TP CENTRAL ODISHA DISTRIBUTION LIMITED
(A Tata Power & Odisha Govt. joint venture)
2nd Floor, IDCO Tower, Janpath Bhubaneshwar, Odisha 751022

NIT No.: TPCODL/P&S/1000000090/2021-22

VERY VERY IMPORTANT FOR THE PROSPECTIVE BIDDERS TO NOTE PRIOR TO GOING THROUGH THE TENDER DOCUMENT

The bidders have to pay the requisite tender fees prior to submission of Pre-Bid queries (if any). The queries of the bidders who have paid the tender fees will be considered for clarification only. The queries of un-paid bidders shall not be considered for clarification. The queries are to be submitted in editable format of MS-Excel through e-mail only.

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

-: Steps for E-tender submission: -

Step 1:
The bidder can get primary information about the tender from the NEWSPAPER advertisement / TPCODL website (in case of open tender) / invitation through e-mail (in case of limited tenders)

Step 2:
First the prospective Bidder who intends to participate in an open tender should deposit the requisite tender fee as mentioned in the tender document trough NEFT/ RTGS in the a/c of TPCODL as mentioned in the tender document. Deposit of the Tender fee should be made within the scheduled time for such deposit as indicated in the Tender document.

Step 3:
After deposit of the tender fee, the bidder should furnish the following information through e-mail to the contact person indicated in the tender document.

Sl No	Description	Bidder's Response
1	Tender Enquiry No.	
2	Description of materials / Works Tendered	
3	Name of the bidding company	
4	Place & Detail Address of the Company	
5	Postal Code (PIN Code)	
6	Name of the authorized contact person of the Bidder	
7	Contact No./Mobile No. authorized person	
8	E-mail Id of the contact person	
9	Tender Fee details (Bank Name / Amount / NEFT-RTGS UTR No / Date) (E Receipt also to be furnished)	
10	GST No.	

Step 4:
After receipt of the above information through e-mail, Vendor will get an **invitation e-mail** from ARIBA System which is the e-tendering platform of TPCODL. In this mail there will be an online link as **Click Here** to participate in the tender. The link is **valid for 48 hrs** only.

Step 5: Click **"Click Here"** to access this event.

Step 6:

If you are bidding first time for TPCODL through ARIBA site then please "Sign UP by creating User Name and password as mentioned in Sign Up page. Please follow the process, as mentioned in the Sign Up page, during creation of User Name and password.

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

Step 7:
Click Continue. The simple one-page registration screen will open for first time user. **All * mark mandatory field to be filled in**.

Step 8:
You will be able to see the RFQ (i.e Detail Tender document).

Step 9:
After review and downloading of all documents click on **"Accept Review Pre-requisites"** i.e acceptance of terms and conditions.

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

Step 11:
You can see attached tender document in PDF format against clause no 1.1.1 (Introduction).

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

Step 13:

Uploading of Price Bid

(a) Price schedule is attached in envelope.3.1 of ARIBA. Same has to be downloaded and price and tax details to be filled in as per the format given, print to be taken in vendor's letter head and signature and seal to be made by authorised person. PDF version of this price bid to be attached. For Price Bid put all the unit price and taxes and duties in provided field. Put "0" (ZERO) in not applicable field.

(b) In addition, the bidder has to upload the editable form of the price bid in EXCEL format in envelope 3.2 of ARIBA system.

Step 14:

After uploading successfully Techno commercial offer and price part then click on **"Submit Entire Response"**

Note: Once user ID and password created, bidder can also login to ARIBA site through the following URL:

https://service.ariba.com/Sourcing.aw/124997008/aw?awh=r&awssk=oxt0s1BN&dard=1

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NIT No.: TPCODL/P&S/1000000090/2021-22

OPEN TENDER NOTIFICATION

FOR

ONE YEAR RATE CONTRACT FOR SUPPLY OF 11 kV & 33 kV RING MAIN UNITS

Tender Enquiry No.: TPCODL/P&S/ 1000000090/2021-22

Due Date for Bid Submission: 12.08.2021 [15:00 Hrs.]

The Tata Power Central Odisha Distribution Limited
2nd Floor, IDCO Towers, Janpath, Bhubaneswar-751022

CONTENTS OF THE ENQUIRY

1. Event Information

1.1Scope of work

Open Tenders are invited in through e-tender bidding process from interested Bidders for entering in to One Year Rate Contract for **Supply of 11 kV and 33 kV Ring Main Unit** as defined below

Lot No.	Description	Qty. in Nos.	EMD Amount (Rs.)	Tender Fee Incl. GST (Rs.)
1	RMU 11KV 3WAY 630A BKR O/D (2ISO+1BKR)	14	2,00,000	5,000
	RMU 11KV 4WAY 2* 630A BKR O/D (2ISO+2BKR)	5		
	RMU 11KV 3WAY 630A WITH METERING UNIT	10		
	RMU 11KV 4WAY 630A WITH METERING UNIT	30		
2	RMU 33KV 3WAY 630A WITH METERING UNIT	10	7,00,000	
	RMU 33KV 4WAY 630A WITH METERING UNIT	10		
	RMU 33KV 3WAY 630A (2 ISLTR+ 1BKR)	10		
	RMU 33KV 3WAY 630A (2 ISLTR+2 BKR)	10		
	RMU 33KV 3WAY 630AMP (3 ISOLATORS)	24		
	RMU 33KV 4WAY 630AMP (4 ISOLATORS)	17		
Total EMD Amount for all the Lot combined			**9,00,000**	

***Bidder can select the Lot in which they want to participate and can deposit EMD amount accordingly**

1.2 Availability of Tender Documents

Non-transferable tender documents may be purchased by interested eligible bidders from address given below, on submission of written application to the under mentioned and upon payment of non- refundable Tender Fee of requisite amount as mentioned above towards cost of bid documents.

Chief (Procurement & Stores)
Tata Power Central Odisha Distribution Limited
2nd Floor, IDCO Towers, Janpath, Bhubaneswar-751022

Tender documents may be downloaded by interested eligible bidders from TPCODL website www.tpcentralodisha.com with effect from 21.01.2021 In the event detailed tender documents are downloaded from TPCODL website or are received through email from TPCODL, the Tender Fee shall be compulsorily submitted either online through NEFT/ RTGS or demand draft/ Banker's cheque drawn in favour of "TP Central Odisha Distribution Limited", payable at Bhubaneswar only. Any such bid submitted without this Fee shall be rejected.

Bidders are requested to visit TPCODL website www.tpcentralodisha.com regularly for any modification/ clarification to the bid documents.

1.3 Calendar of Events

(a)	Date of sale/ availability of tender documents from TPCODL Website/ARIBA E-Tender Portal	From 16.07.2021
(b)	Last date and time of payment of Tender fees through RTGS/NEFT to get link for participation in E-Tender portal	30.07.2021 up to 17:00 Hours
(c)	Last Date of receipt of Pre-Bid queries in **MS – Excel** format through e-mail, (if any) **after which no queries will be entertained**	03.08.2021 up to 13:00 Hours, **after which no queries will be entertained**
(d)	Last Date of Posting Consolidated replies to all the Pre-Bid queries as received in the TPCODL website	07.08.2021
(e)	Last date and time of receipt of Bids through ARIBA E-Tender portal	12.08.2021 up to 15:00 Hours
(f)	Date & Time of opening of bids	12.08.2021 up to 15:00 Hours

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 Clause1.7.
1.4.4 Drawing, Type Test details (as applicable)
1.4.5 Duly signed and stamped 'Schedule of Deviations' as per Annexure III on bidder's letterhead.
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

1.7.1 The average annual turnover of the bidder shall be a minimum of Rs.50 crores for last three financial years. Copy of audited Balance Sheet and P&L Account to be submitted in this regard. If audited balance sheet for 2020-21 is not available owing to Covid19 then the bidder need to audited balance sheet for 2017-18.

1.7.2 The bidder should have own manufacturing facility to manufacture RMUs of same or higher voltage rating and in-house facilities for acceptance tests as per technical specifications. Bidder must submit undertaking in this regard.

1.7.3 The bidder should have experience of having successfully completed supply orders for at least 100 nos. RMUs of same or higher voltage rating during last 3 years. Copy of work order / completion certificate to be submitted in this regard.

1.7.4 The bidder should have performance certificates from at least 2 reputed companies for similar or higher rating of work. The work against these issued certificates should be completed in last seven years from the date of bid submission. In case the bidder has a previous association with TPCODL / CESU for similar products and services, the performance feedback for that bidder by TPCODL User Group shall only be considered irrespective of performance certificates issued by any third organization

1.7.5 The bidder should have dedicated service team in TPCODL to attend issues within 24 hours or bidder shall develop dedicated service team in this area in the event of award of contract, before commencement of supplies. Bidder should submit the undertaking in this regard.

1.7.6 The subsidiaries of global / Indian companies are also eligible to bid if the qualification

requirements stated above are met independently or in combination with the parent / sister concern / group company. However, the bidder should have an establishment of permanent nature in India. Bidder should submit the undertaking with details of address in this regard

1.7.7 The Bidders need to submit Type Test Report as mentioned in Technical Specification (Annexure-II) of the Tender document.

All the tests shall be conducted at CPRI / ERDA or reputed International Laboratory like PHELA, KEMA IPH, etc. as per the relevant standards of IS and IEC. Type test should have been conducted in certified test laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPCODL.

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 market place for a length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honour prices submitted to the marketplace
- Breach of 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 the overall **all-inclusive lowest cost for the individual LOT** as defined in the tender BOQ 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.

- TPCODL reserves the right to assign maximum number of lots to single bidder provided the annual turnover of the BA is more than the order value
- Bidder has to quote against selected Lot of Schedule of Items *[Annexure I]*. Failing to do so, TPCODL may reject the bids.

NOTE: In case of a new bidder not registered with TPCODL, factory inspection and evaluation shall be carried out to ascertain bidder's manufacturing capability and quality procedures. However, TPCODL reserves the right to carry out factory inspection and evaluation for any bidder prior to technical qualification. In case a bidder is found as Disqualified in the factory evaluation, their bid shall not be evaluated any further and shall be summarily rejected. The decision of TPCODL shall be final and binding on the bidder in this regard.

2.1 Price 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. TPCODL shall respond to the clarification raised by various bidders and the replies will be sent to all participating bidders through e-mail through TPCODL website/ e-tender portal/e-mail.

Bids shall be submitted in 3 (Three) parts:

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

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

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

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

a) Documentary evidence in support of qualifying criteria
b) Technical literature/GTP/Type test report etc. *(if applicable)*
c) Qualified manpower 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 authorized person in shape of hard copy in duplicate. (Not applicable to this tender / Hard Copy of Technical Bids need not be submitted.)

The technical bid shall be properly indexed and is to be submitted though E-Tender portal of TPCODL.

THIRD PART: "PRICE BID" shall contain only the price details and strictly in format as mentioned in Annexure I along with explicit break up of basic prices, 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.

FOR BIDS INVITED THROUGH E-PROCUREMENT PORTAL:

The interested bidders are requested to obtain user name and password for purpose of bid submission through e-procurement portal of TPCODL, Bhubaneswar

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

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The interested bidders are requested to obtain user name and password for purpose of bid submission through e-procurement portal(tatapower.sourcing.ariba.com).

Bids shall be submitted in 3 (Three) parts on the assigned folder of e-procurement site. May please refer the user manual available at (tatapower.sourcing.ariba.com).

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

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

EMD for Lot 1 / 2
"RC for Supply of 11 kV and 33 kV Ring Main Unit"

Please mention our Enquiry Number: - **TPCODL/P&S/1000000089/2021-22** on the Tender and drop the same at Tata Power Central Odisha Distribution Limited, 2nd Floor, IDCO Towers, Janpath, Bhubaneswar-751022.

The envelope shall be addressed to:

Chief (Procurement & Stores)
Tata Power Central Odisha Distribution Limited
2nd Floor, IDCO Towers, Janpath, Bhubaneswar-751022

The envelope shall also bear the Name and Address of the Bidder along with our Tender No. and subject.

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.

The Bidder has the option of sending the Bids in person or by post. **(NOT APPLICABLE TO THIS TENDER)** However late receipt due to postal delay or any other reason will not be entertained. Bids submitted by Email/ Telex/ Telegram / Fax will be rejected. No request from any Bidder to the TPCODL to collect the proposals from Courier/ Airlines/ Cargo Agents etc. shall be entertained by the TPCODL**.**

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

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

Communication Details:

Contracts:-

Name : Vibhor Kumar Singh, Procurement
Contact No: 8130485135
E-Mail ID: vibhor.singh@tpcentralodisha.com

Name: Mr. D.P.Das, Sr.GM, Contracts
Contact No: 9438297571
E-Mail ID: debaprasad.das@tpcentralodisha.com

Technical Team HoG:-

Name: Mr. Niranjan Khuntia, HoG, Engineering
Contact No: 9223589453
E-Mail ID : Niranjan.Khuntia@tpcentralodisha.com

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 & total price with taxes, duties, packing & freight up to destination loading unloading at central store Bhubaneswar/ Choudwar 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. The EMD is required to protect the TPCODL against the risk of bidder's conduct which would warrant forfeiture.

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

- Banker's Cheque/ Demand Draft/ Pay order drawn in favour 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

Bids will be opened at Corporate Office of TPCODL as per the schedule mentioned in Calendar of Events. In case of limited tenders, the bids shall be opened internally by TPCODL. In case of Open Tenders, the bids shall be opened in the presence of accredited representatives of bidders who may choose to be present at the time of tender opening. Technical bid must not contain any cost information whatsoever.

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

Next, the technical bid of the bidders who have furnished the requisite EMD will be opened, one by one. The salient particulars of the techno commercial bid will be read out at the sole discretion of TPCODL.

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. After all techno commercial issues are clarified, the date of price bid opening will be intimated to the technically accepted bidders and same shall also be notified at TPCODL website.

4.5 Price Bid Opening

Price bids will be opened at the stipulated date and time. 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 (Clause7.0)
3. Submission of Bid Documents (Clause3.0)
4. Scope of Work and SLA (Annexure VII)
5. Technical Specifications (Annexure II)
6. Inspection Test Plan (Annexure VIII)
7. Acceptance Form for Participation in Reverse Auction (Annexure VI)
8. General Conditions of Contract (Annexure IX)

7.0 Post Award Contract Administration

7.1 Special Conditions of Contract

1. Rate contract shall be valid for a period of 1 years from the placement of Contract. Release Order (RO) shall be placed as per the requirement of TPCODL. Rate shall remain FIRM till the validity of Rate Contract.
2. BA shall submit GTP / Drawing within 2 weeks from issuance of rate contract. In case BA does not get necessary approvals for issuance of manufacturing clearances / 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.
3. Delivery period shall be within 60 days from date of receipt of release order / CAT-A issuance, whichever is later
4. MDCC clause shall be applicable.
5. Business Associate (BA) shall submit applicable Performance Bank Guarantee as per GCC within 30 days of issuance of RC or RO.
   PBG applicable shall be 5% of RC Value or 10% of RO value. PBG submitted, shall be released after completion of applicable guarantee period plus three months.
6. Any change in statutory taxes, duties and levies during the contract period shall be borne by TPCODL. However, in case of delay in work execution owing to reasons not attributable to TPCODL, any increase in total liability shall be passed on the Bidder, whereas any benefits arising owing to such statutory variation in taxes and duties shall be passed on TPCODL.

7. Statutory Variations: Any changes in existing taxes/ Duties and levies, Introduction of new taxes and duties etc. during the period of the contract shall be paid at actuals to BA subject to BA shall submit the tax break up in details, however, where BA has quoted the all-inclusive prices and not shown the tax break-up, this clause will not be applicable. The date of issue of MDCC shall be used for this purpose
8. Quotation in all BOM items is mandatory, and bid shall be rejected if any line of found blank in un price bid
9. All other terms and conditions of TPCODL General Conditions of Contract shall be applicable.

7.2 Drawing Submission & Approval

The relevant drawings and GTPs need to be submitted by the successful bidder to TPCODL for approval as per special condition of contract mentioned in point no. 7.1.

The relevant drawings and GTPs need to be submitted within two weeks of receipt of firm Purchase order/ Release Order.

In case, re-submission of drawings is required on request of TPCODL, same needs to be submitted back to TPCODL within 5 days of such request.

7.3 Delivery Terms

As specified in Special conditions of contract clause no 7.1.

7.4 Guarantee / Warranty 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.

In-Case the BA fails to furnish required Performance Bank Guarantee (PBG) as per TPCODL GCC format before raising their Invoice then the PBG amount shall be deducted and retained by TPCODL from the first bill submitted by the BA and the balance amount due will be released. However, in such a case the amount retained towards PBG shall be paid to BA either on submission of the required PBG or on expiry of the guarantee period of material supplied/services provided, whichever is earlier

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

i. 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.
ii. TPCODL work practices are governed by the Tata Code of Conduct which emphasizes on the following:
iii. We shall select our suppliers and service providers fairly and transparently.
iv. 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.
v. 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.
vi. 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.
vii. We respect our obligations on the use of third party intellectual property and data.
viii. Bidder is advised to refer GCC attached at Annexure IX for more formation. Any ethical concerns with respect to this tender can be reported to the following e-mail ID:

8.0 Specification and standards

As per Annexure II.

9.0 General Condition of Contract

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

10.0 Safety

Safety as per Annexure IX – Safety Code of Conduct

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

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ANNEXURE I

Schedule for Items

Lot No.	Item Description	Unit	Qty	Unit Price (Rs)	GST (Rs.)	All incl. Unit Price (Rs)	All incl. BOQ Price (Rs.)
1	RMU 11KV 3WAY 630A BKR O/D(2ISO+1BKR)	14	EA				
	RMU 11KV 4WAY 2* 630A BKR O/D (2ISO+2BKR)	5	EA				
	RMU 11KV 3 WAY 630A WITH METERING UNIT	10	EA				
	RMU 11KV 4 WAY 630A WITH METERING UNIT	30	EA				
All incl. Value for Lot-1 (Rs.)							
2	RMU 33KV 3 WAY 630A WITH METERING UNIT	10	EA				
	RMU 33KV 4 WAY 630A WITH METERING UNIT	10	EA				
	RMU 33KV 3 WAY 630A (2 ISLTR+ 1BKR)	10	EA				
	RMU 33KV 3 WAY 630A (2 ISLTR+2 BKR)	10	EA				
	RMU 33KV 3 WAY 630AMP (3 ISOLATORS)	24	EA				
	RMU 33KV 4 WAY 630AMP (4 ISOLATORS)	17	EA				
All incl. Value for Lot-2 (Rs.)							
HSN Code:			**All incl. Value of Lot-1 and Lot-2 (Rs.)**				

NOTE:

- The bidder can select the Lot in which they are willing to participate. The bidder has to furnish the EMD based on their choice of participation of the Lot.

- The bidders are advised to quote prices strictly in the above format and for all the line items as mentioned above. 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.
- **Bidder needs to quote mandatorily for each line item of the BoQ**
- The unit price to be indicated in col. No. 5 should be exclusive of GST which are to be indicated in separate column NO. 6 meant for the purpose.
- The Quantity mentioned above is tentative and evaluation purpose. The actual quantity may vary
- The prices shall be inclusive of loading, unloading & delivery at Central Store, TPCODL Bhubaneswar / Choudwar (Cuttack), Odisha.

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ANNEXURE II

Technical Specifications

Attached: Technical Specification

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ANNEXURE III

Schedule of Deviations

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

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

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

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

Seal of the Bidder:

Signature:

Name:

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ANNEXURE IV

Schedule of Commercial Specifications

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

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 GST	Yes / No (If Yes, indicate % rate)
1d.	Inclusive of transit insurance	Yes / No
2.	Delivery	Weeks / months
3.	Guarantee clause acceptable	Yes / No
4.	Terms of payment acceptable	Yes / No
5.	Performance Bank Guarantee acceptable	Yes / No
6.	Liquidated damages clause acceptable	Yes / No
7.	Validity (180 days) (From the date of opening of bid)	Yes / No
8.	Inspection during stage of manufacture	Yes / No
9.	Rebate for increased quantity	Yes / No (If Yes, indicate value)
10.	Change in price for reduced quantity	Yes / No (If Yes, indicate value)
11.	Covered under Small Scale and Ancillary Industrial Undertaking Act 1992	Yes / No (If Yes, indicate, SSI Reg'n No.)

