. viii) Check for Brazed joints wherever applicable. ix) Measurement of voltage ratio to be carried out when core/ yoke is Completely restocked and all connections are ready. x) Certification of all test results.
10.1.4.1	Checks before drying process	i) Check conditions of insulation on the conductor and between the windings. ii) Check insulation distance between high voltage connection distance between high voltage connection cables and earthed and other live parts. iii) Check insulation distance between low voltage connection and earthed and other parts.



		iv) Insulation test of core earthing. v) Check for proper cleanliness vi) Check tightness of coils i.e. no free movement. vii) Certification of all test results.
10.1.4.2	Checks during drying process	i) Measurement and recording of temperature and drying time during vacuum treatment. ii) Check for completeness of drying. iii) Certification of all test results.
10.1.5	Oil	As per IS 335/Standard QAP [R6]
10.1.6	Test on fittings and accessories	As per manufacturer's standard
10.2	Routine tests	The sequence of routine testing shall be as follows i) Visual and dimension check for completely assembled transformer ii) Measurements of voltage ratio iii) Measurements of winding resistance at principal tap and two extreme taps. iv) Vector Group and polarity test v) Measurements of insulation resistance* vi) Separate sources voltage withstand test. vii) Measurement of iron losses and exciting current at rated frequency and 90%, 100% and 112.5% rated voltage. viii) Induced voltage withstand test. ix) Load losses measurement at 50 % & 100 % of load. x) Impedance measurement of principal tap (HV and LV) of the transformer. x) Routine test of tanks xi) Induced voltage withstand test (to be repeated if type tests are conducted). xii) Measurement of Iron loss (to be repeated if type test are conducted). xiii) Measurement of capacitance and Tan Delta for transformer winding and Tan Delta for transformer oil (for all transformers). xiv) Ratio of CT xv) Oil leakage test on completely

		<p>assembled transformer</p> <p>xvi) Magnetic balance test</p> <p>xvii) Power frequency voltage withstand test on all auxiliary circuits</p> <p>xviii) Certification of all test results.</p> <p>xix) Temperature Rise Test #</p> <p>a) *Insulation resistance measurement shall be carried out at 5kV for HV and 1kV for LV. Value of IR should not be less than 2000 M ohms [R6]. Polarization Index (PI = <math>IR_{10min}/IR_{1min}</math>) should not be less than 1.5 (If one minute IR value is above 5000 M ohms and it is not be possible to obtain an accurate 10 minutes reading, in such cases polarization index can be disregarded as a measure of winding condition.)</p> <p>b) #Temperature rise test may be necessary to be carried one unit/lot. Purchaser's engineer, will at its discretion, select transformer for temp. rise test from any lot offered for inspection at manufacturer's works and witness the same for comparison with ERDA/CPRI type test results</p>
10.3	Type Tests	<p>On one transformer of each rating and type at CPRI/ERDA.</p> <p>i) Impulse withstand test on all three HV limbs of the transformers for chopped wave as per standard</p> <p>ii) Temperature rise test as per IS 2026</p> <p>iii) Dissolved gas analysis before and after Temperature Rise Test</p> <p>iv) Air pressure test for sealed transformers</p> <p>v) Pressure and Vacuum test on tank</p> <p>Note – Purchaser may choose to carry out short circuit, impulse &amp; temperature rise test on one unit from a lot offered from inspection at CPRI/ERDA</p>
10.3.2	Notification to bidders	<p>The product offered must be of type tested quality.</p> <p>In case the product offered is never type tested the same as per above list to be conducted by bidder at his own</p>

