BSES Yamuna Power Limited

NOTICE INVITING TENDER (NIT)

RATE CONTRACT FOR SUPPLY

OF

ONAN COOLED TRANSFORMERS OF RATINGS 1000, 1600 & 2000 KVA 11/0.415KV

NIT NO: CMC/BY/24-25/RS/SkS/SV/10
[RFx Number: 2200000027]

Due Date for Submission: 28.06.2024, 14:00 HRS

BSES YAMUNA POWER LIMITED (BYPL)
CONTRACTS & MATERIALS DEPT.,
SHAKTI KIRAN BUILDING, KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
WEBSITE: www.bsesdelhi.com

BSES Yamuna Power Limited

NIT INDEX

VOLUME – I: INFORMATION TO BIDDER (ITB)

SECTION – I: REQUEST FOR QUOTATION

1.00 EVENT INFORMATION

1.01 BSES Yamuna Power Ltd (hereinafter referred to as **"BYPL"**) invites **Open Tender** in the E-Tender Bidding Process on a "Single Stage: Two Parts" from interested Bidders to enter into a **Rate contract valid for one year** as detailed below:

Tender Description	Tender Fee (₹)	Estimated Cost (₹)	EMD Amount (₹)	Delivery at
RATE CONTRACT FOR SUPPLY OF ONAN COOLED TRANSFORMERS OF RATINGS 1000, 1600 & 2000 KVA 11/0.415KV	1,180	25.10 Crore	25.10 Lakh	Delhi Store(s)/ Site(s)

The bidder must qualify the requirements as specified in clause 2.0 stated below.

1.02 The tender document is available for downloading from our website www.bsesdelhi.com **--> BSES YAMUNA POWER LTD --> Tender --> Open Tenders** or through our E-Tendering portal link (https://srmprdportal.bsesdelhi.com:50001/irj/portal).

1.03 **Tender Fee**: The bidder has to compulsorily submit the non-refundable tender fee of **₹ 1,180/-** as demand draft or online transfer of the requisite amount through IMPS/NEFT/RTGS covering the cost of bid documents. Any such bid submitted without this Fee shall be rejected.

1.04 **Earnest Money Deposit (EMD)** of ₹ 25,10,000/- (Twenty Five Lakh and Ten Thousand only) valid for 120 days from the due date of bid submission in the form of BG/FD/online transfer of the requisite amount through IMPS/NEFT/RTGS. Any such bid submitted without EMD shall be rejected.

1.05 **TIME SCHEDULE**

The bidders should complete the following events within the dates specified as under:

S. No.	Events	Due date & Time
1	Date of availability of tender documents from BYPL Website & SRM	up to 28.06.2024, 14:00 Hours
2	Date & Time of Pre-Bid Meeting Pre-Bid Meeting will be done online, Register in advance for this meeting via, the Zoom Meeting link: https://zoom.us/meeting/register/tJMqf--opzgoGdTaAFr3M0nEAvpUKtWKqi7y After registering, you will receive a confirmation email containing information about joining the meeting.	21.06.2024, 11:30 Hours
3	Last Date of receipt of pre-bid queries, if any (Queries to be submitted via e-mail)	21.06.2024 up to 18:00 Hours
4	Last Date of replies to all the pre-bid queries as received	24.06.2024 up to 17:00 Hours
5	Last date and time of receipt of Complete Bids (Tender Fees, EMD, Part A & Part B)	28.06.2024, 14:00HRS
6	Date & Time of Opening of PART A – EMD and Technical Bid	28.06.2024, 15:00HRS
7	Date & Time of opening of Price/RA of qualified bids	Will be notified to the qualified bidders through our website/e-mail

Note: In the event of the last date specified for submission of bids and the date of opening of bids is declared as a closed holiday for the BSES office, the last date of submission of bids and date of opening of bids will be the following working day at the appointed times.

1.06 The Bid shall be submitted online in two (02) parts. Details of the parts are as follows:
Part A – Techno Commercial Bid
Part B – Price Bid
Bids will be submitted online and received up to **28.06.2024, 14:00 Hr.** at the address given below.
Part A of the Bid shall be opened online on **28.06.2024, 15:00 Hr.**
Part B of the Bid will be opened in case of Techno-Commercially Qualified Bidders and the date of opening of same shall be intimated in due course. It is the sole responsibility of the bidder to ensure that the bid documents are submitted online and reach this office on or before the last date.

Head of Department
Contracts & Materials Deptt.
BSES Yamuna Power Ltd
Reception, Ground Floor
Shaktikiran Building, Karkardooma
Delhi 110032

All envelopes shall be duly superscribed "**BID FOR RATE CONTRACT FOR SUPPLY OF ONAN COOLED TRANSFORMERS OF RATINGS 1000, 1600 & 2000 KVA 11/0.415KV" "NIT NO: CMC/BY/24-25/RS/SkS/SV/10 [RFx Number: 2200000027] DUE ON 28.06.2024, 14:00 Hr.**"

1.07 BSES Yamuna Power Ltd reserves the right to accept/reject any or all tenders without assigning any reason thereof in the event of the following:

a) Tender is received after the due date and time.
b) Tender fee of requisite value is not submitted.
c) Earnest Money Deposit (EMD) of requisite value & validity is not submitted in the shape of a Bank Guarantee drawn in favour of BSES Yamuna Power Ltd, payable at Delhi or Online transfer of requisite amount through IMPS/NEFT/RTGS.
d) Price Bid as per the Price Schedule is not submitted.
e) Incomplete Bids.
f) Necessary documents against compliance to Qualification Requirements mentioned in Section 1 Clause 2.0 of this Tender Document.
g) Complete documents/details are not enclosed as per the Bid Index for Part-A (Technical Bid) at APPENDIX I ANNEXURE – 1.01.
h) Filled in Schedule of Deviations as per Annexure is not submitted.

2.00 QUALIFICATION CRITERIA

The prospective bidder must qualify for all of the following requirements and shall be eligible to participate in the bidding who meets the following requirements and management has a right to disqualify those bidders who do not meet these requirements.

2.01 **Technical Criteria:**

S. No.	Criteria	Documents to be submitted by the bidder
1	The bidder should have own manufacturing facility in India for Distribution transformer of similar rating or higher since last 3 years.	i. Manufacturing and factory incorporation certificate / Undertaking

		ii. The details of manufacturing units, locations and works from where supply against this tender shall be proposed to be furnished.
2	The Bidder should have supplied at least 100 Nos of transformers of 990/1000KVA rating or higher ratings in last 5 years from the date of bid opening to any utilities/SEB's/PSU's/reputed company wherein the end user shall be Utility/SEB's/PSU's.	i. Summary list of executed Purchase orders (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.09) ii. Purchase order copies iii. Material delivery clearance certificate copy or Invoice Copies or Delivery completion/ Performance certificate
3	Performance certificate for minimum 2 year satisfactory performance for 990/1000 kVA or higher ratings supplied in last 7 years from the date of bid opening from at least two utilities/ SEB's/ PSU's/ reputed company wherein the end user shall be utilities/ SEB's/ PSU's. In case of bidder has a previous association with BRPL/BYPL for similar product and service, the performance feedback for that bidder by BRPL/BYPL shall only be considered irrespective of performance certificate issued by any third organization.	Performance Certificates (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.10)
4	The bidder should have manufacturing capacity of minimum 20 nos. DT's per month	Installed Manufacturing Capacity (duly certified by the CE/CA/DIC/Self-Undertaking/Government Organization/others)
5	The bidder must possess a valid ISO 9001:2015 certification.	Valid copy of Certification
6	The Bidder must possess valid BIS Licence	Valid copy of Certification
7	The bidder should have servicing , repairing, testing & refurbishment facility in INDIA with necessary spares and testing equipments for providing prompt after sales service for Distribution Transformer.	Relevant Details/certificates/Undertaking (Details of the set-up available shall be brought out in the offer. the bidder shall also submit undertaking along with the bid confirming the infrastructure details submitted)

2.02 **Commercial Criteria:**

S. No.	Criteria	Documents to be submitted by the bidder
8	Bidder should have an Average Annual Sales Turnover of Rs 70 Crores or more in the last three (3) Financial Years (i.e., FY 2020-21, 2021-22 & 2022-23).	Balance Sheet / Copy of audited P&L Account / Duly certified CA certificate having UDIN to be submitted (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.14)
9	The Bidder shall submit an undertaking that "No Litigation" is pending with the BYPL or	Self-Undertaking

	its Group/Associates Companies as on the date of bid opening.	(as per the format enclosed in APPENDIX I - ANNEXURE – 1.15) (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.14)
10	An undertaking (self-certificate) that the bidder has not been blacklisted/debarred by any central/state government institution/Electricity utilities as on the date of bid opening.	Self-Undertaking (as per the format enclosed in APPENDIX I - ANNEXURE – 1.15) (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.14)
11	The bidder must have a valid PAN No. and GST Registration Number, in addition to other statutory compliances. The bidder must submit a copy of registrations and submit an undertaking that the bidder shall comply with all the statuary compliances as per the laws/rules etc. before the start of the supply/work.	Relevant Statutory Documents Copy/ Self Undertaking (as per the format enclosed in APPENDIX I - ANNEXURE – 1.15) (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.14)

Notwithstanding anything stated above, BYPL reserves the right to assess the bidder's capability to perform the contract, assess the capability and installed capacity of the Bidder for carrying out the supplies, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final.

3.00 BIDDING AND AWARD PROCESS

Bidders are requested to submit their offer strictly in line with this tender document. Normally, the deviations to tender terms are not admissible and the bids with deviations are liable for rejection. Hence, the bidders are advised to refrain from taking any deviations on this Tender. Still, in case of any deviations, all such deviations shall be set out by the Bidders, clause by clause in the "Annexure - Schedule of Deviations" and the same shall be submitted as a part of the Technical Bid.

3.01 BID SUBMISSION

BIDS ARE INVITED THROUGH THE E-PROCUREMENT PORTAL:
BSES will carry out E-Procurement through its e-procurement portal (https://srmprdportal.bsesdelhi.com:50001/irj/portal).

Interested Non-registered bidders are requested to obtain the portal user name and password (if not available) for bid submission. For participating in e-Tenders of BYPL, please write a mail to
1. Mr Rakesh Sharma, E-mail: Rakesh.Ku.Sharma@relianceada.com,
2. Mr Sumit Verma, E-mail: sumit.ra.verma@@relianceada.com, with your details as per below:

a) Existing Vendor Code with BYPL or its Group/Associates Companies (if available): .....
b) Trade Name: .....
c) Address of Principal Place of Business: .....
d) Contact Person's Name: .....
e) Contact Person's Designation: .....
f) Contact Person's Mobile No.: .....
g) Contact Person's email ID: .....
h) Also, attach a valid copy of the Power of Attorney in favour of the above-mentioned Contact Person for being authorized to receive user ID and password on behalf of their organization.

The login ID details shall be sent through email to the email ID mentioned by you for the same.

Bids shall be submitted in 2 (Two) parts on the assigned folder of the e-procurement site. Please refer to the user manual available at https://srmprdportal.bsesdelhi.com:50001/irj/portal and enclosed with the tender.

Bids have to be mandatorily submitted only through the e-procurement portal of BSES Delhi. Bids submitted through any other form/ route shall not be admissible.

However, documents that necessarily have to be submitted in originals like Tender Fee (in the form of DD) or EMD (in the form of BG/FD/DD as applicable) and any other documents mentioned in the tender documents have to be submitted at the BYPL office before the due date & time of submission.

Please mention our NIT Number: - …… on the Tender and drop the same in our Tender Box placed at **BSES Yamuna Power Ltd, Reception, Ground Floor, Shaktikiran Building, Karkardooma, Delhi 110032**

The bids and the outer envelope shall be addressed to the following:
Head of Department
Contracts & Materials Deptt.
BSES Yamuna Power Ltd, Shaktikiran Building, Karkardooma, Delhi 110032
Kindly Note:

- The bidder has to ensure that the tender is dropped in the correct box designated for tender submission only.
- BYPL shall not be responsible for any wrong placement of tender documents by the bidder.

This is a two-part bid process. Bidders are to submit the bids online in 2(Two) parts **PART-A TECHNICAL BID & COMMERCIAL TERMS & CONDITIONS** and **Part-B FINANCIAL BID** and shall be submitted before the due date & time specified.

PART A:: TECHNICAL BID comprising of the following, do not contain any cost information whatsoever and shall be submitted within the due date:

S. No.	Descriptions	Type of Documents/Format
A.1	**Bid Details**	
1	**Bid Index for Part-A (Technical Bid)**	In the prescribed format enclosed at APPENDIX I ANNEXURE – 1.01
2	**Cover Letter, if any**	Standard Format
3	**Bid Form (Unpriced) Duly Signed**	Duly Signed Bid Form as per enclosed format at APPENDIX I ANNEXURE – 1.02
4	**Tender Fee**	Non-refundable demand draft or online transfer of the requisite amount through IMPS/NEFT/RTGS for Rs 1,180/-, Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.03
5	**EMD**	Online transfer of the requisite amount through IMPS/NEFT/RTGS or FD or BG in the prescribed stamp paper & format enclosed at APPENDIX I ANNEXURE – 1.05, EMD Details Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.04
6	**Power-of-Attorney/ Authorization Letter**	In the standard stamp paper/letter
A.2	**Technical Bid**	

7	**Communication Details of the Bidder**	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.06
8	**Manufacturer Authorization Form (as applicable)**	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.07
9	**Technical Qualifying Criteria Compliance Index & Documents**	Documentary evidence in support of qualifying criteria mentioned in Section 1 Clause 2.00. Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.08, ANNEXURE – 1.09 & ANNEXURE – 1.10
10	**Schedule of Deviations - Technical**	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.11
11	**Technical Details/ Filled in Guaranteed Technical particulars (GTP) as per specification**	Bidder shall submit duly filled GTP with all Technical documents
12	**Technical Drawings as per specification**	Bidder shall submit all Drawings as per the specification
13	**Type Test Reports**	Bidders shall submit a copy of type test reports in their technical bids in support of technical specifications. Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.12
14	**Sample Submission Details (if applicable as per specification)**	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.13
15	**Product Catalogue (If applicable)**	Bidders shall submit a copy of the product catalogue in their technical bids in support of technical specifications
16	**Manufacturer's Quality Assurance Plan**	Bidders shall submit a copy of MQP in their technical bids in support of technical specifications
17	**Other drawings/ documents mentioned in technical specification**	Bidders shall submit a copy of documents in their technical bids in support of technical specifications
18	**Testing Facilities**	Bidder shall submit the details of testing facilities available at their works/factory.
A.3	**Commercial Bid**	
19	**Company Profile, Organization Chart & Manpower Details.**	Bidder shall submit the details of Organization & Manpower with qualification and experience.
20	**Commercial Qualifying Criteria Compliance Index & Documents**	Documentary evidence in support of qualifying criteria mentioned in Section 1 Clause 2.00. Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.14
21	**Undertakings**	Duly signed self-undertakings as per enclosed format at APPENDIX I ANNEXURE – 1.15
22	**Schedule of Deviations - Commercial**	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.16
23	**Acceptance Form For Participation in Reverse Auction Event**	Duly signed Acceptance Form For Participation In Reverse Auction Event as per enclosed format at APPENDIX I ANNEXURE – 1.17
24	**Commercial Terms and Conditions**	Acceptance of Commercial Terms and Conditions viz. Delivery Schedule/Period, Payment terms, PBG etc. Duly

		filled and signed as per enclosed format at APPENDIX II ANNEXURE – 2.05
25	**Un price Bid Duly Signed**	Item wise marked as "Quoted" & Duly Signed Un price Bid as per enclosed format at VOLUME – II - PRICE BID FORMAT
26	**Signed Tender document**	Original Tender documents duly stamped & signed on each page as a token of acceptance

PART B:: FINANCIAL BID comprising of

- Price strictly in the Format enclosed at VOLUME – II - PRICE BID FORMAT indicating Break up of basic price, taxes & duties, etc.
- The Bidder has to submit the item-wise price bifurcation in the bid. An unpriced copy must be attached with the Part A (Technical Bid).

This will be opened internally after techno-commercial evaluation and only of the qualified bidders.

REVERSE AUCTION CLAUSE:: Purchaser reserves the right to use the reverse auction as an optional tool through SAP-SRM as an integral part of the entire tendering process. All techno-commercially qualified bidders shall participate in the reverse auction. Reverse Auction will be carried out on individual item-wise rates or Package-wise.

Notwithstanding anything stated above, the Purchaser reserves the right to assess the 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. Bidder is to submit their acceptance as per the format APPENDIX I ANNEXURE – 1.17.

BIDS RECEIVED AFTER THE DUE DATE AND TIME MAY BE LIABLE FOR REJECTION

4.00 AWARD DECISION

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

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

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

4.04 Rate Contract: The rate contract shall have a validity period of 12 months from the date of RC issued to the responsive, techno-commercially acceptable and evaluated to be the lowest bidder. Purchase Order (PO) shall be placed as per the requirement of BYPL.

4.05 Price variation shall be applicable as per PV formulae (PVF).

4.06 Quantity Variation: The purchaser reserves the right to vary the quantity by (±) 30% of the tender quantity during the execution of the rate contract.

4.07 Quantity Splitting: The purchaser reserves the right to distribute the procurable quantity on one or more than one of the eligible tenders. If the quantity is to be split, quantity distribution shall be in the manner detailed below:
a) If the quantity is split among 2 bidders, it will be done at 70:30 on the L1 price.
b) If the quantity is split among 3 bidders, it will be done at 50:30:20 on the L1 price.
Note: If quantity needs to be distributed and order splitting is required, quantity distribution shall be maximum among three (3) bidders.

5.00 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 before participating. In addition to other remedies available, we reserve 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 & Conditions. Bidders who violate the marketplace rules or engage in behaviour that disrupts the fair execution of the marketplace restrict a bidder to the length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honour prices submitted to the marketplace.
- Breach of the terms of the published in Request for Quotation/NIT.

6.00 SUPPLIER CONFIDENTIALITY

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

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

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

7.00 CONTACT INFORMATION

Technical clarification, if any, as regards this RFQ shall be sought in writing and sent by e-mail/post/courier to the following addresses. The same shall not be communicated through phone

Address	Name/ Designation	E-mail Address
Technical		
CES Dept. 3rd Floor, B-Block, BSES Yamuna Power Ltd Shaktikiran Building, Karkardooma, Delhi 110032	Jeena Borana DGM (CES)	jeena.borana@relianceada.com
	Srinivas Gopu GM (CES)	srinivas.gopu@relianceada.com
	Gaurav Sharma Addl. VP (HOD-CES)	gaurav.a.sharma@relianceada.com
Commercial		
C&M Dept. 3rd Floor, A-Block, BSES Yamuna Power Ltd Shaktikiran Building, Karkardooma, Delhi 110032	Sumit Verma GM (C&M)	sumit.ra.verma@relianceada.com
	Santosh Singh Addl. VP (Head-Procurement)	santosh.kum.singh@relianceada.com
	Robin Sebastian VP (HOD-C&M)	robin.sebastian@relianceada.com

SECTION – II: INSTRUCTION TO BIDDERS

A. GENERAL

1.00 BSES Yamuna Power Ltd, hereinafter referred to as "The Purchaser" is 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 material notified earlier in this bid document.

2.00 SCOPE OF WORK

The scope shall include Design, Manufacture, testing at works conforming to the Technical Specifications/IS along with Packing, Forwarding, Transportation Unloading and proper stacking at Purchaser's stores/site.

3.0 DISCLAIMER

3.01 This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder/Bidding Consortium should conduct its 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 interest.

3.02 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 a rising in any way from the selection process for the Supply.

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

3.04 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 COST OF BIDDING

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

B. BIDDING DOCUMENTS

5.01 The Scope of Work, Bidding Procedures and Contract Terms are described in the Bidding Documents.

5.02 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 may result in the rejection of the Bid.

6.0 **AMENDMENT OF BIDDING DOCUMENTS**

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

6.02 The Amendment shall be part of the Bidding Documents, pursuant to Clause 5.01, and it will be notified on the website **www.bsesdelhi.com** and the same will be binding on them.