Seal of the Bidder:

Signature:
Name:

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ANNEXURE V

Checklist of all the documents to be submitted with the Bid

Bidder has to mandatorily fill in the checklist mentioned below:-

S. No.	Documents attached	Yes / No / Not Applicable
1	EMD of required value	
2	Tender Fee as mentioned in this RFQ	
3	Company profile/organ gram	
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	
20	PAN, GST, PF, ESIC (The bidder must have all statutory compliance like valid PAN, GSTN etc. The bidder must submit the copy of all these registrations)	
21	Power of Attorney undertaking (Proper authorization letter/ Power of Attorney to sign the tender on the behalf of bidder)	

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Annexure VI

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed and stamped by the bidder)

In a bid to make our entire procurement process more fair and transparent, TPCODLintends to use the reverse auctions through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as technically qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

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

1. TPCODL shall provide the user id and password to the authorized representative of the bidder. *(Authorization Letter in lieu of the same shall be submitted along with the signed and stamped Acceptance Form).*
2. TPCODL will make every effort to make the bid process transparent. However, the award decision by TPCODL would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of TPCODL, bid process, bid technology, bid documentation and bid details.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through Internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of TPCODL.
6. In case of intranet medium, TPCODL shall provide the infrastructure to bidders. Further, TPCODL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case 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. Thepricesasquotedbythebidderduringtheauctioneventshallbeinclusiveofalltheapplicable 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

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ANNEXURE VII

SCOPE OF WORK

1. Supply of Material as per Annexure-1

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Annexure VIII

GENERAL CONDITIONS OF CONTRACT

General Conditions of Contract Attached as Annexure to this document.

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ANNEXURE IX

Contractor's Safety Code of Conduct

TPCODL Follows safety management system and safety code of conduct as per its parent company TATA Power which is as below:

1. Objective

The Tata Power engages contractor workforce to execute, run and maintain various operating sites and facilities across locations for various business verticals including Generation, Transmission, Distribution and Renewable. The activities range from project execution, operation, maintenance to facilities management.

The management of contractor safety represents a significant challenge for management. Tata Power has a responsibility to ensure that contractors are provided with enough information and support to enable them to conduct their roles safely and without endangering health and safety of their own workforce or that of our staff.

To ensure reduction in reportable injuries and achieve goal of zero accidents, first edition of contractor safety code of conduct was launched successfully in the year 2014. Since last four years after the launch of CSCC, Tata Power could achieve the objective of reduction in reportable injuries and fatalities.

Over the period, as the system was being matured, a need was felt to make second revision of the CSCC process. Objective of second revision is improve existing CSCC system and make it user friendly.

2. Scope:

This procedure applies to all operating and project sites of The Tata Power Company Ltd and Group companies including new businesses like EV charging, Home Automation etc.

3. Definitions

3.1. **Order Manager:** Order Manager is the Tata Power representative, who has the ownership of the given job.

3.2. **Site Safety Management Plan**: It is the safety plan agreed between Contractor and Tata Power. It will contain the entire job specific safety requirement and will be signed by the contractor.

3.3. **Contractor**: An individual or a company that provides services to Tata Power under a signed contract.

3.4. **Emergency:** a serious, unexpected or dangerous situation requiring immediate action, which may result in loss of revenue/property, business discontinuity. In case of Emergency*, services may be procured by selecting the qualified vendor based on the vendor category without the safety bid evaluation. It must be approved by MB level and above.

3.5. **Expert Service jobs:** Jobs which needs expert services of contractor which does not involve direct exposure to the potential risk or work which involves only supervisory work such as expert for turbine overhaul, expert for boiler overhaul, expert for pump and motor, expert for compressor overhaul.

3.6. **Head of the Division:** Business in charge of the division who is overall custodian of the generating station or transmission division or distribution division.

3.7. **Category A Vendor:** Vendor eligible to carry out Very High & High risk (as per Tata Power Hazard Identification and Risk Analysis Procedure) and /or Long-Term Contract related to operation and maintenance (O&M) of plant. Vendors must fulfil the requirement specified for Category A in Appendix 12-CSMF-5 of this document.

3.8. **Category B Vendor:** Vendors eligible to carry out technical jobs, that are classified under Medium /low risk. Vendors must fulfil the requirement specified for Category B in Appendix 12-CSMF-5 of this document.

3.9. **Category C Vendor:** Vendors eligible for to carry out low or very low risk administrative and office jobs. For this he must fulfil the requirement specified for Category C in Appendix 12-CSMF-5 of this document.

3.10. **Category D Vendor:** All Consultants, Medical Practitioners or vendors taking job from Tata Power and working from their own premises (e.g. motor rewinding at vendor's shop floor, equipment sent for repair to vendor's works etc.) are classified as Category D Vendor

3.11. **High Risk Jobs:** A Job or its activities are considered as Very High or High Risk when Order manager apply the "Tata Power Hazard Identification and Risk Analysis" procedure and found safety risk associated with are under Very High or High category. Indicative lists of jobs are given in appendix 15 of this document**.**

3.12. **Medium Risk Jobs:** Jobs or its activities are considered as medium risk when Order manager apply "Tata Power Hazard Identification and Risk Analysis" procedure and found the same as Medium Risk.

3.13. **Low Risk Jobs:** Any job or its activities are considered as Low or Very low risk while Order manager, calculate it by applying "Tata Power Hazard Identification and Risk Analysis" procedure and found it under Low or Very Low category.

3.14. **Long Duration Jobs:** When the duration of job is 12 months or more, it is considered as Long duration job

3.15. **High Value Jobs:** When the value of the job contract is Rs. One Crore or more it will be considered as High value job**.**

4. Responsibilities

4.1 Order Manager: Order Manager is the Tata Power representative, who is responsible for:

4.1.1 Finalizing the Site Safety Management Plan along with Contractor, Safety Concurrences Group, Divisional Safety Head and Expert (External or Internal) if required.

4.1.2 Supervise and ensure work is carried out as per the Site Safety Management Plan including agreed Risk Assessment (HIRA/JSA) and Method Statement.

4.1.3 Conduct audit and evaluate Safety Performance of contractor.

4.1.4 Ensure contractors adhere to all statutory provisions.

4.1.5 In case any deviation is needed in agreed safety management plan or in CSCC process for execution of job, Management of Change procedure will be applicable, and approval may be obtained from divisional head /Cluster head.

4.2 Contractor: The person, entity or organisation who is executing the job for Tata Power under a contractual agreement and will be responsible for the following

4.2.1 To follow all Tata Power Critical Safety Procedure, Rules and guidelines given in Safety Terms and Conditions

4.2.2 Undertake job as per Site Safety Management Plan CSM-F10 and method statements agreed with Tata Power.

4.2.3 Raise any concerns with regard to their work and its safety with the Tata Power Order Manager.

4.2.4 Report all injuries, near misses, unsafe acts/conditions, and occurrences to the Tata Power Order Manager immediately.

4.2.5 Ensure that all sub-contractors follow the Tata Power Safety Procedure and agreed Site Safety Management Plan CSM-F10.

4.2.6 To follow all statutory requirements as per the laws of the land.

4.2.7 All vendors applying for A category jobs or submitting quote for high risk jobs shall obtain certificates of ISO 9001, ISO14001 and ISO45001 before submitting quote for high risk Jobs.

4.3 Safety Concurrence Group: It is Cross Functional Team constituted by Corporate Safety Team, which will have representatives from Execution department, Divisional safety and Corporate / Divisional contracts. SCG will be responsible for the following

4.3.1 Assessment of Safety Potential of new vendor before registration as per CSM-F1-Safety Category Qualification Form.

4.3.2 Safety Evaluation of the bids as per evaluation format CSM-F-9 Safety Bid Evaluation Criteria

4.3.3 Finalization of the Site Safety Management Plan CSM-F-10 submitted by the contractor.

4.3.4 Corporate Safety Team / Cluster Safety Head will be part of SCG during Safety Bid Evaluation for following types of jobs

4.3.4.1 High-Risk jobs to be carried out in Annual Overhaul / Major Shutdowns and Outages.

4.3.4.2 Capex jobs of High-Risk Category

5.1 Vendor Registration

For Vendor Registration, Corporate Contract will issue following documents for evaluation of contractor's safety capability

1) CSM-F1 –Safety Category Qualification Form
2) Safety Terms and Conditions

The document Safety Terms and Conditions provides the information about Tata Power safety System to the contractor. Contractor will submit the CSM-F1- Safety Category Qualification Form with all relevant details and documents to Vendor Registration Initiator, which will in turn forward it to Safety Concurrence Group (SCG) for evaluation. The SCG will evaluate the details submitted by the contractor based on a predetermined criteria CSM-F-5 Safety Potential Evaluation Criteria for Vendor Registration and will determine the category (Category A/B/C/D) for which the contractor will be registered. As mentioned in the above criteria, a site visit may also be organized by SCG prior to registration under Category A and B. In case, the contractor does not qualify the safety criteria, the contractor will not be registered. However, he may apply afresh for registration after 6 months. Please refer Appendix 1: Process Flow Chart for Vendor Registration.

5.2 Bid evaluation

At the time of placing the Purchase Requisition (PR), Order Manager is required to declare the risk involved in the of the job (i.e. High Risk / Medium Risk / Low Risk jobs, based on the RPN in HIRA. If the Job is "High Risk" or "Long Duration", then RFQ will be attached with following documents:

1) CSM-F7- Blank Safety Competency Form
2) CSM-F8 PPE requirements
3) Safety Terms and Conditions
4) Job Specific Safety Requirement (Educational and Professional Qualification, Skill & Experience Manpower, Tools and Tackles (e.g. man lifter, use of drone, use & availability of rescue kit), Work Methodology etc.)

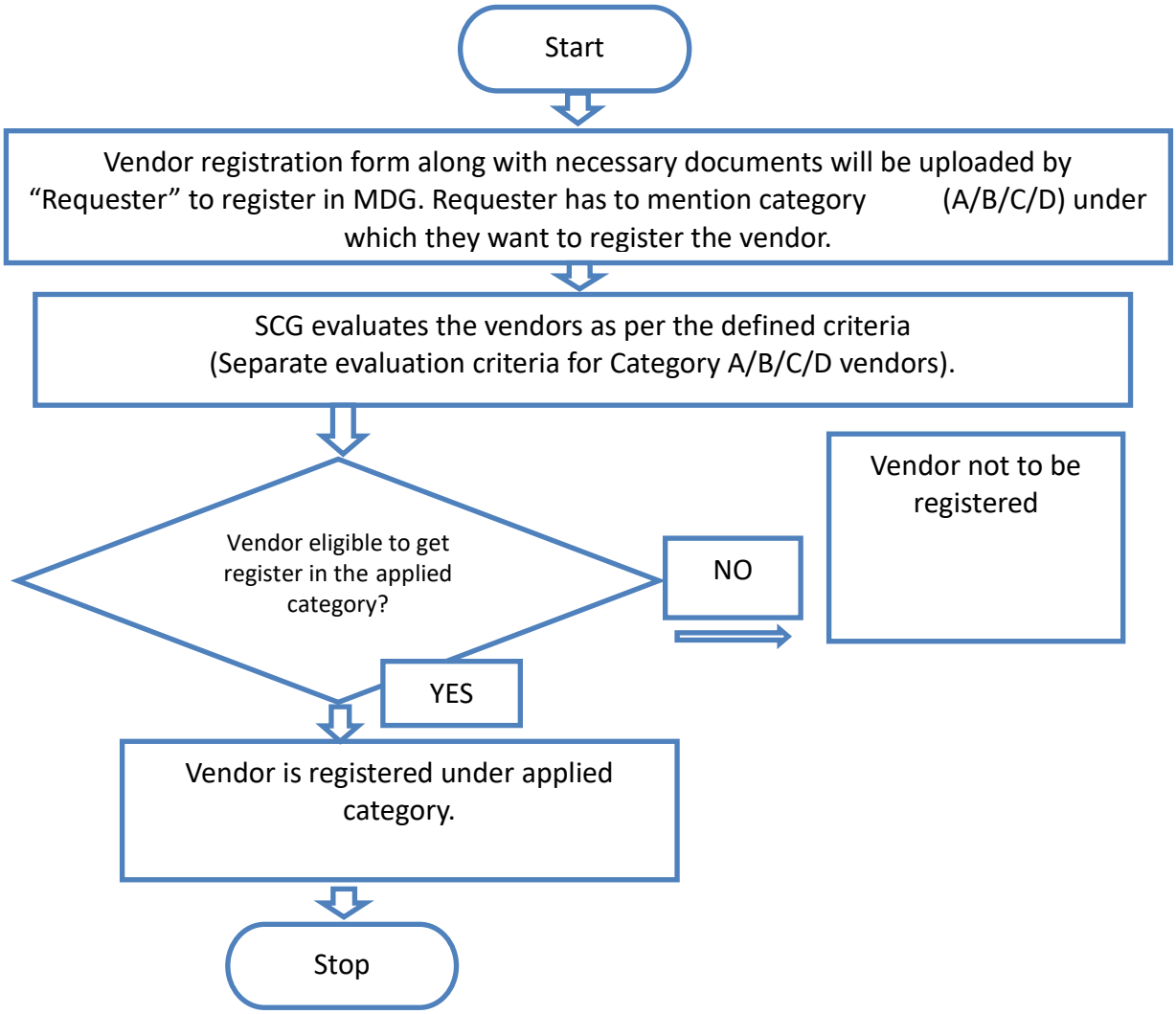
Otherwise the RFQ will be attached only with Safety Terms and Conditions. Long term and low value jobs (see definition) are exempted from the CSCC process.

Corporate Contracts will collect duly filledCSM-F7 Safety Competency Form along with the bid. All other stakeholders will also put their efforts to get all relevant safety data during meeting / discussions with the vendor. SCG will evaluate the document as per the CSM-F9 Safety bid evaluation criteria. If any specific condition related to Contract is required to convey to contractor, Site safety team will attach the same as Annexure for specific conditions of job and submit it to contract team along with safety bid evaluation form. Commercial bid of contractor will be considered for evaluation by contract team only if contractor is qualified in safety bid. Site Safety Management Plan, defining the complete procedure of executing the job at site will be signed by the contractor and SCG after mutual agreement. CC will attach a copy of site safety Management Plan and any specific condition of contract along with PO to the successful bidder. Please refer Appendix 6: Process Flow Chart for issuing RFQ and PO significant health and safety risk associated with it.

5.3 Safety Performance Evaluation

During the time of job execution, regular site inspection will be carried out by the Tata Power officials and violations will be dealt as per CSM–F4 Safety Violation Penalty Criteria. Apart from this, monthly safety performance of the contractor will be evaluated based on the predetermined criteria as per CSM-F11 safety Performance Score and monthly score will be maintained by the Order Manager. Certain percentage of each running bill will be retained as Safety Retention amount and will be released on the basis of Safety Performance Score at certain intervals as defined in CSM- F-3- Safety Performance Evaluation Criteria. Please refer Appendix 10: Process Flow Chart for Safety Performance Evaluation. Percentage of retention amount is mentioned in safety terms and conditions.

Appendix 1: Process Flow Chart for Vendor Registration



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Appendix 2: CSM-F-1 Safety Category Qualification form

1. "**Safety Category Qualification Form**" is part of vendor registration form. It needs to be filled by the contractor at the time of Registration and should submitted to Requester / order manager with all relevant documents.
2. The same will be evaluated by Safety Concurrence Group of the Division (SCG) as per the criteria given in CSM-F-5.
3. Information provided by contractor will be verified during site visit.

Safety Category Qualification Form

Please Consider my application for

Category A Vendor: Vendor eligible to carry out Very High- and High-risk O&M jobs

Category B Vendor: Vendors eligible to carry out technical jobs, classified as Medium / low risk

Category C Vendor: Vendors eligible for to carry out low or very low risk administrative and office jobs

Category D vendor: All Consultants, Medical Practitioners or vendors taking job from Tata Power and working from their own premises.

Name of the Vendor:			
Sr. No	**Safety Information**	Remarks	Attachment
1	Certified for i. OHSAS 18001/ ISO 45001, ii. ISO: 14001 iii. ISO: 9001 (ISO certificates to be issued from reputed accreditation agencies specified by Tata Power)	i. Y/ N ii. Y/ N iii. Y/ N	Attach copy of the certification

Name of the Vendor:			
2	Safety Statistics for Last Three (3) Years - LTIFR - LTISR	Yes/No	<table><tr><td></td><td>Year 1 (Last FY)</td><td>Year 2</td><td>Year 3</td></tr><tr><td>LTIFR</td><td></td><td></td><td></td></tr><tr><td>LTISR</td><td></td><td></td><td></td></tr></table>
3	Do you have Safety Policy?	Yes/No	Attach copy of the safety policy.
4	Do you have Safety training process?	Yes/No	Attach safety training process.
5	Do you have Safety organization structure e.g. Safety Officers and Safety Committees?	Yes/No	Attach copy of the safety organization structure.
6	Name and address of sites where work is in progress or worked earlier	Yes/No	Site details to be attached for inspection by Officials.

Signature :

Name and Designation :

Stamp of Organization :

Appendix 3: Safety Terms and Conditions

Please refer the attached document Safety Terms and Conditions.

Appendix 4: CSM- F-3- Safety Performance Evaluation Criteria

1. A certain percentage of the bill value will be retained against every running bill as safety performance retention. The amount will be released with the last invoice or every six-month based on Safety Performance Score of contractors. The retention amount will be calculated based on contract value as below.

Contract Value	Retention Amount (%)
Up to 10 Lakhs	2.5
10 – 50 lakhs	2
0.5 to 10 Cr	1.5
>10 Cr	1

2. The evaluation criteria include Lead Indicators such as CFSA (Contractor Field safety Audit) score, percentage of workers trained in TPSDI, inspection of critical equipment. Lag indicators such as Fatalities, LWDC and man days lost.
3. The retention amount saved will go to a separate Safety Improvement Fund.

4. For the contract value of more than Rs 1 Cr or contract duration more than 12 months, the retention amount shall be released half yearly based on safety performance. For all remaining contracts, the retention amount will be released with the final bill.
5. Long term jobs with low value (Less than Rs. 1 Cr.) are exempted from the safety retention. Invoice of these type of jobs can be cleared without safety retention.
6. In case of job stoppage due to safety violations / unsafe observations at the site, no time extension shall be given to the contractor, if such delays are attributable to contractor.
7. In case of fatality, limb loss or loss of property, vendor must pay for liability, legal, statutory and additional mutually agreed settlement charges imposed by the appointed committee. This charge is over and above the retention amount.
8. The committee will finalize an amount between 5 -50 lakhs based on factors such as advise by statutory authorities, contract value and impact of accident etc.
9. Safety performance bonus 1% (limiting to 50 lakhs) of the invoice value will be considered at the end of the job if the contractual safety performance score 100%.
10. During the progress of the work, concerned Supervisor/Engineer will visit and inspect the work site regularly and evaluate the safety performance of the contractor based on matrix attached herewith and apply the Consequence management policy as applicable.
11. Order Manager, divisional chief and SBU head have the authority to terminate the contract in case of three consecutive serious violations.

