



Tender Enquiry No- TPCODL/ P&S/ 1000000064/ 21-22
Date- 12.06.2021

CORRIGENDUM-I

Open Tender Notification for

Rate Contract for supply of 11KV 3P4W Oil Cooled Combined CTPT Units with other accessories such as Meter Box, GI Pipe, Control Cable etc.

This is to intimate all concerned that following amendments are made in the open tender for Rate Contract for supply of 11KV 3P4W Oil Cooled Combined CTPT Units with other accessories such as Meter Box, GI Pipe, Control Cable etc. floated vide Tender Enquiry No-TPCODL/ P&S/ 1000000064/ 21-22.

Calendar of Events			
Page No/ Clause Ref.	Content	Existing	Modified as
Pg. 3 of 22/ Cl. 1.3 (a)	Date of sale/ availability of tender documents from TPCODL Website	From 22.05.2021 onwards	From 14.06.2021 onwards
Pg. 3 of 22/ Cl. 1.3 (b)	Date by which Interested and Eligible Bidder to pay Tender Fee and confirm participation as mentioned in "Procedure to Participate in Tender"	29.05.2021; 15:00 Hours	18.06.2021 , 15:00 Hrs
Pg. 3 of 22/ Cl. 1.3 (c)	Last Date of receipt of pre-bid queries, if any	03.06.2021 up to 15:00 Hours	22.06.2021 up to 15:00 Hours
Pg. 3 of 22/ Cl. 1.3 (e)	Last Date of Posting Consolidated replies to all the pre-bid queries as received	09.06.2021	25.06.2021
Pg. 3 of 22/ Cl. 1.3 (f)	Last date and time of receipt of Bids	14.06.2021 up to 15:00 Hours	02.07.2021 up to 15:00 Hours

Tender Document

Sl. No.	Page No/ Clause Ref.	Existing Requirement	Amended Requirement
1	Pg. 3 of 22/ Cl. 1.1	Scope of work	Revised in ANNEXURE-A Pg. 3 of 23/ Cl. 1.1
2	Pg. 3 of 22/ Cl. 1.2	Availability of Tender Documents: - Please Refer “Procedure to participate in the e-Tender”.	Revised in ANNEXURE-A Pg. 3 of 23/ Cl. 1.24 Availability of Tender Documents: - Please Refer revised “Procedure to participate in the e-Tender”. (Refer ANNEXURE- B)
3	Pg. 3 of 22/ Cl. 1.3	Calendar of Events	Revised in ANNEXURE-A Pg. 3 & 4 of 23/ Cl. 1.3
4	Pg. 4 of 22/ Cl. 1.7.2	Qualification Criteria :- The bidder should have own manufacturing facility for manufacturing of CT PT / Metering Cubicle units of 11 KV rating. Bidder should submit self-undertaking in this regard. TPCODL reserve the right to confirm the manufacturing facility by visiting bidder's plant / works.	Revised in ANNEXURE-A Pg. 5 of 23/ Cl. 1.7.2 Qualification Criteria :- The bidder should have own manufacturing facility for manufacturing of CT PT / Metering Cubicle units of the voltage rating 11 KV or 33 KV for which CTPT Unit the bidder is quoting in tender. Bidder should submit self-undertaking in this regard. TPCODL reserve the right to confirm the manufacturing facility by visiting bidder's plant / works.
5	Pg. 4 of 22/ Cl. 1.7.4	Qualification Criteria :- The bidder should have supplied 500 nos. of CTPT / Metering Cubicle (11 KV rating) during the last 5 FY years. Copy of work order / completion certificate to be submitted in this regard.	Revised in ANNEXURE-A Pg. 5 of 23/ Cl. 1.7.4 Qualification Criteria :- The bidder should have supplied 500 nos. of CTPT / Metering Cubicle (33 or 11 KV rating) during the last 5 FY years. Copy of work order / completion certificate to be submitted in this regard.
6	Pg. 5 of 22/ Cl. 2.0	Evaluation Criteria :- The bids will be evaluated commercially on overall lowest cost in BOQ Basis as calculated in Schedule of Items [Annexure I] .	Revised in ANNEXURE-A Pg. 5 of 23/ Cl. 2.0 Evaluation Criteria :- The bids will be evaluated commercially on <u>overall lowest cost in Line Item Basis</u> as calculated in Schedule of Items [Annexure I].
7	Pg. 5 of 22/ Cl. 3.1	Bid Submission :- FIRST PART : “EMD” as applicable for the line item(s) shall be submitted.	Revised in ANNEXURE-A Pg. 6 of 23/ Cl. 3.1 Bid Submission :- FIRST PART : Separate “ EMD ” as applicable for the line item(s) (Lot A & B Separately)

			shall be submitted.
8	Pg. 6 of 22/ Cl. 3.1	<p>Bid Submission :- THIRD PART : “PRICE BID” shall contain only the price details and strictly in format as mentioned in Annexure I with explicit break up of basic prices, Taxes & duties, Freight etc.</p>	<p>Revised in ANNEXURE-A Pg. 7 of 23/ Cl. 3.1 Bid Submission :- THIRD PART : “PRICE BID” shall contain only the price details and strictly in format as mentioned in Annexure I (separate Price Bid for Lot-A & Lot-B shall be submitted) with explicit break up of basic prices, Taxes & duties, Freight etc.</p>
9	Pg. 8 of 22/ Cl. 3.8	<p>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 the TPCODL against the risk of bidder’s conduct which would warrant forfeiture</p>	<p>Revised in ANNEXURE-A Pg. 8 & 9 of 23/ Cl. 3.8 Earnest Money Deposit (EMD) :- The bidder shall furnish, as part of its bid, an EMD amounting as specified in the tender. Bidder may participate for supply of either 33KV or 11KV or for supply of both 33 KV & 11 KV CTPT Units. However, EMD shall be submitted LOT wise. The EMD is required to protect the TPCODL against the risk of bidder’s conduct which would warrant forfeiture</p>
10	Pg. 13 of 22/	ANNEXURE I	<p>Revised in ANNEXURE-A Pg. 13 & 14 of 23 (Revised Price-Bid for LOT-A & LOT-B attached)</p>
11	Pg. 14 of 22/	ANNEXURE II	<p>Revised in ANNEXURE-A Pg. 15 of 23/ (Refer ANNEXURE-C)</p>

All other terms and conditions of the above tender remain unaltered.

By Order,
Chief (Procurement & Stores)

ANNEXURE - A

OPEN TENDER NOTIFICATION

FOR

RATE CONTRACT FOR SUPPLY OF 11 KV & 33 KV 3P4W OIL COOLED COMBINED CTPT UNITS WITH OTHER ACCESSORIES SUCH AS METER BOX, GI PIPE, CONTROL CABLE ETC.

Tender Enquiry No.: TPCODL/ P&S/ 1000000064/ 21-22

Due Date for Bid Submission: 02.07.2021 [up to 15:00 Hrs.]

CONFIDENTIAL

**The TP Central Odisha Distribution Limited
2nd Floor, IDCO Towers, Janpath, Bhubaneswar-751022**

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1.0 Event Information

1.1 Scope of work

Open Tenders are invited through e-tender bidding process from interested Bidders for entering into a Rate Contracts valid for a period of **1 Year** as defined below:

Line Item	Item Sl. No.	Description	EMD Amount (Rs.)	Tender Fee inclusive of GST (Rs.)
LOT-A		Supply of 11 KV 3P4W 0.5 CL Oil Cooled Combined CTPT Units along with other accessories such as Meter Box, GI Pipe, Control Cable etc. of CT Ratio	50,000	5,000
	1	10/5 A- 200 Nos.		
	2	20/5 A- 70 Nos.		
	3	30/5 A- 30 Nos.		
	4	60/5 A- 20 Nos.		
	5	100/5 A- 10 Nos.		
LOT-B		Supply of 33 KV 3P4W 0.5 CL Oil Cooled Combined CTPT Units along with other accessories such as Meter Box, GI Pipe, Control Cable etc. of CT Ratio	50,000	5,000
	1	10/5 A- 10 Nos.		
	2	20/5 A- 5 Nos.		
	3	30/5 A- 5 Nos.		
	4	60/5 A- 5 Nos.		
	5	100/5 A- 5 Nos.		
	6	400-200/5 A- 5 Nos.		

Note :

1. Tender fee is inclusive of GST.
2. Bidder may participate for supply of either 33KV or 11KV or for supply of both 33 KV & 11 KV CTPT Outdoor Units. However EMD shall be submitted item wise.
3. The quantity may vary as per actual requirement.

1.2 Availability of Tender Documents

Please Refer revised "Procedure to participate in the e-Tender".

1.3 Calendar of Events

(a)	Date of sale/ availability of tender documents from TPCODL Website	From 14.06.2021 onwards
(b)	Date by which Interested and Eligible Bidder to pay Tender Fee and confirm participation as mentioned in "Procedure	18.06.2021 , 15:00 Hrs

	to Participate in Tender”	
(c)	Date & Time of Pre-Bid Meeting (If any)	NA
(d)	Last Date and time of receipt of pre-bid queries, if any	22.06.2021 up to 15:00 Hours
(e)	Last Date of Posting Consolidated replies to all the pre-bid queries as received	25.06.2021
(f)	Last date and time of receipt of Bids	02.07.2021 up to 15:00 Hours
(g)	Date & Time of opening technical bids & EMD (Envelope-1 & 2)	Participating Bidders will get mail intimation from TPCODL E-Tender system (Ariba) when their Technical Bids are opened. Refer Section 4.2 for details
(h)	Date & Time of opening of Price of qualified bids	Bidders will get mail intimation from TPCODL E-Tender system (Ariba) when their Price Bids are opened (Refer Section 4.5)

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, Bhubaneswar office the last date of submission of bids and date of opening of bids will be the 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 in case the tender is downloaded from website
- 1.4.3 Requisite Documents for compliance to Qualification Criteria mentioned in Clause 1.7.
- 1.4.4 Drawing, Type Test details along with a sample of each item as specified at Annexure I (as applicable)
- 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 Proper authorization letter/ Power of Attorney to sign the tender on the behalf of bidder.
- 1.4.8 Copy of PAN, GST, PF and ESI Registration (In case any of these documents is not available with the bidder, same to be explicitly mentioned in the ‘Schedule of Deviations’)

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:-

- 1.6.1 EMD of requisite value and validity
- 1.6.2 Tender fee of requisite value
- 1.6.3 Price Bid as per the Price Schedule mentioned in Annexure-I
- 1.6.4 Necessary documents against compliance to Qualification Requirements mentioned at Clause 1.7 of this Tender Document.