6.03 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. The same shall be published as a corrigendum on the website **www.bsesdelhi.com**

6.04 Purchaser shall reserve the rights to the following:
a) Extend the due date of submission,
b) Modify the tender document in part/whole,
c) Cancel the entire tender

6.05 **Bidders are requested to visit the website regularly for any modification/clarification/corrigendum/addendum of the bid documents.**

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) All the Bids must be accompanied by the required Tender Fees and EMD as mentioned in the tender.

(b) PART A – Technical Bid and

(c) PART B - Financial Bid

9.0 **BID FORM**

9.01 The Bidder shall submit Bid Form with the Bidding Documents.

9.02 **EMD**

Pursuant to Clause 8.0(a) above, the bidder shall furnish, as part of its bid, an EMD amounting to as specified in Section I. The EMD is required to protect the Purchaser against the risk of Bidder's conduct which will warrant forfeiture.
The EMD shall be denominated in any of the following forms**:**
(a) Bank Guarantee drawn in favour of BSES Yamuna Power Ltd, payable at Delhi or
(b) Fixed Deposit (lien marked in favour of BSES Yamuna Power Limited) payable at Delhi.

(c) Online transfer of requisite amount through IMPS/NEFT/RTGS to BYPL account mentioned herein in Appendix II - **BYPL BANK DETAILS WITH IFSC CODE**.

EMD shall be valid for One Hundred Twenty (120) days after the due date of submission drawn in favour of BSES Yamuna Power Ltd.

The EMD may be forfeited in the case of:

(a) the Bidder withdraws its bid during the period of specified bid validity

or

(b) the case of a successful Bidder, if the Bidder does not

(i) Accept the Purchase Order, or

(ii) Furnish the required performance security BG.

10.0 **BID PRICES**

10.01 Bidders shall quote for the entire Scope of Supply/Work 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, and Transportation to the site, all in accordance with the requirement of the Bidding Documents. The Bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total Price.

10.02 The prices offered shall be inclusive of all costs as well as Duties, Taxes or Levies paid or payable during the execution of the supply work, a breakup of price constituents, should be there.

10.03 Prices quoted by the Bidder shall be **"Variable"**.

10.04 Price Variation Formula

$$P=P_0/100 * (7+41*C/C_0+23*ES/ES_0+10*IS/IS_0+5*IM/IM_0+8*TO/TO_0+6*W/W_0)$$

P = Ex-works Price payable as adjusted in accordance with above formula

P_0 = Ex-works Price as per RC/PO.

C_0 = Price of CC copper rods. This price is as applicable for the month, ONE month prior to the due date of tender.

ES_0 = Price of CRGO Electrical Steel Lamination. This price is as applicable for the month, ONE month prior to the due date of tender.

IS_0 = Price of HR Coil of 3.15 mm thickness. This price is as applicable for the month, ONE month prior to the due date of tender.

IM_0 = Price of Insulating Materials. This price is as applicable for the month, ONE month prior to the due date of tender.

TO_0 = Price of Transformer Oil. This price is as applicable for the month, ONE month prior to the due date of tender.

W_0 = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base: 2016 = 100). This index number is as applicable for the month, THREE months prior to the due date of tender.

C = Price of CC copper rods. This price is as applicable for the month, ONE month prior to the date of delivery.

ES = Price of CRGO Electrical Steel Lamination. This price is as applicable for the month, ONE month prior to the date of delivery.

IS = Price of HR Coil of 3.15 mm thickness. This price is as applicable for the month, ONE month prior to the date of delivery.

IM = Price of Insulating Materials. This price is as applicable for the month, ONE month prior to the date of delivery.

TO = Price of Transformer Oil. This price is as applicable for the month, ONE month prior to the date of delivery.

W = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base: 2016 = 100). This index number is as applicable for the month, THREE months prior to the date of delivery.

The above prices and indices are as published by IEEMA prevailing as on the first working day of the calendar month, i.e. one month prior to the original date of tender submission e.g. if tender is submitted in May 2024, the applicable prices should be those prevailing as on 1st April, 2024.

If the date of delivery in terms of clause given below falls in November 2024, the applicable prices of raw material should be as published by IEEMA prevailing as on 1st October, 2024.

Note:

a) All prices of raw materials are exclusive of GST amount and exclusive of any other Central, State or Local Taxes etc.
b) Due Date of Tender is the original due date of tender submission. If due date of tender (bid submission) is extended due to any reason, the base date (original due date) will remain unchanged for the calculation of PV clause.
c) The date of delivery for PV calculation shall be the date on which the equipment/material is notified as being ready for inspection/dispatch or the contracted delivery date whichever is earlier whenever supplies are effected within contractual delivery period. In case the supplies are effected after the original contractual delivery period, the date of delivery for P.V. purpose would be the one out of original or extended date on which price variation is lower.
d) Bidder shall submit detailed calculation of revised rate and amount as per the Price Variation Formula along with relevant IEEMA circulars. After approval/clearance from Buyer of revised rates, Invoicing shall be done by the supplier.

11.0 **BID CURRENCIES**

11.01 Prices shall be quoted in Indian Rupees Only.

12.0 **PERIOD OF VALIDITY OF BIDS**

12.01 Bids shall remain valid for 120 days from the due date of submission of the Bid.

12.02 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 and sent by post/courier.

13.0 **ALTERNATIVE BIDS**

13.01 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 regarding the rejection of Bids in the terms and conditions, which are not substantially responsive to the requirements of the Bidding Documents.

14.0 **FORMAT AND SIGNING OF BID**

14.01 The original Bid Form and accompanying documents, must be received by the Purchaser at the date, time and place specified pursuant to Clauses 15.0 and 16.0.

14.02 The original 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-Attorney accompanying the Bid. The Bid submitted on behalf of companies registered with the Indian Companies Act, for the time being in force, shall be signed by persons duly authorized to submit the Bid on behalf of the Company and shall be accompanied by certified true copies of the resolutions, extracts of Articles of Association, special or general Power of Attorney etc. to show clearly the title, authority and designation of persons signing the Bid on behalf of the Company. Satisfactory evidence of the authority of the person signing on behalf of the Bidder shall be furnished with the bid. A bid by a person who affixes to his signature the words 'President', 'Managing Director', 'Secretary', 'Agent' or other designations without disclosing his principal will be rejected.

The Bidder's name stated on the Proposal shall be the exact legal name of the firm.

14.03 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 initiated by the person or persons signing the Bid.

D. SUBMISSION OF BIDS

15.0 **SEALING AND MARKING OF BIDS**

15.01 Bid submission: Bids have to be mandatorily submitted only through the e-procurement portal of BSES Delhi. Bids submitted through any other form/ route shall not be admissible.

15.02 However, documents that necessarily have to be submitted in originals like EMD or Tender Fee (in the form of BG/ DD /FD as applicable) and any other documents mentioned in the tender documents have to be submitted at the BYPL office before the due date & time of submission. The Technical Documents and the EMD shall be enclosed in a sealed envelope and the said envelope shall be superscribed with — "Technical Bid & EMD". All the envelopes should bear the Name and Address of the Bidder and mark for the Original. The envelopes should be superscribed with — "Tender No. & Due date of opening".

15.03 The Bidder has the option of sending the Bids in person. Bids submitted by Email/Telex/Telegram /Fax will be rejected. No request from any Bidder to the Purchaser to collect the proposals from Courier/Airlines/Cargo Agents etc. shall be entertained by the Purchaser.

16.0 **DEADLINE FOR SUBMISSION OF BIDS**

16.01 The Bid must be received by the Purchaser on or before the due date & time of submission.

16.02 The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents in accordance with Clause 6.0, 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**

17.01 Each Bidder shall submit only one Bid by itself. No Joint venture is acceptable. A Bidder who submits or participates in more than one Bid will cause all those Bids to be rejected.

18.0 **LATE BIDS**

18.01 No Bid will be received by the Purchaser after the deadline for submission of Bids prescribed by the Purchaser, pursuant to Clause 16.0.

19.0 **MODIFICATIONS AND WITHDRAWAL OF BIDS**

19.01 The Bidder is not allowed to modify or withdraw its Bid after the Bid's due date & time of submission subject to any corrigendum/addendum/modifications in the tender documents uploaded to the website.

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**

22.01 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. Purchaser may ask for submission of original documents to verify the documents submitted in support of qualification criteria.

22.02 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.

22.03 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.

22.04 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**

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

23.02 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 will be subjected to a responsiveness check. The Technical & qualifying Proposals and the Conditional ties of the Bidders will 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.

23.03 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) Delivery Schedule

(b) Conformance to Qualifying Criteria

(c) 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 the Bidding Documents shall be evaluated. **The Purchaser will make its own assessment of the cost of any deviation to ensure a fair comparison of Bids.**

23.04 Any price adjustments that result from the above procedures shall be added for 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**

24.01 If any Bidder wishes to contact the Purchaser on any matter related to the Bid, from the time of Bid opening to the time of contract award, the same shall be done in writing only.

24.02 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**

Submission of bids shall not automatically construe qualification for evaluation. The Purchaser reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at any time prior to the award of the 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 the order to other bidders in the tender, provided it is required for the timely execution of the project & provided he agrees to come to the lowest rate. Purchaser reserves the right to distribute the entire tender quantity at its own discretion without citing any reasons thereof.

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 the issue of the letter of intent /Notification of Award by Purchaser.

29.0 **PERFORMANCE BANK GUARANTEE (PBG)**

To be submitted within twenty-eight (28) days from the date of issuance of the Letter of Intent/Award/RC. Bidder shall initially submit the performance bank guarantee (PBG) equivalent to 1% of RC Value (including GST) valid till RC validity period plus three months claim period. Upon receipt of the PBG by BYPL against RC, the EMD shall be released. Thereafter bidder shall submit PBG on Purchase Order (PO) basis equivalent to 10% of the PO value (including GST) valid for a period of 30 months from the date of last receipts at site/stores plus 3 months claim period.

30.0 **CORRUPT OR FRAUDULENT PRACTICES**

30.01 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 this provision, the terms set forth below as follows:

(i) "Corrupt practice" means behaviour 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 contract execution; and

(ii) "Fraudulent practice" means a misrepresentation of facts to influence a procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Bidders (before 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 for award 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, 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.

30.02 Furthermore, Bidders shall be aware of the provision stated in the Terms and Conditions of the Contract.

31.0 STATUTORY GUIDELINES & REGULATIONS

The bidder shall make himself fully aware & familiarize himself with all applicable laws/guidelines/regulations.

32.0 SAFETY

Safety related requirements as mentioned in our safety Manual put on the Company's website which can be accessed at http://www.bsesdelhi.com. All bidders shall strictly abide by the guidelines provided in the safety manual at all relevant stages during the contract period.

33.0 PRIORITY OF CONTRACT DOCUMENTS

The several documents forming the Agreement are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies, the same shall be explained and adjusted by the company, who shall, accordingly, issue suitable instructions thereon to the Contractor. In such event, unless otherwise provided in the agreement or explained by way of instructions by the company, as mentioned above, the priority of the documents forming the Agreement shall be as follows:

i) Contract Agreement/Purchase Order.
(a)Special Conditions of Contract
(b)General Conditions of Contract
(ii)The Letter of Acceptance/ Intent
(iii)Agreed Minutes of the Tender Negotiation Meetings
(iv) Agreed Minutes of the Tender Technical Meetings
(v) The Priced Bill of Quantities
(vi)The Technical Specifications / Scope of work
(vii)The Tender document, including all Appendices and/or Addenda, Corrigendum the latest taking precedence.

In the event of any conflict between the above-mentioned documents, the more stringent requirement or conditions which shall be favourable to the company shall govern and the decision of the company/BYPL shall be final and binding upon the parties.

APPENDIX I ANNEXURE – 1.01

BID INDEX FOR PART-A (TECHNICAL BID)

(To be filled & submitted on Bidder Letter Head, Bidders document submission should have following main categories as outlined below and should have page numbers printed at the bottom of each page with this page as page number 1. The page number should be in "Page X of Y" format. Separator with document description shall be provided before each document)

NIT & RFX No.:

Bidder's Name:

Bidder's Bid Reference No. & Date:

S. No.	Particulars	Bid Pdf Page No.	
		From	To
A.1	**Bid Details**		
1.	Bid Index for Part-A (Technical Bid) as per APPENDIX I ANNEXURE - 1.01	1	
2.	Cover Letter, If any		
3.	Bid Form (Unpriced) Duly Signed as per APPENDIX I ANNEXURE - 1.02		
4.	Tender Fee Details as per APPENDIX I ANNEXURE - 1.03		
5.	EMD Details as per APPENDIX I ANNEXURE - 1.04 & 1.05		
6.	Power-of-Attorney / Authorization Letter		
A.2	**Technical Bid**		
7.	Communication Details of the Bidder as per APPENDIX I ANNEXURE - 1.06		
8.	Manufacturer Authorization Form (as applicable) as per APPENDIX I ANNEXURE - 1.07		
9.	Technical Qualifying Criteria Compliance Index & Documents as per APPENDIX I ANNEXURE - 1.08, 1.09, 1.10		
10.	Schedule of Technical Deviations (along with soft editable Excel copy) as per APPENDIX I ANNEXURE - 1.11		
11.	Guaranteed Technical particulars (GTP) as per specification		
12.	All Drawings as per specification		
13.	Type Test Reports (Sequence of Tests shall be strictly in accordance with relevant IS/IEC) as per APPENDIX I ANNEXURE - 1.12		
14.	Sample Submission Details (If applicable as per Specification) as per APPENDIX I ANNEXURE - 1.13		
15.	Product Catalogue (If applicable)		
16.	Manufacturer's quality assurance plan (as applicable)		
17.	Other drawings/ documents mentioned in technical specification		
18.	Testing Facilities		
A.3	**Commercial Bid**		
19.	Company Profile/Organogram/Organization Chart & Manpower Details		
20.	Commercial Qualifying Criteria Compliance Index & Documents as per APPENDIX I ANNEXURE - 1.14		
21.	Undertakings as per APPENDIX I ANNEXURE - 1.15		
22.	Schedule of Commercial Deviations (along with soft editable Excel copy) as per APPENDIX I ANNEXURE - 1.16		
21.	Acceptance form for participation in reverse auction event as per APPENDIX I ANNEXURE - 1.17		
24.	Acceptance of Commercial Terms and Conditions as per APPENDIX II ANNEXURE - 2.05		
25.	Un Price Bid Duly Signed (Volume - II Price Bid Format)		
26.	NIT Document complete Signed & Stamped		

ANNEXURE – 1.02

BID FORM

To

Head of Department
Contracts & Material Deptt.
BSES Yamuna Power Ltd
Shaktikiran Building, Karkardooma,
Delhi 110032

Sir,

1. We understand that BYPL is desirous of procuring…….
   for it's licensed distribution network area in Delhi.
2. Having examined the Bidding Documents for the above-named works, we the undersigned, offer to deliver the goods in full conformity with the Terms and Conditions and technical specifications for the sum indicated in the Price Bid or such other sums as may be determined in accordance with the terms and conditions of the contract. The amounts are in accordance with the Price Schedules attached herewith and are made part of this bid.
3. If our Bid is accepted, we undertake to deliver the entire goods as per the delivery schedule mentioned in Section IV from the date of award of the purchase order/letter of intent.
4. If our Bid is accepted, we will furnish a performance bank guarantee for due performance of the Contract in accordance with the Terms and Conditions.
5. We agree to abide by this Bid for 120 days from the due date of bid submission and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
6. We declare that we have studied the provision of Indian Laws for the supply/services of equipments/materials and the prices have been quoted accordingly.
7. Unless and until Letter of Intent is issued, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
8. We understand that you are not bound to accept the lowest or any bid you may receive.
9. There is provision for Resolution of Disputes under this Contract, by the Laws and Jurisdiction of Contract.

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

Signature..... In the capacity of ……

.....duly authorized to sign for and on behalf of

(IN BLOCK CAPITALS).....

ANNEXURE – 1.03

TENDER FEE DETAILS

a. Amount (Rs.) : **1,180/- (One Thousand One Hundred Eighty Only)**

b. Mode of Payment : DD or online transfer through IMPS/NEFT/RTGS (select any one)

c. DD /UTR No. (As applicable) : .....

d. Dated : .....

e. Bidders Bank Account No. : .....

f. Name of the Bank : .....

g. Address of the Bank : .....

h. IFSC Code of the Bank : .....

ANNEXURE – 1.04

EMD DETAILS

a. EMD Amount (Rs.) : ……

b. Mode of Payment : BG/FD/online transfer through IMPS/NEFT/RTGS (select any one)

c. BG/FD/UTR No. (As applicable): ……

d. Dated : ……

e. BG valid up to : ……

f. BG Claim period up to : ……

g. Bidders Bank Account No. : ……

h. Name of the Bank : ……

i. Address of the Bank : ……

j. IFSC Code of the Bank : ……

ANNEXURE – 1.05

(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*] (hereinafter called the "Bank"), are bound unto BSES Yamuna Power Ltd., with its Corporate Office at Shaktikiran Building, Karkardooma, Delhi - 110032, (hereinafter called - the "Purchaser") in the sum of Rs…… (Rupees…….. only) 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:

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

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

(a) fails or refuses to execute the Contract Form, if required; or

(b) fails or refuses to furnish performance security, In accordance with the Instructions to Bidders/Terms and 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 condition(s), specifying the occurred condition or condition(s).

This guarantee will remain in force up to and including One Hundred Twenty (120) days after the due date of submission bid, and any demand in respect thereof should reach the Bank not later than the above date.

(Stamp & signature of the bank)

Signature of the witness

ANNEXURE – 1.06

COMMUNICATION DETAILS OF THE BIDDER

S. No.	Designation	Name	Mobile No.	E-mail id
1	CEO / MD			
2	Sales / Marketing Head			
3	Sales Representative / Key Account Manager (KAM)			
4	Technical Head			
5	Manufacturer Plant / Operations Head			
6	Post Order Execution In Charge			
7	Authorized contact person (Primary responsibility for the Bid)			
8	Authorized contact person (Secondary responsibility for the Bid)			

ANNEXURE – 1.07

MANUFACTURER AUTHORIZATION FORM
(To be submitted on OEM's Letter Head)

Date: …….
Tender No.: ……..

To

Head of Department
Contracts & Material Deptt.
BSES Yamuna Power Ltd
Shaktikiran Building, Karkardooma,
Delhi 110032

Sir,

WHEREAS M/s. *[name of OEM]*, who are official manufacturers of …… having factories at *[address of OEM]* do hereby authorize M/s *[name of bidder]* to submit a Bid in relation to the Invitation for Bids indicated above, the purpose of which is to provide the following Goods, manufactured by us ……and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty by the Conditions of the Contract or as mentioned elsewhere in the Tender Document, concerning the Goods offered by the above firm in reply to this Invitation for Bids.

We hereby confirm that in case, the channel partner fails to provide the necessary services as per the Tender Document referred above, M/s *[name of OEM]* shall provide standard warranty on the materials supplied against the contract. The warranty period and inclusion/exclusion of parts in the warranty shall remain the same as defined in the contract issued to our channel partner against this tender.

Yours Sincerely,
For …….

Authorized Signatory

ANNEXURE – 1.08

QUALIFYING CRITERIA COMPLIANCE INDEX - TECHNICAL CRITERIA				
S No	**Qualifying Criteria Description as per section 1 clause 2.00**	**Documentary Proof Description**	**Documentary Proof Enclosed on Bid Page No.**	
			From	**To**
1				
2				
3				
4				
5				

ANNEXURE – 1.09

LIST OF PURCHASE ORDERS EXECUTED & DELIVERY DETAILS IN SUPPORT OF QUALIFYING REQUIREMENTS													
S No	Item Details				PO & Execution Details					Customer Name	End User (shall be Utility/ SEB's/ PSU's) name and details	PO copy, MDCC /Delivery completion certificates/ Invoice Copies enclosed on Bid Page no.	
	Item	Model	Voltage Rating (kV)	Current Rating (A)	PO No	PO Date	PO Qty	Executed Qty	Execution Year			From	To
Total							∑	∑					

Note – Only items relevant as per qualifying requirements should be included in the list.

