



**TP CENTRAL ODISHA DISTRIBUTION LIMITED**  
(A Tata Power & Odisha Govt. joint venture)  
1<sup>st</sup> Floor, Anuj Building, Plot No 29, Satya Nagar Bhubaneswar, Odisha  
751007

NIT No.: TPCODL/P&S/1000000443/2023-24

## **Open Tender Notification**

**for**

**Rate contract for Design-Engg, Manufacture,  
Supply and Supervision during Commissioning  
of Line Voltage Regulator Transformer (LVRT)**

**Tender Enquiry No.: TPCODL/P&S/1000000443/23-24**  
**Due Date for Bid Submission: 21 October 2023 [15:00 Hrs.]**

**TP Central Odisha Distribution Limited**  
**(A TATA Power and Odisha Government Joint Venture)**  
**Procurement & Stores Department,**  
**2<sup>nd</sup> Floor, IDCO Towers, Janpath, Bhubaneswar – 751022**



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Tender Enquiry No.	Work Description	EMD (Rs.) *	Tender Fee (Rs.) **	Last Date and Time for payment of Tender Fee
TPCODL/P&S/100000443/23-24	Design-engg, manufacture, supply and supervision during commissioning of LVRT	3,00,000	5000	08.10.2023, 17:00 Hrs

\* EMD is exempted for MSMEs registered in the State of Odisha.

\*\* MSMEs registered in the State of Odisha shall pay tender fee of Rs. 1,000/- including GST. For details of MSME norms, pls refer "Annexure A" below.

### Annexure-A

#### **Preferential norms for procurement from MSMEs registered in the State of Odisha**

##### **1) Tender Fees**

To participate in the tender, MSMEs registered in the State of Odisha shall pay Rs.1,000/- including GST towards cost of tender paper.

##### **2) Earnest Money Deposit (EMD)**

EMD shall be exempted for MSME registered in the State of Odisha. However, Bidder shall be barred to participate in the tendering process for a period of 2 years in case it backs out post award of the contract.

##### **3) Qualification Requirement for Open Tenders**

Qualification Requirement of Financial Turnover for MSME registered in the State of Odisha shall be reduced to 20% of the existing criteria.

For past experience, instead of relying on the volumes / value of earlier Supplies / Projects, assessment of the Bidder shall be done on the basis of feedback from Customers. Past performance experience at Tata Power and its Group Companies shall supersede feedback from other Customers.

##### **4) Reservation for MSME**

It shall be mandatory to procure at least 20% of the total volume of the procurement from MSME registered in the State of Odisha (however, it shall not apply where goods/services are not available with the MSME), subject to matching L1 discovered prices and meeting technical specifications including quality requirements.

##### **5) Performance Bank Guarantees**

Performance Bank Guarantee for MSME registered in the State of Odisha shall be 25% of the value normally prescribed.



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## **INFORMATION TO THE BIDDERS TO PARTICIPATE IN E-OPEN TENDER SYSTEM OF TPCODL**

### **-: Steps for E-tender submission:-**

**Bids are to be submitted only through online e-procurement platform, ARIBA. Any other form of bid submission will not be accepted. Online Link for submission of bid through ARIBA will be sent only after confirmation of payment of tender fee from bidder.**

**Step 1:** The bidder can get primary information about the tender from the Newspaper advertisement / TPCODL website <[www.tpcentralodisha.com](http://www.tpcentralodisha.com)> and can download the tender document from the above website.

**Step 2:** Non-Refundable Tender Participation Fee, as indicated in tender document, to be submitted before last date of tender fee payment, in the form of direct deposit/NEFT/RTGS in the following bank account.

Account Name: TP Central Odisha Distribution Limited  
Bank Name: SBI, IDCO Towers, Bhubaneswar  
Bank Account No. : 10835304915  
IFSC Code : SBIN0007891

**Step 3:** Eligible and Interested bidder to send an email to TPCODL attaching duly signed and stamped letter on Bidder's letterhead, with following details, expressing their intend to bid against above tender:

SI No	Description	Bidder's Response
i)	Tender Enquiry No.	
ii)	Description of materials / Works Tendered	
iii)	Name of the bidding company	
iv)	Name of the authorized contact person	
v)	Contact No. authorized person	
vi)	E-mail Id of the where online ARIBA link to be	
vii)	Tender Fee details (Amount / NEFT-RTGS UTR No	
viii)	GST No.of bidder	

E-mail has to be sent to <[asish.karmakar@tpcentralodisha.com](mailto:asish.karmakar@tpcentralodisha.com)> with copy to <[sudhakar.behera@tpcentralodisha.com](mailto:sudhakar.behera@tpcentralodisha.com)> before "Last date and time for payment of Tender Participation Fee".



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**Step 4:** On receipt of the document as mentioned in Step 3 above and after due verification of the same, ARIBA link for participation in the tender will be sent to bidder's mail address from ARIBA system.

**Step 5:** In this mail there will be an online link as **Click Here** to participate in the tender.

**Step 6:** Click **"Click Here"** to access this event.

**Step 7:** If bidder is bidding first time for TPCODL through ARIBA site then please "Sign UP" by creating User Name and password as mentioned in Sign Up page. Please follow the process, as mentioned in the Sign Up page, during creation of User Name and password. Also a simple one-page registration screen will open for first time user. All \* mark mandatory field to be filled in.

Those who are already having User Name and password for accessing TPCODL events, they can LOGIN using same User Name and password.

If bidder has got User name and password for their other customer, same will not be applicable for TPCODL.

**Step 8:** You will be able to see the RFQ

**Step 9:** After review and downloading of all documents click on **"Review Pre-requisites"**

**Step 10:** Review and accept **"Bidder Agreement"**.

**Step 11:** You can see attached pdf tender document against clause no 1.1.1 (Introduction).

**Step 12:** Vendor has to attach pdf version of technical bid in clause no. 2.1 and 2.2. In this field do not attach any price document.

Price schedule is attached in clause no.3.2. Same has to be downloaded and price and tax details to be filled in as per the format given, print to be taken in vendor's letter head and signature and seal to be made by authorised person. PDF version of this price bid to be attached in clause 3.2 For Price Bid put all the unit price and taxes and duties in provided field. Put "0" (ZERO) in not applicable field.

**Step 13:** After successfully putting Techno commercial offer and price part then click on **"Submit Entire Response"**



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## 1.0 Event Information

### 1.1. Scope of supply

Bids are invited from interested Bidders entering into a Rate Contract valid for 1 year for supply of the following items:

S. No.	Description	UOM	Quantity
1.	Design-engg, manufacture and supply of following LVRT:		
1a	(25-33)/33KV 10MVA L.V.R.T	Each	3
1b	LVRT 5 MVA (25-33)/33KV	Each	1
1c	LVRT 1 MVA (7/11 KV)	Each	15
1d	LVRT 1.5 MVA (7/11 KV)	Each	1
2	Supervision during Commissioning of LVRT	Manday	40

### 1.2. Availability of Tender Documents

Please refer "Procedure to participate in the e-tender".

### 1.3. Calendar of Events

(a)	Date of availability of tender documents from TPCODL Website	29.09.2023
(b)	Last date and time of Payment of Tender Fee	08.10.2023 upto 17.00 Hrs
(c)	Last Date of receipt of pre-bid queries, if any	10.10.2023
(d)	Last Date of Posting Consolidated replies to all the pre-bid queries as received	17.10.2023
(e)	Last date and time of receipt of Bids	21.10.2023 upto 17.00 Hrs

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

### 1.4 Mandatory documents required along with the Bid

- 1.4.1 EMD of requisite value and validity
- 1.4.2 Tender Fee.
- 1.4.3 Requisite Documents for compliance to Qualification Criteria mentioned in Clause 1.7.
- 1.4.4 Acceptance of Specification, drawing with filled in GTP as per Annexure II.
- 1.4.5 Duly signed and stamped 'Schedule of Deviations' as per Annexure III on bidder's letter head.
- 1.4.6 Duly signed and stamped 'Schedule of Commercial Specifications' as per Annexure IV on bidder's letter head.
- 1.4.7 Duly filled in Annexure V and VI.
- 1.4.8 Proper authorization letter/ Power of Attorney to sign the tender on the behalf of bidder.
- 1.4.9 Copy of PAN, GST registration (In case any of these documents is not available with the bidder, same to be explicitly mentioned in the 'Schedule of Deviations')

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***Please note that in absence of any of the above documents, the bid submitted by a bidder shall be liable for rejection.***

### **1.5. Deviation from Tender**

Normally, the deviations to tender terms are not admissible and the bids with deviation 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 III - Schedule of Deviations' and same shall be submitted as a part of the Technical Bid.

### **1.6. Right of Acceptance/Rejection**

Bids are liable for rejection in absence of following documents:

- i. EMD of requisite value and validity.
- ii. Price Bid as per the Price Schedule mentioned in Annexure I (BOQ)
- iii. Necessary documents against compliance to Qualification Requirements mentioned at Clause 1.7 of this Tender Document.
- iv. Filled in Schedule of Deviations as per Annexure III.
- v. Filled in Schedule of Commercial Specifications as per Annexure IV.
- vi. Signed and filled in GTP as per Annexure II.
- vii. Duly filled and signed Annexure V and VI.
- viii. Receipt of Bid within the due date and time.

TPCODL reserves the right to accept/reject any or all the bids without assigning any reason thereof.

### **1.7 Qualification Criteria**

- a) The bidder should have an average annual turnover of Rs 5 crores in last three financial years. Copy of audited Balance Sheet and P&L Account to be submitted in this regard.
- b) Bidder must be an OEM of LVRT of same or Higher Ratings with manufacturing facility / assembly in India. TPCODL reserves the right to inspect the said manufacturing facility as a proof of compliance to this parameter. The bidder has to furnish the Self-undertaking in this regard.
- c) The bidder should have successful Type Test Report (TTR) as specified in specification and shall furnish the same as a part of the Technical Bid. The type tests should have been conducted on the equipment / material of the same design and rating or with higher rating. The type tests should have been conducted within 5 years prior to the date of bid opening.
- d) The bidder should have supplied LVRT of minimum 50% of the quantity tendered of same or higher rating during last five financial years.
- e) The bidder should have In-house routine and acceptance testing facilities for acceptance as per relevant IS/IEC. Self-undertaking to be submitted in this regard. TPCODL reserves the right to inspect the said manufacturing facility as a proof of compliance to this parameter.



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- f) The bid shall be accompanied by user's certificate (preferably issued within immediate last 5 years) from any Distribution Utility/ Reputed Private Organization/ State Govt. / Central Govt. or their undertaking(s) in support of satisfactory performance of the LVRT supplied earlier to them. In case the bidder has a previous association with Tata Power for similar products and services, the performance feedback for that bidder by TPC User Group shall only be considered irrespective of performance certificates issued by any third organization. Copy of performance certificates to be submitted in this regard.
- g) The bidder must have all statutory compliance like valid PAN no, GSTN etc. The bidder must submit the copy of all these registrations.

### 1.8. Marketing Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the General Condition of Contracts. Bidders must agree to these rules prior to participating. In addition to other remedies available, TPCODL reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the General Condition of Contracts. A bidder who violates the market place rules or engages in behavior that disrupts the fair execution of the marketplace, may result in restriction of a bidder from further participation in the marketplace for a length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace
- Breach of terms as published in TENDER/NIT

### 1.9. Supplier Confidentiality

All information contained in this tender is confidential and shall not be disclosed, published or advertised in any manner without written authorization from TPCODL. This includes all bidding information submitted to TPCODL. All tender documents remain the property of TPCODL and all suppliers are required to return these documents to TPCODL upon request. Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

### 2.0 Evaluation Criteria

- The bids will be evaluated technically and on qualifying criteria of tender terms and conditions.
- The bids will be evaluated commercially on individual line item basis (all-inclusive lowest cost) for the tender as calculated in Schedule of Items [Annexure I].

**NOTE:** In case a new bidder is not registered with TPCODL, factory inspection and evaluation shall be carried out to ascertain bidder's manufacturing capability and quality procedures. However, TPCODL reserves the right to carry out factory inspection and evaluation for any bidder prior to technical qualification.

*In case a bidder is found as Disqualified in the factory evaluation, their bid shall not be evaluated any further and shall be summarily rejected. The decision of TPCODL shall be final and binding on the bidder in this regard.*

**2.1 Price Basis:** Price will be fixed and firm during the contractual period.





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### **3.0 Submission of Bid Documents**

#### **3.1 Bid Submission**

Bidders are requested to submit their offer in line with this Tender document through e-tendering process.

Please note all future correspondence regarding the tender, bid submission, bid submission date extension, Pre-bid query etc. will happen only through TPCODL E-Tender system (Ariba).

No e-mail or verbal correspondence will be responded. All communication will be done strictly with the bidder who have done the above step to participate in the Tender.

Bids shall be submitted in 3(Three) parts:

**FIRST PART: "EMD"** as applicable shall be submitted. The EMD shall be valid for 210 days from the due date of bid submission in the form of Bank Guarantee / Bank Draft / Bankers Pay Order (issued from a Scheduled Bank) online NEFT/ RTGS transfer favoring 'TP Central Odisha Distribution Limited' payable at Bhubaneswar. The EMD BG has to be strictly in the format as mentioned in General Condition of Contract, failing which it shall not be accepted by TPCODL and the bid as submitted shall be liable for rejection. A separate non-refundable tender fee of stipulated amount also needs to be transferred online through NEFT/ RTGS in case the tender document is downloaded from our website.

TPCODL Bank Details for transferring Tender Fee and EMD is as below:

**Account Name: TP CENTRAL ODISHA DISTRIBUTION LIMITED**  
**Bank Name: SBI, IDCO Towers, Bhubaneswar**  
**Bank Account No.: 10835304915**  
**IFSC Code: SBIN0007891**

**Note-** EMD is preferred in form of Bank Guarantee and to be delivered at the following address. However, in view of present situation if Bidder is finding it difficult to make and submit BG for EMD amount, they can do online transfer of EMD amount in the above mentioned Account and submit proof of the same as part of Bid Submission.

Please note that in such case, Tender Fee and EMD should be strictly 2 separate transactions.

Please note as return of EMD from Bank Account is non-standard practice and the same may take more time than return of EMD BG.

**EMD Original Hard Copy shall be delivered at the following address in Envelope clearly indicating Tender Reference/ Enquiry Number, Name of Tender and Bidder Name**

**Chief (Procurement & Stores)**  
**TP Central Odisha Distribution Limited**  
**1<sup>st</sup> Floor, Anuj Building, Plot No 29, Satya Nagar, Bhubaneswar- 751007**

**SECOND PART: "TECHNICAL BID"** shall contain the following documents:

- i) Requisite Documents for compliance to Qualification Criteria mentioned in Clause 1.7.
- ii) Acceptance of Specification as per Annexure II.
- iii) Duly signed and stamped 'Schedule of Deviations' as per Annexure III on bidder's letter head.
- iv) Duly signed and stamped 'Schedule of Commercial Specifications' as per Annexure IV on bidder's letter head.



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- iv) Duly filled in Annexure V and VI.
- vi) Proper authorization letter/ Power of Attorney to sign the tender on the behalf of bidder.
- vii) Copy of PAN, GST registration (In case any of these documents is not available with the bidder, same to be explicitly mentioned in the 'Schedule of Deviations')

**The technical bid shall be properly indexed and is to be submitted through TPCODL E-tender System (Ariba) only. Hard Copy of Technical Bids need not be submitted**

**THIRD PART: "PRICE BID"** shall contain only the price details and strictly in format as mentioned in Annexure I along with explicit break up of basic prices and Taxes & duties etc. In case any discrepancy is observed between the item description stated in Schedule of Items mentioned in the tender and the price bid submitted by the bidder, the item description as mentioned in the tender document (to the extent modified through Corrigendum issued if any) shall prevail.

**Price Bid is to be submitted in soft copy through TPCODL E-Tendering system (Ariba) only. Hard copy of Price Bid not be submitted**

The EMD in the form of Bank Draft / BG / Bankers Pay Order shall be submitted in original hard copy and then placed in sealed envelope which shall be clearly marked as below:

#### **EMD**

**"Design-engg, manufacture, supply and Supervision during commissioning of LVRT  
Tender No TPCODL/P&S/1000000443/2023-24**

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the TPCODL, 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.

#### **SIGNING OF BID DOCUMENTS:**

The bid must contain the name, residence and place of business of the person or persons making the bid and must be signed and sealed by the Bidder with his usual signature. The names of all persons signing should also be typed or printed below the signature.

The Bid being submitted must be signed by a person holding a Power of Attorney authorizing him to do so, certified copies of which shall be enclosed.

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 authority of the person signing on behalf of the Bidder shall be furnished with bid.

A bid by a person who affixes to his signature the word 'President', 'Managing Director', 'Secretary', 'Agent' or other designation without disclosing his principal will be rejected.

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



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### 3.2 Contact Information

All the bidders are requested to send their pre-bid queries (if any) against this tender through e-mail within the stipulated timelines. The consolidated reply to all the queries received shall be posted on TPCODL website by the stipulated timelines as detailed in calendar of events.

#### Communication Details:

##### Handling Executive for this Tender:

Name: Asish Karmakar  
Contact No.: 8768455566  
E-Mail ID: asish.karmakar@tpcentralodisha.com

##### Escalation: Senior General Manager (Material Procurement):

Name: Mr. Sudhakar Behera  
Contact No.: 9437282663  
E-Mail ID: Sudhakar.behera@tpcentralodisha.com

### 3.3 Bid Prices

Bidders need to quote for all items as per the Price schedule attached in Annexure I. The bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total price with taxes, duties & freight up to destination at various sites of TPCODL. The all-inclusive prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during the execution of the supply work, breakup of price constituents.

#### **Applicable GST to be specified clearly.**

The quantity break up shown else-where other than Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any items not indicated in the price schedule but which are required to complete the job as per the Technical Specifications/ Scope of Work/ SLA mentioned in the tender, shall be deemed to be included in prices quoted.

### 3.4 Bid Currencies

Prices shall be quoted in Indian Rupees Only.

### 3.5 Period of Validity of Bids

Bids shall remain valid for 180 days from the due date of submission of the bid.

Notwithstanding clause above, the TPCODL may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and responses thereto shall be made in writing.

### 3.6 Alternative Bids

Bidders shall submit Bids, which comply with the Bidding documents. Alternative bids will not be considered. The attention of Bidders is drawn to the provisions regarding the rejection of Bids in the terms and conditions, which are not substantially responsive to the requirements of the bidding documents.



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### **3.7 Modifications and Withdrawal of Bids**

The bidder is not allowed to modify or withdraw its bid after the Bid's submission. The EMD as submitted along with the bid shall be liable for forfeiture in such event.

### **3.8 Earnest Money Deposit (EMD)**

The bidder shall furnish, as part of its bid, an EMD amounting as specified in the tender. The EMD is required to protect TPCODL against the risk of bidder's conduct which would warrant forfeiture.

The EMD shall be denominated in any of the following form:

- Banker's Cheque/ Demand Draft/ Pay order drawn in favor of TP Central Odisha Distribution Limited payable at Bhubaneswar.
- Online transfer of requisite amount through NEFT/ RTGS.
- Bank Guarantee valid for 210 days after due date of submission.

**The EMD shall be forfeited in case:**

a) The bidder withdraws its bid during the period of specified bid validity.

**Or**

b) The successful Bidder does not

- a) accept the Purchase Order, or
- b) furnish the required Performance Security Bank Guarantee

### **3.9 Type Tests (if applicable)**

The type tests specified in TPCODL specifications should have been carried out within five years prior to the date of opening of technical bids and test reports are to be submitted along with the bids. If type tests carried out are not within the five years prior to the date of bidding, the bidder will arrange to carry out type tests specified, at his cost. The decision to accept/ reject such bids rests with TPCODL

## **4 Bid Opening & Evaluation process**

### **4.1. 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 TPCODL's processing of Bids or award decisions may result in rejection of the Bidder's Bid.

### **4.2. Technical Bid Opening**

Bids will be opened at TPCODL Office, Bhubaneswar. All tender bids shall be opened internally by TPCODL. Presence of any bidder will not be allowed during bid opening process. Technical bid must not contain any cost information whatsoever.

First the envelope marked "EMD" will be opened. Bids without EMD/cost of tender (if applicable) of required amount/ validity in prescribed format, shall be rejected.

Next, the technical bid of the bidders who have furnished the requisite EMD will be opened, one by one.



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#### **4.3. Preliminary Examination of Bids/Responsiveness**

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

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

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

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

#### **4.4. Techno Commercial Clarifications**

Bidders need to ensure that the bids submitted by them are complete in all respects. To assist in the examination, evaluation and comparison of Bids, TPCODL may, at its discretion, ask the Bidder for a clarification on its Bid for any deviations with respect to the TPCODL specifications and attempt will be made to bring all bids on a common footing. 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 owing to any clarifications sought by TPCODL.

#### **4.5. Price Bid Opening**

Price bids will be opened internally without the presence of any bidder representative. The EMD of the bidder withdrawing or substantially altering his offer at any stage after the technical bid opening will be forfeited at the sole discretion of TPCODL without any further correspondence in this regard.

#### **4.6. Reverse Auctions**

TPCODL reserves the right to conduct the reverse auction (instead of public opening of price bids) for the products/ services being asked for in the tender. The terms and conditions for such reverse auction events shall be as per the Acceptance Form attached as Annexure VI of this document. The bidders along with the tender document shall mandatorily submit a duly signed copy of the Acceptance Form attached as Annexure VI as a token of acceptance for the same.

### **5 Award Decision**

TPCODL will award the contract to the successful bidder whose bid has been determined to be the lowest-evaluated responsive bid as per the Evaluation Criterion mentioned at Clause 2.0. The Cost for the said calculation shall be taken as the all-inclusive cost (at item level) quoted by bidder in Annexure I (Schedule of Items) subject to any corrections required in line with Clause 3.1 above. The decision to place purchase order/LOI solely depends on TPCODL on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that TPCODL may deem relevant.

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751007

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TPCODL reserves the rights to award contract to one or more bidders so as to meet the delivery requirement or nullify award decision without assigning any reason thereof.

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

## **6 Order of Preference/Contradiction**

In case of contradiction in any part of various documents in tender, following shall prevail in order of preference:

1. Schedule of Items (Annexure I)
2. Technical Specifications (Annexure II)
3. Special Conditions of Contract (Clause 7.0)
4. Submission of Bid Documents (Clause 3.0)
5. Acceptance Form for Participation in Reverse Auction (Annexure VI)
6. General Conditions of Contract (Annexure VIII)

## **7 Post Award Contract Administration**

### **7.1. Special Conditions of Contract**

- Rate contract shall be valid for a period of 1 year from the placement of Contract. Release Order (RO) shall be placed as per the requirement of TPCODL. Rate shall be firm and fixed during the validity of the contract.
- Business Associate (BA) shall submit applicable Performance Bank Guarantee as per GCC within 30 days of issuance of rate contract or release order. PBG applicable shall be 5% of Rate Contract Value or 10% of Release Order value. PBG shall be valid till the warranty period of the LVRT plus applicable claim period.
- Any change in statutory taxes, duties and levies during the contract period shall be borne by TPCODL. However, in case of delay in work execution owing to reasons not attributable to TPCODL, any increase in total liability shall be passed on the Bidder, whereas any benefits arising owing to such statutory variation in taxes and duties shall be passed on TPCODL.
- Statutory Variations: Any changes in existing taxes/ Duties and levies, Introduction of new taxes and duties etc. during the period of the contract shall be paid at actuals to BA subject to BA shall submit the tax break up in details, however, where BA has quoted the all-inclusive prices and not shown the tax break-up, this clause will not be applicable. The date of issue of MDCC shall be used for this purpose.
- Bidder may quote for all items of Annexure I, Price Schedule (sl no 1 to 4) or part items. However Supervision charges during Commissioning (sl no 5) to be quoted mandatorily for the LVRT.
- Delivery period shall be 90 days from date of receipt of release order / CAT-A issuance, whichever is later. Installation, testing and commissioning time will be 15 days from date of site clearance.
- Warranty period: As mentioned in technical specification, Annexure-II enclosed.
- Delivery location: TPCODL Store at Cuttack or Bhubaneswar, Odisha.
- Late delivery(LD) clause will be applicable as per GCC.



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- All other terms and conditions of TPCODL General Conditions of Contract shall be applicable.
- TPCODL shall short close the issued Release Order / Rate contract, in case of any quality issues
- Terms of Payment:

**Supply:** On delivery of the materials in good condition and certification of acceptance by certified official, Associate shall submit the Bills/ Invoices in original in the name of TP Central Odisha Distribution Limited to Invoice Desk. The payment shall be released within 60 days from the date of submission of certified bills/ invoices for Non-MSME BA and within 45 days from the date of submission of certified bills/ invoices for MSME BA.

**Supervision during Commissioning:** Payment shall be released within 60 days from the date of submission of certified bills/ invoices for Non-MSME BA and within 45 days from the date of submission of certified bills/ invoices for MSME BA.

## 7.2 Drawing Submission and Approval

The relevant drawings need to be submitted within two weeks of receipt of firm purchase order by the successful bidder to TPCODL for approval. In case, re-submission of drawings is required on request of TPCODL, same needs to be submitted back to TPCODL within 5 days of such request.

## 7.3 Payment Terms

As per SCC, Clause number 7.1.

## 7.4 Climate Change

Significant quantities of waste are generated during the execution of job and an integrated approach for effective handling, storage, transportation and disposal of the same shall be adopted. Also as per the directive from Government of India, there shall be no use of Single Use Plastic, having thickness less than 120 micron, by Associate in the execution of the job. This would ensure the minimization of environmental and social impact in order to combat the climate change. Please refer attached Environment Policy and Sustainability Policy, Annexure-X for more details.

## 7.5 Ethics

TPCODL is an ethical organization and as a policy TPCODL lays emphasis on ethical practices across its entire domain. Bidder should ensure that they should abide by all the ethical norms and in no form either directly or indirectly be involved in unethical practice.

TPCODL work practices are governed by the Tata Code of Conduct which emphasizes on the following:

- We shall select our suppliers and service providers fairly and transparently.
- We seek to work with suppliers and service providers who can demonstrate that they share similar values. We expect them to adopt ethical standards comparable to our own.



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- Our suppliers and service providers shall represent our company only with duly authorized written permission from our company. They are expected to abide by the Code in their interactions with, and on behalf of us, including respecting the confidentiality of information shared with them.
- We shall ensure that any gifts or hospitality received from, or given to, our suppliers or service providers comply with our company's gifts and hospitality policy.
- We respect our obligations on the use of third party intellectual property and data.

Bidder is advised to refer Tata Code of Conduct (TCOC) attached for more information.

Any ethical concerns with respect to this tender can be reported to the following e-mail ID:

pravin.jain@tpcentralodisha.com

## **8 Specification and standards**

As per Annexure II

## **9 General Condition of Contract**

Any condition not mentioned above shall be applicable as per GCC attached along with this tender.

## **10 Safety**

All jobs are this tender have to be executed strictly in compliance to the Safety terms and Conditions of TP Central Odisha Distribution Limited. Please refer attached Safety terms and conditions, Annexure-IX, for details. Violation of Safety norms will result in Penalty as mentioned in the above document.





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**Annexure-I, Price Schedule**

Sl No	Item Description	Qty	UOM	Rate (Rs/Number)	Amount (Rs)	GST Amount(Rs)	Total with GST (Rs)
1	Supply of (25-33)/33KV 10MVA L.V.R.T	3	Each				
2	Supply of LVRT 5 MVA (25-33)/33KV	1	Each				
3	Supply of LVRT 1 MVA (7/11 KV), 7/11 KV	15	Each				
4	Supply of LVRT 1.5 MVA (7/11 KV),	1	Each				
5	Supervision during commissioning of LVRT	40	Manday				
	Total						

**NOTE:**

- i) Scope of supply of the LVRT will be as per attached specification.
- ii) All rates are to be quoted on delivered basis at TPCODL Store located at Cuttack and Bhubaneswar, Odisha and should be inclusive of freight, insurance, loading & unloading, handling charges and any other charges which may be applicable.
- iii) The overall period of the rate contract shall be for a period of 1 year. Release order shall be issued as per requirement of TPCODL. Rates will remain fixed and firm during contractual period.
- iv) The bids will be evaluated on the individual item level basis on all-inclusive lowest cost.
- v) The bidders are advised to quote prices strictly in the above format. Failing to do so, bids are liable for rejection.
- vi) The bidder must fill each and every column of the above format. Mentioning "extra/inclusive" in any of the column may lead for rejection of the price bid.
- vii) No cutting/ overwriting in the prices is permissible.
- viii) Quantities mentioned above is for evaluation purpose only and not guaranteed. Procured quantities may change as per actual requirements.



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**ANNEXURE III**

**Schedule of Deviations**

*Bidders are advised to refrain from taking any deviations on this TENDER. Still in case of any deviations, all such deviations from this tender document shall be set out by the Bidders, 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 TPCODL's specifications:*

S. No.	Clause No.	Tender Clause Details	Details of deviation with justifications

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

**Seal of the Bidder:**

**Signature:**

**Name:**



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**ANNEXURE IV**

**Schedule of Commercial Specifications**

***(The bidders shall mandatorily fill in this schedule and enclose it with the offer Part I: Technical Bid. In the absence of all these details, the offer may not be acceptable.)***

<b>S. No.</b>	<b>Particulars</b>	<b>Remarks</b>
1.	Prices firm or subject to variation (If variable indicate the price variation clause with the ceiling if applicable)	Firm / Variable
1a.	If variable price variation on clause given	Yes / No
1b.	Ceiling	----- %
1c.	Inclusive of GST	Yes / No (If Yes, indicate % rate)
1d.	Inclusive of transit insurance	Yes / No
2.	Delivery	Weeks / months
3.	Guarantee clause acceptable	Yes / No
4.	Terms of payment acceptable	Yes / No
5.	Performance Bank Guarantee acceptable	Yes / No
6.	Liquidated damages clause acceptable	Yes / No
7.	Validity (180 days) (From the date of opening of bid)	Yes / No
8.	Inspection during stage of manufacture	Yes / No
9.	Rebate for increased quantity	Yes / No (If Yes, indicate value)
10.	Change in price for reduced quantity	Yes / No (If Yes, indicate value)
11.	Covered under Small Scale and Ancillary Industrial Undertaking Act 1992	Yes / No (If Yes, indicate, SSI Reg'n No.)

**Seal of the Bidder:**

**Signature:**

**Name:**



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**ANNEXURE V**

**Checklist of all the documents to be submitted with the Bid**

Bidder has to mandatorily fill in the checklist mentioned below:

S. No.	Documents attached	Yes / No / Not Applicable
1	EMD of required value	
2	Tender Fee as mentioned in this tender	
3	Signed copy of this tender as an unconditional acceptance	
5	Duly filled schedule of commercial specifications (Annexure IV)	
6	Sheet of commercial/technical deviation if any (Annexure III)	
7	Balance sheet for the last completed three financial years; mandatorily enclosing Profit & loss account statement	
8	Acknowledgement for Testing facilities if available (duly mentioned on bidder letter head)	
9	List of Machine/tools with updated calibration certificates if applicable	
10	Details of order copy (duly mentioned on bidder letter head)	
11	Order copies as a proof of quantity executed	
12	Details of Type Tests if applicable (duly mentioned on bidder letter head)	
13	All the relevant Type test certificates as per relevant IS/IEC (CPRI/ERDA/other certified agency) if applicable	
14	Project/supply Completion certificates	
15	Performance certificates	
16	Client Testimonial/Performance Certificates	
17	Credit rating/solvency certificate	
18	Undertaking regarding non blacklisting (On company letter head)	
19	List of trained/untrained Manpower	

**Seal of the Bidder:**

**Signature:**

**Name**



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**ANNEXURE VI**

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

*(To be signed and stamped by the bidder)*

In a bid to make our entire procurement process more fair and transparent, TPCODL intends to use the reverse auctions as an integral part of the entire tendering process. All the bidders who are found as technically 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. TPCODL shall provide the user id and password to the authorized representative of the bidder. *(Authorization Letter in lieu of the same shall be submitted along with the signed and stamped Acceptance Form).*
2. TPCODL will make every effort to make the bid process transparent. However, the award decision by TPCODL would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of TPCODL, bid process, bid technology, bid documentation and bid details.
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 glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of TPCODL.
6. In case of intranet medium, TPCODL shall provide the infrastructure to bidders. Further, TPCODL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case of an auction event is restarted, the best bid as 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 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 out-rightly rejected by TPCODL.
8. The bidder shall be prepared with competitive price quotes on the day of the bidding 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 at TPCODL 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 auction event shall be considered by TPCODL.
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 conclusion of the auction event for arriving at Contract amount.

**STANDARD TECHNICAL SPECIFICATION COVER SHEET****Specification No. : ENG-HV-2038****Specification Name : Technical Specification 7-11 kV 1.0 MVA Line Voltage Regulator Transformer**

Prepared by	Reviewed by	Reviewed by	Reviewed by	Approved by	Released by
SWARUP NAYAK	Vijender Goyal	SHANTAPRIYA JENA	JYOTIPRAKASH MOHANTY	KHAJAN BHARDWAJ	POURUSH GARG
TPCODL	TPSODL	TPNODL	TPWODL	TPCODL	TPCODL
10-03-2023	11-03-2023	11-03-2023	17-03-2023	18-03-2023	18-03-2023

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## 1. SCOPE:

I.This Specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forward, supply and unloading at site/store and performance of Oil immersed, non-sealed, naturally cooled, three Phase 11KV Line Voltage Regulator Transformer 500KVA & 1000 KVA to control voltage variation ranging from 7 to11KV.

II.The transformer shall be complete with all components and accessories, which are necessary or usual for their efficient performance and trouble free operation under the various operating and atmospheric conditions specified in clause no. 3

III.Such of the parts that may have not been specifically included, but otherwise form part of the transformer as per standard trade and/or professional practice and/or are necessary for proper operation of transformer, will be deemed to be also included in this specification. The successful bidder shall not be eligible for any extra charges for such accessories etc. notwithstanding the fact that at the time of an initial offer bidder had segregated such items and quoted for them separately.