- 1.6.5 Filled in Schedule of Deviations as per Annexure III
- 1.6.6 Filled in Schedule of Commercial Specifications as per Annexure IV
- 1.6.7 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

1. The bidder should have average annual turnover of Rs.5 Crore in last three years (FY 18-19, FY 19-20 and FY 20-21). Copy of Audited balance sheet, profit and loss account and auditors report from the statutory auditors of the company required.
2. The bidder should have own manufacturing facility for manufacturing of CT PT / Metering Cubicle units of the voltage rating 11 KV or 33 KV for which CTPT Unit the bidder is quoting in tender. Bidder should submit self-undertaking in this regard. TPCODL reserve the right to confirm the manufacturing facility by visiting bidder's plant / works.
3. The bidder should have in-house testing facilities for Acceptance Test as per TPCODL technical specification. Bidder must submit self-undertaking along with list of testing equipment's.
4. The bidder should have supplied 500 nos. of CTPT / Metering Cubicle (33 or 11 KV rating) during the last 5 FY years. Copy of work order / completion certificate to be submitted in this regard.

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 on the compliance to tender terms and conditions.
- The bids will be evaluated commercially on **overall lowest cost in Line Item Basis** as calculated in Schedule of Items [Annexure I]. TPCODL reserves the right to split the order line item wise and / or quantity wise, among more than one Bidder. Hence all bidders are advised to quote their most competitive rates.
- Bidder has to mandatorily quote as per schedule of item [Annexure-I]. Failing to do so TPCODL may reject the bid.

NOTE: In case of a new bidder not registered, 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 Variation Clause: The prices shall remain **FIRM** during the entire contract period.

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: Separate **“EMD”** as applicable for the line item(s) (Lot A & B Separately) 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) 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 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/ 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 : SBIN007891

EMD is strictly 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 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

2ND FLOOR, IDCO TOWERS, JANAPATH, BHUBANESWAR- 751022

SECOND PART: “TECHNICAL BID” shall contain the following documents:

- Documentary evidence in support of qualifying criteria
- Technical literature/GTP/Type test report etc. *(if applicable)*
- Qualified manpower (if available)

- d) Testing facilities (*if applicable*)
- e) No Deviation Certificate as per the Annexure III – Schedule of Deviations
- f) Acceptance to Commercial Terms and Conditions viz Delivery schedule/period, payment terms etc. as per the Annexure IV – Schedule of Commercial Specifications.
- g) Quality Assurance Plan/Inspection Test Plan for supply items (*if applicable*)

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.

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

THIRD PART: “PRICE BID” shall contain only the price details and strictly in format as mentioned in Annexure I (separate Price Bid for Lot-A & Lot-B shall be submitted) with explicit break up of basic prices, Taxes & duties, Freight 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.**

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 the 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.

3.2 Contact Information

Please note all 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.

Communication Details:

Package Owner

Name: Mr. Tapas Ranjan Rout
Designation: Dy. Manager – Procurement (Commercial Services)

Contact No: 9439783444
E-Mail ID: tapas.rout@tpcentralodisha.com

Escalation Matrix

Name: Mr. Sudhakar Behera
Designation: General Manager – Procurement (Commercial Services)
Contact No: 9437282663
E-Mail ID: sudhakar.behera@tpcentralodisha.com

Name: Mr. Pravin Ku Jain
Designation: Chief (Procurement & Stores)
E-Mail ID: pravin.jain@tpcentralodisha.com

Bidders are strictly advised to communicate with Package Owner through TPCODL E-tender System (Ariba) only. They need to pay Tender Participation Fee and receive the Ariba log-in. Above escalation details are for reference purpose only.

3.3 Bid Prices

Bidders shall quote for the entire Scope of Supply / work with a break up of prices for individual items and Taxes & duties. 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.

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 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.

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. **Bidder may participate for supply of either 33KV or 11KV or for supply of both 33 KV & 11 KV CTPT Units. However EMD shall be submitted LOT wise.** The EMD is required to protect the 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 of:

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

Or

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

i) accept the purchase order, or

ii) furnish the required performance security BG

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.

4.0 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 the rejection of the Bidder's Bid.

4.2 Technical Bid Opening

The bids shall be opened internally by TPCODL. Participating Bidders will get mail intimation from TPCODL E-Tender system (Ariba) when their Technical Bids are opened.

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.

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/or 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 Bid of only Technically and / or safety qualified Bidders shall be considered and open internally by TPCODL. Bidders will get mail intimation from TPCODL E-Tender system (Ariba) when their Price Bids are opened.

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.

4.7 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.

5.0 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 quoted by bidder in Annexure I (Schedule of Items) subject to any corrections required in line with Clause 4.3 above. The decision to place rate contract / 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.

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

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

6.0 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. Post Award Contract Administration (Clause 7.0)

3. Submission of Bid Documents (Clause 3.0)
4. Scope of Work and SLA (if any)
5. Technical Specifications (Annexure II)
6. Inspection Test Plan (if any)
7. Acceptance Form for Participation in Reverse Auction (Annexure VI)
8. General Conditions of Contract (Annexure VII)

7.0 Post Award Contract Administration

7.1 Special Conditions of Contract

- After finalization of tender, Rate Contract shall be issued on successful bidder with a validity period of **One Year**. Prices shall remain firm till validity of issued rate contract. Within the validity of rate contract and as per requirement of material, release order shall be issued time to time.
- Business Associate (BA) shall submit applicable Performance Bank Guarantee as per GCC within 30 days of issuance of rate contract. PBG applicable shall 5% of Rate Contract Value. PBG submitted, shall be released after completion of applicable guarantee period plus one month.
- Guarantee applicable shall be as per technical specifications.
- **Within 30 days of Rate Contract issuance by TPCODL, it is the responsibility of BA to get manufacturing clearance and CAT-A issued from TPCODL.** In case BA does not get necessary approvals for issuance of CAT-A within mentioned / mutually agreed timelines, then TPCODL reserve the right to cancel issued rate contract / release order and also reserve the right to forfeit EMD / PBG.
- Delivery period shall be 60 days from date of receipt of release order / CAT-A issuance, whichever is later.
- TPCODL shall short close the issued Release Order / Rate contract, in case of any quality issues.
- Any change in statutory taxes, duties and levies shall be borne by TPCODL.
- All other terms and conditions of TPCODL GCC shall be applicable.

7.2 Drawing Submission & Approval

The relevant drawings and GTPs need to be submitted as per special condition of contract mentioned in point no. 7.1.

7.3 Delivery Terms

The delivery of material shall be made as per special condition of contract mentioned in point 7.1.

7.4 Guarantee Period

Guarantee Period of the supplied material shall be as per technical specification attached separately with this tender.

7.5 Payment Terms

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 45 days** from the date of submission of certified bills/ invoices

7.6 Climate Change

Significant quantities of waste are generated during the execution of project and an integrated approach for effective handling, storage, transportation and disposal of the same shall be adopted.

This would ensure the minimization of environmental and social impact in order to combat the climate change

7.7 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.
- 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 GCC attached for more information.

Any ethical concerns with respect to this tender can be reported to the following e-mail ID: purchase@tpcentralodisha.com.

8.0 Specification and standards:

Attached separately with tender.

9.0 General Condition of Contract

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

10.0 Safety

Safety related requirements as mentioned in our safety Manual is put in the Company's website and same shall be strictly followed.

<http://www.tpcentralodisha.com>

All Associates shall strictly abide by the guidelines provided in the safety manual at all relevant stages during the contract period.

ANNEXURE I (LOT-A)
Schedule for Items

Line Item	Item Sl. No.	Description	Qty Q	UoM	Ex. Work (in Rs.) A	GST (in Rs.) B	Unit Price with GST (in Rs.) A+B	Amount (in Rs.) Q x (A+B)
1	2	3	4	5	6	7	8	9
LOT-A		Supply of 11 KV 3P4W 0.5 CL Oil Cooled Combined CTPT Units along with other accessories such as Meter Box, GI Pipe, Control Cable etc. of CT Ratio						
	1	10/5 A	200	EA				
	2	20/5 A	70	EA				
	3	30/5 A	30	EA				
	4	60/5 A	20	EA				
	5	100/5 A	10	EA				
		TOTAL	330					

NOTE:

- The overall period of the rate contract shall be for a period of 1 years and prices shall be firm till the validity of contract. Release order shall be issued as per requirement of TPCODL.
- The bids will be evaluated commercially on the overall lowest cost in Line Item basis.
- The unit price with GST in column no. 8, is landed price for TPCODL at their Central store Bhubaneswar / Cuttack.
- The bidders are advised to quote prices strictly in the above format. Failing to do so, bids are liable for rejection.
- 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.**
- No cutting/ overwriting in the prices is permissible.
- The quantity may vary as per actual requirement.

Signature & Seal of the Bidder

ANNEXURE I (LOT-B)
Schedule for Items

Line Item	Item Sl. No.	Description	Qty Q	UoM	Ex. Work (in Rs.) A	GST (in Rs.) B	Unit Price with GST (in Rs.) A+B	Amount (in Rs.) Q x (A+B)
1	2	3	4	5	6	7	8	9
LOT-B		Supply of 33 KV 3P4W 0.5 CL Oil Cooled Combined CTPT Units along with other accessories such as Meter Box, GI Pipe, Control Cable etc. of CT Ratio						
	1	10/5 A	10	EA				
	2	20/5 A	5	EA				
	3	30/5 A	5	EA				
	4	60/5 A	5	EA				
	5	100/5 A	5	EA				
	6	400-200/5 A	5	EA				
		TOTAL	35					

NOTE:

- The overall period of the rate contract shall be for a period of 1 years and prices shall be firm till the validity of contract. Release order shall be issued as per requirement of TPCODL.
- The bids will be evaluated commercially on the overall lowest cost in Line Item basis.
- The unit price with GST in column no. 8, is landed price for TPCODL at their Central store Bhubaneswar / Cuttack.
- The bidders are advised to quote prices strictly in the above format. Failing to do so, bids are liable for rejection.
- 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.***
- No cutting/ overwriting in the prices is permissible.
- The quantity may vary as per actual requirement.