ANNEXURE – 1.10

LIST OF PERFORMANCE CERTIFICATES IN SUPPORT OF QUALIFYING REQUIREMENT														
S No	Item Details				PO No	Supplied/ Commissioning		Performance Certificate Issue Date	Performance Certificate Issued By End User (Utility/SEB/Govt Org.)	Contact Details of Issuing Person			Enclosed on Bid Page No.	
	Item	Model	Voltage Rating (kV)	Current Rating (A)		Qty.	Date			Name	Email	Mobile	From	To
Total						∑								

Note –

1. **Only items relevant as per qualifying requirement should be included in the list.**
2. **Only Performance certificates issued by End User (utilities/ SEB's/PSU's only) will be accepted as per qualifying requirement.**

ANNEXURE – 1.11

SCHEDULE OF DEVIATIONS - TECHNICAL

Vendor shall refrain from taking any deviations on this TENDER. Still, in case of any deviations, all such deviations from this tender shall be set out by the Bidder, Clause by Clause in this schedule and submit the same as a part of the Technical Bid.

Unless **specifically** mentioned in this schedule, the tender shall be deemed to confirm the BYPL's specifications:

Technical Deviations:-

S. No.	NIT Pdf Page No.	NIT Clause No.	NIT Clause Descriptions	Details of Clarification/deviation with justifications

Note – Please enclose detailed GTP and drawings as per specification after the technical deviation sheet

Seal of the Bidder:

Signature:

Name:

ANNEXURE – 1.12

TYPE TEST REPORTS (SEQUENCE OF TESTS SHALL BE STRICTLY IN ACCORDANCE WITH RELEVANT IS/IEC)								
S No	Test Description	Reference Standard	Reference Standard Clause No.	Name of Testing Lab	Test Report Reference Number	Date of Issue of Report	Report Enclosed on Bid Page No	
							From	To
1								
2								
3								
4								
5								
6								
7								

ANNEXURE – 1.13

SAMPLE SUBMISSION DETAILS (IF APPLICABLE AS PER SPECIFICATION)		
S No	**Description**	**Bidder's Response**
1	Samples submitted with the bid	Yes/No
1	Sample Type -1	
1.1	Model Number	
1.2	Number of samples	
2	Sample Type -2	
2.1	Model Number	
2.2	Number of samples	

ANNEXURE – 1.14

QUALIFYING CRITERIA COMPLIANCE INDEX - COMMERCIAL CRITERIA				
S No	**Qualifying Criteria Description as per section 1 clause 2.00**	**Documentary Proof Description**	**Documentary Proof Enclosed on Bid Page No.**	
			From	**To**
1				
2				
3				

ANNEXURE – 1.15

UNDERTAKINGS
(To be submitted on Bidders Letter Head)

Date: …….

Tender No.: ……..

To

Head of Department
Contracts & Material Deptt.
BSES Yamuna Power Ltd
Shaktikiran Building, Karkardooma,
Delhi 110032

Sir,

We M/s *[name of bidder]*, …… do hereby undertake that

- *[name of bidder]* has "No Litigation" pending with the BYPL or its Group/Associates Companies as on the date of bid opening.
- *[name of bidder] has* not been blacklisted/debarred by any central/state government institution/Electricity utilities as on the date of bid opening.
- *[name of bidder]* shall comply with all the statuary compliances as per the laws/rules etc. before the start of the supply/work.

Yours Sincerely,
For ……..

Authorized Signatory

ANNEXURE – 1.16

SCHEDULE OF DEVIATIONS - COMMERCIAL

Vendor shall refrain from taking any deviations on this TENDER. Still, in case of any deviations, all such deviations from this tender shall be set out by the Bidder, Clause by Clause in this schedule and submit the same as a part of the Technical Bid.

Unless **specifically** mentioned in this schedule, the tender shall be deemed to confirm the BYPL's specifications:

Commercial Deviations:-

S. No.	NIT Pdf Page No.	NIT Clause No.	NIT Clause Descriptions	Details of Clarification/deviation with justifications

By signing this document we hereby withdraw all the deviations whatsoever taken anywhere in this bid document and comply with all the terms and conditions, technical specifications, scope of work etc. as mentioned in the standard document except those mentioned above.

Seal of the Bidder:

Signature:

Name:

ANNEXURE – 1.17

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed and stamped by the bidder)

BSES Yamuna Power Ltd (hereinafter referred to as **"BYPL"**) intends to use the reverse auction through the SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as techno commercial qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

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

1. BYPL shall provide the user ID and password to the authorized representative of the bidder. (Authorization letter in lieu of the same be submitted along with the signed and stamped acceptance form)
2. BYPL will make every effort to make the bid process transparent. However, the award decision by BYPL would be final and binding on the bidder.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of BYPL, bid process, bid technology, bid documentation, bid details, etc.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitches, internet response issues, software or hardware hangs; power failure or any other reason shall not be the responsibility of BYPL.
6. In case of intranet medium, BYPL shall provide the infrastructure to bidders, further, BYPL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders from submitting the bids to ensure fair & transparent competitive bidding. In case an auction event is restarted, the best bid already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due to any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder's final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be outright rejected by BYPL.
8. The bidder shall be prepared with competitive price quotes on the day of the reverse auction event.
9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR Landed Cost basis at the BYPL site.
10. The prices submitted by a bidder during the auction event shall be binding on the bidder.
11. No requests for time extension of the auction event shall be considered by BYPL.
12. The original price bids of the bidders shall be reduced on pro-rata basis against each line item based on the final all-inclusive prices offered during the conclusion of the auction event to arrive at the contract amount.

Signature & seal of the Bidder

ANNEXURE – 1.18

VENDOR CODE OF CONDUCT

Purchaser is committed to conducting its business in an ethical, legal and socially responsible manner. To encourage compliance with all legal requirements and ethical business practices, Purchaser has established this Vendor Code of Conduct (the "Code") for Purchaser's Vendors. For the purposes of this document, "Vendor" means any company, corporation or other entity that sells, or seeks to sell goods or services, to Purchaser, including the Vendor's employees, agents and other representatives.

Fundamental to adopting the Code is the understanding that a business, in all of its activities, must operate in full compliance with the laws, rules and regulations of the countries in which it operates. This Code encourages Vendors to go beyond legal compliance, drawing upon internationally recognized standards, in order to advance social and environmental responsibility.

I. Labour and Human Rights

Vendors must uphold the human rights of workers, and treat them with dignity and respect as understood by the international community.

. Fair Treatment - Vendors must be committed to a workplace free of harassment. Vendors shall not threaten workers with or subject them to harsh or inhumane treatment, including sexual harassment, sexual abuse, corporal punishment, mental coercion, physical coercion, verbal abuse or unreasonable restrictions on entering or exiting company provided facilities.

. Antidiscrimination - Vendors shall not discriminate against any worker based on race, colour, age, gender, sexual orientation, ethnicity, disability, religion, political affiliation, union membership, national origin, or marital status in hiring and employment practices such as applications for employment, promotions, rewards, access to training, job assignments, wages, benefits, discipline, and termination. Vendors shall not require a pregnancy test or discriminate against pregnant workers except where required by applicable laws or regulations or prudent for workplace safety. In addition, Vendors shall not require workers or potential workers to undergo medical tests that could be used in a discriminatory way except where required by applicable law or regulation or prudent for workplace safety.

. Freely Chosen Employment - Forced, bonded or indentured labour or involuntary prison labour is not to be used. All work will be voluntary, and workers should be free to leave upon reasonable notice. Workers shall not be required to hand over government-issued identification, passports or work permits as a condition of employment.

. Prevention of Under Age Labor - Child labour is strictly prohibited. Vendors shall not employ children. The minimum /age for employment or work shall be 15 years of age, the minimum age for employment in that country, or the age for completing compulsory education in that country, whichever is higher. This Code does not prohibit participation in legitimate workplace apprenticeship programs that are consistent with Article 6 of ILO Minimum Age Convention No. 138 or light work consistent with Article 7 of ILO Minimum Age Convention No. 138.

. Juvenile Labor - Vendors may employ juveniles who are older than the applicable legal minimum age for employment but are younger than 18 years of age, provided they do not perform work likely to jeopardize their health, safety, or morals, consistent with ILO Minimum Age Convention No. 138.

. Minimum Wages - Compensation paid to workers shall comply with all applicable wage laws, including those relating to minimum wages, overtime hours and legally mandated benefits. Any Disciplinary wage deductions are to conform to local law. The basis on which workers are being paid is to be clearly conveyed to them in a timely manner.

. Working Hours - Studies of good manufacturing practices clearly link worker strain to reduced productivity, increased turnover and increased injury and illness. Work weeks are not to exceed maximum set by local law. Further, a work week should not be more than 60 hours per week, including overtime,

except in emergency or unusual situations. Workers should be allowed at least one day off per seven-day week.

. Freedom of Association - Open communication and direct engagement between workers and management are the most effective ways to resolve workplace and compensation issues. Vendors are to respect the rights of workers to associate freely and to communicate openly with management regarding working conditions without fear of reprisal, intimidation or harassment. Workers' rights to join labour unions seek representation and or join worker's councils in accordance with local laws should be acknowledged.

II. Health and Safety

Vendors must recognize that in addition to minimizing the incidence of work-related injury and illness, a safe and healthy work environment enhances the quality of products and services, consistency of production and worker retention and morale. Vendors must also recognize that ongoing worker input and education are essential to identifying and solving health and safety issues in the workplace.

The health and safety standards are:

. Occupational Injury and Illness - Procedures and systems are to be in place to prevent, manage, track and report occupational injury and illness, including provisions to a) encourage worker reporting; b) classify and record injury and illness cases; c) provide necessary medical treatment; d) investigate cases and implement corrective actions to eliminate their causes; and e) facilitate return of workers to work.

. Emergency Preparedness - Emergency situations and events are to be identified and assessed, and their impact minimized by implementing emergency plans and response procedures, including emergency reporting, employee notification and evacuation procedures, worker training and drills, appropriate fire detection and suppression equipment, adequate exit facilities and recovery plans.

. Occupational Safety - Worker exposure to potential safety hazards (e.g., electrical and other energy sources, fire, vehicles, and fall hazards) is to be controlled through proper design engineering and administrative controls, preventative maintenance and safe work procedures (including lockout/ragout), and ongoing safety training. Where hazards cannot be adequately controlled by these means, workers are to be provided with appropriate, well-maintained, personal protective equipment. Workers shall not be disciplined for raising safety concerns.

. Machine Safeguarding - Production and other machinery are to be evaluated for safety hazards. Physical guards, interlocks and barriers are to be provided and properly maintained where machinery presents an injury hazard to workers.

. Industrial Hygiene - Worker exposure to chemical, biological and physical agents is to be identified, evaluated, and controlled. Engineering or administrative controls must be used to control overexposures. When hazards cannot be adequately controlled by such means, worker health is to be protected by appropriate personal protective equipment programs.

. Sanitation, Food, and Housing - Workers are to be provided with ready access to clean toilet, facilities potable water and sanitary food preparation, storage, and eating facilities. Worker dormitories provided by the Participant or a labour agent are to be maintained clean and safe, and provided by the Participant or a labour egress, hot water for bathing and showering, and adequate heat and ventilation and reasonable personal space along with reasonable entry and exit privileges.

. Physically Demanding Work - Worker exposure to the hazards of physically demanding tasks, including manual material handling and heavy or repetitive lifting, prolonged standing and highly repetitive or forceful assembly tasks is to be identified, evaluated and controlled.

III. Environmental

Vendors should recognize that environmental responsibility is integral to producing world class products In manufacturing operations, adverse effects on the environment and natural resources are to be minimized while safeguarding the health and safety of the public.

The environmental standards are:

. Product Content Restrictions - Vendors are to adhere to applicable laws and regulations regarding prohibition or restriction of specific substances including labeling laws and regulations for recycling and disposal. In addition, Vendors are to adhere to all environmental requirements specified by Purchaser.
. Chemical and Hazardous Materials -Chemical and other materials posing a hazard if released to the environment are to be identified and managed to ensure their safe handling, movement storage, recycling or reuse and disposal.
. Air Emissions - Air emissions of volatile organic chemicals, aerosols, corrosives, particulates, ozone depleting chemicals and combustion by-products generated from operations are to be characterized, monitored, controlled and treated as required prior to discharge.
. Pollution Prevention and Resource Reduction -Waste of all types, including water and energy, are to be reduced or eliminated at the source or by practices such as modifying production, maintenance and facility processes, materials substitution, conservation, recycling and re-using materials.
. Wastewater and Solid Waste - Wastewater and solid waste generated from operations industrial processes and sanitation facilities are to be monitored, controlled and treated as required prior to discharge or disposal.
. Environmental Permits and Reporting - All required environmental permits (e.g. discharge monitoring) and registrations are to be obtained, maintained and kept current and their operational and reporting requirements are to be followed.

IV. Ethics

Vendors must be committed to the highest standards of ethical conduct when dealing with workers, Vendors, and customers.
. Corruption, Extortion, or Embezzlement - Corruption, extortion, and embezzlement, in any form, are strictly prohibited. Vendors shall not engage in corruption, extortion or embezzlement in any form and violations of this prohibition may result in immediate termination as a Vendor and in legal action.
. Disclosure of Information - Vendors must disclose information regarding their business activities, structure financial situation, and performance in accordance with applicable laws and regulations and prevailing industry practices.
. No Improper Advantage - Vendors shall not offer or accept bribes or other means of obtaining undue or improper advantage.
. Fair Business, Advertising, and Competition - Vendors must uphold fair business standards in advertising, sales, and competition.
. Business Integrity - The highest standards of integrity are to be expected in all business interactions. Participants shall prohibit any and all forms of corruption, extortion and embezzlement. Monitoring and enforcement procedures shall be implemented to ensure conformance.
. Community Engagement - Vendors are encouraged to engage the community to help foster social and economic development and to contribute to the sustainability of the communities in which they operate.
. Protection of Intellectual Property - Vendors must respect intellectual property rights; safeguard customer information; and transfer of technology and know-how must be done in a manner that protects intellectual property rights.

V. Management System

Vendors shall adopt or establish a management system whose scope is related to the content of this Code. The management system shall be designed to ensure (a) compliance with applicable laws, regulations and customer requirements related to the Vendors' operations and products; (b) conformance with this Code; and (c) identification and mitigation of operational risks related to this Code. It should also facilitate continual improvement.

The management system should contain the following elements:

. Company Commitment - Corporate social and environmental responsibility statements affirming Vendor's commitment to compliance and continual improvement.

. Management Accountability and Responsibility - Clearly identified company representative[s]responsible for ensuring implementation and periodic review of the status of the management systems.

. Legal and Customer Requirements - Identification, monitoring and understanding of applicable laws, regulations and customer requirements.

. Risk Assessment and Risk Management - Process to identify the environmental, health and safety and labour practice risks associated with Vendor's operations. Determination of the relative significance for each risk and implementation of appropriate procedural and physical controls to ensure regulatory compliance to control the identified risks.

. Performance Objectives with Implementation Plan and Measures - Areas to be included in a risk assessment for health and safety are warehouse and storage facilities, plant/facilities support equipment, laboratories and test areas, sanitation facilities (bathrooms), kitchen/cafeteria and worker housing /dormitories. Written standards, performance objectives, and targets an implementation plans including a periodic assessment of Vendor's performance against those objectives.

. Training - Programs for training managers and workers to implement Vendor's policies, procedures and improvement objectives.

. Communication - Process for communicating clear and accurate information about Vendor's performance, practices and expectations to workers, Vendors and customers.

. Worker Feedback and Participation - Ongoing processes to assess employees' understanding of and obtain feedback on practices and conditions covered by this Code and to foster continuous improvement.

. Audits and Assessments - Periodic self-evaluations to ensure conformity to legal and regulatory requirements, the content of the Code and customer contractual requirements related to social and environmental responsibility.

. Corrective Action Process - Process for timely correction of deficiencies identified by internal or external assessments, inspections, investigations and reviews.

. Documentation and Records - Creation of documents and records to ensure regulatory compliance and conformity to company requirements along with appropriate confidentiality to protect privacy.

The Code is modelled on and contains language from Recognized standards such as International Labour Organization Standards (ILO), Universal Declaration of Human Rights (UDHR), United Nations Convention against Corruption, and the Ethical Trading Initiative (ETI) were used as references in preparing this Code and may be useful sources of additional information

GENERAL CONDITIONS OF CONTRACT
(GCC-SUPPLY)

GENERAL CONDITIONS OF CONTRACT (GCC)-SUPPLY

The General Condition of Contract shall form a part of specifications, contract document.

1.0 General Instructions

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

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

1.03 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.

1.04 The Purchaser reserves the right to request 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.

1.05 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

2.01 "Purchaser" shall mean BSES Yamuna Power Limited, on whose behalf this bid enquiry is issued by its authorized representative/officers.

2.02 "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.

2.03 "Supply" shall mean the Scope of Contract as described.

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

2.05 "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.

2.06 "Month" shall mean the calendar month and "Day" shall mean the calendar day.

2.07 "Codes and Standards" shall mean all the applicable codes and standards as indicated in the Specification.

2.08 "Offer Sheet" shall mean Bidder's firm offer submitted to BYPL in accordance with the specification.

2.09 "Contract" shall mean the "Letter of Acceptance/Purchase Order" issued by the Purchaser.

2.10 "Contract Price" shall mean the price referred to in the "Letter of Acceptance/Purchase Order".

2.11 "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 the extended contract period for reason beyond the control of the Supplier and/or Purchaser due to force majeure.

2.12 "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

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

4.0 Scope of Supply -General

4.01 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.

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

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

4.04 All relevant drawings, data and instruction manuals.

5.0 Quality Assurance and Inspection

5.01 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 of 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.

5.02 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 is to proceed with the work past a hold point only after clearance by purchaser or a witness waiver letter from BYPL.

5.03 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.

5.04 On completion of manufacturing the items can only be dispatched after receipt of dispatch Instructions issued by the Purchaser.

5.05 All in-house testing and inspection shall be done without any extra cost. The in-house inspection shall be carried out in presence of BSES/BSES authorized third-party inspection agency. Cost of Futile/abortive visit(s) shall be debited from the invoices.

5.06 Purchaser reserves the right to send any material being supplied to any recognized laboratory for testing, wherever necessary and the cost of testing shall be borne by the Bidder. In case the material is found not in order with the technical requirement/specification, the charges along with any other penalty that may be levied are to be borne by the bidder.

6.0 Inspection & Test Charges

6.01 GOODS shall be inspected by BUYER and/or third-party inspection agency nominated by BUYER. Inspection shall carry out stage-wise/final inspection as per agreed QA /QC procedure.
In addition, inspection of GOODS shall be carried out at our Site/stores. SELLER shall, however, repair/replace the damaged/rejected GOODS to the satisfaction of BUYER at no extra cost.

6.02 Inspection charges are included in total order value, however, BUYER will bear third-party inspection charges. In case of a futile/abortive visit of BUYER's inspector at SELLER'S works, the cost towards the same shall be debited from the SELLER's invoices.

6.03 GOODS covered by this PURCHASE ORDER shall not be dispatched in whole or in part until SELLER has received a written Release for Shipment Notice from BUYER or their designated representative.

6.04 Inspection call shall be raised a minimum of 7 (seven) days in advance from the delivery schedule mentioned in the PO and duly filled Format issued by BYPL

7.0 Handling and Storage

7.01 Material Safety Data Sheet (MSDS), detail handling & storage instruction sheet/manual, wherever applicable, to be furnished before the commencement of supply and one copy is to be submitted in store/site with First Lot.