## 2. APPLICABLE STANDARDS:

The equipment ( and the materials used ) covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian standards & other relevant standards for components & CEA guidelines with latest amendment from time to time, thereof, some of which are listed below:

Indian Standards	Title
IS 1180	Outdoor Type Oil Immersed Distribution Transformers Upto and Including 2500 KVA, 33 kV-Specification
IS 2026 ( all parts )	Specification for Power Transformers
IS 104	Specification for ready mixed paint, brushing, zinc chrome, priming
IS 335	Specification for new insulating oil.
IS 649	Testing for steel sheets and strips and magnetic circuits.
IS 5	Specification for Colors for ready mixed paints and enamels
IS 1576	Solid Pressboard for Electrical Purposes -Specification
IS 2099	Specification for bushings for alternating voltages above 1000 volts



IS 2362	Determination of water content in oil by Karl in oil Fischer Method – Test Method.
IS 3024	Grain oriented electrical steel sheets and strips
IS3347 (Part I & Part-3)	Dimensions for Porcelain Transformer Bushings for Use in Normal and Lightly Polluted Atmospheres - Part 1 : Up to and including 1 kV
IS 4253: Part II:	Specification for cork composition sheets- Part II : Cork and Rubber
IS 4257(Part I):	Dimensions for Clamping Arrangements for Porcelain transformer Bushings - Part I: For 12 kV to 36 kV Bushings
IS 5082	Wrought Aluminum and Aluminum Alloy bars, Rods , Tubes, Sections, Plates and Sheets for Electrical Applications
IS 5561	Specification for Electric Power Connectors
IS 6103	Specification for Testing of specific resistance of electrical insulating liquids
IS 2026 part 7	Guide for loading of Oil-immersed transformer
IS 6792	Method for Determination of Electric Strength of Insulating Oil
IS 7404 (Part-1):	Paper Covered conductors: Round Conductors
IS 7421	Specification for porcelain bushings for alternating voltages up to and including 1000kv
IS 8603 (Part-1) :	Dimensions for Porcelain Transformer Bushings for Use in Heavily Polluted Atmospheres - Part I:12 kV and 17.5 kV Bushings
IS 9335	Specification for Cellulosic Papers for Electrical Purposes
IS 10028	Code of Practice for Selection, Installation and Maintenance of Transformers
IS 11149	Specification for rubber gaskets
IS 12444	Specification for Continuously Cast and Rolled Electrolytic Copper Wire Rods for Electrical Conductors.
IS/IEC 60947 ( PART 1& PART 2 )	Specification for LV Switchgear & Control gear
IS 6160	Rectangular electrical conductors for electrical machines
IS 13964	Methods of measurement of transformer and reactor sound levels

IS 3401	Specification of silica Gel
IS 1897	Copper strip for electrical purposes
IS 60529	Degree of protection provided by enclosure
IS 816	Welding of Mild Steel
CEA	Guidelines for specifications of energy efficient outdoor type single and three phase distribution transformers
IS 6262	Method of test for power factor and dielectric constant of electrical insulating liquids
IS 16659	Fluids For Electro technical Applications - Unused Natural Esters For Transformers And Similar Electrical Equipment
IS 16081	Insulating liquids — Specifications for. Unused synthetic organic esters for Electrical purposes
IEC 60156	Method of determination of electric strength of insulating oils.
IEC 60296	Specification for unused mineral insulating oils for transformers and switchgear.
IEC 60529	Degrees of protection provided by enclosures (IP Code)
IS 1852	Rolling and cutting tolerances for hot rolled steel products

### 3. CLIMATIC CONDITIONS:

1	Maximum ambient temperature	50 deg C
2	Max. Daily average ambient temp	35 deg C
3	Min Ambient Temperature	0 deg C
4	Maximum Humidity	95%
5	Average Annual Rainfall	1500 mm
6	Average No. of rainy days per annum	120
7	Altitude above MSL not exceeding	1000m
8	Wind Pressure	300 Km/hr

9	Earthquakes of an intensity in horizontal direction	equivalent to seismic acceleration of 0.3g
10	Earthquakes of an intensity in vertical direction	equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity)

TPCODL/TPNODL/TPWODLTPSODL service area has heavy saline conditions along the coast and High cyclonic Intensity winds with speed upto 300 Kmph. The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months.

#### 4. GENERAL TECHNICAL REQUIREMENTS:

SL	Parameters	Unit	500 KVA	1000 KVA
1.	Description		11KV Line Voltage Regulator Transformer	
2.	Service		Outdoor	
3.	Reference Standard & Tolerances		IS:2026	
4.	KVA Ratings of Transformers	kVA	500	1000
5.	Voltage Variation	KV	7KV-11KV on Source Side to maintain a constant 11KV on Load side.	
6.	Full Load Current	Amp	41.24A at 7KV, 26.24A at 11KV	82.48 at 7KV, 52.48A at 11KV
7.	Voltage Control		By provision of an AVR With OLTC	
8.	Rated Frequency	Hz	50	
9.	No. of Phases	Nos	3	
10.	Max Flux density at normal voltage (11KV) and frequency (50Hz)	Tesla	1.6 T	
11.	Max Flux density at 12.5% increase of Combined Nominal V & f .	Tesla	1.9 T	
12.	Max Current density	A/Sq. mm	2.5	

13.	Vector Group		Ynya0	
14.	Type of Cooling		ONAN	
15.	Temperature Rise- Top Oil/ Winding,	°C	40/45	
16.	No-Load Loss at rated voltage (11kV) & Frequency	kW	1 kW ( $\pm 10\%$ Tolerance)	2 kW ( $\pm 10\%$ Tolerance)
17.	Load Loss at rated current and at 75 Deg at Highest Tap	kW	2 kW ( $\pm 10\%$ Tolerance)	3.5 KW ( $\pm 10\%$ Tolerance)
18.	Impedance Voltage at rated current at 75 Deg	%	0.55 ( $\pm 10\%$ Tolerance)	0.6 ( $\pm 10\%$ Tolerance)
19.	Type of Tap Changer		In-Tank OLTC (On Load Tap Changer)	
	Make		EASUN MR/CTR	
	Tapping Range		16 Step,17-Position	
20.	Insulation Class		Class-A	
21.	Separate Source Power Frequency Voltage Withstand	KVR MS	28	
22.	Induced Over Voltage Withstand	KVR MS	22	
23.	Full Wave Lightening Impulse Withstand Voltage of winding	kVp	95	
24.	Terminal Arrangement -			
	Load Side Bushing		Outdoor type 17.5KV Bushing on Top	
	Source Side Bushing		Outdoor type 17.5KV Bushing on Top	
25.	Weight (With $\pm 10\%$ Tolerance)		As per Manufacturer's Design	
26.	Weight of Core	Kg	As per Manufacturer's Design	
27.	Weight of Winding(Copper)	Kg	As per Manufacturer's Design	

28.	Core &Winding	Kg	As per Manufacturer's Design
29.	Tank &Fitting	Kg	As per Manufacturer's Design
30.	Transformer Oil	Ltrs/ Kg	As per Manufacturer's Design
31.	Total Weight of Transformer	Kg	As per Manufacturer's Design
32.	Auxiliary Transformer 3Ph 1KVA for Tap Changer and Control. ( Separate/In Built)	Qty	1
33.	Core Material & Grade		CRGO M3 0.23 mm
34.	Winding Resistance at 20 Deg.c Per phase(Tap.No.1)	Ohm	As per Manufacturer's Design
35.	Magnetizing Current at 90%,100% &112.5%	%	2%,3% & 5.0% of Rated Current
36.	Winding Material Insulation		QPC
37.	Type of Mounting		Floor Mounted/ Plinth Mounted

## 5. GENERAL CONSTRUCTION:

- I. The transformer shall be stacked core, copper coil, oil immersed, naturally cooled (ONAN), non-sealed type with plain rectangular tank.
- II. The transformer shall be suitable for service with fluctuations in supply voltage as per GTP
- III. The transformer shall be designed suitable for service life of 25 years.
- IV. The transformer and accessories shall be designed to facilitate trouble free operation, inspection, maintenance and repairs under the various operating and atmospheric conditions specified in clause no. 3.
- V. The design shall incorporate every precaution and provision for the safety of the equipment as well as staff engaged in operation and maintenance of the equipment.
- VI. All outdoor apparatus of the transformer, including bushing insulators with their

mountings, shall be designed so as to avoid any accumulation of water.

#### 5.1 CORE:

- I. Transformer core shall be stack type, 2D, constructed from high grade cold rolled, non-ageing, grain oriented, silicon steel lamination which shall be properly annealed (under inert atmosphere, if required) to relieve stresses.
- II. The core shall have low loss and good grain properties.
- III. Core should be coated with hot oil proof, with insulation coating, an inorganic coating equivalent to C-5 type as ASTM A976 or IS 3024, like Carlite -3.
- IV. All core should be clamped together with frames to prevent vibration and noise. The core clamping shall be preferably without through bolts and if any bolt used same shall be effectively insulated.
- V. The core thickness should be 0.23mm or better. 23HP85 as per IS 3024 or better with Minimum Polarization in Tesla at a Field Strength of 800 A/m
- VI. Only single grade and same thickness of core stampings shall be accepted and mixing of different grades shall not be allowed.
- VII. The complete design of the core must ensure maximum permanency of the core losses without continuous working of the transformers .
- VIII. The value of the maximum flux density allowed in the design and grade of lamination used shall be clearly stated. The vendor shall submit the calculations in support of the same.
- IX. The handling of core lamination and stacking should be smooth and uniform.
- X. The transformer shall be suitable for continuous service without damage under 'over fluxing' where the ratio of voltage over frequency exceeds the corresponding ratio at rated voltage and rated frequency up to 12.5% and the core shall not get saturated. The BH graph to be submitted by bidder for core material.
- XI. Increase of 12.5% of rated voltage shall not increase the no-load current by 5% maximum of full load current .
- XII. The bidder shall be required to submit the following documents in regard to procurement of core material during stage inspection:
  - a. Invoice of supplier
  - b. Mill's test certificate
  - c. Packing list
  - d. Bill of landing
  - e. Bill of entry certificate by custom (if required)

- f. Description of material, electrical analysis, physical inspection certificate for surface defects, thickness and width of material.
- XIII. The bidder shall offer the core for inspection and approval of TPCODL/TPNODL/TPWODLTPSODL during manufacturing stage. Heavy penalty or black listing shall be imposed on the bidders using defective CRGO sheets i.e in case of nonconformance w.r.t TPCODL/TPNODL/TPWODLTPSODL Specifications.
- XIV. Transformer core assembly shall have enclosed type lifting lugs for lifting arrangement.
- XV. **Bidder shall provide the below details in below table:**

Sl. No.	Description	Unit	To be furnished by bidder
1	Magnetizing (No Load) Current		
	90% Voltage	%	
	100% Voltage	%	
	112.5% Voltage	%	
2.	Core grade		
3.	Thickness of core Lamination	Mm	
4.	Core Dimension: Length X height X diameter	mm x mm x mm	
5.	Gross core area	Sq.cm	
6.	Net core area	Sq.cm	
7.	Flux density (calculated)	Tesla	
8.	Over fluxing without saturation to be submitted)	Tesla	
9.	Mass of core	Kg	
10.	Loss per Kg of core at the above specified flux density	Watt	
11.	Core window height	Mm	
12.	Center to center distance of the	Mm	

13	Mass of Core Lamination (min.	Kg	
14	Make of Core offered		

## 5.2 WINDING CONNECTIONS

- I. Load and Source Side windings shall be constructed from high- conductivity (copper conductors), QPC copper conductor with min. 25% overlap per layer of paper.
- II. The conductor should be drawn uniformly without any deformation and any burr.
- III. No metallic or non-metallic dust should be present in-between QPC conductor.
- IV. The current density for Load and Source Side winding should not be more than 2.5 Ampere per sq.mm.
- V. The insulation between core and bolts, core and clamps shall withstand **2.5 kV for one minute.**
- VI. Proper bonding of inter layer insulation with the conductor shall be ensured.
- VII. All turns of windings shall be adequately supported (by which material) to prevent movement. The core/coil assembly shall be securely held in position to avoid any movement under short circuit conditions.
- VIII. The joints in the winding shall be avoided but if it is necessary then, they shall be properly brazed and the resistance of the joints shall be less than that of parent conductor. Crimping is not allowed at any joints.**
- IX. Bidder shall provide the below details in below table:**

SL	Parameters	Unit	Technical Data
1	Description		
2	Service		
3	Reference Standard & Tolerances		
4	KVA Ratings of Transformers	kVA	
5	Voltage Variation	KV	
6	Full Load Current	Amp	
7	Voltage Control		
8	Rated Frequency	Hz	
9	No. of Phases	Nos	
11	Max Flux density at normal voltage (11KV) and frequency (50Hz)	Tesla	
11	Max Flux density at 12.5% increase of Combined Nominal V & f .	Tesla	
12	Current density	A/Sq.mm	
13	(Intentionally Kept Blank )		
14	Vector Group		
15	Type of Cooling		
16	Temperature Rise-Top Oil/ Winding,	°C	
17	No-Load Loss at rated voltage (11kV) & Frequency	kW	
18	Load Loss at rated current and at 75 Deg	kW	



19	Impedance Voltage at rated current	%	
20	Type of Tap Changer		
	Make		
	Tapping Range		
21	Insulation Class		
22	Separate Source Power Frequency Voltage Withstand	KVRMS	
23	Induced Over Voltage Withstand	KVRMS	
24	Full Wave Lightning Impulse Withstand Voltage of winding	kVp	
25	Terminal Arrangement -		
	Load Side Bushing		
	Source Side Bushing		
26	Efficiency at 75°C at unit P.F & at 0.8 PF Lagging		
	a. 125% Load	%	
	b.100% Load	%	
	c. 75% Load	%	
	d.50% Load	%	
	e.25% Load _	%	
27	Regulation		
	a. At unit P.F	%	
	b. At 0.8 P.F Lagging at 75°C	%	
	c. Maximum Efficiency occurs at	%	
	d. Maximum Efficiency	%	
28,	Weight (With ±10% Tolerance)		
	Weight of Core	Kg	
	Weight of Winding(Copper)	Kg	
	Core &Winding	Kg	
	Tank &Fitting	Kg	
	Transformer Oil	Ltrs/Kg	
	Total Weight of Transformer	Kg	
29	Auxiliary Transformer 3Ph 1KVA for Tap Changer and Control. ( Separate/In Built)	Qty	
30	Core Material & Grade		
31	Winding Resistance at 20 Deg.c Per phase(Tap.No.1)	Ohm	
32	Magnetizing Current at 90%,100% &112.5%	%	
33	Winding Material Insulation		

**5.3 INSULATING PAPER AND INSULATING PRESSBOARD**

- I. Inter layer insulation both for Load and Source Side windings shall be Epoxy diamond dotted Kraft paper and compressed pressboard of make (refer Clause no.5.32) subject to approval of TPCODL/TPNODL/TPWODLTPSODL
- II. Load and Source Side windings shall be constructed from high- conductivity (copper conductors), QPC copper conductor with min. 25% overlap per layer of paper.
- III. Kraft paper and Pressboard should be made of pure Cellulose from soft wood pulp manufactured from sulphate process. No additive, adhesive or coloring matter shall be present.
- IV. Kraft paper and Pressboard should be of class A (105°C) insulation material.
- V. All spacers, axial wedges / runners used in windings shall be made of pre-compressed solid pressboard.
- VI. All axial wedges/runners shall be properly milled to dovetail shape so that they pass through the designed spacers freely.
- VII. Insulation shearing, milling and punching operations shall be carried out in such a way, that there should not be any burr, sharp edges and dimensional variations.
- VIII. Kraft paper self-adhesive tape to be used for bonding of insulating paper layer, spanner and paperboards that are immersed in the oil filled transformer.
- IX. Insulation shall be uniform throughout the winding. Graded Insulation is not allowed.
- X. **Below required values could be verified if required at any stage of the inspection and it should fulfill the requirement as per below table:**

Characteristics	Kraft Paper	Pressboard (all Sizes)
1. Dimension	As specified by bidder with $\pm 5\%$ tolerance.	As specified by bidder with tolerance as per IS1576.
2. Apparent Density	$>0.80 \text{ g/cm}^3$	as per IS 1576 w.r.t Thickness
3. pH of Aqueous extract	6-8%	6-8%
4. Electrical strength i) in air ii) In Oil	7KV/mm -----	12KV/mm 35KV/mm
5. Ash content	Maximum 1%	Maximum 0.7
6. Moisture content	Maximum 8%	Maximum 8%
7. Oil absorption	-----	Minimum 9%
8. Heat stability	As per IS 9335-part 3	As per IS 1576
9. Tear index	As per IS 9335-part 3	As per IS 1576

Bidder has to submit the test certificates as per IS-9335, IS-1576 for all type of insulating materials covering above stated parameters along with **below parameters during stage inspection :**

- a. Substance (Grammage) (g/m<sup>3</sup>)
- b. Compressibility
- c. Tensile strength
- d. Conductivity of water extract
- e. Shrinkage in air
- f. Flexibility

- g. Cohesion between plies.
- h. Elongation
- i. Air permeability
- j. Bidder shall provide the below details in below table

Sl. No.	Description	Unit	As furnished by bidder
1.	QPC Paper for Load and Source Side conductors :		
	Type of QPC Paper		
	Make of QPC Paper		
	Thickness QPC Paper	mm	
	Percentage Overlapping (not less than 25%)	%	
2.	Type of Paper for Interlayer Insulation		
	Make of Paper for Interlayer Insulation		
	Thickness of Paper for Interlayer Insulation	mm	
3.	Type of Paper for Insulation Between Load and Source Side winding		
	Make of Paper for Insulation Between Load and Source Side winding		
	Thickness of Paper for Insulation Between Load and Source Side winding (for all sizes)	mm	
4.	Type of Pressboards used for Insulation Between Load and Source Side winding		
	Make of Pressboards used for Insulation Between Load and Source Side winding		
	Thickness of Pressboards for Insulation Between Load and Source	mm	

	Side winding (all size)		
5.	Type of Paper used for insulation between core and Winding		
6.	Type of Pressboard used for insulation between core and Winding		
	Make of Pressboard used for insulation between core and Winding		
	Thickness of Pressboard used for insulation between core and Winding (All sizes)		
7.	Material used for top and bottom yoke insulation		
	Make of material used for top and bottom yoke insulation		
	Thickness of material used for top and bottom yoke insulation	mm	
8.	Type of material used for Spanner, wedge and Axial for insulation		
	Make of material used for Spanner, wedge and Axial for insulation		
	Thickness of material used for Spanner, wedge and Axial for insulation (all sizes)	mm	

**5.4 LOSSES**

- I. The bidder shall individually guarantee No load loss (Iron loss at rated voltage and frequency) and full load Copper Loss (at 75°C) without any positive tolerance.
- II. **The bidder shall also guarantee the total loss at 50% and 100% load condition (at rated voltage and frequency and these should be within the limits of maximum total losses declared by TPCODL/TPNODL/TPWODLTPSODL for both 50% and 100% loading values ( as per table below ) :**

Description	
Maximum Losses at 50% loading at 75°C (Watts)	



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Maximum Losses at 100% loading at 75°C (Watts)	
<b>Description</b>	
Maximum Losses at 50% loading at 75°C (Watts)	
Maximum Losses at 100% loading at 75°C (Watts)	

**No positive tolerance shall be allowed on the losses as mentioned above. However, bidder can offer losses less than specified but no consideration in cost will be given for the same.**

**\* : Ratings are for optional/ future use**

- III. The successful bidder shall guarantee the quoted losses for at least five years. If at any point of time during operation if it is found that the total losses at 50% and 100% load are more than the values given in specifications, then bidder shall be liable to pay a fine of Rs 250 per watt to the amount by which losses at 50% loading and 100% loading increase with respect to the values given in specifications.
- IV. During testing at Bidder's works if it is found that the actual measured losses are more than the values quoted by the Bidder, TPCODL/TPNODL/TPWODLTPSODL shall have the right to reject the complete lot.
- V. During testing at Bidder's works, if the temperature rise exceeds the specified values, the entire lot shall be rejected by TPCODL/TPNODL/TPWODLTPSODL.
- VI. During testing at Bidder's works, if the impedance values differ from the guaranteed values including tolerance, the entire lot shall be rejected by TPCODL/TPNODL/TPWODLTPSODL.
- VII. Transformer losses shall be checked on any one of DT from supplied lot at TPCODL/TPNODL/TPWODLTPSODL workshop. If it is found that the actual measured losses are more than the values quoted by the Bidder, TPCODL/TPNODL/TPWODLTPSODL shall have the right to reject the complete lot.

VIII. **Bidder shall provide the below details in below table:**

Sl. No.	Description	Unit	To be furnished by bidder
1	No Load losses	Watt	
2	Load losses at 50%loading at 75° C	Watt	
3	Load losses at 100% loading at 75° C	Watt	
4	Total losses at 50%load at 75° C	Watt	
5	Total losses at 100% load at 75° C	Watt	
6	<b>Efficiency at 75 deg. C</b>		
7	<b>Efficiency at Unity P.F.</b>		

7.1	100% load	%	
7.2	80% load	%	
7.3	60% load	%	
7.4	40% load	%	
7.5	20% load	%	
8	<b>Efficiency at 0.8 P.F.</b>		
8.1	100% load	%	
8.2	80% load	%	
8.3	60% load	%	
8.4	40% load	%	
8.5	20% load	%	
9	<b>Regulation at :</b>		
9.1	Unity P.F. at 75 deg. C	%	
9.2	0.8 P.F. at 75 deg. C	%	
9.3	% Impedance at 75 deg. C	%	

## 5.5 TRANSFORMER TANK AND TANK CONSTRUCTION

- I. The transformer tank shall be of robust construction, rectangular in shape and shall be built up of electrically tested welded mild steel plates.
- II. The tank shall be fabricated by welding at corners. No horizontal or vertical joints in tank side walls and its bottom or top cover shall be allowed.
- III. All welding operations should be carried by qualified welders (performance qualification certificates to the customer) as per the relevant ASME standards and a copy of the welding procedure has to be submitted to TPCODL/TPNODL/TPWODLTPSODL at the time of drawing approval.
- IV. The thickness of tank should be as below:  
For top and bottom : 6 mm (min.)  
For Sides : 5 mm (min.)  
Tolerance shall be applicable as per IS 1852 as per above thickness band.
- V. In addition the cover of the main tank shall be provided with an **air release plug**.
- VI. The tank plates shall be of such strength that the complete transformer when filled with oil may be lifted bodily by means of the lifting lugs provided. The top cover shall have no cut at point of lifting lug.
- VII. The transformer tank cover shall be bolted with tank rim so as to make a leak proof joint.
- VIII. The tank plate and lifting lugs shall be of such strength that the complete transformer filled with oil may be lifted by means of lifting shackle.



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- IX. The tank cover shall have slight slope (10 mm ± 2mm) towards Source Side side to drain rain water.
- X. There must be sufficient space from the core to the top cover to take care of oil expansion. The oil volume inside the tank shall be such that even under the extreme operating conditions, the **pressure generated inside the tank does not exceed 0.4 kg/sq. cm positive or negative** and the tank shall be of adequate mechanical strength to withstand it.
- XI. The transformer should be capable of **withstanding 0.8kg/sq.cm air pressure and a vacuum of 0.7kg/sq.cm**. The permanent deflection of the flat plate, when the tank without oil is subjected to a vacuum of 525 mm of mercury shall not be more than the values specified:

<b>Length of Plate</b>	<b>Deflection</b>
Up to 750 mm	5.0 mm
751 mm to 1250 mm	6.5 mm
1251 mm to 1750 mm	8.0 mm
Above 1750 mm	9.0 mm

- XII. The tank design shall be such that the core and the windings can be lifted freely without dismantling the bushings.
- XIII. All joints of tank and fittings shall be oil tight and no bulging shall occur during service.
- XIV. Anti –theft arrangement via drill hole in one of the thread shall be provided at top cover.
- XV. The tightening torque chart to be provided for all bolts used. This shall be submitted along with each rating drawings.
- XVI. The transformer shall be provided with four pulling lugs of MS plate of 8mm thick to pull the transformer horizontally.

**Lifting lugs:**

- I. The transformer shall be provided with a minimum of four welded heavy duty enclosed lifting lugs of Structural steel E250 or better grade quality A (Minimum quality A) as per IS 2062 plate of minimum 16mm thickness for lower rating and gradually increased for higher rating as per weight suitably reinforced by vertical supporting flat stiffener smooth welded properly on the side walls up to reinforcing angle. They shall be so extended that cutting bend plate is not required. The transformer lifting lug shall be painted with yellow colour.
- II. The location of lifting lugs shall be such that the clearance between lifting chain and nearest part of bushing shall be at least 100 mm.
- III. There shall be facilities for lifting the core coil assembly separately.
- IV. The lifting lugs shall be designed in such a way that any two diagonal lugs are capable of lifting two times of the total weight of the transformer. The design of should be such that it should be suitable for 120degree lifting rope angle as per ASME B30.9 and at any point of time the maximum stress allowed on the Lug martial shall be lesser than 82MPa as per ANSI C.57.12.10
- V. Calculation sheet for Lifting lug design to be submitted by Bidder. The calculation shall include the Stress on lifting lug material and stress on welding both. The Stress on the welding should be less than 840kg/cm2 as per ANSI C.57.12.10. All calculation to be done for considering lifting on any diagonal opposite two lugs conditions.
- VI. The lifting lugs shall be located on the side walls only and conservator on LT box side. Separate drawing to be submitted stating welding thickness, welding length and location on tank along with stiffener support for all rating and all lugs.

**Bidder shall provide the transformer size and clearances in below table:**

<b>Sl. No.</b>	<b>Description</b>	<b>Unit</b>	<b>To be furnished by bidder</b>
1	Transformer overall Length x Height x width	mm x mm x mm	
2	Only Tank overall Length x Height x width	mm x mm x mm	
3	Source Side Cable box overall LxWxH (If applicable)	mm x mm x mm	
4	Load Side Cable box overall LxWxH (If applicable)	mm x mm x mm	
5	<b>Clearances</b>		
5.1	Core and Winding	mm	
5.3	Winding Phase to phase	mm	
5.5	Between yoke and inside of tank to cover	mm	
5.6	Between yoke and bottom	mm	
5.7	Any point of winding to tank	mm	
6	<b>Calculated Impedance</b>	%	
7.1	Winding to Earth Creepage distance in oil (minimum 15mm)	mm	
8.	Conservator dimension (dia x Length)	mmxmm	
9.	Size of Pipe used for conservator to Tank	mm	
10.	Size of Pipe used for Valves	Mm	
11.	Base Channel size	mmxmmxmm	
12.	No. of Radiators	Nos	
13.	No. of fins per Radiator	Nos	



14	Dimension of radiator fins (L x W)	mmxmm	
15	Make of Tank material		

### 5.6 RADIATORS

- I. Radiators of pressed steel type conforming to the design requirement suitable for mineral oil and Ester oil (all type) type transformer.
- II. The Pressed Steel type should be used in vertical formation without any bending and should be individually tested for leakage and pressure test etc. before welding with the main tank.
- III. **Thickness** of sheet for radiators shall be **1.20 mm (min)**.
- IV. The **mounting** of the radiators shall be **detachable**
- V. The number / cross section / length / fixing arrangement of radiators shall be indicated in the general assembly drawing.
- VI. Radiator thickness must be uniform without any dent or damage and also no bulging or concave should occur even after performing pressure/ vacuum test and temperature rise test.
- VII. Corrugated designs are not accepted.

### 5.7 GASKET

- I. **Cork rubber gaskets** conforming to Type C , grade RC70 as per IS 4253 (Part-2) shall be provided for all oil bearing & water ingress resistant requirements for components like bushings bottom gasket, terminal box, Top Cover, Conservator, Valves etc.
- II. **Nitrile/Neoprene rubber gaskets** conforming to Type IV – 4C (heat and oil resistant) as per IS 11149 shall be provided for bushing O ring (oil gaskets).
- III. **Only Joint free Gasket to be used. Only in case of top cover gasket and terminal box gasket up to two dove-tail joints with adhesive shall be allowed. The terminal box gasket joint shall come at bottom part.**
- IV. Cork sheet, Nitrile/Neoprene rubber gaskets shall be free from cracks, pinholes and shall be capable of being cut or punched without crack or tearing.

### 5.8 On Load Tap Changer

On Load Tap changer (OLTC) on Source Side	
a) Type	On Load (In Tank)
b) Range	7kV -11kV 0 to -36%
c) Number of Steps	16 Step (17 Position)
e) Manual / Automatic	Yes (Both)
f) Remote / Local	Yes (Both)
g) IS	8468-2006
h) All contacts should be SCADA compatible and suitable for connection to TMU	Yes
i) Protection for OLTC	Yes
j) Potential free contacts for SCADA shall be Provided	Yes



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k) Flow of Power	Bidirectional
l) AVR and SCADA compatibility	Yes

## 5.9 BUSHINGS AND TERMINAL CONNECTORS

### **A. HT Bushings (17.5 kV/250 A) on Load and Source Side Side:**

- I. The bushings shall be outdoor type, external part shall be made of porcelain material. Rods, nuts and flat washer (Tightening Nut along with Check Nut) shall be made of tinned brass material.
- II. IS to be followed: IS 8603(Part- I) for porcelain, IS 3347 part3 section 2 for metal part and Complete bushing shall comply IS 2099.  
**Outdoor Bushing on Top with Bird Guard**
- III. The bushings shall have Hot Dipped Galvanized or Alum-zinc coated or SS material arcing horns with 8mm diameter. The thickness of coating shall be **86 microns** (minimum at any point).
- IV. The bushing shall be fitted with bird guard on the bushing connector.
- V. Complete Tinned Brass joint less connectors shall be provided on bushing rods suitable for bare dog conductor connections. The connector should have large contact area. Hardware shall be Hot Dipped Galvanized or Aluzinc coated or SS material

**LA of suitable voltage rating shall be mounted at both ends of the transformer**

## 5.10 TERMINAL CONNECTORS

### **HT TERMINAL CONNECTOR:**

- I. Tinned Brass connectors shall be provided connected with bushing rods for bare top plate bushings .
- II. UV resistant polymeric insulating shrouds shall be provided on the bare bushing terminals.

## 5.11 INTENTIONALLY KEPT BLANK

## 5.12 EQUILISING/ EQUIPOTENTIAL STRIP

- I. The Transformer top cover shall be connected with main tank using **tinned copper strip (30mm wide, 0.7mm thick)** at two places (diagonally opposite with each other).
- II. The strip should touch bare surface of tank in order to ensure proper electrical connection of tank body with top cover with the strip.
- III. All the covers like inspection cover, Conservator cover must be electrically connected using **tinned copper strip (30mm wide, 0.7mm thick)**.
- IV. Separate arrangement to be made and cover tightening bolt not to be used for equipotential strips.

## 5.13 EARTHING CONNECTIONS

### **NEUTRAL EARTHING:**

- I. 12KV Grade of neutral bushing shall be provided

**BODY EARTHING:**

- I. Two body earthing terminals pads boss arrangement (up to 500sq.mm) shall be provided on Transformer tank with M12 SS Bolt with 70 sq. mm lug. with SS plain washer and spring washer.
- II. It shall be located on the lower side of the transformer, diagonally opposite to each other.
- III. Each Earthing terminal pad on DT shall be provided with two SS M12 bolts on each pad on each side with two 70 sq.mm AL Lugs and washers.

**5.14 OIL**

**Note: Default Oil shall be Mineral oil only if not specified / asked for other oil.**

**Mineral Oil: In case of Mineral Oil below are the requirements to be fulfilled:**

1. All transformers shall be filled with new, unused, clean, standard mineral oil in compliance with IS 335-2018 / IEC 296 type-II and shall be free from all traces of polychlorinated biphenyl (PCB) compounds.
2. The use of recycled oil is not acceptable.
3. Oil shall be filled under vacuum before filling it shall be filtered and tested (as per IS 6103).
4. The test parameters should be as per the table below:

Test parameters	Values
Break Down Voltage (min )	70 kV
Water content ppm, (max.)	30 ppm
Specific resistance (min.) ( at 27°C )	2.5 × 10 <sup>12</sup> ohm-cm

Bidder has to provide the oil data in below table:

Sl. No.	Description	Unit	To be furnished by bidder
1	Type of oil		
2	Oil Qty. for first filling	Ltr.	
3	Grade of Oil		
4	Maker's name		
5	BDV at the time of first filling	kV	

**5.15 CONSERVATOR**

- I. The conservator shall be supported / fixed on the main body of the transformer tank.
- II. The capacity of the conservator tank shall be designed keeping in view the total quantity of oil and its contraction and expansion due to temperature variations. The total volume of

conservator shall be such as to contain **10% quantity of the oil used in transformer**. Normally, at least **30% volume of conservator** shall be filled with Oil.

- III. The connecting pipe of the conservator shall be so fitted to transformer tank that the pipe can be detached from the tank.
- IV. Joint less pipe shall be used which shall be connected with round flanges.
- V. The inside diameter of the pipe connecting the conservator to the main tank shall be within 25 to 50 mm and it should be projected into the conservator so that its end is approximately 20mm above the bottom of the conservator so as to create a sump for collection of impurities. The minimum oil level corresponding to -5°C should be above the sump level.
- VI. The conservator oil filling cap/hole shall be of 32mm diameter & female type cap to be provided.
- VII. The conservator to be fitted with MOG such that it shall operate/open contact when the oil level in conservator goes below -5 degree C /Minimum mark. The float switch shall be with normally closed type. This contact shall be wired up in auxiliary terminal box.
- VIII. Buchholz relay: The pipe should not contain any right angle elbows. Its diameter should correspond to the diameter of the hole for the passage of oil of the relay. The pipe must be arranged to slope upwards towards the conservator at an angle of about 2 to 4 degrees to the horizontal (max 5 degrees). The part of the pipe preceding the relay should be straight for a length equal to at least five pipe diameters; the part of the pipe leading to the conservator immediately adjacent to the relay should be straight for a length equal to at least three pipe diameters.
- IX. The Oil conservator shall be provided with:
  - a. **Oil level indicator** (as per clause no. 5.18).
  - b. **Dehydrating breather** (as per clause no. 5.22).
  - c. **Drain plug**
  - d. **Oil filling hole** (1.25 inch/32mm with thread size of BSP 1.25inch, 11TPI) with cover.
  - e. **Detachable end plate** on one side (the side on which the gauge glass is fitted), to enable the maintenance staff to periodically clean the inside of the conservator tank

#### **Center of Gravity**

The transformer should be designed in such a way that the centre of gravity of complete transformer with oil and with all accessories shall fall at the vertical centre at lower height such that the transformer should be stable on flat surface ground and while lifting at lifting hooks.

#### **5.16 OIL LEVEL INDICATOR**

- I. Oil level indicator with **prismatic glass and red colour background** shall be provided.
- II. The oil gauge glass shall be removable and so embodied in the end plate so as to prevent oil leakage.
- III. The Oil level indicator should indicate oil level at minimum, normal and maximum as -5°C, 30°C and 90°C respectively.

#### **5.17 PRESSURE RELEASE VALVE**

- I. All transformers shall be provided with PRV with auxiliary contacts. The contact to be wired up in the auxiliary terminal box.
- II. PRV shall be provided to operate before reaching the test pressure as specified in the above class.
- III. PRV shall not have air release arrangement.
- IV. The PRV shall seal-off after the excess pressure has been released and it shall have mechanical flag arrangement.
- V. The PRV shall have NO, NC contacts wired up in auxiliary terminal box.

### 5.18 AIR RELEASE PLUG

The cover of the main tank shall be provided with an **air release plug on all ratings.**

### 5.19 DRAIN VALVE AND FILTER VALVE

- I. The drain valve and filter valve shall be of Brass with gate valve.
- II. The drain valve and filter valve shall have double round flanges. One side shall be fixed with tank and other side should be left open for oil filling/filtration purpose.
- III. The drain valve and filter valve shall be provided with embossed name plate stating drain valve and filter valve.
- IV. The drain valve shall be located on the bottom and filter valve shall be provided at side top of tank.
- V. Locking arrangement shall be provided to stop movement of hand wheel.
- VI. The valves shall be covered with a MS box of 2mm thickness by welding on tank. The paint thickness shall be min. 120 micron on the box.

### 5.20 DEHYDRATING BREATHER

- I. The breather pipe shall enter the conservator from the upper side of the conservator.
- II. The breather shall contain 1 kg of silica gel.
- III. The silica gel shall be blue colored as per IS: 3401 – 1992. Quantity shall be decided by manufacturer.
- IV. The body of the breather shall be unbreakable, transparent, UV stabilized seamless polycarbonate tube of minimum thickness 3mm
- V. The top cover shall be of pressure die cast aluminum and powder coated.
- VI. The oil cup shall be of UV protected polycarbonate.
- VII. Oil cup shall have marking of oil filling level
- VIII. The breather shall be supplied as per approved make and as per specifications.
- IX. The gasket should be of Class 3B, Type III as per IS 11149 Nitrile rubber (Oil resistant gaskets)
- X. All tie rods and all hardware should be of stainless steel material ( SS 304)
- XI. While fixing of breather on transformer Teflon tape should be used to make it air tight & water tight. This shall be checked during inspection and after receipt at our stores on each transformer.
- XII. The breather should have passed air pressured test as per our specification i.e. Breather shall be tested at an air pressure of 0.35kg/cm<sup>2</sup> (5 PSI) for period of 30 minutes. NABL lab test report to be submitted from OEM.