*Handwritten signature*

*Handwritten signature*



		cost at CPRI/ERDA. The test report shall not be more 5 years old
10.4	Special Tests	<p>On one transformer of each rating and type</p> <p>i) Dynamic &amp; Thermal (3 sec) Short Circuit Test as per IS 2026</p> <p>ii) Measure of zero seq. impedance (Cl. 16.10 IS 2026 Part I).</p> <p>iii) Measurement of acoustic noise level (Cl. 16.12 of IS 2026 Part I).</p> <p>iv) Measurement of harmonic level on no load current.</p> <p>v) Paint adhesion test.</p> <p>vi) High voltage withstand test shall be performed on the auxiliary equipment and wiring after complete assembly. Cost of such tests, if extra, shall be quoted separately by the Bidder.</p>
10.4.1	Note for special test	In case the product offered is never tested for short circuit (Dynamic & Thermal) same to be conducted by bidder at his own cost at CPRI/ERDA. The test report shall not be more 5 years old.
10.5	Customer Hold Point	<p>i) GTP &amp; Drawings approval</p> <p>ii) Core Inspection(See CI No 10.1.2) Sample to be tested at CPRI/ERDA for each lot.</p> <p>iii) Tank Pressure &amp; vacuum Test</p> <p>iv) Core &amp; Coil Stage inspection of each lot to be offered for final testing.</p>

## 11.0 Packing, Shipping, Handling and Storage

11.1	Packing	
11.1.1	Packing protection	Against corrosion, dampness, heavy rains, breakage and vibration
11.1.2	Packing for accessories and spares	Robust wooden non returnable packing case with all the above protection
11.1.3	Packing details	<p>On each packing case details required as follows</p> <p>i) Individual serial number;</p> <p>ii) Purchaser's name;</p> <p>iii) PO number;</p> <p>iv) Destination;</p> <p>v) Supplier's name;</p>

		vi) Name and address of supplier's agent vii) Description and quantity viii) Manufacturer's name ix) Country of origin x) Case measurements xi) Gross and net weights in kilograms xii) All necessary slinging and stacking instructions.
11.2	Shipping	The bidder shall ascertain at an early date and definitely before the commencement of manufacture, any transport limitations such as weights, dimensions, road culverts, overhead lines, free access etc. from the manufacturing plant to the project site; and furnish to the Purchaser confirmation that the proposed packages can be safely transported, as normal or oversize packages, upto the plant site. Any modifications required in the infrastructure and cost thereof in this connection shall be brought to the notice of the Purchaser
11.3	Handling and Storage	As per manufacturer's instruction

## 12.0 Deviations

Deviations from this Specification shall be stated in writing with the tender by reference to the Specification clause/GTP/Drawing and a description of the alternative offer. In absence of such a statement, requirements of the Specification shall be met without exception.

## 13.0 Inspection Expenses

Inspection (i.e. routing test, acceptance test, type test, factory visit etc.) shall be done any time by BSES on the basis of PO or may involve 3rd party as per BSES requirement. Inspection expenses like accommodation, fooding, local transport, air fare, train fair, taxi (NCR) etc shall be borne by seller.

Any kind of test (routine/type test/acceptance test if any) at 3rd lab (i.e. CPRI/ERDA/NABL approved lab) shall be carried out by seller at their own cost. BSES may witness the test and the expenses like accommodation, fooding, local transport, air fare, train, taxi etc. shall be borne by seller.




Above expenses shall be applied at each and every inspection and shall stand till closing of POWO/Rate contracts etc.

### **Annexure A Scope of supply**

#### **1.0 The scope of supply shall include following**

- 1.1 Design, manufacture, assembly, testing at stages of manufacture as per Cl. 10 of this specification, final testing at manufacturer works on completely assembled transformer before dispatch, packing, transportation, delivery and submission of all documentation for the Power transformer with all accessories as below

<b>Sr. No</b>	<b>Description</b>	<b>Scope of Supply</b>
1.1.1	Fully assembled transformer with all major parts like conservator, Radiators, CT box, Fittings and accessories as per Clause 5.0 of this specification	YES
1.1.2	Off circuit tap changer as per this specification	YES
1.1.3	HV, LV, cable boxes	YES
1.1.4	Support steel material for support of cable boxes from ground	YES
1.1.5	Foundation Bolts for complete transformer	YES
1.1.6	Support structure to support of cable from the transformer tank	YES
1.1.7	Nickel Plated brass double compression glands for HV and LV, LVN cables (in case of termination by cable)	YES
1.1.8	Long barrel medium duty Aluminium lugs for power cables (in case of termination by cable)	YES
1.1.9	Nickel Plated brass double compression glands and tinned copper lugs for control cable termination in CT box for vendor's cables	YES
1.1.10	Cables and wires for transformer accessories and internal wiring of CT box	YES
1.1.11	Touch up paint, minimum 2 litres	YES
1.1.12	Extra Transformer oil 10 % in separate nonreturnable drum	YES
1.1.13	One spare complete set of gaskets	YES
1.1.14	Routine testing as per Cl. 10.2 of this specification	YES
1.1.15	Type testing as per Cl. 10.3 of this specification	YES
1.1.16	Special testing as per Cl. 10.4 of this specification	YES
1.1.17	Submission of Documentation as detailed below	YES