8.0 Packing, Packing List & Marking

8.01 **Packing:** Supplier shall pack or shall cause to be packed all Commodities in crates/boxes/drums/containers/cartons and otherwise in such a manner as shall be reasonably suitable for shipment by road or rail to BYPL, Delhi/New Delhi stores/site without undue risk of damage in transit. All the packaging materials as prescribed shall be supplied preferably with bio-degradable packing- materials.

8.02 **Packing List:** The contents of each package shall be itemized on a detailed list showing the exact weight, extreme outside dimensions (length, width & weight) of each container/box/drum/carton, Item SAP Code, PO No & date. One copy of the packing list shall be enclosed in each package delivered.

9.0 Prices/Rates/Taxes

9.01 **Price basis for supply of materials**

a) Bidder to quote their prices on Landed Cost Basis and separate price for each item for supply to BYPL Delhi/New Delhi stores inclusive of packing, forwarding, loading at manufacturer's premises, payment of GST, Freight, and any other local charges. **Octroi is presently not applicable in Delhi and however if applicable shall be reimbursed at actuals.**

b) The above supply prices shall also include unloading at BYPL Delhi/New Delhi stores/sites.

c) Transit insurance will be arranged by Bidder

10.0 Taxes & Duties

10.01 Prices for Goods are on Ex- Works basis. For the Goods covered under the GST laws, all taxes that are applicable under CGST, SGST, UGST, IGST and GST Compensation Cess shall be payable extra.

10.02 For the Goods not covered in the GST laws, the applicable ED, VAT / CST shall be payable extra at applicable rates.

10.03 GSTIN of BSES YAMUNA POWER LTD - 07AABCC8569N1Z0
CST No of BSES YAMUNA POWER LTD -07740254593
TIN NO of BSES YAMUNA POWER LTD - 07740254593
PAN NO of BSES YAMUNA POWER LTD - AABCC8569N

10.04 At the end of each month, the SELLER must submit their detail of invoices and amount thereof to the concerned officer in charge, within 07 days after the close of the respective month to which supply relates. Non-submission of the said request would be treated as good as the SELLER has no requirement for reconciliation.

11.0 Invoicing Instructions

11.01 Invoices in triplicate [1) Original for recipient, 2) Duplicate for Transporter, 3) Triplicate for supplier] shall be made out and delivered to the following address: BSES YAMUNA POWER LIMITED, SHAKTI KIRAN BUILDING, KARKARDOOMA, DELHI-110032.
MDCC will be released separately for Capex & Opex. Invoice will be submitted by the supplier as per the MDCC.

11.02 Vendor shall obtain GST registration in the State from where the supply will be carried out. Vendors supplying Goods to the Purchaser shall have a valid GST registration number and shall submit GST Tax Invoice and other documents as per SGST Act, CGST Act, IGST Act, UTGST Act, GST Compensation Cess Act and Rules made there under. Failure to submit GST Tax Invoice shall be liable for withholding SGST, CGST, IGST, UTGST, GST Compensation Cess amount charged by the vendor while releasing the payment.

11.03 Invoice will be in the name of BSES YAMUNA POWER LIMITED & address of the store/site mentioned in the MDCC. Invoice should contain all information as required under GST Invoice, Debit Note and Credit Rules. The government has notified rules of invoicing under GST along with a template of invoice(GST INV-01) covering the elements such as supplier's details, GSTIN No, HSN Codes, item details, GST tax rates, etc that need to be presented by the supplier.

11.04 Vendor to carefully examine and charge relevant CGST / SGST, UGST, IGST and GST compensation cess as applicable to the transactions.

11.05 Timely provision of invoices / Debit Notes / Credit Notes:

11.05.1 Vendor to timely provide invoice / Debit note / Credit note to enable Purchaser to claim tax benefit on or before stipulated time period. All necessary adjustment entries (Credit Notes, Purchase Returns, Debit Notes) shall be made within the timelines prescribed under the GST Laws.

11.05.2 In case of receipt of advance, the Vendor undertakes to raise the tax invoice. Purchaser, upon payment of advance, shall issue payment voucher as per applicable GST laws and rules. Four copies of the invoices need to be provided by suppliers and wherever the law requires, an Electronic Reference Number for each invoice.
Documents and devices to be carried by a person in charge of a conveyance under.

11.05.3 Any Vendors / Contractors / Service providers 'shall' mention the following minimum requirements in 'invoice' while furnishing Invoices with us:
1. Invoice / Credit Note Number and Date.
2. Address of supplier/service provider and GSTN.
3. Customer Name and Address as per GST Registration Certificate and GST registration Number.
4. 'Shipped to' and 'Billed to' addresses.
5. Place of Supply.
6. Description of Goods/Service along with unit of measurements.
7. HSN / SAC Code.
8. Taxable value (Gross & deduct Discount separately if allowed)
9. Rate and amount of Tax separately for CGST, SGST and IGST as applicable.
10. Signature of Supplier. (For e-invoices physical signature is not required)
11. Whether Reverse Charge is applicable or not.

11.06 E Way Bills/transit documents for movement of Goods:
Wherever applicable, the Vendor shall be responsible for issuing required transit documents / E Way Bills for the movement of Goods and the logistic partner/transporter shall not be liable for any loss arising due to confiscation of goods by government agencies on account of lack of proper documents or any misdeclaration. The Supplier is responsible for complying with rules applicable to the E-way bill. Any violation in provision of E-way Bill will attract penalties and seizure of Transit Material. Any Penalty and Pre-Deposit due to violation of rules/provisions shall be paid and borne by the Supplier. Also, the Supplier is responsible for releasing goods from the Authority whether CGST/SGST. Delay in supply from the contractual date due to the seizure of goods shall also attract liquidated damages.

12.0 Terms of Payment and Billing

12.01 For Supply of equipment/item:
100% payment shall be made within 45 days from the date of receipt & acceptance of material at store/site against submission of the following documents against dispatch of each consignment at our Vendor Support Cell (VSC):
a) Signed copy of accepted Rate Contract (as applicable) & Purchase Order (for first payment)
b) PBG equivalent to 1% of RC Value (including GST) valid till RC validity period, as applicable
c) LR / RR / BL as applicable
d) Challan as applicable
e) Two (02) copies of the Supplier's detailed Recipient Invoice showing Commodity description, quantity, unit price, total price and basis of delivery, and is 100% of the value of the consignment claimed.
f) Two (02) copies of Supplier's transporter invoice duly receipted by BYPL Store & Original certificate issued by BYPL confirming receipt of the subject material at Store/Site and acceptance of the same as per the provisions of the contract.

g) Two (02) copies Packing List / Detailed Packing List
h) Approved Test certificates / Quality certificates, if applicable
i) Certificate of Origin, if applicable
j) Material Dispatch Clearance Certificate (MDCC)
k) Warranty / Guarantee Certificate, if applicable
l) Checklist for bill submission.

12.02 Purchaser has the right to recover tax loss, interest and penalty suffered due to any non-compliance of tax laws by the Vendor. In the event, Purchaser is not able to avail of any tax credit due to any shortcoming on the part of the Vendor (which otherwise should have been available to Purchaser in the normal course), then the Vendor at his own cost and effort will get the short coming rectified. If for any reason the same is not possible, then the Vendor will make 'good' the loss suffered by Purchaser due to the tax credit it lost. In such event, any amount paid to the Vendors shall be first attributable to the tax (GST) charged in the invoice and the balance shall be considered towards the 'value' of supply of goods/ services.

12.03 Purchaser shall deduct "Tax Deducted at Source" wherever applicable and at the rate prescribed under the GST Laws or any other Indian law and remit the same to the Government. Necessary TDS certificates as per law shall be issued by the purchase to the vendor.

12.04 Any liability arising out of dispute on the tax rate, classification under HSN, calculation and payment of tax to the Government will be to the Vendor's account.

12.05 Where the supply of Goods is liable to GST under reverse charge mechanism, then the supplier should clearly mention the category under which it has been registered and also that "the liability of payment of GST is on the Recipient of Supply".

13.0 Tax Indemnity Clause

13.01 Vendor (along with its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for this agreement) agrees that it will be solely responsible for performing all compliances and making payments of all taxes (direct tax or indirect tax including but not limited to income-tax, transfer pricing, value added tax, SGST, CGST, IGST, UTGST, GST Compensation Cess custom duty, excise duty, Research and Development Cess, etc.), cesses, interest, penalties or any other tax/ duty/ amount/ charge/ liability arising either out of laws/ regulations applicable in India and overseas or because of a demand/ recovery initiated by any revenue authority under laws/ regulations applicable in India or overseas.

13.02 In case any tax liability (including but not limited to income tax, transfer pricing, value added tax, SGST, CGST, IGST, UTGST, GST Compensation Cess, custom duty, excise duty, Research and Development Cess, etc.), cesses, interest, penalties or any other tax/ duty/ amount/ charge/ liability becomes payable by Purchaser due to failure of the Vendor, or any of its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for this agreement, to comply with the relevant laws/ regulations applicable in India or overseas, Vendor undertakes to indemnify Purchaser for an amount equal to amount payable by Purchaser.

13.03 Further, Vendor undertakes to keep Purchaser indemnified at all times against and from all other actions, proceedings, claims, loss, damage, costs and expenses which may be brought against Purchaser or suffered or incurred by Purchaser and which shall have arisen either directly or indirectly out of or in connection with failure of The Vendor, or any of its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such

affiliates for this agreement, to comply with relevant obligations/ compliance under any law/ regulations applicable in India and overseas.

13.04 The parties agree to follow the following process in case any communication of demand, arising out of non-compliance by Vendor (along with its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for this agreement), is received by Purchaser:

13.04.1 On Purchaser receiving any communication from a competent authority demanding tax liability (including but not limited to income tax, transfer pricing, value added tax, SGST, CGST, IGST, UTGST, GST Compensation Cess custom duty, excise duty, Research and Development Cess, etc.), cesses, interest, penalties or any other tax/ duty/ amount/ charge/ liability, Purchaser shall, within 5 common working days from the date of receipt of such communication (save where the period to respond to the relevant authority is less than five days, in which case, as soon as reasonably possible) inform Vendor in writing of such communication.

13.04.2 Pursuant to receiving communication from Purchaser, Vendor shall suggest to accept the communication and pay the demand amount to the competent authority. In such an event, Vendor shall reimburse such amount paid to Purchaser within 5 working days from the date of payment by Purchaser to the competent authority.

13.04.3 If Vendor advises in writing and Purchaser agrees to dispute the demand, then Purchaser shall dispute the matter with competent authority as per due process prescribed under the regulations and Purchaser shall not pay the Tax Demand. In such scenario, cost of litigation including but not limited to Counsel cost, filing fees, other related charges, should be reimbursed by Vendor to Purchaser. Additionally, If any coercive steps of recovery are initiated by the department, then Purchaser would pay such amount (including by way of adjustment of refunds due to it) and the same would be reimbursed by Vendor within 5 working days from date of such recovery from Purchaser. Purchaser will take all necessary steps to avoid such recovery measures.

13.04.4 On determination of the demand through an Order issued by a Tribunal or any other similar Authority, by whatever name called, under any law applicable in India or overseas, if the demand or any part thereof becomes payable and is paid by Purchaser, then Vendor undertakes to reimburse such amount to Purchaser within 10 days from the date of payment. Alternatively, if on determination of the demand through an Order, no amount is payable by Purchaser then any refund arising to Purchaser due to such an Order shall be passed on to Vendor within 10 days from the date of receipt of refund.

14.0 The Micro, Small and Medium Enterprises (MSME)

14.01 If the SELLERS establishment is covered under the purview of The Micro, Small and Medium Enterprises Development Act, 2006 and its amendments, he shall declare so within the bid of its status failing which it will be presumed that it is a non-MSME unit. Also, submit a copy of Udyog Aadhaar (UA) & Udyam Registration Number.

15.0 Price Validity

15.01 All bids submitted shall remain valid, firm and subject to unconditional acceptance by BYPL Delhi for 120 days from the due date of submission. For awarded suppliers, the prices shall remain valid till contract completion.

16.0 Performance Guarantee

16.01 To be submitted within twenty-eight (28) days from the date of issuance of the Letter of Intent/Award/RC. Bidder shall initially submit the performance bank guarantee (PBG) equivalent to 1% of RC Value (including GST) valid till RC validity period plus three months claim period. Upon receipt of the PBG by BYPL against RC, the EMD shall be released. Thereafter bidder shall submit PBG on Purchase Order (PO) basis equivalent to 10% of the PO value (including GST) valid for a period of 30 months from the date of last receipts at site/stores plus 3 months claim period.

16.02 Bank guarantee shall be drawn in favour of BSES Yamuna Power Ltd as applicable. The performance Bank guarantee shall be in the format specified by BYPL.

17.0 Forfeiture

17.01 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 BYPL of this Performance Bond, to the relevant bank referred to above, together with a simple statement that supplier has failed to comply with any term or condition outlined in the Contract.

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

18.0 Release

18.01 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 16.0) except for the case outlined in Clause 22.0.

19.0 Defects Liability Period/Guarantee/Warranty

19.01 The bidder is to Guarantee the materials/items supplied against any defect or failure, which arises due to faulty materials, workmanship or design for the entire defects liability period. The Defect liability period shall be 66 months from the date of receipt of each unit at store(s)/site(s).

19.02 If during the Defects Liability Period, any GOODS are found to be defective, they shall be promptly replaced or rectified by BIDDER at its own cost (including the cost of dismantling and (reinstallation) on the instructions of BUYER and if removed from SITE for such purpose, shall be removed and re-delivered to SITE by BIDDER at its own cost.

20.0 Return, Replacement or Substitution

20.01 BYPL shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BYPL may at its discretion elect to return defective Commodities to Supplier for replacement, free of charge to BYPL or may reject such Commodities and purchase the same or similar Commodities from any third party. In the latter case, BYPL 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. BYPL may set off such costs against any amounts payable by BYPL to the Supplier. Supplier shall reimburse BYPL for the amount, if any, by which the price of a substitute Commodity exceeds the price for such Commodity as quoted in the Bid. BUYER at its sole discretion shall have the opinion to dispose of the material

or GOODS so rejected and not taken back within forty-five days from the date of intimation of rejection.

21.0 Effective Date of Commencement of Contract

21.01 The date of the issuance of the Letter of Acceptance/Purchase Order shall be treated as the effective date of the commencement of Contract.

22.0 Time – The Essence Of Contract

22.01 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.

23.0 The Laws and Jurisdiction of Contract:

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

23.02 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 Delhi, India

24.0 Events of Default

24.01 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 BYPL.

25.0 Consequences of Default.

(a) If an Event of Default shall occur and be continuing, BYPL may forthwith terminate the Contract by written notice.

(b) In the event of an Event of Default, BYPL 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 BYPL may incur as a result of Supplier's default.

26.0 Penalty for Delay

26.01 If supply of items/equipments is delayed beyond the supply schedule as stipulated in the 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 basic (ex-works) price for every week delay of undelivered units or part thereof for individual milestone deliveries.

26.02 The total amount of penalty for delay under the contract will be subject to a maximum of ten percent (10%) of the basic (ex-works) price of total undelivered units.

26.03 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.

26.4 If the Penalty is levied as per the Order terms & conditions; BYPL will raise the Invoice for the penalty amount along with applicable GST rates. Accordingly, after setting off the penalty Invoice amount, net payment shall be made.

27.0 Variation in Taxes, Duties & Levies

27.1 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. In case of reduction in taxes, duties and levies, the benefits of the same shall be passed on to BUYER.

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

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

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

28.0 Taxes & Duties on raw materials & bought out components

28.01 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.

28.02 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.

29.0 Force Majeure

29.01 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 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 to comply with the above clause.

29.02 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 :

(i) The following events and circumstances :

a) Effect of any natural element or other acts of God, including but not limited to storm, flood, earthquake, lightning, cyclone, landslides or other natural disasters.

b) Explosions or fires

(ii) War declared by the Government of India.

(iii) Dangers of navigation, perils of the sea.

Note: Causes like power breakdowns/strikes, accidents etc do not fall under Force Majeure.

29.03 Notice of Events of Force Majeure If a force majeure event prevents a party from performing any obligations under the Contract in part or in full, that party shall:

i) Immediately notify the other party in writing of the force majeure events within 7(seven) working days of the occurrence of the force majeure event

ii) Be entitled to suspend performance of the obligation under the Contract which is affected by force majeure event for the duration of the force majeure event.

iii) Use all reasonable efforts to resume full performance of the obligation as soon as practicable

iv) Keep the other party informed of all such efforts to resume full performance of the obligation on a regular basis.

v) Provide prompt notice of the resumption of full performance or obligation to the other party.

29.04 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.

29.05 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.

29.06 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.
The Purchaser may terminate the contract after giving 7 (seven) days' notice if any of the following occurs:

i. Bidder fails to complete the execution of works within the approved schedule of works, terms and conditions.
ii. In case the Bidder commits any Act of Insolvency, or is adjudged insolvent
iii. Has abandoned the contract
iv. Has failed to commence work or has suspended the progress of works
v. Has failed to proceed with the works with due diligence and failed to make such due progress

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

29.08 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.

29.09 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 the failure to perform such obligations shall be due to an event of Force Majeure."

29.10 Severability
If any provision of this Agreement is or becomes invalid or unenforceable by the courts of any jurisdiction to which it is subject, such invalidity or unenforceability shall not prejudice the remaining provisions of this Agreement, which shall continue in full force and effect.

30.0 Transfer and Sub-Letting

30.01 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.

31.0 Recoveries

31.01 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.

32.0 Waiver

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

33.0 Indemnification

33.01 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.

34.00 Termination for convenience of Purchaser

34.1 Purchaser at its sole discretion may terminate the contract by giving 30 days prior notice in writing or through email to the Supplier. Purchaser shall pay the Supplier for all the supplies/ services rendered till the actual date of contract termination against submission of invoice by the Supplier to that effect.

34.2 Payment of such compensation is the sole and exclusive remedy of the supplier for termination of this Agreement by Purchaser hereunder and the supplier shall not be entitled to, and hereby waives, claims for lost profits and all other damages and expenses.

34.3 Supplier hereby agrees that substantiation for settlement of any claims submitted by supplier shall be complete and in sufficient detail to allow Purchaser's evaluation. Terminate all sub-contracts except those that have been/ to be assigned to the Purchaser all rights, titles and benefits of the Suppliers/Vendor as the case may be.

35.00 Documentation

35.01 The Bidder shall procure all equipment from BYPL-approved sources as per the attached specifications. The Bidders shall submit copies of Material/Type Test Certificates, O&M Manuals, and Approved & As-built drawings, related to various equipment (as applicable). The Bidder shall ensure strict compliance with the specifications and Field Quality Procedures issued by BYPL.

36.0 Transit Insurance

36.01 Transit Insurance shall be arranged by the Bidder.

36.02 DAMAGE / LOSS OF CARGO IN TRANSIT: The vendor shall be solely responsible for coordinating with the concerned insurance company for procuring insurance for material and/or Goods, processing claims lodgment and settlement. Notwithstanding the insurance cover, in case of loss/damage to material and/or Goods, in any manner and for any cause whatsoever, Vendor shall cause the damaged cargo to be replaced and delivered to the Purchaser with new material and/or Goods within 30 days of such loss/damage. The Vendor shall be solely responsible for all expenses in relation to the replacement and delivery in such circumstances.

37.0 Limitation of Liability

37.01 Except for willful misconduct or gross negligence, neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or any other indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract. The total liability of the Supplier to the Purchaser under the Contract shall not exceed the Contract Value. Except that this Clause shall not limit the liability of the Supplier:

(a) In cases of fraud, willful misconduct or illegal or unlawful acts, or

(b) In cases of acts or omissions of the Supplier that are contrary to the most elementary rules of diligence that a conscientious Supplier would have followed in similar circumstances.

38.0 Liability of Suppliers

38.1 Subject to the due discharge of its obligations under the Contract and except in case of gross negligence or willful misconduct on the part of the Supplier or on the part of any person acting on behalf of the Supplier, with respect to any loss or damage caused by the Supplier to the Purchaser's property or the Site, the Supplier shall not be liable to the Purchaser for the following:

(a) For any indirect or consequential loss or damage; and

(b) For any direct loss or damage that exceeds:

(i) The total payments made and expected to be made to the Supplier under the Contract including reimbursements, if any; or

(ii) The insurance claim proceeds that the Supplier may be entitled to receive from any insurance purchased by the Supplier to cover such a liability, whichever is higher.