### 5.21 OIL TEMPERATURE INDICATOR

- I. Dial Type Oil temperature indicator shall be provided inside the marshalling Box
- II. Range: 0- 120 °C, Accuracy:  $\pm 4$  °C.
- III. The OTI shall have auxiliary contacts for alarm and trip contacts at preset temperatures, both the contacts should be wired up in the auxiliary terminal box.
- IV. The IP65 gland should be used for dial for taking out auxiliary wires.
- V. The OTI shall be IP55 tested.

### 5.22 FASTENERS

- I. All the bolts or studs shall be **at least 6 mm in diameter** except when used for small wiring terminals. **All bolts shall be of grade 8.8.**
- II. All nuts/bolts/washers exposed to atmosphere shall be as follows:

Size 12mm (or below)	Stainless Steel
Above 12mm	Steel with antirust coating (aluzinc coated), Hot dip galvanized

- III. All ferrous bolts, nuts and washers placed in outdoor positions shall be hot dip galvanized to prevent corrosion (except high tensile steel bolts and spring washers which shall have electrolytic action between dissimilar metals).
- IV. In case the galvanization is removed due to welding or manufacturing, the parts should be properly cleaned and painted to avoid exposure to atmosphere.
- V. The cup type washers to be used as spring washers, cut spring washers are not accepted.
- VI. Taper washers shall be provided where necessary. Protective washers of suitable material shall be provided on front and back of the securing screws.
- VII. Each bolt shall project at least one thread but more than three threads through the nut. If bolts and nuts are placed so that they are inaccessible by means of ordinary spanners, special spanners shall be provided. The length of the screwed portion of the bolts shall be such that no screw thread may form part of a shear plane between members.
- VIII. Core bolts shall be black colored high tensile grade-8.8

### 5.23 SURFACE PREPARATION AND PAINTING

- I. The paint shall be applied by airless spray. Thickness shall be 120 Microns.
- II. Steel surfaces shall be prepared by **shot blast cleaning** (IS-9954) to grade Sq.2.5 of ISO 8501-1 or **chemical cleaning** including phosphating of the appropriate quality (IS 3618).
- III. **Heat resistant (Hot oil proof) paint** shall be used for the **inside surface** and whereas for **external surface one coat of thermosetting powder paint or one coat of epoxy primer (zinc chromate/Zinc Phosphate) followed by two coats of polyurethane (P.U.) base paint.** as per table given below

S.No.	Paint type (should be UV restraint, non-fading)	Area to be painted	No of coats	Total dry film thickness (min); micron
1.	<b>Thermosetting powder paint</b>	Inside	01	30
		Outside	01	60
<b>2.</b>	<b>Liquid Paint</b>			
a.	Epoxy (primer)	Outside	01	30
b.	P.U. Paint (finish paint)	Outside	02	25 (each)
c.	Hot oil resistant paint	Inside	01	35

The two coats shall be of oil and weather-resistant nature with final coat as flossy and non-fading paint of shade 631 as per IS 5.

- IV. The dry film thickness shall not exceed the specified minimum dry film thickens by more than 25%.
- V. Any damaged part shall be cleaned to bare metal with an area extending 25 mm around its boundary. A priming coat shall be immediately applied followed by full paint finish equal to that originally applied and extending 50 mm around the perimeter of the original damage. The repainted surface shall present a smooth surface which shall be obtained by carefully chamfering the paint edges before and after priming.
- VI. Painting shall not affect by weather changes & performance against pilling out or fading etc. to be guaranteed for 5 Years.

#### **5.24 RADIO INTEREFENCE**

When operated at voltages up to **12.5%** in excess of the normal system rating, transformers shall be substantially free from partial discharges (i.e. corona discharges in either internal or external insulation) which are likely to cause interference with radio or telephone communication.

#### **5.25 OVERLOAD CAPACITY**

The transformer shall be suitable for loading as per IS 2026 part 7

#### **5.26 FITTINGS**

The following standard fittings shall be provided:

- I. Two earthing terminal pads/ boss with earthing symbol  $\perp$  for body earthing on opposite sides with 70sq.mm AL lug and M12 SS bolt and washers.
- II. Air Release Device.
- III. Thermometer Pocket with cap.
- IV. Drain cum Sampling Valve & filter valve
- V. Pressure Release Valve
- VI. Radiators
- VII. Cable **Box** /Bare Bushing (as per site requirement) for all transformer. For Source side, cable box or Bare bushings can be provided. **User group shall decide this during tender.**
- VIII. For bare bushing transformer- bird guard on bushings terminals connectors
- IX. Load and Source Side two part Gland plates (Non-Magnetic and with Single compression Brass glands).
- X. Conservator with Dehydrating Breather on Load Side.
- XI. Prismatic Oil level Gauge and MOG in conservator.
- XII. Lifting lugs (enclosed type) for the top cover, complete transformer and core and winding assembly.
- XIII. Pulling Lugs.
- XIV. Jacking Pads
- XV. Stiffener Angle.
- XVI. 2 Base channels all Transformer
- XVII. Marking Plates as asked in clause 6.1
- XVIII. Oil Temperature indicator with alarm & trip contact
- XIX. Two GI earth strip of Size 50x6 mm for neutral earthing from both side with minimum GI coating thickness of 86 microns. With SS nut bolts and washer.
- XX. Magnetic Oil level Gauge , Winding Temperature Indicator , Magnetic Reed type Buchholz relay in line with IS 1180.
- XXI. Marshalling Box with stud type terminals .

**5.27 WINDING TEMPERATURE INDICATOR (WTI)**

- I. WTI shall be provided (Qty:1)
- II. WTI shall be **indicating type**, responsive to the combination of top oil temperature and winding current, calibrated to follow the hottest spot temperature of the transformer winding.
- III. WTI shall operate a remote alarm and trip in the event of attaining the predefined temperature.

**5.28 BUCHHOLZ RELAY**

- I. Magnetic Reed type Buchholz relay shall be provided with alarm and tripping contacts to detect accumulation of gas.
- II. The installation shall be fixed and weather proof to avoid any water seepage inside the relay.
- III. Round flange of nominal pipe bore of **50mm diameter** shall be used.
- IV. In addition, pocket with heater coil along with Resistance Temperature Indicator (RTD) shall be provided for WTI and OTI. CT for RTD for winding hot spots shall be provided.

**5.29 Two Separate Marshalling Box shall be provided**

- 1. For Transformer OTI, WTI, etc and AVR
  - I. Marshalling Box of suitable size, made up of **Mild Steel** and with **theft proof locking arrangement** shall be provided.
  - II. Marshalling box shall have IP 55 protection.
  - III. Marshalling Box shall have provision for wiring the **WTI, OTI, MOG, PRV, Buchholz relay and WTI CT terminals**. The terminals shall be provided as per table below:

Element	Alarm	Trip
Oil Temperature Indicator	NO,NC,COM	NO,NC,COM
Winding Temperature Indicator	NO,NC,COM	NO,NC,COM
Buchholz	NO,NC,COM	NO,NC,COM
Magnetic Oil Level Gauge	NO,NC,COM	
PRV	NO,NC,COM	
Spare TB	4 No.	
Tap Position		

- IV. WTI meter shall be wired/ installed in the marshalling box.
- V. Plastic ferrules engraved with black letters shall be used to mark the wires in the marshalling box.
- VI. Wiring in Marshalling box shall be done by 2.5 sq.mm Cu FRLS PVC stranded panel wires.
- VII. All the cables and conduits between the transformer and control cabinet shall be included in the scope of supply by the bidder.



2 . For AVR Controls

- I. Marshalling Box of suitable size, made up of Mild Steel and with theft proof locking arrangement shall be provided.
- II. All necessary arrangement for local operation /Remote operation to be provided.
- III. All the cables and conduits between the transformer and control cabinet shall be included in the scope of supply by the bidder.
- IV. Marshalling box shall have IP 55 protection.
- V. All necessary protection for OLTC/AVR to be provided.
- VI. AVR should have SCADA compatibility using Modbus or IEC60870-103 Protocol for remote monitoring and control.

**5.30 MAKE OF MAJOR COMPONENTS & RAW MATERIALS**

The BA shall procure the following constituent items from the designated vendors as follows:

S.no	RAW MATERIAL/EQUIPMENT	MAKE
a)	Copper	M/S Sterlite, M/S Hindustan Copper, M/S Hindalco.
b)	Core	M/S AK Steels, POSCO, Kawasaki/JFE, Nippon Steel.
c)	Insulation paper and Pressboards	ITC paper, ABB, Raman Boards-Mysore, Senapathy Whiteley – Bangalore
d)	Transformer Oil ( Mineral oil)	Savita, Apar, Gandhar
e)	Gaskets & Corks	Nu Cork, Anchor Corks
f)	Steel For Tank	M/s, TATA Steel, M/s SAIL, M/s. JSW Steel, M/s. IISCO, M/s. RINL/Vizag Steel, M/s. Jindal Steel,
g)	Dehydrating Breather	Yogya, Anushree, Electrical engineers
h)	Bushings	Genesys Electricals,Hindustan Chemicals, Rashtriya Electricals,LAMCO
i)	Buchholz, PRD, SPR, OTI , WTI, and other devices	Reputed make to be approved by TPCODL/TPNODL/TPWODLTPSO DL during detailed engineering.

Also, Bidder has to provide all test certificates from original manufacturers & relevant sourcing documents. BA shall also have shot blasting facility.

**6. MARKING:**

**6.1 MARKING PLATES**

**I. Name Plate (Rating) Plate : SS material**

A rating plate shall be fitted to each transformer in a visible position and shall carry all the information as **specified in clause no. 6.2**

**II. Terminal Marking Plate : on same name plate also accepted**

- The terminal marking plate shall be provided which shall be strictly in accordance with **figure 4 of IS 1180-Part 1: 2014**. This plate may be combined with the rating plate or can be provided separately.
- Value of short circuit impedance on extreme tapping and on principal tapping and indication of winding to which impedance is related has to be displayed additionally.

**III. Details Plate : MS sheet of 2.5mm with punched details and welded on tank.**

A separate plate of **size 125 mm x 125 mm** shall be provided having following details:

- Name of the firm.
- Serial No.
- Rating of transformer.
- Order no. and date.
- Date of dispatch.

**IV. Guarantee Plate :**

A separate warranty plate made of **Stainless Steel** with following clause written on it.

***“THE EQUIPMENT GUARANTEED UPTO A PERIOD OF 48 MONTHS FROM THE DATE OF COMMISSIONING OR 60 MONTHS FROM THE DATE OF LAST SUPPLY”***

All the plates described above (clause 1 to 4) should be as followings:

Material	Stainless Steel
Thickness	1 mm
Engraving	The letters on the rating plate shall be engraved black on the white/silver back ground.
Fixing	Fixing screws shall be of stainless steel.

**V. Danger Plate: On all cable boxes (If applicable)**

Danger notice shall have red lettering on a white background on a plate as specified in **IS: 2551 – 1982**.

**VI. BIS Certification Mark: On main name plate**

The Bidder is required to get approval from BIS and display BIS mark on the name plate.

- a. Oil filled, naturally cooled type
- b. Make

- c. Capacity in KVA
- d. Voltage up to 11 KV
- e. Total losses at 50% loading in watts
- f. Total losses at 100% loading in watts
- g. Model and year of manufacturing.

**VII. Control Circuit drawing Plates:**

- Engraved drawing for control circuit unit shall be available on Marshalling box.

**6.2 NAME PLATE DETAILS**

The name plate shall be strictly as per **IS 1180: 2014 (figure 1)**. Additionally, following points shall be displayed :

- I. **Actual no load losses of transformer.**
- II. **Actual total losses of transformer at 50% load and 100% load.**
- III. Standard mark (BIS certification).
- IV. **“PROPERTY OF TPCODL/TPNODL/TPWODLTPSODL”** shall be written in bold letters.
- V. PO number with date has to be mentioned.
- VI. Overall dimensions of the transformer

**6.3 MARKING**

- I. All transformers shall have Source Side windings marked as 2U, 2V, 2W. The neutral point terminal shall be indicated by the letter 2N. Clear Marking as “Source Side” to be done.
- II. The Load Side winding for the same phase shall be marked by 1U, 1V, 1W. Clear Marking as “Load Side” to be done.
- III. The markings shall be done by steel strips in which marks had been engraved in black colour.
- IV. Colour marking of the bushings shall be done.
- V. On the top cover of tank and the core channel, Manufacturer’s name and Manufacturer’s serial no. shall be engraved.
- VI. On the body of tank, Manufacturer’s name, rating, serial no. and year of manufacturing shall be written with black paint on yellow base. It should be written in suitable place in approved format that it is readable from ground after installation on pole.
- VII. Durable QR code Sticker with name plate details and warranty details to be fixed on two accessible places i.e one on side wall of Load Side terminal box and other one is on conservator.

**7. TESTS:**

- I. All routine, acceptance & type tests shall be carried out in accordance with the IS 2026 and IS 1180: Part-1 (2014).
- II. All routine & acceptance tests shall be witnessed by the TPCODL/TPNODL/TPWODLTPSODL/his authorized representative.
- III. All the components shall also be type tested as per the relevant standards.

**Following tests shall be necessarily conducted on the Distribution Transformers in addition to others specified in IS/IEC standards.**

**7.1 TYPE TESTS**

- I. Lightning Impulse Test [As per IS 2026 (Part 3) Clause no. 12].
- II. Temperature Rise Test [As per IS 2026 (Part 2) Clause no.4].  
**NOTE:** Maximum measured total loss (No load at Rated excitation load loss at maximum current tap converted to 75°C reference temperature) at 100 percent loading shall be supplied during temperature rise test.
- III. Short Circuit Withstand test [As per IS 2026 (Part 5)].  
**NOTE:** Routine tests before and after short circuit test shall be conducted as per IS 2026(Part 1).
- IV. Pressure Test [As per IS 1180: Part 1 (2014)].
- V. Determination of sound levels [IS 2026 (part 10)].
- VI. No load current at 112.5% voltage
- VII. BDV and moisture content of oil in transformer (IS 335).
- VIII. Magnetic balance test.
- IX. Measurement of Zero-phase sequence impedance.
- X. Measurement of Harmonics of no-load current.
- XI. Test to verify IP 55 for Marshalling Box.

**Note:** - Out of the above mention type test, the tests under sl. No. 1, 2, 3 and 4 shall be conducted at CPRI/ERDA labs and the balance tests to be conducted at TPCODL/TPNODL/TPWODLTPSODL recommended NABL lab. **In-house test labs are accepted if in-house lab is NABL accredited for these tests.**

## 7.2 ROUTINE TESTS

Sr. No.	Test to be done	Reference BIS	Clause no.
1	Measurement of Winding Resistance on each tap.	IS 2026 (Part 1)	16.2.1 & 16.2.3
2	Measurement of voltage ratio, check of voltage displacement, polarity, phase sequence and vector group	IS 2026 (Part 1)	16.3
3	Measurement of short circuit impedance (principal tapping, when applicable) and load loss at 50% and 100% load	IS 2026 (Part 1)	16.4
4	Measurement of no load losses and magnetizing current at rated frequency and 90%, 100% and 112.5% of rated voltage	IS 2026 (Part 1)	16.5
5	Measurement of insulation resistance	IS 2026 (Part 1)	16.6
6	Induced over voltage withstand test	IS 2026 (Part 3)	11
7	Separate Source voltage withstand test	IS 2026 (Part 3)	10
8	Oil leakage test	IS 1180 (Part 1)	21.5.1.3
9	Neutral current measurement	IS 1180	7.9.2
10	BDV and moisture content of oil in transformer (Type-2 oil)	For mineral oil : IS 335 (2018) For Ester oil : IEC 60247 & IEC61099	For mineral oil : IS 335 Table 2

## 7.3 ACCEPTANCE TESTS

- I. Temperature Rise test on one unit of first lot against every release order / PO for each rating. For further lots, TPCODL/TPNODL/TPWODLTPSODL reserves the right to perform Temperature rise if required. [As per IS 2026 (Part 2) Clause no.4]



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- II. Oil leakage test for acceptance shall be conducted at pressure of 0.35kg/sq.cm for one hour. (IS 1180 (Part 1) clause 21.5.1.3)
- III. The painted surface shall pass the Cross Adhesion Test (IS1180 part 1 clause no. 21.4.d).
- IV. Calibration of WTI and OTI.
- V. Magnetic Balance Test.
- VI. OEM test reports for breather for air pressure test.
- VII. At stage inspection -Checking of weight, dimensions, fitting and accessories, tank sheet thickness, oil quantity, material finish and workmanship, physical verification of core coil assembly and measurement of flux density on one unit of each rating of the offered lot with reference to the GTP and contract drawings. Oil BDV of all offered lot.
- VIII. At least 10% transformer of the offered lot (minimum of one) shall be subjected to all the tests mentioned under the section 'ROUTINE Test" in presence of TPCODL/TPNODL/TPWODLTPSODL's representative at the place of manufacture before dispatch without any extra charges. The testing shall be carried out in accordance with IS: 1180 and IS: 2026.
- IX. Device trails & test (Buchholz trip, Buchholz alarm, PRV trip, WTI alarm, WTI trip and OTI alarm).
- X. At Stage and Final inspection, the incoming raw material and its movement/consumption record in the related jobs of TPCODL/TPNODL/TPWODLTPSODL will be verified by inspecting officer. In case of any deviation or non-availability of such records, the offered lot may get rejected.

#### **8. TYPE TEST CERTIFICATES:**

- I. The Bidder shall furnish the type test certificates of the offered rating and design of transformer for the tests as mentioned above as per the corresponding standards.
- II. All the tests shall be conducted at CPRI / ERDA or as defined in 7.1 as per the relevant standards.
- III. In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPCODL/TPNODL/TPWODLTPSODL.
- IV. Type tests should have been conducted as per TS during the period not exceeding timeline as per latest CEA guideline.

#### **9. PRE-DISPATCH INSPECTION:**

- I. Bidder to raise the inspection calls for stage inspection and only after getting clearance from TPCODL/TPNODL/TPWODLTPSODL shall proceed for further manufacturing. The bidder shall raise the inspection call for Final Inspection or prototype Inspection in TPCODL/TPNODL/TPWODLTPSODL format.
- II. If the prototype inspections asked for during drawing approval then bidder to make one unit of transformer and raise for inspection call for stage and final for prototype inspection.
- III. Equipment shall be subject to inspection by a duly authorized representative of the TPCODL/TPNODL/TPWODLTPSODL.
- IV. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material, the same is liable to rejection.
- V. Bidder shall grant free access to the places of manufacture to TPCODL/TPNODL/TPWODLTPSODL's representatives at all times when the work is in progress.
- VI. Inspection by the TPCODL/TPNODL/TPWODLTPSODL or its authorized representatives shall not relieve the supplier of his obligation of furnishing equipment

- in accordance with the specifications.
- VII. The BA shall ensure that 100% of the lot must be ready for inspection and atleast 10% must be ready with all mounting and accessories during inspection.
- VIII. Material shall be dispatched only after getting MDCC (Material Dispatch Clearance Certificate) from TPCODL/TPNODL/TPWODLTPSODL.
- IX. Following documents shall be sent along with material:
- a) Test reports
  - b) MDCC issued by TPCODL/TPNODL/TPWODLTPSODL
  - c) Invoice in duplicate
  - d) Packing list
  - e) Drawings & catalogue
  - f) Guarantee / Warrantee card
  - g) Delivery Challan.
  - h) Other Documents (as applicable)
- X. To ascertain the quality of the transformer oil, the original manufacturer's tests report shall be submitted at the time of inspection.
- XI. Arrangements shall also be made for testing of transformer oil, after taking out the sample from the manufactured transformers and tested in the presence of TPCODL/TPNODL/TPWODLTPSODL's representative.
- XII. In respect of raw material such as core stampings, winding conductors, insulating paper and oil, bidder shall use materials manufactured/supplied by standard manufacturers and furnish the manufacturers' test certificate as well as the proof of purchase from these manufacturers (excise gate pass) for information of the TPCODL/TPNODL/TPWODLTPSODL.
- XIII. The bidder shall furnish following documents along with their offer in respect of the raw materials:
- a) Invoice of supplier.
  - b) Mill's certificate
  - c) Packing List.
  - d) Bill of Landing
  - e) Bill of entry certificate by custom.
- XIV. To ensure about the quality of transformers, the inspection shall be carried out by the TPCODL/TPNODL/TPWODLTPSODL's representative at following two stages:
- a) Online anytime during receipt of raw material and during manufacturing/assembly Stage.
  - b) At finished stage i.e. transformers are fully assembled and ready for dispatch.
- XV. Advance intimation of 7Days (Within Odisha)/12 Day (Outside Odisha) is required for both Stage and final inspections.
- XVI. All tests and inspection shall be carried out at the place of manufacture unless otherwise specifically agreed upon by the manufacturer and TPCODL/TPNODL/TPWODLTPSODL at the time of purchase.
- XVII. The manufacturer shall offer the inspector representing the TPCODL/TPNODL/TPWODLTPSODL all reasonable facilities, without charges, to satisfy him that the material is being supplied in accordance with this specification. This will include Stage Inspection during manufacturing stage as well as Active Inspection during Acceptance Tests.
- XVIII. During the stage inspection a few assembled core coil and assembled Tanked transformer shall be dismantled (only in case of CRGO material) to ensure that the CRGO laminations, Windings and workmanship are of good quality. TPCODL/TPNODL/TPWODLTPSODL also reserves the right to review any document or certificates related to material, manufacturing process, quality checks at any point of stage inspection.

- XIX. TPCODL/TPNODL/TPWODLTPSODL also reserves the right to inspect the tank of transformer before surface preparation and painting. The same shall be informed to TPCODL/TPNODL/TPWODLTPSODL accordingly.
- XX. Final inspection Call for carrying out acceptance tests as per relevant IS/IECs shall be sent by the Bidder along with routine test certificates.
- XXI. The bidder shall provide all services to establish and maintain quality of workmanship in his works and that of his sub-contractors to ensure the mechanical / electrical performance of components, compliance with drawings, identification and acceptability of all materials, parts and equipment as per latest quality standards of ISO 9000.
- XXII. The TPCODL/TPNODL/TPWODLTPSODL has the right to have the test carried out at his own by an independent agency wherever there is a dispute regarding the quality supplied. **Also TPCODL/TPNODL/TPWODLTPSODL has right to test 1% of the supply selected either from the stores or field** to check the quality of the product. In case of any deviation TPCODL/TPNODL/TPWODLTPSODL have every right to reject the entire lot or penalize the bidder, which may lead to blacklisting, among other things.
- XXIII. At the time of inspection the material should be ready as specified, In case of material non-readiness or material failure in acceptance, Cost of re-inspection shall be borne by bidder.

#### 10. INSPECTION AFTER RECEIPT AT STORE:

- I. The material received at the TPCODL/TPNODL/TPWODLTPSODL store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection.
- II. In case the transformers proposed for supply against the order are not exactly as per the tested design, the Bidder shall be required to carry out the short circuit test and impulse voltage withstand test at its own cost in the presence of the representative of TPCODL/TPNODL/TPWODLTPSODL.
- III. The supply shall be accepted only after such test is done successfully, as it confirms on successful withstand of short circuit and healthiness of the active parts thereafter on un-tanking after a short circuit test.
- IV. Apart from dynamic ability test, the transformers shall also be required to withstand thermal ability test or thermal withstand ability will have to be established by way of calculations
- V. TPCODL/TPNODL/TPWODLTPSODL reserves the right to conduct all tests on Transformer after arrival at site / stores and the manufacturer shall guarantee test certificate figures under actual service conditions.
- VI. TPCODL/TPNODL/TPWODLTPSODL reserves the right to conduct short circuit test and impulse voltage withstand test in accordance to IS, afresh on each ordered rating at purchaser cost, even if the transformer of the same rating and similar design are already tested. This test shall be carried out on a transformer to be selected by TPCODL/TPNODL/TPWODLTPSODL either at the manufacturer's works when they are offered in a lot for supply or randomly from the supplies already made to TPCODL/TPNODL/TPWODLTPSODL stores. The findings and conclusions of these tests shall be binding on the bidder.

#### 11. GUARANTEE:

- I. Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under the contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any



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defect is found by the Purchaser up to a period of 48 months from the date of commissioning or 60 months from the date of last supplies made under the contract, whichever is earlier.

- II. Bidder shall be liable to undertake to replace/rectify such defects at his own costs within mutually agreed timeframe and to the entire satisfaction of the TPCODL/TPNODL/TPWODLTPSODL, failing which the TPCODL/TPNODL/TPWODLTPSODL will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the TPCODL/TPNODL/TPWODLTPSODL's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be.
- III. In case of Distribution transformer fails within the guarantee period TPCODL/TPNODL/TPWODLTPSODL will immediately inform the Bidder who shall take back the failed Distribution Transformer within 15 days from the date of intimation at his own cost and replace / repair the transformer within forty five days of date of intimation with a roll over guarantee. The outage period i.e. period from the date of failure till unit is repaired / replaced shall not be counted for arriving at the guarantee period.
- IV. Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.

## 12. PACKING AND TRANSPORT:

- I. Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit.
- II. Transformers shall be delivered filled with oil and supplied with all accessories mounted. Screws and bolts shall be thoroughly tightened to ensure no leakage of oil.

**Note: One use plastic not to be used for packing of the material.**

## 13. TENDER SAMPLE:

All offered transformer detailed documents to be submitted as per clause no.18. The sample shall be not applicable

## 14. QUALITY CONTROL:

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. TPCODL/TPNODL/TPWODLTPSODL's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

The following information shall necessarily be submitted with the bid:

- I. List of important raw materials, names of sub-suppliers for raw materials, standards to which raw material is tested and the copies of test reports of the tests carried out on raw materials in presence of Bidder's representatives.
- II. List of manufacturing facilities available, level of automation achieved and the areas where manual process exists.
- III. List of areas in manufacturing process where stage inspections are normally carried out for quality control and details of these tests and inspections



- IV. List of testing equipment for final testing with valid calibration reports. Manufacturer shall possess 0.1 class instruments for measurement of losses.
- V. QAP withhold points for TPCODL/TPNODL/TPWODLTPSODL inspection.

**15. TESTING FACILITIES:**

Bidder shall have adequate in house testing facilities for carrying out all routine tests, acceptance tests and pre-dispatch inspection as per relevant International / Indian standards.

**16. MANUFACTURING FACILITIES:**

The successful bidder will have to submit (after placement of RC) technical compliance document and drawing of each part along with CCA, breather, bushings, terminal box etc. as per RC line items to be submitted for getting approval before mass manufacturing.

The first time supplier will have to make one prototype sample of each line tem of RC as per CAT-B approved drawing within 30 days of drawing approval. Inspection call to be raised by bidder before 7 days of date of proposed inspection. TPCODL/TPNODL/TPWODLTPSODL shall arrange inspectors and intimate or confirm the date. Any observation during inspection shall have to be addressed within 7 days and revised improved drawing & technical details to be shared to TPCODL/TPNODL/TPWODLTPSODL for final approval.

Manufacturing mass quantity to start only after getting CAT-A approved drawings or as per intimation from TPCODL/TPNODL/TPWODLTPSODL

**17. SPARES, ACCESSORIES AND TOOLS**

Bidder shall give an assurance that the reparability of transformer is ensured by using standard spare parts and accessories available in market in India.

**18. DRAWINGS AND DOCUMENTS:**

Following drawings and documents shall be prepared based on TPCODL/TPNODL/TPWODLTPSODL specifications and statutory requirements and shall be submitted with the bid:

- a. Completely filled in compliance to each clause of Technical Specification and any Additional Details and Fittings.
- b. Description of the transformer and all components drawings.
- c. General arrangement for Transformer.
- d. Bill of material.
- e. Design calculation details of transformer losses, cooling, efficiency and current density, weight of coils and components
- f. Experience Certificate and list
- g. Type test certificates.
- h. List of makes of major components as listed above.

**Drawings / documents to be submitted for approval after the award of the order within 7 days before mass manufacturing are as under:**

**List of Drawings/Parameters to be submitted:**

- a. Technical Parameters as asked in Specification (General Technical Particulars, General Technical Requirements, Additional Details, Fittings, Type test Reports and Routine test certificates of bought out accessories).
- b. General Arrangement Drawing of the Transformer (Front view, Top view and both sides view. Complete list of fittings to be displayed and quantities to be mentioned with the drawing).
- c. Internal Core arrangement drawing.
- d. Internal Core-coil assembly drawing.
- e. Foundation Plan drawing.
- f. Marking plates and Markings (as mentioned in clause 6 )
- g. Load and Source Side bushings drawing ( with internal view and metal parts)
- h. Conservator drawing.
- i. Marshalling Box with wiring details
- j. Prismatic oil level gauge drawing.
- k. Silica Gel Breather drawing.
- l. BH curve & Loss/Kg graph of core material offered.
- m. The tightening torque chart to be provided for all bolts used in specific rating.
- n. Type Test Certificates.
- o. Installation/ Mounting Instructions/Drawing.
- p. Efficiency vs Load curve of the offered design.
- q. Quality Assurance plan.

**List of Calculations to be submitted:**

- a. All the calculations shall be step by step showing the use of formulas and other practical considerations. **Concise calculations in table or excel sheet shall not be accepted.** Also, the reference (only standard sources as IS, IEC or any such standard is acceptable) of the formulas shall be mentioned.
- b. Resistance Calculation ( 75 deg. C )
- c. Load Losses Calculation ( at 75 deg. C )
- d. No load Losses.
- e. Stray Losses.
- f. Weight of Copper (Bare and with Insulation also).
- g. Weight of Core.
- h. Flux Density calculations.
- i. Current Density Calculations.
- j. Short Circuit withstand.
- k. Temperature Rise Calculations.
- l. Conservator Volume calculations
- m. Cooling Calculations showing cooling with tank and radiators separately with no. of radiators and fins mentioned specifically (For both Mineral oil and Ester oil)
- n. Calculation sheet for Lifting lug design and mounting lug design to be submitted by Bidder.

**Additional Documents to be submitted :**

- a. List of raw materials as well as bought out accessories and name of sub-suppliers selected from those furnished along with offer.
- b. Type test certificates of the raw materials and bought out accessories.
- c. The successful Bidder shall submit the **routine test certificates of bought out accessories** and central excise passes for raw material at the time of routine testing.

All the documents & drawings shall be in English language. After the receipt of the order, the successful bidder will be required to furnish all relevant drawings/parameters/calculation to TPCODL/TPNODL/TPWODLTPSODL for approval.



**Specification No:** ENG-HV-2038

**Specification Name:** Specification For 11KV Line Voltage Regulator Transformer 500KVA & 1000KVA

**Instruction Manuals:**

Bidder shall furnish softcopies of nicely bound manuals (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.

**19. SCHEDULE- "A" GUARANTEED TECHNICAL PARTICULARS:**

**All clauses and points in the Specification to be complied for along with GTR and offered design details.**

**20. SCHEDULE "B" DEVIATIONS:**

**(TO BE ENCLOSED WITH TECHNICAL BID)**

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

<b>SL. No</b>	<b>Clause No.</b>	<b>Details of deviation with justifications</b>
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**TPCODL**  
**TPWODL**

**TPNODL**  
**TPSODL**

**Specification No:** ENG-HV-2038

**Specification Name:** Specification For 11KV  
Line Voltage Regulator Transformer 500KVA &  
1000KVA

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We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature

Designation

**STANDARD TECHNICAL SPECIFICATION COVER SHEET****Specification No. : ENG-EHV-1033****Specification Name : Technical Specification for 33kV, 2.5MVA, 5MVA and 10MVA Line Voltage Regulator Transformer**

Prepared by	Reviewed by	Reviewed by	Reviewed by	Approved by	Released by
SWARUP NAYAK	MILAN MAITY	Jyoti Ranjan Sahu	SANTOSH KUMAR PATRA	KHAJAN BHARDWAJ	POURUSH GARG
TPCODL	TPNODL	TPSODL	TPWODL	TPCODL	TPCODL
01-03-2023	02-03-2023	02-03-2023	02-03-2023	18-03-2023	18-03-2023

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**1. SCOPE:**

This Specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forward, supply and unloading at site/store and performance of Oil immersed, non-sealed, naturally cooled, three Phase 33KV Line Voltage Regulator Transformer to control voltage variation ranging from 25KV to 33KV.

**2. APPLICABLE STANDARDS:**

The equipment and the materials used covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian standards & other relevant standards for components & CEA guidelines with latest amendment from time to time, thereof, some of which are listed below:

Indian Standards	Title
IS 1180	Outdoor Type Oil Immersed Distribution Transformers Upto and Including 2500 KVA, 33 kV-Specification
IS 2026 ( all parts )	Specification for Power Transformers
IS 104	Specification for ready mixed paint, brushing, zinc chrome, priming
IS 335	Specification for new insulating oil.
IS 649	Testing for steel sheets and strips and magnetic circuits.
IS 5	Specification for Colors for ready mixed paints and enamels
IS 1576	Solid Pressboard for Electrical Purposes -Specification
IS 2099	Specification for bushings for alternating voltages above 1000 volts
IS 2362	Determination of water content in oil by Karl in oil Fischer Method – Test Method.
IS 3024	Grain oriented electrical steel sheets and strips
IS3347 (Part I & Part-3)	Dimensions for Porcelain Transformer Bushings for Use in Normal and Lightly Polluted Atmospheres - Part 1 : Up to and including 1 kV
IS 4253: Part II:	Specification for cork composition sheets- Part II : Cork and Rubber
IS 4257(Part I):	Dimensions for Clamping Arrangements for Porcelain transformer Bushings - Part I: For 12 kV to 36 kV Bushings
IS 5082	Wrought Aluminum and Aluminum Alloy bars, Rods , Tubes, Sections, Plates and Sheets for Electrical Applications

IS 5561	Specification for Electric Power Connectors
IS 6103	Specification for Testing of specific resistance of electrical insulating liquids
IS 2026 part 7	Guide for loading of Oil-immersed transformer
IS 6792	Method for Determination of Electric Strength of Insulating Oil
IS 7404 (Part-1):	Paper Covered conductors: Round Conductors
IS 7421	Specification for porcelain bushings for alternating voltages up to and including 1000kv
IS 8603 (Part-1) :	Dimensions for Porcelain Transformer Bushings for Use in Heavily Polluted Atmospheres - Part I:12 kV and 17.5 kV Bushings
IS 9335	Specification for Cellulosic Papers for Electrical Purposes
IS 10028	Code of Practice for Selection, Installation and Maintenance of Transformers
IS 11149	Specification for rubber gaskets
IS 12444	Specification for Continuously Cast and Rolled Electrolytic Copper Wire Rods for Electrical Conductors.
IS/IEC 60947 ( PART 1& PART 2 )	Specification for Secondary Side Switchgear & Control gear
IS 6160	Rectangular electrical conductors for electrical machines
IS 13964	Methods of measurement of transformer and reactor sound levels
IS 3401	Specification of silica Gel
IS 1897	Copper strip for electrical purposes
IS 60529	Degree of protection provided by enclosure
IS 816	Welding of Mild Steel
CEA	Guidelines for specifications of energy efficient outdoor type single and three phase distribution transformers
IS 6262	Method of test for power factor and dielectric constant of electrical insulating liquids



IS 16659	Fluids For Electro technical Applications - Unused Natural Esters For Transformers And Similar Electrical Equipment
IS 16081	Insulating liquids — Specifications for. Unused synthetic organic esters for Electrical purposes
IEC 60156	Method of determination of electric strength of insulating oils.
IEC 60296	Specification for unused mineral insulating oils for transformers and switchgear.
IEC 60529	Degrees of protection provided by enclosures (IP Code)
IS 1852	Rolling and cutting tolerances for hot rolled steel products

### 3. CLIMATIC CONDITIONS:

1	Maximum ambient temperature	50 deg C
2	Max. Daily average ambient temp	35 deg C
3	Min Ambient Temperature	0 deg C
4	Maximum Humidity	95%
5	Average Annual Rainfall	1500 mm
6	Average No. of rainy days per annum	120
7	Altitude above MSL not exceeding	1000m
8	Wind Pressure	300 Km/hr
9	Earthquakes of an intensity in horizontal direction	equivalent to seismic acceleration of 0.3g
10	Earthquakes of an intensity in vertical direction	equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity)

TPCODL/TPNODL/TPSODL/TPWODL service area has heavy saline conditions along the coast and High cyclonic Intensity winds with speed upto 300 Kmph. The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months.