*Verified*

*Ans*

## 2.0 Submission of documents

Submission of drawings, calculations, catalogues, manuals, test reports shall be as follows

	Along with offer	For Approval after award of contract	Final after approval	Remarks
Drawings	3 copies (Typical drgs)	4 copies	12 copies + 1 soft copy in CD	See Clause 9 for various drawings required
Calculations	3 copies (Typical)	4 copies	6 copies + 1 soft copy in CD	See Clause 9 for details
Catalogues	1 copy		12 copies + 1 soft copy in CD	
Instruction manual for the transformer	1 copy		12 copies + 1 soft copy in CD	
Test Report	2 copies (Type test and sample Routine Test )		12 copies + 1 soft copy in CD	Type test and sample routine test reports

## 3.0 Delivery schedule

- 3.1 Delivery period start date -
- 3.2 Delivery period end date -
- 3.3 Material dispatch clearance - after inspection by purchaser & written dispatch clearances from purchaser

*Vandana*

*2/12*

**Annexure B Service Conditions**

1.0.0	Delhi Atmospheric conditions	
a)	Average grade atmosphere :	Heavily polluted, dry
	Maximum altitude above sea level	1000 M
b)	Ambient Air temperature	Highest 50 deg C, Average 40 deg C
	Design ambient temperature	50 deg C
c)	Relative Humidity	90 % Max
d)	Seismic Zone	4
e)	Rainfall	750 mm concentrated in four months

**Annexure C Technical Particulars of transformer Oil**

Transformer oil shall be new and conform to the following requirements:

**1.0 Codes & standards**

Latest revision of following codes & standards with all amendments –

	Standard no	Title
1.1	IS 335	New insulating oils
1.2	IS 1783	Drums for oils

**2.0 Properties**

The insulating material shall have following features [R8]:

Sr No	Item description	Specification requirement
2.1	Appearance of oil	Clear, free from sediment and suspended matter
2.2	Viscosity Max.	15 mm <sup>2</sup> /s at 40 <sup>0</sup> C 1800 mm <sup>2</sup> /s at 0 <sup>0</sup> C
2.3	Pour Point, Max	- 10 <sup>0</sup> C
2.4	Water content, Max	30 mg/Kg
	Breakdown voltage	
	i) New unfiltered oil. Min.	30 kV
2.5	ii) After filtration Min.	70 kV
2.6	Density Max.	0.895 g/ml at 20 <sup>0</sup> C
2.7	Dielectric dissipation factor Max	0.005 at 90 <sup>0</sup> C,
2.8	Particle Content	Value to be provided by the vendor
2.9	Acidity Max	0.01 mg KOH/g
2.10	Interfacial tension at 27 <sup>0</sup> C Min	40 mN/m
2.11	Total sulphur content	Value to be provided by the vendor
2.12	Corrosive sulfur	Not-corrosive
2.13	Potentially Corrosive sulfur	Not-corrosive

Sr No	Item description	Specification requirement
2.14	DBDS	Not detectable (<5 mg/kg)
2.15	Inhibitor	Not detectable (<0.01%)
2.16	Metal Passivator	Not detectable (<5 mg/kg)
2.17	Other additives	Type and concentration of additives to be provided
2.18	2-furfural and related Compounds content	Not detectable (<0.05 mg/kg) for each individual compound
2.19	Oxidation stability	
a)	Total acidity, Max	1.2 mg KOH/g
b)	Sludge Max	0.8%
c)	DDF at 90 °C, Max	0.5
2.20	Gassing Tendency	Value to be provided by the vendor
2.21	ECT	Value to be provided by the vendor
2.22	Flash point Min.	135 °C,
2.23	PCA content Max	3%
2.24	PCB content	Not detectable (<2 mg/Kg)