38.2 This limitation of liability shall not affect the supplier's liability, if any, for damage to third-party property or injury or death of a person due to negligence of the Contractor or any Person or firm acting on behalf of the supplier in executing the order.

38.3 Notwithstanding anything contained in the Contract, the Supplier shall not be liable for any gross negligence or willful misconduct on the part of the Purchaser or any of its affiliates, any vendor, or any party, other than Supplier and/or, its directors, officers, agents or representatives or its affiliates, or SubSupplier, or the vendor or any third party engaged by it.

38.4 Notwithstanding anything contained in the Contract, including but not limited to approval by the Purchaser of any drawings, documents, vendor list, supply of information or data or the participation of the Purchaser in any meeting and/or discussion or otherwise, shall not absolve the Supplier from any of its liabilities or responsibilities arising in relation to or under the Contract.

39.0 Intellectual Property Rights and Royalties

39.1 The Supplier shall indemnify the Purchaser and the Purchaser's Representative from and against all claims and proceedings on account of infringement (or alleged infringement) of any patent rights, registered designs, copyright, design, trademark, trade name, know-how or other intellectual property rights (hereinafter collectively referred to as "**Intellectual Property Rights**") in respect of the Works, Supplier's Equipment, machines, Works method, Plant, Materials, or anything whatsoever required for the execution of the Works and from and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto. In the event of an infringement of any Intellectual Property Rights of any third party as a result of the execution of the Works (or any part thereof) by the Supplier, the Supplier shall rectify, modify or replace, at its own cost, the Works, Plant or Materials or anything whatsoever required for the Works so that infringement ceases to exist or, in the alternative, the Supplier shall procure necessary rights/ licenses from the affected third party so that there is no infringement of Intellectual Property Rights.

39.2 The Supplier shall be promptly notified of any claim made against the Purchaser. The Supplier shall, at its cost, conduct negotiations for the settlement of such claim, and any litigation or arbitration that may arise from it. The Purchaser or the Purchaser's Representative shall not make any admission that might be prejudicial to the Supplier unless the Supplier has failed to take over the conduct of the negotiations, litigation or arbitration within a reasonable time after having been so requested. In the event of the Supplier failing to act at the Purchaser's Representative's notice, the Purchaser shall be at full liberty to deduct any such amount of pending claim from any amount due to the Supplier under the Contract or any other contract and the balance portion of claim shall be treated as debt due from the Supplier.

39.3 All Intellectual Property Rights in respect of any Plant, Materials, Drawings and Designs, plans,

documents, specifications, data, materials, know-how, charts, information, etc., provided to the Supplier by the Purchaser pursuant to this Contract for the execution of the Works, belongs to and shall continue to belong to the Purchaser and the Supplier shall not have any rights in the same other than the limited right for its use for the purpose of execution of the Works.

39.4 Intellectual Property Rights in respect of any Plant, Materials, Drawings and Designs, plans, calculations, drawings, documents, know-how and information relating to the Works which are proprietary to the Supplier and/ or its third-party licensors ("**Supplier's IPR**") shall continue to vest with the Supplier and/ or its third-party licensors and the Supplier shall grant and/ or procure from its third party licensors, at its own cost, a worldwide, perpetual, royalty-free, non-exclusive license (along with the right to sub-license) to use and reproduce such Supplier's IPR for the use, operation, maintenance and repair of the Works.

39.5 If any patent, trademark, trade name, registered design or software is developed by the Supplier or its SubSupplier specifically for the execution of the Works, then all Intellectual Property Rights in respect of such design, trademark, trade name or software shall be the absolute property of the Purchaser and shall not be utilized or retained by the Supplier (or its SubSuppliers) for any purpose other than with the prior written consent of the Purchaser.

39.6 If the Supplier uses proprietary software (whether customized or off the shelf) for the purpose of storing or utilizing records in relation to the Works, the Supplier shall obtain at its own expense, the grant of a worldwide, royalty-free, perpetual licence or sublicence (including the right to sublicense) to use such software, in favour of the Purchaser provided that the use of such software under the licence or the sublicense may be restricted to use any such software only for the design, construction, reconstruction, manufacture, installation, completion, reinstatement, extension, repair and operation of the Works or any part thereof.

39.7 If any software is used by the Supplier for the execution of the Works over which the Supplier or a third party holds pre-existing title or other rights, the Supplier shall obtain for the Purchaser, a worldwide, royalty-free, perpetual license for the right to use and apply that software (together with any modifications, improvements and developments thereof).

40.0 Acceptance

40.01 Vendor confirms to have gone through the Policy of BYPL on legal and ethical code required to be followed by vendors encapsulated in the "Vendor Code of Conduct" displayed on the official website of BYPL (www.bsesdelhi.com) also, which shall be treated as a part of the contract/PO/WO.
The vendor undertakes that he shall adhere to the Vendor Code of Conduct and also agrees that any violation of the Vendor Code of Conduct shall be treated as breach of the contract/PO/WO.
In the event of any such breach, irrespective of whether it causes any loss/damage, Purchaser (BYPL) shall have the right to recover loss/damage from Vendor.
The Contractor/Vendor hereby indemnifies and agrees to keep indemnified the Purchaser (BYPL) against any claim/litigation arising out of any violation of Vendor Code of Conduct by the Contractor/Vendor or its officers, agents & representatives etc.

40.02 Acceptance of the CONTRACT implies and includes acceptance of all terms and conditions enumerated in the CONTRACT in the technical specification and drawings made available to Contractor consisting of general conditions, detailed scope of work, detailed technical specification, detailed equipment drawing and complete scope of work.

40.03 Contractor and Company contractual obligations are strictly limited to the terms set out in the CONTRACT. No amendments to the concluded CONTRACT shall be binding unless agreed to in writing for such amendment by both parties.

40.04 We expect your services and supplies to be aligned to our Vision, Mission and Values. Please refer to the following link to know about our Vision, Mission and Values; https://www.bsesdelhi.com/web/bypl/about-bses.

QUANTITY AND DELIVERY REQUIREMENTS

Sl. No.	BYPL SAP Code	Item Description	Specification	Total Qty. (Nos)	Tentative Delivery Schedule	Destination
1	2100266148	Supply of ONAN Transformers of rating 1000KVA 11/0.415KV	BSES-TS-12-TRDU-R1	1	Delivery for the Ist Lot of 15 nos DT's shall be within 03 Month from the PO date and completion @15 Nos per month in lots thereafter.	BYPL Delhi Store(s)/ Site(s)
2	2100266149	Supply of ONAN Transformers of rating 1600KVA 11/0.415KV		46		
3	2100266150	Supply of ONAN Transformers of rating 2000KVA 11/0.415KV		28		

The delivery schedule shown above is tentative. PO(s) will be released as per the actual requirement. However, the supplier has to deliver the material within the delivery schedule provided.

Schemes may be executed in a phased manner.

APPENDIX II

ANNEXURE – 2.01

FORMAT OF PERFORMANCE BANK GUARANTEE
(To be executed on a Non-Judicial Stamp Paper of appropriate value)

This Guarantee made at _____ this [___] day of [_____] 20XX

1. WHEREAS M/s BSES Yamuna Power Limited, a Company incorporated under the provisions of Companies Act, 1956 having its Registered Office at Shaktikiran Building, Karkardoa, Delhi 110032, India hereinafter referred to as the " Owner ", (which expression shall unless repugnant to the context or meaning thereof include its successors, administrators, executors and assigns).

2. AND WHEREAS the Owner has entered into a contract for _____(Please specify the nature of contract here) vide Contract No. _____dated _____(hereinafter referred to as the "Contract") with M/s._____, (hereinafter referred to as "the Supplier", which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include each of their respective successors and assigns) for providing services on the terms and conditions as more particularly detailed therein.

3. AND WHEREAS as per clause ____of Conditions of Contract, the Suppliers are obliged to provide to the Owners an unconditional bank guarantee for an amount equivalent to ten percent (10%) of the total Contract Value for the timely completion and faithful and successful execution of the Contract from **[_____]** *pl. specify the name of Bank)* having its head/registered office at **[_____]** through its branch in _____*(pl. specify the name of Branch through which B.G is issued)* hereinafter referred to as "the Bank", (which expression shall unless it be repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns).

4. NOW THEREFORE, in consideration inter alia of the Owner granting the Suppliers the Contract, the Bank hereby unconditionally and irrevocably guarantees and undertakes, on a written demand, to immediately pay to the Owner any amount so demanded (by way of one or more claims) not exceeding in the aggregate [Rs.].....(*in words)* without any demur, reservation, contest or protest and/or without reference to the Supplier and without the Owner needing to provide or show to the Bank, grounds or reasons or give any justification for such demand for the sum/s demanded.

5. The decision of the Owner to invoke this Guarantee and as to whether the Supplier has not performed its obligations under the Contract shall be binding on the Bank. The Bank acknowledges

that any such demand by the Owner of the amounts payable by the Bank to the Owner shall be final, binding and conclusive evidence in respect of the amounts payable by the Supplier to the Owner. Any such demand made by the Owner on the Bank shall be conclusive and binding, notwithstanding any difference between the Owner and the Supplier or any dispute raised, invoked, threatened or pending before any court, tribunal, arbitrator or any other authority.

6. The Bank also agrees that the Owner at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor without proceeding against the Suppliers notwithstanding any other security or other guarantee that the Owner may have in relation to the Supplier's liabilities.

7. The Bank hereby waives the necessity for the Owner first demanding the aforesaid amounts or any part thereof from the Suppliers before making payment to the Owner and further also waives any right the Bank may have of first requiring the Owner to use its legal remedies against the Suppliers, before presenting any written demand to the Bank for payment under this Guarantee.

8. The Bank's obligations under this Guarantee shall not be reduced by reason of any partial performance of the Contract. The Bank's obligations shall not be reduced by any failure by the Owner to timely pay or perform any of its obligations under the Contract.

9. The Bank further unconditionally and unequivocally agrees with the Owner that the Owner shall be at liberty, without the Bank's consent and without affecting in any manner its rights and the Bank's obligation under this Guarantee, from time to time, to:

(i) vary and/or modify any of the terms and conditions of the Contract;

(ii) Forebear or enforce any of the rights exercisable by the Owner against the Suppliers under the terms and conditions of the Contract; or

(iii) Extend and/or postpone the time for performance of the obligations of the Suppliers under the Contract;

and the Bank shall not be relieved from its liability by reason of any such act or omission on the part of the Owner or any indulgence shown by the Owner to the Suppliers or any other reason whatsoever which under the law relating to sureties would, but for this provision, have the effect of relieving the Bank of its obligations under this Guarantee.

10. This Guarantee shall be a continuing bank guarantee and shall not be discharged by any change in the constitution or composition of the Suppliers, and this Guarantee shall not be affected or

discharged by the liquidation, winding-up, bankruptcy, reorganization, dissolution or insolvency of the Suppliers or any of them or any other circumstances whatsoever.

11. This Guarantee shall be in addition to and not in substitution or in derogation of any other security held by the Owner to secure the performance of the obligations of the Suppliers under the Contract.

12. NOTWITHSTANDING anything herein above contained, the liability of the BANK under this Guarantee shall be restricted to _____*(insert an amount equal to ten percent (10%) of the Contract Value)* and this Guarantee shall be valid and enforceable and expire on _____*(pl. specify date)* or unless a suit or action to enforce a claim under this Guarantee is filed against the Bank on or before the date of expiry.

13. On termination of this Guarantee, all rights under the said Guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities hereunder.

14. The Bank undertakes not to revoke this Guarantee during its validity except with the prior written consent of the Owner and agrees that any change in the constitution of the Bank or the Suppliers shall not discharge our liability hereunder.

15. This Guarantee shall be governed by the laws of India. Any suit, action, or other proceeding arising out of, connected with, or related to this Guarantee or the subject matter hereof shall be subject to the exclusive jurisdiction of the courts of **Delhi,** India.

Dated this …… day of …….. …20XX at ……..

(Signature)

.....

(Name)

.....

(Designation with Bank Stamp)
Attorney as per
Power of Attorney No.....
Date.....

ANNEXURE – 2.02

BYPL BANK DETAIL WITH IFSC CODE:

1. Name of the Bank:	Axis Bank Limited
2. Branch Name & Full Address:	C-58, Basement & Ground Floor, Preet Vihar, Main Vikas Marg, New Delhi 110092
3. Branch Code:	055
4. Bank Account No:	911030003596085
5. IFSC Code:	UTIB0000055
6. Swift Code:	AXISINBB055

ANNEXURE – 2.03

FORMAT OF WARRANTY/GUARANTEE CERTIFICATE

BSES YAMUNA POWER LIMITED Shaktikiran Building, Karkardooma, Delhi -110032.

Ref. Purchase Order No. :

Dear Sir,

We hereby confirm that the.....dispatched to BSES YAMUNA POWER LTD vide invoice no..... DT.....is exactly of the same nature and description as per above mentioned Purchase Order.

We further confirm that we will replace/repair our.....free of cost if any manufacturing defect during.....months from the date of dispatch of material or.....months from the date of commissioning whichever is earlier.

Vendor Name & Signature

ANNEXURE – 2.04

UNDERTAKING GST

The Vendor shall give an undertaking in the following words on each invoice in the absence of which tax payment as on the Vendor's invoice may be withheld.

"The tax component as mentioned in the invoice shall be deposited with the GST Department as per law by way of actual payment or by way of legal set off as per law. The turnover billed shall be duly declared in my GST returns a copy of which shall be filed with the Purchaser. Should the input tax credit to the Purchaser be denied by way of any lapse on the part of the Vendor, the same shall be paid on demand and in any case the Purchaser is authorized to deduct the tax equivalent amount from the amount payable to the Vendor"

ANNEXURE – 2.05

SUMMARY OF COMMERCIAL TERMS AND CONDITIONS - SUPPLY

SL NO	PARTICULARS	CLAUSE AS PER TENDER	BIDDER'S CONFIRMATION
1	Validity	120 days from the date of submission of the bid	
2	Price basis	**"Variable"**, FOR Delhi store(s)/site(s) basis. Prices shall be inclusive of all taxes & duties, freight up to Delhi store(s)/site(s).	
3	Unloading	Unloading at stores/sites shall be in vendor's scope	
4	Transit insurance	Transit insurance in Bidder's scope	
5	Payment terms	100% payment shall be paid within 45 days from the date of receipt and acceptance of GOODS at store/site against submission of documents.	
6	Delivery Schedule	Transmittal Approval Documents (GTP/Drawings/QAP/etc.) are to be submitted within 15 days to the concerned official in BYPL for approval. BYPL shall approve/provide comments on the submitted drawings within 7 days of first submission. In case resubmission is required, it shall be completed by the supplier within next 5 days. The timelines for approval by BYPL shall be 5 days in case of every resubmission. However, repetitive submissions are not desirable. Delivery for the Ist Lot of 15 nos DT's shall be within 03 Month from the PO date and completion @15 Nos per month in lots thereafter or completion as per the PO schedule.	
7	Defect Liability Period	66 months from the date of receipt of each unit at store(s)/site(s), whichever is earlier	
8	Penalty for delay	1% (One) of the basic value (ex-works value) of undelivered units per week of delay or part thereof, subject to maximum of 10% (Ten) of the total basic value (ex-works value) of undelivered units.	
9	Performance Bank Guarantee	To be submitted within twenty-eight (28) days from the date of issuance of the Letter of Intent/Award/RC. Bidder shall initially submit the performance bank guarantee (PBG) equivalent to 1% of RC Value (including GST) valid till RC validity period plus three months claim period. Upon receipt of the PBG by BYPL against RC, the EMD shall be released. Thereafter bidder shall submit PBG on Purchase Order (PO) basis equivalent to 10% of the PO value (including GST) valid for a period of 30 months from the date of last receipts at site/stores plus 3 months claim period.	
10	Reverse Auction	Acceptance for participation in Reverse Auction event	

Seal of the Bidder:

Signature:

Name:

VOLUME – II

PRICE BID FORMAT

ALL PRICES IN INR (₹)

S. No.	DESCRIPTION OF GOODS	HSN CODE (8 Digit Mandatory)	UoM	QTY **(A)**	UNIT BASIC PRICE INCL FREIGHT (₹) **(B)**	UNIT GST & CESS AS APPLICABLE (CGST & SGST/UTGST or IGST) (₹) **(C)**		UNIT LANDED RATE (All Inclusive) (₹) **(D=B+C)**	TOTAL LANDED VALUE (₹) **(E=DXA)**
						%	AMT		
1	Supply of ONAN Transformers of rating 1000KVA 11/0.415KV		Nos	1					
2	Supply of ONAN Transformers of rating 1600KVA 11/0.415KV		Nos	46					
3	Supply of ONAN Transformers of rating 2000KVA 11/0.415KV		Nos	28					
GRAND TOTAL LANDED VALUE (₹)									
In words ……									

NOTE: Cost of all tests as per technical specification is to be included. No separate charges will be paid.

The Un-priced bid should be marked as **"Quoted"** and be submitted with Part – A

We declare that the following are our quoted prices in INR for the entire package.

Date: Bidders Name:

Place: Bidders Address:

Signature: …… Designation: ……..

Printed Name: …… Common Seal: …….

VOLUME – III

TECHNICAL SPECIFICATIONS

BSES

Technical Specification of Conventional Oil filled Distribution Transformer

Specification no – BSES-TS-12-TRDU-R1

Rev:		1
Date:		07/12/2022
Prepared by	Vani Sood / Pronab Bairagi	
	Jeena Borana	
Reviewed by	Srinivas Gopu	
	Amit Tomar	
Approved by	Gaurav Sharma	
	Gopal Nariya	

INDEX

Record of Revision

Sl No.	Revision No	Item/Clause No.	Nature of change	Approved by
1	R1	3.23, 3.24.3, 3.25.7, 3.26.7, 3.30, 3.35, 4.2.8.6,4.2.10.7	Transformer rating added	GN/GS
2	R1	3.29	Material of HV busbar revised	GN/GS
3	R1	3.31	Material of LV busbar revised	GN/GS
4	R1	4.2.8.2	Rating of additional neutral bushing added	GN/GS
5	R1	5.21	Buchholz relay for 1000 KVA added	GN/GS

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.

IS 1180	Outdoor type oil immersed distribution transformer upto and including 2.5MVA,33kV
IS 2026	Power Transformers
IS 2026-4	Terminal Marking, tappings and Connections for Power 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:8478	Application guide for On-load tap changer
IS:10028	Code of practice for selection, installation & maintenance of transformers
IS 5561	Electrical Power Connectors
IS 5	Colors for ready mix paints
IS:335	Insulating oil
IS 6272	Industrial cooling fans
IS 12615	Three phase induction motors
IS/IEC 60034	Rotating Electrical Machines. (e.g. For Cooler Fan Motors.)
IS/IEC 60071	Co-ordination of Insulation.
IS 16227/IEC 61869	Current Transformers.
IS 8468/ IEC 60214	On Load Tap Changers
IS2026-7/IEC 60076-7	Loading Guide for Oil-Immersed Power Transformers.
IS 2026-8 /IEC 60076-8	Application Guide for Power Transformers.
IS 2026-10/IEC 60076-10	Determination of Transformer Sound Levels.
IS/IEC 60529	Degrees of Protection Provided by Enclosures (IP Code).