Safety Performance Evaluation report- CSM-F-3

	Lead Indicators	**Unit Of measurement**	**Target**	**weight age**
1	% of Employee certified in TPSDI/Authorized agency	%	50%	10
2	CFSA score (Annexure 6.1)	Average Severity of Violations	1.49	20
3	Monthly inspection completed by contractor for Critical Equipment, lifting Tools & Tackles and hand tools used at site as per Tata Power Checklist	%	80	5
4	Revalidation of	%	100	15

	Condition of tools, tackles and equipment by Order Manger. -			
	Lag Indicators			
1	Number of Fatalities	No.	0	30
2	Number of Lost workday case (LWDC)	No.	0	10
3	Man-days Lost	No.	0	10

Appendix 5: CSM- F-4 Safety Violation Penalty Criteria

Penalty shall be imposed on the contractors under the following circumstances for breaching the contractual agreements:

Sr No	Description of violation	Severity	Penalty
1.	Working without Permit	5	5000/-
2.	Untrained (TPSDI) worker on high-risk jobs.	5	5000/-
3.	Unhygienic/Bad condition of PPE	2	250/-
4.	Not following Tata Power Procedure & Standard	4	2000/-
5.	Unsafe Act/Condition of Severity 4	4	2000/-
6.	Unsafe Act/Condition of Severity 5	5	5000/-
7.	No Earthling of Electrical equipment	5	5000/-
8.	Damaged welding cable	5	5000/
9.	Violation of Positive Isolation Procedure (LOTO Not followed)	5	5000/
10.	ELCB of more than 30 mA/ELCB not working	5	5000/
11.	On/Off switch of welding m/c not working	5	5000/
12.	Electric cable tied with metal wire	5	5000/
13.	Leakage found DA hose / cylinder	5	5000/
14.	Use of LPG	5	5000/
15.	Use of IC engine based Three-wheeler at the work site.	5	5000/
16.	Starting the job without Toolbox Talk	5	5000/
17.	Spatter falling on DA hose / Gas-line/ pathways / Equipment	5	5000/
18.	No safety latch in crane hook	5	5000/
19.	Load raised or swung over people or occupied areas of buildings	5	5000/
20.	Persons standing in swing area of construction equipment.	5	5000/
21.	Using damaged slings.	5	5000/
22.	Unstable scaffolding/nonstandard Scaffolding in use	5	5000/

Sr No	Description of violation	Severity	Penalty
23.	Handrails and mid-rails are missing	5	5000/
24.	Safety Harness not anchored with lifeline/fixed structure	5	5000/
25.	Fall arrestor not provided/ Not being used.	5	5000/
26.	Double lifeline not used for working at height	5	5000/
27.	No rubber mat in- Electrical Distribution (DB) room	4	2000/-
28.	Water found accumulated in Electrical Distribution room/near welding machine.	4	2000/
29.	Inserting electric cables into socket, without using plug.	4	2000/
30.	Use of damaged electrical cable/two core cables.	4	2000/
31.	Inflammable material found in Distribution Room / welding areas.	4	2000/
32.	Loose material falling into excavated pit	4	2000/
33.	Water logging into excavated pit /trenches	4	2000/
34.	No / inadequate Barricade	4	2000/
35.	Undercut / cave-in found on sides of excavated pits	4	2000/
36.	Grinding wheel/ Coupling/ Piling winch/other rotating parts without guard	4	2000/
37.	The HMV/Mobile Crane operator does not have a valid HMV driving license.	4	2000/
38.	The loading area is not leveled properly.	4	2000/
39.	Ladder not anchored at top	4	2000/
40.	Opening found in working platform of scaffolding/floor	4	2000/
41.	Inadequate illumination at the working area	4	2000/
42.	Loose material lying on Gantry, platform	4	2000/
43.	Cleaning with Compressed Air.	3	500/-
44.	Gas Cylinders using without cap.	3	500/
45.	Gas Cylinders stored without securing	3	500/
46.	Bringing inside any other chemicals, apart from approved by Safety dept.	3	500/
47.	Using drum for sitting or accessing height.	3	500/
48.	Misusing emergency facilities like fire hydrant line/ hose box/ spray system/ eye wash etc.	3	500/
49.	No provision of Safety net where falling materials or tools may occurs	3	500/
50.	Taking electrical supply from non-designated outlet (other	3	500/

Sr No	Description of violation	Severity	Penalty
	than socket).		
51.	Restricted gangways due to unwanted materials.	3	500/
52.	Not reporting incident.	3	500/
53.	Entering into restricted area like switch yard/ hazardous storage	3	500/
54.	Work without supervision	3	500/
55.	Parking of vehicle without applying wheel choke at right front-front and left rear-rear wheels other than passenger cars.	3	500/
56.	Heavy Vehicle without helper or co-driver.	3	500/
57.	Not wearing florescent safety jacket at site.	3	500/
58.	People travelling in load body of vehicle.	3	500/
59.	Parking of vehicles at non designated area.	3	500/
60.	Shifting heavy materials without guide ropes.	3	500/
61.	Using other than 24V lamp inside the confined space/Use of other than 24V lamps.	3	500/
62.	Angular loading/ lifting with Crane or hoist.	3	500/
63.	By passing the limit switch/ Safety Interlock.	3	500/
64.	Housekeeping activities on road without proper barricade.	3	500/
65.	Trying to board or alit from running vehicle.	3	500/
66.	Cylinder Valves of Gas cylinders not closed when not in use.	3	500/
67.	Flash-back arrester not used.	3	500/
68.	Hand Trolley wheel found damaged.	3	500/
69.	Guy ropes of required length on both sides of object are not used during movement with load.	3	5/ 00/
70.	Scotch block/wedge not provided, when the vehicle is parked.	3	500/
71.	Suitable Trolley not provided to hold the cylinders.	3	500/
72.	Locked First Aid box	3	500/
73.	Caution boards, danger signs (luminescent /red) along with emergency contact number are not found displayed.	3	500/
74.	Person found jumping barricading tape	3	500/
75.	Stacking of pipes, pile casing, drums without chock blocks/wedges	3	500/
76.	The terrain on which Heavy Equipment/Machinery moves is not reasonably hard.	3	500/

Sr No	Description of violation	Severity	Penalty
77.	Without Safety Helmet at working sites	4	250/-
78.	Without Crash Helmet (on bikes)	4	500/-
79.	Without Full body double lanyard Safety Harness (for work at height)	5	5000/-
80.	Without Hand gloves - Material Handling, Welding, Cutting,	4	100/-
81.	Without Safety goggles/ face shield - Welding/Cutting /Grinding	5	5000/-
82.	Handling Chemical without PVC Apron	5	5000/-
83.	Smoking in prohibited area (Closed Go-downs, Storage of flammable material, Storage of Gas cylinders)	5	1000/-
84.	Sleeping at Workplace	3	100/-
85.	Driving beyond speed limit	3	1000/-
86.	Seat Belt While Driving (for front seat passengers and driver)	3	500/-
87.	Driving without license	4	1000/-
88.	Heavy Commercial vehicles without reverse horn	3	500/-
89.	Nonfunctional Head light/ taillight and side indicators	3	100/-
90.	Using Mobile Phone During Driving	5	5000/-
91.	Poor visibility of registration number/ without registration number	3	100/-
92.	Broken/ without Side view mirror	3	100/-
93.	Over speeding above specified limit	3	500/-
94.	Broken/ Without Pressure gauge on Oxygen/ LPG / Acetylene cylinder.	3	500/-
95.	Without Flash back arrestor on Industrial Acetylene & Oxygen cylinders.	5	5000/-
96.	Spillage of hazardous material/chemicals during transportation	4	2000/-
97.	Electrical equipment without Earthing/ ELCB/ Double Insulation Cable.	5	5000/-
98.	Lifting Tools & Tackles used without/ expired Test Certificates.	5	5000/-
99.	Housekeeping repeatedly not maintained		
100.	• First Time	3	Warning
101.	• Second Time	4	1000/-

Sr No	Description of violation	Severity	Penalty
102.	• Third Time	5	5000/-
103.	Serious Violation of House Keeping (after 1st or 2nd warning to be decided by Project Manager depending on the severity)	5	Rs.10000/- and above
104.	Repeat Violation of same nature	5	5 X Penalty for Violation
105.	Appointment of subcontractor without his Safety Bid Evaluation and/or without the permission of engineer in charge or Order manager.	5	5% of Contract Value

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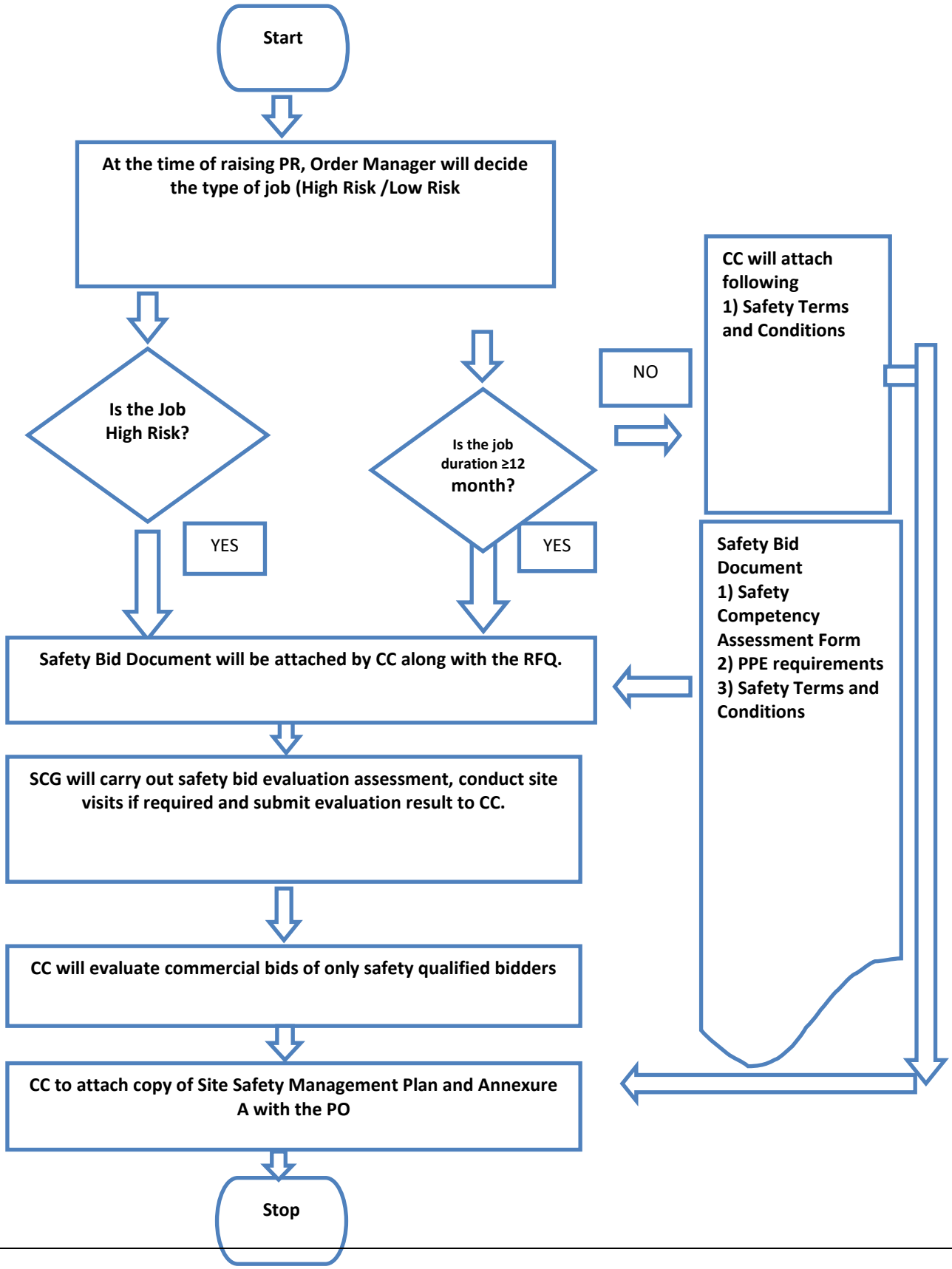

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Appendix 7: CSM-F-7 Safety Competency Form (Template)

Name of the Vendor/Bidder : -

Name of the Sub Vendor (If job is given to Sub Vendor) : -

Description of the Job : -

Request for Quotation (RFQ) No. :-

Vendor/Bidder to mandatorily provide the below safety competency related information.

1. Proposed Manpower Deployment Schedule : -

Category of Manpower Deployed	Minimum Qualification & Experience	Proposed Numbers against each category month-wise			
		Month 1	Month 2	…	Month n
Project Manager					
Site-In-Charge (Site Manager)					
Shift-in-Charge					
Safety Officers					
Supervisors					
Technicians					
a……					
b……..					
Highly Skilled Workmen					
a……					
b……..					
Skilled Workmen					
Semi-Skilled Workmen					
Unskilled Workmen					
Total Manpower					

Instructions to Bidder to fill:

1. Bidder to provide the overall site manpower deployment schedule as above.
2. Bidder to indicate (through colour code mentioned below) their direct and sub-contracted employees

Direct bidder employee
Partly Direct / Partly sub-contracted
Sub-Contracted

3. Against each of the category, bidder to indicate the minimum qualification and experience of the proposed manpower.
4. Rows can be added to also identify other specialised manpower e.g. specific details to be included for high risk activities operators
5. Columns can be extended to the actual duration of Site activities.
6. Bidder to note that if operations is in shifts, then Shift-in-charge / safety officers are required for each shift of operation.

2. List of Tools, Tackles, Machines and Equipment: -

Bidder/ Vendor to provide the list of tools, tackles, equipment **to be used during the job / project execution**. Bidder/Vendor to ensure that all the lifting tools and tackles, pressure vessels are duly certified by the competent person authorised by the Chief Inspector of Factories of the respective state prior to start of the job

Sr. No.	Description of Tools / Tackles	Capacity / Rating	Quantity	Make	Remarks
1					
2					
3					
4					
5					
6					
7					
...					

3. Safety Records:

Bidder to provide the details of fatalities and lost workday cases (LWDC), occurred in last three years (data to be provided for the last completed FY and preceding 2 years).

Description	Safety Data for Last 3 Years		
	Year 1 (Last FY)	Year 2	Year 3
	20__ - __	20__ - __	20__ - __
Fatalities (Nos.)			
Lost Workday Cases (Nos.)			

In case of no fatalities, LWDC during any year, the form may be filled stating NIL against the respective year. Bidders are encouraged to also submit the RCA / incident investigation reports and the learning's implemented out of the above reported incidents

4. Job Safety Plan/ Method Statement:

Bidder to provide / enclose a detailed Site/Job Safety Plan along with a Method statement detailing the execution philosophy (how the bidder intends to execute the Job/Project), identifying all key activities which are required to be performed by the contractor at Site. Bidder to also list down all high-risk activities and provide the Hazard Identification and Risk Assessment (HIRA) for all such high-risk activities involved in the site work.
(Use Method Statement template attached as annexure A and sample as attachment B)

5. Management System Certification: -

Sr.	Certification	Yes / No	If Yes, Year of Certification	If No, Target date for Certification
	ISO 9001			
	ISO 14001			
	OSHAS 18001 / ISO 45001			
	Any other (please specify……			
Note: Please attach certificates to support above. In case not accredited for above but applied for, application letters may be attached.				

Appendix 8: CSM-F-8 PPE requirements

The Contractor shall ensure that the following PPE of Approved standards shall be available at all time and shall be used by his employees with no exception whatsoever.

1	All contractor's employees at site	Safety Florescent Jacket (orange color), Safety helmet & safety shoes with Composite or steel toe cap
2	Workers mixing asphalt, cement, lime / concrete	Safety goggle & protective Hand gloves and footwear, Nose mask.
3	Welders / Grinders	Welding screen/goggles, safety shoes, leather hand gloves, aprons, leg guard
4	Stone breaker	Protective goggle, hearing protection, anti-vibration hand gloves and Protective clothing.
5	Electricians	Rubber hand gloves & Electrical resistant shoes.
6	Workers engaged in insulation using glass wool etc.	Respiratory mask & leather Hand gloves, goggles.
	Workers engaged in coal handling plant, ash handling plant and working in high dust area.	Dust mask, Hand gloves, protective goggles.
7	Workers working at a height of 1.8 Meter or above.	Double lanyard full body harness, fall arrestor and safety net made of reinforced nylon fiber ropes firmly supported with steel structures

- **PPE shall be conforming to BIS/DGMS/DIN specifications, in good condition and shall be comfortable to his employees, when used.**

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Appendix 9: CSM- F-10 Site Safety Management Plan / Method Statement

Site Safety Plan / Method Statement (Template)

This Method Statement describes the specific safe working methods which will be used to carry out the described work. It gives details of work procedure with control measures to counter health and safety issues related to this work. The listed content of this Method Statement can be changed/modified subjected to job scope / specifications, but task specific method statement once finalized & approved, that should not be modified during work execution without permission from the approving authority.

Project/Job Name			
Scope of work: -			
Drawing References: -			
Detail of Sub contractors involved: -			
Method Statement Prepared By: - Designation: - (e.g. Site Manager)		Signature	Date

1.0 Introduction (*Describe purpose of the work, give details of type and scope of work being carried out);*

2.0 Location of Work *(Give site address and precise location on site where work is to be carried out.)*

3.0 Safety Document /Specific Approval Required (Details of any safety documents or specific approval i.e. Client specific approval required to undertake the work)

5.0 Role & Responsibilities of Personnel/Parties Involved in activities: -Clearly define role and responsibilities of all personnel involved in activity i.e. Site management staff including subcontractors' parties- Main contractor Project/Site Manager, Sub Contractor Site Manager, Project Engineer, Safety officer, Competent Supervisory Staff)

6.0 Working/Activity Description: - It *is important that all operatives should have clear idea of those operational sequences and responsible supervisor must verify their competency prior to their engagement in operation.*

6.1 Pre-Working Checks

6.2 Resources (Equipment, tools including manpower) Details *i.e. Equipment and Tools, specific operational equipment, test kits, lifting resources, Details of materials to be used in operation, including any reference to COSHH assessments in case of use of any chemicals, Details of the manpower allocated to the task, e.g. titles, qualifications, competences, direct manpower, contractors. Details of plant, tools and equipment to*

be used for the work, including the availability of relevant statutory documents, checks or inspections etc. Details of fencing, barriers, cones, chains, dangers notices, warning signs etc.

Tools required for work:

Sr.No	Tools /Equipment /Machine	UOM	Required Qty.	Remark
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

6.4 Operational Sequence of work: - *Full description of the work, setting out the methodology in a sequential manner, including any reference to any identified operational restraints. Also refer here sec. 5.0 responsibilities part for every step of work sequence).*

Sr.No	Activity	Details of job sequence	Risk Involved	Control Checks
1.		1.		
2.				
3				
4				
5.				

6.7 Final Checks & restoration of work area after completion of work :- *Those checks to be carried out by responsible supervisor in witness of his line hierarchy by use of specific checklist of certain operational*

checks and once those completed satisfactory, PTW (if applicable) to be closed and isolation arrangements to be restored by removing barricades/cautionary tags.

7.0 Task Specific Hazards: - *Refer to Task Specific Risk Assessment and attach in appendix*
Attachment: - Specific Risk Assessment
In addition, please provide below control measures in risk assessment *(as applicable).*

Fall Protection Measures: (Where Work at height cannot be avoided)							
Control Measures for Electrical Hazards							
Others Hazard if any (please provide details)							
Hazardous Substances to be used in job : (Attach MSDS if required)	 Acute Toxic	 Health Hazard	 Corrosive	 Dangerous For the environment	 Oxidising	 Highly flammable	 Explosives
	Yes /No	Yes /No	Yes /No	Yes /No	Yes /No	Yes /No	Yes /No

Emergency Provisions: -*Relevant operational possibility of a programme in the case of emergency situation i.e. electrical supply restoration. In addition emergency response provisions i.e. first aiders, fire fighting, and first aid arrangements, nearest onsite/offsite emergency response also to be considered during emergency planning.*

7.0 "5S issues" / Waste Disposal/ Housekeeping and Environmental issues: -*Details waste disposal processes and or housekeeping activities, Details of environmental impacts and control measures.*

8.0 Personal Protective Equipment (PPE):- (*Tick on PPE requirements for the task/Job*

10.0 First Aid facilities and Nearby Hospitals Details

	First Aid Facilities:	Name of On-Site First Aider:	
		First Aid Box Location:	
		Location of Nearest Hospital:	

Required Personnel Protective Equipment:	 Safety Boots	 Hard Hats	 Safety Gloves	 Hearing Protection	 Eye Protection	 Respiratory Protection	Other: 1. Hi-Viz 2. Coveralls 3.

11.0 Occupational Health, Fitness and COVID-19 related Preparedness:

1. Please give a brief writeup / methodology of your organization planned to avoid impact of the COVID-19 pandemic at Tata Power working site.

2. Please give brief details of occupational health and hygiene related interventions planned by your organisation to ensure good health and fitness of workforce at Tata Power site.