*Vamsay*

*Handwritten signature*



**Annexure D Guaranteed Technical Particulars (Data by Seller)**

Sr.	Particulars	Specified / Required			Offered
1.0	General				
1.1	Make				
1.2	Type	Oil immersed, core type, step down located generally outdoor but may be located indoor also with poor ventilation. Bidder shall confirm full rating available in indoor location also			
2.0	Nominal Continuous Rating, KVA				
2.1	HV winding	400 KVA	630 KVA	1000 KVA	
2.2	LV winding	400 KVA	630 KVA	1000 KVA	
3.0	Rated voltage ( kV )				
3.1	HV Winding	11 kV			
3.2	LV Winding	433 volt			
4.0	Rated current ( Amps )	400 KVA	630 KVA	1000 KVA	
4.1	HV Winding				
4.2	LV Winding				
5.0	Connections				
5.1	HV Winding	Delta			
5.2	LV Winding	Star with neutral			
5.3	Vector Group reference	Dyn11			
6.0	Impedance at principal tap rated current and frequency, ohm @75 deg C				
6.1	Impedance [R5]	4.5% / 4.5% / 5.0 % with IS tolerance			
6.2	Reactance				
6.3	Resistance				
6.4	Impedance at lowest tap at				

*Varun Singh*
*Arshad*



	rated current and frequency		
6.5	Impedance at highest tap at rated current and frequency		
7.0	Resistance of the winding at 75 <sup>o</sup> C in ohm		
7.1	a) HV		
7.2	b) LV		
8.0	Zero sequence impedance in ohm		
8.1	a) HV		
8.2	b) LV		
9.0	Guaranteed maximum Total losses at principal tap at 75°C, kW		
9.1	50 % of Load	as per Spec Cl 3.25	
9.2	100% of Load	as per Spec Cl 3.26	
9.3	No Load Loss (Max)		
9.4	Total I <sup>2</sup> R losses of windings @ 75 deg C, KW		
9.5	Total stray losses @ 75 deg C, KW		
9.6	Total Load losses (Max.), KW		
9.7	No load loss at maximum permissible voltage and frequency (approx.),kW		
10.0	Temperature rise over reference ambient of 40 °C		
10.1	Top oil by thermometer ° C	40 °C	
10.2	Winding by resistance ° C	45 °C	
11.0	Efficiency		
11.1	Efficiency at 75°C and unity power factor %		
11.1.1	at 110% load		
11.1.2	at 100% load		
11.1.3	at 80% load	Not Less than 99.5%	
11.1.4	at 60% load		

*VanSoy*

*hille*

11.1.5	at 40% load		
11.1.6	at 20% load		
11.2	Efficiency at 75°C and 0.8 power factor lag %		
11.2.1	at 110% load		
11.2.2	at 100% load		
11.2.3	at 80% load		
11.2.4	at 60% load		
11.2.5	at 40% load		
11.2.6	at 20% load		
11.3	Maximum efficiency at 75°C %		
11.4	Load and power factor at which it occurs		
12.0	Regulation (%)		
12.1	Regulation at full load at 75°C		
12.1.1	at unity power factor		
12.1.2	at 0.8 power factor lagging		
12.2	Regulation at 110% load at 75°C		
12.2.1	at unity power factor		
12.2.2	at 0.8 power factor lagging		
13.0	Tappings		
13.1	Type		
13.2	Capacity		
13.3	Range-steps x % variation		
13.4	Taps provided on HV winding (Yes / No)		
13.5	Rated current of rotary switch		
14.0	Cooling system		
14.1	Type of cooling	ONAN	
14.2	No. of cooling unit Groups		
14.3	Capacity of cooling units		
14.4	Mounting of radiators		
14.5	Number of Radiators		
14.8	Total radiating surface , sqmm		
14.9	Thickness of radiator tubes, mm	Minimum 1.2 mm	