IS/IEC 60947	Low-Voltage Switchgear and Control gear.
IS/IEC 60137	Bushing for alternating voltage above 1000V
IS:1271/IEC 60085	Thermal evaluation and classification of electrical insulation
IEC 60076	Power transformers.
IEC 60156	Method for Determination of the Electric Strength for Insulating Oils.
IEC 60296	Specification for Unused Mineral Insulating Oils for Transformers and Switchgear.
IEC 60445	Basic& Safety principles for man-machine interface, marking and identification, Identification of Equipment Terminals and conductor terminals
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 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 -

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

Sr 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	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	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	250/400/630/1000/1600/2000/2500 (R1) kVA

3.24	Percentage Impedance at 75 deg C	
3.24.1	250/400/630 kVA	4.5 % with IS tolerance
3.24.2	1000 kVA	5.0 % with IS tolerance
3.24.3	1600/2000/2500 (R1) kVA	6.25% with IS tolerance
3.25	Max Total losses(No Load+ Load Losses at 75ºC) at 50% of the rated load , kW	
3.25.1	250 kVA	0.98
3.25.2	400 kVA	1.225
3.25.3	630 kVA	1.86
3.25.4	1000 kVA	2.79
3.25.5	1600 kVA	4.2
3.25.6	2000 kVA	5.05
3.25.7	2500 kVA	6.15 (R1)
3.26	Max Total losses(No Load+ Load Losses at 75ºC) at 100% of the rated load , kW	
3.26.1	250 kVA	2.93
3.26.2	400 kVA	3.45
3.26.3	630 kVA	5.3
3.26.4	1000 kVA	7.7
3.26.5	1600 kVA	11.8
3.26.6	2000 kVA	15
3.26.7	2500 kVA	18.5 (R1)
3.27	Phase CT Ratio , Amp	
3.27.1	250 kVA	400/5
3.27.2	400 kVA	600/5
3.27.3	630 kVA	1000/5
3.27.4	1000 kVA	1500/5
3.27.5	1600 kVA	2500/5
3.27.6	2000 kVA	3000/5
3.27.7	2500 kVA	4000/5 (R1)

3.28	HV cable size for all sizes / Conductor size	11 kV (E) grade , A2XCEWY 3C x 150 sqmm
3.29	Busbar size on HV side for cable termination, mm x mm	50x10-Tinned copper (R1)
3.30	LV cable size, 650 /1100 V grade , A2XY cable single core 630 sqmm unarmoured (approx cable dia 40 mm)/ A2XY Cable single core 1000sqmm(Approx dia. 48mm)	Cable
3.30.1	250 kVA	1 runs per phase + 1 runs in Neutral-single core 630 sqmm cable
3.30.2	400 kVA	2 runs per phase + 2 runs in Neutral-single core 630 sqmm cable
3.30.3	630 kVA	3 runs per phase + 3 runs in Neutral-single core 630 sqmm cable
3.30.4	1000 kVA	4 runs per phase + 4 runs in Neutral-single core 630 sqmm cable
3.30.5	1600 KVA	3 runs per phase + 3 runs in Neutral-single core 1000 sqmm cable
3.30.6	2000 kVA	4 runs per phase + 4 runs in Neutral-single core 1000 sqmm cable
3.30.7	2500 kVA (R1)	5 runs per phase + 5 runs in Neutral-single core 1000 sqmm cable
3.31	Busbar size on LV side for cable termination, mm x mm	
3.31.1	250/400/630 kVA (R1)	
3.31.1.1	Phase	100 x 12-Alumium
3.31.1.2	Neutral	100 x 12-Alumium
3.31.2	1000kVA	
3.31.2.1	Phase	2 runs 100 x 12-Aluminium
3.31.2.2	Neutral	2 runs 100 x 12-Aluminium

3.31.3	1600kVA (R1)	
3.31.3.1	Phase	2 runs 160 x 12-Aluminium
3.31.3.2	Neutral	2 runs 160 x 12-Aluminium
3.31.4	2000kVA	
3.31.4.1	Phase	2 runs 160 x 12-Aluminium
3.31.4.2	Neutral	2 runs 160 x 12-Aluminium
3.31.5	2500kVA (R1)	
3.31.5.1	Phase	2 runs 160 x 15-Aluminium
3.31.5.2	Neutral	2 runs 160 x 15-Aluminium
3.32	Maximum Overall Dimension Acceptable (length x width x height), mm x mm x mm	
3.32.1	250 KVA	1500 x1300x 1700
3.32.2	400 kVA	1500X1500X2000
3.32.3	630 kVA	1700X1700X2200
3.32.4	1000 kVA	1900X1900X2500
3.32.5	1600 kVA	2300X2000X2600
3.32.6	2000 kVA	2500X2000X2600
3.32.7	2500 kVA (R1)	2800X2300X2700
3.33	Short Circuit withstand Capacity of the transformer	
3.33.1	Three phase dead short circuit at secondary terminal with rated voltage maintained on the other side	For 3 secs.
3.33.2	Single phase short circuit at secondary terminal with rated voltage maintained on other side	For 3 secs.
3.34	Overload Capability	As per IS 2026/IEC 60905

3.35	Noise Level (R1)	400/630/1000/1600/2000/2500 KVA-56/57/58/60/61/62 Db respectively
3.36	Radio Influence Voltage	Maximum 250 microvolt
3.37	Harmonic suppression	Transformer to be designed for suppression of 3rd, 5th, 7th harmonic voltages and high frequency disturbances.
3.38	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
3.39	Tappings	Off Circuit taps on HV winding , +10% to - 10% in steps of 2.5 % , change of taps by externally operated switch
3.39.1	Rotary tap switch operating voltage	11 kV
3.39.2	Rotary tap switch current rating, Amp.	
3.39.2.1	250 KVA	20 Amps
3.39.2.2	400 kVA	60 Amp
3.39.2.3	630 / 1000 kVA	100 Amp
3.39.2.4	1600/2000 kVA	150 Amp
3.39.2.5	2500 kVA (R1)	200 Amp

4.0 Construction & Design

4.1	Type	Double Copper wound, three phase, oil immersed, with ONAN cooling, with off circuit tap changer
4.2	**Major Parts**	
4.2.1	**Tank**	
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, 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
4.2.1.6	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
4.2.1.7	Fittings and accessories on main tank	See under fittings and accessories.
4.2.2	**Conservator for the main tank**	
4.2.2.1	Capacity	Adequate between highest and lowest visible levels to meet the requirement of 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	i) Conservator shall be bolted into position so that it can be removed for cleaning / other maintenance purposes ii) Main pipe from tank shall project about 20 mm above conservator bottom for creating a sump for collection of impurities iii) Conservator minimum oil level corresponding to minimum temperature shall be well above the sump level. iv) Conservator to main tank piping

		shall be supported at minimum two points.
4.2.2.4	Fittings and accessories on main tank conservator	i) Prismatic oil gauge with MINIMUM, NORMAL and MAXIMUM marking ii) End Cover iii) Oil Filling Hole with cap 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. Silica gel shall be of round ball type of 2.5mm dia. v) Drain Plug vi) Air release plug as required vii) Pressure/ Vacuum gauge viii) Magnetic Oil Gauge with LOW LEVEL ALARM
4.2.3	**Radiators**	Detachable type
4.2.3.1	Thickness	Minimum 1.2 mm
4.2.4.2	Features	With lifting lugs, air release plug,
4.2.5	**Core**	
4.2.5.1	Material	High grade , non ageing, low loss, high permeability, grain oriented, cold rolled silicon steel lamination. Core shall be low loss of 1Watt/kG (max)
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 % over excitation / over fluxing	1.9 T
4.2.5.6	Core Design Features	i) Core shall be in the form of step and stack in three limb format. Note: Wound core shall not be acceptable ii) Magnetic circuit designed to avoid short circuit paths within core or to the earthed clamping structures iii) Magnetic circuit shall not produce flux components at right angles to the plane of lamination to avoid local heating iv) Least possible air gap and rigid clamping for minimum core loss and noise generation v) Adequately braced to withstand bolted faults on secondary terminals without mechanical damage and damage/ displacement during transportation and positioning. vi) Percentage harmonic potential with the maximum flux density under any condition limited to avoid capacitor overloading in the system vii) All steel sections used for supporting the core shall be thoroughly sand blasted after cutting , drilling, welding viii) Provision of lifting lugs for core

		coil assembly ix) Supporting framework designed not to obstruct complete drainage of oil from transformer
4.2.6	**Winding**	
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	i) Type of winding a. LV: Sprial/Helical b. HV: Crossover/Disc Note: Foil winding shall not be acceptable ii) Stacks of winding to receive adequate shrinkage treatment iii) Connections braced to withstand shock during transport, switching, short circuit, or other transients. iv) Minimum out of balance force in the transformer winding at all voltage ratios. v) Conductor width on edge exceeding six times its thickness vi) Transposed at sufficient intervals. vii) Coil assembly shall be suitably supported between adjacent sections by insulating spacers + barriers viii) Winding leads rigidly supported ,

		using guide tubes if practicable ix) Winding structure and major insulation not to obstruct free flow of oil through ducts x) Provision of taps as per clause 3.39
4.2.7	**Transformer Oil**	
4.2.7.1	Type	Should be in accordance with specification as per Annex C of this document
4.2.8	**Bushings and Terminations**	
4.2.8.1	Type of HV side bushing	HV bushing should be top mounted. Outdoor, Pocelain, rated voltage and creepage as per 31mm/kV with voltage class of 12kV respectively
4.2.8.2	Type of LV side bushing (R1)	LV bushing should be top mounted. Outdoor, Porcelain, rated voltage and creepage as per 31mm/kV with voltage class of 1.1 kV respectively Additional neutral bushing of porcelain outside on top of LT cable box with brass palm connector (as per IS 3347) shall be provided. The rating of additional neutral bushing should be same as phase bushing (R1). Connection between the main neutral and additional neutral shall be provided. For extra neutral bushing, protection box shall be provided in order to prevent ingress of water.
4.2.8.2.1	Essential provision for LV side line bushing	It shall be complete with brass palm with aluminium busbar of size shall be as per clause 3.31. Bimetallic strip to be provided

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 as per clause 3.31
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 650/1100VGrade, A2XY Cable single core 630sqmm (Approx dia 40mm) / A2XY Cable single core 1000sqmm (Approx dia. 48mm) for 1600/2000/2500 (R1) KVA.
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	Brass palm connector for HV & LV side (as per IS: 3347)
4.2.8.13	Sealing washers /Gasket ring	Nitrile cork rubber(RC70C)/

		Expanded TEFLON(PTFE) as applicable.
4.2.9	**HV & LV cable box**	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) / A2XY Cable single core 1000sqmm (Approx dia. 48mm) for 1600/2000/2500 (R1) KVA.
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) / A2XY Cable single core 1000sqmm (Approx dia. 48mm) for 1600/2000/2500 (R1) KVA.
4.2.9.6	Detachable Gland Plate material for HV, LV, LV Neutral box	i) MS for HV cable box ii) Al for LV cable box.
4.2.9.7	Gland plate thickness for HV, LV, LV Neutral box	i) 3 mm for HV side cable box ii) 5 mm for LV cable box.
4.2.9.8	Cable gland for HV cables	Nickel plated brass double compression weatherproof cable gland
4.2.9.9	Cable lug for HV, LV, LV Neutral cables	i) Double hole Aluminium lugs for LV & Neutral side ii) Single hole Aluminum lugs for HV side
4.2.9.10	Essential parts	i) Flange type removable front cover with handles min two nos. ii) Aluminium for LV with bimetallic strips and tinned copper for HV

		Busbar of adequate size for Purchaser's cable termination with busbar supports iii) Earthing boss for the cable box iv) Earthing link for the gasketted 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 gasketted 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	**Current Transformers**	
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 fibre 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	CT ratio	

	250 KVA	400/5
	400kVA	600/5
	630kVA	1000/5
	1000kVA	1500/5
	1600kVA	2500/5
	2000kVA	3000/5
	2500kVA (R1)	4000/5
4.2.10.8	**CT terminal Box**	
4.2.10.8.1	Size	650 mm height x 750 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 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	**Off Circuit tap Switch**	
4.2.11.1	Range /Step	Off circuit taps on HV winding, +10% 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	i) 400 kVA - 60 Amps ii) 630/1000 kVA - 100 Amps iii) 1600/2000kVA-150 Amps iv) 2500kVA- 200 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	**Pressure Relief Device**	
4.2.12.1	Type	Pressure Relief Valve (PRV)
4.2.12.2	Auxiliary contacts	2 NO

4.2.13	**Winding and Oil Temperature scanner**	Required
4.2.13.1	PT 100 sensor	For measurement of Oil temperature LV winding temperature.
4.2.13.2	No of potential free trip contacts	2 NO
4.2.13.3	No of potential free alarm contacts	2 NO
4.2.13.4	Auxiliary Supply	240 AC, Single phase, 50Hz. Tapped from LV side busbar through a MCB located inside box.
4.2.13.5	Communication port	RS 485 port for interfacing with FRTU on Modbus protocol. Battery/Super capacitor for data transmission to SCADA in the event of Auxiliary supply fail
4.2.13.5	Fixing of instrument	On side wall of tank
4.2.14	**Auxiliary Relay (hand reset type)**	Required to identify the type of fault/indication.
4.2.14.1	Quantity	4 no's Separate auxiliary relay to be provided for PRV, MOG,WTI/OTI, Buchholz relay.
4.2.14.2	Potential free contacts	2 NO
4.2.14.3	Auxiliary supply	240V AC
4.3	**Hardware**	
4.3.1	External	Hot dip galvanized bolts
4.3.2	Internal	Cadmium plated except special hardware for frame parts and core assembly as per manufacturer's design
4.4	**Gasket**	
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
4.5	Valves	

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	Cable routing on Transformer	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.	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	Terminal Blocks to be used by the vendor	Nylon 66 material, minimum 4 sq mm, Stud type screw driver operated type for control wiring and potential circuit.
4.7.1	Essential provision for CT terminals	Sliding link type disconnecting terminal block Stud type screwdriver operated with facility for CT terminal shorting material of housing melamine/ Nylon66
4.8	Cable glands to be used by the vendor	Nickel plated brass double compression weatherproof cable gland

4.9	Cable lugs to be used by the vendor	
4.9.1	For power cables	Long barrel medium duty Aluminium lug with knurling on inside surface.
4.9.2	For Control Cable	Tinned copper pre insulated Pin, Ring, Fork type as applicable
4.10	Painting of transformer, Radiator, marshalling box for CT, cable boxes etc.	
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.

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	Following details shall be provided on rating and diagram plate as a minimum i) type/kind of transformer with winding material ii) standard to which it is manufactured iii) manufacturer's name; iv) transformer serial number; v) month and year of manufacture vi) rated frequency in Hz vii) rated voltages in kV viii) number of phases ix) rated power in kVA x) type of cooling (ONAN) xi) rated currents in A xii) vector group connection symbol xiii) 1.2/50µs wave impulse voltage withstand level in kV xiv) power frequency withstand voltage in kV xv) impedance voltage at rated current and frequency in percentage at principal, minimum and maximum tap xvi) Max. Total losses at 50 % rated load xvii) Max. Total losses at 100 % rated load xviii) Load loss at 50% & 100% rated load xix) No-load loss at rated voltage and frequency 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 xxvii) Weight of winding 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 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	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
5.14	Rainhood for vertical gasketted joints , in cable boxes, Conservator	Required Not required as per Annexure A Scope of supply
5.15	Earthing bridge by copper strip jumpers on all gasket joints at at least two points for electrical	Required

	continuity	
5.16	Skid base welded type with haulage hole	Required
5.17	Core , Frame to tank Earthing	Required
5.18	Danger plate made of Anodized aluminum with white letters on red background on Transformer, cable boxes (all fixed by rivet)	Required
5.19	Caution plate for Off Circuit tap changer fixed by rivet.	Required
5.20	MOG with auxiliary contact wired upto Terminal Box	Required
5.21	Buchholz relay for transformer 1000kVA (R1) and above	Required
5.22	Pressure relief valve	Required
5.23	WTI & OTI Temperature Scanner	Required
5.24	Auxiliary relays (4 no's)	Required
5.25	LT cable support-By aluminium clamp fixed on the on MS bracket of size 50x 10 supported from the tank wall shall be provided .	Required
5.26	HT cable support-By GI clamp fixed on the on MS bracket of size 50x 10 supported from the tank wall shall be provided.	Required

6.0 Approved make of components

6.1	CT	Pragati / ECS / Kappa/Mehru/Continental/Nortex
6.2	Bushings	Baroda Bushing/Jaipur glass/CJI
6.3	Tap Changer	Alwaye /Paragon
6.4	MOG	Sukrut/Atvus

6.5	Valves	Newman/ATAM
6.6	CRGO	Nippon/JFE/Posco/Thyson kkurup
6.7	Copper	Birla copper/Sterlite
6.8	Pre compressed Pressboard	Raman Board, Mysore/ Senapathy Whiteley
6.9	Laminated Wood	Permalli Wallance / Rochling Engineers
6.10	Oil	Apar/Savita/Raj Petro/Gandhaar
6.11	Steel	TATA/Jindal/SAIL
6.12	Lugs/Glands	Jainson/Dowells/Comet
6.13	Radiators	CTR/Hi-Tech Radiators /Tarang Engineers
6.14	WTI/OTI	Precimeasure/ Pecon
6.15	Buchholz Relay	Sukrut/Atvus
6.16	Auxiliary Relay	GE/Alstrom
6.17.	Aluminium	Hindalco, Nalco, Sterlite, Birla

Note – Any other make of component offered by the bidder maybe reviewed & approved by purchaser

7.0 Quality assurance

7.1	Quality Assurance program	To be submitted before contract award. Program shall contain following i) The structure of the organization ii) The duties and responsibilities assigned to staff ensuring quality of work. iii) The bidder should have qualified technical & dedicated QA personnel at various stages of manufacture & testing. 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. v) The system for purchasing, taking

		delivery and verification of materials vi) The system for ensuring quality of workmanship vii) The system for control of documentation viii) The system for the retention of records ix) The arrangements for the Supplier's internal auditing 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
7.2	Quality Plan	To be submitted by the successful bidder for approval. Plan shall contain following as a minimum i) An outline of the proposed work and programm sequence ii) The structure of the Supplier's organisation for the contract iii) The duties and responsibilities assigned to staff ensuring quality of work for the contract iv) Inspection Hold and notification points mutually agreed. v) Submission of engineering documents required by the specification vi) The inspection of materials and components on receipt vii) Reference to the Supplier's work procedures appropriate to each activity viii) Inspection during fabrication/ construction ix) Final inspection and test 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
7.3	Manufacturing Quality Assurance Plan	Refer Annexure D

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 i) Progress on material procurement ii) Progress on fabrication iii) Progress on assembly iv) Progress on internal stage inspection v) Reason for any delay in total programme vi) Details of test failures if any in manufacturing stages vii) Progress on final box up viii) Constraints ix) Forward path

9.0 Inspection & testing

9.1	Inspection and Testing during manufacture	Only type tested equipment shall be acceptable
9.1.1	Tank and Conservator	i) Check correct dimensions between wheels demonstrate turning of wheels through 90 deg and further dimensional check. ii) Check for physical properties of materials for lifting lugs, jacking pads etc. All load bearing welds, including lifting lug welds shall be subjected to iii) required load tests. iv) Leakage test of the conservator. v) Certification of all test results. vi) Oil leakage test . vii) Vacuum and Pressure test on tank as type test as per IS

9.1.2	Core	
9.1.2.1	Mother Core coil	Verification & inspection of the mother coil at port & putting stamp & seal may be inspected by BSES.
9.1.2.2	Core sample type testing	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. i) Specific core loss measurement ii) Magnetic polarization iii) Magnetic permeability iv) Specific core loss measurement after accelerated ageing test v) Surface insulation resistivity vi) Electrical resistivity measurement vii) Stacking factor viii) Ductility(Bend test) ix) Lamination thickness x) Magnetization characteristics (B-H curve)
9.1.2.3	Core cutting	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.
9.1.2.4	Core physical verification	i) Check on the quality of varnish if used on the stampings. a) Measurement of thickness and hardness of varnish on stampings. b) Solvent resistance test to check that varnish does not react in hot oil. 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. ii) Check on the amount of burns. iii) Bow check on stampings. iv) Check for the overlapping of stampings. Corners of the sheet are to be apart.