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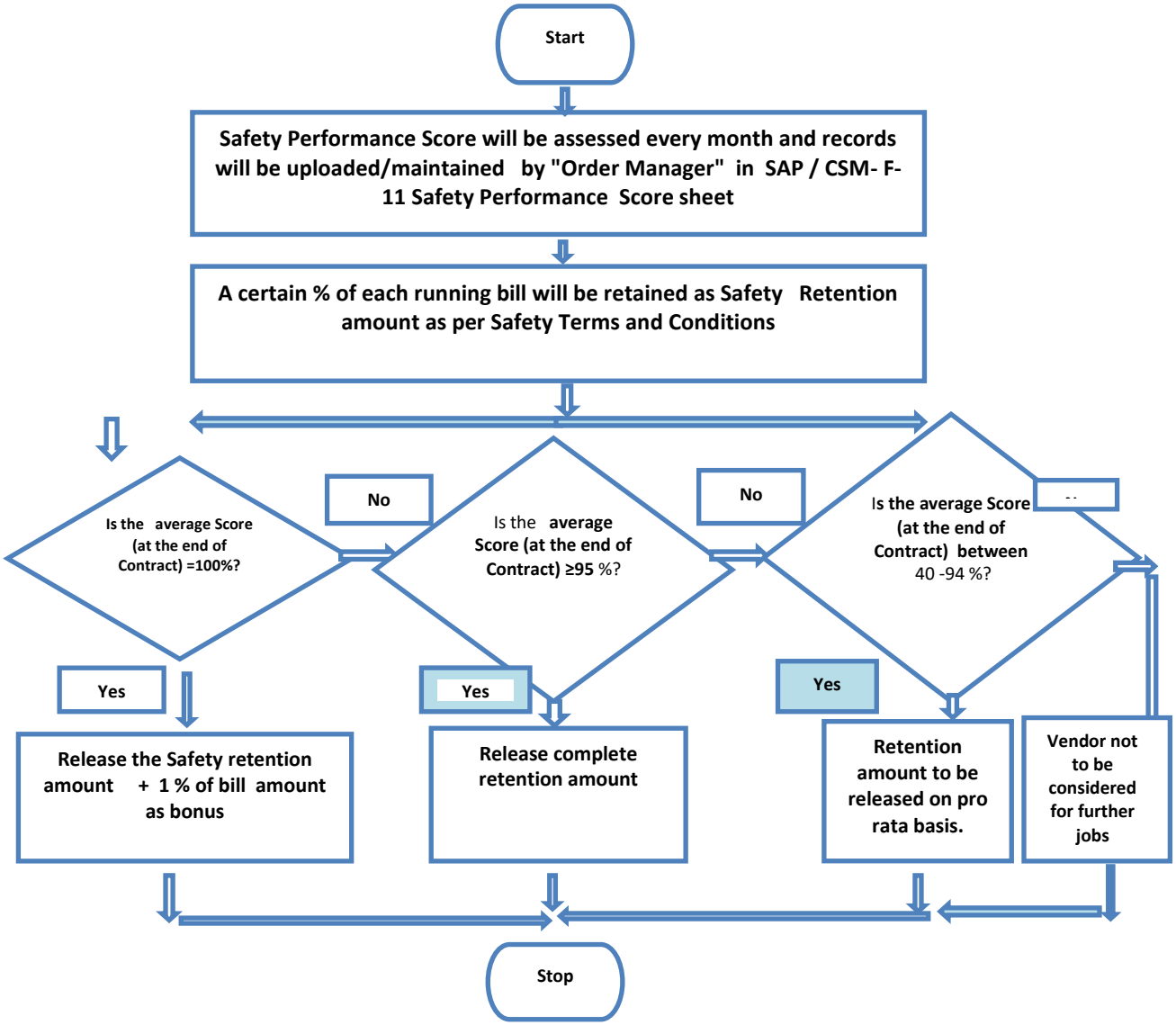
Appendix 10: Process Flow Chart for Safety Performance Evaluation



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Appendix 11: CSM- F-11 Safety Performance Score

Sr.No	Parameter	Unit of Measurement	Target	Weightage	Actual Performance	Actual Score
Lead Indicator						
1	% of Employee certified in TPSDI/Authorized agency	Number	50%	10		
2	CFSA score (Annexure 6.1)	Average Severity of Violations	1.49	20		
3	Monthly inspection completed for Critical Equipment, lifting Tools & Tackles and hand tools used at site	Number	80%	10		
4	Condition of critical tools, tackles and equipment	Number	100%	10		
Lag Indicator						
1	Number of Fatalities	No	0	30		
2	Number of Lost workday case (LWDC) (reportable)	No	0	10		
3	Man-days Lost	Man-days	0	10		
					Final Score	
					Invoice Value	
					Amount to be released	

Safety Performance Evaluation Criteria

Lead Indicators

	Target

% of Employee certified in TPSDI/Authorized agency	50%	100%	Less than 100%	
Score		10	5	
	Target			
CFSA score	<=1.49	1.5 to 2.5	2.51 to 3.5	>=3.51
Score	20	15	10	0
	Target			
Monthly inspection completed for Critical Equipment, lifting Tools & Tackles and hand tools used at site	>=80%	79 to 50%	<50%	
Score	10	7	0	
	Target			
Condition of critical tools, tackles and equipment	100%	<100%		
Score	10	0		

Lag Indicators

Number of Fatalities	0	>0	
Score	30	0	
Number of LWDC (reportable)	0	>0	
Score	10	0	
Number of man days lost	0	1 to 5	>5
Score	10	5	0

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Appendix 12: CSM-F-5 Safety Potential Evaluation Criteria for Vendor Registration

At the time of vendor registration, vendor will be registered under 3 categories

1) **Category A**- Vendors eligible to carry out High risk Jobs
2) **Category B**- Vendors eligible to carry out technical jobs that are low risk
3) **Category C**- Vendors eligible to carry out administrative and office jobs
4) **Category D**- Outsourced Jobs / Consultants /Medical Practitioners / Suppliers etc

For vendors to be registered under **Category A**, a safety potential evaluation will be carried out based on following parameters.

Sr. No	Description	Weightage (%)	Actual Score	Remarks
1	Does the contractor have a valid ISO 45001/ OHSAS 18001/ Certification?	30		
2	During site visit check for safety adequacy at site	30		Annexure - 12.1
3	Check the Safety statistics of Contractor	10		Annexure - 12.2
4	Check the Safety orientation & training process of Contractor	15		Annexure 12.3
5	Check the organizational structure for safety professionals & engineers / supervisors.	10		Annexure - 12.4
6	Certified/skilled workers as a percentage of overall workforce	5		
	Total	100		

Evaluation Criteria for Category B

Sr. No	Description	Weightage (%)	Actual Score	Remarks

1	Does the contractor have a valid ISO 9001 certification?	30		
2	During site visit check for safety adequacy at site	30		Annexure -12.1
3	Check the Safety statistics of Contractor	10		Annexure -12.2
4	Check the Safety orientation & training process of Contractor	15		Annexure -12.3
5	Check the organizational structure for safety professionals & engineers / supervisors.	10		Annexure -12.4
6	Certified/skilled workers as a percentage of overall workforce	5		
	Total	100		

Evaluation Criteria for Category C

Sr. No	**Description**	Weightage (%)	Actual Score	Remarks
1	Does the contractor have a valid ISO 9001 certification?	40		
2	Check the Safety statistics of Contractor	40		Annexure - 12.2
3	Check the Safety orientation & training process of Contractor	20		Annexure - 12.3
	Total	100		

Annexure 12.1: Evaluation Criteria for Category D:

Category D does not require any evaluation as it is for outsourced job outside the Tata Power company premise.

Annexure 12.2

Check List – Adequacy of Safety Statistics of Service Provider			Actual Marks obtained	Remarks
1	Check the safety statistics for last 3 years (LTIFR and LTISR)	Statistics available: 5 Statistics not available: 0		
2	Check the trend LTIFR for last 3 years	LTIFR value / Marks 0 to 0.2: 5 0.21 to 0.3: 2.5 >0.3: 0		
3	Check the trend of LTISR last 3 years	LTISR value / Marks 0 to 2: 5 2 to 3: 2.5 >3: 0		
4	Has there been any Prosecution/Conviction for any contravention with regard to Safety & Health provisions under the Factories Act /Electricity Act/ BOCW Act and Rules framed there under?	Marks No Prosecution: 10 Prosecution: 0 To be provided in written on letter head		
	Total	25		

Annexure 12.3

Check List – Adequacy of Safety orientation & training process of Service provider			Actual Marks obtained
1	Records of safety trainings provided to safety officer/supervisor/workmen during last 1 year as percentage(%) of total employed by service provider	**Safety Officer** / Marks ≥80% of employees: 5 50 to 79 % of employee: 2.5 < 50%: 0	
		Safety Supervisor / Marks ≥80% of employees: 10 50 to 79 % of employee: 6 < 50%: 0	
		Workmen / Marks ≥80% of employees: 10 50 to 79 % of employee: 6 < 50%: 0	
	Total	25	

Annexure 12.4

Check List – Adequacy of organizational structure for safety professionals & engineers / supervisors.			Actual Marks obtained
1	Check availability of number of safety officers from government recognized institute as per workforce strength.	Marks 1 in 50 employees: 10 1 in 100 employee: 6 Any other: 0	
3	Check availability of qualified workforce from government recognized institute/TPSDI.	Marks 100% of safety officers qualified: 5 50 – 99% of safety officers qualified: 3 <50: 0	
	Total	15	

Appendix 13: CSM-F-9 Safety Bid Evaluation Criteria.

The User has to select whether the job is high risk/ long duration at time of raising the PR.

1) The decision whether job is "**high risk** "or not has to be made by order manager on the basis of Risk involved (Risk Priority Number in HIRA) of the Jobs. An indicative list of high-risk jobs is attached as annexure
2) If a technical job is of low risk with estimated duration of the contract is 1 year or more the job should be treated as "**long duration**".
3) All Safety bids will be evaluated by Safety Concurrence Group. Structure of SCG will be declared by Corporate safety. Corporate safety team will audit bid evaluation process of a few selected jobs and Quality of evaluated safety Bids.
4) Records of jobs sent by for Safety Bid evaluation shall be maintained by Corporate Contract team in existing tracing sheet along with other jobs.
5) For Safety Bid Evaluation will be based on following parameters.

		Minimum Requirement	**Weight age (%)**	**Score Obtained**
Manpower	**Safety Officer (1 per 500 workers)**	**Qualification-** Officer shall possess Advance Diploma In Industrial Safety by state technical board. **Experience**- Minimum 1-year	5	

		experience in relevant field as mentioned in the job in PR.		
	Safety Supervisor (1 per work site up to max. 50 workers)	**Qualification-** Supervisor shall possess ITI/ Diploma in relevant field. **Experience**- Minimum 2-year experience in relevant field as mentioned in the job in PR. **Training** – Trained and certified by TPSDI or equivalent institute in relevant safety procedures. **Note:** On request of the contractor/Users -TPDSI should vet & certify the skilled & experienced Technician if Technical Qualification is not adequate.	5	
	Technician (Skilled workers as electrician, rigger, fitter, welder, cable jointer, line men etc)	**Experience**- Minimum 2 year experience in relevant field as mentioned in the job in PR. **Training** – Trained and certified by TPSDI or equivalent institute in relevant safety procedures.	5	
Tools & Tackles	Equipment / Machines/ Tools & Tackles(lifting and shifting tools)	The list of Equipment /Machines / Tools and tackles to be used for job to be submitted by the contractor. Evaluation of the list will be carried out based on 1) Suitability as per the relevant job 2) Make and age of the tools from authorized agencies defined by the user. 3) Certification by the competent authority of respective state.	30	
Safety	Safety Records	Safety Records for last 3 years (as per	15	

Records		vendor or as per our knowledge) – Recommendation?		
Safety Plan	HIRA/Contract Job Safety Plan	Adequacy of HIRA and Job Safety Plan with respect to relevant job. More weight age will be given to vendor for using mechanized work and advanced tools and equipment	20	
Accredited Bodies certificate	ISO-9001	ISO-9001	2	
	ISO-14001	ISO-14001	3	
	OHSAS 18001 ISO 45000	OHSAS 18001/ISO 45000	15	
		Total Score		

6) Vendor entitled to carry out the job only when qualified for the safety evaluation as follows:

   Contractor is qualified in safety bid only if his total score is more than 70% in all category 1 jobs such as high risk/long duration.

7) The Corporate Contract has to ensure that the vendor provides the filled "Safety Competency Form" along with the quotation.

8) Corporate Contract will forward the Safety Competency Form received from the contractor to the Safety Concurrence Group for evaluation.

9) In case SCG wants to visit the site, the Safety Competency will be based on evaluation at the time of site visit Annexure 13.1

Annexure -13.1:

Checklist to be used: During site visit to check the adequacy Safety systems.			
		Observation	Score* (1-5)
1	Check the adequacy of safety policy and Safety Management system of the contractor.		

2	Does the contractor have written down safety procedures?		
3	Check the records of Near miss, unsafe act, unsafe conditions and incidents.		
4	Check the organization setup to implement the safety systems at site (safety officer, safety supervisor)		
5	Check whether safety meeting and toolbox talk carried out regularly and records maintained or not.		
6	Is the process of incident investigation adequate or not?		
7	Verify incident reporting and recording system		
8	Check the usage of equipment/tools and tackles.		
9	Check for housekeeping at site		
10	Check the use of PPEs and general behavior of workforce towards safety		
	Total Score		
	Site Visit Score		

Score*- rating on the scale of 1-5 to be given based on the observations on site. Score of 1 is the lowest and core of 5 is the highest.

Appendix 14: CSM-F-11.1 CFSA Format

CONTRACTOR FIELD SAFETY AUDIT						
Project Name :						
Date:						
Description of Severity rating:			**Audit Team:**			
	1 = Untidy area, minor issues, sets poor example					
	2 = Restricted access, unacceptable trash, disorderly					
	3 = Rule or procedure violation, potential injury					
	4 = Unsafe condition, serious injury potential					
	5 = Immediate serious injury potential, stop activity immediately and correct		**Audit Time:**			10:00hrs -11:30 hrs
			Weather:			cloudy
	Description	**Responsible**	**Number Personnel Observed**	**Violations**	**Remarks**	Leading Indicators

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		Engineer	Contractors	Good Citizens	Violators	Number of Violations	Severity	Violations x Severity		4 & 5	PPE	Unsafe Act	Unsafe Condition
Area													
1													
	Sub Totals			0	0	0	0	0		0	0	0	0
	% of Observed People Working Safely												
	Number of Violations												
	Average Severity of Violations												
	Number of Severity 4 & 5 Violations												
	% of 4 & 5 Violations												
	Approximate Number of Workers Observed												
	Number of People on Site												
	% of Workers Observed												

Appendix 15: Indicative List of High-Risk Jobs

To access the exhaustive list of High-risk jobs, please refer the following documents

1) High Risk Jobs- Generation
2) High Risk Jobs- T&D
3) High Risk Jobs- Renewable

Indicative List of High-Risk Jobs -Generation Cluster					
Sl. No.	**Jobs**				
1	Demolition / Painting of Chimney				
2	Survey Sounding Jobs in Sea				
3	Dredging at Coal Birth Jetty				
4	Maintenance / Testing and Replacement of Extra High Voltage (132 KV etc.) Switchyard equipment				
5	Maintenance of EOT Cranes				
6	Deep excavation (5 feet or more) near existing buildings /Structure s				

7	Working inside confined spaces (entry through manhole)				
8	Operation Maintenance of elevators				
9	Working on Live control Circuits for identification of faults				
10	Cable laying and termination Jobs				

Indicative List of High-Risk Jobs - T&D Cluster

Sl. No.	Jobs				
1	Transmission Line Tower Erection on columns, near live lines, In congested areas, In creeks, In the Sea				
2	Conductor Stringing on Tower Using Tensioner & Puller in the area such as Line Crossing, Near Live lines, Congested Areas, Road Crossing, Bridge Crossing, Railway line Crossing, In creeks ,In the Sea				
3	Cable Pulling by Using winch Machine in City and Rural Areas				
4	Hot Washing of HT and Extra HT lines, Towers and switchyards equipment				
5	Installation of Lifts				
6	Installation of EOT Cranes				
7	Tower Dismantling				
8	Working on H Frame /Pole mounted Transformers				
9	Excavation in operational Area heaving power cables in receiving station				
10	Identification and spiking of cable / disconnection of cables from poles				

Indicative List of High-Risk Jobs - Renewable Cluster

Sl. No.	Jobs				
1	Working on Electrical Panels				
2	Hi Potting of Equipment				
3	Battery commissioning and maintenance				
4	Working on the nasal of Wind Turbine				
5	Working on live electrical switchyard, material Handling and Equipment installation				
6	Roof Top Solar Panels Installation and maintenance				
7	Working in live Electrical Switchyard, Material Handling, equipment installation				
8	All maintenance activities that requires climbing on Towers /Structures / Transformer/ GODs				
9	Loading and Unloading of Solar Panels on trucks				
10	Structural Repair /Dismantling work at height.				

NIT No.: TPCODL/P&S/1000000090/2021-22

NIT No.: TPCODL/P&S/1000000090/2021-22

ANNEXURE X

TATA CODE OF CONDUCT

The Owner abides by the Tata Code of Conduct in all its dealing with stake holders and the same shall be binding on the Owner and the Contractor for dealings under this Order/ Contract. A copy of the Tata Code of Conduct is available a tour website:

https://www.tatapower.com/pdf/aboutus/Tata-Code-of-Conduct.pdf

The Contractor is requested to bring any concerns regarding this to the notice of our Chief , Contracts & stores . e-mail ID: pravin.jain@tpcentralodisha.com

ANNEXURE XI
ENVIRONMENT & SUSTAINABILITY POLICY

CORPORATE ENVIRONMENT POLICY

Tata Power is committed to a clean, safe and healthy environment, and we shall operate our facilities in an environmentally sensitive and responsible manner. Our commitment to environmental protection and stewardship will be achieved by:

- Complying with the requirements and spirit of applicable environmental laws and striving to exceed required levels of compliance wherever feasible
- Ensuring that our employees are trained to acquire the necessary skills to meet environmental standards
- Conserving natural resources by improving efficiency and reducing wastage
- Making business decisions that aim towards sustainable development
- Engaging with stakeholders to create awareness on sustainability

(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018

CORPORATE SUSTAINABILITY POLICY

At Tata Power, our Sustainability Policy integrates economic progress, social responsibility and environmental concerns with the objective of improving quality of life. We believe in integrating our business values and operations to meet the expectations of our customers, employees, partners, investors, communities and public at large

- We will uphold the values of honesty, partnership and fairness in our relationship with stakeholders
- We shall provide and maintain a clean, healthy and safe working environment for employees, customers, partners and the community
- We will strive to consistently enhance our value proposition to the customers and adhere to our promised standards of service delivery
- We will respect the universal declaration of human rights, International Labour Organization's fundamental conventions on core labour standards and operate as an equal opportunities employer
- We shall encourage and support our partners to adopt responsible business policies, Business Ethics and our Code of Conduct Standards
- We will continue to serve our communities:
  - By implementing sustainable Community Development Programmes including through public/private partnerships in and around our area of operations
  - By constantly protecting ecology, maintaining and renewing bio-diversity and wherever necessary conserving and protecting wild life, particularly endangered species
  - By encouraging our employees to serve communities by volunteering and by sharing their skills and expertise
  - By striving to deploy sustainable technologies and processes in all our operations and use scarce natural resources efficiently in our facilities
  - We will also help communities that are affected by natural calamities or untoward incidence, or that are physically challenged in line with the Tata Group's efforts

The management will commit all the necessary resources required to meet the goals of Corporate Sustainability.

(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018

TATA POWER
Lighting up Lives!

Annexure XII

Business Associate Registration Format

Attached as Annexure to this document

(Please Submit the duly filled in form as attached herewith and scanned copies of the relevant documents asked for in the form with scanned copy of a cancelled cheque for generation of BA code.)