Signature & Seal of the Bidder

ANNEXURE II

**Technical Specifications –
Attached separately with the tender.**

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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:

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.)

S. No.	Particulars	Remarks
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 Excise Duty	Yes / No (If Yes, indicate % rate)
1d.	Sales tax applicable at concessional rate	Yes / No (If Yes, indicate % rate)
1e.	Octroi payable extra	Yes / No (If Yes, indicate % rate)
1f.	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 technical 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.)

Signature & Seal of the Bidder

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 RFQ	
3	Company profile/ organogram	
4	Signed copy of this RFQ 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	

Signature & Seal of the Bidder

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 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 VII

**General Conditions of Contract –
Attached separately with the tender.**

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Annexure VIII

**Safety Policy and Safety Terms and Conditions –
Attached separately with the tender.**

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Annexure IX

Tata Code of Conduct (TCoC) –
Attached separately with the tender.

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Annexure X

Environment & Sustainability –
Attached separately with the tender.

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ANNEXURE - B



Procedure to Participate in Tender (Revised)

Tender Enquiry No	Work Description	EMD (Rs.)	Tender Participation Fee (Rs.)	Last Date and Time for payment of Tender Participation Fee
TPCODL/ P&S/ 1000000064 / 21-22	Open Tender for Rate Contract for supply of 11KV & 33KV 3P4W Oil Cooled Combined CTPT Units with other accessories such as Meter Box, GI Pipe, Control Cable etc.	50,000/ 50,000	5000	18.06.2021, 15.00 Hrs

Please note that corresponding details mentioned in this document will supersede any other details mentioned anywhere else in the Tender Document.

Procedure to Participate in Tender.

Following steps to be done before “Last date and time for Payment of Tender Participation Fee” as mentioned above

1. Eligible and Interested Bidders to submit duly signed and stamped letter on Bidder's letter head indicating
 - a. Tender Enquiry number
 - b. Name of authorized person
 - c. Contact number
 - d. e-mail id
 - e. Details of submission of Tender Participation Fee
 - f. GST Number
2. Non-Refundable Tender Participation Fee, as indicated in table above, to be submitted in the form of

Direct deposit in the following bank account and submit the receipt along with a covering letter clearly indicating the Tender Reference/ Enquiry Number –

Beneficiary Name – TP Central Odisha Distribution Ltd.
Bank Name – STATE BANK OF INDIA
Branch Name – IDCO Towers, Bhubaneswar
Address – PO- Sahidnagar, Janapath, Bhubaneswar.
Branch Code – 7891
Account No – 10835304915
IFSC Code – SBIN0007891

E-mail with necessary attachment of 1 and 2 above to be sent to tapas.rout@tpcentralodisha.com with copy to sudhakar.behera@tpcentralodisha.com and Pravin.jain@tpcentralodisha.com before last date and time for payment of Tender Participation Fee.



Interested bidders to submit Tender Participation Fee and Authorization Letter before Last date and time as indicated above after which link from TPCODL E-Tender system (Ariba) will be shared for further communication and bid submission.

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). User manual to guide the bidders to submit the bid through E-Tender system (Ariba) is also enclosed.

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

Also it may be strictly noted that once date of “Last date and time for Payment of Tender Participation Fee” is lapsed no Bidder will be sent link from TPCODL E-Tender System (Ariba). Without this link vendor will not be able to participate in the tender. Any last moment request to participate in tender will not be entertained.

Any payment of Tender Participation Fee / EMD by Bidder who have not done the prerequisite will not be refunded.

Also all future corrigendum's to the said tender will be informed on Tender section on website <https://www.tpcentralodisha.com>.

ANNEXURE - C

ANNEXURE-II

(LOT-A)

TECHNICAL SPECIFICATION FOR

**11KV, 3P4W Oil cooled, Combined CTPT Units with
Other Accessories Such as Meter Box, GI Pipe, Control
Cable etc.**



**TECHNICAL SPECIFICATION FOR
11KV, 3P4W, 0.5 ACCURACY CLASS, CT PT COMBINED, OIL COOLED
METERING UNITS**

1.0 Scope:

This specification covers designing, manufacturing, assembling, stage testing, inspection, supply, loading at factory, transportation to stores, unloading at stores of **11KV, of different ratio 3P4W, 0.5 accuracy class, CTPT Combined, Oil Cooled Metering Units.**

2.0 Standard:

Except where modified by this specification the component parts of the equipment shall comply with the following IS available (the latest versions).

Current Transformers	:	IS	2705/1992
Potential Transformers	:	IS	3156/1992
HV Porcelain Bushing	:	IS	2099/1986
Oil	:	IS	335/1983
Electric strength for insulation oil	:	IS	6792/1992
Galvanization	:	IS	2633
Primary Terminals	:	IS	10601

3.0 Type & Rating:

3.1 Metering Unit Type:-

- a) The 3P4W, metering transformer equipment should be of pole mounting type for outdoor use.
- b) They are to be used in 11KV Three Phase system with solidly earthed neutral and should also be suitable for 3 Phase 3 Wire 50 Hz network.
- c) The equipment is required for operation of HT Tri-vector Meters and should be oil cooled.

3.2 Metering Unit Rating:-

The 11KV, 3P4W, CTPT sets shall have the following ratings.

i	Rated Voltage	11 KV
ii	Highest system voltage	12 KV
iii	Insulation level	12 KV
iv	Standard Impulse withstand voltage	75 KV Peak
v	One minute power frequency withstand Voltage	
a)	Primary:	28 KV
b)	Secondary	3 KV
vi	Short time thermal current and its duration	16KA for 1sec.
vii	Class of Accuracy	0.5
viii	Rated burden per Phase	For CTs : 15 VA
		For PTs : 50 VA

ix	Frequency	50 HZ
x	Maximum attainable winding temperature	80 deg C
xi	Minimum Phase to Phase distance	255 mm
xii	Shortest distance between metal part & earth	190 mm
xiii	Creepage distance of HV bushing	300mm (Min)
xiv	Thickness of MS Tank	Min 5mm for top cover & 3.15 mm bottom & all other side
xv	Galvanization	Entire tank including secondary chamber shall be hot dip galvanized
xvi	Bi-metallic terminal connector	Bi-metallic terminal connector with a nut, plane washer, spring washer & check nut suitable for aluminum conductor required for different rating of metering units. Six nos to be provided with each metering units.
xvii	Minimum volume of oil	Shall not be less than 45 ltrs.

4.0 Design:

4.1 The equipment shall be designed to ensure satisfactory operation under all conditions of service to facilitate easy inspection, cleaning and repairs.

4.2 The design shall incorporate every reasonable precaution and provisions for safety of all those concerned in the operation and maintenance of the equipment. A **pressure relief valve with metallic cap** shall be invariably provided to the CTPT set. It shall be provided at the top cover of the tank.

All outdoor apparatus shall be so designed that water cannot collect at any point and enter the CT/PT set. The top cover of the tank, secondary terminal cover, inspection chamber cover plate may be designed accordingly. All outdoor apparatus shall be so designed that water cannot collect at any point and enter the CT/PT set. The top covers of the tank, secondary terminal cover, inspection chamber cover plate are suitable bent at the edges (**at least 25mm bent**) so that the gaskets are not exposed to moisture.

4.3 All connections and terminals shall be of sufficient size for carrying the specified currents continuously without undue heating.

4.4 All bolts, nuts, washers in contact with non-ferrous parts shall be of brass.

4.5 All ferrous parts including bolts & nuts liable to corrosion, forming integral part of the equipment shall be smoothly and continuously hot dip galvanized.

4.6 The secondary terminal box with double door arrangement (Inner & Outer) and oil gauge shall be provided with Metering Units. The inner door of the secondary chamber should be of hinge type with suitable handle/knob& sealing arrangement.

4.7 The core shall be high grade non-ageing electrical silicon laminated steel of low hysteresis loss and high permeability to ensure high accuracy, at both normal and over current/voltage.

4.8 All winding shall be of insulated high grade Electrolytic copper wire and the manufacturing of the units shall be done in completely closed and air-conditioned room otherwise Fiber glass

insulation sleeves are to be provided for primary winding. Details of winding and core shall be furnished.

- 4.9 The CTPT set should have Three CTs and One three phase PTs with star / star connection.

5.0 Sealing:

Sealing bolts for sealing at 4 points on the secondary terminal box (both inner & outer door) and the top cover of the tank shall be provided. This may be made by providing a hole on tail of corner bolts of adequate size to pass the sealing wire of above 13 SWG.

6.0 Fluctuation In Voltage And Frequency:

For continuous operation entire equipment shall be subjected to variation of voltage up to +20% & -30% of rated voltage and frequency of +/- 5% of rated frequency.

7.0 Instrument Transformers (CT & PT):

- 7.1 The voltage and current transformers shall have normal continuous rating as per the schedule of requirement.
- 7.2 The voltage transformer shall be so designed that the increased magnetizing currents due to any persisting over voltage, does not produce injurious overheating. **Phase barriers shall be provided.**
- 7.3 The peak value of the rated dynamic current shall not be less than 2.5 times the rated short time thermal current unless stated otherwise. (6.6.2 of ISS : 2705/Part-I of 1992, latest version).
- 7.4 **Modified Polyester Enamel Copper Wire** is to be used for winding and it shall conform to IS-4800/ Part-V (latest version).
- 7.5 The terminals of the Instrument Transformer shall be clearly marked by distinctive letters as stated in Annex 'C' of IS : 3156/ Part I/ 1992 (latest version) for voltage transformer and Annex "C" of IS-2705/ Part.I/ 1992 (latest version) for current transformers.
- 7.6 The winding shall be neatly laid and anchored.
- 7.7 The metering set tank and other metal parts shall be galvanized both inside & outside as per latest IS applicable.

8.0 Incoming side:

8.1 Terminals:-

Brass rods 12 mm dia up to 20A & 16mm dia >20A for Primary and 6 mm dia for secondary. The lugs shall be properly crimped & brazed.

8.2 Bushing for outgoing side of CT/PT set:-

- 8.2.1 The porcelain portion of HT bushings shall be of standard make and conform to IS-2099/1986.
- 8.2.2 The dimensions of the bushings shall conform to IS: 3347/ Part.III/ 1972. The minimum phase-to-phase clearance shall be as per IS/GTP.
- 8.2.3 The bushings shall be of reputed manufacturers which are having complete testing facilities. It should be ISI marked.
- 8.2.4 The bushing stems shall be provided with suitable bimetallic connectors so as to connect the jumper without disturbing the bushing stem. The bush rod stem length should be at least 40 mm and 3 nuts with 2 flat washers of brass material should be provided with each bush rod.