		v) Visual and dimensional check during assembly stage. vi) 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. vii) Check for inter laminar insulation between core sectors before and after pressing. viii) Visual and dimensional checks for straightness and roundness of core, thickness of limbs and suitability of clamps. ix) High voltage test (2 KV for one minute) between core and clamps. Certification of all test results.
9.1.2.5	Documents verification	Following documents to be submitted during the stage inspection i) Invoice of supplier ii) Mills test certificates iii) Packing list iv) Bill of lading v) Bill of entry certificates by customs
9.1.3	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.
9.1.4	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.
9.1.4.1	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.
9.1.4.2	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.
9.1.5	Oil sample testing	One sample of oil drawn from every lot of transformer offered for inspection should be tested at CPRI/ERDA lab for tests as listed under Table-1 of IS:1866 (2000). The cost of this testing should be included within the cost of transformer.
9.1.6	Test on fittings and accessories	As per manufacturer's standard
9.2	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 110% 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. xi) Routine test of tanks xii) Induced voltage withstand test (to be repeated if type tests are conducted). xiii) Measurement of Iron loss (to be repeated if type test are conducted). xiv) Measurement of capacitance and Tan Delta for transformer winding and Tan Delta for transformer oil (for all transformers). xv) Ratio of CT xvi) Oil leakage test on completely assembled transformer xvii) Magnetic balance test xviii) Power frequency voltage withstand test on all auxiliary circuits xix) Certification of all test results. xx) Temperature Rise Test # Note: a) *Insulation resistance measurement shall be carried out at 5kV for HV and

		1kV for LV. Value of IR should not be less than 1000 Mohms. Polarization Index (PI = IR_{10min}/IR_{1min}) should not be less than 1.5 (If one minute IR value is above 5000 Mohms 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.) 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 c) BSES may appoint recognized testing authority like CPRI /ERDA lab 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.
9.3	Acceptance test at NABL lab	Bidder should have in-house NABL accredited testing facility. In case of unavailability of same, one Transformer of each rating shall be randomly selected and sealed by BSES representative for complete acceptance test as per IS 1180 (including temperature test) at third party NABL Lab. Tests shall be conducted once per Rate contract.
9.4	Type Tests	On one transformer of each rating and type at CPRI/ERDA. i) Impulse withstand test on all three HV limbs of the transformers for chopped wave as per standard ii) Temperature rise test as per IS

		iii) Dissolved gas analysis before and after Temperature Rise Test iv) Pressure and Vacuum test on tank Note – Purchaser may choose to carry out short circuit, impulse & temperature rise test on one unit from a lot offered from inspection at CPRI/ERDA
9.5	Special Tests	On one transformer of each rating and type i) Dynamic & Thermal (3 sec) Short Circuit Test as per IS 2026 ii) Measure of zero seq. impedance (Cl. 16.10 IS 2026 Part I). iii) Measurement of acoustic noise level (Cl. 16.12 of IS 2026 Part I). iv) Measurement of harmonic level on no load current. v) Paint adhesion test. 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.
9.6	Notification to bidders	In case bidder had conducted type & special tests from CPRI/ERDA on BSES design and there is no design change in the transformer less than 10 years from the date of the bid opening, then bidder need not to conduct the type test from CPRI/ERDA lab. The bidder shall submit the under taking that there is no change in design with respect to type tested design.
		The product offered must be of type tested quality. In case the product offered is never type & special tested the same (as per above clause 9.4.& 9.5), is to be conducted by bidder at his own cost at CPRI/ERDA
9.7	Customer Hold Point	i) GTP & Drawings approval ii) Core Inspection(See Cl No 9.1.2)

		Sample to be tested at CPRI/ERDA for each lot. iii) Tank Pressure & vacuum Test iv) Core & Coil Stage inspection of each lot to be offered for final testing.

10.0 Packing , Shipping, Handling and Storage

10.1	Packing	
10.1.1	Packing protection	Against corrosion, dampness, heavy rains, breakage and vibration
10.1.2	Packing for accessories and spares	Robust wooden non returnable packing case with all the above protection
10.1.3	Packing details	On each packing case details required as follows i) Individual serial number; ii) Purchaser's name; iii) PO number; iv) Destination; v) Supplier's name; 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.
10.2	Shipping	i) The bidder shall ascertain at an early date and definitely before the commencementof 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.

		ii) Any modifications required in the infrastructure and cost thereof in this connection shall be brought to the notice of the Purchaser
10.3	Handling and Storage	As per manufacturer's instruction

11.0 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.

12.0 Drawings& Data Submission Matrix

Drawing submission shall be as per the matrix given below. All documents/ drawing shall be provided on A3/A4 sheet in box file with separators for each section. PDF shall also be provided of all documents via USB. Deviation sheet and GTP shall be provided in excel sheet.Language of the documents shall be English only. Deficient/ improper document/ drawing submission may liable for rejection.

S.no	Documents to be submitted	With the bid	After Award	
			For Approval	Prior to dispatch
1	Copy of specification along with company seal & signature on each page.	✓	✓	
2	Guaranteed technical particulars	✓	✓	
3	Outline dimension drawing for each major component, general arrangement drawing showing component layout an general schematic diagrams.	✓	✓	
4	Type test certificates, where available, and sample routine test reports	✓	✓	
5	Detailed reference list of customers already using equipment offered during the last 5 years with particular emphasis on units of similar design and rating	✓		
6	Details of manufacturers quality assurance standard and programme and ISO 9000 series or equivalent national certification.	✓		
7	Deviations from this specification. Only deviations approved in writing before award of contract shall be	✓		

S.no	Documents to be submitted	With the bid	After Award	
			For Approval	Prior to dispatch
	accepted.			
8	Recommended spare parts and consumable items for the five years of operation with prices and spare parts catalogue with price list for future requirements.	✓		
9	Transport / shipping dimension and weights, space required for handling parts for maintenance	✓		
10	Write up on oil preservation system.		✓	✓
11	Quality assurance program.	✓	✓	
12	Programme for production and testing		✓	
13	General description of the equipment and all components, including brochures		✓	
14	Detailed dimension drawing for all components, general arrangement drawing showing detailed component layout and detailed schematic and wiring drawings for all components like marshalling box and OTI/WTI scanner, PRV, Buchhloz relay. Auxiliary relays		✓	
15	Calculations to substantiate choice of electrical, structural, mechanical component size, ratings		✓	
16	Detailed loading drawing to enable the purchaser to design and construct foundations for the transformer.		✓	
17	Transport /shipping dimension with weights ,wheel base details, untanking height etc.		✓	
18	Terminal arrangements and cable box details		✓	
19	Flow diagram of cooling system showing no. of cooling banks		✓	
20	Drawings of major components like bushing,CT, OTI/WTI Scanner, PRV, Buchholz relay, Auxiliary relays, Valves, radiators etc		✓	
21	Lists of makes of all fittings and accessories		✓	
22	Statement drawing attention to all exposed points in the equipment at		✓	

S.no	Documents to be submitted	With the bid	After Award	
			For Approval	Prior to dispatch
	which contact with or in close proximity to other metals and stating clearly what protection is employed to prevent corrosion at each point			
23	Detailed installation and commissioning instructions			✓
24	Inspection and test reports carried out in manufacturers works			✓
25	Test certificates of all bought out items. and catalogues			✓
26	Operation and maintenance instructions as well as trouble shooting charts.			✓

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. 9 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

Sr. No	Description	Scope of Supply
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 non returnable drums	YES
1.1.13	One spare complete set of gaskets	YES
1.1.14	Routine testing as per Cl. 9.2 & 9.3 of this specification	YES
1.1.15	Type testing as per Cl. 9.4 of this specification	YES
1.1.16	Special testing as per Cl. 9.5 of this specification	YES
1.1.17	Submission of Documentation as detailed below	YES

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

Sr No	Item description	Specification requirement
2.1	**Function**	
2.1.1	Viscosity	
2.1.1.1	Viscosity at 40^0C	15 mm^2/s, Max
2.1.1.2	Viscosity at 0^0C	1800 mm^2/s, Max
2.1.2	Pour Point	- 10^0C, Max
2.1.3	Water content	30 mg/Kg, Max
2.1.4	Breakdown voltage	
2.1.4.1	New unfiltered oil	30 kV, Min
2.1.4.2	After filtration	70 kV, Min
2.1.5	Density at 20^0C	0.895 g/ml, Max
2.1.6	Dielectric dissipation factor at 90^0C	0.005, Max
2.1.7	Particle Content	Manufacturer to specify the data
2.2	**Refining/Stability**	
2.2.1	Appearance of oil	Clear, free from sediment and suspended matter

Sr No	Item description	Specification requirement
2.2.2	Acidity	0.01 mg KOH/g, Max
2.2.3	Interfacial tension at 27^0C	0.04 N/m, Min
2.2.4	Total sulphur content	Manufacturer to specify the data
2.2.5	Corrosive sulfur	Not-corrosive
2.2.6	Potentially Corrosive sulfur	Not-corrosive
2.2.7	DBDS	Not detectable (<5 mg/kg)
2.2.8	Inhibitor	Not detectable (<0.01%)
2.2.9	Metal Passivator	Not detectable (<5 mg/kg)
2.2.10	Other additives	Manufacturer to specify the data
2.2.11	2-furfural and related Compounds content	Not detectable (<0.05 mg/kg) for each individual compound
2.3	**Performance**	
2.3.1	Oxidation stability, test duration 164 h	
2.3.1.1	Total acidity	1.2 mg KOH/g, Max
2.3.1.2	Sludge	0.8%, Max
2.3.1.3	DDF at 90^0C	0.5, Max
2.3.2	Gassing Tendency	Manufacturer to specify the data
2.3.3	ECT	Manufacturer to specify the data
2.4	**Health,safety and Environment**	
2.4.1	Flash point	135^0C, Min
2.4.2	PCA content Max	3%, Max
2.4.3	PCB content	Not detectable (<2 mg/Kg)

Annexure D Manufacturing Quality Assurance Plan

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
A	**RAW Material**										
1	**Winding Conductor (PICC)**										
1.1	Bare Dimensions & Finish of Conductor	Major	Measurement	1 sample per size per lot	IEC 13730 Part 27,IEC 60317,IS 7404,IS 6160,IS 613	IEC 13730 Part 27,IEC 60317,IS 7404,IS 6160,IS 613	Supplier's TC	P	V	R	
1.2	Increase in dimensions due to Paper covering	Major	Measurement	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.3	Resistivity @ 20°C	Major	Electrical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.4	No of Layers	Critical	Measurement	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.5	Conductor Tensile strength	Critical	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.6	Conductor Elongation	Critical	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.7	% Overlap of Paper	Critical	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
1.8	Corner Radius	Critical	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9	**Kraft Paper Insulation**										
1.9.1	Thickness	Major	Measurement	1 sample per size per lot	IEC:60554, IS:9335	IEC:60554, IS:9335	Supplier's TC	P	V	R	
1.9.2	Apparent Density	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.3	Air Permeability	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.4	Tensile Index (Longitudinal and Transverse)	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.5	Electrical Strength in Air	Major	Electrical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.6	Ash Content	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.7	pH of 5% Aqueous Extract	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.8	Conductivity of 5% Aqueous Extract	Critical	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.9	Moisture Content	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.10	Heat Stability	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.11	Degree of Polymerization	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
1.9.12	Elongation (MD & CMD)	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
1.9.13	Tear index	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
2.0	**CRGO Laminations (Watt absorption)**										
2.1	Specific Core Loss	Major	Electrical	Random	IEC 60404, IS 3024, IS 649	IEC 60404, IS 3024, IS 649	Supplier's TC	P	V	R	
2.2	Surface Insulation resistance	Major	Electrical	-DO-	-DO-	-DO-	-DO-	P	V	R	
2.3	Ageing Test	Major	Measurement	-DO-	-DO-	-DO-	-DO-	P	V	R	
2.4	Stacking Factor	Major	Measurement	-DO-	-DO-	-DO-	-DO-	P	V	R	
2.5	Waviness	Major	Measurement	-DO-	-DO-	-DO-	-DO-	P	V	R	
2.6	Edge Burr	Major	Visual	-DO-	-DO-	-DO-	-DO-	P	V	R	
2.7	Sample testing for Checking Specific Core loss, accelerated ageing test, Surface insulation resistivity, AC permeability and magnetization, stacking	Major	Electrical	100%	-DO-	-DO-	--	--	P	W	Sample will be randomly selected by BSES & will be send for testing at CPRI/ERDA

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
	factor, Ductility										lab.
3.12	Core Cutting	Major	Visual	Random	-DO-	-DO-	-DO-	P	W	W	
3.0	**Un-impregnated Laminated Wood**										
3.1	Thickness	Major	Visual	1 sample size / LOT	IS 3513/IEC 61061	IS 3513/IEC 61061	Supplier's TC	P	V	R	
3.2	Density	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
3.3	Moisture Content	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
3.4	Oil Absorption	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
3.5	Cross breaking strength	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
3.6	Compressive Strength	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
3.7	Electric Strength in Oil	Major	Electrical	-DO-	-DO-	-DO-	-DO-	P	V	R	
3.8	Shrinkage in oil	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
3.9	Tensile Strength,compressive strength	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.0	**Press Boards (Pre-compressed)**										

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
4.1	Thickness	Major	Measurement	1 sample/Size/LOT	IEC:60641, IS:1576	IEC:60641, IS:1576	Supplier's TC	P	V	R	
4.2	Tensile Strength (MD & CMD)	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.3	Shrinkage in Air (MD & CMD)	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.4	Moisture Content	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.5	Oil Absorption	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.6	Electrical Strength in Oil and air	Major	Electrical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.7	pH of 5% aqueous extract	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.8	Conductivity of 5% aqueous extract	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.9	Compressibility	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.10	Ash Content	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.11	Apparent density	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
4.12	Elongation (MD & CMD)	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
5.0	**Tank and its**										

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
	accessories										
5.1	Structural steel										
5.1.1	Thickness	Major	Measurement	Random	IS 2062/ IS:1576	IS 2062/ IS:1576	Suppliers TC	P	V	R	
5.1.2	Yield Strength	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
5.1.3	Tensile Strength	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
5.1.4	Elongation	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
5.1.5	Bend test	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
5.1.6	Chemical composition	Major	Chemical	-DO-	-DO-	-DO-	-DO-	P	V	R	
5.2	**Manufacturing of Tank and accessories**										
5.2.1	Dimension check	Major	Measurement	100%	MFR. Spec/ DRG/BSES approved document	MFR. Spec/ DRG/ BSES approved document	MFR. Fabrication report	P	W	R	
5.2.2	Joint preparation	Major	Measurement	100%	-DO-	-DO-	-DO-	P	V	R	
5.2.3	Assembly and alignment	Major	Visual and measurement	100%	MFR. Spec/ DRG	MFR. Spec/ DRG	MFR. Fabrication report	P	V	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
5.2.4	DP Test on Welds on Load bearing members eg. Jack Pads	Major	DP Test	100%	-DO-	-DO-	-DO-	P	W	R	
5.2.5	Pressure test	Major	Mechanical	On One unit	CBIP	CBIP	Test Report	--	P	W	**STAGE INSPECTION**
5.2.6	Vacuum test	Major	Mechanical	On One unit	CBIP	CBIP	Test Report	--	P	W	**STAGE INSPECTION**
5.2.7	**Leakage test**										
5.2.7.1	Main Unit	Major	Mechanical	100%	MFR. STD	MFR. STD	Test report	P	W	R	
5.2.7.2	Conservator	Major	Mechanical	100%	MFR. STD	MFR. STD	Test report	P	W	R	
5.2.7.3	Pipes	Major	Mechanical	100%	MFR. STD	MFR. STD	Test report	P	W	R	
5.2.8	Surface preparation	Major	Visual	100%	MFR. STD	MFR. STD	MFR. Fabrication report	P	V	R	
5.2.9	Final Paint Coat (including Primer), Thickness & Shade	Major	Measurement	100%	MFR. STD	MFR. STD	Test report	P	V	R	
5.2.10	Paint Peel off test	Major	Visual	100%	MFR. STD	MFR. STD	Test report	--	P	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
6.0	**Bushing/Insulators**										
6.1	Make and rating	Critical	Visual	100%	IS 8603/IS 2099/App.Drg.	IS 8603/IS 2099/App.Drg.	Supplier's TC	P	V	R	
6.2	Visual inspection for surface smoothness, any damage, etc.	Critical	Visual	100%	-DO-	-DO-	-DO-	P	V	R	
6.3	Important dimension including Creepage distance	Major	Measurement	One sample /size / lot	-DO-	-DO-	-DO-	P	V	R/W	
6.4	Dry Power Frequency voltage withstabd test	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
6.5	Air pressure test in water	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
6.6	Electro -Tinning	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
6.7	All routine electrical tests	Major	Electrical	-do-	-do-	-do-	-do-	P	V	R	
7.0	**Magnetic Oil Gauge**										
7.1	Make and dimensions	Major	Physical	100%	App.Drg./ Supplier Catalogue	App.Drg./ Supplier Catalogue	Supplier's TC	P	V	R	
7.2	Test for level (eg at 30°	Major	Mechanical	100%	-DO-	-DO-	-DO-	P	V	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
	Max)										
7.3	Switch contact test	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
7.4	Leakage test	Major	Mechanical	100%	-DO-	-DO-	-DO-	P	V	R	
7.5	Switch operating and setting	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
7.6	Di-electric test at 2 KV AC between live terminal and body	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
8.	**Buchholz relay**										
8.1	Make and type	Critical	Visual	100%	App.Drg./ Supplier Catalogue /IS 3637	App.Drg./ Supplier Catalogue /IS 3637	Supplier's TC	P	V	R	
8.2	Bore size	Major	Measurement	One/size	-DO-	-DO-	-DO-	P	V	R	
8.3	Porosity and element test	Major	Critical	100%	-DO-	-DO-	-DO-	P	V	R	
8.4	Gas volume and surge test	Major	Mechanical	One/Size	-DO-	-DO-	-DO-	P	V	R	
8.5	HV test at 2 KV AC & IR test	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
8.6	Continuity for alarm/Trip	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
9.0	**Radiator**										
9.1	Dimension, number of sections	Major	Measurement	100%	MFR. DRG	VTD DRG	Supplier's TC	P	V	R	
9.2	Leakage Test with Air	Major	Visual	100%	As per CBIP	As per CBIP	Supplier's TC	P	V	R	
9.3	Paint shade	Major	Visual & Measurement	Random	MFR. Specs /Drg	MFR. Specs /Drg	Supplier's TC	P	V	R	
9.4	Surface Preparation	Major	Measurement	100%	SA 2.5 of ISO 8503/2	SA 2.5 of ISO 8503/2	Supplier's TC	P	V	R	
10	**Off Circuit Tap Changer**										
10.1	Make, Rating and model	Major	Visual	100%	MFR. Spec/ IS 8468 /IEC 214-1989	MFR. Spec/ IS 8468 /IEC 214-1989	Supplier's TC	P	V	R	
10.2	Contact Resistance test	Major	Visual	100%	Supplier's STD	Supplier's STD	Supplier's TC	P	V	R	
10.3	Electrical Routine test	Major	Electrical	100%	IS 8468/ IEC 214	IS 8468/ IEC 214	Supplier's TC	P	V	R	
10.4	Mechanical test on diverter switch including	Major	Mechanical	100%	-DO-	-DO-	-DO-	P	V	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
	pressure test										
10.5	HV test for Auxiliary circuit	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
10.6	Mechanical test on Tap selector switch with motor drive	Major	Mechanical	100%	-DO-	-DO-	-DO-	P	V	R	
10.7	Pressure test for Oil Compartment	Major	Mechanical test	100%	-DO-	-DO-	-DO-	P	V	R	
11.0	**Transformer Oil**	Major	Testing	One Sample from each lot	Annexure D of BSES spec.	Annexure D of BSES spec.	STC	P	V	R	One sample of oil shall be drawn from **each lot of Transformer** offered for final inspection by BSES representative and same shall be tested at CPRI/ERDA