CONTENTS

1.0	**Scope**	This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at site/store and performance of 11kV Ring Main Units with all accessories and necessary training for trouble free & efficient performance. It is not the intent to specify completely herein all the details of tech design and construction of material. However, the material shall conform to practices consistent with sound environmental management and local statues. It is also expected that equipment shall comply in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation in manner acceptable to the TPCODL, who will interpret the meanings of drawings and specification and shall have the power to reject any work or material which, in his judgment is not in accordance therewith. The offered material shall be complete with all components necessary for their effective and trouble-free operation. Such components shall be deemed to be within the scope of Bidder's supply irrespective of whether those are specifically brought out in this specification and/or the commercial order or not.
2.0	**APPLICABLE STANDARDS**	The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with latest editions of the following Standards /IEC and shall conform to the regulations of local statutory authorities. IS9920: Part 1 : High Voltage Switches, Part 1: Switches for Rated Voltages Above 1kV and Less Than 52 Kv IEC 62271-200 : HV switchgear and control gear-AC Metal Enclosed switchgear and control gear for voltages above 1kV and up to and including 52Kv. IEC 62271-100 : Alternating-current circuit-breakers IS 513 : Cold Rolled Low Carbon Steel Sheets and Strips. IEC 60694 : Common specifications for high voltage switchgear and control gear standards IEC 62271-102 : HV switchgear and control gear-Alternating current disconnectors and earthing switches IEC 60265-1 : High voltage switches – Part 1: Switches for rated voltages above 1 kV and less than 52 kV IEC 60529 : Degrees of protection provided by enclosures (IP Code) IEC 62262 : Degrees of protection provided by enclosures for electrical equipment against mechanical impacts (IK Code) IEC 60060 : High-voltage test techniques IEC 60947 /IS 13947 : Low voltage switchgear and control gear IEC 60439-1 : Low-voltage switchgear and control gear assemblies- Type tested and partially type tested assemblies IEC 60255-3 : Electrical relays - Part 3: Single input energizing quantity measuring relays with dependent or independent time. IEC 60044-1 / IS 2705 : Current Transformers IEC 60044-2 / IS 3156 : Voltage Transformers IEC 60376 : Specification of technical grade sulfur hexafluoride (SF6) for use in electrical equipment IEC 62271-206:2011 :High-voltage prefabricated switchgear and control gear assemblies - Voltage presence indicating systems. IS 13573-2 : Cable accessories for extruded power cable for Working Voltages from 3.3 kV up to and Including 33 Kv.
3.0	**CLIMATIC CONDITIONS OF THE INSTALLATIO**	a) Max. Ambient Temperature : 50 deg.C b) Max. Daily average ambient temp. : 40 deg.C c) Min Ambient Temp : 0 deg C d) Maximum Humidity : 95%

N OF RMU:

e) Minimum Humidity : 10%
f) Average No. of thunderstorm days per annum : 50
g) Maximum Annual Rainfall : 1458 mm
h) Average No. of rainy days per annum : 60
i) Rainy months : June to Oct.
j) Altitude above MSL not exceeding : 300 meters
k) Wind Pressure : 300 kg/sq m up to an elevation at 10 m.

The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months. The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.3 g.

For ODISHA the atmosphere is mainly humid, windy& saline across year.

4.0 **GENERAL TECHNICAL REQUIREMENTS OF RMU:**

Sr. no.	Description	Requirement
1	Application	Three phase - Three wire
2	Rated Voltage	12kV
3	Service Voltage	11kV
4	System Frequency	50 Hz
5	Internal Arc rating	IAC AFL , AFLR or better
6	Internal Arc test	20 kA for 1 Sec.
7	Lightning Impulse withstand Voltage	75 kV Peak
8	Power Frequency withstand voltage	28 kV rms
9	Rated current of incomer load break switch	630 A
10	Rated current of Circuit-breaker	630 A
11	Rated Short time current withstand (3 sec)	21 kA
12	Rated Short circuit making current	50 kA
13	Number of operations at rated short circuit current on line switches, earthing switches ,CB	5 close
14	Opening time of breaker (max.) without relay time	2.5 cycle
15	Closing time of breaker (max.) without relay time	3 cycle
16	Breaker Duty Cycle	O – 3min - CO - 3min - CO
17	Rated cable charging interrupting current of	

				incomer- - Load Break Switch	10 A
			18	Rated cable charging breaking current of breaker	25 A
			19	Insulating medium	SF6
			20	Interrupting medium	Vacuum- for CB and SF6 for LBS and earth switch
			21	Temperature Rise	Maximum permissible temperature rise for bus bar shall not be 65˚C at an ambient temperature not exceeding 40˚C, as per IEC 62271-1. However, the temperature rise for accessible enclosures and covers shall not exceed 30K and in case, they are not required to be touched during normal operation, the limit shall be raised by 10K.
			22	Cable compartment	Front opening cable compartment for all feeders

4.1 RMU CONFIGURATIONS

Types of Ring Main Units shall be as under:

A) For TPCODL, ODISHA:

i) 3 Way with 1 CB (For Indoor and Outdoor application)**:** Both side extensible
2 Nos. 630A Incomer Load Break Switches + 1 No. 630A Local Feeder/transformer Control Vacuum Circuit Breaker with self-powered O/C + E/F relays+ shunt trip coil (24V DC) + 1 No. Electronic Fault Passage Indicator on left LBS in each RMU

ii) 3 Way with 2CB Non extension type(For Indoor and Outdoor application)**:**
1 Nos. 630A Incomer Load Break Switches + 2 No. 630A Local Feeder/transformer Control Vacuum Circuit Breaker with self-powered O/C + E/F relays+ shunt trip coil (24V DC) +1 No. Electronic Fault Passage Indicator on left LBS in each RMU + LBS with 1Cx 630 sq mm cable provisions.

iii) 4 Way with 2CB (For Indoor and Outdoor application)**:** Both side extensible
2 Nos. 630A Load Break Switches + 2 Nos. 630A Feeder Vacuum Circuit Breakers with self-powered O/C + E/F relays + shunt trip coil (24V DC) + 1 No. Electronic Fault Passage Indicator in left side LBS in each RMU

iv) 4 Way with 3 CB Non extension type (For Indoor and Outdoor application)**:**
1 Nos. 630A Incomer Load Break Switch + 3 Nos. 630A Feeder Vacuum Circuit Breakers with self-powered O/C + E/F relays + Shunt trip coil (24V DC) + 1 No. Electronic Fault Passage Indicator in left side LBS in each RMU

v) 5 Way Non Extension RMU (For Indoor and Outdoor application)**:**
2 Nos. 630A Incomer Load Break Switch With Electronic Fault Passage Indicator in each LBS + 3 Nos. 630A Feeder Vacuum Circuit Breakers with self-powered O/C + E/F relays+ Shunt trip coil (24V DC)

		VI) **4 Way with 4 LBS** (For Indoor and Outdoor application): Non extensible 4Nos. 630A Load Break Switches + 3 No. Electronic Fault Passage Indicator in extreme left & right side LBS in each RMU VII) **3 Way with 3 LBS** (For Indoor and Outdoor application): Non extensible -3 Nos. 630A Load Break Switches + 3 No. Electronic Fault Passage Indicator in extreme left & right side LBS in each RMU Cable Voltage presence Indicators to be provided in each compartment of all type of RMUs in above mentioned combination. All LBS, EW and CB shall be with auxiliary contacts for SCADA status indication. All LBS and CB should be given24V DC motorized RMU while designing RMU having inbuilt Battery & Battery charger. **Note- All shunt trip coils shall be 24V DC for TPCODL**
5.0	**General construction for RMU**	
5.1	MAIN TANK	5.1.1 The switchgear and bus bar shall be contained in a stainless steel tank filled with SF6 gas and the outer body shall be made of GI high tensile steel/CRCA 2mm thick with thick gland plates as per IS 513. 5.1.2 The tank shall have SS sheet of 2.5 mm thickness minimum (or as per type tested design of bidder with undertaking on letter head) and meet the "sealed pressure system" criteria in accordance with the IEC 62271-200. This is a system for which no handling / refilling of gas shall be required throughout the expected operating life, i.e. 30 years. Sealed pressure systems are completely assembled, filled and tested in the factory. 5.1.3 The maximum leakage rate of SF6 gas shall be lower than 0.1 % of the total initial mass of SF6 gas per annum from main tank. The filling pressure for the switchgear shall be just above the atmospheric pressure so as to prevent the tendency to leak. SF6 gas used for the filling of the RMU shall be in accordance with IEC 376. 5.1.4 It is mandatory to fit an absorption material in the tank to absorb the moisture from the SF6 gas and to regenerate the SF6 gas following arc interruption. The degree of protection for RMU tank (Indoor/Outdoor) shall be IP 67. 5.1.5 The RMU shall be complete with all connection and copper bus bar with continuous current carrying capacity of 630A. The bus bar shall be fully encapsulated by SF6 gas inside the steel tank. 5.1.6 The tank shall have an separate SF6 refilling valve and the filling pressure must be mentioned near the valve. And the refilling valve should be marked properly. 5.1.7 If same valve is used for pressure indicator or remote communication then the procedure to refill to be mentioned near the NRV from with permanent sticker. 5.1.8 The SF6 tank shall be completely enclosed in the enclosure such way that any rodent entry on top or side of tank is deterred. 5.1.9 All configurations should be in one tank without any coupling/joint on main Busbar.

5.2	GENERAL DETAILS	5.2.1	The mimic board shall be provided with IP2X degree of protection for Indoor RMUs and protection for Outdoor RMUs shall be minimum IP 54(Main door closed). Cable compartment shall be IP54.
		5.2.2	The RMU shall be suitable for mounting on plinth with trench below and shall have base frame on sides with mounting bolt accessibility from outside of RMU the mounting bolts provision shall be min. M12 bolts on all four sides. The mounting bolts and nuts shall be of hot dip galvanized to avoid rusting. The provision for cabling shall be through base plate from bottom of RMU through trench below. The RMU shall be designed so that the position of the different devices is visible to the operator on the front face plate with permanent type indicators.
		5.2.3	The RMU shall be identified by an appropriately sized permanent labels which clearly indicates the functional units and their operation directions etc. The ON or OFF shall be marked as words and only I/O labelling shall not suffice.
		5.2.4	The RMU shall be designed to be tamper proof so as to prevent access to all live parts during operation without the use of special tools.
		5.2.5	The earth bus bar shall be covered if passing through the cable chamber and enclosed in an enclosure housing to prevent theft/tampering. Only extension out side enclosure shall open for access.
		5.2.6	There shall be continuity between the metallic parts of the RMU and cables so that there is no electric field pattern in the surrounding air, thereby ensuring the safety of people. The enclosure and cable compartment and tank shall be connected to common earthing.
		5.2.7	All parts of main circuit to which access is required or provided shall be capable of being earthed prior to becoming accessible. This does not apply to removable parts which become accessible after being separated from the switchgear and control gear. The cables shall be earthed by an earth switch with short-circuit making capacity in compliance with IEC 62271-102.
		5.2.8	The LBS /CB shall not be closed in case Earth Switch is closed. The earth switch shall be fitted with its own operating mechanism and manual closing shall be driven by a fast-acting mechanism, independent of operator action. Mechanical interlocking systems shall prevent access to the operating shaft to avoid all operator errors such as closing the earth switch when the Load break switch is closed or when cable is charged.
		5.2.9	All panel covers shall be provided with anti-vandal screw bolts so that opening of panel covers is only possible with special tools, which shall be provided by the Bidder as mandatory spare/tool.
		5.2.10	The default design of cable compartment for TPCODL, ODISHA shall be for 3Cx400sq.mm AL cables (91mm external dia.). Cable boots, gland plate, cable cleat, washer, bushings & terminal bolts should be suitable for 3Cx400 sq.mm cables in all RMU compartments except three way with 2 CB
		5.2.11	Three way with two CB configuration following thing to be complied: The incomer LBS shall be suitable for 1Cx 630 sq.mm cable. Cable boots, gland plate, cable cleat, washer, bushings & terminal bolts should be suitable for 1Cx 630 sq.mm cable in only incomer LBS cable compartment. The other two CB compartment shall be suitable for 3Cx 400 sq.mm cable termination. The terminal bolt used in LBS compartment shall have 15mm extra length than regular bolt to accommodate the mechanical type lug having large thickness. For Incomer LBS shall be provided with nonmagnetic base plate section and suitable cable cleat for 51 mm diameter 3x1C

		cables. 5.2.12 The circuit breakers, Load break switches and earthing switches shall have pad lock provision & can be locked in the open or closed position by 1 to 3 padlocks 6 to 8mm in diameter. 5.2.13 For ODISHA the atmosphere is mainly humid,saline across year hence necessary anticorrosive fasteners & components to be provided on switchgear. Anticorrosive painting should be painted for RMU
5.3	INTERNAL ARC TESTING	Any accidental over pressure inside the sealed chamber tank shall be limited by the opening of a pressure limiting device provided at the bottom part of the tank. Gas shall be released to the bottom without affecting cables and termination of the RMU with partition between cable chamber such way that gas releases away from the operator. Bidder shall provide type test report to prove compliance to the 'Internal fault IAC- A FL minimum for indoor and A-FLR for outdoor with bottom release' as per IEC 62271-200 on main tank and cable chambers. An anti-reflex mechanism on the operating lever shall prevent any attempts to reopen immediately after closing of the switch or earth switch. All manual operations shall be carried out on the front of the RMU. In case of SF6 gas leakage from gas tank or any kind of repair should be done at site or replacement of complete RMU to be done free of cost within guarantee period.
5.4	**Incomer Load Break Switches (LBS)**	5.4.1 Load break switches shall be maintenance-free. The position of the power contacts and earthing contacts shall be clearly visible on the front of the RMU. The position indicator shall provide positive contact indication in accordance with IEC 60265-1. In addition, manufacturer shall prove reliability of indication in accordance with the standard. The switches shall be of the "increased operating frequency" in accordance with IEC 60265-1. **5.4.2 Electrical /Mechanical Interlock should be provided to the Earth switch it should not be Close when cable is back charged .** 5.4.3 The LBS shall have at least 3 positions, open-disconnected, closed, and earth (with making capacity) and shall be constructed in such a way that natural interlocking prevents unauthorized operations. 5.4.4 The disconnector should have the maximum 200micro ohm contact resistance. 5.4.5 Earthing of the cable shall be either through a three position switch of a separate snap action type or Earth Switch having fault making capacity. 5.4.6 The switches shall be fully mounted and inspected in the factory. Provision for future motorisation of LBS and CB should be kept in configuration while designing RMU. 5.4.7 The load break switch and earthing switch operating mechanism shall have mechanical endurance of at least 1000 operations. The type test reports to be submitted along with Bid. 5.4.8 Load break switch shall have mechanical switch operation counter and should be visible on front in horizontal alignment. 5.4.9 The Load break switch should have minimum spare (for TPCODL use) 3 NO+ 3 NC auxiliary contacts and 1NO+1NC for earth switch. 5.4.10 The load break switch shall be compatible for remote operation without any

		modification of the operating mechanism and without de-energizing the RMU, The LBS shall be fitted with an electrical operating mechanism and can remotely open-disconnected, closed and earthed from a reserved location.
5.5	**Circuit Breaker For Transformer / Local Feeder Control**	5.5.1 The circuit breakers/ interrupter shall be of the maintenance free. 5.5.2 The position of the power and earthing contacts shall be clearly visible on the front of the RMU. 5.5.3 The circuit breakers shall have at least 2 positions: Open-disconnected and closed and shall be constructed in such a way that natural interlocks prevent all unauthorized operations. 5.5.4 For TPCODL where the RMU CB is used for switching operation & protection of feeder (cables) - In view of safety each VCB shall be assisted with feeder side disconnector having 3 positions, open-disconnected, closed, and earth (having fault making capacity) and shall be constructed in such a way that natural interlocking prevents unauthorized operations. 5.5.5 They shall be fully mounted and inspected in the factory. 5.5.6 Breaker contact resistance should be <=50 micro-ohms. The various circuit contact resistance should comply with provisions in IEC 62271-200. 5.5.7 The breaker should have minimum spare (exclusively for TPCODL use) 4 NO+ 4 NC auxiliary contacts. 5.5.8 An operating mechanism can be used to manually close and open the circuit breaker with single push on push buttons. It shall be fitted with a local system for manual tripping by an integrated push button. There will be no mechanical automatic re-closing. 5.5.9 The operating mechanism shall be compatible for remote/ SCADA operation. The required motor for this operation shall be delivered separately to stores (at a later date) and shall be compatible with older versions of RMUs already working within the TPCODL network. 5.5.10 The circuit breaker shall be associated with an integrated protection unit that will operate without any auxiliary power supply and shall include three toroid transformers incorporated in the transformer tee-off bushings, an electronic self-powered relay, a low energy release, and a "fast-on" test receptacle for protection testing (with or without CB tripping). 5.5.11 CT shall be mounted on cables the mounting arrangement shall be flexible to move to & fro, up and down based on site condition of cable terminations etc. The mounting arrangement shall ensure that the CT should not reach less tan 300mm from live part of bushing. The CT mounting shall be fixed at position while dispatch such that the cable entry, the bushing terminal bolt and CT core hole are co-axial. 5.5.12 Fixing bracket to be provided for fixing CT on particular position without touching termination cores. Bolting arrangement to be provided for fixing CT on the mounting bracket. 5.5.13 In any mounting the CT shall be mounted in such a way that the secondary connection shall be accessible and visible form front side after opening cable compartment door 5.5.14 Breaker shall have mechanical endurance of at least 2000 operations. Relevant type test reports to be submitted along with bid.

		5.5.15 Breaker operation counter should be provided and should be visible on front in horizontal alignment. 5.5.16 The circuit breaker shall be compatible for remote operation and can close (ON) and open (OFF) by remote operation in future if automated. 5.5.17 In control cabinet the Terminal block shall have AC input wiring provision and MCB provision for incoming of LT AC supply. 5.5.18 The relay auxiliary power, communication ports and other required ports should be wired up on the TB. 5.5.19 The breaker should have one series trip coil and one shunt trip coil. 5.5.20 For TPCODL, ODISHA supply - The shunt trip coil shall be of 24V DC along with charger and complete wiring up to trip coil through DC MCB and socket and switch arrangement for AC charger. **5.5.21 Electrical /Mechanical Interlock should be provided to the Earth switch it should not be Close when cable is back charged.** 5.5.22 The protection system shall ensure circuit breaker tripping as of a minimum operating current which is the rated current of the underground network to be protected. The CT settings shall be adjustable between 60 - 400/1 Amp for outgoing feeder and transformer in relay. The pickup current of relay should be adjustable as per relay specification as per the requirement at site. 5.5.23 CT shall be resin cast only, CT shall be of Protection class having duel ratio i.e. 400/1A and 60/1A. The ratio selection shall be made available on one TB on control cubicle. The ratio section chart shall be fixed permanently at suitable nearest arrangement available. 5.5.24 The class of CT shall be 5P10 for both cores and CT Burden shall be 2.5 VA. 5.5.25 The relays shall be self-powered suitable numerical relay with necessary elements. Please refer Specification no. ENG-HV-95 for Self power relay for RMU feeder protection. The preferable make of relay are ABB, Ashida, Schneider, Siemens make relay. 5.27 For TPCODL ODISHA Supply- Following shall be applicable The circuit breaker shall be associated with an integrated protection unit that will operate without any auxiliary power supply and shall include: □ Three toroid transformers incorporated in the transformer tee-off bushings, □ An electronic relay,(self powered target latched by battery or capacitive unit) □ A low energy release, □ A "fast-on" test receptacle for protection testing (with or without CB tripping) The protection relaying shall have following features: □ Phase Protection: With Definite time/ IDMT element having standard characteristics of Standard Inverse, Very inverse, Extremely Inverse (as per IEC 255-3) or Fuse Characteristics. □ Earth Fault Protection: With Definite time or IDMT element having standard characteristics of Standard Inverse, Very inverse, Extremely Inverse as per IEC 255-3 standard. □ The CTs of 5P20 Class shall be employed. CT ratio shall be 200/1 (Further CT ratio

			may finalized during detailed engineering) The transformer ratings which are to be controlled by the breaker are as follows: 500kVA to 2000kVA. The terminal protectors to be supplied with the RMU by the vendor along with the cable termination bolt for termination 400 Sq. mm 11kV 3 C for isolator & Breaker compartment. There should be provision of flag Relay on each outgoing vacuum breaker module for indication of Trip on Fault The preferable make of relay at ODISHA supplies are ABB, Ashida, Schneider, Siemens, C&S, Alstom make relay.
5.6	**Bushings and Cable terminations**	5.6.1	Bushing should be of Epoxy resin. Each cable compartment shall be provided with three bushings of adequate sizes to terminate the incoming and outgoing cables. The termination bolt shall be M16 only for TPCODL ODISHA supplies for all bushings & M12 for TPCODL ODISHA supplies
		5.6.2	The bushings shall be conveniently located for proper bend so as to allow easy working and termination of cables. The cable termination shall be done with Heat shrinkable /Push ON termination method so that adequate clearances are maintained between phases & cable shall be held by HDPE (fire retardant) cleat. The Sizes of incoming and outgoing cable shall be as per clause no. 5.2.10 to 15.2.12
		5.6.3	BA should provide bimetallic washer for connection between Copper bushing stud and Aluminum Lug. Necessary spring and flat washers to be provided on each terminal. The bimetallic washer shall be suitable for M16 bolt for ODISHA & M12 bolt for ODISHA supply and 630A rating in all compartments with minimum thickness of 2mm and sufficiently cover the completely copper bushing stud. The bidder can alternately offer tinned copper surface of bushing then bimetallic washer not required.
		5.6.4	The Terminal bolt shall have arrangement for fixing the cable test rod through cable boot opening. Cable boot should have opening for test rod insertion.
		5.6.5	The bolt tightening pressure must be written inside each cable chamber with permanent sticker.
		5.6.6	Cable boot for cable termination should be as per IS 13573-2. Boot should be easy to install.
		5.6.7	The cable compartment must be without any holes or gaps and properly vermin proofing before inspection.
		5.6.8	The cable testing provision to be ensured in design. In case cables are to be tested with front door open, doors shall have interlocks such that doors can be opened only with earth switch in closed position & a cable test rod (to be quoted as spare) which can be fixed on the terminations/ termination bolt through boot hole to facilitate testing. Termination boots as approved by the TPCODLshould have a proper opening to facilitate the testing. The opening in boot shall be covered by means of removable protection cap.
		5.6.9	All cable compartments shall have front door opening. The cable cover door shall be pad lockable and shall be Tamper and Arc proof. The circuit breaker and earth switch shall be lockable in the open or closed positions by 1 to 3 padlocks.