**4. GENERAL TECHNICAL REQUIREMENTS:**

SL	Parameters	Unit	Technical Data		
1.	Description		33KV Line Voltage Regulator Transformer		
2.	Service		Outdoor use		
3.	Reference Standard & Tolerances		IS:2026		
4.	KVA Ratings of Transformers	kVA	2500	5000	10000
5.	Operating Voltage Range	KV	25KV-33KV on Source Side to maintain a constant 33KV on Load side.	25KV-33KV on Source Side to maintain a constant 33KV on Load side.	25KV-33KV on Source Side to maintain a constant 33KV on Load side.
6.	Full Load Current	Amp	43.73 A at 33KV, 57.73A at 25KV	87.47 A at 33KV, 115.46A at 25KV	174.95 A at 33KV, 230.92A at 25KV
7.	Voltage Control method		By provision of In-Tank OLTC (On Load Tap Changer)/ Side Mounted OLTC (TBD in Detailed Engineering) with AVR for automatic operation	By provision of In-Tank OLTC (On Load Tap Changer)/ Side Mounted OLTC (TBD in Detailed Engineering) with AVR for automatic operation	By provision of In-Tank OLTC (On Load Tap Changer)/ Side Mounted OLTC (TBD in Detailed Engineering) with AVR for automatic operation
8.	Rated Frequency	Hz	50	50	50
9.	No. of Phases	Nos	3	3	3
10.	Flux density at 33KV and frequency 50Hz	Tesla	1.6 T	1.6 T	1.6 T
11.	Max Flux density at 12.5% increase of Combined Nominal V & f	Tesla	1.9 T	1.9 T	1.9 T
12.	Current density at min tap	A/Sq.mm	2.4	2.4	2.4
13.	Vector Group		Ynya0	Ynya0	Ynya0
14.	Type of Cooling		ONAN	ONAN	ONAN

15.	Temperature Rise-Top Oil/ Winding	°C	40/45	40/45	40/45
16.	Total Loss at rated current and at 75 Deg at Highest Tap	kW	10KW (±10%)	20KW (±10%)	30KW (±10%)
17.	Impedance Voltage at rated current at 75 Deg	%	0.6% (±10%)	1% (±10%)	3% (±10%)
			Design Calculation to be furnished	Design Calculation to be furnished	Design Calculation to be furnished
18.	Type of Tap Changer		In-Tank OLTC (On Load Tap Changer)/ Side Mounted OLTC (TBD in Detailed Engineering)	In-Tank OLTC (On Load Tap Changer)/ Side Mounted OLTC (TBD in Detailed Engineering)	In-Tank OLTC (On Load Tap Changer)/ Side Mounted OLTC (TBD in Detailed Engineering)
	Make		EASUN MR/CTR	EASUN MR/CTR	EASUN MR/CTR
	Tapping Range		16 Step,17-Position (to be able to increase voltage from 25KV to 33KV)	6 Step,17-Position in step (to be able to increase voltage from 25KV to 33KV)	6 Step,17-Position in step (to be able to increase voltage from 25KV to 33KV)
19.	Insulation Class		Class-A	Class-A	Class-A
20.	Separate Source Power Frequency Voltage Withstand	KVRMS	70	70	70
21.	Induced Over Voltage Withstand	KVRMS	66	66	66
22.	Full Wave Lightning Impulse Withstand Voltage of winding	kVp	170	170	170
23.	Terminal Arrangement -				

	Load Side Bushing		Outdoor type 36KV Bushing on Top
	Source Side Bushing		Outdoor type 36KV Bushing on Top
	Neutral Bushing		Outdoor type 36KV Bushing on Top
24.	Weight (With $\pm 10\%$ Tolerance)		
25.	Weight of Core	Kg	To be furnished by Bidder
26.	Weight of Winding(Copper)	Kg	
27.	Core &Winding	Kg	
28.	Tank &Fitting	Kg	
39.	Transformer Oil	Ltrs	
30.	Total Weight of Transformer	Kg	To be furnished by Bidder
31.	Auxiliary Transformer 3Ph 1KVA for Tap Changer and Control. ( Separate/In Built)	Qty	1
32.	Core Material & Grade		CRGO M3 or better 0.23 MM
33.	Winding Resistance at 20 Deg.c Per phase(Tap.No.1)	Ohm	To be furnished by Bidder
34.	No Load Current at Rated Voltage and Frequency	%	0.5%
35.	Winding Material Insulation		TPC

**5. GENERAL CONSTRUCTION:**

- I. The transformer shall be stacked core, copper coil, oil immersed, naturally cooled (ONAN), non-sealed type with plain rectangular tank.
- II. The transformer shall be suitable for service with fluctuations in supply voltage as per GTP
- III. The transformer shall be designed suitable for service life of 25 years.
- IV. The transformer and accessories shall be designed to facilitate trouble free operation, inspection, maintenance and repairs under the various operating and atmospheric conditions

specified in clause no. 3.

- V. The design shall incorporate every precaution and provision for the safety of the equipment as well as staff engaged in operation and maintenance of the equipment.
- VI. All outdoor apparatus of the transformer, including bushing insulators with their mountings, shall be designed so as to avoid any accumulation of water.

### 5.1 CORE:

- I. Transformer core shall be stack type, 2D, constructed from high grade cold rolled, non-ageing, grain oriented, silicon steel lamination which shall be properly annealed (under inert atmosphere, if required) to relieve stresses.
- II. The core shall have low loss and good grain properties.
- III. Core should be coated with hot oil proof, with insulation coating, an inorganic coating equivalent to C-5 type as ASTM A976 or IS 3024, like Carlite -3.
- IV. All core should be clamped together with frames to prevent vibration and noise. The core clamping shall be preferably without through bolts and if any bolt used same shall be effectively insulated.
- V. The core thickness should be 0.23mm or better
- VI. Only single grade and same thickness of core stampings shall be accepted and mixing of different grades shall not be allowed.
- VII. The complete design of the core must ensure maximum permanency of the core losses without continuous working of the transformers.
- VIII. The value of the maximum flux density allowed in the design and grade of lamination used shall be clearly stated. The vendor shall submit the calculations in support of the same.
- IX. The handling of core lamination and stacking should be smooth and uniform.
- X. The transformer shall be suitable for continuous service without damage under 'over fluxing where the ratio of voltage over frequency exceeds the corresponding ratio at rated voltage and rated frequency up to 12.5% and the core shall not get saturated. The BH graph to be submitted by bidder for core material.
- XI. The bidder shall be required to submit the following documents in regard to procurement of core material during stage inspection:
  - a. Invoice of supplier
  - b. Mill's test certificate
  - c. Packing list

- d. Bill of landing
  - e. Bill of entry certificate by custom (if required)
  - f. Description of material, electrical analysis, physical inspection certificate for surface defects, thickness and width of material.
- XII. The bidder shall offer the core for inspection and approval of TPCODL/TPNODL/TPSODL/TPWODL during manufacturing stage. Heavy penalty or black listing shall be imposed on the bidders using defective CRGO sheets i.e in case of nonconformance w.r.t TPCODL/TPNODL/TPSODL/TPWODL Specifications.
- XIII. Transformer core assembly shall have enclosed type lifting lugs for lifting arrangement.
- XIV. **Bidder shall provide the below details in below table:**

Sl. No.	Description	Unit	To be furnished by bid
1	Magnetizing (No Load) Current		
	90% Voltage	%	
	100% Voltage	%	
	112.5% Voltage	%	
2.	Core grade		
3.	Thickness of core Lamination	Mm	
4.	Core Dimension: Length X height X diameter	mm x mm x m	
5.	Gross core area	Sq.cm	
6.	Net core area	Sq.cm	
7.	Flux density (calculated)	Tesla	
8.	Over fluxing without saturation (BH curve to be submitted)	Tesla	
9.	Mass of core	Kg	
10.	Loss per Kg of core at the above specified flux	Watt	
11.	Core window height	Mm	

12.	Center to center distance of the core	Mm	
13	Mass of Core Lamination (min.)	Kg	
14	Make of Core offered		

## 5.2 WINDING CONNECTIONS

- I. Windings shall be constructed from high- conductivity (copper conductors), Tripple Paper Covered (TPC) copper conductor with min 25% overlap per layer of paper.
- II. The conductor should be drawn uniformly without any deformation and any burr.
- III. No metallic or non-metallic dust should be present in-between TPC conductor.
- IV. The current density for winding should not be more than 2.4 Ampere per sq.mm.
- V. The insulation between core and bolts, core and clamps shall withstand **2.5 kV for one minute**.
- VI. Proper bonding of inter layer insulation with the conductor shall be ensured.
- VII. All turns of windings shall be adequately supported (by which material) to prevent movement. The core/coil assembly shall be securely held in position to avoid any movement under short circuit conditions.
- VIII. The joints in the winding shall be avoided but if it is necessary then, they shall be properly brazed and the resistance of the joints shall be less than that of parent conductor. Crimping is not allowed at any joints.
- IX. Winding shall be such that neutral formation is at the top.
- X. Bidder shall provide the below details in below table:

SL	Parameters	Unit	Technical Data
1	Description		
2	Service		
3	Reference Standard & Tolerances		
4	KVA Ratings of Transformers	kVA	
5	Voltage Variation	KV	
6	Full Load Current	Amp	
7	Voltage Control		
8	Rated Frequency	Hz	
9	No. of Phases	Nos	
11	Max Flux density at normal voltage (33 KV) and frequency (50Hz)	Tesla	
11	Max Flux density at 12.5% increase of Combined Nominal V & f .	Tesla	
12	Current density	A/Sq.mm	
14	Vector Group		
15	Type of Cooling		
16	Temperature Rise-Top Oil/ Winding,	°C	

17	No-Load Loss at rated voltage (33 kV) & Frequency	kW	
18	Load Loss at rated current and at 75 Deg	kW	
19	Impedance Voltage at rated current	%	
20	Type of Tap Changer		
	Make		
	Tapping Range		
21	Insulation Class		
22	Separate Source Power Frequency Voltage Withstand	KVRMS	
23	Induced Over Voltage Withstand	KVRMS	
24	Full Wave Lightning Impulse Withstand Voltage of winding	kVp	
25	Terminal Arrangement -		
	Load Side Bushing		
	Source Side Bushing		
26	Efficiency at 75°C at unit P.F & at 0.8 PF Lagging		
	a. 125% Load	%	
	b.100% Load	%	
	c. 75% Load	%	
	d.50% Load	%	
	e.25% Load _	%	
27	Regulation		
	a. At unit P.F	%	
	b. At 0.8 P.F Lagging at 75°C	%	
	c. Maximum Efficiency occurs at	%	
	d. Maximum Efficiency	%	
28,	Weight (With ±10% Tolerance)		
	Weight of Core	Kg	
	Weight of Winding(Copper)	Kg	
	Core &Winding	Kg	
	Tank &Fitting	Kg	
	Transformer Oil	Ltrs/Kg	
	Total Weight of Transformer	Kg	
29	Auxiliary Transformer 3Ph 1KVA for Tap Changer and Control. ( Separate/In Built)	Qty	
30	Core Material & Grade		



31	Winding Resistance at 20 Deg.c Per phase(Tap.No.1)	Ohm	
32	Magnetizing Current at 90%,100% &112.5%	%	
33	Winding Material Insulation		

### 5.3 INSULATING PAPER AND INSULATING PRESSBOARD


- I. Inter layer insulation both for Primary Side and Secondary Sidewindings shall be Epoxy Kraft paper and compressed pressboard of make (refer Clause no.5.32) subject to approval of TPCODL/TPNODL/TPSODL/TPWODL
- II. Primary and secondary windings shall be constructed from high- conductivity (copper conductors), Triple Paper Covered (TPC) copper conductor with min. 25% overlap per layer of paper.
- III. Kraft paper and Pressboard should be made of pure Cellulose from soft wood pulp manufactured from sulphate process. No additive, adhesive or coloring matter shall be present.
- IV. Kraft paper and Pressboard should be of class A (105°C) insulation material.
- V. All spacers, axial wedges / runners used in windings shall be made of pre-compressed solid pressboard.
- VI. All axial wedges/runners shall be properly milled to dovetail shape so that they pass through the designed spacers freely.
- VII. Insulation shearing, milling and punching operations shall be carried out in such a way, that there should not be any burr, sharp edges and dimensional variations.
- VIII. Kraft paper self-adhesive tape to be used for bonding of insulating paper layer, spanner and paperboards that are immersed in the oil filled transformer.
- IX. Insulation shall be uniform throughout the winding. Graded Insulation is not allowed.
- X. **Below required values could be verified if required at any stage of the inspection and it should fulfill the requirement as per below table:**

Characteristics	Kraft Paper	Pressboard (all Sizes)
1. Dimension	As specified by bidder with $\pm 5\%$ tolerance.	As specified by bidder with tolerance as per IS1576.
2. Apparent Density	$>0.80 \text{ g/cm}^3$	as per IS 1576 w.r.t Thickness
3. pH of Aqueous extract	6-8%	6-8%
4. Electrical strength i) in air ii) In Oil	7KV/mm -----	12KV/mm 35KV/mm
5. Ash content	Maximum 1%	Maximum 0.7
6. Moisture content	Maximum 8%	Maximum 8%
7. Oil absorption	-----	Minimum 9%
8. Heat stability	As per IS 9335-part 3	As per IS 1576
9. Tear index	As per IS 9335-part 3	As per IS 1576

Bidder has to submit the test certificates as per IS-9335, IS-1576 for all type of insulating materials covering above stated parameters along with **below parameters during stage inspection** :

- a. Substance (Grammage) (g/m<sup>3</sup>)
- b. Compressibility
- c. Tensile strength
- d. Conductivity of water extract
- e. Shrinkage in air
- f. Flexibility
- g. Cohesion between plies.
- h. Elongation
- i. Air permeability
- j. Bidder shall provide the below details in below table

Sl. No.	Description	Unit	As furnished by bidder
1.	TPC Paper for Conductors :		
	Type of TPC Paper		
	Make of TPC Paper		
	Thickness TPC Paper	mm	
	Percentage Overlapping (not less than 25%)	%	
2.	Type of Paper for Interlayer Insulation		
	Make of Paper for Interlayer Insulation		
	Thickness of Paper for Interlayer Insulation	mm	
3.	Material used for top and bottom yoke insulation		
	Make of material used for top and bottom yoke insulation		
	Thickness of material used for top and bottom yoke insulation	mm	
4.	Type of material used for Spanner, wedge and Axial for insulation		
	Make of material used for Spanner, wedge and Axial for insulation		

	<b>Specification No:</b> ENG-EHV-  <b>Specification Name:</b> Technical Specification for 33kV, 2.5MVA, 5MVA and 10MVA Line Voltage Regulator Transformer
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	Thickness of material used for Spanner, wedge and Axial for insulation (all sizes)	mm	
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**5.4 LOSSES**

- I. The bidder shall individually guarantee No load loss (Iron loss at rated voltage and frequency) and full load Copper Loss (at 75°C) without any positive tolerance.
- II. The bidder shall also guarantee the total loss at 100% load condition (at rated voltage and frequency and these should be within the limits of maximum total losses declared by TPCODL/TPNODL/TPSODL/TPWODL for 100% loading values ( as per table below )

<b>Description</b>	
Maximum Losses at 100% loading at 75°C (Watts)	
<b>Description</b>	
Maximum Losses at 100% loading at 75°C (Watts)	

No positive tolerance shall be allowed on the losses as mentioned above. However, bidder can offer losses less than specified but no consideration in cost will be given for the same.

- III. During testing at Bidder's works if it is found that the actual measured losses are more than the values quoted by the Bidder, TPCODL/TPNODL/TPSODL/TPWODL shall have the right to reject the complete lot.
- IV. During testing at Bidder's works, if the temperature rise exceeds the specified values, the entire lot shall be rejected by TPCODL/TPNODL/TPSODL/TPWODL
- V. During testing at Bidder's works, if the impedance values differ from the guaranteed values including tolerance, the entire lot shall be rejected by TPCODL/TPNODL/TPSODL/TPWODL
- VI. Transformer losses shall be checked on any one of Transformer from supplied lot at TPCODL/TPNODL/TPSODL/TPWODL workshop. If it is found that the actual measured losses are more than the values quoted by the Bidder, TPCODL/TPNODL/TPSODL/TPWODL shall have the right to reject the complete lot.
- VII. Bidder shall provide the below details in below table:

Sl. No.	Description	Unit	To be furnished by bidder
1	No Load losses	Watt	
2	Load losses at 75° C	Watt	
3	<b>Efficiency at 75 deg. C</b>		
4	% Impedance at 75 deg. C	%	

### 5.5 TRANSFORMER TANK AND TANK CONSTRUCTION

- I. The transformer tank shall be of robust construction, rectangular in shape and shall be built up of electrically tested welded mild steel plates.
- II. The tank shall be fabricated by welding at corners. No horizontal or vertical joints in tank side walls and its bottom or top cover shall be allowed.
- III. All welding operations should be carried by qualified welders (performance qualification certificates to the customer) as per the relevant ASME standards and a copy of the welding procedure has to be submitted to TPCODL/TPNODL/TPSODL/TPWODL at the time of drawing approval.
- IV. The thickness of tank should be as below:  
For 2.5MVA and 5MVA :  
 For top and bottom : 10 mm (min.)  
 For Sides : 8 mm (min.)  
For 10 MVA :  
 For top and bottom : 12 mm (min.)  
 For Sides : 10 mm (min.)  
 Tolerance shall be applicable as per IS 1852 as per above thickness band.
- V. In addition the cover of the main tank shall be provided with an air release plug.
- VI. The tank plates shall be of such strength that the complete transformer when filled with oil may be lifted bodily by means of the lifting lugs provided. The top cover shall have no cut at point of lifting lug.
- VII. The transformer tank cover shall be bolted with tank rim so as to make a leak proof joint.
- VIII. The tank plate and lifting lugs shall be of such strength that the complete transformer filled with oil may be lifted by means of lifting shackle.
- IX. The tank cover shall have slight slope (10 mm  $\pm$  2mm) towards Primary Side side to drain rain water.
- X. There must be sufficient space from the core to the top cover to take care of oil expansion. The oil volume inside the tank shall be such that even under the extreme operating conditions, the pressure generated inside the tank does not exceed 0.4 kg/sq. cm positive or negative and the tank shall be of adequate mechanical strength to withstand it.
- XI. The transformer should be capable of withstanding 0.8kg/sq.cm air pressure and a vacuum of 0.7kg/sq.cm. The permanent deflection of the flat plate, when the tank without oil is subjected to a vacuum of 525 mm of mercury shall not be more than the values specified:

<b>Length of Plate</b>	<b>Deflection</b>
Up to 750 mm	5.0 mm



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751 mm to 1250 mm	6.5 mm
1251 mm to 1750 mm	8.0 mm
Above 1750 mm	9.0 mm

- XII. The tank design shall be such that the core and the windings can be lifted freely without dismantling the bushings.
- XIII. All joints of tank and fittings shall be oil tight and no bulging shall occur during service.
- XIV. The tightening torque chart to be provided for all bolts used. This shall be submitted along with each rating drawings.
- XV. The transformer shall be provided with four pulling lugs of MS plate of 8mm thick to pull the transformer horizontally.

**Lifting lugs:**

- I. The transformer shall be provided with a minimum of four welded heavy duty enclosed lifting lugs of Structural steel E250 or better grade quality A (Minimum quality A) as per IS 2062 plate of minimum 16mm thickness for lower rating and gradually increased for higher rating as per weight suitably reinforced by vertical supporting flat stiffener smooth welded properly on the side walls up to reinforcing angle. They shall be so extended that cutting bend plate is not required. The transformer lifting lug shall be painted with yellow colour.
- II. The location of lifting lugs shall be such that the clearance between lifting chain and nearest part of bushing shall be at least 100 mm.
- III. There shall be facilities for lifting the core coil assembly separately.
- IV. The lifting lugs shall be designed in such a way that any two diagonal lugs are capable of lifting two times of the total weight of the transformer. The design of should be such that it should be suitable for 120degree lifting rope angle as per ASME B30.9 and at any point of time the maximum stress allowed on the Lug martial shall be lesser than 82MPa as per ANSI C.57.12.10
- V. Calculation sheet for Lifting lug design to be submitted by Bidder. The calculation shall include the Stress on lifting lug material and stress on welding both. The Stress on the welding should be less than 840kg/cm2 as per ANSI C.57.12.10. All calculation to be done for considering lifting on any diagonal opposite two lugs conditions.

Bidder shall provide the transformer size and clearances in below table:

Sl. No.	Description	Unit	To be furnished by bidder
1	Transformer overall Length x Height x width	mm x mm x mm	
2	Only Tank overall Length x Height x width	mm x mm x mm	
3	<b>Clearances</b>		
	(a)Core-Winding		

	(b)Winding Ph-Ph		
	©Winding -Yoke		
	Creepage (Winding to Earth in Oil)		
4	Between yoke and inside of tank to cover	mm	
5	Between yoke and bottom	mm	
6	Any point of winding to tank	mm	
7	<b>Calculated Impedance</b>	%	
8.	Conservator dimension (dia x Length)	mmxmm	
9.	Size of Pipe used for conservator to Tank	mm	
10.	Size of Pipe used for Valves	Mm	
11.	Base Channel size	mmxmmxmm	
12.	No. of Radiators	Nos	
13.	No. of fins per Radiator	Nos	
14	Dimension of radiator fins (L x W)	mmxmm	
15	Make of Tank material		

## 5.6 RADIATORS

- I. Radiators of pressed steel type conforming to the design requirement suitable for mineral oil and Ester oil (all type) type transformer.
- II. The Pressed Steel type should be used in vertical formation without any bending and should be individually tested for leakage and pressure test etc. before welding with the main tank.
- III. The number / cross section / length / fixing arrangement of radiators shall be indicated in the general assembly drawing.
- IV. Radiator thickness must be uniform without any dent or damage and also no bulging or concave should occur even after performing pressure/ vacuum test and temperature rise test.
- V. Corrugated designs are not accepted.

## 5.7 GASKET

- I. Cork rubber gaskets conforming to Type C , grade RC70 as per IS 4253 (Part-2) shall be provided for all oil bearing & water ingress resistant requirements for components like Primary Side & Secondary Side bushings bottom gasket, Top Cover, Conservator, Valves etc.
- II. Nitrile/Neoprene rubber gaskets conforming to Type IV – 4C (heat and oil resistant) as per IS 11149 shall be provided for bushing O ring (oil gaskets).
- III. Only Joint free Gasket to be used. Only in case of top cover gasket up to two dove-tail joints with adhesive shall be allowed.
- IV. Cork sheet, Nitrile/Neoprene rubber gaskets shall be free from cracks, pinholes and shall be capable of being cut or punched without crack or tearing.

**5.8 On Load Tap Changer**

On Load Tap changer (OLTC) on Primary Side Side	
a) Type	In-Tank OLTC (On Load Tap Changer)/ Side Mounted OLTC (TBD in Detailed Engineering)
b) Range	25kV -33kV
c) Number of Steps	16 Step (17 Position)
e) Manual / Automatic	Yes (Both)
f) Remote / Local	Yes (Both)
g) IS	8468-2006
h) All contacts should be SCADA compatible and suitable for connection to TMU	Yes
i) Protection for OLTC	Yes
j) Potential free contacts for SCADA shall be Provided	Yes
k) Flow of Power	Bidirectional
l) AVR and SCADA compatibility	Yes

**5.9 BUSHINGS AND TERMINAL CONNECTORS**

**A. Primary Side & Secondary Side Bushings (36 kV/250 A)**

- I. The bushings shall be outdoor type, external part shall be made of porcelain material. Rods, nuts and flat washer (Tightening Nut along with Check Nut) shall be made of tinned brass material.
- II. IS to be followed: IS 8603(Part- I) for porcelain, IS 3347 part3 section 2 for metal part and Complete bushing shall comply IS 2099.  
**Primary/Secondary Bushing on Top with Bird Guard**
- III. The Primary Side bushing shall be fitted with bird guard on the bushing connector.
- IV. Complete Tinned Brass joint less connectors shall be provided on Primary Side bushing rods suitable for bare panther conductor connections. The connector should have large contact area. Hardware shall be Hot Dipped Galvanized or Aluzinc coated or SS material

**LA of suitable voltage rating shall be mounted at both ends of the transformer**

## 5.10 TERMINAL CONNECTORS

### Primary/Secondary Side Bushing:

- I. Tinned Brass connectors shall be provided connected with Primary & Secondary Side bushing rods for bare top plate bushings .

## 5.11 INTENTIONALLY KEPT BLANK.

## 5.12 EQUILISING/ EQUIPOTENTIAL STRIP

- I. The Transformer top cover shall be connected with main tank using **tinned copper strip (30mm wide, 0.7mm thick)** at two places (diagonally opposite with each other).
- II. The strip should touch bare surface of tank in order to ensure proper electrical connection of tank body with top cover with the strip.
- III. All the covers like inspection cover, Conservator cover must be electrically connected using **tinned copper strip (30mm wide, 0.7mm thick)**.
- IV. Separate arrangement to be made and cover tightening bolt not to be used for equipotential strips.

## 5.13 EARTHING CONNECTIONS

### NEUTRAL EARTHING:

- I. 36 KV Grade of neutral bushing shall be provided

### BODY EARTHING:

- I. Two body earthing terminals pads boss arrangement (up to 500sq.mm) shall be provided on Transformer tank with M12 SS Bolt with 70 sq. mm lug. with SS plain washer and spring washer.
- II. It shall be located on the lower side of the transformer, diagonally opposite to each other.
- III. Each Earthing terminal pad on Transformer shall be provided with two SS M12 bolts on each pad on each side with two 70 sq.mm AL Lugs and washers.

## 5.14 OIL

### Note: Default Oil shall be Mineral oil only if not specified / asked for other oil.

### Mineral Oil: In case of Mineral Oil below are the requirements to be fulfilled:

1. All transformers shall be filled with new, unused, clean, standard mineral oil in compliance with IS 335-2018 / IEC 296 type-II and shall be free from all traces of polychlorinated biphenyl (PCB) compounds.
2. The use of recycled oil is not acceptable.



3. Oil shall be filled under vacuum before filling it shall be filtered and tested (as per IS 6103).  
4. The test parameters should be as per the table below:

Test parameters	Values
Break Down Voltage (min )	70 kV
Water content ppm, (max.)	30 ppm
Specific resistance (min.) ( at 27°C )	2.5 × 10 <sup>12</sup> ohm-cm

Bidder has to provide the oil data in below table:

Sl. No.	Description	Unit	To be furnished by bidder
1	Type of oil		
2	Oil Qty. for first filling	Ltr.	
3	Grade of Oil		
4	Maker's name		
5	BDV at the time of first filling	kV	

### 5.15 CONSERVATOR

- I. The conservator shall be supported / fixed on the main body of the transformer tank.
- II. The capacity of the conservator tank shall be designed keeping in view the total quantity of oil and its contraction and expansion due to temperature variations. The total volume of conservator shall be such as to contain **10% quantity of the oil used in transformer**. Normally, at least **30% volume of conservator** shall be filled with Oil.
- III. The connecting pipe of the conservator shall be so fitted to transformer tank that the pipe can be detached from the tank.
- IV. Joint less pipe shall be used which shall be connected with round flanges.
- V. The inside diameter of the pipe connecting the conservator to the main tank shall be within 25 to 50 mm and it should be projected into the conservator so that its end is approximately 20mm above the bottom of the conservator so as to create a sump for collection of impurities. The minimum oil level corresponding to -5°C should be above the sump level.
- VI. The conservator oil filling cap/hole shall be of 32mm diameter & female type cap to be provided.
- VII. The conservator to be fitted with MOG such that it shall operate/open contact when the oil level in conservator goes below -5 degree C /Minimum mark. The float switch shall be with normally closed type. This contact shall be wired up in auxiliary terminal box.
- VIII. Buchholz relay: The pipe should not contain any right angle elbows. Its diameter should correspond to the diameter of the hole for the passage of oil of the relay. The pipe must be arranged to slope upwards towards the conservator at an angle of about 2 to 4 degrees to the horizontal (max 5 degrees). The part of the pipe preceding the relay should be straight for a length equal to at least five pipe diameters; the part of the pipe leading to the conservator

immediately adjacent to the relay should be straight for a length equal to at least three pipe diameters.

- IX. The Oil conservator shall be provided with:
- a. **Oil level indicator** (as per clause no. 5.18).
  - b. **Dehydrating breather** (as per clause no. 5.22).
  - c. **Drain plug**
  - d. **Oil filling hole** (1.25 inch/32mm with thread size of BSP 1.25inch, 11TPI) with cover.
  - e. **Detachable end plate** on one side (the side on which the gauge glass is fitted), to enable the maintenance staff to periodically clean the inside of the conservator tank

#### Center of Gravity

The transformer should be designed in such a way that the centre of gravity of complete transformer with oil and with all accessories shall fall at the vertical centre at lower height such that the transformer should be stable on flat surface ground and while lifting at lifting hooks.

#### 5.16 OIL LEVEL INDICATOR

- I. Oil level indicator with **prismatic glass and red colour background** shall be provided.
- II. The oil gauge glass shall be removable and so embodied in the end plate so as to prevent oil leakage.
- III. The Oil level indicator should indicate oil level at minimum, normal and maximum as -5°C, 30°C and 90°C respectively.

#### 5.17 PRESSURE RELEASE VALVE

- I. PRV shall be provided with auxiliary contacts. The contact to be wired up in the auxiliary terminal box.
- II. PRV shall be provided to operate before reaching the test pressure as specified in the above class.
- III. PRV shall not have air release arrangement.
- IV. The PRV shall seal-off after the excess pressure has been released and it shall have mechanical flag arrangement.
- V. The PRV shall have NO, NC contacts wired up in auxiliary terminal box.

#### 5.18 AIR RELEASE PLUG

The cover of the main tank shall be provided with an **air release plug on all ratings.**

#### 5.19 VALVE

Valves shall be of forged carbon steel upto 50mm size and of gun metal or of cast iron bodies with gunmetal fittings for sizes above 50mm. They shall be of full way type with screwed ends and shall be opened by turning counter clockwise when facing the hand wheel. There shall be no oil leakage when the valves are in closed position.

II. Each valve shall be provided with an indicator to show the open and closed positions and shall be provided with facility for padlocking in either open or closed position. All screwed valves shall be furnished with pipe plugs for protection. Padlocks with duplicate keys shall be supplied along with the valves.

III. All valves except screwed valves shall be provided with flanges having machined faced drilled to suit the applicable requirements, Oil tight blanking plates shall be provided for each connection for use when any radiator is detached and for all valves opening to atmosphere. If any special radiator valve tools are required the OEM shall supply the same.

IV. Each transformer shall be provided with following valves on the tank:

- a) Drain valve so located as to completely drain the tank & to be provided with locking arrangement.
- b) Two filter valves on diagonally opposite corners of 50mm size & to be provided with locking arrangement.
- c) Oil sampling valves not less than 8mm at top and bottom of main tank & to be provided with locking arrangement.
- d) One 15mm air release plug.
- e) Valves between radiators and tank.
- f) Drain and filter valves shall be suitable for applying vacuum as specified in the specifications

**5.20 DEHYDRATING BREATHER**

- I. The breather pipe shall enter the conservator from the upper side of the conservator.
- II. The silica gel shall be blue colored as per IS: 3401 – 1992. The granules size should be 3-5 mesh (4 to 6.73mm).
- III. It shall be suitably sized for 2.5 MVA , 5 MVA, 10 MVA
- IV. The body of the breather shall be unbreakable, transparent, UV stabilized seamless polycarbonate tube of minimum thickness 3mm
- V. The top cover shall be of pressure die cast aluminum and powder coated.
- VI. The oil cup shall be of UV protected polycarbonate.
- VII. Oil cup shall have marking of oil filling level
- VIII. The breather shall be supplied as per approved make and as per specifications.
- IX. The gasket should be of Class 3B, Type III as per IS 11149 Nitrile rubber (Oil resistant gaskets)
- X. All tie rods and all hardware should be of stainless steel material ( SS 304)
- XI. While fixing of breather on transformer Teflon tape should be used to make it air tight & water tight. This shall be checked during inspection and after receipt at our stores on each transformer.
- XII. The breather should have passed air pressured test as per our specification i.e. Breather shall be tested at an air pressure of 0.35kg/cm2 (5 PSI) for period of 30 minutes. NABL lab test report to be submitted from OEM. For further details please refer our specifications of breathers.

**5.21 OIL TEMPERATURE INDICATOR**

- I. Range: 0- 120 °C, Accuracy: ± 4 °C.
- II. The OTI shall have auxiliary contacts for alarm and trip contacts at preset temperatures, both the contacts should be wired up in the auxiliary terminal box.
- III. The IP65 gland should be used for dial for taking out auxiliary wires.
- IV. The OTI shall be IP55 tested.
- V. OTI/WTI shall be mounted inside Marshalling Box.

**5.22 FASTENERS**

- I. All the bolts or studs shall be **at least 6 mm in diameter** except when used for small wiring terminals. **All bolts shall be of grade 8.8.**
- II. All nuts/bolts/washers exposed to atmosphere shall be as follows:

Size 12mm (or below)	(or)	Stainless Steel
----------------------	------	-----------------

Above 12mm	Steel with antirust coating (aluzinc coated) ,Hot dip galvanized
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- III. All ferrous bolts, nuts and washers placed in outdoor positions shall be hot dip galvanized to prevent corrosion (except high tensile steel bolts and spring washers which shall have electrolytic action between dissimilar metals).
- IV. In case the galvanization is removed due to welding or manufacturing, the parts should be properly cleaned and painted to avoid exposure to atmosphere.
- V. The cup type washers to be used as spring washers, cut spring washers are not accepted.
- VI. Taper washers shall be provided where necessary. Protective washers of suitable material shall be provided on front and back of the securing screws.
- VII. Each bolt shall project at least one thread but more than three threads through the nut. If bolts and nuts are placed so that they are inaccessible by means of ordinary spanners, special spanners shall be provided. The length of the screwed portion of the bolts shall be such that no screw thread may form part of a shear plane between members.
- VIII. Core bolts shall be black colored high tensile grade-8.8

**5.23 SURFACE PREPARATION AND PAINTING**

- I. The paint shall be applied by airless spray.
- II. Steel surfaces shall be prepared by shot blast cleaning (IS-9954) to grade Sq.2.5 of ISO 8501-1 or chemical cleaning including phosphating of the appropriate quality (IS 3618).
- III. Heat resistant (Hot oil proof) paint shall be used for the inside surface and whereas for external surface one coat of thermosetting powder paint or one coat of epoxy primer (zinc chromate/Zinc Phosphate) followed by two coats of polyurethane (P.U.) base paint. as per table given below

S.No.	Paint type (should be UV restraint, non-fading)	Area to be painted	No of coats	Total dry film thickness (min); micron
1.	Thermosetting powder paint	Inside	01	30
		Outside	01	60
2.	Liquid Paint			
a.	Epoxy (primer)	Outside	01	30
b.	P.U. Paint (finish paint)	Outside	02	25 (each)
c.	Hot oil resistant paint	Inside	01	35

The two coats shall be of oil and weather-resistant nature with final coat as flossy and non-fading paint of shade 631 as per IS 5.