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
											lab as per relevant std.
12.0	**OTI / WTI Scanner**										
12.1	Make and Model	Critical	Visual	100%	MFR. STD/App. Drg.	MFR. STD/App. Drg.	Suppliers TC	P	P	R	
12.2	Calibration	Major	Electrical	100%	-DO-	-DO-	-DO-	P	P	R	
12.3	Check for alarm & trip signal operation against set value	Major	Electrical	100%	-DO-	-DO-	-DO-	P	P	R	
12.4	HV test	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
12.5	Switch Setting	Major	Mechanical	100%	-DO-	-DO-	-DO-	P	P	R	
13.0	**Bushing Metal parts**										
13.1	Dimension Checks	Major	Mechanical	100%	MFR. STD /IS 3347	MFR. STD /IS 3347	Supplier's TC	P	V	R	
13.2	Surface Finish	Major	Visual	100%	-DO-	-DO-	-DO-	P	V	R	
14.0	**Current Transformers**										
14.1	Dimensions, make	Major	Measurement	100%	MFR. STD /App. DRG. / IS 2705	MFR. STD /App. DRG. / IS 2705	Supplier's TC	P	P	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
14.2	Rating and terminal marking	Major	Physical	100%	MFR. APPD. DRG	MFR. APPD. DRG	Supplier's TC	P	P	R	
14.3	Measurement of ratio and phase angle error	Major	Electrical	100%	IS 2705	IS 2705	Supplier's TC	P	V	R	
14.4	High Voltage test	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
14.5	Inter-Turn insulation test	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
14.6	Polarity	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
14.7	Knee point voltage	Major	Electrical	-do-	-do-	-do-	-do-	P	V	R	Only for Class-PS NCT
14.8	Excitation current	Major	Electrical	-do-	-do-	-do-	-do-	P	V	R	Only for Class-PS NCT
14.9	Secondary winding resistance	Major	Electrical	-do-	-do-	-do-	-do-	P	V	R	Only for Class-PS NCT
15.0	**Valves/ Butterfly valves**										
15.1	Make & operation	Critical	Visual	100%	APP.drg./MFR. STD/IS 778	APP.drg./MFR. STD/IS 778	Supplier's TC	P	P	R	
15.2	Leakage test for body	Major	Mechanical	100%	-DO-	-DO-	-DO-	P	P	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
15.3	Leakage test for top spindle	Major	Mechanical	100%	-DO-	-DO-	-DO-	P	P	R	
15.4	Mounting dimensions	Major	Measurement	100%	-DO-	-DO-	-DO-	P	P	R	
15.5	Material of Body & Seat	Major	Chemical & measurement	1 sample per lot	-DO-	-DO-	-DO-	P	V	R	
16.0	**Pressure relief Valve/Device**										
16.1	Make	Critical	Visual	100%	MFR. STD/ App. Drg.	MFR. STD/ App. Drg.	-DO-	P	P	R	
16.2	Operating pressure	Major	Mechanical	100%	-DO-	-DO-	-DO-	P	P	R	
16.3	Switch Contact test	Major	Electrical	100%	-DO-	-DO-	-DO-	P	P	R	
16.4	Mounting dimensions	Major	Measurement	100%	-DO-	-DO-	-DO-	P	V	R	
16.5	HV test between body & terminal	Major	Electrical	100%	-DO-	-DO-	-DO-	P	V	R	
17.0	**Gasket**										
17.1	Appearance & Finish	Major	Mechanical	1 sample per size per lot	IS 4253-II, 1980/IS 3400	IS 4253-II, 1980/IS 3400	Supplier's TC	P	V	R	
17.2	Hardness, IRHD	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
17.3	Tensile Strength	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
17.4	Compressibility	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
17.5	Compression set	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
17.6	Flexibility	Major	Mechanical	-DO-	-DO-	-DO-	-DO-	P	V	R	
18.0	**Silica gel Breather with oil seal**										
18.1	Type / model/weight	Major	Visual	100%	MFR. STD /DRG	MFR. STD /DRG	Supplier's TC	P	V	R	
18.2	Color of Gel	Major	Visual	100%	-DO-	-DO-	-DO-	P	V	R	
19	**Control cubicle/CT terminal Box**										
19.1	Dimensions	Major	Measurement	100%	BSES Approved document	BSES Approved document	Supplier's TC	P	V	R	
19.2	Hi-voltage test at 2kV RMS for one minute	Major	Electrical	-DO-	-DO-	-DO-	-DO-	P	V	R	
19.3	Insulation resistance at 5000 V DC	Major	Electrical	-DO-	-DO-	-DO-	-DO-	P	V	R	
19.4	Verification of component & Fittings	Major	Visual	-DO-	-DO-	-DO-	-DO-	P	V	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
19.5	Wiring check	Major	Visual	-DO-	-DO-	-DO-	-DO-	P	V	R	
19.6	Welding, grinding, chipping	Major	Visual	--DO-	-DO-	-DO-	-DO-	P	V	R	
19.7	Paint	Major	Visual	-DO-	-DO-	-DO-	-DO-	P	V	R	
B	**In Process**										
1	**Winding(LV and HV)**										
1.1	Check for Visual, physical and dimensional Parameters and no. of parallel conductors.										
1.1.1	Measurement of axial height, OD & ID& current density calculation.	Major	Measurement	100%	MFR. Data/Drg/BSES approved document	MFR. Data/Drg/BSES approved document	QC report/Test report	--	P	W	
1.1.2	Copper Conductor size (Bare & covered)	Major	Measurement	100%	-DO-	-DO-	-DO-	--	P	W	
1.1.3	No. of Turns / Disc	Major	Measurement	100%	-DO-	-DO-	-DO-	--	P	R	
1.2	Winding height	Major	Measurement	100%	-DO-	-DO-	-DO-	--	P	W	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
1.3	Visual inspection of Brazed joints as applicable	Major	Visual	100%	-DO-	-DO-	-DO-	--	P	R	
1.4	Tap Leads termination in case of tap winding	Major	Visual	100%	-DO-	-DO-	-DO-	--	P	R	
1.5	Current density calculation	--	--	--	--	--	--	--	P	W	
1.6	**Weight**	Major	Visual	100%	-DO-	-DO-	-DO-	--	P	W	
2.0	**Core Assembly**										
2.1	Visual & Key Dimensional check										
2.1.1	Diagonal distance	Major	Measurement	100%	MFR.Drg/BSES approved document	MFR.Drg/BSES approved document	QC report/Test report	--	P	W	
2.1.2	Window centre distance	Major	Measurement	100%	-DO-	-DO-	-DO-	--	P	W	
2.1.3	Window height	Major	Measurement	100%	-DO-	-DO-	-DO-	--	P	W	
2.2	Stack Thickness	Major	Measurement	100%	-DO-	-DO-	-DO-	--	P	W	
2.3	High Voltage test at 2 KV AC for I min between core & core clamp, Yoke	Major	Electrical	100%	-DO-	-DO-	-DO-	--	P	W	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
	bolt										
2.4	Pre-Core loss measurement	Major	Electrical	100%	-DO-	-DO-	-DO-	--	P	W	
2.5	Weight	Major	Visual	100%	-DO-	-DO-	-DO-	--	P	W	
3.0	**Core-Coil Assembly**										
3.1	Top & Bottom insulation arrangement	Major	Visual	100%	MFR.Data /DRG/BSES approved document	MFR.Data /DRG/BSES approved document	QC report	--	P	R	
3.2	Lead arrangement	Critical	Visual	100%	-DO-	-DO-	-DO-	--	P	R	
3.3	Tap & Lead End Brazing & Insulation	Critical	Visual	100%	-DO-	-DO-	-DO-	--	P	R	
3.4	Dimension of Coil After Shrinkage	Major	Measurement	100%	-DO-	-DO-	-DO-	--	P	R	
3.5	Verification of Major electrical clearances	Major	Visual & Measurement	100%	-DO-	-DO-	-DO-	--	P	R	
3.6	HV/LV Connection	Major	Visual	100%	-DO-	-DO-	-DO-	--	P	R	
3.7	Cleanliness	Major	Visual	100%	-DO-	-DO-	-DO-	-	P	R	
4.0	**Core-Coil Assembly**										

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
	Before Ovening										
4.1	Initial Ratio test	Major	Measurement	100%	-DO-	-DO-	-DO-	--	P	R	
5.0	**Core-coil assembly during drying**										
5.1	Measurement & recording of temperature & drying time during vacuum treatment.	Major	Visual	100%	MFR.Data /DRG	MFR.Data /DRG	QC report	--	P	R	
5.2	Check for completeness of drying	Major	Visual	100%	MFR.Data /DRG	MFR.Data /DRG	QC report	--	P	R	
5.3	Certification of all test	Major	Visual	100%	MFR.Data /DRG	MFR.Data /DRG	QC report	--	P	R	
6.0	**Core-Coil Assembly After Ovening**										
6.1	Ratio Test,Vector Group & Magnetic Balance test	Major	Electrical	100%	-DO-	-DO-	QC report /Test report	--	P	W	
6.2	Recording of time/Temp, Vacuum	Major	Measurement	100%	-DO-	-DO-	-DO-	--	P	R	
6.3	Record of Moisture extract	Major	Measurement	100%	MFR. STD	MFR. STD	QC report	--	P	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
6.4	Verification of completeness & Drying	Major	Verify	100%	MFR. STD	MFR. STD	QC report	--	P	R	
6.5	Insulation resistance measurement by Megger	Major	Electrical	100%	MFR. STD	MFR. STD	Test report	--	P	R	
6.6	Earthing connection	Major	Visual	-DO-	MFR. STD	MFR. STD	QC Report	--	P	R	
7.0	**Tanking**										
7.1	Electrical clearance arrangement	Major	Measurement	100%	MFR. DRG	MFR. DRG	QC report	--	P	R	
7.2	Verification of Core-Frame Clamping arrangement	Major	Visual	100%	-DO-	-DO-	-DO-	--	P	R	
7.3	Core to frame insulation resistance test & HV test at 2 KV for min	Major	Electrical	100%	-DO-	-DO-	-DO-	--	P	R	
8.0	**Final Assembly for testing**										
8.1	Fittings of external accessories	Major	Visual	100%	MFR. STD /DRG	MFR. STD /DRG	Job Card	--	P	R	
8.2	Internal Oil leakage test on main unit	Major	Visual	100%	CBIP	CBIP	QC report	--	P	R	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
8.3	Oil filtration & pressure test	Major	Visual	-DO-	IS 1180	IS 1180	-DO-	-	P	R	
C	**Final testing**										
1	**Routine Test**										
1.1	Voltage Ratio test and check of phase displacement	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test Report	--	P	W	
1.2	Winding Resistance at all tap corrected to 75°C	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	
1.3	No Load Loss & Current @90%,100%&112.5% of rated voltage	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	To be repeated after type test.
1.4	Impedance Voltage/Short Circuit Impedance(Principal Tap)	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	
1.5	Load Loss measurement at 50% and 100% of load @Principal, Max, MinTap	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
1.6	Induced over voltage	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	To be repeated after type test
1.7	Separate Source Voltage Test	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	
1.8	Insulation Resistance &PI(10 min / 1 min)	Major	Electrical	100%	--	--	Test report	--	P	W	IR shall be more than 2000 MΩ PI Shall be more than1.5
1.9	Voltage Vector Relationship & Polarity	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	
1.10	Magnetic Balance Test	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	
1.11	Oil leakage test on transformer with complete fitting and accessories	Major	Visual	100%	CBIP	CBIP	Test report	--	P	W	
1.12	Polarity check & Ratio Test of LVWTI CT/	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
	Metering CT										
1.13	BDV test on Transformer Oil	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	
1.14	Power frequency withstand on auxiliary circuit	Major	Electrical	100%	IS 2026/IS 1180	IS 2026/IS 1180	Test report	--	P	W	
1.15	Heat Run Test (Temp. Rise Test)	Major	Testing	One Unit (each lot)	IS 2026/IS 1180	IS 2026/IS 1180	Test Report	--	P	W	
1.16	Pressure relief device test	Major	Testing	One Unit (each lot)	MFR. STD	MFR. STD	Test Report	--	P	W	
1.17	Visual and dimensional check	Major	Visual	100%	Approved drawings	Approved drawings	Test Report	--	P	W	
1.18	Measurement of Cap & tandelta of Wdg, Oil and HV bushing	Major	Electrical	One unit	--	--	Test report	--	P	W	
1.19											
2.0	**Type test (One unit of each type and rating of Transformer at CPRI/ERDA)**										
2.1	Heat Run Test (Temp. Rise Test)	Major	Testing	One Unit	IS 2026	IS 2026	Test Report	**CPRI/ERDA**			

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
2.2	Dynamic & Thermal (3 sec) Short Circuit Test	Major	Testing	One Unit	IS 2026	IS 2026	Test Report	**CPRI/ERDA**			
2.3	Impulse withstand Test on all HV & LV Limb for Chopped wave.	Major	Testing	One Unit	IS 2026	IS 2026	Test Report	**CPRI/ERDA**			
2.4	DGA Test Before & After temperature rise	Major	Testing	One Unit	Relevant std.	Relevant std.	Test Report	**CPRI/ERDA**			Test shall be conducted once per PO
3.0	**Special Test (One unit of each type and rating of Transformer)**										
3.1	Zero Phase Sequence Test	Major	Testing	One Unit	IS 2026	IS 2026	Test Report	--	P	W	
3.2	Noise Level Test	Major	Testing	One Unit	NEMA TR-1	NEMA TR-1	Test Report	--	P	W	
3.3	No Load Harmonic Test	Major	Testing	One Unit	IS 2026	IS 2026	Test Report	--	P	W	
3.4	HV Test on all auxiliary equipment and wiring after complete assembly	Major	Testing	One Unit	--	--	Test Report	--	P	W	
D	**Dispatch & Packing**										
1.1	Identification & packing	Major	Visual	100%	As per packing list	As per packing list	Packing List	--	P	--	

SL NO	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								S	M	O	
1	2	3	4	5	6	7	8	9			10
1.2	Check for proper Packing	Major	Visual	100%	As per packing list	As per packing list	Packing List	--	P	--	
1.3	Visual check before dispatch	Major	Visual	100%	As per packing list	As per packing list	Packing List	--	P	--	

Note:

- Transformer from each lot may be opened for core and winding verification. BSES approval is be taken prior to opening the transformer.
- Type Test shall be valid for 10 years.

All IS and IEC standards with their latest revisions/amendments shall be applicable

LEGEND:

S: Supplier
M: Main Contractor (Manufacturer)
O: Owner (BSES)

P - Perform
V - Verify
R – Review
W- Witness

Schedule A 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	250/400/630/1000/1600/2000/2500kVA	
2.2	LV winding	250/400/630/1000/1600/2000/2500kVA	
3.0	Rated voltage (kV)		
3.1	HV Winding	11 kV	
3.2	LV Winding	415 volt	
4.0	Rated current (Amps)	250/400/630/1000/1600/2000/2500kVA	
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	4.5%/4.5% / 4.5%/ 5.0/6.25/6.25 % with IS tolerance	
6.2	Reactance		
6.3	Resistance		
6.4	X/R ratio		
6.5	Impedance at lowest tap at		

	rated current and frequency		
6.6	Impedance at highest tap at rated current and frequency		
7.0	Resistance of the winding at 75^0 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^2R losses of windings @ 75 deg C, KW		
9.5	Total stray loses @ 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 ^{0}C		
10.1	Top oil by thermometer ^{0} C	40 ^{0}C	
10.2	Winding by resistance^0 C	45 ^{0}C	
11.0	Efficiency		
11.1	Efficiency at 75^0C 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		
11.1.5	at 40% load		
11.1.6	at 20% load		
11.2	Efficiency at 75^0C 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 75^0C %		
11.4	Load and power factor at which it occurs		
12.0	Regulation , (%)		
12.1	Regulation at full load at 75^0 C		
12.1.1	at unity power factor		
12.1.2	at 0.8 power factor lagging		
12.2	Regulation at 110% load at 75^0 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	
15.0	Details of Tank		
15.1	Material	Robust mild steel plate without pitting and low carbon content	
15.2	Thickness of sides 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^2)	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 % overexcitation /overfluxing, Tesla	1.9 Tesla Max allowed	
16.7	Equivalent cross section area mm²		
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		
17.1	HV		
17.2	LV		
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	**Insulating oil**		
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?	Yes in separate non returnable drums with each transformer	
19.3	Type of Oil	As per cl 4.2.7	
20.0	**Bushing / Support Insulator**		
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	**Terminal connections**		
21.1	HV	Cable size as per Cl no 3.28	
21.2	LV	Cable size as per Cl no 3.30	
21.3	LV Neutral	Cable size as per Cl no 3.30	
22.0	**HV cable box**	Required	
22.1	Suitable for cable type,size	Cable size as per Cl 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	120 mm	

	box,mm		
23.0	**LV Cable box**	Required	
23.1	Suitable for cable type , size	Cable size as per Cl 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		
26.0	Pressure release device		
26.1	Minimum pressure the device is set to rupture		
26.1.1	For Main Tank		
26.1.2	Alarm and trip contact ratings of protective devices		
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	OTI/WTI Scanner		
27.1.1	Make		
27.1.2	Model no		
27.1.3	Auxiliary supply		
27.1.4	Manual submitted (Yes/No)		
27.2	Buchholz Relay		
27.2.1	Make		
27.2.2	Model no		
27.2.3	Auxiliary supply		
27.2.4	Manual submitted (Yes/No)		
27.3	Auxiliary relays for Fault/indication identification (PRV, Buchholz relay, MOG)		
27.3.1	Make		
27.3.2	Model no		
27.3.3	Auxiliary supply		
27.3.4	Potential free contacts		
27.3.5	Manual submitted (Yes/No)		
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		
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 per Cl. (Yes/ No)		
34.4	All Special Tests confirmed as per Cl. (Yes/ No)		

Schedule B 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
1.0	Manufacturer Name		
1.1		Address	
1.2		Contact person	
1.3		Contact telephone no	
2.0	**Function**		
2.1	Viscosity		
2.1.1	Viscosity at 40^0C	15 mm^2/s, Max	
2.1.2	Viscosity at 0^0C	1800 mm^2/s, Max	
2.2	Pour Point	- 10^0C, Max	
2.3	Water content	30 mg/Kg, Max	
2.4	Breakdown voltage		
2.4.1	New unfiltered oil	30 kV, Min	
2.4.2	After filtration	70 kV, Min	
2.5	Density at 20^0C	0.895 g/ml, Max	
2.6	Dielectric dissipation factor at 90^0C	0.005, Max	
2.7	Particle Content	Manufacturer to specify the data	
3.0	**Refining/Stability**		
3.1	Appearance of oil	Clear, free from sediment and suspended matter	
3.2	Acidity	0.01 mg KOH/g, Max	
3.3	Interfacial tension at 27^0C	0.04 N/m, Min	
3.4	Total sulphur content	Manufacturer to specify the data	
3.5	Corrosive sulfur	Not-corrosive	
3.6	Potentially Corrosive sulfur	Not-corrosive	
3.7	DBDS	Not detectable (<5 mg/kg)	
3.8	Inhibitor	Not detectable (<0.01%)	
3.9	Metal Passivator	Not detectable (<5 mg/kg)	

Sr No	Item description	Specification requirement	Data by Vendor
3.10	Other additives	Manufacturer to specify the data	
3.11	2-furfural and related Compounds content	Not detectable (<0.05 mg/kg) for each individual compound	
4.0	**Performance**		
4.1	Oxidation stability, test duration 164 h		
4.1.1	Total acidity	1.2 mg KOH/g, Max	
4.1.2	Sludge	0.8%, Max	
4.1.3	DDF at 90^0C	0.5, Max	
4.2	Gassing Tendency	Manufacturer to specify the data	
4.3	ECT	Manufacturer to specify the data	
5.0	**Health,safety and Environment**		
5.1	Flash point	135^0C, Min	
5.2	PCA content Max	3%, Max	
5.3	PCB content	Not detectable (<2 mg/Kg)	

Schedule C Recommended Spares (Data by Seller)

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	