9.0 Steel Tank:

- 9.1 The oil filled container incorporating the voltage transformers and current transformers should be fitted with incoming and outgoing primary terminals and secondary terminal box. The secondary terminal box shall be arranged on sides. The general arrangement drawing with 3 bushing on the incoming side and 3 bushings on the outgoing side shall be submitted along with tender. Adequate level of oil shall be maintained in the tank for proper cooling & curb flashover.

- 9.2 The tank shall be built with a plate of 5 mm thick top and 3.15 mm sides and bottom and with all fittings shall be capable of withstanding without leakage or distortion at the standard test pressure. All joints of the tank and fittings shall be hot oil tight and no leakage should occur during service. Both side of the joint should have continuous welding.
- 9.3 It shall be provided with an oil gauge. The oil gauge glass shall be fixed to the side of the raised wall of the inspection box.
- 9.4 The tank shall be provided with necessary lifting lugs. Tank including top cover shall be hot dip Galvanized.
- 9.5 The secondary terminal box cover, tank cover and other vertical joints where gaskets are used may be suitably bent at least **25 mm** bent with necessary sealing arrangement **with sealing bolts at all corners and bolts should be at least 10 mm diameter GI bolts spaced maximum 70 mm apart**. This is to safeguard against seepage of water into tank in case of damaged gasket. Eye holes shall be made in all bolts used in the tank, inspection chamber, secondary chamber, fixing of bushings for sealing.
- 9.6 The **6 mm** gaskets shall be dovetailed without joints to prevent moisture entry. In case of dovetailed joint, they shall not be more than two. The gaskets shall be of good quality **Neoprene** or **superior quality rubberized gasket**.
- 9.7 **Earthing:-**
Two earthing terminals shall be adequate size protected against corrosion and metallicly clean and identified by means of the sign marked in a legible and indelible manner on or adjacent to the terminals.
- 9.8 All bolts should be provided with 2 flat washers and a spring washer with a nut.
- 9.9 Conservator should not be provided for these CTPT sets.
- 9.10 The Secondary terminal box incoming hole should be 32 mm diameter and at a suitable height from bottom to avoid replacement/ modification of secondary wires pipe when CTPT set is replaced. The secondary terminals size should be 6 mm diameter, 25 mm stem length, 2 flat washers with 3 nuts of brass material should be provided. The terminals should be provided at least 70 mm height from incoming hole and clearances shall be as per IS to avoid shorting terminals due to secondary wires pipe.
- 9.11 Secondary chamber shall have double door (inner & outer) with suitable arrangement for sealing of both the doors. The inner door shall be of transparent polycarbonate so that secondary terminal connections can be viewed without breaking the inner door seals. The inner door shall be provided with suitable handle/knob.
- 9.12 **Meter BOX, GI Pipe , Control Cable**
The meter box, GI pipe and secondary wiring shall be provided with each unit.
The meter box shall be made of MS with thickness of 2 mm and dimensions of approx 500 mm (L) X 400 mm (D) X 400mm (H) and **shall be hot dip galvanized** and shall be suitable to accommodate Purchaser's HT Trivector meter. The meter box shall have degree of IP55 for protection against dust and water. The meter box shall have only front opening with two doors in order to make the meter chamber pilfer proof as well as tamper proof. The outer door and inner door shall be made of MS with provision of window made of transparent toughened glass and fitted with wire mesh for meter reading. The transparent sheet of acrylic or other polymer is not acceptable for door window. The outer door shall be provided with at least one locking and two nos. sealing arrangements. Necessary sealing arrangements shall also be provided on the inner door of the meter chamber along with the provision of window to enable meter reading. A frame of slotted hanger shall be provided inside the Meter box on which the meter shall be mounted.

A **GI pipe shall be hot dip galvanized** and should be of 40 mm outer dia. and 6000 mm length with flanges welded at both ends shall be supplied with each unit. One of the flanges provided on either ends of the GI pipe shall be bolted to the bottom of secondary terminal box of the CT/ PT unit. The bolts used for tightening the flanges shall have sealing arrangement.

1.1KV, 10 core X 2.5 sq mm, PVC insulated, **multi strand**, armoured, Copper cable with color coding, thimble (bottle type one side and ring type another side) and ferrule along with marking shall be provided from secondary terminal box of CT PT unit to meter box through GI pipe. The marking on ferrule shall be RS1, R, RS2 for R phase, YS1, Y, YS2 for Y phase, BS1, B, BS2 for B phase and N for neutral. The wiring shall be neatly bunched together and length of cable shall be 07 meter. Suitable size of lugs shall be used to tighten the wire with the unit's secondary terminals. For the mounting of the meter box on the channel two flat plates of 5mm thick with hole for M16 bolt shall be provided on either side at top corners of the box along the axis and also at side wall bottom edge along the height.

The CT/PT unit shall be complete in all respects. Any fitting, accessories or apparatus which may not have been specifically mentioned in this specification but which is/ are considered necessary shall be deemed to have included. All the bolts and iron material used shall be hot dip galvanized.

10.0 Mounting Arrangement:

The under base of all CTPT sets shall be provided with two 75 x 40 mm GI channels and foundation dimensions shall be suitable placing with tank base uniform for all sets with only +/- 2 mm tolerance, to avoid modification of structure/ plinth, whenever CTPT set is replaced.

11.0 Oil:

The insulation oil used in the tank shall comply with the requirements specified in relevant IS: 335/ 93 (latest revision) and Annexure-II

12.0 Guaranteed Technical Particulars:

The Technical Particulars as specified in IS shall be guaranteed. Each bidder should furnish the particulars required and guarantee the values so furnished for the supplies in Annexure -I.

13.0 Tests:

13.1 Type Tests:-

13.1.1 The equipment offered shall be fully type tested from Govt. approved laboratory such as CPRI/ ERDA / ERTL etc or any NABL accredited laboratory by the bidder as per the relevant standards.

13.1.2 The bidder shall furnish copies of Type Test Reports with the bid for the offered material.

13.1.3 The bidders also furnish type test certificates for bushings and oil along with the bid. **The type test certificates shall be not older than 5 years from the date of opening of bid.**

13.1.4 Type Tests For CTs (as per IS-2705:1992Part-1)

1. Verification of terminal marking and polarity
2. Short time current Test.
3. Temperature rise test.
4. Lightning Impulse Test.
5. High Voltage Power frequency wet withstand voltage test.
6. Determination of errors or other characteristics according to the requirements of the appropriate designation or accuracy class.

13.1.5 Type Tests For PTs (as per IS-3156:1992Part-1)

1. Verification of terminal marking and polarity

2. Temperature rise test.
3. Lightning Impulse test
4. High voltage Power frequency wet withstand voltage test.
5. Determination of errors according to the requirements of appropriate accuracy class.

13.1.6 Type Tests For Transformer Bushings (as per IS2099/1986)

1. Wet power frequency voltage with stand test.
2. Dry lightning impulse voltage with stand test.
3. Temperature rise test.
4. Thermal short time current withstand test.
5. Cantilever load withstand test.

13.2 Acceptance and Routine Tests:-

The following shall be conducted at factory premises for acceptance of material.

1. Verification of Terminal marking and polarity.
2. Power frequency/ dry withstand tests on primary windings.
3. Power frequency dry withstand tests on secondary windings.
4. Determination of errors according to the requirements of the appropriate accuracy class.
5. Temperature rise Test
6. **Air pressure test on empty tank of transformer opened for physical verification test (One per each lot offered during pre-dispatch inspection)**

13.3 Immediately after finalization of the program for testing, the manufacturer shall give advance intimation (minimum of two weeks in advance) to the purchaser, to enable him to depute his representative for witnessing the tests where the equipment is ready for testing and inspection.

13.4 All acceptance and routine tests as stipulated in the relevant standards for CTs & PTs shall be carried out by the supplier in presence of purchaser's representatives.

14.0 Drawings:

Two sets of drawings showing clearly the general arrangements, sectional views, fitting details, electrical connections, foundation details, overall dimensions (length, breadth & height) and design features of each component/part should accompany the tender. The bidder has to submit clear & detail drawing with description how he will arrange the double door system in secondary chamber with sealing. Technical leaflets giving the operating instructions should also be furnished along with tender. **Tenders without details are liable to be rejected.**

15.0 Deviations:

Any deviation(s) from the specified specifications of CTPT set (MU) and Standard Lab (CPRI/ ERDA etc.) Type Tested CTPT set (MU) along with detailed reasons for deviations shall be submitted along with tender.

16.0 Tolerances:

Unless otherwise specified herein the test value of the transformers supplied should be within the tolerance limit permitted in the IS on the guarantee values.

17.0 Inspection:

17.1 Inspection & Testing of MUs:-

- 17.1.1** The supplier will keep the Purchaser informed in advance of the time of the starting and the progress of manufacture of equipment in its various stages so that arrangement could be made for inspection. The accredited representative of the TPCODL will have access to the

supplier's or his subcontractor's work at any time during working hours for the purpose of inspecting the materials during manufacturing of the materials / equipment and testing and may select test samples from the materials going into plant and equipment. The supplier will provide the facilities for testing such samples at any time including access to drawings and production data at no charge to Purchaser. As soon as the materials are ready the supplier will duly send intimation to TPCODL and carry out the tests in the presence of representative of the TPCODL. At the time of factory inspection a **random sample of 20 nos or 20% of the offered quantity** which is more will be tested and firm will submit routine test report of all metering units basing upon which dispatch instruction will be issued. TPCODL may if deemed fit, can waive off the inspection of material subject to testing of material on receipt in TPCODL store in presence of vendor representative.

- 17.1.2 TPCODL may at its option get the materials inspected by the third party if it feels necessary.
- 17.1.3 The dispatches should be done after Material Dispatch Clearance Certificate (MDCC) is issued by TPCODL based inspection by the TPCODL Officer or if such inspection is waived by the competent authority.
- 17.1.4 The acceptance of any quantity of materials will in no way relieve the supplier of its responsibility for meeting all the requirements of this specification and will not prevent subsequent rejection if such materials are later found to be defective or deviation from specification/IS.
- 17.1.5 The supplier will give 15days advance intimation to enable the Purchaser depute its representative for witnessing the acceptance and routine tests.
- 17.1.6 Should any inspected or tested materials / equipment fail to conform to the specification, the Purchaser may reject the materials and supplier will either replace the rejected materials or make alterations necessary to meet specifications requirements free of costs to the Purchaser.
- 17.1.7 After delivery of materials at TPCODL Store 100% ordered materials may be collected & tested at purchaser own laboratory before acceptance. In case of any deviation to the specification, GTP, IS found during the tests the lot will be rejected or will be replaced by supplier.