- IV. The dry film thickness shall not exceed the specified minimum dry film thickens by more than 25%.

- V. Any damaged part shall be cleaned to bare metal with an area extending 25 mm around its boundary. A priming coat shall be immediately applied followed by full paint finish equal to that originally applied and extending 50 mm around the perimeter of the original damage. The repainted surface shall present a smooth surface which shall be obtained by carefully chamfering the paint edges before and after priming.
- VI. Painting shall not affect by weather changes & performance against pilling out or fading etc. to be guaranteed for 5 Years.
- VII. Paint thickness shall be 120 Microns

#### 5.24 RADIO INTEREFENCE

When operated at voltages up to **12.5%** in excess of the normal system rating, transformers shall be substantially free from partial discharges (i.e. corona discharges in either internal or external insulation) which are likely to cause interference with radio or telephone communication.

#### 5.25 OVERLOAD CAPACITY

The transformer shall be suitable for loading as per IS 2026 part 7

#### 5.26 FITTINGS

The following standard fittings shall be provided:

- I. Two earthing terminal pads/ boss with earthing symbol  $\perp$  for body earthing on opposite sides with 70sq.mm AL lug and M12 SS bolt and washers.
- II. Air Release Device.
- III. Thermometer Pocket with cap.
- IV. Drain cum Sampling Valve & filter valve
- V. Pressure relief valve with auxiliary contacts
- VI. Detachable type Radiators
- VII. Load and Source side bushing shall be bare type. .
- VIII. For Load side bare bushing bird guard on bushings terminals connectors
- IX. Conservator with Dehydrating Breather
- X. Prismatic Oil level Gauge and MOG in conservator.
- XI. Lifting lugs (enclosed type) for the top cover, complete transformer and core and winding assembly.
- XII. Pulling Lugs.
- XIII. Jacking Pads
- XIV. Stiffener Angle.
- XV. Marking Plates as asked in clause 6.1
- XVI. OTI/WTI with alarm & trip contact
- XVII. Two GI earth strip of Size 50x6 mm for neutral earthing from both side of Secondary Sidebox with minimum GI coating thickness of 86 microns. With SS nut bolts and washer.
- XVIII. Magnetic Oil level Gauge , Winding Temperature Indicator , Magnetic Reed type Buchholz relay in line with IS 1180.
- XIX. Marshalling Box with stud type terminals

#### 5.27 WINDING TEMPERATURE INDICATOR (WTI)

- I. WTI shall be **indicating type**, responsive to the combination of top oil temperature and winding current, calibrated to follow the hottest spot temperature of the transformer winding.
- II. WTI shall operate a remote alarm and trip in the event of attaining the predefined temperature.
- III. WTI shall be housed inside Marshalling Box.

**5.28 BUCHHOLZ RELAY**

- I. Magnetic Reed type Buchholz relay shall be provided with alarm and tripping contacts to detect accumulation of gas.
- II. The installation shall be fixed and weather proof to avoid any water seepage inside the relay.
- III. Round flange of nominal pipe bore of **50mm diameter** shall be used.
- IV. In addition, pocket with heater coil along with Resistance Temperature Indicator (RTD) shall be provided for WTI and OTI. CT for RTD for winding hot spots shall be provided.

**5.29 Two Separate Marshalling Box shall be provided**

1. For Transformer OTI, WTI, etc
  - I. Marshalling Box of suitable size, made up of Mild Steel and with theft proof locking arrangement shall be provided.
  - II. Marshalling box shall have IP 55 protection.
  - III. Marshalling Box shall have provision for wiring the WTI, OTI, MOG, PRV, Buchholz relay and LT CT terminals. The terminals shall be provided as per table below:

Element	Alarm	Trip
Oil Temperature Indicator	NO,NC,COM	NO,NC,COM
Winding Temperature Indicator	NO,NC,COM	NO,NC,COM
Buchholz	NO,NC,COM	NO,NC,COM
Magnetic Oil Level Gauge	NO,NC,COM	
PRV	NO,NC,COM	
LT Voltage terminals	RYBN	
Spare TB	4 No.	
Tap Position		

- IV. WTI meter shall be wired/ installed in the marshalling box.
- V. 10 core PVC wire (4 sq.mm Cu FRLS PVC stranded panel wires) shall be used to terminate connections from CTs at Secondary Sideside to the Marshalling box.
- VI. Plastic ferrules engraved with black letters shall be used to mark the wires in the marshalling box.

- VII. Wiring in Marshalling box shall be done by 2.5 sq.mm Cu FRLS PVC stranded panel wires.
- VIII. All the cables and conduits between the transformer and control cabinet shall be included in the scope of supply by the bidder.

**2 . For AVR Controls**

- I. Marshalling Box of suitable size, made up of Mild Steel and with theft proof locking arrangement shall be provided.
- II. All necessary arrangement for local operation /Remote operation to be provided.
- III. All the cables and conduits between the transformer and control cabinet shall be included in the scope of supply by the bidder.
- IV. Marshalling box shall have IP 55 protection.
- V. All necessary protection for OLTC/AVR to be provided.
- VI. AVR should have SCADA compatibility using Modbus or IEC60870-104 Protocol for remote monitoring and control.

**5.30 MAKE OF MAJOR COMPONENTS & RAW MATERIALS**

The BA shall procure the following constituent items from the designated vendors as follows:

S.no	RAW MATERIAL/EQUIPMENT	MAKE
a)	Copper	M/S Sterlite, M/S Hindustan Copper, M/S Hindalco.
b)	Core	M/S AK Steels, POSCO, Kawasaki/JFE, Nippon Steel,
c)	Insulation paper and Pressboards	ITC paper, ABB, Raman Boards-Mysore, Senapathy Whiteley – Bangalore
d)	Transformer Oil ( Mineral oil)	Savita, Apar, Gandhar
e)	Gaskets & Corks	Nu Cork, Anchor Corks
f)	Steel For Tank	M/s, TATA Steel, M/s SAIL, M/s. JSW Steel, M/s. IISCO, M/s. RINL/Vizag Steel, M/s. Jindal Steel,
g)	Dehydrating Breather	Yogya, Anushree, Electrical engineers
h)	Bushings Primary Side & Secondary Side	Genesis Electric, Hindustan Chemicals, Rashtriya Electricals,LAMCO



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i)	Buchholz, PRD, SPR, OTI , WTI, and other devices	Reputed make to be approved by TPCODL/TPWODL/TPNODL/TPSO DL during detailed engineering.
j)	AVR, Relay, Tap Changer Controller	Reputed make to be approved by TPCODL/TPWODL/TPNODL/TPSO DL during detailed engineering.

Also, Bidder has to provide all test certificates from original manufacturers & relevant sourcing documents. BA shall also have shot blasting facility.

6. MARKING:

6.1 MARKING PLATES

I. Name Plate (Rating) Plate : SS material

A rating plate shall be fitted to each transformer in a visible position and shall carry all the information as **specified in clause no. 6.2**

II. Terminal Marking Plate : on same name plate also accepted

- The terminal marking plate shall be provided which shall be strictly in accordance with **figure 4 of IS 1180-Part 1 or IS2026 (Whichever is applicable)**. This plate may be combined with the rating plate or can be provided separately.
- Value of short circuit impedance on extreme tapping and on principal tapping and indication of winding to which impedance is related has to be displayed additionally.

III. Details Plate : MS sheet of 2.5mm with punched details and welded on tank.

A separate plate of **size 125 mm x 125 mm** shall be provided having following details:

- Name of the firm.
- Serial No.
- Rating of transformer.
- Order no. and date.
- Date of dispatch.

IV. Guarantee Plate :

A separate warranty plate made of **Stainless Steel** with following clause written on it.

**“THE EQUIPMENT GUARANTEED UPTO A PERIOD OF 48 MONTHS FROM THE DATE OF COMMISSIONING OR 60 MONTHS FROM THE DATE OF LAST SUPPLY”**

All the plates described above (clause 1 to 4) should be as followings:

Material	Stainless Steel
----------	-----------------



Thickness	1 mm
Engraving	The letters on the rating plate shall be engraved black on the white/silver back ground.
Fixing	Fixing screws shall be of stainless steel.

**V. Danger Plate:**

Danger notice shall have red lettering on a white background on a plate as specified in IS: 2551 – 1982.

- a. Equipment is a Line Voltage Regulator
- b. Oil filled, naturally cooled type
- c. Name of the manufacturer and brand
- d. Capacity in KVA as tested
- e. Total losses
- f. Model and year of manufacturing.
- g. Bureau's authorisation number

**VI. Control Circuit drawing Plates:**

Engraved drawing for control circuit unit shall be available on Marshalling box.

**6.2 NAME PLATE DETAILS**

The name plate shall be strictly as per **IS 1180: 2014 or IS 2026 Whichever is applicable (figure 1)**. Additionally, following points shall be displayed :

- I. Actual no load losses of transformer.
- II. Actual total losses of transformer at 100% load.
- III. "PROPERTY OF TPCODL/TPWODL/TPNODL/TPSODL" shall be written in bold letters.
- IV. PO number with date has to be mentioned.
- V. Overall dimensions of the transformer

**6.3 MARKING**

- I. All transformers shall have Source Side phase windings marked in both, the terminal boards inside the tank and outside with capital letter 1U, 1V, 1W.
- II. The Load Side winding for the same phase shall be marked by corresponding small letter 2u, 2v, 2w. The neutral point terminal shall be indicated by the letter N.
- III. The markings shall be done by steel strips in which marks had been engraved in black colour.
- IV. Colour marking of the bushings shall be done.
- V. On the top cover of tank and the core channel, Manufacturer's name and Manufacturer's serial no. shall be engraved.
- VI. On the body of tank, Manufacturer's name, rating, serial no. and year of manufacturing shall be written with black paint on yellow base. It should be written in suitable place in approved format that it is readable from ground after installation on pole.

## 7. TESTS:

- I. All routine, acceptance & type tests shall be carried out in accordance with the IS 2026 and IS 1180: Part-1 (2014).
- II. All routine & acceptance tests shall be witnessed by the TPCODL/TPWODL/TPNODL/TPSODL /his authorized representative.
- III. All the components shall also be type tested as per the relevant standards. Following tests shall be necessarily conducted on the Distribution Transformers in addition to others specified in IS/IEC standards.

### 7.1 TYPE TESTS

- I. Lightning Impulse Test [As per IS 2026 (Part 3) Clause no. 12].
- II. Temperature Rise Test [As per IS 2026 (Part 2) Clause no.4].  
**NOTE:** Maximum measured total loss (No load at Rated excitation load loss at maximum current tap converted to 75°C reference temperature) at 100 percent loading shall be supplied during temperature rise test.
- III. Short Circuit Withstand test [As per IS 2026 (Part 5)].  
**NOTE:** Routine tests before and after short circuit test shall be conducted as per IS 2026(Part 1).
- IV. Pressure Test [As per IS 1180: Part 1 (2014)].
- V. Determination of sound levels [IS 2026 (part 10)].
- VI. No load current at 112.5% voltage
- VII. BDV and moisture content of oil in transformer (IS 335).
- VIII. Magnetic balance test.
- IX. Measurement of Zero-phase sequence impedance.
- X. Measurement of Harmonics of no-load current.
- XI. Test to verify IP 55 for Marshalling Box.

**Note:** - Out of the above mention type test, the tests under sl. No. 1, 2 ,3 and 4 shall be conducted at CPRI/ERDA labs and the balance tests to be conducted at TPCODL/TPWODL/TPNODL/TPSODL recommended NABL lab.

### 7.2 ROUTINE TESTS

Sr. No.	Test to be done	Reference BIS	Clause no.
1	Measurement of Winding Resistance on each tap.	IS 2026 (Part 1)	16.2.1 & 16.2.3
2	Measurement of voltage ratio, check of voltage displacement, polarity, phase sequence and vector group	IS 2026 (Part 1)	16.3
3	Measurement of short circuit impedance (principal tapping, when applicable) and load loss at 100% load	IS 2026 (Part 1)	16.4
4	Measurement of no load losses and	IS 2026 (Part 1)	16.5

	magnetizing current at rated frequency and 90%, 100% and 112.5% of rated voltage		
5	Measurement of insulation resistance	IS 2026 (Part 1)	16.6
6	Induced over voltage withstand test	IS 2026 (Part 3)	11
7	Separate Source voltage withstand test	IS 2026 (Part 3)	10
8	Oil leakage test	IS 1180 (Part 1)	21.5.1.3
9	Neutral current measurement	IS 1180	7.9.2
10	BDV and moisture content of oil in transformer (Type-2 oil)	For mineral oil : IS 335 (2018) For Ester oil : IEC 60247 & IEC61099	For mineral oil : IS 335 Table 2

### 7.3 ACCEPTANCE TESTS

- I. Temperature Rise test on one unit of first lot against every release order / PO for each rating. For further lots, TPCODL/TPWODL/TPNODL/TPSODL reserves the right to perform Temperature rise if required. [As per IS 2026 (Part 2) Clause no.4]
- II. Oil leakage test for acceptance shall be conducted at pressure of 0.35kg/sq.cm for one hour. (IS 1180 (Part 1) clause 21.5.1.3)
- III. The painted surface shall pass the Cross Adhesion Test (IS1180 part 1 clause no. 21.4.d).
- IV. Calibration of WTI and OTI.
- V. Magnetic Balance Test.
- VI. OEM test reports for CT if used.
- VII. OEM test reports for breather for air pressure test.
- VIII. At stage inspection -Checking of weight, dimensions, fitting and accessories, tank sheet thickness, oil quantity, material finish and workmanship, physical verification of core coil assembly and measurement of flux density on one unit of each rating of the offered lot with reference to the GTP and contract drawings. Oil BDV of all offered lot.
- IX. At least 10% transformer of the offered lot (minimum of one) shall be subjected to all the tests mentioned under the section 'ROUTINE Test" in presence of TPCODL/TPWODL/TPNODL/TPSODL's representative at the place of manufacture before dispatch without any extra charges. The testing shall be carried out in accordance with IS: 1180 and IS: 2026.
- X. Device trails & test (Buchholz trip, Buchholz alarm, PRV trip, WTI alarm, WTI trip and OTI alarm).
- XI. At Stage and Final inspection, the incoming raw material and its movement/consumption record in the related jobs of TPCODL/TPWODL/TPNODL/TPSODL will be verified by inspecting officer. In case of any deviation or non-availability of such records, the offered lot may get rejected.

### 8. TYPE TEST CERTIFICATES:

- I. The Bidder shall furnish the type test certificates of the offered rating and design of transformer for the tests as mentioned above as per the corresponding standards.
- II. All the tests shall be conducted at CPRI / ERDA or as defined in 7.1 as per the relevant standards.



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- III. In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPCODL/TPWODL/TPNODL/TPSODL.
- IV. Type tests should have been conducted in CPRI/ERDA during the period not exceeding 5 years from the date of opening the bid.

#### **9. PRE-DISPATCH INSPECTION:**

- I. Bidder to raise the inspection calls for stage inspection and only after getting clearance from TPCODL/TPWODL/TPNODL/TPSODL shall proceed for further manufacturing. The bidder shall raise the inspection call for Final Inspection or prototype Inspection in TPCODL/TPWODL/TPNODL/TPSODL format.
- II. If the prototype inspections asked for during drawing approval then bidder to make one unit of transformer and raise for inspection call for stage and final for prototype inspection.
- III. Equipment shall be subject to inspection by a duly authorized representative of the TPCODL/TPNODL/TPSODL/TPWODL
- IV. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material, the same is liable to rejection.
- V. Bidder shall grant free access to the places of manufacture to TPCODL/TPWODL/TPNODL/TPSODL's representatives at all times when the work is in progress.
- VI. Inspection by the TPCODL or its authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications.
- VII. The BA shall ensure that 100% of the lot must be ready for inspection and atleast 10% must be ready with all mounting and accessories during inspection.
- VIII. Material shall be dispatched only after getting MDCC (Material Dispatch Clearance Certificate) from TPCODL/TPNODL/TPSODL/TPWODL
- IX. Following documents shall be sent along with material:
  - a) Test reports
  - b) MDCC issued by TPCODL/TPNODL/TPSODL/TPWODL
  - c) Invoice in duplicate
  - d) Packing list
  - e) Drawings & catalogue
  - f) Guarantee / Warrantee card
  - g) Delivery Challan.
  - h) Other Documents (as applicable)
- X. To ascertain the quality of the transformer oil, the original manufacturer's tests report shall be submitted at the time of inspection.
- XI. Arrangements shall also be made for testing of transformer oil, after taking out the sample from the manufactured transformers and tested in the presence of TPCODL/TPNODL/TPSODL/TPWODL's representative.
- XII. In respect of raw material such as core stampings, winding conductors, insulating paper and oil, bidder shall use materials manufactured/supplied by standard manufacturers and furnish the manufacturers' test certificate as well as the proof of purchase from these manufacturers (excise gate pass) for information of the TPCODL/TPWODL/TPNODL/TPSODL.
- XIII. The bidder shall furnish following documents along with their offer in respect of the raw materials:

- a) Invoice of supplier.
  - b) Mill's certificate
  - c) Packing List.
  - d) Bill of Landing
  - e) Bill of entry certificate by custom.
- XIV. To ensure about the quality of transformers, the inspection shall be carried out by the TPCODL/TPNODL/TPSODL/TPWODL's representative at following two stages:
- a) Online anytime during receipt of raw material and during manufacturing/assembly Stage.
  - b) At finished stage i.e. transformers are fully assembled and ready for dispatch.
- XV. Advance intimation of 7Days (Within Odisha)/12 Day (Outside Odisha) is required for both Stage and final inspections.
- XVI. All tests and inspection shall be carried out at the place of manufacture unless otherwise specifically agreed upon by the manufacturer and TPCODL/TPNODL/TPSODL/TPWODL at the time of purchase.
- XVII. The manufacturer shall offer the inspector representing the TPCODL/TPNODL/TPSODL/TPWODL all reasonable facilities, without charges, to satisfy him that the material is being supplied in accordance with this specification. This will include Stage Inspection during manufacturing stage as well as Active Inspection during Acceptance Tests.
- XVIII. During the stage inspection a few assembled core coil and assembled Tanked transformer shall be dismantled (only in case of CRGO material) to ensure that the CRGO laminations, Windings and workmanship are of good quality. TPCODL/TPNODL/TPSODL/TPWODL also reserves the right to review any document or certificates related to material, manufacturing process, quality checks at any point of stage inspection.
- XIX. TPCODL/TPNODL/TPSODL/TPWODL also reserves the right to inspect the tank of transformer before surface preparation and painting. The same shall be informed to TPCODL/TPNODL/TPSODL/TPWODL accordingly.
- XX. Final inspection Call for carrying out acceptance tests as per relevant IS/IECs shall be sent by the Bidder along with routine test certificates.
- XXI. The bidder shall provide all services to establish and maintain quality of workmanship in his works and that of his sub-contractors to ensure the mechanical / electrical performance of components, compliance with drawings, identification and acceptability of all materials, parts and equipment as per latest quality standards of ISO 9000.
- XXII. The TPCODL/TPWODL/TPNODL/TPSODL has the right to have the test carried out at his own by an independent agency wherever there is a dispute regarding the quality supplied. **Also TPCODL/TPNODL/TPSODL/TPWODL has right to test 1% of the supply selected either from the stores or field** to check the quality of the product. In case of any deviation TPCODL/TPNODL/TPSODL/TPWODL have every right to reject the entire lot or penalize the bidder, which may lead to blacklisting, among other things.
- XXIII. At the time of inspection the material should be ready as specified, In case of material non-readiness or material failure in acceptance, Cost of re-inspection shall be borne by bidder.

## 10. INSPECTION AFTER RECEIPT AT STORE:



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- I. The material received at the TPCODL/TPWODL/TPNODL/TPSODL store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection.
- II. In case the transformers proposed for supply against the order are not exactly as per the tested design, the Bidder shall be required to carry out the short circuit test and impulse voltage withstand test at its own cost in the presence of the representative of TPCODL/TPNODL/TPSODL/TPWODL.
- III. The supply shall be accepted only after such test is done successfully, as it confirms on successful withstand of short circuit and healthiness of the active parts thereafter on un-tanking after a short circuit test.
- IV. Apart from dynamic ability test, the transformers shall also be required to withstand thermal ability test or thermal withstand ability will have to be established by way of calculations
- V. TPCODL/TPNODL/TPSODL/TPWODL reserves the right to conduct all tests on Transformer after arrival at site / stores and the manufacturer shall guarantee test certificate figures under actual service conditions.
- VI. TPCODL/TPNODL/TPSODL/TPWODL reserves the right to conduct short circuit test and impulse voltage withstand test in accordance to IS, afresh on each ordered rating at purchaser cost, even if the transformer of the same rating and similar design are already tested. This test shall be carried out on a transformer to be selected by TPCODL/TPWODL/TPNODL/TPSODL either at the manufacturer's works when they are offered in a lot for supply or randomly from the supplies already made to TPCODL/TPWODL/TPNODL/TPSODL stores. The findings and conclusions of these tests shall be binding on the bidder.

## 11. GUARANTEE:

- I. Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under the contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of 48 months from the date of commissioning or 60 months from the date of last supplies made under the contract, whichever is earlier.
- II. Bidder shall be liable to undertake to replace/rectify such defects at his own costs within mutually agreed timeframe and to the entire satisfaction of the TPCODL/TPWODL/TPNODL/TPSODL, failing which the TPCODL/TPNODL/TPSODL/TPWODL will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the TPCODL's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be.
- III. In case of Distribution transformer fails within the guarantee period TPCODL/TPWODL/TPNODL/TPSODL will immediately inform the Bidder who shall take back the failed Distribution Transformer within 15 days from the date of intimation at his own cost and replace / repair the transformer within forty five days of date of intimation with a roll over guarantee. The outage period i.e. period from the date of failure till unit is repaired / replaced shall not be counted for arriving at the guarantee period.
- IV. Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.



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## 12. PACKING AND TRANSPORT:

- I. Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit.
- II. Transformers shall be delivered filled with oil and supplied with all accessories mounted. Screws and bolts shall be thoroughly tightened to ensure no leakage of oil.

**Note: One use plastic not to be used for packing of the material.**

## 13. TENDER SAMPLE:

All offered transformer detailed documents to be submitted as per clause no.18. The sample shall be not applicable

## 14. QUALITY CONTROL:

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. T TPCODL/TPNODL/TPSODL/TPWODL 's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

The following information shall necessarily be submitted with the bid:

- I. List of important raw materials, names of sub-suppliers for raw materials, standards to which raw material is tested and the copies of test reports of the tests carried out on raw materials in presence of Bidder's representatives.
- II. List of manufacturing facilities available, level of automation achieved and the areas where manual process exists.
- III. List of areas in manufacturing process where stage inspections are normally carried out for quality control and details of these tests and inspections
- IV. List of testing equipment for final testing with valid calibration reports. Manufacturer shall possess 0.1 class instruments for measurement of losses.
- V. QAP withhold points for TPCODL/TPNODL/TPSODL/TPWODL inspection.

## 15. TESTING FACILITIES:

Bidder shall have adequate in house testing facilities for carrying out all routine tests, acceptance tests and pre-dispatch inspection as per relevant International / Indian standards.

## 16. MANUFACTURING FACILITIES:

The successful bidder will have to submit (after placement of RC) technical compliance document and drawing of each part along with CCA, breather, bushings, terminal box etc. as per RC line items to be submitted for getting approval before mass manufacturing.

The first time supplier will have to make one prototype sample of each line tem of RC as per

CAT-B approved drawing within 30 days of drawing approval. Inspection call to be raised by bidder before 7 days of date of proposed inspection. TPCODL/TPNODL/TPSODL/TPWODL shall arrange inspectors and intimate or confirm the date. Any observation during inspection shall have to be addressed within 7 days and revised improved drawing & technical details to be shared to TPCODL/TPWODL/TPNODL/TPSODL for final approval.

Manufacturing mass quantity to start only after getting CAT-A approved drawings or as per intimation from TPCODL/TPWODL/TPNODL/TPSODL

#### 17. SPARES, ACCESSORIES AND TOOLS

Bidder shall give an assurance that the reparability of transformer is ensured by using standard spare parts and accessories available in market in India.

#### 18. DRAWINGS AND DOCUMENTS:

Following drawings and documents shall be prepared based on TPCODL/TPNODL/TPSODL/TPWODL specifications and statutory requirements and shall be submitted with the bid:

- a. Completely filled in compliance to each clause of Technical Specification and any Additional Details and Fittings.
- b. Description of the transformer and all components drawings.
- c. General arrangement for Transformer.
- d. Bill of material.
- e. Design calculation details of transformer losses, cooling, efficiency and current density, weight of coils and components
- f. Experience Certificate and list
- g. Type test certificates.
- h. List of makes of major components as listed above.

**Drawings / documents to be submitted for approval after the award of the order within 7 days before mass manufacturing are as under:**

**List of Drawings/Parameters to be submitted:**

- a. Technical Parameters as asked in Specification (General Technical Particulars, General Technical Requirements, Additional Details, Fittings, Type test Reports and Routine test certificates of bought out accessories).
- b. General Arrangement Drawing of the Transformer (Front view, Top view and both sides view. Complete list of fittings to be displayed and quantities to be mentioned with the drawing).
- c. Internal Core arrangement drawing.
- d. Internal Core-coil assembly drawing.
- e. Foundation Plan drawing.
- f. Marking plates and Markings (as mentioned in clause 6 )
- g. Primary Side and Secondary Side bushings drawing ( with internal view and metal parts)
- h. Conservator drawing.
- i. Prismatic oil level gauge drawing.
- j. Silica Gel Breather drawing.





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- k. Auxiliary Terminal Box drawing with internal wiring arrangement.
- l. Gland plate of drawing
- m. BH curve & Loss/Kg graph of core material offered.
- n. The tightening torque chart to be provided for all bolts used in specific rating.
- o. Type Test Certificates.
- p. Installation/ Mounting Instructions/Drawing.
- q. Efficiency vs Load curve of the offered design.
- r. Quality Assurance plan.

**List of Calculations to be submitted:**

- a. All the calculations shall be step by step showing the use of formulas and other practical considerations. **Concise calculations in table or excel sheet shall not be accepted.** Also, the reference (only standard sources as IS, IEC or any such standard is acceptable) of the formulas shall be mentioned.
- b. Resistance Calculation ( 75 deg. C )
- c. Load Losses Calculation ( at 75 deg. C )
- d. No load Losses.
- e. Stray Losses.
- f. Weight of Copper (Bare and with Insulation also).
- g. Weight of Core.
- h. Flux Density calculations.
- i. Current Density Calculations.
- j. Short Circuit withstand.
- k. Temperature Rise Calculations.
- l. Conservator Volume calculations
- m. Cooling Calculations showing cooling with tank and radiators separately with no. of radiators and fins mentioned specifically (For both Mineral oil and Ester oil)
- n. Calculation sheet for Lifting lug design and mounting lug design to be submitted by Bidder.

**Additional Documents to be submitted :**

- a. List of raw materials as well as bought out accessories and name of sub-suppliers selected from those furnished along with offer.
- b. Type test certificates of the raw materials and bought out accessories.
- c. The successful Bidder shall submit the **routine test certificates of bought out accessories** and central excise passes for raw material at the time of routine testing.

All the documents & drawings shall be in English language. After the receipt of the order, the successful bidder will be required to furnish all relevant drawings/parameters/calculation to TPCODL/TPNODL/TPSODL/TPWODL for approval.

**Instruction Manuals:**

Bidder shall furnish soft copies of nicely bound manuals (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.

**19. SCHEDULE- "A" GUARANTEED TECHNICAL PARTICULARS:**

**All clauses and points in the Specification to be complied for along with GTR and offered design details.**



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**20. SCHEDULE “B” DEVIATIONS:**

**(TO BE ENCLOSED WITH TECHNICAL BID)**

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:


<b>SL. No</b>	<b>Clause No.</b>	<b>Details of deviation with justifications</b>

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature

Designation

<b>TPC</b>  <b>ODL</b>	<b>TP CENTRAL ODISHA DISTRIBUTION LIMITED</b>	
	<b>WORK INSTRUCTION /OPERATING GUIDELINES</b>	
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## 1.0 ORGANIZATIONAL VALUES

The Tata Group has always been a value driven organization. These values continue to direct the Group's growth and businesses. The six core Tata Values underpinning the way we do business are:

**Integrity** - We must conduct our business fairly, with honesty and transparency. Everything we do must stand the test of public scrutiny.

**Understanding** - We must be caring, respectful, compassionate and humanitarian towards our colleagues and customers around the world and always work for the benefit of India.

**Excellence** - We must constantly strive to achieve the highest possible standards in our day to day work and in the quality of goods and services we provide.

**Unity** - We must work cohesively with our colleagues across the group and with our customers and partners around the world to build strong relationships based on tolerance, understanding and mutual co-operation.

**Responsibility** - We must continue to be responsible and sensitive to the countries, communities and environments in which we work, always ensuring that what comes from the people goes back to the people many times over.

**Agility** - We must work in a speedy and responsive manner and be proactive and innovative in our approach.

## 2.0 ETHICS

In our effort towards Excellence and in Management of Business Ethics at TPCODL, an Ethics Management Team is constituted.

The main objective of the Ethics Management Team is to:

1. Record, address and allay the issues and concerns on ethics raised by different stakeholders like employees, consumers, vendors, Associates etc. by initiating immediate corrective actions.
2. Ensure proper communication of the ethics policies and guidelines through prominent displays at all offices of TPCODL and through printed declarations in all concerned documents where external stakeholders are involved.
3. Ensure proper framework of policies as preventive measures against any ethics violation recorded by them.
4. Prepare and submit MIS of all issues and concerns, corrective and preventive actions on monthly basis to the top management for their information.

All Associates and Stakeholders are requested to register any grievance on ethics violation on our website [www.tpccentralodisha.com](http://www.tpccentralodisha.com).

## 3.0 CONTRACT PARAMETERS

### 3.1 Issue/Award of Contract

TPCODL awards the contract to the Associate in writing in the form of Purchase Order (PO) or Rate Contract (RC), hereafter referred as Contract, through in any or all of following modes physical handover / post / e-mail / web document / fax with all the attachments/enclosures which shall be part of the contract document.

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On receipt of the contract, the associate shall return to TPCODL copy of the contract document duly signed by legally authorized representative of associate, within two days of Effective Date of Contract for contracts having contract execution time less than 30 days and within five days for all other contracts.

### **3.2 Contract Commencement Date**

The date of issue/award of contract shall be the Effective Date of Contract or Contract Commencement date.

### **3.3 Contract Completion Date**

The date of expiry of Guarantee Period shall be deemed as the Contract Completion Date.

### **3.4 Contract Period/Time**

The period from Contract Commencement Date to Contract Completion Date shall be deemed as the Contract Period/Time.

### **3.5 Contract Execution Completion Date**

The stipulated date for completing the supply as per schedule of quantities shall be deemed as the Contract Execution Completion Date.

### **3.6 Contract Price /Value**

The total all inclusive price/value mentioned in the PO/RC is the Contract Price/Value and is based on the quantity, unit rates and prices quoted and awarded and shall be subject to adjustment based on actual quantities supplied and accepted and certified by the authorized representative of the company unless otherwise specified in schedule of quantities or in contract documents.

### **3.7 Contract Document**

The Contract Document shall mean and include but not limited to the following:

- NIT/Tender Enquiry, QR, Instruction to Bidders, Special Condition of Contract (SCC) of tender, GCC, Technical & Commercial Specifications including relevant annexure and attachments).
- Bids & Proposals Received from Associate including relevant annexure/attachments.
- RC/PO with agreed deviations from the tender/bid documents.
- All the Inspection and Test reports, Detailed Engineering Drawings.
- Material Dispatch Clearance Certificate (MDCC).
- Minutes of Meeting (MoM)

### **3.8 Contract Language**

All documents, instructions, catalogues, brochures, pamphlets, design data, norms and calculations, drawings, operation, maintenance and safety manuals, reports, labels, on deliveries and any other data shall be in English Language.

The Contract documents and all correspondence between the TPCODL, Third Parties associated with the contract, and the Associate shall be in English language.

However, all signboards required indicating "Danger" and/or security at site and otherwise statutory required shall be in English, Hindi, and local languages.

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### **3.9 Reverse Auction**

TPCODL reserves the right to conduct the reverse auction (instead of public opening of price bids) for the products / services being asked for in the tender. The terms and conditions for such reverse auction events shall be as per the Acceptance Form attached in Annexure F.

### **4.0 SCOPE OF WORK**

All the activities that are to be undertaken by the Associate to realize the contractual deliverables in completeness form Scope of Work. Following clauses list, but not limited to, major requirements of the scope of work.

The associate shall satisfy himself and undertake fully the technical/commercial requirements of items to be supplied as listed in the Schedule of Quantities together with the tests to be performed /test reports to be furnished before dispatch, arrangement of stage and final inspections during manufacturing as per terms and conditions of contract, technical parameters & delivery terms and conditions including transit insurance to be met in order to fully meet TPCODL's requirements.

Completeness: Any supplies and services which might have not been specifically mentioned in the Contract but are necessary for the scope mentioned in Special Terms & Conditions and/or completeness of the works at the highest possible level, including any royalties, license fees & compensation to be paid, whether incurred by the associates or by a third party for the work covered in the scope, regardless of when incurred, shall be supplied/provided by the associate without any extra cost and within the time schedule for efficient, smooth and satisfactory operation and maintenance of the works at the highest possible level under Indian conditions (but according to international standards for facility of this type), unless expressly excluded from the scope of supplies and services in this Contract.

TPCODL have the right, during the performance of the Contract, to change the scope and/or technical character of the Project and/or of the supplies and services stipulated in the Contract by submitting a request in writing to the Associate. The Associate shall, within fifteen days of receipt of such request from the TPCODL, provide Purchaser with a reasonably detailed estimate of the cost of the change outlined in the request.

In the event, TPCODL requests a change, the Contract price and time shall be adjusted upwards or downwards, as the case may be and shall be mutually agreed to. The associate shall not be entitled to any extension of time unless such changes adversely affect the time schedule.

The Associate shall not proceed with the changes as requested till adjustment of contract price and time schedule where so applicable in terms of or otherwise directed by the TPCODL.

### **5.0 PRICES/RATES/TAXES**

Unless specified elsewhere in the contract document, the prices/rates are inclusive of cost of finished product for which MDCC will be issued by TPCODL, packaging and forwarding charges, freight and transit insurance charges covering loading at Associate's works, transportation to TPCODL store/site & unloading & delivery at TPCODL stores/TPCODL site, cost of documentation including all the relevant test certificates and other supportive documents to be furnished.

The Prices/Rates are inclusive of all taxes, levies, cess and duties, particularly Goods and Services Tax as applicable. All government levy / taxes shall be paid only when the invoice is submitted according to the relevant act.



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The prices/rates shall remain firm till actual completion of entire supply of goods/material/equipment as per contract is achieved and shall remain valid till the completion of the contract.

The prices shall remain unchanged irrespective of TPCODL making changes in quantum in all or any of the schedules of items of contract.