		5.6.10 In outdoor RMU the door should have pad lock provision and cable door shall have interlock so that it shall not be opened by external forces. Also it shall not be possible to operate the load break switch / isolator or breaker from outside once door closed. This is required to prevent pilferage. 5.6.11 Locking provision of cable compartment door to be provided in case of any switch/CB is at earth position to avoid pilferage. 5.6.12 Control cabinet with a terminal block (TB) located at convenient accessible location so as to wire all inputs & outputs (IOs) up to the terminal block (TB). All the cable secondary wiring should be rooted through marshaling box separately for relay, CT etc. 5.6.13 The wiring of the relay to be done on the TB for its terminals along with communication terminals. 5.6.14 All terminals wires shall have proper identification ferrules and the identification marking provided on TB. 5.6.15 Control cabinet shall have control cable entry arrangement on both sides of the RMU top control cabinet with proper grommet such that the opening are sealed in normal installations when not used for our door extension box arrangement to be provided any other arrangement to be explained in drawing during tender. Note: Supply of Cable terminations is not to be part of RMU supply.
5.7	**Earthing:**	5.7.1 The RMU outdoor metal clad switchgear enclosure, load Break Switch, VCB, SF6 tank etc. shall be equipped with an copper earth bus throughout all compartments and securely fixed along the base of the RMU with cover. 5.7.2 The extension of this earth bus shall be taken out minimum 50mm outside the enclosure on both sides for fixing of the TPCODLs GI earth flat of 50mm width. The extension coming out of enclosure shall be properly sealed such a way to ensure vermin proofing of the cable compartment. 5.7.3 The size of copper earth bus-bar should be Min.105 sq.mm inside the enclosure to withstand short time current carrying capacity as per IEC. 5.7.4 Two nos. body earthing bolts of M12X70 mm to be provide on the extended bus-bar. 5.7.5 The mother earth need to be extended up to 250mm periphery of cable entry hole so that the cable termination earthing can be connected easily to the main mother earth with 12mm bolt and washers. This arrangement need to be provided in each compartment of RMU. 5.7.6 The main tank must be connected to mother earth at least two positions with proper contact. 5.7.7 In Three way outdoor type compact design bidders should ensure the earthing from mother earth is provided inside the cable compartment for earthing of the cable terminations. that TPCODL shall provide only two main earthing on switchgear 5.7.8 Bidder to ensured that the earth bus shall be single conductor/bus suitable for taking specified fault current and both main earthing are interconnected by earth bus and not through thank or enclosure. 5.7.9 If bolt are provided as current carrying path then the bolt material shall be brass and size shall be suitable to carry specified fault current .

5.8	**Voltage indicator lamps and phase comparators**	5.8.1 Each compartment of RMU shall be equipped with a fixed type voltage indicator lamps having dip ports for insertion of phase comparators or line tester to check the phase sequence or presence of charge in cable. This is to be fixed on the front face plate to indicate presence of voltage in the cables. The capacitive dividers will supply low voltage power to the indicator lamps. Three inlets can be used to check the synchronization of phases with phase comparator or other device. These devices shall be in compliance with IEC 62271-206:2011 standard. The VPIS without dip ports are not accepted. 5.8.2 All the VIPS installed on compartments shall have auxiliary contacts wired up to the terminal block of respective compartment which shall be further used for remote status indication at SCADA. The auxiliary contacts in VPIS shall be there should be electrical interlock of cable presence indicator and operation of earth switch in RMU incomer cable compartment of LBS.
5.9	**Front Cover**	5.9.1 The front cover shall provide a clear mimic diagram that indicates the different functions. This shall be permanent in nature throughout the useful life of the RMU. 5.9.2 The position indicators shall give a true reflection of the position of the main contacts. Position Indicators shall be clearly visible to the operator. 5.9.3 The lever operating direction shall be clearly indicated in the mimic diagram. 5.9.4 The bidder shall provide a operating sequence process on each compartment with permanent type arrangements. So that all data shall be self-explanatory. 5.9.5 The mimic shall have clear Words for “CLOSE/OPEN/EARTH’ at each desired place. 5.9.6 All status indicators shall be marked appropriately with permanent labels as Earth On/OFF, Disconnector/LBS On/OFF, CB On/OFF. 5.9.7 All operating ports shall have marking like spring charging provision, three position disconnector port and Shutter operator for interlocking, Operation allowed along with arrow indication and labeled as earth operation or disconnector operation. 5.9.8 For better clarity of earthing related operations shutters and ports shall be painted in Yellow background such way that the persons should get clear indication that if operating in Yellow region means he is performing earthing related operation. The details shall be as per annexture-2 of this specification for 5.9.9 The Direction of operation shall be clock wise for any close operation and anti-clock wise for any open operation of disconnector/LBS and earth switch or as per type tested design with undertaking 5.9.10 There shall be one label for SF6 gas pressure indicator and a clear message must be fixed near pressure indicator that region of safe operation and Alert message stating ‘ If GAS pressure not OK. Do not operate any switchgear and report to OEM(name) customer care/engineer in charge’ This message should be clearly visible in front with suitable background and shall be with permeant marked.

		5.9.11 For gas pressure indication a dial type manometer to be provided with will show actual pressure. Gas pressure shall have SCADA compatible contacts and wired up on TB with labeling. 5.9.12 All the other accessories and boxes shall be properly labelled with permanent marking/printing such a way that the product is self-explanatory for user.
5.10	**Fault Passage Indicators**	5.10.1 Fault Passage Indicators shall be installed on the Ring Main Unit. These devices shall be, electronic devices with their own energy source and connected to Single 3 phase Split Core CTs (CBCT) for O/C. These shall be provided with bright LED s / flag Indicators, which shall be clearly visible in the day time. These shall have the following resetting facilities: a. Manual reset b. Resetting after a set time duration c. Electrically reset from remote with at least 2-spare potential free contacts. d. Resetting on restoration of LV 5.10.2 The unit shall have Short Circuit adjustable to different settings with separate Current transformer. They shall be fully field-programmable and shall have at least and 5 settings for Phase fault or over current. 5.10.3 The preferred range is – O/C setting range 200-1000A. 5.10.4 The default setting shall be and 300A for overcurrent. This shall be ensured before inspection call in each RMU. 5.10.5 The Approved Make of FPI are EKL8000, EKL8000NG, Easergy Flair 22D ,SICAM and any other makes can be approved subject to TPCODL Approval 5.10.6 It shall be possible to Test these indicators at site thru “Test” push button. The Fault Passage Indicators shall also be provided with a SCADA output contact. 5.10.7 The process of fixing the FPI shall be fixed on the wall of the incomer LBS cable compartment along with pictorial view. 5.10.8 FPI connecting wires should be properly dressed and covered in insulated sleeve and tied to the side walls with help of cable ties. If sticking type arrangement is provide then it must be with good quality permanent adhesive from reputed makes like 3M and should not come out with force of 10kN. 5.10.9 These shall confirm to the following standards: IEC 60068-2-6, IEC 60068-2-9 : Environmental testing – For Vibration, solar radiations IEC 60950 : Information Technology equipment – Safety IEC 1000-2 : Electromagnetic compatibility for low-frequency conducted disturbances and signaling in public low power supply systems IEC 1000-4 : EMC – Testing & Measurement IEC 1000-6 : EMC- Immunity for Residential, Commercial and light industrial environments.

5.11	**Remote Control of the RMU:**	5.11.1 For non-motorized RMU: Future provision for motorization to be kept along with the hurting plug arrangement on each feeder of each RMU For future requirement of remote operation of the RMU line switches shall be possible using motors fitted to the operating mechanism for both line switch and circuit-breaker functions as and when required. All the necessary accessories shall be supplied separately to stores based on PO placed on quotation provided in this tender. The fitting of the motors to the mechanism must not in any way impede or interfere with the manual operation of the switches. An auxiliary contact to prevent motorized operation of the mechanism while the operating handle is inserted into the operating point shall also be provided. 5.11.2 For motorized RMU- The motors to be fitted in LBS sections only. The fitting of the motors to the mechanism must not in any way impede or interfere with the manual operation of the switches. An auxiliary contact to prevent motorized operation of the mechanism while the operating handle is inserted into the operating point shall also be provided. Preferred communication protocol for FRTU shall IEC-60870-5-104. All Close-Open coils / signaling contacts shall be rated for 24 V DC. Following signaling contacts are essential for remote operation of RMU: A) Aux. contact for Line Isolator (Status) B) Aux. contact for all earthing switch (Status) C) Aux. contact for Breaker (Status) D) Aux. contact for FPI indication E) Aux. contact for Protection trip (Breaker module) F) Aux. Contact for Low Gas Pressure 2 Nos. spare relay tripping NO, NC contacts to be provided. Flag Indications on RMU when tripped should be on shunt trip. A provision for physical disconnection of motor supply (like fuse) of line isolator must be provided in RMU unit itself. (A flag is required for series and shunt coil actuation). There should be harting plug arrangement for individual Isolator as well as breaker motor connections, which will be fitted on the RMU body itself. Also the PCB of motor should be covered by anti-tracking agent. There should be relay with timer instead of only relay, which is used in the latching circuit. Suitable unlatching system to be provided to prevent mal operation of motor in case of any latched command/ non executed command at RMU (case like fuse failure etc.) The separator between terminals to be provided to avoid any tracking etc. Signal requirement for field RTU (which shall be mounted near RTU) is attached (refer Annexure-1). The bidder shall quote the cost of field RTU (FRTU) separately with all technical details for acquisition of the signal as described in Annexure-1.

5.12	**Paint**	All paint shall be applied on clean dry surfaces under suitable atmospheric conditions by seven tank process and powder coating. The overall paint thickness shall not be less than 70 microns. The paint shall not scale off or crinkle or be removed by abrasion during normal handling. The enclosure of the RMU shall be painted with shade light Grey, i.e. RAL 7032. The RMU should be painted with Anticorrosive paints. If any damage observed after delivery same need to be touch-up painted after delivery at site. The paint should sustain for harsh environment & saline weather , Corrosion Protection for RMU entire life cycle(minimum25Years) .
5.13	**SLD and configuration**	The SLD and the offered configurations cannot be changed without prior notice and approval from TPCODL. TPCODL reserve the right to accept the change or reject the same. Safety being utmost concern hence same need to be taken care in offered designs.
6.0	**NAME PLATE & MARKING: -**	All the components and operating devices of the RMU shall be provided with durable and legible nameplates containing all technical parameters. Name plates shall be suitably embossed with" PO no. with date", "PROPERTY OF TPCODL, ODISHA' & "CODE NUMBER" along with the following information. A Danger plate of appropriate size shall also be provided on the enclosure. a) Manufacturer's Name b) Month and year of supply c) PO Number d) Type/Model e) Rated Voltage f) Rated current g) Service voltage h) System Frequency i) Rated Short time withstand current for 1 sec j) Rated Impulse withstand Voltage k) Degree of Protection l) Type Designation or Serial no. m) Year and month of manufacture. n) Applicable Rated values o) Mass of unit p) SF6 gas filling pressure. q) Warranty period THE SR. NO. AND YEAR OF MANUFACTURING SHALL BE PAINTED IN BLACK COLOR WITH YELLOW BACKGROUND ON SIDE.
7.0	**TESTS FOR RMU**	All the Routine and acceptance tests shall be carried out in accordance with the relevant IS/IEC standards. All routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components within the RMU enclosure shall have been tested for Routine/acceptance and Type tests as per the relevant standards. All Type tests as per latest IS / IEC shall have been carried out on the RMU as a whole as per relevant IS/IEC. Following tests shall be necessarily conducted on the equipment and its components as specified in IEC 62271-200:

7.1	TYPE TESTS	1. Lightening Impulse test 2. Power Frequency Voltage Test 3. Temperature Rise Test 4. Measurement of Circuit Resistance 5. Rated Short Time and Peak Current Withstand test for main and Earth Circuit. 6. Breaking and Making Capacity Test for Breaker & Isolating Switches. 7. Operational & Interlock Performance Test 8. Internal Arc Withstand Test. 9. Degree of Protection (IP Code verification tests) 10. Mechanical Endurance Tests for Isolator and Breaker. 11. Pressure withstand test & Leakage test on SF-6 Gas chamber 12 Dimensional and Visual Checks. 13. Salt Spray Test for 1000Hours
7.2	ROUTINE TESTS	Following routine tests are to be done on 100% of the lot quantity 1. Power Frequency Withstand Test. 2. Dimensional & Visual Checks 3. Operational & Interlock Tests of breaker & isolator switches 4. Measurement of Circuit Resistance 5. Sf-6 chamber pressure withstands/leakage test. 6. HV withstand test across isolator distance. 7. HV withstand test of control and auxiliary circuits. 8. Voltage Indication Tests. 9. Breaker Contact Resistance Test 10. Total Trip Time Check Test through Current Injection in primary. 11. IR Value. Below routine test has to be provided on cable Boot for cable termination: a) Visual inspection of the final finished product. b) Intactness with Bushing. c) Insulation Test. d) AC HV test.
7.3	ACCEPTANCE TESTS	All the tests specified under Routine Test Clause above shall be carried out as acceptance test on random samples as per sampling plan under IEC/IS for each lot. Bidder should have all the requisite testing equipment's to carry out routine and acceptance test mentioned above including: a. Facility for primary current injection up to 1000amp. b. Facility to check total trip timing of breaker along with breaker main contacts through primary current injection
8.0	**TYPE TEST CERTIFICATE**	The Bidder shall furnish the type test certificates of the 11KV RMU of same design as offered in bid for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA or reputed International Laboratory like PHELA, KEMA IPH, etc. as per the relevant standards of IS and IEC. Type tests shall have been conducted in certified Test laboratories during the period not exceeding 5 years from the date of opening the bid. In case if type test conducted beyond 5 years then bidder to certify on letter head of parent OEM that no design change & no

		manufacturing plant change occurred from type tested product. In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPCODL. Bids without all type test report shall stand disqualified.
9.0	**PRE-DISPATCH INSPECTION**	Equipment shall be subject to inspection by a duly authorized representative of the TPCODL. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material is liable to rejection. Supplier shall grant free access to the places of manufacture to TPCODL's representatives at all times when the work is in progress. Inspection by the TPCODL or it's authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL. Following documents shall be sent along with material a) Test reports b) MDCC issued by TPCODL c) Invoice in duplicate d) Packing list e) Drawings & catalogue f) Guarantee / Warrantee card g) Delivery Challen h) Installation and maintenance Manual soft copy for FPI, Relay, RMU i) Other Documents (as applicable)
10.0	**INSPECTION AFTER RECEIPT AT STORE**	The material received at TPCODL Store will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Project Engineering department.
11.0	**GUARANTEE**	Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 48 months from the date of commissioning or 60 months from the date of last supplies made under the contract whichever is earlier, Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be. In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure. Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported

		by the Purchaser.
12.	**PACKING**	Bidder shall ensure that all equipment covered by this specification shall be prepared for rail/road transport (local equipment) and be packed in such a manner as to protect it from damage in transit. The packing should be in such manner that during storage the RMU and its components should not be damaged.
13.0	**TENDER SAMPLE**	Not applicable. Bidders to mention offered model number or type in GTP along with GA drawing during tender for each variant.
14.0	**QUALITY CONTROL**	The bidder shall submit with the offer, assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and after finishing, bought out items and fully assembled component and equipment including drives. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's or its nominated representative engineer shall have free access to the manufacturer/sub-supplier's works to carry out inspections. To ensure proper operation of RMU the bidder shall provide onsite training of TPCODL teams as and when required. To ensure quality of installations bidder shall provide supervision support during impartation.
15.0	**TESTING FACILITIES**	Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards
16.0	**MANUFACTURING ACTIVITIES**	The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage with quantity. This bar chart shall be in line with the Quality Assurance Plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.
17.0	**SPARES, ACCESSORIES & SPECIAL TOOLS / GAUGES**	Bidder shall provide a list of recommended spares with quantity and unit prices for 5 years of operation after commissioning. TPCODL may order all or any of the spare parts listed at the time of contract award and the spare parts so ordered shall be supplied as part of the definite works. The may order additional spares at any time during the contract period at the rates stated in the Contract Document. Bidder shall give an assurance that spare parts and consumable items will continue to be available through the life of the equipment which shall be 25 years minimum. However, the TPCODL shall be intimated with a minimum of 12 months' notice in the event that the Bidder or any sub-vendor plans to discontinue manufacturing of any component used in this equipment. Any spare apparatus, parts or tools shall be subject to the same specification, tests and conditions as similar material supplied under the Contract. They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the plant and must be suitably marked and numbered for identification. Bidder has to provide separate quotation unit rate for below mentioned spare of RMU

SL. No.	Name of Spare Parts	Required spares with above 100 No. of RMU	Required spares with above 30 No. up to 100 No. of RMU	Required spares up to 30 No. of RMU
1	Breaker Mechanism	4 No's	3 No's	2 No's
2	Isolator Mechanism	4 No's	3 No's	2 No's
3	Trip Coil	5 No's	3 No's	2 No's
4	Relay	5 No's	3 No's	2 No's
5	CT (All types)	3 Sets (1 Set = 3 Nos.)	2 Set	1 Set
6	Bolt (For cable connection)	5 Sets (1 Set = 3 Nos.)	3 Set	2 Set
7	"L" Key (All Size)	2 Sets	1 Set	1 Set
8	Operating Handle	1 No.	1 No.	1 No.
9	Cable Bushing (If replaceable)	15 (5 Set)	9 (3 Set)	NA
10	VPIs	10 No's	5	NA
11	FPI	10 No's	5	NA
12	Push Button (ON & OFF Both)	10 (5 On & 5 Off)	6	NA
13	Manometer	5 No's	3	NA
14	Washer (S.S.)	20 No's	15	NA
15	Anti vandal Screw (All Size)	20 No's	15	NA
16	Cable Boot	5 sets	3 Sets	NA
17	Reducer M16 to M12	12	3	NA
18	M12 to M16 conducting Bolt (If M12 bushing supplied in past)	12	3	NA
19	The nonmagnetic base plate arrangement for 3x 1Cx 630 mm cable	10	5	NA
20	HDPE cable cleat arrangement for 3x 1Cx 630 mm cable in incomer LBS included	10	5	NA
21	The extensibility connection kit – indoor RMU	10	10	NA
22	The extensibility connection kit – Out door RMU	10	10	NA

18.0	**DRAWINGS & DOCUMENTS**	Following drawings and documents shall be prepared based on TPCODL specifications and statutory requirements and shall be submitted with the bid:

a) Completely filled in Technical Particulars
b) Any deviation sheet or No deviation
c) General description of the equipment and all components including brochures.
d) General arrangement for RMU
e) SLD of each feeder
f) Arc path drawing of all variants offered
g) Foundation plan
h) Experience List
i) All set of Type test certificates for offered design each variant

Drawings / documents to be submitted for approval after the award of the contract are as under:

Sl. No.	Description	For Approval	For Review/ Information	Final Submission
1	General Technical Particulars (GTP)	√		√
2	General Arrangement drawings	√		√
3	Schematic Diagram of MIMIC with ON/OFF and all front labelling	√		√
4	Bill of materials	√		√
5	Arc path drawing for each variant	√	√	√
6	SLD of complete RMU and feeders	√	√	√
7	Control wiring diagram and arrangement in control cubicle	√	√	√
8	Cable compartment internal dimension drawing and one drawing stating standard boots arrangement and cable earthing arrangement with cable	√	√	√
9	CT mounting arrangement drawing with details of fixing and frame movement etc.	√		√
10	Foundation Plan/Drawing	√	√	√
11	Installation & Maintenance Instructions and manual			√
12	QA & QC Plan	√		√
13	Test Certificates	√	√	√

All the documents & drawings shall be in English language.