17.2 Inspection and Testing Of Transformer Oil

To ascertain the quality of transformer oil the manufacturer's test report should be submitted at the time of inspection. Arrangements should also be made for testing the transformer oil, after taking out the samples from the manufactured CTPT sets and tested in the presence of TPCODL representative (or) if desired, in an independent laboratory.

18.0 Sealing of MU(s) After Testing and Individual Test Reports:

- 18.1 After witnessing physical inspection of all offered MUs and testing of random sample of 20 nos or 20% of the offered quantity which ever is more, the purchaser's representative will seal all offered MUs with numbered plastic seals at TWO opposite corners of tank and Secondary Chamber, for delivery of correct inspected materials only.
- 18.2 The manufacturer has to provide test report duly mentioning all test results, seals numbers and Name & Designation of purchaser's representative after inspection is over. The seals number shall also be mentioned in the test reports signed by purchaser's representative submitted for delivery instructions.

19.0 Deviation from specification:

If the bidder wishes to deviate from this specification in any respect, he shall draw the attention to such points of deviation explaining fully the reasons thereof. Unless this is done the requirements of this specification will be deemed to have been accepted in every respect.

20.0 Name Plate:

The following additional details shall be embossed / punched / casted/ laser printed on a metallic plate with at least 10 mm letter size and the name plate shall be of non-detachable type & fixed with rivets (not with bolts & nuts). The respective sides shall be painted “ INCOMING, OUTGOING, Sl. No., CT Ratio, R, Y, B” with suitable font readable from 30feets.

- a) Make- Name of Manufacturer
- b) Ratio (CT & PT)/ Frequency(CT&PT)
- c) Rated Output and corresponding Accuracy Class (CT &PT)
- d) Highest System Voltage, Insulation Level & Short time Thermal Current (CT&PT)
- e) Rated voltage factor & corresponding rated time
- f) Number of phases & method of connection (connection diagram)
- g) Earthed / Unearthed
- h) Reference standard
- i) Serial No. & Type Designation
- j) Month & Year of Manufacturing
- k) Guarantee- 66months
- l) Purchase Order No. and Date.
- m) PROPERTY OF TPCODL,ODISHA

21.0 Guarantee:

The supplier shall give Guarantee for the satisfactory functioning of the material / equipment as per specification, for a minimum period of 60 months from date of commissioning or **66 months from the last date of receipt of material in good condition at departmental store for each consignment whichever is earlier**. The bidder shall be liable to undertake the replacement or rectify defects at his own cost within mutually agreed timeframe. The bidder shall further be responsible for free replacement for another period of three years from the end of guarantee period for any “latent defect” if noticed and reported to purchaser.

22.0 The supplier shall mention the source of all materials. He shall also mention the name of the supplier for conductor, Transformer oil, Electrical Steel Laminations, Construction Steel etc.

23.0 Fittings:

The following standard fittings shall be provided with the Metering Units.

Sl No	Particulars	Quantity
1	Rating and terminal marking plates non detachable	1No.
2	Earthing terminals with bolt, nuts & washers for connecting earth wire	2Nos
3	Lifting lugs	
a)	for main tank	4Nos
b)	for top cover	2Nos
4	Pressure relief valve with metallic cap	1 No
5	Bimetallic terminal connectors on the HV bushings	6 Nos
6	HV bushings Outdoor	6 Nos

7	Secondary terminals bushings	as per requirement of CT ratio
8	Base Channel	2Nos

ANNEXURE - 1

GURANTEED TECHNICAL PARTICULARS

For Supply of 11KV, 3P4W, 0.5 accuracy class, CTPT Combined, Oil Cooled Metering Units

Sl. No	Particulars	Requirement	Bidder's offer
1	Manufacturer's Name & Address	To be indicated	
2	Manufacturer's Type & Design	To be indicated	
3	Type of cooling	To be indicated	
4	Nominal System Voltage	11 KV	
5	Highest System Voltage	12 KV	
6	Frequency.	50 HZ	
7	Specification of CT & PT of Metering Unit		
(A)	Current Transformer		
i	Type	Oil immersed	
ii	Accuracy Class	0.5	
iii	Rated output	15 VA	
iv	Insulation level	28 KV _{rms} / 75 KV _{pk}	
v	Short time thermal current rating for 1 sec	16KA for 1sec.	
vi	Saturation factor	To be indicated	
vii	Normal current density of primary winding	≤1.6 Amps per Sq.mm	
Viii	Knee Point Voltage	To be indicated	
ix	Continuous percentage over load	120%	
x	ISF	As per IS	
(B)	Potential Transformer		
i	Type	Oil immersed	
ii	PT ratio	11KV/√3/ 110V/ √3	
iii	Rated output VA/phase	50VA	
iv	Class of accuracy	0.5	
v	Insulation level	28 KV _{rms} / 75 KV _{pk}	
vi	Winding connection	Star/Star	
vii	Rated voltage factor & duration	To be indicated	
8	Details of Metering Unit		

(A)	Current Transformer		
I	Weight of core and winding		
i	Core	To be indicated in a separate sheet for each rating	
ii	Primary winding		
iii	Secondary winding		
II	Resistance of winding per phase at 75° C		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
III	Cross section area of each turn of winding (in sq. mm.)		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
IV	No. of turns		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
V	Winding material type		

i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
VI	Core material type	To be indicated in a separate sheet for each rating	
(b)	Potential Transformer		
I	Weight of core and winding		
i	Core	To be indicated in a separate sheet for each rating	
ii	Primary winding		
iii	Secondary winding		
II	Resistance of winding per phase at 75° C		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
III	Cross section area of each turn of winding (in sq. mm.)		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
IV	No. of turns		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
V	Winding material type		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		

VI	Core material type	To be indicated in a separate sheet for each rating	
(C)	MS Tank		
I	Construction Material	MS Hot dip Galvanized tank	
II	Galvanization of Tank	Metering Unit tank including top cover ,secondary chamber shall be hot deep galvanized.	
III	Tank Dimension in mm		
i	Length	To be indicated	
ii	Breadth	To be indicated	
iii	Height	To be indicated	
IV	Thickness		
i	Side walls, Bottom.	3.15mm	
ii	Top	5 mm	
V	Edge bending	To be provided in the Top Cover	
VI	Standard pressure & duration that can be withstand.	To be indicated	
(D)	Oil		
i	Grade of oil	To be indicated	
ii	Quantity of oil in ltr	To be indicated (min 45 ltr)	
(E)	HV Bushing		
i	Type	To be indicated	
ii	Make	To be indicated	
iii	Creepage distance of HV bushing	300mm (Min)	
iv	Bi-metallic terminal connector	6 nos Bi-metallic terminal connector with nut, plain washer, spring washer & check nut suitable for aluminum conductor as per CT rating to be provided	
(F)	Gasket Details		
I	Type of Gasket to be used on		
i	Top cover tank	To be indicated	
ii	Secondary terminal box	To be indicated	
iii	HV bushings	To be indicated	
II	Thickness of Gasket to be used on		
i	Top cover tank	To be indicated	
ii	Secondary terminal box	To be indicated	
iii	HV bushings	To be indicated	

(G)	Studs Details		
I	Primary Stud		
i	Material	To be indicated	
ii	Size	M12 upto 20A & M16 > 20A	
II	Secondary Stud		
i	Material	To be indicated	
ii	Size	M6	
III	Gap between I/C & O/G Studs of same phase	Minimum 15° angle with the vertical axis to maintain a good distance at stud levels.	
(H)	Identification/ Marking		
I	Primary terminals		
i	Incoming	RM, YM, BM	
ii	Outgoing	RL, YL, BL	
(I)	Secondary terminals		
i	CT marking	RS1- RS2-RS3, YS1-YS2-YS3, BS1-BS2-BS3	
ii	PT marking	R, Y, B, N	
(J)	Clearance		
I	Minimum phase to phase distance	255mm	
ii	Shortest distance between metal part & earth	190mm	
(K)	Meter Box	As per tender requirement.	
i.	Material and Thickness of the Meter Box	mm	
ii	Protection against penetration of dust and water.		
iii	Dimensions		
iv.	Locking and sealing arrangement	Yes/ No	
(L)	G I Pipe	As per tender requirement.	
i.	Size	Mm	
ii	Length	Mm	
(M)	Secondary Wire	As per tender requirement.	
i.	Size	mm	
ii	Type		
iii	Lugs provided	Yes/ No	

iv	Ferrule Provided	Yes/ No	
v	Cable length	mtr	
9	Total weight of complete MU including all accessories and oil	To be indicated	
10	Maximum attainable winding temperature	80° C	
		Secondary chamber shall have double door (inner & outer) with suitable	
11	Double door type Secondary Chamber & sealing arrangement	Arrangement for sealing of both the doors. The inner door shall be of transparent polycarbonate so that secondary terminal connections can be viewed without breaking the inner door seals. The inner door of the secondary chamber should be of hinge type with suitable handle/knob& sealing arrangement.	
12	Name Plate	As per tender requirement.	
13	Sealing arrangements	The secondary terminal box cover, tank cover sealing arrangements have to be done with sealing bolts at all corners and bolts should be at least 10 mm diameter GI bolts spaced maximum 70 mm apart. Sealing holes also to be provided in the bolts fitted with bushing & body for sealing, so that one can not open the bushing with out breaking seals. Eye holes shall be made in all bolts used in the tank, inspection chamber, secondary chamber, fixing of bushings for sealing.	