### **5.1 Changes in Statutory Tax Structure**

If rate of any or all of the statutory taxes and duties applicable to the contract changes, such changes shall be incorporated by default if the changes occur within the contract execution time and shall be applicable if the contract is executed by the Associate within the Contract Execution Time.

For execution of contracts beyond contract execution time, where the delay is not attributable to TPCODL no upward revision in tax /duties shall be considered irrespective of changes in the statutory tax structure either within the contract execution time or beyond. However, in such cases, benefits due to any downward revisions in statutory tax rates shall be passed on to TPCODL.

### **6.0 TERMS OF PAYMENT**

On delivery of the materials in good condition and certification of acceptance by TPCODL official, Associate shall submit the Bills/Invoices in original in the name of "TP Central Odisha Distribution Limited" to invoice desk, complete with all required documents as under:

- Test Reports (4 sets).
- MDCC issued by TPCODL.
- Packing List.
- Drawing and Catalogue.
- Guarantee/Warrantee Card.
- Delivery Challan.
- O&M Manual.
- Copy of Order.
- Minutes of Meeting.

Bills/ invoices shall mention Supplier's GST Number. TPCODL will make 100% payment within 30 days of submission of the Bill/Invoice complete in all respects and along with all the requisite documents mentioned above, subject to condition that Associate has furnished the requisite Security-cum-Performance Guarantee as stipulated in the contract.

### **6.1 Quantity Variation**

Payment will be made on the basis of actual quantity of supplies/actual measurement of works accepted by TPCODL and not on the basis of contract quantity.

### **6.2 Full and Final Payment**

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Full & Final Payment in all contracts shall be made subject to the associate submitting "No Demand Certificate" in the format as per Annexure-C.

## 7.0 MODE OF PAYMENT

Payment shall be made through crossed Cheque or RTGS whichever of the two modes chosen by the Associate, in favour of Associate's Bank Account on TPCODL records, on whose name Contract has been issued. Those Associates opting for the RTGS mode shall submit the details of Bank Account and other details as per annexure G. Further, for any payments made, TPCODL is not responsible for any consequences/disputes Associate have among the owners channel partners, sub-Associates and all such dispute/concerns shall be settled solely by the Associate.

## 8.0 SECURITY CUM PERFORMANCE DEPOSIT

Associates shall submit within 15 days from the effective date of issue of PO/RC, Security Performance Bank Guarantee (SPBG) in the format as per Annexure B of this document from banks acceptable to TPCODL for:

- (a) 5% of the PO value if purchase order value is more than Rs 5 Crores.
- (b) 10% of the PO value if purchase order value is less than Rs 5 Crores.

This shall remain valid till the end of the Guarantee Period of contract, plus one month.

- (c) 5% of the RC value in case of Rate Contract. This shall remain valid till the Guarantee period plus one month.

- For PO/RC values less than Rs. 5 lacs, Associate may request for deduction of amount equivalent to SPBG value from their first invoice. Such amount shall be withheld by TPCODL while processing the invoice and shall be released after completion of Guarantee Period plus one month.
- For PO/RC values less than Rs. 3 lacs, the clause (8.0) for Security cum Performance Bank Guarantee (SPBG) shall not be applicable.
- In case of RC (Rate Contract) after the expiry of RC validity, Associate shall have to submit SPBG. However, the Associate has the option to re-submit the SPBG as per actual RO (Release Order) value issued against the RC, valid for Guarantee Period plus one month. The Guarantee Period shall be considered as per the last RO issued against the said RC. The original SPBG as submitted against the RC shall be released on submission of the new SPBG to TPCODL. Alternatively, Associate may extend the validity of original SPBG only till the requisite period, i.e. Guarantee Period plus one month.

## 9.0 STATUTORY COMPLIANCE

### 9.1 Compliance to Various Acts

Associate should ensure adherence to all applicable laws, rules and regulation applicable under this contract from time to time. In case of violation any risk, costs etc shall be in associates account and keep TDPPL indemnified always till completion of contracts.

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## 9.2 SA 8000

TPCODL expects its Associates to follow guidelines of SA 8000:2014 on the following aspects

1. Child Labour
2. Forced or Compulsory Labour
3. Health & Safety
4. Freedom of Association & Right to Collective Bargaining
5. Discrimination
6. Disciplinary Practices
7. Working Hours
8. Remuneration
9. Management System

## 9.3 Affirmative Action

TPCODL appreciate and welcome the engagement/employment of persons from SC/ST community or any other deprived section of society by their business associates.

### Relaxation in Contract Clauses under Affirmative Action for SC/ ST Business Associates\*\*

TPCODL believes that inclusive growth is the key to sustainable development, and to promote the same Policy on Affirmative Action for Scheduled Caste & Scheduled Tribe Communities has been adopted across the company.

Under the same pre-text, and to promote entrepreneurship among SC/ST community TPCODL has taken initiative by proposing relaxations in contract clauses as per below:

S. No	Initiative	for SC/ ST BA's	Guideline Document
1	Tender Fees	100% waiver for SC/ST community	All Open Tenders
2	Earnest Money Deposit	50 % relaxation of estimated EMD value	All limited and Open Tenders
3	Performance Bank Guarantee	50% relaxation in PBG for order value above 50 lacs else 25% relaxation	All limited and Open tenders
4	Turnover	25% relaxation in company turnover under qualifying requirement criteria	All Open Tenders

### \*\*Classification of BAs under SC/ST shall be governed under following guidelines:

- Proprietorship/ Single Ownership Firm: Proprietor of the firm should be from SC/ST community. Governing document shall be duly audited balance Sheet for the last FY bearing the name of proprietor.
- Partnership Firm: Only such firms shall qualify which have SC/ST partners holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Partnership Deed and audited balance sheet/ ITR for last FY.
- Private limited company: Only such firms shall qualify which have SC/ST directors holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Memorandum of Understanding (MoU) and/or Article of Association (AoA).

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Governing document shall be Memorandum of Understanding (MoU) and/or Article of Association (AoA).

*Note: Certification from SC/ST commission shall be required for deciding upon SC/ST status of a person.*

## **10.0 QUALITY**

### **10.1 Knowledge of Requirements**

The Associate shall be deemed to have carefully examined and to have knowledge of the equipment, the general and other conditions, specifications, schedules, drawings, etc. forming part of the Contract and also to have satisfied himself as to the nature and character of the work to be executed and the type of the equipment and duties required including wherever necessary of the site conditions and relevant matters and details. Any information thus procured or otherwise obtained from TPCODL/Consultants shall not in any way relieve the Associate from his responsibility and executing the works in accordance with the terms of contract.

### **10.2 Material/Equipment/Works Quality**

The items / works under the scope of the Associate shall be of the best quality and workmanship according to the latest engineering practice and shall be manufactured from materials of best quality considering strength and durability for their best performance and, in any case, in accordance with the specifications set forth in this Contract. All material shall be new. Substitution of specified material or variation from the process of fabrication/ construction/ manufacture may be permitted but only with the prior written approval of the TPCODL.

### **10.3 Adherence to Rules & Regulations**

The Associate shall procure and/or fabricate/erect all materials and equipment in accordance with all requirements of Central and State enactment, rules and regulations governing such work in India and at site. This shall not be construed as relieving the Associate from complying with any requirement of TPCODL as enumerated in the Contract which may be more rigid than and not contrary to the above mentioned rules, nor providing such construction as may be required by the above mentioned rules and regulations. In case of variance of the Technical Specification from the laws, ordinance, rules and regulations governing the work, the Associate shall immediately notify the same to the TPCODL. It is the sole responsibility of the Associate, however, to determine that such variance exists. Wherever required by rules and regulations, the Associate shall also obtain the statutory authorities' approval for the plant, machinery and equipment to be supplied by the Associate.

### **10.4 Specifications and Standards**

The Associate shall follow all codes and standards referred in the Contract Document. Codes and standards of other may be followed by the Associate with the prior written approval of TPCODL, provided materials, supplies and equipment according to the standard are equal to or better than the corresponding standards specified in the Contract.

Brand names mentioned in the Contract documents are for the purpose of establishing the type and quality of products to be used. The Associate shall not change the brand name and qualities of the bought out items without the prior written approval of the TPCODL. All such products and equipment shall be used or installed in strict accordance with original manufacturer's recommendations, unless otherwise directed by the TPCODL. In any circumstances the codes, specimen and standards prescribed by any government agency should not be violated.

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## 11.0 INSPECTION/PARTICIPATION

### 11.1 Right to Carry Out Inspection

TPCODL reserves the right to send its representatives for inspection or participation at various stages of contract execution listed below, applicable as per contract construction.

- During basic design and detail engineering of material/ Equipment carried out by Associate /Outsourced Agencies.
- During manufacturing stages of the product at Associate's/Associate's Outsourced Agency's Plant/Facility.
- During Pre-dispatch Inspection and Testing of finished/manufactured product at Associate's/Associate's outsourced Agency's Plant/Facility.
- During Installation & Commissioning Activities/Stages.
- Prior to Clearing of the completed installation for commissioning.
- Any other stage as find appropriate by TPCODL during contract execution time.

All inspections and participations shall be carried out by TPCODL giving written intimation to the Associate or receiving appropriate advance written inspection call from the Associate, unless otherwise specified elsewhere in the contract document.

### 11.2 Facilitating Inspection

The Associate shall provide all opportunities and information to TPCODL's engineers to get acquainted with the technical know-how and the methods and practices adopted by the Associate in basic and detail engineering. The Associate shall provide documents, drawings, calculations etc. as may be required by TPCODL's Engineers.

The Associate shall provide free of charge office accommodation, office facilities, secretarial services, communication facilities, general and drawing office stationary, etc. as may be reasonably required by the TPCODL's engineers. Similarly, facilities shall also be provided by Associate's outsource agencies/partners/authorized dealers (collectively termed as sub associates) if such basic and detail engineering activities are carried out in the design offices of sub-Associates.

The Associate shall be responsible for the safety of employees of TPCODL/Third Party Agency when they are at the Associate's /Associate's outsource agency's plant or facility for carrying out/witnessing inspection/testing. All statutory safety precautions as applicable shall be followed by the Associate during Inspection Testing. If TPCODL inspectors are not satisfied with the safety arrangements at the plant, TPCODL have the right to call off inspection till such time corrective action is taken by the Associate.

Before raising the call for pre-dispatch final inspection and testing, the Associate shall conduct all the tests—type tests, routine tests etc-as specified in the contract document and submit copies of the test certificates to TPCODL along with the inspection call, for scrutiny of TPCODL.

The Associate and TPCODL shall jointly document all the observations, comments and action points after completion of inspection and it shall be binding on the Associate to provide compliance on all the points requiring compliance and furnish the compliance report to the designated authority of TPCODL for receiving clearance for dispatch of materials

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### **11.3 Third Party Nomination**

TPCODL also may nominate a third party for the purpose of carrying out the inspection and such an agency shall be entitled to all the rights and privileges of TPCODL as far as conducting the inspection.

### **11.4 Waiver of Inspections**

TPCODL on its own discretion shall chose to waive off any inspection and ask the Associate to submit all the test reports as applicable as per contract specifications, related to inspection and testing of the goods ordered for scrutiny and clearance for dispatch.

### **11.5 Incorrect Inspection Call**

In case it is observed that the material offered for inspection is not ready at the time of TPCODL inspection visit rendering it as futile, all costs towards such inspection shall be recovered from the BA. Taxes as applicable on such recoveries shall be borne by the BA.

## **12.0 MDCC & DELIVERY OF MATERIALS**

### **12.1 Material Dispatch Clearance Certificate**

Associate shall deliver material/goods/equipment against Supply Contracts or Supply Part of Composite/Service Contracts only after receiving Material Dispatch Clearance Certificate (hereafter termed as MDCC) issued by designated authority of TPCODL. Material delivered at TPCODL stores or at project site without a valid MDCC issued by the designated official of TPCODL shall be rejected. MDCC shall be issued to associate furnishing compliance report on the action points documented during pre-dispatch inspection and testing at Associate's/ Sub Associate's plant/ facility. In case Pre-dispatch inspection is waived at the discretion of TPCODL, then, MDCC shall be issued on receiving all the test reports-routine& type-from the Associate and finding them in order.

The associate shall include and provide for securely protecting and packing the materials so as to avoid loss or damage during handling and transport by air, sea, rail and road or any other means.

All such packing shall allow to the extent possible for easy removal and checking at Site. The associate shall take special precautions to prevent rusting of steel and iron parts during transit by sea. Gas seals or other materials shall be utilized by the associate for protection against moisture during transit of all Plant and Equipment.

Each Equipment or parts of Equipment shall be tagged with reference to the assembly drawings and corresponding part numbers. Each bale or package shall contain a packing note quoting specifically the name of the associate, item description, quantity, item / package identification.

All packing cases, containers, packing and other similar materials shall be new and supplied free by the associate and it shall not be required to be returned to the associate.

Notwithstanding anything stated in this clause, the associate shall be entirely responsible for loss, damage or depreciation or deterioration to the materials and supplies due to faulty and/or insecure packing or otherwise during transportation to the Site until otherwise provided herein.

In case of the consignments dispatched by road, the associate shall ensure that it or its subcontractors:

- i) Identify and obtain the correct type of trucks/trailers, keeping in view the nature of consignments to be dispatched.

ii) Take such actions as may be necessary to avoid all possible chances of damages during transit and to ensure that all packages are firmly secured.

Timelines for inspection and MDCC is as below:

S. No.	Inspection	MDCC issuance time including Inspection time (max.)
1	Outside Bhubaneswar	12 days
2	Within Bhubaneswar	5 days
3	Waiver*	3 working days

\* Associate is expected to raise the inspection call assuming that Inspection shall be carried out by TPCODL. The decision for waiver of inspection shall be on sole discretion of TPCODL.

### 12.2 Right to Rejection on Receipt

Goods/Material/Equipment delivered in condition physically damaged & incomplete as a product ordered, or not packed and transported as per the terms and conditions of the contract is liable to be rejected. Such item shall be lifted back by Associates within 15 days from receipt of rejection note from TPCODL and have to supply back the material within next 30 days or within the timeframe mutually decided by Associate and TPCODL.

If delivery of the material is beyond the agreed time, Liquidated damage clause, mentioned in this GCC separately shall be applicable; but the period for levy of LD shall be considered as per the original delivery schedule and not from the agreed timelines for material rectification.

### 12.3 Consignee

Unless otherwise specified in the Contract Document, Materials/Goods/Equipment shall be consigned to "Stores-In-Charge", TPCODL, Bhubaneswar.

### 12.4 Submission of mandatory documents on Delivery

Following documents shall be mandatorily submitted by BA along with supply of material to TPCODL stores/site:

S. No.	Documents	Requisite
1	Invoice copy in original	With all consignments
2	LR copy	Wherever required
3	Packing list	With all consignments
4	MDCC	With all consignments
5	Purchase order / Release order	Signed copy
6	Test certificates	With all consignments
7	Inspection/JVR report	In case pre-dispatch inspection is conducted
8	Device data in CD as per template for metering items	Wherever applicable

### 12.5 Dispatch and Delivery Instructions

S. No.	Instructions
1	Purchase order/ Release order no. shall be mentioned on invoice and on material

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2	TPCODL material code and material description shall be mentioned in invoice and on material.
3	“Property of TPCODL” shall be embossed on material.
4	The material shall be properly sealed and packed in standard packing as per purchase order terms & conditions.
5	The weight and quantity of material shall be mentioned wherever applicable
6	The material supplied shall be co-related with the packing list.
7	The name plate detail on equipment shall include Material code, Material description, specification detail of material [as applicable], Serial No. Year of manufacturing, PO/RO no. and date, “PROPERTY OF TPCODL, Bhubaneswar”, Guarantee period and Associate’s name.
8	In case of manual unloading, supplier / transporter shall deploy sufficient Labour for unloading the material at TPCODL central store. For heavy item(s), crane will be provided by TPCODL [unloading cost will be recovered from the associate].
9	The driver should have valid License and one helper in truck. All the documents of truck like registration papers, PUC etc. should be available in Truck.
10	BA representative should accompany the material and get it unloaded / stacked in his presence wherever possible.

### 13.0 GUARANTEE

#### 13.1 Guarantee of Performance

Associates shall stand guarantee that the equipment and material supplied under the contract is free from design, manufacturing, material, construction, erection & installation and workmanship & quality defects and is capable of its due, rated and intended quality performance, as an integrated product delivered under the contract, for a specific period termed as Guarantee Period(as elaborated elsewhere in this clause). The Associate should also guarantee that the equipment/material is new and unused except for the usage required for the tests and checks required as part of quality assurance.

#### 13.2 Guarantee Period

The Guarantee Period will be equipment/service/work specific and shall be as specified in the Standard Specifications of TPCODL for the equipment/material/service/work and where standard specifications are not part of contract documents or guarantee period is not specified in the standard specifications,, the guarantee period shall be as per the Special Terms and Conditions of the Contract. In case of no mention of the guarantee period in standard specifications or SCC Guarantee Period will be 12 Months from the Date of Commissioning or 24 months from the date of delivery of final lot of supplies made, whichever is earlier.

#### 13.3 Failure in Guarantee Period (GP)

If the equipment and material supplied under the contract fails to perform its due, rated & intended quality performance, during the Guarantee period, the associate is liable to undertake repair/rectify/replace the equipment and material supplied within time frame specified in the SCC or elsewhere in the contract documents at associate’s cost to make the equipment and material supplied/service or work rendered under the contract of performing its due, rated and intended quality performance. If Associate fails to repair/rectify/replace the equipment or material supplied rendered under the contract, failed in Guarantee Period, TPCODL will be at liberty to get the same done at Associate’s risks and costs and recover all such expenses plus the TPCODL’s own



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charges (@ 20% of expenses incurred), from the Associate or from the "Security cum Performance Deposit" as the case may be.

If during the Warranty/ Guarantee period some parts of the supplies are replaced owing to the defects/ damages under the Warranty, the Warranty period for such replaced parts shall be until the expiry of twelve months from the date of such replacement or renewal or until the end of original Guarantee period, whichever is later.

Any repairs during the Guarantee Period shall be carried out by the Associate within 30 days of reporting the issue to Associate by TPCODL. However, if replacement of the Equipment is required, Associate shall notify the same to TPCODL within 7 days of reporting the issue by TPCODL. Thereafter, the total time for supply of new equipment/ material shall be equal to the original delivery period of that equipment/ material as specified in the Contract. In case the Associate is not able to rectify/ replace the faulty equipment/ material within the stipulated timelines as mentioned above, penalty shall be levied as per the Liquidated Damages clause mentioned in this document. The penalty amount shall be recovered from the payment due to the vendor or by encashment of the SPBG as the case may be.

#### **13.4 Cost of repairs on failure in GP**

The cost of repairs/rectification/replacement, required transportation, site inspection /mobilization/dismantling and re-installation costs as applicable, to be borne by Associate. The Associate has to ensure that the interruption in the usage of intended purpose of the equipment is minimized to the maximum extent In lieu of the time taken for repairs/rectification/replacement.

#### **13.5 Guarantee period for Goods Outsourced**

If the Associate outsources partly equipment/materials/services from third party as mutually agreed upon at the pre award stage of contract, TPCODL shall have the benefit of any additional guarantee period if provided by the third party for the part supplied/executed by them.

#### **13.6 Latent Defect**

Hidden defects in manufacturing or design of the product supplied and which could not be identified by the tests conducted but later manifested during operation of the equipment are termed as latent defects. Associates shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Company.

#### **13.7 Support beyond the Guarantee Period**

The Associate shall ensure availability of spares and necessary support for a period of atleast 10 years post completion of guarantee period of equipment supplied against the contract.

#### **14.0 LIQUIDATED DAMAGES**

- a) For supplies which are of standalone use, multiple in quantities and having a single final delivery schedule, Liquidated damages shall be levied without prejudice to any of the other contractual rights of TPCODL, as described below:

For delay of each week and part thereof from the delivery schedule specified in the contract, 1% of contract value corresponding to undelivered quantity, provided full quantity is supplied within 130% of the original contract time. If full contractual quantity is not delivered within 130% of contract time for delivery, TPCODL has the right to levy LD on the entire contract value, subject to a maximum of 10% of the total contract value.

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- b) For Supplies having phased delivery schedule as per contract terms, standalone use and multiple in quantities, Liquidated damages shall be levied without prejudice to any of the other contractual rights of TPCODL, as described below:

For the purpose of calculating and applying LD, each delivery lot shall be considered separately. For delay of each week and part thereof, from the delivery schedule specified for the lot, 1% of the contract value corresponding to the undelivered quantity of the lot subject to a maximum of 10% of the total contract value of the subject lot. However, if full contractual quantity is not delivered within 130% of contract time for delivery, TPCODL has the right to levy LD on the entire contract value, subject to a maximum of 10% of the total contract value. Deduction of LD shall be on landed cost i.e contract value inclusive of taxes and in pursuant statutory compliance GST would be applicable at the stipulated rate and the same shall be borne by Business Associate. In case of LD deduction, a GST invoice shall be issued by TPCODL as a proof of deduction/recovery.

#### **14.1 LD Waiver Request**

Any request of LD waiver shall be submitted within thirty (30) days of deducting LD. Request submitted beyond the timeline shall not be entertained.

#### **15.0 UNLAWFUL ACTIVITIES**

The Associate shall have to ensure that none of its employees are engaged in any unlawful activities (whether covered under the scope of the present GCC or not) subversive of the TPCODL's interest failing which appropriate action (legal or otherwise) may be taken against the Associate by the TPCODL, in accordance with the terms of the present GCC.

#### **16.0 CONFIDENTIALITY**

Associate and its employees or representatives thereof shall strictly maintain the confidentiality of various information they come across while executing the contract as detailed below.

##### **16.1 Documents**

All maps, plans, drawings, specifications, schemes and other documents or information related to the Contract/Project and the subject matter contained therein and all other information given to the Associate by the TPCODL in connection with the performance of the contract shall be held confidential by the Associate and shall remain the property of the TPCODL and shall not be used or disclosed to third parties by the Associate for any purpose other than for which they have been supplied or prepared. The Associate may disclose to third parties, upon execution of confidentiality agreements, such part of the drawings, specifications or information if such disclosure is necessary for the performance of the Work provided such third parties agree in writing to keep such information confidential to the same extent and degree as provided herein, for the benefit of the TPCODL.

##### **16.2 Geographical Data**

Maps, layouts and photographs of the unit/plant including its surrounding regions showing vital installation for national security of country or those of TPCODL shall not be published or disclosed to the third parties or taken out of the country without prior written approval of the TPCODL and upon execution of confidentiality agreements satisfactory to the TPCODL with such third parties prior to disclosure.

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### **16.3 Associate's Processes**

Title to secret processes if any developed by the Associate on an exclusive basis and employed in the design of the equipment shall remain with the Associate. TPCODL shall hold in confidence such processes and shall not disclose such processes to the third parties without prior approval of the Associate and execution by such third parties of secrecy agreements satisfactory to the Associate prior to disclosure. Upon completion of contract, such processes shall become the property of the TPCODL. Title to technical specifications, drawings, flow sheets, norms, calculations, diagrams, interpretations of test results, schematics, layouts and such other information, which the Associate has supplied to the TPCODL under the Contract shall be passed on to the TPCODL. The TPCODL shall have the right to use these for construction, erection, start-up, Trial Run, operation, maintenance, modifications and/or expansion of the works including for the manufacture of spare parts.

### **16.4 Exclusions**

The provision of Clauses 16.1 to 16.3 shall not apply to information:

- Which at the time of disclosure are in the public domain which later on become part of public domain through no fault of the party concerned, or
- Which were in the possession of the party concerned prior to disclosure to him by the other party, or
- Which were received by the party concerned after the time of disclosure without restriction on disclosure or use, from a third party who did not acquire such information directly or indirectly from the other party or has no obligation of confidentiality for such information.

### **16.5 Violation**

In case of violation of this clause, the Associate is liable to pay compensation and damages as may be determined by the competent authority of TPCODL.

## **17.0 INTELLECTUAL PROPERTY RIGHTS**

If, in the course of performance of its functions and duties as envisaged by the scope of the present GCC, the Associate acquires or develops, any unique knowledge or information which would be covered, or, is likely to be covered within the definition of a trademark, copyright, patent, business secret, geographical indication or any other form of intellectual property right, it shall be obliged, under the terms of this present GCC, to share such knowledge or information with the TPCODL. All rights, with respect to, or arising from such intellectual property, as afore mentioned, shall solely vest in TPCODL.

Moreover, the Associate undertakes not to breach any intellectual property right vesting in a third party/parties, whether by breach of statutory provision, passing off, or otherwise. In the event of any such breach, the Associate shall be wholly liable to compensate, indemnify or make good any loss suffered by such third party/parties, or any compensation/damages arising from any legal proceeding/s, or otherwise. No liability of TPCODL shall arise in this respect, and any costs, damages, expenses, compensation payable by TPCODL in this regard to a third party/parties, arising from a legal proceeding/s or otherwise, shall be recoverable from the Associate.

## **18.0 INDEMNITY**

The Associate shall at all times indemnify, keep indemnified and hold harmless the TPCODL and its officers, directors, employees, affiliates, agents, successors and assigns against all actions, claims, demands, costs, charges and expenses arising from or incurred by reason of any

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infringement of patent, trade mark, registered design, copy rights and/or industrial property rights by manufacture, sale or use of the equipment supplied by the Associate whether or not the TPCODL is held liable for by any court judgement. In this connection, the TPCODL shall pass on all claims made against him to the Associate for settlement.

The Associate assumes responsibility for and shall indemnify and save harmless the TPCODL from all liability, claims, costs, expenses, taxes and assessments including penalties, punitive damages, attorney's fees and court costs which are or may be required to be paid by the TPCODL and its officers, directors, employees, affiliates, agents, successors and assigns arising from any breach of the Associate's obligations under the Contract or for which the Associate has assumed responsibilities under the Contract including those imposed under any local or national law or laws, or in respect to all salaries, wages or other compensation for all persons employed by the Associate or his Sub-Associates or suppliers in connection with the performance of any work covered by the Contract. The Associate shall execute, deliver and shall cause his Sub-Associate and suppliers to execute and deliver, such other further instruments and to comply with all the requirements of such laws and regulation as may be necessary there under to conform and effectuate the Contract and to protect the TPCODL.

The TPCODL shall not be held responsible for any accident or damages incurred or claims arising, due to the Associate's error there from prior to completion of work. The Associate shall be liable for such accidents and after completion of work for such accidents as the case may be due to negligence on his part to carry out Work in accordance with Indian laws and regulations and the specifications set forth herein.

## **19.0 LIABILITY & LIMITATIONS**

### **19.1 Liability**

Except for any specific liability which may be identified in the Contract and which may be payable hereunder, Associate shall not be liable for any special, incidental, indirect, or consequential Damages or any loss of business Contracts, revenues or other financial loss (or equivalents thereof no matter how claimed, computed or characterized) arising out of or in connection with the Performance of the Work or supply of Goods ***unless caused by Associate's negligence, willful misconduct or breach of contract.***

If the Associate is a joint venture or consortium, all concerned parties shall be jointly and severally bound to the TPCODL for the fulfillment of the provisions of the Contract. The consortium or the joint venture shall designate one party as their leader, who will be the coordinator between the parties and TPCODL. The constituents & leader of the consortium or joint venture shall not be changed without the prior consent of TPCODL.

TPCODL shall have no liability or any special, incidental, indirect or consequential Damages for any loss of Business Contracts, revenues or other financial loss arising out of this Contract.

### **19.2 Limitation of Liability**

The total liability of Associate against any contract shall be limited to the Total All Inclusive Contract Value.

## **20.0 FORCE MAJEURE**

Force Majeure applies if the performance by either Party ("the Affected Party") of its obligations under Contract is materially and adversely affected.

"Force Majeure" shall mean any event or circumstance or combination of events or circumstances referred below and their consequences that wholly or partly prevents or unavoidably delays any

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Party in the performance of its obligations under this Agreement, but only and to the extent that such events and circumstances are not within the reasonable control, directly or indirectly, of the Affected Party and could not have been avoided even if the Affected Party had taken reasonable care:

- Act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, embargo, blockade, revolution, riot, bombs, religious strife or civil commotion, etc. ▪ Politically motivated sabotage, or terrorism, etc.
- Action or Act of Government or Governmental agency for which remedy is beyond the control of the affected parties. ▪ Any act of God.

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

Time being the essence of the Contract, if either party is prevented from the performance of its obligations in whole or in part due to an event of Force Majeure, then provided Notice of happening of any event by the Affected Party is given to the other party within seven (7) days from the date of occurrence of such event, which DIRECTLY has impact on works and submitted details and quantum of resulting effect, but at the same time had made all possible efforts to mitigate and overcome effects thereof, the Affected Party's performance under this Contract shall be suspended until such event ceases and the Scheduled Completion shall be delayed accordingly.

If Force Majeure event(s) continue for a period of more than three months, the parties shall hold consultation to discuss the further course of action.

Neither party shall be considered to be in default or in breach of its obligation under the Contract to the extent that performance of such obligation by either party is prevented by any circumstances of Force Majeure which arise after effective date of Contract.

Neither party can claim any compensation from the other party on account of Force Majeure.

## **21.0 SUSPENSION OF CONTRACT**

### **21.1 Suspension for Convenience**

TPCODL may, at any time and at its sole option, suspend execution of all or any portions of the schedule of items of contract to be supplied/work to be executed by Associate under the contract by providing to the Associate at least two business days written notice for contracts having contract completion period less than sixty days and at least seven business days' notice for all other contracts.

Upon receipt of any such notice, the Associate shall respond as follows as applicable as per contract construction.

- Immediately discontinue further supply of material/goods specified in the suspension notice for supply contracts
- Immediately discontinue further service/work and supply of materials of those services/materials/work specified in the suspension notice for service /composite contract
- Promptly make every reasonable effort to obtain suspension, upon terms satisfactory to TPCODL, of all orders, outsourcing arrangements, and rental Contracts to the extent that they relate to performance of the portion of Work suspended by the notice.

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- Protect and maintain the portion of the service/Work already completed, including the portion of the Work suspended hereunder, unless otherwise specifically stated in the notice.
- Continue delivering/carrying out the supply/service/work items as per contract conditions, which do not fall under purview of the suspension notice.

On receipt of resumption notice from TPCODL, the Associate shall resume execution of contract as specified in the resumption notice, within the time frame specified in the resumption notice.

### **21.2 Suspension for Breach of Contract conditions.**

TPCODL shall suspend execution of whole/or part thereof the contract till such time Associate complies with the conditions stipulated under section clause 22.1 for breach/default of contract conditions.

### **21.3 Compensation in lieu of Suspension**

If the suspension of the contract in whole or in part is for convenience of TPCODL and not due to any breach of contract conditions by the associate, TPCODL at its discretion shall consider compensating all reasonable additional costs incurred by Associate in lieu of suspension of whole or part of contract, on representation of the Associate providing justified estimates of such additional costs and such estimates are found acceptable and approved by competent authority of TPCODL.

If the suspension of contract in whole or part thereof is due to breach of contract conditions (refer clause 22.1) by the Associate, Associate shall not be entitled for any compensation for any cost incurred in lieu of suspension of whole or part of contract and also shall be liable for compensating all the losses arising to TPCODL in lieu of suspension of contract. Resumption notice shall be subject to the Associate taking corrective action for the breach of contract conditions within the time frame and as per the terms specified in the suspension notice.

## **22 TERMINATION OF CONTRACT**

### **22.1 Termination for Default/Breach of Contract**

The contract / PO /RC shall be subject to termination by TPCODL in case of breach of the contract by the Associate which shall include but not be limited to the following:

- a. Withdrawal or intimation by the Associate of its intent to withdraw or surrender the execution / completion of the contracted work /PO or failure in ensuring adherence to any delivery schedules, in deviation of the contract/PO.
- b. Refusal or neglect on the part of the Associate to supply material/equipment of quantity or quality as specified by TPCODL and within the timeframe as specified in the contract document or refusal or neglect to execute the services/work in terms of the agreed standards of quantity or quality and/or within the timeframe specified in the contract/PO.
- c. Failure in any respect to perform any portion of the Work contracted with promptness, diligence, or in accordance with the terms of the contract.
- d. Failure to furnish guarantees as specified and /or failure to comply with the terms thereof.
- e. Failure to furnish such relevant documents or information within the time specified which may be necessary for due execution / completion of the works and documentation.

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- f. Liquidation, bankruptcy either voluntary or involuntary OR entering into any composition or compromise with its creditors, or Insolvency.
- g. In case any reasonable information has been received by TPCODL that Associate has adopted/ or attempted to adopt any unethical conduct, action in award of the contract /PO or at any time thereafter.
- h. Failure to comply with applicable statutory provisions as contained in the contract or failure to comply with the applicable laws.
- i. Failure to comply with safety regulations/clauses stipulated in the contract or as may be generally instructed by TPCODL.

If the default or breach as specified under clause 22 (except sub clause g thereof) be committed by the associate for the first time, TPCODL shall issue, along the with notice of default or breach, a warning notice instructing the associate to take remedial/corrective action within the time frame stipulated in the warning notice and not to repeat the same in future. The timeframe for corrective action by the associate shall be specific to the nature of breach of contract and the same shall not be objected to by the Associate. If the Associate fails to comply with the instructions in the warning notice or in taking corrective action to the satisfaction of TPCODL then TPCODL may terminate the entire or part of contract at its discretion by issuing termination notice without incurring any liability on this ground.

In case the contract is terminated for any breach of the nature specified in clause 22 g stated above, TPCODL shall have the right to terminate all the contracts TPCODL is having with the Associate by issuing termination notice which shall be without prejudice to the other rights of TPCODL available to it under law.

Without prejudice to its right to terminate for breach of contract, TPCODL may, without assigning any reason, terminate the Contract in whole or in part at any time at its discretion while the contract is in force by serving a written notice of two weeks to the Associate.

In the event of TPCODL having proceeded with termination of the contract the associate shall comply and proceed further in the following manner:

- a) Associate shall discontinue the supply, on the expiry of the said period of two weeks.
- b) Associate shall ensure that no further steps are being taken towards discharge of the obligations, terms and conditions as contained in the contract/PO. This shall include initiation of actions not limited to discontinuation of other allied and associated arrangements which the associate might have entered into with third parties for due discharge of its obligations under the contract with TPCODL.
- c) The Associate shall perform thereafter such tasks as may be necessary to preserve and protect the terminated portion of the material/service/work in progress and the materials and equipment at TPCODL sites or in transit thereto. However the associate shall continue to fulfill its contractual obligations with regard to the part of contract not terminated.
- d) It shall be open for TPCODL to conduct a joint assessment with the associate of the material, supplies, equipment ,works or in general as to the subject matter of the contract in regard to which the associate claims having completed its obligations before or during such termination.

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- e) It shall be open to TPCODL to seek invocation of the performance bank guarantee or any other guarantee or other security deposit by whatever name called submitted by the associate, which shall not be objected to or protested against by the associate.

In case of termination of the contract the parties agree to be governed inter alia by the following:

- a) In case TPCODL exercises its right of termination as stated above the associate shall not dispute or object to the same.
- b) The Associate shall be entitled to receive and claim only such payments OR sums of money from TPCODL as may be found payable to it in regard to works executed by it under the terms of the contract and no other claim of any nature whatsoever shall be made by the Associate.
- c) All such provisions which the parties have agreed to survive and prevail even after termination of the contract shall remain effective despite the termination.