*Varisad*
*Sub*

15.0	Details of Tank		
15.1	Material	Robust mild steel plate without pitting and low carbon content	
15.2	Thickness of side mm		
15.3	Thickness of bottom mm		
15.4	Thickness of cover mm		
15.5	Confirmation of Tank designed and tested for Vacuum, Pressure ( Ref: CBIP Manual ) , (Yes/ No)		
15.5.1	Vacuum mm of Hg. / (kN/m <sup>2</sup> )	As per IS	
15.5.2	Pressure mm of Hg.		
15.6	Is the tank lid sloped?	Yes	
15.7	Inspection cover provided (Yes / No)	as per spec	
15.8	Location of inspection cover (Yes / No)		
15.9	Min. dimensions of inspection cover ( provide list of all inspection cover with dimension), mm x mm		
16.0	Core		
16.1	Type:	Core	
16.2	Core material grade	Premium grade minimum M3 or better	
16.3	Core lamination thickness in mm		
16.4	Insulation of lamination	With insulation coating on both sides	
16.5	Design flux density at rated condition at principal tap, Tesla		
16.6	Maximum flux density at 12.5 % <sup>R5</sup> over excitation /over fluxing, Tesla	1.9 Tesla Max allowed	
16.7	Equivalent cross section area		

*Navisag*

*Subal*

	mm <sup>2</sup>		
16.8	Guaranteed No Load current at 100% rated voltage , Amps		
16.8.1	HV		
16.8.2	LV		
16.9	Guaranteed No Load current At 110% rated voltage, Amps		
16.9.1	HV		
16.9.2	LV		
17.0	Type of Winding [R8]		
17.1	HV	Crossover/Disc	
17.2	LV	Spiral/Helical	
17.3	Conductor material	Electrolytic Copper	
17.4	Current density (HV/LV)	Maximum allowed 3.0 A per sq mm.at all taps	
17.5	Gauge/area of cross section of conductor		
17.5.1	a) HV		
17.5.1	b) LV		
17.6	Insulating material		
17.6.1	HV Turn		
17.6.2	LV Turn		
17.6.3	LV Core		
17.6.4	HV - LV		
17.7	Insulating material thickness, mm		
17.7.1	HV Turn		
17.7.2	LV Turn	-	
17.7.3	LV to Core		
17.7.4	HV to LV		
18.0	Minimum design clearance, mm		
18.1	HV to earth in Air		
18.2	HV to earth in oil		
18.3	LV to earth in Air		
18.4	LV to earth in oil		
18.5	Between HV & LV in Air		




18.6	Between HV & LV in oil		
18.7	Top winding and yoke		
18.8	Bottom winding and yoke		
19.0	<b>Insulating oil</b>		
19.1	Quantity of oil Ltrs		
19.1.1	In the Transformer tank		
19.1.2	In each radiator		
19.1.4	Total quantity		
19.2	10% excess oil furnished?	To be furnished in separate nonreturnable drum with each transformer [R8]	
19.3	Type of Oil	As per cl 4.2.7	
20.0	<b>Bushing / Support Insulator</b>		
20.1	Make	-	
20.2	Type		
20.2.1	HV side	As per Cl. 4.2.8.1 of the spec	
20.2.2	LV side	As per Cl. 4.2.8.2 of the spec	
20.3	Reference Standard		
20.4	Voltage class, kV		
20.4.1	HV side Bushing/ Support Insulator	12 kV	
20.4.2	LV side line and neutral bushing/ Support Insulator	1.1 kV	
20.5	Creepage factor for all bushing / Support Insulator mm/KV	31 mm / kV	
20.6	Rated thermal short time current		
20.6.1	HV bushing	25 times rated current for 2 secs.	
20.6.2	LV line and neutral bushing	25 times rated current for 2 secs.	
20.7	Weight, Kg		
20.7.1	HV bushing		
20.7.2	LV line and neutral bushing		
20.8	Free space required for bushing removal, mm		
20.8.1	HV bushing		
20.8.2	LV line and neutral bushing		