ANNEXURE – II

GUARANTEE TECHNICAL PARTICULARS

For Oil to be used in 11KV Metering Units

Sl. No.	Characteristic.	Particulars.	Bidder's offer
1.	Appearance.	The oil shall be clear and transparent and free from suspended matter or sediments and should conform to IS-335/93 or latest versions.	
2.	Density at 27 degrees C (max)	0.89 g/cm.	
3.	Kinematic Viscosity at 27 degrees C (max)	27 CST.	
4.	Interfacial Tension at 27 Degrees C (max)	0.04 N/M.	
5.	Flash point, pensky – marten (closed) (min)	140 Degrees C.	
6.	Pour point (max)	-10 Degrees C.	
7.	Neutralization Value : a) Total acidity(max) b) In-organic acidity alkalinity.	0.01. Nil	
8.	Corrosive sulphur.	Non-corrosive.	
9.	Electric Strength (breakdown voltage/minute) a) New unfiltered oil. b) After filtration.	30 KV(rms) 50 KV(rms)	
10.	Dielectric dissipation factor (Tan delta at 90 Deg. C (min)).	0.005.	
11.	Specific resistance (Resistivity). a) At 90 Deg. C(min) b) At 27 Deg. C(min)	30x10 ¹² ohms- cm. 500x10 ¹² ohms-cm	
12.	Oxidation stability a) Neutralization value after oxidation(max) b) Total sludge after oxidation(max)	0.5 mg KOH/g 0.05% by Weight.	
13.	Ageing characteristics after accelerating ageing (open breaker method with copper catalyst) for 96 Hrs. (as per ASTM D. 1934-1978)		
a	Specific resistance (Resistivity)		
	At 27 Deg. C (min)	2.5 x 10 ¹² ohms-cm	
	At 90 Deg. C (min)	0.50 x 10 ¹² ohms-cm	
b	Dielectric dissipation factor Tan delta at 90 Deg. C (max)	0.50	
c	Total sludge value (max)	0.5	

d	Total acidity (max)	0.5	
14.	Presence of oxidation inhibitor.	Nil	
15.	Water content (max)	50 ppm	



ANNEXURE-II

(LOT-B)

TECHNICAL SPECIFICATION FOR

33KV, 3P4W Oil cooled, Combined CTPT Units with Other Accessories Such as Meter Box, GI Pipe, Control Cable etc.



TECHNICAL SPECIFICATION FOR

33 KV, 3P4W, 0.5 ACCURACY CLASS, CT PT COMBINED, OIL COOLED METERING UNITS

1.0 Scope:

This specification covers designing, manufacturing, assembling, stage testing, inspection, supply, loading at factory, transportation to stores, unloading at stores of **33 KV, of different ratios, 3P4W, 0.5 accuracy class, CTPT Combined, Oil Cooled Metering Units.**

2.0 Standard:

Except where modified by this specification the component parts of the equipment shall comply with the following IS available (the latest versions).

Current Transformers	: IS 2705/1992
Potential Transformers	: IS 3156/1992
HV Porcelain Bushing	: IS 2099/1986
Oil	: IS 335/1983
Galvanization	: IS 2633
Electric strength for insulation oil	: IS 6792/1992
Primary Terminals	: IS 10601

3.0 Type & Rating:

3.1 Metering Unit Type:-

- The 3P4W, metering transformer equipment should be of pole mounting type for outdoor use.
- They are to be used in 33KV Three Phase system with solidly earthed neutral and should also be suitable for 3 Phase 3 Wire 50 Hz network.
- The equipment is required for operation of HT Trivector Meters and should be of oil cooled.

3.2 Metering Unit Rating:-

The 33KV, 3P4W, CTPT sets shall have the following ratings.

i	Rated Voltage	33 KV
ii	Highest system voltage	36 KV
iii	Insulation level	70 KV rms
iv	Standard Impulse withstand voltage	170 KV Peak
v	One minute power frequency withstand Voltage	
a)	Primary:	70 KV
b)	Secondary	3 KV
vi	Short time thermal current and its duration	25KA for 1sec.
vii	Class of Accuracy	0.5
viii		For CTs : 15 VA



	Rated burden per Phase	For PTs : 50 VA
ix	Frequency	50 HZ
x	Maximum attainable winding temperature	80 deg C
xi	Minimum Phase to Phase distance	430 mm
xii	Shortest distance between metal part & earth	380 mm
xiii	Creepage distance of HV bushing	900mm (Min)
xiv	Thickness of MS Tank	Min 5mm for top cover & 3.15 mm bottom & all other side
xv	Galvanization	Entire tank shall be hot dip galvanized
xvi	Bi-metallic terminal connector	Bi-metallic terminal connector with a nut, plane washer, spring washer & check nut suitable for aluminum conductor required for different rating of metering units. Six nos to be provided with each metering units.
xvii	Minimum volume of oil	shall not be less than 110 Liters..

4.0 Design:

- 4.1 The equipment shall be designed to ensure satisfactory operation under all conditions of service to facilitate easy inspection, cleaning and repairs.
- 4.2 The design shall incorporate every reasonable precaution and provisions for safety of all those concerned in the operation and maintenance of the equipment. **A pressure relief valve with metallic cap** shall be invariably provided to the CTPT set. It shall be provided at the top cover of the tank.
- All outdoor apparatus shall be so designed that water cannot collect at any point and enter the CT/PT set. The top cover of the tank, secondary terminal cover, inspection chamber cover plate may be designed accordingly. All outdoor apparatus shall be so designed that water cannot collect at any point and enter the CT/PT set. The top covers of the tank, secondary terminal cover, inspection chamber cover plate are suitable bent at the edges (**at least 25mm bent**) so that the gaskets are not exposed to moisture.
- 4.3 All connections and terminals shall be of sufficient size for carrying the specified currents continuously without undue heating.
- 4.4 All bolts, nuts, washers in contact with non-ferrous parts shall be of brass.
- 4.5 All ferrous parts including bolts & nuts liable to corrosion, forming integral part of the equipment shall be smoothly and continuously hot dip galvanized.
- 4.6 The secondary terminal box with double door arrangement (Inner & Outer), inspection cover and oil gauge shall be provided with MU. The inner door of the secondary chamber should be of hinge type with suitable handle/knob & sealing arrangement.
- 4.7 The core shall be high grade non-ageing electrical silicon laminated steel of low hysteresis loss and high permeability to ensure high accuracy, at both normal and over current/voltage.
- 4.8 All winding shall be of insulated high grade Electrolytic copper wire and the manufacturing of the units shall be done in completely closed and air-conditioned room otherwise Fiber glass insulation sleeves are to be provided for primary winding. Details of winding and core shall be furnished.



4.9 The CTPT set should have Three CTs and One three phase PTs with star / star connection.

5.0 Sealing:

Sealing bolts for sealing at 4 points on the secondary terminal box (both inner & outer door), inspection cover and the top cover of the tank shall be provided. This may be made by providing a hole on tail of corner bolts of adequate size to pass the sealing wire of above 13SWG.

6.0 Fluctuation In Voltage And Frequency:

For continuous operation entire equipment shall be subjected to variation of voltage up to +20% & -30% of rated voltage and frequency of +/- 5% of rated frequency.

7.0 Instrument Transformers (CT &PT):

7.1 The voltage and current transformers shall have normal continuous rating as per the schedule of requirement.

7.2 The voltage transformer shall be so designed that the increased magnetizing currents due to any persisting over voltage, does not produce injurious overheating. **Phase barriers shall be provided.**

7.3 The peak value of the rated dynamic current shall not be less than 2.5 times the rated short time thermal current unless stated otherwise. (6.6.2 of ISS : 2705/Part-I of 1992, latest version).

7.4 **Modified Polyester Enamel Copper Wire** is to be used for winding and it shall conform to IS-4800/ Part-V (latest version).

7.5 The terminals of the Instrument Transformer shall be clearly marked by distinctive letters as stated in Annex 'C' of IS : 3156/ Part I/ 1992 (latest version) for voltage transformer and Annex "C" of IS-2705/ Part.I/1992 (latest version) for current transformers.

7.6 The winding shall be neatly laid and anchored.

7.7 The metering set tank and other metal parts shall be galvanized both inside & outside as per latest IS applicable.

8.0 Incoming side:

8.1 Terminals:-

Brass rods 12 mm dia up to 20A & 16mm dia >20A for Primary and 6 mm dia for secondary. The lugs shall be properly crimped & brazed.

8.2 Bushing for outgoing side of CT/PT set:-

8.2.1 The porcelain portion of HT bushings shall be of standard make and conform to IS-2099/1986.

8.2.2 The dimensions of the bushings shall conform to IS: 3347/ Part.III/ 1972. The minimum phase-to-phase clearance shall be as per IS/GTP.

8.2.3 The bushings shall be of reputed manufacturers which are having complete testing facilities. It should be ISI marked.

8.2.4 The bushing stems shall be provided with suitable bimetallic connectors so as to connect the jumper without disturbing the bushing stem. The bush rod stem length should be at least 40 mm and 3 nuts with 2 flat washers of brass material should be provided with each bush rod.

9.0 Steel Tank:

9.1 The oil filled container incorporating the voltage transformers and current transformers should be fitted with incoming and outgoing primary terminals and secondary terminal box. The secondary terminal box shall be arranged on sides. The general arrangement drawing with 3 bushing on the incoming side and 3 bushings on the outgoing side shall be submitted along with tender. Adequate level of oil shall be maintained in the tank for proper cooling & curb flash over.

9.2 The tank shall be built with a plate of 5 mm thick top and 3.15 mm sides and bottom and with all fittings shall be capable of withstanding without leakage or distortion at the standard test pressure. All joints of the tank



and fittings shall be hot oil tight and no leakage should occur during service. Both side of the joint should have continuous welding.

- 9.3 It shall be provided with an oil gauge. The oil gauge glass shall be fixed to the side of the raised wall of the inspection box.
- 9.4 The tank shall be provided with necessary lifting lugs. Tank including top cover shall be hot deep Galvanized.
- 9.5 The secondary terminal box cover, tank cover and inspection cover and other vertical joints where gaskets are used may be suitably bent at least **25 mm** bent with necessary sealing arrangement **with sealing bolts at all corners and bolts should be at least 10 mm diameter GI bolts spaced maximum 70 mm apart**. This is to safeguard against seepage of water into tank in case of damaged gasket. Eye holes shall be made in all bolts used in the tank, inspection chamber, secondary chamber, fixing of bushings for sealing.
- 9.6 The **6 mm** gaskets shall be dovetailed without joints to prevent moisture entry. In case of dovetailed joint, they shall not be more than two. The gaskets shall be of good quality **Neoprene** or **superior quality rubberized gasket**.
- 9.7 **Earthing:-**
- Two earthing terminals shall be adequate size protected against corrosion and metallicly clean and identified by means of the sign marked in a legible and indelible manner on or adjacent to the terminals.
- 9.8 All bolts should be provided with 2 flat washers and a spring washer with a nut.
- 9.9 Conservator should not be provided for these CT PT sets.
- 9.10 The Secondary terminal box incoming hole should be **32 mm** diameter and at a suitable height from bottom to avoid replacement/ modification of secondary wires pipe when CTPT set is replaced. The secondary terminals size should be 6 mm diameter, 25 mm stem length, 2 flat washers with 3 nuts of brass material should be provided. The terminals should be provided at least 70 mm height from incoming hole and clearances shall be as per IS to avoid shorting terminals due to secondary wire's pipe.
- 9.11 Secondary chamber shall have double door (inner & outer) with suitable arrangement for sealing of both the doors. The inner door shall be of transparent polycarbonate so that secondary terminal connections can be viewed without breaking the inner door seals. The inner door shall be provided with suitable handle/knob.
- 9.12 **Meter BOX, GI Pipe , Control Cable**

The meter box, GI pipe and secondary wiring shall be provided with each unit.