After the receipt of the order, the successful bidder will be required to furnish all detailed drawings of components for TPCODL approval.

Instruction Manuals: Bidder shall furnish softcopies and one hard copy manuals of RMU, FPI, Relay (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.

19.0 **GENERAL TECHNICAL PARTICULARS FOR RMU**

S.N.	Description	As specified by TPCODL (Options defined in specs)	As furnished by Bidder
1.0	RMU Category -Motorized	3Way - 1CB or 2 CB or LBS 4Way - 2 CB or 3 CB or LBS 5 Way - 3CB	
2.0	RMU application	Indoor or Outdoor as mentioned in tender	
3.0	Offered Model nos. and OEM type	a. 3Way (E/NE, I/D or O/D) b. 4Way (E/NE, I/D or O/D) c. 5 Way (E/NE, I/D or O/D)	
4.0	Dielectric medium	SF6	
5.0	Interrupting medium	Vacuum- for CB SF6 for LBS and earth switch	
6.0	System Frequency	50 Hz	
7.0	Rated Voltage	12 KV	
8.0	Service Voltage	11 KV	
9.0	Rated current -Line Switches	630 A	
10.0	Rated Current-CB and LBS	630 A for all type	
11.0	Rated Short time current withstand (3 sec)	21 KA	
12.0	Rated Short time Making capacity	50 KA	
13.0	Rated cable charging interrupting current of incomer load break switch	10 A	
14.0	Rated load interrupting line current	630 A	
15.0	Rated cable charging breaking current of breaker	25 A	
16.0	No. of operations at rated short circuit current on line switches, earthing switches should be E2	LBS- 5 close ES- 5 close The ES in line with CB	
17.0	Opening time of breaker (max.) Without relay time	2.5 cycle	
18.0	Closing time of breaker (max.)	3 cycle	
19.0	Breaker Duty Cycle	O – 3min - CO - 3min – CO	
20.0	i. Mechanical endurance for Isolator & Earth Switch	Min 1000 Operations	
	ii. Mechanical endurance for Circuit Breaker	Min 2000 Operations	
21.0	Electrical operations of at rated current	To be provided by bidder	

			a. LBS/Disconnector b. Earth Switch		
		22.0	Temp rise above ambient of 50 deg.	50 Deg C. (Type Tested as per IEC and complying to requirements)	
		23.0	Min Gas pressure in bar	To be provided by bidder based on type tested design	
		24.0	SF6 Gas pressure manometer with indicating bars/scale to measure the actual gas pressure (indirect method RFS etc. not accepted)	1. Dial type Manometer to be provided for gas pressure indication 2. Contacts to be provided and wires up on the TB for SCADA communication of gas status.	
		25.0	Enclosure	The RMU metal parts shall be greater than 2mm thickness high tensile steel/CRCA. The overall paint thickness shall be not less than 70 microns.	
		26.0	Guaranteed SF6 leakage per annum	Less than 0.1% from main tank	
		27.0	Degree of protection	a. IP 67 for the tank and b. IP2X for the front cover / mimic board and c. IP 54 (Main door closed) for Outdoor RMUs. d. IP 54 for cable compartment	
		28.0	Internal Arc rating	IAC AFL or better	
		29.0	Internal Arc test	20kA for 1 Sec.	
		30.0	Lightning Impulse withstand Voltage	75 kVp	
		31.0	Power Frequency withstand voltage	28 kVrms.	
		32.0	SF6 Tank design	Hermetically/robotically sealed unpainted stainless steel enclosure with SF6 Gas. Sealed pressure system by Laser welding so that no refilling of gas is required for 30 years. No gas work at site. Complete body shall be tamperproof to prevent access to live parts. No gaskets shall be used. No bolts shall be provided.	
		32.1	Tank material and grade of SS and welding	Should be of SS and non-corrosive, offered grade of SS to be mentioned. The welding shall be such that there shall be corrosion of welding for useful life of equipment.	
		33.0	Earth bus bars	In enclosure to prevent tampering.	
		34.0	Material & size of earth bus bar	To be provided by the bidder	

		35.0	Earthing of main CCT Cables shall be earthed with earth switch with S/C making capacity as per IEC 129. Moving contacts of earthing switch shall be visible in closed position thru transparent covers AND closing shall be possible only when Isolator is open	To be provided by bidder	
		36.0	Incomer Load Break switch: Shall be SF6 insulated with least maintenance. Shall have at least 3 positions, Open, Close & earth with natural interlocks. Fitting of motor at site shall be possible & shall have mechanical interlock. The electrical interlock of cable charge with earth switch is preferred.	To be provided by bidder	
		37.0	Circuit Breakers: a. With VCB interrupter and SF6 insulated bus with minimum maintenance and shall have at least 2 positions I.e. Open & Close, Manual operation & fitting of motor at site shall be possible if required. b. In view of safety each VCB shall be assisted with feeder side disconnector having 3 positions, open-disconnected, closed, and earth (having fault making capacity) and shall be constructed in such a way that natural interlocking prevents unauthorized operations.	To be provided by bidder as per specs.	
		38.0	Protection Relay-Without auxiliary power & shall include , electronic relay, low energy release & fast on test receptacle for protection testing		
		39.0	Make of self-powered Relay & offered model	a. For TPCODL, ODISHA – ABB ,Ashida, Schneider, Siemens	

		40.0	Flag indication for CB Trip on fault in relay/ mechanical	To be provided by bidder	
		41.0	Testing of Cable- If doors are opened then earth switch shall be in closed position with necessary interlocks and cable test rod fixing provision in bolt head which can be fixed on terminations through boot cap/opening for testing purpose AND if doors are opened it shall not be possible to operate, Isolator, E/Switch or CB through interlocks	To be confirmed. If separate test bushing are provided, it shall be covered with suitable antitheft covers with anti vandal screws	
		42.0	Protection against theft	Design of RMU shall be tamper & arc proof. Anti vandal screws shall be provided. Cable covers shall be pad lockable. All live parts and internal parts etc. shall be covered with antitheft covers.	
		43.0	Doors	Hinged Main doors shall be provided for outdoor type RMU. The hinges for the doors need to be riveted and shall not have any access from outside. Bolted shall not be acceptable.	
		44.0	Voltage indicator box shall be fixed type-This device shall be in compliance with IEC 62271-206:2011 standard only	Capacitive dividers type which will supply low voltage to power the lamps AND 3 inlets can be used to check phase sequence or presence of voltage in cable	
		45.0	Cable cleats (full circle)	HDPE/Nylon (Fire Retardant)	
		46.0	Cable termination and bushing suitability	Heat/ Cold shrink terminations	
		46.A	Cable Termination boot /Cable boot	Bidder should provide Cable Termination protector /cable boot for each cable compartment, 12KV Class Cable size 3x400sqmm.Approved make - 3M/Raychem	
		46.0	Cable compartment suitability shall be	Suitable for cable sizes a. 11kV 3CX400 sq.mm having dia of 92mm in all compartment and b. For three way with two CB the LBS shall be suitable for 11kV 1CX630 sq.mm cable having diameter of 51mm in incomer LBS- the necessary cleat and nonmagnetic base plate cable entry arrangement and 15mm longer bolt than other	

				compartment shall be provided.	
		47.0	The cable compartment	All cable compartment shall be bottom entry and front opening type only	
		48.0	Size of bimetallic washer in all compartments	Must be suitable for M16 for TPCODL, ODISHA) bolt and bushing sizes with min. 2mm thick.	
		49.0	Height of bushing terminal from base plate	Minimum 800mm for proper termination space.	
		50.0	Fault passage indicator	FPI on each LBS as a part of each RMU with specified default setting.	
		51.0	Operating handle	To be provided by bidder as a part of RMU with each RMU and to be placed on front or on door	
		52.0	Non removable MIMIC Diagram on Front of panel	To be provided by bidder with detailed descriptions as mentioned in specs. And earth switch marking background shall be yellow for TPCODL-ODISHA As per annexture-2	
		53.0	Main Bus bar Material	Copper	
		53.1	Bus bar Cross Section	To be specified by bidder as per current density	
		54.0	Opening & Closing times with relay	125 ms maximum	
		55.0	Current Transformer for CB compartment	Shall be epoxy resin casted and mounted on cables. The CTs around the cables shall be supported on the sheet steel bracket and should be fixed with bolts. The mounting frame should be moveable up and down or to and fro but shall be fixed at co-axial position with base plat holes and bushing terminal bolts. a. For TPCODL, ODISHA The CT settings shall be adjustable between 60 - 400/1 Amp at terminal block. CT ratio is 60-400/1A, Burden is 2.5 VA, Class - 5P10.	
		56.0	Future motorization and SCADA Compatibility	To be provided	
		57.0	Guarantee	As per specification	
		58.0	Dimension (LxWxH) (mm x mm x mm)	To be provided by bidder	
		59.0	Total weight	To be provided by bidder	
		60.0	Paint	Light Gray shade RAL 7032	
		61.0	Type test of product	To be provided by bidder as per specification	
		62.0	Availability of spares	Assurance by bidder for 25 years,	

				list of spares as mentioned in specification to be provide along with RMU lot.	
			63.0	VPIS auxiliary contact	The VPIS shall have auxiliary contact such that it can be configured with SCADA for remote status indication of cable charged. The auxiliary contact to be wired up in TB.	
			63.1	VPIS	In all compartments	
			64.0	Breaker operation counter	To be provided by bidder	
			65.0	LBS operation counter	To be provided by bidder	
			66.0	Moisture absorption material in SF6 tank	Bidder should provide the detail of the moisture absorption material.	
			67.0	Direction of operation (As offered) (Close - clock wise Open- counter clock wise)	a. LBS – ON/off b. ES- Open/ close c. CB disconnector- ON/off d. CB earth switch-Open/ close	
			68.0	Making of earthing operations	a. For TPCODL, ODISHA All earth operation to be marked with Yellow back ground and permanent in nature.	
			69.0	Auxiliary contacts (total numbers and spare numbers)	LBS Earth Switch CB CB Disconnector - CB earth switch-	
			70.0	Control cable entry provision	To be provided	
			71.0	Shunt trip coil 24V DC	a. For TPCODL, ODISHA 24V DC shunt trip coil to be provided and specify DC voltage rating and charger rating Trip coils to be wired up on TB.	
			72.0	MCB for LT AC incomer and TB connection of all CT, Aux switches and relay wiring	To be provided	
			74.0	RMU Cable Boot/ terminal protector		
			a	Terminal protector	Insulating Boots	
			b	System voltage	12 kV	
			c	AC High voltage	28kV For 1 min	
			d	Impulse withstand voltage	75kV	
			e	Bushing Diameter	To be provided by bidder	
			f	Bushing Types	To be mentioned by bidder	
			g	Cable cross section suitability	Bidder to provide complying to specs.	
			h	Dimensions of cable protector	Suitable for cables & bushing in specs.	

				(offered size to be provided by bidder)	
		i	Material of the component	To be specified by bidder	
		75	Type test reports	Bidders to provide detailed list of tests conducted at lab name, conducted dates, report number along with full reports.	
		For motorized RMU			
		1	SCADA Compatibility-Remote operation of RMU shall be possible by using motors fitted to operating mechanism of isolators & CB etc.	To be provided	
		2	Harting Plug arrangement for individual isolator as well as breaker motor connections, which will be fitted on RMU body itself.	To be provided	
		3	Details of I/O	As per Annexure-IO list of this specs	
		4	System to prevent mal operation in case of latch command	Bidder to provide inbuilt system to prevent any mal operation in case of latch command at RMU in case of any fuse failure or DC fail situation	
		5	**Technical Details of motors**		
		a	Operating Voltage	24 V DC	
		b	Max. power rating	240 Watts	
		c	Max current drawn	9 Amp (±10%)	
		d	Operating time	4-8 seconds	
		e	Power Supply	There shall be provision of 230 V AC (maximum 5 Amp current) & 24 V DC	

20 **SCHEDULE OF DEVIATIONS**

(TO BE ENCLOSED WITH TECHNICAL BID)

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

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

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

Seal of the Company:

Designation

Signature

ANNEXURE – 1
I/O LIST -SIGNAL LIST FOR AUTOMATION

Description	Analog Inputs(AI)					Status(DI)		
Type	Amp. Loading-R ph	Amp. Loading-Y ph	Amp. Loading-B ph	Phase Voltage	Power factor	Switch close	Switch Open	Reset Element
RMU Switch *	0	0	0	0	0	1	1	
Breakers *	1	1	1	1	0	0	0	
FPI							1	1
Pressure Gauge (manometer)							1	
VPIS						1	1	

FRTU SIGNAL LIST

Description	Analog Inputs (AI)				
Type	Amp. Loading-R ph	Amp. Loading-Yph	Amp. Loading-B ph	Phase Voltage	Power factor
Switch *	0	0	0	0	0
Breakers *	1	1	1	1	1
Fault passage indicator *	0	0	0	0	0

Note: 0 indicate functionality not req. for that element, 1 indicate functionality required for that element

***** Denotes the nos of switches/ Breaker s in RMU based on the type of RMU (3way, 4way, 5way).

Additional IOs

RMU switch Control Command
Earth Sw. 1 Status Input
Earth Sw. 2 Status Input
FPI Reset
FRTU Local/Remote Position
FRTU Door Open
FRTU Battery Charger Faulty
FRTU Battery Faulty
FRTU Switchgear Supply Off
FRTU Aux Supply Off
FRTU Fault
Relay operation
CB OFF status
CB ON status
CB ON/OFF Command

. Annexture-2

The reference sample MIMIC used for earthing color identifications.

a. TPCODL, ODISHA

TECHNICAL SPECIFICATION

FOR

"11 KV, 3 Way /4W Outdoor, Motorised COMBINED RMU + CT/PTUNIT"

TATA Power CENTRAL ODISHA DISTRIBUTION LTD Company Ltd.
Consumer Engineering Department,
Dharavi Receiving Station,
Matunga,
Mumbai – 400 093

Rev No.	Description	Prepared By & Date	Checked By & Date	Approved for Issue By & Date
R0	Specification for 11 KV Outdoor Motorized Combined RMU with CTPT Unit	Anil Sah	Niranjan Khuntia	Pourush Garg
Date		01/07/2020	17/07/2019	17/07/2019

CONTENTS

Annexure-1

1.0	**Scope**	This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at site/store and performance of 11kV Ring Main Units with Metering CTPT with all accessories and necessary training for trouble free & efficient performance suitable for indoor as well as outdoor application. It is not the intent to specify completely herein all the details of tech design and construction of material. However, the material shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation in manner acceptable to the TATA POWER CENTRAL ODISHA DISTRIBUTION LTD, who will interpret the meanings of drawings and specification and shall have the power to reject any work or material which, in his judgment isnot in accordance therewith. The offered material shall be complete with all components necessary for their effective and trouble free operation. Such components shall be deemed to bewithin the scope of Bidder's supply irrespective of whether those are specifically brought out inthis specification and/or the commercial order or not.
2.0	**APPLICABLE STANDARDS**	The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with latest editions of the following Standards /IEC and shall conform to the regulations of local statutory authorities. IS9920: Part 1 : High Voltage Switches, Part 1: Switches for Rated Voltages Above 1kV and Less Than 52 Kv IEC 62271-200 : HV switchgear and control gear-AC Metal Enclosed switchgear and control gear for voltages above 1kV and up to and including 52Kv. IEC 62271-100 : Alternating-current circuit-breakers IS 513 : Cold Rolled Low Carbon Steel Sheets and Strips. IEC 60694 : Common specifications for high voltage switchgear and control gear standards IEC 62271-102 : HV switchgear and control gear-Alternating current disconnectors and earthing switches IEC 60265-1 : High voltage switches – Part 1: Switches for rated voltages above 1 kV and less than 52 kV IEC 60529 : Degrees of protection provided by enclosures (IP Code) IEC 62262 : Degrees of protection provided by enclosures for electrical equipment against mechanical impacts (IK Code) IEC 60060 : High-voltage test techniques IEC 60947 /IS 13947 : Low voltage switchgear and control gear IEC 60439-1 : Low-voltage switchgear and control gear assemblies- Type tested and partially type tested assemblies IEC 60255-3 : Electrical relays - Part 3: Single input energizing quantity measuring relays with dependent or independent time. IEC 60044-1 / IS 2705 : Current Transformers IEC 60044-2 / IS 3156 : Voltage Transformers IEC 60376 : Specification of technical grade sulfur hexafluoride (SF6) for use in electrical equipment IEC 62271-206:2011 : High-voltage prefabricated switchgear and control gear assemblies - Voltage presence indicating systems. IS 13573-2 : Cable accessories for extruded power cable for Working Voltages from 3.3 kV up to and Including 33 Kv. IS 2705-2092 :Specification for Current transformer IS 3156-1992 : Specification for Voltage transformer IS 5621-1980 : Specification for hollow insulators for use in Electrical equipment IS 2099-1986 : Specification for bushings for AC Voltages above 1000 Volts IS 8603- 2008 : Dimensions for Porcelain Transformer Bushings for use in Heavily Polluted Atmospheres IS 5561 : Specification for Electric Power connectors

		CEA -2010(Amendment regulation): -Installation & Operation of Meters
3.0	**CLIMATIC CONDITIONS OF THE INSTALLATION OF RMU:**	a) Max. Ambient Temperature : 50 deg.C b) Max. Daily average ambient temp. : 40 deg.C c) Min Ambient Temp : 0 deg C d) Maximum Humidity : 95% e) Minimum Humidity : 10% f) Average No. of thunderstorm days per annum 50 g) Maximum Annual Rainfall : 2386 mm h) Average No. of rainy days per annum : 60 i) Rainy months : June to Oct. j) Altitude above MSL not exceeding : 300 meters k) Wind Pressure : 275 kg/sq m up to an elevation at 10 m. The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months. The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.3 g. For Mumbai the atmosphere is mainly humid across year.