21.0	<b>Terminal connections</b>		
21.1	HV	Cable size as per CI no 3.28	
21.2	LV	Cable size as per CI no 3.30	
21.3	LV Neutral	Cable size as per CI no 3.30	
22.0	<b>HV cable box</b>	Required	
22.1	Suitable for cable type, size	Cable size as per CI no 3.28	
22.2	Termination height	750 mm min.	
22.3	Gland plate dimension, mm x mm		
22.4	Gland plate Material	MS	
22.5	Gland plate thickness	3 mm min.	
22.6	Phase to phase clearance inside box, mm	180 mm	
22.7	Phase to earth inside box, mm	120 mm	
23.0	<b>LV Cable box</b>	Required	
23.1	Suitable for cable type , size	Cable size as per CI no 3.30	
23.2	Termination height	1000 mm, min.	
23.3	Gland plate dimension, mmxmm		
23.4	Gland plate material	Aluminium	
23.5	Gland plate thickness	5 mm min.	
23.6	Phase to phase	25 mm	
23.7	Phase to earth	25 mm	
24.0	L.V neutral Cable termination arrangement	Separate cable box not required (LV-N to be provided in LV cable box.)	
25.0	Current Transformer on LV phases		
25.1	Type		
25.2	Make		
25.3	Reference Standard		
25.4	CT Ratio		
25.5	Burden, VA		
25.6	Class of Accuracy		
25.7	CT terminal box size		

*VarSocd*

*25.12*

26.0	Pressure release device				
26.1	Minimum pressure the device is set to rupture				
26.1.1	For Main Tank				
27.0	Fittings Accessories Each Transformer furnished as per Clause No 5. (Bidder shall attach separate sheet giving details, make and bill of materials)				
27.1	WTI/OTI Scanner details [R7]	NA	NA	Required	
27.1.1	Make				
27.1.2	Model no.				
27.1.3	Manual submitted				
27.2	Buchholz Relay [R7]	NA	NA	Required	
27.2.1	Make				
27.2.2	Model no.				
27.2.3	Manual submitted				
28.0	Painting: as per clause for the transformer, cable boxes, radiator, Marshalling box (Yes/No)				
29.0	Max over all transformer dimensions	As per Clause 3.32			
29.1	Length, mm				
29.2	Breadth, mm				
29.3	Height, mm				
30.0	Transformer Tank Dimensions				
30.1	Length, mm				
30.2	Breadth, mm				
30.3	Height, mm				
31.0	Weight data				
31.1	Core, kG				
31.2	Frame parts, kG				
31.3	Core and frame, kG				
31.4	Total Winding, kG				

*Varisod*
*Amle*



31.5	Core , Frame, Winding, kG		
31.6	Tank, kG		
31.7	Tank lid, kG		
31.8	Empty conservator tank, kG		
31.9	Each radiator empty, kG		
31.10	Total weight of all radiators empty, kG		
31.11	Weight of oil in Tank, kG		
31.12	Weight of oil in Conservator, kG		
41.13	Weight of oil in each Radiators, kG		
31.14	Total weight of oil in Radiators, kG		
31.16	Total Transport weight of the transformer, kG		
32.0	Volume Data		
32.1	Volume of oil in main tank, litres		
32.2	Volume of oil between highest and lowest levels of main conservator, litres		
32.4	Volume of oil in each radiator, litres		
32.5	Total volume of oil in radiators, litres		
32.7	Transformer total oil volume, litres		
33.0	Shipping Data		
33.1	Weight of heaviest package, kG		
33.2	Dimensions of the largest package (L x B x H) mm		
34.3	Tests		
34.1	All in process tests confirmed as per Cl. (Yes/ No)		
34.2	All Type Tests confirmed as per Cl. (Yes / No)		
34.3	All Routine Tests confirmed as		

*Handwritten signature*

*Handwritten signature*

	per Cl. (Yes/ No)		
34.4	All Special Tests confirmed as per Cl. (Yes/ No)		

### Annexure E Guaranteed Technical Particulars of Transformer Oil

Bidder to submit hard copy duly filled & signed along with techno commercial offer.  
 Bidder to submit separate GTP for each type of insulating oil –