In the event of such termination, TPCODL may finish the Work by whatever method it may deem expedient, including the hiring of services and /or purchase of material equipment from such third parties as TPCODL may deem fit or may itself provide any labor or materials and perform any part of the Work. The associate undertakes to bear the incremental costs if any paid by TPCODL in such a case attributable to failure on the part of the associate. The Associate in such a case shall not be entitled to receive any further payments and any sums found payable to it may be adjusted by TPCODL against the amount recoverable from him on this ground. The same shall be without prejudice to other rights available to TPCODL under law against the associate. Upon the termination of any of the contract due to occurrence of any circumstances provided in clauses stated above and constituting repeated breach or misconduct, TPCODL shall be entitled to bar the associates its agents, affiliates from undertaking any negotiation / tendering, bidding, participation activities concerning TPCODL for a period of two years from date of such termination. The same shall be without prejudice to other rights available to TPCODL.

### **22.2 Termination for Convenience of Associate**

Associate at its convenience may request for termination of contract, clearly assigning the reason for such request. TPCODL has full right to accept, reject or partially accept such request. However, associate shall continue its supply as per contract till final approval is given to associates for such termination.

### **22.3 Termination for Convenience of TPCODL**

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

## **23.0 DISPUTE RESOLUTION & ARBITRATION**

In case of any dispute or difference the parties shall endeavour to resolve the same through conciliatory and amicable measures within 15 Days failing which the matter may be referred by either party for resolution by the sole arbitrator to be appointed mutually by both the parties. The arbitral proceedings shall be conducted in accordance with Arbitration and Conciliation Act 1996 and the place of arbitration shall be Bhubaneswar. The language to be used at proceedings shall be English and the award of the arbitrator shall be final and binding on the parties. The parties shall bear their respective costs of arbitration. The associate shall continue to discharge its obligations towards due performance of the works as per the terms of the contract during the



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arbitration proceedings unless otherwise directed in writing by TPCODL or suspended by the arbitrator. Further, TPCODL shall continue making such payments as may be found due and payable to the associate for such works.

### **23.1 Governing Laws and Jurisdiction**

The parties shall be subject to the jurisdiction of the courts of law in Bhubaneswar and any matter arising here from shall be subject to applicable law in force in India.

## **24.0 ATTRIBUTES OF GCC**

### **24.1 Cancellation**

The Company reserves the right to cancel, add, delete at its sole discretion, all or any terms of this GCC or any contract, order or terms agreed between the parties in pursuance without assigning any reasons and without any compensation to the Associates.

### **24.2 Severability**

If any portion of this GCC is held to be void, invalid, or otherwise unenforceable, in whole or part, the remaining portions of this GCC shall remain in effect.

### **24.3 Order of Priority**

In case of any discrepancies between the stipulations in General Conditions of the Contract (GCC) and Special Conditions of Contract (SCC), the GCC shall stand superseded by the SCC to the extent stipulated hereinabove while balance portion of respective clauses of GCC shall continue to be applicable.

## **25.0 ERRORS AND OMISSIONS**

The Associate shall be responsible for all discrepancies, errors and omissions in the drawings, documents or other information submitted by him, irrespective of whether these have been approved, reviewed or otherwise accepted by the TPCODL or not. However any error in design/drawing arising out of any incorrect data/written information from TPCODL will not be considered as error and omissions on part of the Associate.

## **26.0 TRANSFER OF TITLES**

The title of ownership and property to all equipment, materials, drawings & documents shall pass to the TPCODL on acceptance of material by store/site after Inspection.

However, such passing of title of ownership and property to the TPCODL shall not in any way absolve, dilute or diminish the responsibility and obligations of the Associate under this Contract including loss or damages and all risks, which shall vest with the Associate.

## **27.0 INSURANCE**

The Contractor shall take out the Insurance Policies which shall cover all risks including the following, as applicable:-

- a) The value of the policy shall cover the total value of all the items till they are handed over to TPCODL.
- b) TPCODL shall be the principal holder of the policy. The Associate shall be the loss payee under the policy. Associate / Sub-contractor of the Associate shall not be holders or beneficiaries in the policy nor shall they be named in the policy. TPCODL reserves the exclusive right to assign the policy.

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- c) While the payment of premium may be phased in agreement with the insurance company, at no time shall goods and services required to be provided by the associate shall remain uninsured in accordance with (a) above.
- d) A copy of the Insurance policy shall be made available to TPCODL prior to first dispatch lot of any Equipment and policy shall be kept alive and valid at all times up to the stage of final acceptance.
- e) TPCODL reserves the right to take out whatever policy that is deemed necessary by him if the associate fails to keep the said policy alive and valid at all times and/or causes lapses in payment of premium thereby jeopardizing the said policy. The cost of such policy(s) shall be recovered / deducted from the amount payable to the associate.
- f) The policy shall ensure that the TPCODL's decision regarding replacement of goods damaged, lost or rendered unusable shall be final.

In all cases, the associate shall lodge the claims with the underwriters and also settle the claims and shall also notify TPCODL of any filed claims. However, the associate shall proceed with the repairs and/or replacement of the equipment/components without waiting for the settlement of the claims. In case of seizure of materials by concerned authorities, the associate shall arrange prompt release against bond, security or cash as required. TPCODL, upon request by the associate, will extend all reasonable assistance to the associate in such a case.

All the insurance claims shall be processed and settled by the associate and the missing/damaged items shall be replaced/repared by them without any extra cost to TPCODL and without affecting the completion time.

### 28.0 SUGGESTIONS & FEEDBACK

We welcome all our Business Associates to write to us about their experience with TPCODL; be it our Company, our services or our people. Each and every concern, issue, query and suggestion from you will help us to become a better company to work with and shall help us develop a strong bonding of trust and a long term relationship with you.

You may send your feedback by filling up our Business Associate Feedback Form enclosed herewith as *Annexure-E*. You can also log on to our website [www.tpcentralodisha.com](http://www.tpcentralodisha.com) to provide your feedback.

- Suggestions for us
- Feedback form
- Knowledge Sharing/ Experience with TPCODL
- Any issues with TPCODL.

Submission of feedback form is mandatory before the release of final payment to the BA.

### 29.0 CONTACT POINTS

In case Business Associate needs information with respect to payments or has any grievances, same may be lodged by log on to our website [www.tpcentralodisha.com](http://www.tpcentralodisha.com)

### 30.0 LIST OF ANNEXURES

S. No.	Subject	Annexure
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1.	Performa for Bid Security Bank Guarantee	A
2.	Performa for Performance Bank Guarantee (CP cum EP)	B
3.	Performa for No Demand Certificate by Associate	C
4.	Performa For Application For Issuance of Consolidated TDS Certificate	D
5.	Business Associate Feedback Form	E
6.	Acceptance Form For Participation In Reverse Auction Event	F
7.	Form for RTGS Payment	G
8.	Vendor Appraisal Form	H
9.	Manufacturer Authorization Form	I

**ANNEXURE-A**

**PROFORMA FOR BID SECURITY BANK GUARANTEE**

**The TP Central Odisha Distribution Limited  
Bhubaneswar**

WHEREAS, (Name of the Bidder) \_\_\_\_\_  
(hereinafter called "the BIDDER") has submitted his bid dated \_\_\_\_\_ for the (Name  
of Contract) \_\_\_\_\_ (hereinafter called "the BID").

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KNOW ALL men by these presents we (Name of the Bank) \_\_\_\_\_ of (Name of the Country) \_\_\_\_\_ having our registered office at \_\_\_\_\_ (hereinafter called "the BANK) are bound unto The TP Central Odisha Distribution Limited (TPCODL) in the sum of \_\_\_\_\_ for which payment well and truly to be made to the TPCODL the Bank binds himself, his 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:

- i) If the Bidder withdraws his Bid during the period of bid validity specified in the Proforma of Bid or
- ii) If the Bidder having been notified of the acceptance of his Bid by the TPCODL during the period of bid validity fails or refuses to furnish the Contract Performance Bank Guarantee, in accordance with the Instructions to Bidders.

We undertake to pay the TPCODL upto the above amount upon receipt of its first written demand, provided that in its demand the TPCODL will note that amount claimed by it is due to it owing to the occurrence of one or both conditions, specifying the occurred condition or conditions.


This Guarantee will remain in force upto and including the date (No of days as mentioned in tender enquiry) days after the closing date of submission of bids as stated in the Invitation to Bid or as extended by you at any time prior to this date, notice of which extension to the Bank being hereby waived, and any demand in respect thereof should reach the Bank not later than the above date.

**DATE** ..... **SIGNATURE OF THE BANK** .....

**WITNESS** ..... **SEAL** .....

(Signature, Name & Address) ( At least 2 witnesses)

GENERAL CONDITIONS OF CONTRACT

	TP CENTRAL ODISHA DISTRIBUTION LIMITED	
	WORK INSTRUCTION /OPERATING GUIDELINES	
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**ANNEXURE- B**

**PROFORMA FOR PERFORMANCE BANK GUARANTEE (CP cum EP)**

**(On Rs.100/- Stamp Paper) Note:**

- a) Format shall be followed in toto
- b) Claim period of one month must be kept up
- c) The guarantee to be accompanied by the covering letter from the bank confirming the signature to the guarantee

**The TP Central Odisha Distribution Limited**

**Bhubaneswar**

**CP cum EP BG No.....**

**Order/Contract No.....dated.....**

1. You have entered into a Contract No \_\_\_\_\_ with M/s. \_\_\_\_\_ (hereinafter referred to as "the Vendor") for the supply cum erection / civil work of \_\_\_\_\_ (hereinafter referred to as "the said Equipment") for the price and on the terms and conditions contained in the said contract.
2. In accordance with the terms of the said contract, "the Vendor" agreed to furnish you with an irrevocable, unconditional and acceptable bank guarantee for 10% of the value of contract and to be valid till the end of Guarantee period plus one month towards "Contract cum Equipment performance". For this purpose you have agreed to accept the guarantee.
3. In consideration thereof, we, \_\_\_\_\_ hereby irrevocably and unconditionally guarantee to pay to you on demand but in any case before the end of five working days from the date of the claim and without demur and without reference to "the Vendor" such amount or amounts not exceeding the sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) being \_\_\_\_\_% (\_\_\_\_\_ percent) of the total value of the contract on receipt of your intimating that "the Vendor" has not fulfilled his contractual obligations. You shall be the sole judge for such non-fulfillment and "the Vendor" shall have no right to question such judgment.
4. You shall have the right to file / make your claim on us under the guarantee for a **further period of one month** from the date of expiry.
5. This guarantee shall not be revoked without express consent and shall not be affected by your granting time or any other indulgence to "the Vendor", which shall include but not be limited to, postponement from time to time of the exercise the same in you or any right which you may have against "the Vendor" and to exercise the same in any covenant contained or implied in the said contract or any other course or remedy or security available to you, and our Bank shall not be released from its obligations under this guarantee by

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your exercising any of your rights with reference to matters aforesaid or any of them or by reasons of any other act or forbearance or other acts of omission or commission on your part or any other indulgence shown by you or by any other matter or thing whatsoever which under the law would, but for this provision have the effect of relieving our bank from its obligation under this guarantee.

6. We also agree that you shall be entitled at your option to enforce this guarantee against our bank as a principal debtor, in the first instance, notwithstanding any other security or guarantee that you may have in relation to "the Vendor's" liabilities in respect of the premises
7. This guarantee shall not be affected by any change in the constitution of our Bank or "the Vendor" or for any other reason whatsoever.
8. Any claim / extension under the guarantee can be lodge-able at outstation banks or at Bhubaneswar branch and claim will also be payable at Bhubaneswar Branch (to be confirmed by Bhubaneswar Branch by a letter to that effect in case BG is from the branch outside Bhubaneswar).
9. Notwithstanding anything herein contained, our liability under this guarantee is limited to Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_) only and the guarantee will remain in force upto and including \_\_\_\_\_ (Date) and shall be extended from time to time for such period or period as may be desired by "the Vendor".
10. Unless a demand or claim under this guarantee is received by us in writing within one months from \_\_\_\_\_ (expiry date) i.e. on or before \_\_\_\_\_ (claim period end date), we shall be discharged from all liabilities under this guarantee thereafter.

Dated at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

Bank's rubber stamp

1.

Banks full address

Designation of Signatory

2.

Bank official number

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**ANNEXURE-C**

**PROFORMA FOR “NO DEMAND CERTIFICATE” BY ASSOCIATE**

(On Company’s Letter head or with Company Seal)

(To be submitted by the Associate to TPCODL Accounts Department at the time of receipt of full and final payment)

**(Certificate No. CCP/002)**

Name of the Project Order/

Contract No.

Dated

Name of the Associate Scheme

No. / Job No.

We, M/s. \_\_\_\_\_ (Associate) do hereby acknowledge and confirm that we have received the full and final payment due and payable to us from TPCODL, in respect of our aforesaid Order No \_\_\_\_\_ dated \_\_\_\_\_ including amendments, if any, issued by TPCODL to our entire satisfaction and we further confirm that we have no claim whatsoever pending with TPCODL under the said contract / W.O.

Notwithstanding any protest recorded by us in any correspondence, documents, measurement books and / or final bills etc., we waive all our rights to lodge any claim or protest in future under this contract.

We are issuing this “NO DEMAND CERTIFICATE” in favour of TPCODL, with full knowledge and with our free consent without any undue influence, misrepresentation, coercion etc.

**Place**

**Name**

(Company Seal)

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**ANNEXURE-D**

**PROFORMA FOR APPLICATION FOR ISSUANCE OF CONSOLIDATED TDS  
CERTIFICATE**

To be printed on the letterhead

To,

The TP Central Odisha Distribution Limited,

Bhubaneswar

**Sub: Application for issuance of Consolidated TDS Certificate for the FY \_\_\_\_\_**

Dear Sir,

I / we hereby request / authorize you to issue me / us a consolidate TDS Certificate for the financial year \_\_\_\_\_ against tax deducted at source by you from my / our payments / bills during the said year from time to time under Chapter XVII – B of the Income Tax Act, 1961. For and on behalf of

Signature

Name

Address

Contact No. (Land Line)

(Mobile)

PAN #

Assessing authority

**ATTACH THE COPY OF PAN CARD**



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**ANNEXURE-E**

**BUSINESS ASSOCIATE FEEDBACK FORM**

With an objective to improve our internal processes and systems, and serve you better, we solicit your valuable feedback & suggestions. It is estimated that it will take about 10 minutes to complete this survey. We assure you that your feedback shall be kept confidential. Please send the duly filled feedback form in the "TPCODL addressed - attached envelop"

**You are associated with us as**

- OEMs    Service Contractor    Material Suppliers    Material & Manpower Supplier

**You are associated with us for**

- Less than 1 year    More than 1 year but less than 3 years    More than 3 years

**Your office is located at**

- Bhubaneswar    Within 200 kms from Bhubaneswar    More than 200 kms from Bhubaneswar

**Your nearly turnover with TPCODL**

- Less than 25 Lacs    25 Lacs to 1 Crore    More than 1 Cr.

**Additional Information**

<b>Your Name</b>	
<b>Your Designation</b>	
<b>Your Organization</b>	
<b>Contact Nos.</b>	
<b>Email</b>	

*We once again thank you for your participation in this survey. Please spare 10 minutes to give your feedback on following pages (Section A to E)*

### SECTION – A

(Please ✓ mark in the relevant box and give your remarks / suggestions / information for our improvement).

S. No.	Parameters	1	2	3	4	5	Remarks/ Suggestion
		Do Not Agree	Slightly in Agreement	In Fair Agreement	Mostly in Agreement	Fully Agree	
1	You receive all relevant queries / tenders from us in timely manner.						
2	We provide you enough lead time to respond to our queries / tenders.						
3	We provide you adequate support (drawings, documents, clarifications, briefing etc.) to enable you meet our requirements.						
4	All following elements of our contract / purchase order are rational :						
4.1	Scope of Work						
4.2	Delivery / Execution Schedule						
4.3	Payment Terms						
4.4	Liquidated Damages						
4.5	Performance Guarantee						
5	Our purchase orders / contracts are simple, specific & easy to understand						
6	TPCODL demonstrate willingness to be flexible in administration of Contract / Purchase Order						
7	We provide timely responses / clarifications to your queries						
8	TPCODL representative you interact / coordinate with is adequately empowered to support you in meeting contractual obligations						
9	TPCODL provide you all necessary infrastructure support for timely and quality completion of work (including AMC)						
10	TPCODL Engineer-in-Charge timely certifies the jobs executed/ material supplied						
11	TPCODL Engineer-in-Charge efficiently supervises the job execution for timely completion of job						
12	BIRD (Bill Inward Receipt Desk) initiative has improved payment disbursement process						

S. No.	Parameters	1	2	3	4	5	Remarks/ Suggestion
		Do Not Agree	Slightly in Agreement	In Fair Agreement	Mostly in Agreement	Fully Agree	
13	Our approach for Inspection and Quality Assurance effective to expedite project completion?						
14	TPCODL never defaults on contractual terms						
15	In TPCODL Contracts closure is done within set time limit						
16	Our material receiving procedures are well defined and efficiently deployed to reduce mutual inconvenience						
17	Bank Guarantees are released in time bound manner						
18	Our processes related to payment / account settlement are effective.						
19	You get payments on time						
20	TPCODL Employees follow Ethical behaviour						

### SECTION – B

SECTION – B (Please rate the following parameters on a scale of 1 to 5, where 1 - Minimum; 5 - Maximum)

S. No.	Parameters	1	2	3	4	5	Remarks/ Suggestion
1	How do you rate courtesy/ empathy/ attitude level and warmth of TPCODL employees you interact with from following team?						
1.1	Project Engineering						
1.2	District / Zones						
1.3	Projects/HOG (TS &P)						
1.4	Inspection & Quality Assurance						
1.5	Stores						
1.6	Metering & Billing						
1.7	Accounts / Finance						
1.8	Administration						
1.9	IT & Automation						
2	How would you rate TPCODL in comparison to your other clients in terms of <b>fairness of treatment and transparency</b> with its Business Associates?						
3	How would you rate TPCODL in comparison to your other clients in terms of <b>processes and systems to manage partnership</b> with its Business Associates						
4	How would you rate TPCODL in comparison to your other clients in terms of <b>building long term &amp; mutually relationship</b> with its Business Associates						

### SECTION – C

Please √ mark in the relevant box and give your remarks / suggestions / information for our improvement.

S. No.	Parameters	Certainly No	Probably No	Certainly Yes	Probably Yes	Remarks/ Suggestion
1	Based on your experience with TPCODL, would you like to continue your relationship with TPCODL?					
2	If someone asks you about TPCODL, would you talk "positively" about					

	TPCODL?					
3	Would you refer TPCODL name to others in your community, fraternity and society as a professional & dynamic organization?					

**SECTION - D**

**If we ask you to rate us on a scale of 1 to 10, how will you rate TPCODL, that truly represents your overall satisfaction with us (please tick appropriate box) -**

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

**SECTION - E**

Please ✓ mark in the relevant box and give your remarks / suggestions / information for our improvement.

Please spare your thoughts for TPCODL's improvement in particular areas of weaknesses, particularly relating to some great practices, attitudes that you have seen elsewhere in Indian and International Organizations, which you recommend TPCODL to adopt. Please give your valuable salient recommendations.

Please spare your thoughts for TPCODL's improvement in particular areas of major concerns for you. We also welcome your suggestions to adopt any best practices, altitudes that you

Recommendation	<i>Please tick (✓) your top 5 expectations out of the following 10 points listed below -</i>	
(Please list down improvement you expect from TPCODL)	<i>Timely payment</i>	
1	<i>Flexibility in Contracts/PO</i>	
	<i>Clarity in PO,s &amp; Contracts</i>	
2	<i>Timely response to quarries</i>	
	<i>Timely certification of works executed</i>	
3	<i>Clarity in Specs, drawings, other docs etc.</i>	
	<i>Adequate information provided on website for tender notification, parties qualified etc.</i>	
4	<i>Timely receipt of material at site for execution</i>	
	<i>Performance Guarantee/EMD released in time</i>	

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5	<i>Inspection &amp; quality assurance support for timely job completion</i>
---	---

We thank you for your time and courtesy!!

**ANNEXURE-F**

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

***(To be signed and stamped by the bidder prior to participation in the auction event)***

In a bid to make our entire procurement process more fair and transparent, TPCODL intends to use the reverse auctions through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as technically 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. TPCODL shall provide the user id and password to the authorized representative of the bidder. (Authorization Letter in lieu of the same shall be submitted along with the signed and stamped Acceptance Form).
2. TPCODL will make every effort to make the bid process transparent. However, the award decision by TPCODL would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of TPCODL, bid process, bid technology, bid documentation and bid details.
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 glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of TPCODL.
6. In case of intranet medium, TPCODL shall provide the infrastructure to bidders. Further, TPCODL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case an auction event is restarted, the best bid as 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 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 out rightly rejected by TPCODL.
8. The bidder shall be prepared with competitive price quotes on the day of the bidding 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 at TPCODL 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 TPCODL.
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 conclusion of the auction event for arriving at Contract amount.

**Signature & Seal of the Bidder**

**ANNEXURE-G**

To,

DGM (Finance)  
The TP Central Odisha Distribution Limited  
Bhubaneswar

**Sub: e-Payments through National Electronic Fund Transfer (NEFT) OR Real Time Gross Settlement System (RTGS)**

Dear Sir,

We request and authorize you to affect e-payment through NEFT/RTGS to our Bank Account as per the details given below:-

Vendor Code :

Title of Account in the Bank :

Account Type :

(Please mention here whether account is Savings/Current/Cash Credit)

Bank Account Number :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Name & Address of Bank :

Bank Contact Person's Names :

Bank Tele Numbers with STD Code :

Bank Branch MICR Code :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(Please enclose a Xerox a copy of a cheque. This cheque should not be a payable at par cheque)

Bank Branch IFSC Code :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(You can obtain this from branch where you have your account)

Email Address of accounts person: (to : send payment information)

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Name of the Authorized Signatory: \_\_\_\_\_ :

Contact Person's Name:

Official Correspondence Address:

We confirm that we will bear the charges, if any, levied by our bank for the credit of NEFT/RTGS amounts in our account. Any change in above furnished information shall be informed to TPCODL well in time at our own. Further, we kept TPCODL indemnified for any loss incurred due to wrong furnishing of above information.

Thanking you,

For \_\_\_\_\_

**(Authorised Signatory)**

**(Signature with Rubber Stamp)**

**Certification from Bank:**

We confirm that we are enabled for receiving NEFT/RTGS credits and we further confirm that the account number (specify Bank a/c no.) of (Please mention here name of the account holder), the signature of the authorised signatory and the MICR and IFSC Code of our branch mentioned above are correct.

This also is certified that the above information is correct as per Bank record

**(Manager's/ Officers Signature under Bank Stamp)**



**ANNEXURE-H**  
**VENDOR APPRAISAL FORM**

<b>TO BE SUBMITTED BY VENDOR (To be filled as applicable)</b>			
<b>VENDOR:</b>			
<b>1.0</b>	<b>DETAILS OF THE FIRM</b>		
	1.1	NAME (IN CAPITAL LETTERS)	:
	1.2	TYPE OF CONCERN (PROPRIETARY) Partnership, Pvt. Ltd., Public Ltd. etc.	:
	1.3	YEAR OF ESTABLISHMENT	:
	1.4	LOCATION OF OFFICE POSTAL ADDRESS TELEGRAPHIC ADDRESSES, TELEX NO. FAX NO.	:
	1.5	LOCATION OF MANUFACTURING UNITS	:
		i) UNITS 1	:
		ii) OTHER UNITS	:
<b>2.0</b>	<b>PRODUCTS MANUFACTURED</b>		
<b>3.0</b>	<b>TURNOVER DURING THE LAST 3 YEARS (TO BE VERIFIED WITH THE LATEST PROFIT &amp; LOSS STATEMENT).</b>		
<b>4.0</b>	<b>VALUE OF FIXED ASSETS</b>		
<b>5.0</b>	<b>NAME &amp; ADDRESS OF THE BANKERS</b>		
<b>6.0</b>	<b>BANK GUARANTEE LIMIT</b>		
<b>7.0</b>	<b>CREDIT LIMIT</b>		
<b>8.0</b>	<b>TECHNICAL</b>		
	8.1	NO. OF DESIGN ENGINEERS (INDICATE NO. OF YEARS EXPERIENCE IN RELATED FIELDS)	:
	8.2	NO. OF DRAUGHTS MEN	:
	8.3	COLLABORATION DETAILS (IF ANY)	:
		8.3.1 DATE OF COLLABORATION	:
		8.3.2 NAME OF COLLABORATOR	:
		8.3.3 RBI APPROVAL DETAILS	:
		8.3.4 EXPERIENCE LIST OF COLLABORATOR	:
		8.3.5 DURATION OF AGREEMENT	:
	8.4	AVAILABILITY OF STANDARDS / DESIGN PROCEDURES / COLLABORATOR'S /	:

		DOCUMENTS (CHECK WHETHER THESE ARE LATEST/CURRENT)	
	8.5	TECHNICAL SUPPORT, BACK-UP GUARANTEE, SUPERVISION, QUALITY CONTROL BY COLLABORATOR (WHEREVER ESSENTIAL). (THIS CLAUSE IS RELEVANT WHEN VENDOR'S EXPERIENCE IS INADEQUATE)	:
	8.6	QUALITY OF DRAWINGS	:
<b>9.0</b>	<b>MANUFACTURE</b>		
	9.1	SHOP SPACE, LAYOUT LIGHTING, VENTILATION, ETC.	:
	9.2	POWER (KVA)	:
		MAINS INSTALLED	:
		UTILIZED	:
		STANDBY POWER SOURCE	:
	9.3	MANUFACTURING FACILITIES (ATTACH LIST OF EQUIPMENT AS APPLICABLE)	:
		9.3.1 MATERIAL HANDLING	:
		9.3.2 MACHINING	:
		9.3.3 FABRICATION	:
		9.3.4 HEAT TREATMENT	:
		9.3.5 BALANCING FACILITY	:
		9.3.6 SURFACE TREATMENT PRIOR TO PAINTING/ COATING, POLISHING, PICKLING, PASSIVATION, PAINTING, ETC.	:
	9.4	SUPERVISORY STAFF	:
	9.5	ADEQUACY OF SKILLED LABOURS (MACHINISTS, WELDERS, ETC.)	:
	9.6	NO. OF SHIFTS	:
	9.7	TYPE OF MATERIAL HANDLED (SUCH AS CS, SS, ETC.)	:
	9.8	WORKMANSHIP	:
	9.9	MATERIAL IN STOCK AND VALUE	:
	9.10	TRANSPORT FACILITIES	:
	9.11	CARE IN HANDLING	:
<b>10.0</b>	<b>INSPECTION / QC / QA / TESTING</b>		
	10.1	NUMBER OF PERSONNEL (INDICATE NO. OF YEARS OF EXPERIENCE)	:
	10.2	INDEPENDENCE FROM PRODUCTION	:

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	10.3	AVAILABILITY OF PROCEDURAL WRITE UP/QUALITY PLAN	:
	10.4	INCOMING MATERIAL CONTROL AND DOCUMENTATION	:
	10.5	RELIABILITY/REPUTATION OF SUPPLY SOURCES	:
	10.6	STAGE INSPECTION AND DOCUMENTATION	:
	10.7	SUB-ASSEMBLY & DOCUMENTATION	:
	10.8	FINAL INSPECTION AND DOCUMENTATION	:
	10.9	PREPARATION OF FINAL DOCUMENTATION PACKAGE	:
	10.10	TYPE TEST FACILITIES	:
	10.11	ACCEPTANCE TEST FACILITIES	:
	10.12	CALIBRATION OF INSTRUMENTS AND GAUGES (WITH TRACEABILITY TO NATIONAL STANDARDS) (ATTACH LIST)	:
	10.13	STATUTORY APPROVALS LIKE BIS, IBR, ETC.(AS APPLICABLE)	:
	10.14	SUB-VENDOR APPROVAL SYSTEM AND QUALITY CONTROL	:
	10.15	DETAILS OF TESTS CARRIED OUT AT INDEPENDENT RECOGNIZED LABORATORIES	:
		i) FURNISH LIST OF TESTS CARRIED OUT AND THE NAME OF THE LABORATORY WHERE THE TESTS WERE CONDUCTED	:
		ii) CHECK AVAILABILITY OF CERTIFICATES AND REVIEW THESE WHEREVER POSSIBLE	:
	<b>11.0</b>	<b>EXPERIENCE (INCLUDING CONSTRUCTION / ERECTION / COMMISSIONING) TO BE FURNISHED IN THE FORMAT INDICATED IN APPENDIX)</b>	:
	<b>12.0</b>	<b>SALES, SERVICE AND SITE ORGANIZATIONAL DETAILS</b>	:
	<b>13.0</b>	<b>CERTIFICATE FROM CUSTOMERS (ATTACH COPIES OF DOCUMENTS)</b>	:
	<b>14.0</b>	<b>POWER SITUATION</b>	:
	<b>15.0</b>	<b>LABOUR SITUATION</b>	:
	<b>16.0 *</b>	<b>APPLICABILITY OF SC/ST RELAXATION (Y/N) IF YES, SUPPORTING DOCUMENTS TO BE ATTACHED</b>	
	<b>17.0</b>	<b>ORGANIZATIONAL DETAILS</b> 1. PF NO 2. ESI NO 3. INSURANCE FOR WORK MAN COMPENSATION ACT NO 4. ELECTRICAL CONTRACT LIC NO 5. ITCC / PAN NO 6. SALES TAX NO 7. WC TAX REG. NO	:
	<b>18.0</b>	<b>DOCUMENTS TO BE ENCLOSED:</b>	

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	<ol style="list-style-type: none"> <li>1. FACTORY LICENSE</li> <li>2. ANNUAL REPORT FOR LAST THREE YEARS</li> <li>3. TYPE TEST REPORT FOR THE ITEM</li> <li>4. PAST EXPERIENCE REPORTS</li> <li>5. ISO CERTIFICATE –QMS, EMS, OHAS, SA</li> <li>6. REGISTRATION OF SALES TAX</li> <li>7. COPY OF TIN NO.</li> <li>8. COPY OF SERVICE TAX NO.</li> <li>9. REGISTRATION OF CENTRAL EXCISE</li> <li>10. COPY OF INCOME TAX CLEARANCE.</li> <li>11. COPY OF PF REGISTRATION</li> <li>12. COPY OF ESI REGISTRATION</li> <li>13. COPY OF INSURANCE FOR WORK MAN COMPENSATION ACT NO</li> <li>14. COPY OF ELECTRICAL CONTRACT LIC NO</li> <li>15. COPY OF PAN NO</li> <li>16. COPY OF WC TAX REGISTRATION</li> <li>17. DOCUMENTS IN SUPPORT OF SC/ST RELAXATION AT S.NO.16.0</li> <li>18. GSTN CERTIFICATE</li> </ol>	
--	--	--

\* **Classification of BA s under SC/ST shall be governed under following guidelines:**

- **Proprietorship/ Single Ownership Firm:** Proprietor of the firm should be from SC/ST community. Governing document shall be Proprietorship Deed.
- **Partnership Firm:** Only such firms shall qualify which have SC/ST partners holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Partnership Deed.
- **Private Limited Company:** Only such firms shall qualify which have SC/ST directors holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Memorandum of Understanding (MoU) and/or Article of Association (AoA).

*NOTE: Certification from SC/ST Commission shall be required for deciding upon SC/ST status of a person.*

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**ANNEXURE-I**  
**MANUFACTURER AUTHORIZATION FORM**

*(To be submitted on OEM's Letter Head)*

Date: .....

Tender Enquiry No.: .....

To,  
Chief (Procurement & Stores)  
The TP Central Odisha Distribution Limited,  
Bhubaneswar

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.

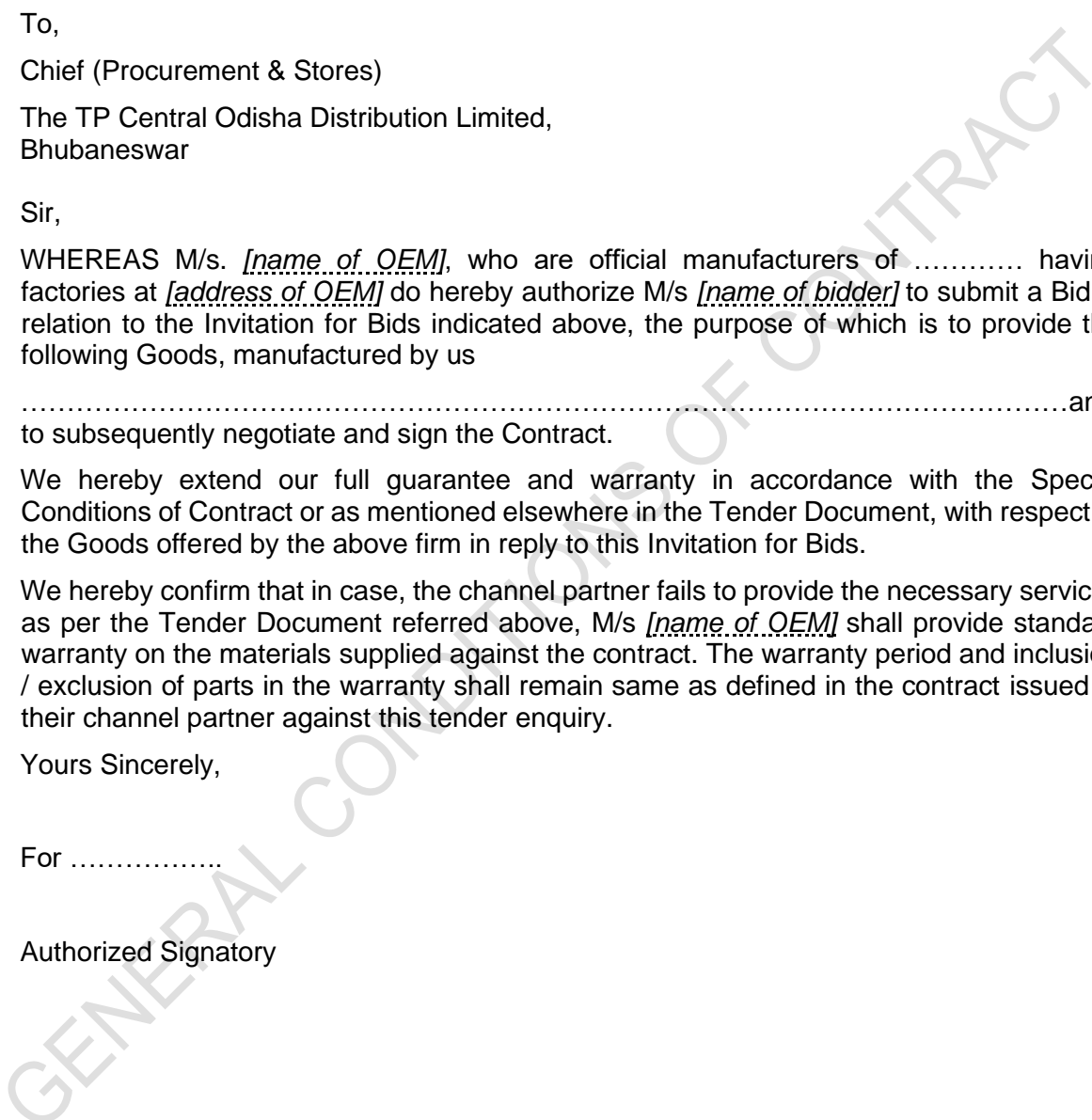
We hereby extend our full guarantee and warranty in accordance with the Special Conditions of Contract or as mentioned elsewhere in the Tender Document, with respect to the Goods offered by the above firm in reply to this Invitation for Bids.