The meter box shall be made of MS with thickness of 2 mm and dimensions of approx 500 mm (L) X 400 mm (D) X 400mm (H) and **shall be hot dip galvanized** and shall be suitable to accommodate Purchaser's HT Trivector meter. The meter box shall have degree of IP55 for protection against dust and water. The meter box shall have only front opening with two doors in order to make the meter chamber pilfer proof as well as tamper proof. The outer door and inner door shall be made of MS with provision of window made of transparent toughened glass and fitted with wire mesh for meter reading. The transparent sheet of acrylic or other polymer is not acceptable for door window. The outer door shall be provided with at least one locking and two nos. sealing arrangements. Necessary sealing arrangements shall also be provided on the inner door of the meter chamber along with the provision of window to enable meter reading. A frame of slotted hanger shall be provided inside the Meter box on which the meter shall be mounted.

A **GI pipe shall be hot dip galvanized** and should be of 40 mm outer dia. and 6000 mm length with flanges welded at both ends shall be supplied with each unit. One of the flanges provided on either ends of the GI pipe shall be bolted to the bottom of secondary terminal box of the CT/ PT unit. The bolts used for tightening the flanges shall have sealing arrangement.

1.1KV, 10 core X 2.5 sq mm, PVC insulated, **multi strand**, armoured, Copper cable with color coding, thimble (bottle type one side and ring type another side) and ferrule along with marking shall be provided from secondary terminal box of CT PT unit to meter box through GI pipe. The marking on ferrule shall be RS1, R, RS2 for R phase, YS1, Y, YS2 for Y phase, BS1, B, BS2 for B phase and N for neutral. The wiring shall be neatly bunched together and length of cable shall be 07 meter. Suitable size of lugs shall be



used to tighten the wire with the unit's secondary terminals. For the mounting of the meter box on the channel two flat plates of 5mm thick with hole for M16 bolt shall be provided on either side at top corners of the box along the axis and also at side wall bottom edge along the height.

The CT/PT unit shall be complete in all respects. Any fitting, accessories or apparatus which may not have been specifically mentioned in this specification but which is/ are considered necessary shall be deemed to have included. All the bolts and iron material used shall be hot dip galvanized.

10.0 Mounting Arrangement:

The under base of all CTPT sets shall be provided with two 75 x 40 mm GI channels and foundation dimensions shall be suitable placing with tank base uniform for all sets with only +/- 2 mm tolerance, to avoid modification of structure/ plinth, whenever CTPT set is replaced.

11.0 Oil:

The insulation oil used in the tank shall comply with the requirements specified in relevant IS: 335/ 93 (latest revision) and Annexure-II.

12.0 Guaranteed Technical Particulars:

The Technical Particulars as specified in IS shall be guaranteed. Each bidder should furnish the particulars required and guarantee the values so furnished for the supplies.

13.0 Tests:

13.1 Type Tests:-

13.1.1 The equipment offered shall be fully type tested from Govt. approved laboratory such as CPRI/ ERDA / ERTL etc or any NABL accredited laboratory by the bidder as per the relevant standards.

13.1.2 The bidder shall furnish copies of Type Test Reports with the bid for the offered material.

13.1.3 The bidders also furnish type test certificates for bushings and oil along with the bid. **The type test certificates shall be not older than 5 years from the date of opening of bid.**

13.1.4 Type Tests For CTs (as per IS-2705:1992Part-1)

1. Verification of terminal marking and polarity
2. Short time current Test.
3. Temperature rise Test.
4. Lightning Impulse Test.
5. High Voltage Power frequency wet withstand voltage test.
6. Determination of errors or other characteristics according to the requirements of the appropriate designation or accuracy class.

13.1.5 Type Tests For PTs (as per IS-3156:1992Part-1)

1. Verification of terminal marking and polarity
2. Temperature rise Test.
3. Lightning Impulse Test
4. High voltage Power frequency wet withstand voltage Test.
5. Determination of errors according to the requirements of appropriate accuracy class.

13.1.6 Type Tests For Transformer Bushings (as per IS 2099/1986)

1. Wet power frequency voltage withstand Test.
2. Dry lightning impulse voltage withstand Test.
3. Temperature rise Test.
4. Thermal short time current withstand Test.



5. Cantilever load withstand Test.

13.2 Acceptance and Routine Tests:-

The following shall be conducted at factory premises for acceptance of material.

1. Verification of Terminal marking and polarity.
2. Power frequency/ dry withstand tests on primary windings.
3. Power frequency dry withstand tests on secondary windings.
4. Determination of errors according to the requirements of the appropriate accuracy class.
5. Temperature rise Test
6. **Air pressure test on empty tank of transformer opened for physical verification test (One per each lot offered during pre-dispatch inspection.**

13.3 Immediately after finalization of the program for testing, the manufacturer shall give advance intimation (minimum of two weeks in advance) to the purchaser, to enable him to depute his representative for witnessing the tests where the equipment is ready for testing and inspection.

13.4 All acceptance and routine tests as stipulated in the relevant standards for CTs & PTs shall be carried out by the supplier in presence of purchaser's representatives.

14.0 Drawings:

Two sets of drawings showing clearly the general arrangements, sectional views, fitting details, electrical connections, foundation details, overall dimensions (length, breadth & height) and design features of each component/part should accompany the tender. The bidder has to submit clear & detail drawing with description how he will arrange the double door system in secondary chamber with sealing. Technical leaflets giving the operating instructions should also be furnished along with tender. **Tenders without details are liable to be rejected.**

15.0 Deviations:

Any deviation(s) from the specified specifications of CTPT set (MU) and Standard Lab (CPRI, ERDA etc.) Type Tested CTPT set (MU) along with detailed reasons for deviations shall be submitted along with tender.

16.0 Tolerances:

Unless otherwise specified herein the test value of the transformers supplied should be within the tolerance limit permitted in the IS on the guarantee values.

17.0 Inspection:

17.1 Inspection & Testing of MUs:-

17.1.1 The supplier will keep the Purchaser informed in advance of the time of the starting and the progress of manufacture of equipment in its various stages so that arrangement could be made for inspection. The accredited representative of the TPCODL will have access to the supplier's or his subcontractor's work at any time during working hours for the purpose of inspecting the materials during manufacturing of the materials / equipment and testing and may select test samples from the materials going into plant and equipment. The supplier will provide the facilities for testing such samples at any time including access to drawings and production data at no charge to Purchaser. As soon as the materials are ready the supplier will duly send intimation to TPCODL by Regd. Post and carry out the tests in the presence of representative of the TPCODL. At the time of factory inspection a **random sample of 20 nos or 20% of the offered quantity** which is more will be tested and firm will submit routine test report of all metering units basing upon which dispatch instruction will be issued.

17.1.2 TPCODL may at its option get the materials inspected by the third party if it feels necessary and all inspection charges in this connection will be borne by the supplier.



- 17.1.3 The dispatches will be affected only if the test results comply with the specification. The dispatches will be made only after the inspection by the TPCODL Officer is completed to the TPCODL satisfaction or such inspection is waived by the competent authority.
- 17.1.4 The acceptance of any quantity of materials will in no way relieve the supplier of its responsibility for meeting all the requirements of this specification and will not prevent subsequent rejection if such materials are later found to be defective or deviation from specification/IS.
- 17.1.5 The supplier will give 15 days' advance intimation to enable the Purchaser depute its representative for witnessing the acceptance and routine tests.
- 17.1.6 Should any inspected or tested materials / equipment fail to conform to the specification, the Purchaser may reject the materials and supplier will either replace the rejected materials or make alterations necessary to meet specifications requirements free of costs to the Purchaser.
- 17.1.7 After delivery of materials at TPCODL Store 100% ordered materials will be collected & tested at purchaser own laboratory before acceptance. In case of any deviation to the specification, GTP, IS found during the tests the lot will be rejected or will be replaced by supplier.

17.2 Inspection and Testing Of Transformer Oil

To ascertain the quality of transformer oil the manufacturer's test report should be submitted at the time of inspection. Arrangements should also be made for testing the transformer oil, after taking out the samples from the manufactured CTPT sets and tested in the presence of TPCODL representative (or) if desired, in an independent laboratory.

18.0 Sealing of MU(s) After Testing and Individual Test Reports:

- 18.1 After witnessing physical inspection of all offered MUs and testing of random sample of 20 nos or 20% of the offered quantity which is more, the purchaser's representative will seal all offered MUs with numbered plastic seals at TWO opposite corners of tank, Secondary Chamber and Inspection Cover, for delivery of correct inspected materials only.
- 18.2 The manufacturer has to provide test report duly mentioning all test results, seals numbers and Name & Designation of purchaser's representative after inspection is over. The seals number shall also be mentioned in the test reports signed by purchaser's representative submitted for delivery instructions.

19.0 Deviation from specification:

If the bidder wishes to deviate from this specification in any respect, he shall draw the attention to such points of deviation explaining fully the reasons thereof. Unless this is done the requirements of this specification will be deemed to have been accepted in every respect.

20.0 Name Plate:

The following additional details shall be embossed / punched / casted/ laser printed on a metallic plate with at least 10 mm letter size and the name plate shall be of non-detachable type & fixed with rivets (not with bolts & nuts). The respective sides shall be painted " INCOMING, OUTGOING, Sl. No., CT Ratio, R, Y, B" with suitable font readable from 30feet.