Sr No.	Item description	Specification requirement	Data by vendor
1.1	Appearance of oil	Clear, free from sediment and suspended matter	
1.2	Viscosity Max.	15 mm <sup>2</sup> /s at 40 <sup>0</sup> C 1800 mm <sup>2</sup> /s at 0 <sup>0</sup> C	
1.3	Pour Point, Max	- 10 <sup>0</sup> C	
1.4	Water content, Max	30 mg/Kg	
1.5	Breakdown voltage		
	i) New unfiltered oil. Min.	30 kV	
	ii) After filtration Min.	70 kV	
1.6	Density Max.	0.895 g/ml at 20 <sup>0</sup> C	
1.7	Dielectric dissipation factor Max	0.005 at 90 <sup>0</sup> C,	
1.8	Particle Content	Value to be provided by the vendor	
1.9	Acidity Max	0.01 mg KOH/g	
1.10	Interfacial tension at 27 <sup>0</sup> C Min	40 mN/m	
1.11	Total sulphur content	Value to be provided by the vendor	
1.12	Corrosive sulfur	Not-corrosive	
1.13	Potentially Corrosive sulfur	Not-corrosive	
1.14	DBDS	Not detectable (<5 mg/kg)	
1.15	Inhibitor	Not detectable (<0.01%)	
1.16	Metal Passivator	Not detectable (<5 mg/kg)	
1.17	Other addivites	Type and concentration of additives to be provided	
1.18	2-furfural and related Compounds content	Not detectable (<0.05 mg/kg) for each individual compound	
1.19	Oxidation stability		
a)	Total acidity, Max	1.2 mg KOH/g	
b)	Sludge Max	0.8%	
c)	DDF at 90 <sup>0</sup> C, Max	0.5	
1.20	Gassing Tendency	Value to be provided by the vendor	

*Handwritten signature*

*Handwritten signature*

1.21	ECT	Value to be provided by the vendor	
1.22	Flash point Min.	135 <sup>0</sup> C,	
1.23	PCA content Max	3%	
1.24	PCB content	Not detectable (<2 mg/Kg)	

#### Annexure – F Recommended Spares (Data by Supplier)

List of recommended spares as following –

Sr No	Description of spare part	Unit	Quantity
1		No	
2		No	
3		No	
4		No	
5		No	
6		No	

#### Annexure G - BSES Standard Quality Plan (to be followed during testing/ Inspection)(attached)

#### Annexure H - CRGO & Testing Points [R7]

In addition to the BSES specification following points to be verified during manufacturing/inspection.	
1	Transformer core shall be low loss, non-ageing, high permeability PRIME GRADE CRGO with M3 Grade or better with max thickness of .23mm and with max core loss of 1W/Kg, perfectly insulated and clamped to minimize noise and vibrations.
2	Following stage inspections will be carried out by purchaser or by third party engineers appointed by BSES :
2.1	Verification & inspection of the mother coil at port & putting stamp & seal may be inspected by BSES.
2.2	Reconciliation of mother coil by checking stamp & seal at factory before slitting. One sample of CRGO to be sealed for testing at ERDA/CPRI. Following Tests shall be conducted on the sample per P.O. [R8]: <ol style="list-style-type: none"> <li>1) Specific core loss measurement</li> <li>2) Magnetic polarization</li> <li>3) Magnetic permeability</li> <li>4) Specific core loss measurement after accelerated ageing test</li> <li>5) Surface insulation resistivity</li> <li>6) Electrical resistivity measurement</li> <li>7) Stacking factor</li> </ol>

*Vandana*

*Shilp*

	8) Ductility(Bend test) 9) Lamination thickness 10) Magnetization characteristics (B-H curve)
2.3	Bidder should have in house core cutting facility for proper monitoring & control on quality. In case it is done outside cutting shall be done in presence of BSES.
2.4	Following documents to be submitted during the stage inspection
2.4.1	Invoice of supplier
2.4.2	Mills test certificates
2.4.3	Packing list
2.4.4	Bill of lading
2.4.5	Bill of entry certificates by customs
2.4.6	Core material shall be directly procured either from the BSES approved manufacturer or through their authorized service centre/distributor and not through any contractor.
2.5	Bidder should have hydraulic core lifting facility to avoid any jerk at the time of core building.
2.6	BSES may appoint recognized testing authority like CPRI /ERDA with their instruments & engineer's team and measure no load loss, load loss and percentage impedance of the transformer at supplier's works at our own cost. Bidder shall agree and give them full co-operation during their stay & testing at shop floor. The losses & impedance values so obtained will be considered as final.
2.7	Bidder should have in-house NABL accredited testing facility.

Vansoj

*[Signature]*