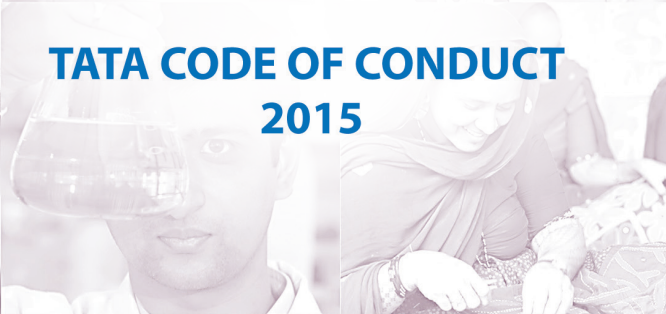
We hereby confirm that in case, the channel partner fails to provide the necessary services as per the Tender Document referred above, M/s *[name of OEM]* shall provide standard warranty on the materials supplied against the contract. The warranty period and inclusion / exclusion of parts in the warranty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

Yours Sincerely,

For .....

Authorized Signatory





**TATA CODE OF CONDUCT  
2015**



## LEADERSHIP THAT INSPIRES

For over 100 years, the Tata group has been led by visionaries who have stayed true to the vision of the founder, Jamsetji Tata.

A vision that placed the greater good of society at par with business growth.

A vision that put into practice pioneering social initiatives that changed the way responsible business was run.

And a vision that brought into the group a strong social conscience.



We do not claim to be more unselfish, more generous or more philanthropic than other people. But we think we started on sound and straightforward business principles, considering the interests of the shareholders our own, and the health and welfare of the employees, the sure foundation of our success.

**Jamsetji Tata**  
Founder of the Tata group  
Chairman (1868 – 1904)



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## FOREWORD

Tata companies have consistently adhered to the values and ideals articulated by the Founder for over 150 years. The Tata Code of Conduct was first formalized by Mr Ratan Tata. It articulates the Group's values and ideals that guide and govern the conduct of our companies as well as our colleagues in all matters relating to business. Today, the Code is a bedrock on which we base our individual, as well as leadership commitments to core Tata values.

The Tata Code of Conduct outlines our commitment to each of our stakeholders, including the communities in which we operate, and is our guiding light when we are sometimes faced with business dilemmas that leave us at ethical crossroads. The Code is also dynamic in that it has been periodically refreshed in order to remain contemporary and contextual to the changes in law and regulations. However it remains unaltered at its core.

Our stellar reputation and success as a business entity has been defined by the powerful commitment and adherence to the core values and principles expressed in this Code, by all our employees, directors and partners. I trust every Tata colleague and Tata company will continue to not only comply with the laws and regulations that govern our business interests around the world, but will continue to set new standards of ethical conduct that will generate deep respect and inspire emulation by others.

**N. Chandrasekaran**

21<sup>st</sup> February, 2017



## A. OUR VALUES

TATA has always been values-driven. The five core values that underpin the way we conduct our business activities are:



These universal values serve as the foundation for the Tata Code of Conduct. They find expression within the value system of every Tata company.

## B. SCOPE AND PURPOSE OF THIS CODE

1. This Code sets out how we behave with:
  - our employees, or those who work with us;
  - our customers;
  - the communities and the environment in which we operate;
  - our value-chain partners, including suppliers and service providers, distributors, sales representatives, contractors, channel partners, consultants, intermediaries and agents;
  - our joint-venture partners or other business associates;
  - our financial stakeholders;
  - the governments of the countries in which we operate; and
  - our group companies.
2. In this Code, “we or us” means our company, our executive directors, officers, employees and those who work with us, as the context may require.
3. The term “our group companies” in this Code typically means companies Tata Sons intends for this Code to apply to, and / or to whom Tata Sons has issued this Code.
4. This Code sets out our expectations of all those who work with us. We also expect those who deal with us to be aware that this Code underpins everything we do, and in order to work with us they need to act in a manner consistent with it.

### REMEMBER...

It is our commitment to protect our reputation and our brand equity by adhering to the values and principles set out in this Code. By doing so, we strengthen our unique culture and identity.

# OUR CORE PRINCIPLES



The Tata philosophy of management has always been, and is today more than ever, that corporate enterprises must be managed not merely in the interests of their owners, but equally in those of their employees, of the consumers of their products, of the local community and finally of the country as a whole.

**J.R.D. Tata**

Chairman, Tata Sons (1938 – 1991)

## C. OUR CORE PRINCIPLES

1. We are committed to operating our businesses conforming to the highest moral and ethical standards. We do not tolerate bribery or corruption in any form. This commitment underpins everything that we do.
2. We are committed to good corporate citizenship. We treat social development activities which benefit the communities in which we operate as an integral part of our business plan.
3. We seek to contribute to the economic development of the communities of the countries and regions we operate in, while respecting their culture, norms and heritage. We seek to avoid any project or activity that is detrimental to the wider interests of the communities in which we operate.
4. We shall not compromise safety in the pursuit of commercial advantage. We shall strive to provide a safe, healthy and clean working environment for our employees and all those who work with us.
5. When representing our company, we shall act with professionalism, honesty and integrity, and conform to the highest moral and ethical standards. In the countries we operate in, we shall exhibit culturally appropriate behaviour. Our conduct shall be fair and transparent and be perceived as fair and transparent by third parties.
6. We shall respect the human rights and dignity of all our stakeholders.
7. We shall strive to balance the interests of our stakeholders, treating each of them fairly and avoiding unfair discrimination of any kind.
8. The statements that we make to our stakeholders shall be truthful and made in good faith.
9. We shall not engage in any restrictive or unfair trade practices.
10. We shall provide avenues for our stakeholders to raise concerns or queries in good faith, or report instances of actual or perceived violations of our Code.
11. We shall strive to create an environment free from fear of retribution to deal with concerns that are raised or cases reported in good faith. No one shall be punished or made to suffer for raising concerns or making disclosures in good faith or in the public interest.
12. We expect the leaders of our businesses to demonstrate their commitment to the ethical standards set out in this Code through their own behaviour and by establishing appropriate processes within their companies.
13. We shall comply with the laws of the countries in which we operate and any other laws which apply to us. With regard to those provisions of the Code that are explicitly dealt with under an applicable law or employment terms, the law and those terms shall take precedence. In the event that the standards prescribed under any applicable law are lower than that of the Code, we shall conduct ourselves as per the provisions of the Code.

### REMEMBER...

“Good faith” means having a reasonable belief that the information you have provided is truthful. It does not mean having ‘all the evidence’ about the potential violation or case reported.

## OUR EMPLOYEES



Once you got the best people, the people who shared our values and ideals, we left them free to act on their own. We do not fetter them. We encourage them and give them opportunities for leadership.

**J.R.D. Tata**

Chairman, Tata Sons (1938 – 1991)

## D. OUR EMPLOYEES

### Equal opportunity employer

1. We provide equal opportunities to all our employees and to all eligible applicants for employment in our company. We do not unfairly discriminate on any ground, including race, caste, religion, colour, ancestry, marital status, gender, sexual orientation, age, nationality, ethnic origin, disability or any other category protected by applicable law.
2. When recruiting, developing and promoting our employees, our decisions will be based solely on performance, merit, competence and potential.
3. We shall have fair, transparent and clear employee policies which promote diversity and equality, in accordance with applicable law and other provisions of this Code. These policies shall provide for clear terms of employment, training, development and performance management.

### Q&A

**A job requirement entails extensive travel. One of the candidates has excellent relevant experience and qualifications. However, this candidate is a single parent. As a result, I feel such a situation would significantly hinder this candidate's ability to cope with the job requirement. What should I do?**

In accordance with the Code, the decision to recruit an employee should be based upon merit. We cannot make a presumption that the candidate would not be able to meet the travel requirements of the job. All eligible candidates should be provided with equal opportunity to demonstrate or justify that they can cope with the travel requirements of the job. Being a single parent cannot be a ground to be discriminated against at any stage of recruitment or ongoing employment in our company.

### REMEMBER...

We do not tolerate harassment in any form and therefore we expect every employee to discourage such misdemeanours in the workplace.



### Dignity and respect

4. Our leaders shall be responsible for creating a conducive work environment built on tolerance, understanding, mutual cooperation and respect for individual privacy.
5. Everyone in our work environment must be treated with dignity and respect. We do not tolerate any form of harassment, whether sexual, physical, verbal or psychological.
6. We have clear and fair disciplinary procedures, which necessarily include an employee's right to be heard.
7. We respect our employees' right to privacy. We have no concern with their conduct outside our work environment, unless such conduct impairs their work performance, creates conflicts of interest or adversely affects our reputation or business interests.

### Human rights

8. We do not employ children at our workplaces.
9. We do not use forced labour in any form. We do not confiscate personal documents of our employees, or force them to make any payment to us or to anyone else in order to secure employment with us, or to work with us.

### Bribery and corruption

10. Our employees and those representing us, including agents and intermediaries, shall not, directly or indirectly, offer or receive any illegal or improper payments or comparable benefits that are intended or perceived to obtain undue favours for the conduct of our business.

#### REMEMBER...

Violation by even a single employee of any law relating to anti-bribery, anti-corruption, anti-competition, data privacy, etc. could result in severe financial penalties and cause irreparable reputational damage to the company.

## Gifts and hospitality

11. Business gifts and hospitality are sometimes used in the normal course of business activity. However, if offers of gifts or hospitality (including entertainment or travel) are frequent or of substantial value, they may create the perception of, or an actual conflict of interest or an 'illicit payment'. Therefore, gifts and hospitality given or received should be modest in value and appropriate, and in compliance with our company's gifts and hospitality policy.

## Freedom of association

12. We recognise that employees may be interested in joining associations or involving themselves in civic or public affairs in their personal capacities, provided such activities do not create an actual or potential conflict with the interests of our company. Our employees must notify and seek prior approval for any such activity as per the 'Conflicts of Interest' clause of this Code and in accordance with applicable company policies and law.

### REMEMBER...

As a general rule, we may accept gifts or hospitality from a business associate, only if such a gift:

- has modest value and does not create a perception (or an implied obligation) that the giver is entitled to preferential treatment of any kind;
- would not influence, or appear to influence, our ability to act in the best interest of our company;
- would not embarrass our company or the giver if disclosed publicly.

The following gifts are never appropriate and should never be given or accepted:

- gifts of cash or gold or other precious metals, gems or stones;
- gifts that are prohibited under applicable law;
- gifts in the nature of a bribe, payoff, kickback or facilitation payment\*;
- gifts that are prohibited by the gift giver's or recipient's organisation; and
- gifts in the form of services or other non-cash benefits (e.g. a promise of employment).

(\*'Facilitation' payment is a payment made to secure or speed up routine legal government actions, such as issuing permits or releasing goods held in customs.)

### Working outside employment with us

13. Taking employment, accepting a position of responsibility or running a business outside employment with our company, in your own time, with or without remuneration, could interfere with your ability to work effectively at our company or create conflicts of interest. Any such activity must not be with any customer, supplier, distributor or competitor of our company. Our employees must notify and seek prior approval for any such activity as per the 'Conflicts of Interest' clause of this Code and in accordance with applicable company policies and law.

### Integrity of information and assets

14. Our employees shall not make any wilful omissions or material misrepresentation that would compromise the integrity of our records, internal or external communications and reports, including the financial statements.
15. Our employees and directors shall seek proper authorisation prior to disclosing company or business-related information, and such disclosures shall be made in

accordance with our company's media and communication policy. This includes disclosures through any forum or media, including through social media.

16. Our employees shall ensure the integrity of personal data or information provided by them to our company. We shall safeguard the privacy of all such data or information given to us in accordance with applicable company policies or law.
17. Our employees shall respect and protect all confidential information and intellectual property of our company.
18. Our employees shall safeguard the confidentiality of all third party intellectual property and data. Our employees shall not misuse such intellectual property and data that comes into their possession and shall not share it with anyone, except in accordance with applicable company policies or law.
19. Our employees shall promptly report the loss, theft or destruction of any confidential information or intellectual property and data of our company or that of any third party.

## Q&A

**I am an accountant in the finance department of my company. Due to my artistic skills, I received an offer to pen cartoons for a children's publication for which I would receive compensation. I plan to undertake this activity during week-ends. What should I do before accepting this offer?**

Before accepting the offer, you should ascertain whether the company policies and rules require you to make a disclosure to your supervisor so that the company may determine whether your undertaking this activity adversely affects our company's interests. On confirmation from the company that it does not do so, you would be free to take up the activity. It is also your duty to bring to the attention of the company whenever there is any change in the situation you have disclosed.

20. Our employees shall use all company assets, tangible and intangible, including computer and communication equipment, for the purpose for which they are provided and in order to conduct our business. Such assets shall not be misused. We shall establish processes to minimise the risk of fraud, and misappropriation or misuse of our assets.
21. We shall comply with all applicable anti-money laundering, anti-fraud and anti-corruption laws and we shall establish processes to check for and prevent any breaches of such laws.

### Insider trading

22. Our employees must not indulge in any form of insider trading nor assist others, including immediate family, friends or business associates, to derive any benefit from access to and possession of price sensitive information that is not in the public domain. Such information would include information about our company, our group companies, our clients and our suppliers.

### Q&A

**Our company has recently announced the launch of a new business initiative. In connection with this, your friend who is a journalist with a leading business newspaper has asked you to provide some information that he could cover in his forthcoming article. He has promised not to quote you, or reveal your identity. Should you be giving him this information?**

No. You should not be sharing information of this nature with the media, even if it is assured that the source would remain anonymous. Only authorised personnel in the company are permitted to speak to the media and provide information of this nature.

**Our company has a “Use of Social Media” policy that lays down the “dos and don’ts” for use of social media even if you may access such media on your own time. Why is there such a policy?**

External communication is a serious matter. It must be carefully managed because information put out with reference to our company or its businesses needs to be clear, truthful and not violate any undertakings we have given to other parties. In each business there are managers nominated to authorise and make different types of statements to the outside world. These managers should be consulted about any request for information you may receive or information you think we should give out.

In using social media, in particular blogs or social networking sites, you should exercise great caution while talking about our company or the business we do. It may feel like you are chatting with friends or expressing a personal opinion but even while doing so you cannot share any confidential information of our company.

### REMEMBER...

We must respect the property rights of others by never misusing their assets, intellectual property or trade secrets, including the copying or downloading of unauthorised software, trademarks, copyrighted material or logos. We should never make unauthorised copies of computer software programs or use unlicensed personal software on company computers.

### Prohibited drugs and substances

23. Use of prohibited drugs and substances creates genuine safety and other risks at our workplaces. We do not tolerate prohibited drugs and substances from being possessed, consumed or distributed at our workplaces, or in the course of company duties.

### Conflicts of interest

24. Our employees and executive directors shall always act in the interest of our company and ensure that any business or personal association *including close personal relationships* which they may have, does not create a conflict of interest with their roles and duties in our company or the operations of our company. Further, our employees and executive directors shall not engage in any business, relationship or activity, which might conflict with the interest of our company or our group companies.

25. Should any actual or potential conflicts of interest arise, the concerned person must immediately report such conflicts and seek approvals as required by applicable law and company policy. The competent authority shall revert to the employee within a reasonable time as defined in our company's policy, so as to enable the concerned employee to take necessary action as advised to resolve or avoid the conflict in an expeditious manner.
26. In the case of all employees other than executive directors, the Chief Executive Officer / Managing Director shall be the competent authority, who in turn shall report such cases to the Board of Directors on a quarterly basis. In case of the Chief Executive Officer / Managing Director and executive directors, the Board of Directors of our company shall be the competent authority.

### Q&A

**You are responsible for maintaining our company's customer database. One of your friends is starting a business venture and requests you to share a few particulars from this database for marketing purposes of his business. He assures you that he would keep the data as well as his source confidential. Should you do so?**

No. You should respect the confidentiality of customer information and not share any part of the database with any person without due authorisation.

**You have access to revenue numbers of different business units of our company. While having a conversation with you over evening drinks, your friend enquires about the financial performance of our company. You do not share detailed information with your friend, but share approximate revenue figures. Is this conduct of yours correct?**

No, it is not. You are not permitted to share financial information of our company with others who do not need to know this information. Financial information should always be safeguarded and disclosed only on a need-to-know basis after obtaining requisite approvals. Sharing of any price sensitive information that is not generally available with the public could also lead to violation of applicable insider trading laws.

27. Notwithstanding such or any other instance of conflict of interest that exists due to historical reasons, adequate and full disclosure by interested employees shall be made to our company's management. At the time of appointment in our company, our employees and executive directors shall make full disclosure to the competent authority, of any interest leading to an

actual or potential conflict that such persons or their immediate family (including parents, siblings, spouse, partner, children) or persons with whom they enjoy close personal relationships, may have in a family business or a company or firm that is a competitor, supplier, customer or distributor of, or has other business dealings with, our company.

### REMEMBER...

A conflict of interest could be any known activity, transaction, relationship or service engaged in by an employee, his/her immediate family (including parents, siblings, spouse, partner, and children), relatives or a close personal relationship, which may cause concern (based upon an objective determination) that the employee could not or might not be able to fairly perform his/her duties to our company.

### Examples of Potential Conflicts of Interest

A conflict of interest, actual or potential, arises where, directly or indirectly, an employee or executive director:

- (a) engages in a business, activity or relationship with anyone who is party to a transaction with our company;
- (b) is in a position to derive an improper benefit, personally or for any family member or for any person in a close personal relationship, by making or influencing decisions relating to any transaction;
- (c) conducts business on behalf of our company or is in a position to influence a decision with regard to our company's business with a supplier or customer where a relative of, or a person in close personal relationship with, an employee or executive director is a principal officer or representative, resulting in a personal benefit or a benefit to the relative;
- (d) is in a position to influence decisions with regard to award of benefits such as increase in salary or other remuneration, posting, promotion or recruitment of a relative or a person in close personal relationship employed in our company or any of our group companies;
- (e) undertakes an activity by which the interest of our company or our group companies can be compromised or defeated; or
- (f) does anything by which an independent judgement of our company's or our group companies' best interest cannot be exercised.

28. If there is a failure to make the required disclosure and our management becomes aware of an instance of conflict of interest that ought to have been disclosed by an employee or executive director, our management shall take a serious view of the matter and consider suitable disciplinary action as per the terms of employment. In all such matters, we shall follow clear and fair disciplinary procedures, respecting the employee's right to be heard.

### Examples of activities normally approved (post-disclosure) as per applicable company policy

Acceptance of a position of responsibility (whether for remuneration or otherwise) in the following cases would typically be permitted, provided the time commitments these demand do not disturb or distract from the employee's primary duties and responsibilities in our company, and are promptly disclosed to the relevant competent authority:

- (a) Directorships on the Boards of any of our group companies, joint ventures or associate companies.
- (b) Memberships/positions of responsibility in educational/professional bodies, where such association will promote the interests of our company.
- (c) Memberships or participation in government committees/bodies or organisations.

### Q&A

**You are in a relationship with a colleague who has been recently moved into your team and would now be reporting to you. What should you do?**

Romantic or close personal relationships with another employee where a reporting relationship exists and one is responsible for evaluating the other's performance, is likely to create a conflict of interest. In such a situation, you would need to report the potential conflict to your supervisor.

**Your company is submitting a proposal to a company in which you were previously employed. You have confidential information pertaining to your previous employer, which you believe will help your present employer in winning the contract. Should you share this information?**

No. You should not share this information with your company since it relates to confidential information of a third party. Your company respects its employees' duty to protect confidential information that they may have relating to their previous employers.

**You are the purchasing manager in the procurement department of your company. You receive an invitation from a supplier to attend a premier sporting event as her guest. This particular supplier is one of the vendors who has submitted a proposal for an open tender issued by your company. Should you accept the invitation?**

No. You should not accept the invitation in this instance. Since you are in a key decision-making role for the tender, any unusual benefit that you receive could be perceived as an inducement that could compromise your objectivity.

## OUR CUSTOMERS



We have continued to enjoy prosperity, even with adverse times to fight against. Our relations with all concerned are the most friendly. We have maintained the same character for straight-forward dealing with our constituents and customers. Our productions have continued to be of the same high quality, and therefore command the best reputation and realise the highest prices. ... I mention these facts only to point out that with honest and straight-forward business principles, close and careful attention to details, and the ability to take advantage of favourable opportunities and circumstances, there is a scope for success.

### Jamsetji Tata

Founder of the Tata group  
Chairman, Tata Sons (1868 – 1904)



## E. OUR CUSTOMERS

### Products and services

1. We are committed to supplying products and services of world-class quality that meet all applicable standards.
2. The products and services we offer shall comply with applicable laws, including product packaging, labelling and after-sales service obligations.
3. We shall market our products and services on their own merits and not make unfair or misleading statements about the products and services of our competitors.

### Export controls and trade sanctions

4. We shall comply with all relevant export controls or trade sanctions in the course of our business.

### Fair competition

5. We support the development and operation of competitive open markets and the liberalisation of trade and investment in each country and market in which we operate.
6. We shall not enter into any activity constituting anti-competitive behaviour such as abuse of market dominance, collusion, participation in cartels or inappropriate exchange of information with competitors.
7. We collect competitive information only in the normal course of business and obtain the same through legally permitted sources and means.

### Dealings with customers

8. Our dealings with our customers shall be professional, fair and transparent.
9. We respect our customers' right to privacy in relation to their personal data. We shall safeguard our customers' personal data, in accordance with applicable law.

## Q&A

**You are the Regional Sales Manager of our company. You have become a member of an “informal group”, on an instant messaging service, whose members are the regional sales heads of our company’s competitors. The administrator of the group has requested an in-person meeting to informally discuss market conditions and brainstorm on “pricing strategy” from an industry perspective. What should you do?**

Any meeting with competitors, especially to discuss “pricing strategy”, could be an attempt to promote an anti-competitive practice or manipulate prices. You should respond by declining this invitation and exiting the “informal group”. You should also report this incident to your supervisor and your Legal department.

**You are attending a customer meeting with a colleague, and your colleague makes an untruthful statement about the company’s services. What should you do?**

You should assist your colleague in correcting the inaccuracy during the meeting if possible. If this is not possible, raise the issue with your colleague after the meeting to enable him/her or the company to correct any misrepresentation made to the customer.

**While working on a customer project, you receive a call from your colleague. He used to manage that customer account before you took over his role. He recalls that he had worked with the customer on developing a new ordering system which he thinks would be beneficial for another customer and requests you to send him the project details. What should you do?**

You must not share this information without specific approval of the customer; you are not permitted to use a customer’s assets, including software, for another customer or for any personal use.

## REMEMBER...

Striving for excellence in the standards of our work and in the quality of our goods and services is a core Tata value. It is the unwavering practice of this value that builds and sustains customer trust in our brand.

# OUR COMMUNITIES AND THE ENVIRONMENT



In a free enterprise, the community is not just another shareholder in business but is in fact the very purpose of its existence.

**Jamsetji Tata**

Founder of the Tata group  
Chairman, Tata Sons (1868 – 1904)

## F. OUR COMMUNITIES AND THE ENVIRONMENT

### Communities

1. We are committed to good corporate citizenship, and shall actively assist in the improvement of the quality of life of the people in the communities in which we operate.
2. We engage with the community and other stakeholders to minimise any adverse impact that our business operations may have on the local community and the environment.
3. We encourage our workforce to volunteer on projects that benefit the communities in which we operate, provided the principles of this Code, where applicable, and in particular the 'Conflicts of Interest' clause are followed.

### The environment

4. In the production and sale of our products and services, we strive for environmental sustainability and comply with all applicable laws and regulations.
5. We seek to prevent the wasteful use of natural resources and are committed to improving the environment, particularly with regard to the emission of greenhouse gases, consumption of water and energy, and the management of waste and hazardous materials. We shall endeavour to offset the effect of climate change in our activities.

# OUR VALUE-CHAIN PARTNERS



If we had done some of the things that some other groups have done, we would have been twice as big as we are today. But we didn't, and I would not have it any other way.

**J.R.D. Tata**

Chairman, Tata Sons (1938 – 1991)

(on the pace of expansion of the Tata group in the 1960s and 70s)

## G. OUR VALUE-CHAIN PARTNERS

1. We shall select our suppliers and service providers fairly and transparently.
2. We seek to work with suppliers and service providers who can demonstrate that they share similar values. We expect them to adopt ethical standards comparable to our own.
3. Our suppliers and service providers shall represent our company only with duly authorised written permission from our company. They are expected to abide by the Code in their interactions with, and on behalf of us, including respecting the confidentiality of information shared with them.
4. We shall ensure that any gifts or hospitality received from, or given to, our suppliers or service providers comply with our company's gifts and hospitality policy.
5. We respect our obligations on the use of third party intellectual property and data.

### Q&A

**You head the procurement function in our company. You have tight budgetary constraints for a project that you are working on. In order to complete the project within the targeted costs, you intend to request your supplier to provide you an exceptional discount on this project order on the understanding that you would “make it up to him” in future orders. Would you be violating the Code?**

Yes, you would. Inducement in any form, including future benefits to the supplier, could compromise your ability to act objectively and in the best interests of the company and therefore must be avoided.

### REMEMBER...

Our value-chain partners would include our suppliers and service providers, distributors, sales representatives, contractors, channel partners, consultants, intermediaries and agents; joint-venture partners and other business associates.

# OUR FINANCIAL STAKEHOLDERS



Ethical behaviour in business – in every sphere and with all constituents – has been the bedrock on which the Tata group has built, and operates, its enterprises. This has been an article of faith for the group ever since its inception, a fundamental element of our cherished heritage and the essence of our way of life.

**Ratan Tata**

Chairman, Tata Sons (1991 – 2012)

## H. OUR FINANCIAL STAKEHOLDERS

1. We are committed to enhancing shareholder value and complying with laws and regulations that govern shareholder rights.
  2. We shall inform our financial stakeholders about relevant aspects of our business in a fair, accurate and timely manner and shall disclose such information in accordance with applicable law and agreements.
  3. We shall keep accurate records of our activities and shall adhere to disclosure standards in accordance with applicable law and industry standards.
-



# GOVERNMENTS



Business, as I have seen it, places one great demand on you; it needs you to impose a framework of ethics, values, fairness and objectivity on yourself at all times. It is not easy to do this; you cannot impose it on yourself forcibly because it has to become an integral part of you.

**Ratan Tata**

Chairman, Tata Sons (1991 – 2012)

## I. GOVERNMENTS

### Political non-alignment

1. We shall act in accordance with the constitution and governance systems of the countries in which we operate. We do not seek to influence the outcome of public elections, nor to undermine or alter any system of government. We do not support any specific political party or candidate for political office. Our conduct must preclude any activity that could be interpreted as mutual dependence/favour with any political body or person, and we do not offer or give any company funds or property or other resources as donations to any specific political party, candidate or campaign.

Any financial contributions considered by our Board of Directors in order to strengthen democratic forces through a clean electoral process shall be extended only through the Progressive Electoral Trust in India, or by a similar transparent, duly-authorised, non-discriminatory and non-discretionary vehicle outside India.

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### Government engagement

2. We engage with the government and regulators in a constructive manner in order to promote good governance. We conduct our interactions with them in a manner consistent with our Code.
3. We do not impede, obstruct or improperly influence the conclusions of, or affect the integrity or availability of data or documents for any government review or investigation.

## OUR GROUP COMPANIES



I do not think anyone was on par with Jamsetji as an industrial visionary. But that is not the sole reason why I have been an admirer of Jamsetji. The major reason was his sense of values, sterling values, which he imparted to this group. If someone were to ask me, what holds the Tata companies together, more than anything else, I would say it is our shared ideals and values which we have inherited from Jamsetji Tata.

**J.R.D. Tata**

Chairman, Tata Sons (1938 – 1991)

## J. OUR GROUP COMPANIES

1. We seek to cooperate with our group companies, including joint ventures, by sharing knowledge, physical resources, human and management resources and adopting leading governance policies and practices in accordance with applicable law including adherence to competition law, where relevant.
2. We shall strive to achieve amicable resolution of any dispute between us and any of our group companies, through an appropriate dispute resolution mechanism so that it does not adversely affect our business interests and stakeholder value.
3. We shall have processes in place to ensure that no third party or joint venture uses the TATA name/brand to further its interests without proper authorisation.
4. Our Board of Directors shall consider for adoption policies and guidelines periodically formulated by Tata Sons and circulated to group companies.

### Q&A

**You are in the process of selecting potential vendors for an IT project in our company. In the final shortlist of two companies, one is a new start-up with limited references and a lower price-quotation, while the other is a Tata company with thirty years of implementation experience and good references, but a marginally higher quote for the same job. With all other parameters of choice being nearly equal, which company should you select for the job?**

While price is undoubtedly an important criterion for decision making, it is clearly not the only one to be evaluated. You may also need to consider good customer references, proven track record and shared value systems in order to decide on your IT partner.

**You are in the process of selecting potential vendors for a project. One of the three finalists is a group company. In reviewing the final proposals, you rank the group company second out of the three proposals based on pricing and total cost of ownership, and select the first-ranked vendor. Is this the right decision?**

Yes. You should select the vendor that, on its own merits, is the vendor that is most appropriate for your company's requirements. You should not select a group company only because of its affiliation.

## RAISING CONCERNS

We encourage our employees, customers, suppliers and other stakeholders to raise concerns or make disclosures when they become aware of any actual or potential violation of our Code, policies or law. We also encourage reporting of any event (actual or potential) of misconduct that is not reflective of our values and principles.

Avenues available for raising concerns or queries or reporting cases could include:

- immediate line manager or the Human Resources department of our company
- designated ethics officials of our company
- the 'confidential reporting' third party ethics helpline (if available)
- any other reporting channel set out in our company's 'Whistleblower' policy.

We do not tolerate any form of retaliation against anyone reporting legitimate concerns. Anyone involved in targeting such a person will be subject to disciplinary action.

If you suspect that you or someone you know has been subjected to retaliation for raising a concern or for reporting a case, we encourage you to promptly contact your line manager, the company's Ethics Counsellor, the Human Resources department, the MD/CEO or the office of the group's Chief Ethics Officer.

### Q&A

**My supervisor has asked me to do something which I believe may be illegal. I am afraid if I do not do what I am told, I could lose my job. Should I do it?**

No. Breaking the law is never an option. Discuss the situation with your supervisor to be certain that you both understand the facts. If your concerns are not resolved, contact a higher level supervisor, the Ethics Counsellor, the Legal department or report them via the company's confidential reporting system, if available.

**I feel that my supervisor is treating me unfairly for reporting a concern to the Ethics Counsellor. What should I do?**

Retaliation against anyone who raises a concern is a violation of the Code. You should therefore promptly report this action of your supervisor to the Ethics Counsellor or the MD/CEO of your company or via the company's confidential reporting system, if available.

## ACCOUNTABILITY

This Code is more than a set of prescriptive guidelines issued solely for the purpose of formal compliance. It represents our collective commitment to our value system and to our core principles.

Every person employed by us, directly or indirectly, should expect to be held accountable for his/her behaviour. Should such behaviour violate this Code,

they may be subject to action according to their employment terms and relevant company policies.

When followed in letter and in spirit, this Code is 'lived' by our employees as well as those who work with us. It represents our shared responsibility to all our stakeholders, and our mutual commitment to each other.

### SPEAK UP...

If you are unsure whether a particular action you are about to take is consistent with the principles set forth in the Code, ask yourself:

- Could it directly or indirectly endanger someone or cause them injury?
- Is it illegal/unlawful or out of line with our policies and procedures?
- Does my conscience reject it? Does it conflict with my personal values?
- Would I feel uncomfortable if the story appeared in the media? Would it shame my company, spouse, partner, parent or child?
- Does it 'feel' wrong?

If the answer to any of these questions is "Yes", please stop and consult your reporting manager, the Ethics Counsellor, the Human Resource department, the Legal department or any member of the senior management team, to assist you in making the decision.

**When faced with a dilemma:** Stop, Think, Act Responsibly

**NOTE**

The Code does not provide a comprehensive and complete explanation of all expectations from a company standpoint or obligations from a stakeholder standpoint.

Our employees have a continuing obligation to familiarise themselves with all applicable law, group-level advisories and policies, company-level policies, procedures and work rules as relevant. For any guidance on interpretation of the Code, we may seek support from our company's Ethics Counsellor or from the group's Chief Ethics Officer, as appropriate.

All joint ventures are encouraged to adopt the Tata Code of Conduct (TCOC) or a code of conduct that incorporates all elements of the TCOC.

This version of the Tata Code of Conduct supersedes all earlier versions and associated documents and stands effective from 29<sup>th</sup> July, 2015.

For any query or clarification on the Code, please contact the office of the group's Chief Ethics Officer via email at: [ethicsoffice@tata.com](mailto:ethicsoffice@tata.com).



## TATA CODE OF CONDUCT – 2015

I acknowledge that I have received the Tata Code of Conduct.

I have read the Tata Code of Conduct and I acknowledge that as a Tata employee, I am required to comply with the guidelines described therein and failure to do so may subject me to action as per my employment terms and relevant company policies.

If I have a concern about a violation, or a potential violation of the Tata Code of Conduct, I understand that there are channels available to me in my company to report such concerns. By making use of these channels when necessary, I will play my part in maintaining the high ethical standards to which we hold ourselves.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Department: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

*(Please submit this declaration to your Ethics Counsellor or the Human Resource department of your company.)*













For further information on the Code please contact:  
 The Ethics Office,  
 Tata Sons Ltd.,  
 Bombay House,  
 24, Homi Mody Street,  
 Mumbai – 400001, India.  
 Email: [ethicsoffice@tata.com](mailto:ethicsoffice@tata.com)

## CORPORATE SUSTAINABILITY POLICY

At Tata Power, our Sustainability Policy integrates economic progress, social responsibility and environmental concerns with the objective of improving quality of life. We believe in integrating our business values and operations to meet the expectations of our customers, employees, partners, investors, communities and public at large

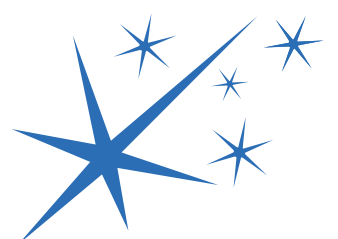
- We will uphold the values of honesty, partnership and fairness in our relationship with stakeholders
- We shall provide and maintain a clean, healthy and safe working environment for employees, customers, partners and the community
- We will strive to consistently enhance our value proposition to the customers and adhere to our promised standards of service delivery
- We will respect the universal declaration of human rights, International Labour Organization's fundamental conventions on core labour standards and operate as an equal opportunities employer
- We shall encourage and support our partners to adopt responsible business policies, Business Ethics and our Code of Conduct Standards
- We will continue to serve our communities:
  - By implementing sustainable Community Development Programmes including through public/private partnerships in and around our area of operations
  - By constantly protecting ecology, maintaining and renewing bio-diversity and wherever necessary conserving and protecting wild life, particularly endangered species
  - By encouraging our employees to serve communities by volunteering and by sharing their skills and expertise
  - By striving to deploy sustainable technologies and processes in all our operations and use scarce natural resources efficiently in our facilities
  - We will also help communities that are affected by natural calamities or untoward incidence, or that are physically challenged in line with the Tata Group's efforts

The management will commit all the necessary resources required to meet the goals of Corporate Sustainability.



(Praveer Sinha)  
CEO & Managing Director

Date: 15<sup>th</sup> June, 2018



## CORPORATE ENVIRONMENT POLICY

**Tata Power is committed to a clean, safe and healthy environment, and we shall operate our facilities in an environmentally sensitive and responsible manner. Our commitment to environmental protection and stewardship will be achieved by:**

- Complying with the requirements and spirit of applicable environmental laws and striving to exceed required levels of compliance wherever feasible
- Ensuring that our employees are trained to acquire the necessary skills to meet environmental standards
- Conserving natural resources by improving efficiency and reducing wastage
- Making business decisions that aim towards sustainable development
- Engaging with stakeholders to create awareness on sustainability



(Praveer Sinha)  
CEO & Managing Director

Date: 15<sup>th</sup> June, 2018