- a) Make- Name of Manufacturer
- b) Ratio (CT & PT)/ Frequency(CT&PT)
- c) Rated Output and corresponding Accuracy Class (CT &PT)
- d) Highest System Voltage, Insulation Level & Short time Thermal Current (CT&PT)
- e) Rated voltage factor & corresponding rated time
- f) Number of phases & method of connection (connection diagram)
- g) Earthed / Unearthed
- h) Reference standard
- i) Serial No. & Type Designation
- j) Month & Year of Manufacturing



- k) Guarantee- 66months
- l) Purchase Order No. and Date.
- m) PROPERTY OF TPCODL,ODISHA

21.0 Guarantee:

The supplier shall give Guarantee for the satisfactory functioning of the material / equipment as per specification, for a minimum period of 60 months from date of commissioning or **66 months from the last date of receipt of material in good condition at departmental store for each consignment whichever is earlier**. The bidder shall be liable to undertake the replacement or rectify defects at his own cost within mutually agreed timeframe. The bidder shall further be responsible for free replacement for another period of three years from the end of guarantee period for any “latent defect” if noticed and reported to purchaser.

22.0 The supplier shall mention the source of all materials. He shall also mention the name of the supplier for conductor, Transformer oil, Electrical Steel Laminations, Construction Steel etc.

23.0 Fittings:

The following standard fittings shall be provided with the Metering Units.

SI No	Particulars	Quantity
01	Rating and terminal marking plates non detachable	1No.
02	Earthing terminals with bolt, nuts & washers for connecting earth wire	2Nos
03	Lifting lugs	
a)	for main tank	4Nos
b)	for top cover	2Nos
04	Pressure relief valve with metallic cap	1 No
05	Bimetallic terminal connectors on the HV bushings	6 Nos
06	HV bushings Outdoor	6 Nos
07	Secondary terminals bushings	as per requirement of CT ratio
08	Base Channel	2Nos



ANNEXURE – I

GUARANTEED TECHNICAL PARTICULARS

For Supply of 33 KV, 3P4W, 0.5 accuracy class, CTPT Combined, Oil Cooled Metering Units

Sl. No	Particulars	Requirement	Bidder's offer
1	Manufacturer's Name & Address	To be indicated	
2	Manufacturer's Type & Design	To be indicated	
3	Type of cooling	To be indicated	
4	Nominal System Voltage	33 KV	
5	Highest System Voltage	36 KV	
6	Frequency.	50 HZ	
7	Specification of CT & PT of Metering Unit		
(A)	Current Transformer		
i	Type	Oil immersed	
ii	Accuracy Class	0.5	
iii	Rated output	15 VA	
iv	Insulation level	70 KV _{rms} / 170 KV _{pk}	
v	Short time thermal current rating for 1 sec	25KA	
vi	Saturation factor	To be indicated	
vii	Normal current density of primary winding	≤1.6 Amps per Sq.mm	
Viii	Knee Point Voltage	To be indicated	
ix	Continuous percentage over load	120%	
x	ISF	As per IS	
(B)	Potential Transformer		
i	Type	Oil immersed	
ii	PT ratio	33 KV/√3/ 110V/ √3	



iii	Rated output VA/phase	50VA	
iv	Class of accuracy	0.5	
v	Insulation level	70 KV _{rms} / 170 KV _{pk}	
vi	Winding connection	Star/Star	
vii	Rated voltage factor & duration	To be indicated	
8	Details of Metering Unit		
(A)	Current Transformer		
I	Weight of core and winding		
i	Core	To be indicated in a separate sheet for each rating	
ii	Primary winding		
iii	Secondary winding		
II	Resistance of winding per phase at 75° C		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
III	Cross section area of each turn of winding (in sq. mm.)		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
IV	No. of turns		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
V	Winding material type		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
VI	Core material type	To be indicated in a separate sheet for each rating	
(b)	Potential Transformer		
I	Weight of core and winding		
i	Core	To be indicated in a separate sheet for each rating	
ii	Primary winding		



iii	Secondary winding		
II	Resistance of winding per phase at 75° C		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
III	Cross section area of each turn of winding (in sq. mm.)		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
IV	No. of turns		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
V	Winding material type		
i	Primary	To be indicated in a separate sheet for each rating	
ii	Secondary		
VI	Core material type	To be indicated in a separate sheet for each rating	
(C)	MS Tank		
I	Construction Material	MS Hot dip Galvanized tank	
II	Galvanization of Tank	Metering Unit tank including top cover, secondary chamber shall be hot dip galvanized.	
III	Tank Dimension in mm		
i	Length	To be indicated	
ii	Breadth	To be indicated	
iii	Height	To be indicated	
IV	Thickness		
i	Side walls, Bottom.	3.15mm	
ii	Top	5 mm	
V	Edge bending	To be provided in the Top Cover	
VI	Standard pressure & duration that can be withstand.	To be indicated	



(D)	Oil		
i	Grade of oil	To be indicated	
ii	Quantity of oil in ltr	To be indicated (min 110 ltr)	
(E)	HV Bushing		
i	Type	To be indicated	
ii	Make	To be indicated	
iii	Creepage distance of HV bushing	900mm (Min)	
iv	Bi-metallic terminal connector	6 nos Bi-metallic terminal connector with nut, plain washer, spring washer & check nut suitable for aluminum conductor as per CT rating to be provided	
(F)	Gasket Details		
I	Type of Gasket to be used on		
i	Top cover tank	To be indicated	
ii	Secondary terminal box	To be indicated	
iii	HV bushings	To be indicated	
II	Thickness of Gasket to be used on		
i	Top cover tank	To be indicated	
ii	Secondary terminal box	To be indicated	
iii	HV bushings	To be indicated	
(G)	Studs Details		
I	Primary Stud		
i	Material	To be indicated	
ii	Size	M12 upto 20A & M16 > 20A	
II	Secondary Stud		
i	Material	To be indicated	
ii	Size	M6	



III	Gap between I/C & O/G Studs of same phase	Minimum 15° angle with the vertical axis to maintain a good distance at stud levels.	
(H)	Identification/ Marking		
I	Primary terminals		
i	Incoming	RM, YM, BM	
ii	Outgoing	RL, YL, BL	
II	Secondary terminals		
i	CT marking	RS1- RS2-RS3, YS1-YS2-YS3, BS1-BS2-BS3	
ii	PT marking	R, Y, B, N	
(I)	Clearance		
i	Minimum phase to phase distance	430mm	
ii	Shortest distance between metal part & earth	380mm	
(J)	Meter Box	As per tender requirement	
i.	Material and Thickness of the Meter Box	mm	
ii	Protection against penetration of dust and water.		
iii	Dimensions		
iv.	Locking and sealing arrangement	Yes/ No	
(K)	G I Pipe	As per tender requirement	
i.	Size	Mm	
ii	Length	Mm	
(L)	Secondary Wire	As per tender requirement	
i.	Size	mm	
ii	Type		
iii	Lugs provided	Yes/ No	
iv	Ferrule Provided	Yes/ No	



v	Cable length	mtr	
9	Total weight of complete MU including all accessories and oil	To be indicated	
10	Maximum attainable winding temperature	80° C	
11	Double door type Secondary Chamber & sealing arrangement	Secondary chamber shall have double door (inner & outer) with suitable arrangement for sealing of both the doors. The inner door shall be of transparent polycarbonate so that secondary terminal connections can be viewed without breaking the inner door seals. The inner door of the secondary chamber should be of hinge type with suitable handle/knob & sealing arrangement.	
12	Name Plate	As per tender requirement.	
13	Sealing arrangements	The secondary terminal box cover, tank cover and inspection cover sealing arrangements have to be done with sealing bolts at all corners and bolts should be at least 10 mm diameter GI bolts spaced maximum 70 mm apart. Sealing holes also to be provided in the bolts fitted with bushing & body for sealing, so that one can not open the bushing without breaking seals. Eye holes shall be made in all bolts used in the tank, inspection chamber, secondary chamber, fixing of bushings for sealing.	

**Signature of Bidder
With Name and Seal of Company**

Note:-

The above schedule is to be duly filled up & signed by the bidder along with their seal on every page and must be enclosed along with the Part-I Bid-document.



ANNEXURE – II
GUARANTEE TECHNICAL PARTICULARS
For Oil to be used in 33 KV Metering Units

Sl. No.	Characteristic.	Particulars.	Bidder's offer
1.	Appearance.	The oil shall be clear and transparent and free from suspended matter or sediments and should conform to IS-335/93 or latest versions.	
2.	Density at 27 degrees C (max)	0.89 g/cm.	
3.	Kinematic Viscosity at 27 degrees C (max)	27 CST.	
4.	Interfacial Tension at 27 Degrees C (max)	0.04 N/M.	
5.	Flash point, pensky – marten (closed) (min)	140 Degrees C.	
6.	Pour point (max)	-10 Degrees C.	
7.	Neutralization Value : a) Total acidity(max) b) In-organic acidityalkalinity.	0.01. Nil	
8.	Corrosive sulphur.	Non-corrosive.	
9.	Electric Strength (breakdown voltage/ minute) a) New unfiltered oil. b) After filtration.	30 KV(rms) 50 KV(rms)	
10.	Dielectric dissipation factor (Tan delta at 90 Deg. C (min)).	0.005.	
11.	Specific resistance (Resistivity). a) At 90 Deg. C(min)	30x10 ¹² ohms- cm. 500x10 ¹² ohms-cm	



	b) At 27 Deg. C(min)		
12.	Oxidation stability a) Neutralization value after oxidation(max) b) Total sludge after oxidation(max)	0.5 mg KOH/g 0.05% by Weight.	
13.	Ageing characteristics after accelerating ageing (open breaker method with copper catalyst) for 96 Hrs. (as per ASTM D. 1934-1978)		
a	Specific resistance (Resistivity)		
	At 27 Deg. C (min)	2.5×10^{12} ohms-cm	
	At 90 Deg. C (min)	0.50×10^{12} ohms-cm	
b	Dielectric dissipation factor Tan delta at 90 Deg. C (max)	0.50	
c	Total sludge value (max)	0.5	
d	Total acidity (max)	0.5	
14.	Presence of oxidation inhibitor.	Nil	
15.	Water content (max)	50 ppm	

**Signature of Bidder
With Name and Seal of Company**

Note:-
The above schedule is to be duly filled up & signed by the bidder along with their seal on every page and must be enclosed along with the Part-I Bid-document.