4.0 **GENERAL TECHNICAL REQUIREMENTS OF RMU & CTPT UNIT**

Sr. no.	Description	Requirement
1	Application	Three phase - Three wire
2	Rated Voltage	12Kv
3	Service Voltage	11kV
4	System Frequency	50 Hz
5	Internal Arc rating	IAC AFL , AFLR or better
6	Internal Arc test	20 kA for 1 Sec.
7	Lightning Impulse withstand Voltage	75 kV Peak
8	Power Frequency withstand voltage	28 kV rms
9	Rated current of incomer load break switch	630 A
10	Rated current of Circuit-breaker	630 A
11	Rated Short time current withstand (3 sec)	21 kA
12	Rated Short circuit making current	50 kA
13	Number of operations at rated short circuit current on line switches, earthing switches ,CB	5 close
14	Opening time of breaker (max.) without relay time	2.5 cycle
15	Closing time of breaker (max.) without relay time	3 cycle
16	Breaker Duty Cycle	O – 3min - CO - 3min - CO
17	Rated cable charging interrupting current of incomer- - Load Break Switch	10 A
18	Rated cable charging breaking current of breaker	25 A
19	Insulating medium	SF6
20	Interrupting medium	Vacuum- for CB and SF6 for LBS and earth switch
21	Temperature Rise	Maximum permissible temperature rise for bus bar shall not be 65˚C at an ambient temperature not exceeding 40˚C, as per IEC 62271-1. However, the temperature rise for accessible enclosures and covers shall not exceed 30K and in case, they are not required to be touched during normal operation, the limit shall be raised by 10K.
22	Cable compartment	Front opening cable compartment for all feeders

4.2	**General for CT-PT**	
4.2.1	Rated Voltage	12 (KV rms)
4.2.2	Service Voltage	11 (KV rms)
4.2.3	Frequency	50HZ
4.2.4	No of Phases	3
4.2.4	Impulse Withstand Voltage (on assembled CT-PT set)	75 (KVP)
4.2.5	Insulation Level a) One minute power frequency withstand voltage (on assembled CT-	

		PT) Primary Secondary b) One minute wet withstand voltage (on assembled CT-PT set)	28 (KV rms) 3 (KV rms) Rt. 2*28 (KVP)		
4.3	**Current Transformer**				
4.3.1	Transformation ratio (CT ratio)	30/5, 50/5 ,100/5, 200/5 & 300/5			
4.3.2	Rated Output (VA Burden)	15 VA			
4.3.3	Class of accuracy	0.2s			
4.3.4	Rated continuous thermal current	1.2 times Primary Current			
4.3.5	Short time thermal current rating	200/5 : 18.4 KA Amps for 1 sec .For other Ratio as per IS			
4.3.6	Rated Dynamic Current	2.5 times short time thermal current rating			
4.3.7	No of Cores.	One			
4.3.8	Instrument Security Factor	≤ 5			
4.3.9	No of phases	Three			
4.3.10	Limits of current (ratio) Error and phase Displacement.	Percentage of rated current	± percentage current (ratio) error	± phase Displa In minutes	
		1	0.75	30	
		5	0.35	15	
		20	0.2	10	
		100	0.2	10	
		120	0.2	10	
4.3.11	Maximum temperature rise over ambient temperature.	55 Deg C as per IS 2705-1			
4.4	**Potential Transformer**				
4.4.1	Transformation ratio (PT ratio)	11KV/110 Volts (single core)			
4.4.2	Rated Output (VA Burden)	50 VA per phase			
4.4.3	Rated Voltage factor and time	1.2 times continuous and 1.9 for 8 Hrs			
4.4.4	Class of accuracy	0.2			
4.4.5	Winding connection	Star			
4.4.6	Limit of voltage (ratio) Error	± 0.2			
4.4.7	No. of Phases	Three			
4.4.8	Limit of phase displacement (minutes)	± 10			
4.4.9	Maximum temperature rise over ambient temperature	55 Deg C as per IS 3156 , Part-1			
4.5	**Bushing**				
4.5.1	Materials of bushings	Porcelain			
4.5.2	Dimension of bushing	As per IS 8603 -2008			
4.5.3	Minimum creepage distance between phase and earth	25 mm/KV			
4.5.4	Material for Rod of bushings	Copper / brass			
4.6	**Enclosure**				
4.6.1	Material and thickness of the enclosure	Ms sheet, Minimum 2mm			
4.6.2	Protection against penetration of dust and water	IP-55			

Clearance: -

Cable Box	Phase to phase	Phase to Ground
	11 KV	11 KV
HV	130 mm	90 mm
LV	45 mm	20 mm

4.1 RMU CONFIGURATIONS

This specification covers 11kV Motorized Non-Extensible Ring Main Unit (RMU) with following functions:

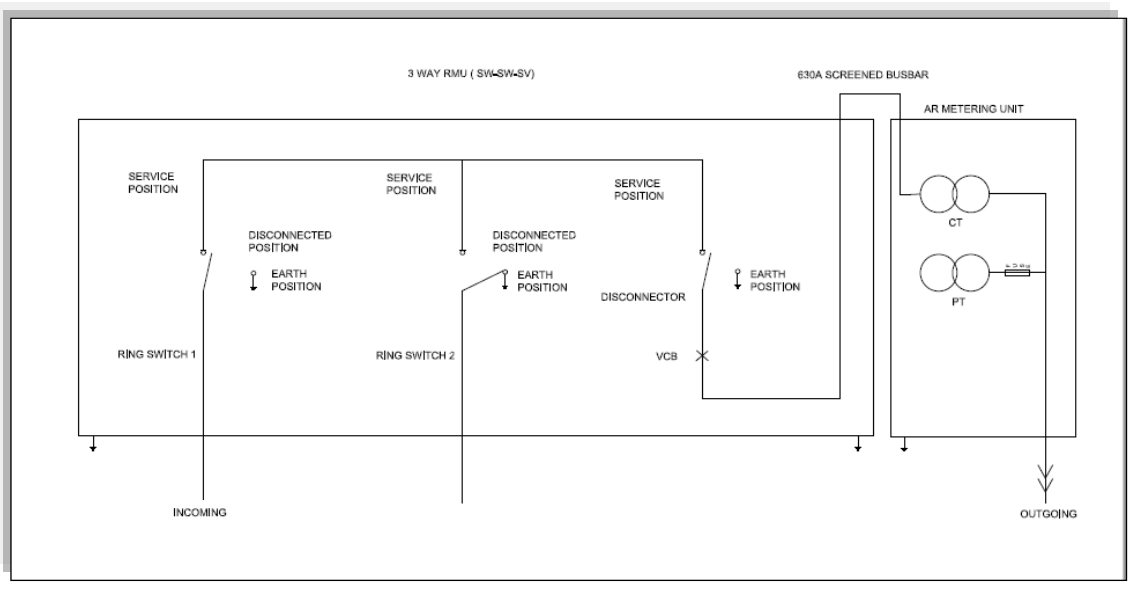
A) 3 Function Non-Extensible Local Transformer Control Motorized Ring Main Unit comprising of:
2 Nos. of 630A Incomer Load Break Disconnector Switches
1 No. of 630A Local transformer Control SF6/Vacuum Feeder Circuit Breaker with self-powered O/C + E/F relays & Shunt tripping coil
1 Nos. of Electronic Fault Passage Indicator per RMU, 3 Nos of Voltage Presence Indicating System (VPIS).
Isolator with motorized functionality to be considered.

B) There will be 3 no's of 11KV Current Transformer & 3 no's of 11KV Potential Transformer in the metering unit compartment.

C) The PT should have isolation facility either through Load break switch or through Vacuum breaker.

The configuration may be as follows:

General Arrangemnet for 3W RMU with Metering Unit:



		Note- All shunt trip coils shall be 230V AC for TPCODL supply (There should be mechanical interlock between 630A LBS of PT& outgoing. Outgoing LBS should not close unless LBS of PT is ON. There should be single core PT.)
5.0	**General construction for RMU**	
5.1	MAIN TANK	5.1.1 The switchgear and bus bar shall be contained in a stainless steel tank filled with SF6 gas and the outer body shall be made of GI high tensile steel/CRCA 2mm thick with

			thick gland plates as per IS 513.
		5.1.2	The tank shall have SS sheet of 2.5 mm thickness minimum (or as per type tested design of bidder with undertaking on letter head) and meet the "sealed pressure system" criteria in accordance with the IEC 62271-200. This is a system for which no handling / refilling of gas shall be required throughout the expected operating life, i.e. 30 years. Sealed pressure systems are completely assembled, filled and tested in the factory.
		5.1.3	The maximum leakage rate of SF6 gas shall be lower than 0.1 % of the total initial mass of SF6 gas per annum from main tank. The filling pressure for the switchgear shall be just above the atmospheric pressure so as to prevent the tendency to leak. SF6 gas used for the filling of the RMU shall be in accordance with IEC 376.
		5.1.4	It is mandatory to fit an absorption material in the tank to absorb the moisture from the SF6 gas and to regenerate the SF6 gas following arc interruption. The degree of protection for RMU tank (Indoor/Outdoor) shall be IP 67.
		5.1.5	The RMU shall be complete with all connection and copper bus bar with continuous current carrying capacity of 630A. The bus bar shall be fully encapsulated by SF6 gas inside the steel tank.
		5.1.6	The tank shall have a separate SF6 refilling valve and the filling pressure must be mentioned near the valve. And the refilling valve should be marked properly.
		5.1.7	If same valve is used for pressure indicator or remote communication then the procedure to refill to be mentioned near the NRV from with permanent sticker.
		5.1.8	The SF6 tank shall be completely enclosed in the enclosure such way that any rodent entry on top or side of tank is deterred.
		5.1.9	All configurations should be in one tank without any coupling/joint on main Busbar.
5.2	GENERAL DETAILS	5.2.1	The mimic board shall be provided with IP2X degree of protection for Indoor RMUs and protection for Outdoor RMUs shall be minimum IP 54(Main door closed). Cable compartment shall be IP54.
		5.2.2	The RMU shall be suitable for mounting on plinth with trench below and shall have base frame on sides with mounting bolt accessibility from outside of RMU the mounting bolts provision shall be min. M12 bolts on all four sides. The mounting bolts and nuts shall be of Hot dip galvanized to avoid rusting. The provision for cabling shallbe through base plate from bottom of RMU through trench below. The RMU shall be designed so that the position of the different devices is visible to the operator on the front face plate with permanent type indicators.
		5.2.3	The RMU shall be identified by an appropriately sized permanent labels which clearly indicates the functional units and their operation directions etc. The ON or OFF shall be marked as words and only I/O labelling shall not suffice.
		5.2.4	The RMU shall be designed to be tamper proof so as to prevent access to all live parts during operation without the use of special tools.
		5.2.5	The earth bus bar shall be covered if passing through the cable chamber and enclosed in an enclosure housing to prevent theft/tampering. Only extension out side enclosure shall open for access.
		5.2.6	There shall be continuity between the metallic parts of the RMU and cables so that there is no electric field pattern in the surrounding air, thereby ensuring the safety of people. The enclosure and cable compartment and tank shall be connected to common earthing.
		5.2.7	All parts of main circuit to which access is required or provided shall be capable of being earthed prior to becoming accessible. This does not apply to removable parts which become accessible after being separated from the switchgear and control gear. The cables shall be earthed by an earth switch with short-circuit making capacity in compliance with IEC 62271-102.

		5.2.8 The LBS /CB shall not be closed in case Earth Switch is closed. The earth switch shall be fitted with its own operating mechanism and manual closing shall be driven by a fast-acting mechanism, independent of operator action. Mechanical interlocking systems shall prevent access to the operating shaft to avoid all operator errors suchas closing the earth switch when the Load break switch is closed or when cable is charged. 5.2.9 All panel covers shall be provided with anti-vandal screw bolts so that opening of panel covers is only possible with special tools, which shall be provided by the Bidder as mandatory spare/tool. 5.2.10 The default design of cable compartment for TATA Power CENTRAL ODISHA DISTRIBUTION LTD shall be for 3Cx300sq.mm AL cables . Cable boots, gland plate, cable cleat, washer, bushings & terminal bolts 5.2.11 The default design of cable compartment for TATA Power CENTRAL ODISHA DISTRIBUTION LTD shall be suitable for 3Cx400 sq.mm cables in feeder compartments & in the breaker compartment 11kV, 1CX185 sq. mm / 3C X 300 Sq. mm. cables . 5.2.12 The circuit breakers, Load break switches and earthing switches shall have pad lock provision & can be locked in the open or closed position by 1 to 3 padlocks 6 to 8mm in diameter. 5.2.13 For TATA POWER CENTRAL ODISHA DISTRIBUTION LTD the atmosphere is mainly humid across year hence necessary anticorrosive fasteners & components to be provided on switchgear.
5.3	INTERNAL ARC TESTING	Any accidental over pressure inside the sealed chamber tank shall be limited by the opening of a pressure limiting device provided at the bottom part of the tank. Gas shall be released to the bottom without affecting cables and termination of the RMU with partition between cable chamber such way that gas releases away from the operator. Bidder shall provide type test report to prove compliance to the 'Internal fault IAC- A FL minimum for indoor and A-FLR for outdoor with bottom release' as per IEC 62271-200 on main tank and cable chambers. An anti-reflex mechanism on the operating lever shall prevent any attempts to reopen immediately after closing of the switch or earth switch. All manual operations shall be carried out on the front of the RMU. In case of SF6 gas leakage from gas tank or any kind of repair should be done at site or replacement of complete RMU to be done free of cost within guarantee period.
5.4	**Incomer Load Break Switches (LBS)**	5.4.1 Load break switches shall be maintenance-free. The position of the power contacts and earthing contacts shall be clearly visible on the front of the RMU. The position indicator shall provide positive contact indication in accordance with IEC 60265-1. In addition, manufacturer shall prove reliability of indication in accordance with the standard. The switches shall be of the "increased operating frequency" in accordance with IEC 60265-1. 5.4.2 The LBS shall have at least 3 positions, open-disconnected, closed, and earth (with making capacity) and shall be constructed in such a way that natural interlocking prevents unauthorized operations. 5.4.3 The disconnector should have the maximum 200micro ohm contact resistance. 5.4.4 Earthing of the cable shall be either through a three position switch of a separate snap action type or Earth Switch having fault making capacity. 5.4.5 The switches shall be fully mounted and inspected in the factory. Provision for future motorisation of LBS and CB should be kept in configuration while designing RMU. 5.4.6 The load break switch and earthing switch operating mechanism shall have mechanical endurance of at least 1000 operations. The type test reports to be

		submitted along with Bid. 5.4.7 Load break switch shall have mechanical switch operation counter and should be visible on front in horizontal alignment. 5.4.8 The Load break switch should have minimum spare (for TATA POWER CENTRAL ODISHA DISTRIBUTION LTD use) 3 NO+ 3 NC auxiliary contacts and 1NO+1NC for earth switch. 5.4.9 The load break switch shall be compatible for remote operation without any modification of the operating mechanism and without de-energizing the RMU, The LBS shall be fitted with an electrical operating mechanism and can remotely open- disconnected, closed and earthed from a reserved location.
5.5	**Circuit Breaker For Transformer / Local Feeder Control**	5.5.1 The circuit breakers/ interrupter shall be of the maintenance free. 5.5.2 The position of the power and earthing contacts shall be clearly visible on the front of the RMU. 5.5.3 The circuit breakers shall have at least 2 positions: Open-disconnected and closed and shall be constructed in such a way that natural interlocks prevent all unauthorized operations. 5.5.4 For TPC supply & places where the RMU CB is used for switching operation & protection of feeder (cables) - In view of safety each VCB shall be assisted with feederside disconnector having 3 positions, open-disconnected, closed, and earth (having fault making capacity) and shall be constructed in such a way that natural interlocking prevents unauthorized operations. 5.5.5 They shall be fully mounted and inspected in the factory. 5.5.6 Breaker contact resistance should be <=50 micro-ohms. The various circuit contact resistance should comply with provisions in IEC 62271-200. 5.5.7 The breaker should have minimum spare (exclusively for TATA POWER CENTRAL ODISHA DISTRIBUTION LTD use) 4 NO+4 NC auxiliary contacts. 5.5.8 An operating mechanism can be used to manually close and open the circuit breaker with single push on push buttons. It shall be fitted with a local system for manual tripping by an integrated push button. There will be no mechanical automatic re- closing. 5.5.9 The operating mechanism shall be compatible for remote/ SCADA operation. The required motor for this operation shall be delivered separately to stores (at a laterdate) and shall be compatible with older versions of RMUs already working within the TATA Power CENTRAL ODISHA DISTRIBUTION LTD distribution network. 5.5.10 The circuit breaker shall be associated with an integrated protection unit that will operate without any auxiliary power supply and shall include three toroid transformers incorporated in the transformer tee-off bushings, an electronic self-powered relay, a low energy release, and a "fast-on" test receptacle for protection testing (with or without CB tripping). 5.5.11 CT shall be mounted on cables the mounting arrangement shall be flexible to move to & fro, up and down based on site condition of cable terminations etc. The mounting arrangement shall ensure that the CT should not reach less tan 300mm from live part of bushing. The CT mounting shall be fixed at position while dispatch such that the cable entry, the bushing terminal bolt and CT core hole are co-axial. (There should be separate CTs for protection & metering. Separate colors for metering & protection CTs. There should be separate compartment for metering CTs & PTs) 5.5.12 Fixing bracket to be provided for fixing CT on particular position without touching termination cores. Bolting arrangement to be provided for fixing CT on the mounting bracket.

		5.5.13 In any mounting the CT shall be mounted in such a way that the secondary connection shall be accessible and visible form front side after opening cable compartment door. 5.5.14 Breaker shall have mechanical endurance of at least 2000 operations. Relevant type test reports to be submitted along with bid. 5.5.15 Breaker operation counter should be provided and should be visible on front in horizontal alignment. 5.5.16 The circuit breaker shall be compatible for remote operation and can close (ON) and open (OFF) by remote operation in future if automated. 5.5.17 In control cabinet the Terminal block shall have AC input wiring provision and MCB provision for incoming of LT AC supply. 5.5.18 The relay auxiliary power, communication ports and other required ports should be wired up on the TB. 5.5.19 The breaker should have one series trip coil and one shunt trip coil. 5.5.20 For TATA Power CENTRAL ODISHA DISTRIBUTION LTD, Mumbai Supply – The shunt trip coil shall be of 230V AC & wired upon TB 5.5.21 For TATA Power CENTRAL ODISHA DISTRIBUTION LTD Supply- Following shall be applicable The circuit breaker shall be associated with an integrated protection unit that will operate without any auxiliary power supply and shall include: ▯ Three toroid transformers incorporated in the transformer tee-off bushings, ▯ An electronic relay,(self-powered target latched by battery or capacitive unit) ▯ A low energy release, ▯ A "fast-on" test receptacle for protection testing (with or without CB tripping) The protection relaying shall have following features: ▯ Phase Protection: With Definite time/ IDMT element having standard characteristics of Standard Inverse, Very inverse, Extremely Inverse (as per IEC 255-3) or Fuse Characteristics. ▯ Earth Fault Protection: With Definite time or IDMT element having standard characteristics of Standard Inverse, Very inverse, Extremely Inverse as per IEC 255-3 standard. ▯ The CTs of 5P20 Class shall be employed. CT ratio shall be 200/1 (Further CT ratio may finalized during detailed engineering) ▯ The transformer ratings which are to be controlled by the breaker are as follows: 400kVA to 2000kVA. ▯ The terminal protectors to be supplied with the RMU by the vendor along with the cable termination bolt for termination 185 Sq. mm 11kV 1C cable in breaker & 300 Sq. mm 11kV 3 C for isolator compartment. There should be provision of flag Relay on each outgoing vacuum breaker module for indication of Trip on Fault The preferable make of relay at Mumbai supplies are ABB, Ashida, Schneider, Siemens, C&S, Alstom make relay.
5.6	**Bushings and Cable terminations**	5.6.1 Bushing should be of Epoxy resin. Each cable compartment shall be provided with three bushings of adequate sizes to terminate the incoming and outgoing cables. The termination bolt shall be M12 for TATA Power CENTRAL ODISHA DISTRIBUTION LTD Mumbai supplies

		5.6.2 The bushings shall be conveniently located for proper bend so as to allow easy working and termination of cables. The cable termination shall be done with Heat shrinkable /Push ON termination method so that adequate clearances are maintained between phases & cable shall be held by HDPE (fire retardant) cleat. The Sizes of incoming and outgoing cable shall be as per clause no. 5.2.10 to 15.2.12 5.6.3 BA should provide bimetallic washer for connection between Copper bushing stud and Aluminum Lug. Necessary spring and flat washers to be provided on each terminal. The bimetallic washer shall be suitable for M12 bolt and 630A rating in all compartments with minimum thickness of 2mm and sufficiently cover the completely copper bushing stud. The bidder can alternately offer tinned copper surface of bushing then bimetallic washer not required. 5.6.4 The Terminal bolt shall have arrangement for fixing the cable test rod through cable boot opening. Cable boot should have opening for test rod insertion. 5.6.5 The bolt tightening pressure must be written inside each cable chamber with permanent sticker. 5.6.6 Cable boot for cable termination should be as per IS 13573-2. Boot should be easy to install. 5.6.7 The cable compartment must be without any holes or gaps and properly vermin proofed before inspection. 5.6.8 The cable testing provision to be ensured in design. In case cables are to be tested with front door open, doors shall have interlocks such that doors can be opened only with earth switch in closed position & a cable test rod (to be quoted as spare) which can be fixed on the terminations/ termination bolt through boot hole to facilitate testing. Termination boots as approved by the TATA Power CENTRAL ODISHA DISTRIBUTION LTDshould have a properopening to facilitate the testing. The opening in boot shall be covered by means of removable protection cap. 5.6.9 All cable compartments shall have front door opening. The cable cover door shall be pad lockable and shall be Tamper and Arc proof. The circuit breaker and earth switch shall be lockable in the open or closed positions by 1 to 3 padlocks. 5.6.10 In outdoor RMU the door should have pad lock provision and cable door shall have interlock so that it shall not be opened by external forces. Also it shall not be possible to operate the load break switch / isolator or breaker from outside once door closed. This is required to prevent pilferage. 5.6.11 Locking provision of cable compartment door to be provided in case of any switch/CB is at earth position to avoid pilferage. 5.6.12 Control cabinet with a terminal block (TB) located at convenient accessible location so as to wire all inputs & outputs (IOs) up to the terminal block (TB). All the cable secondary wiring should be rooted through marshalling box separately for relay, CT etc. 5.6.13 The wiring of the relay to be done on the TB for its terminals along with communication terminals. 5.6.14 All terminals wires shall have proper identification ferrules and the identification marking provided on TB. 5.6.15 Control cabinet shall have control cable entry arrangement on both sides of the RMU top control cabinet with proper grommet such that the opening are sealed in normal installations when not used for our door extension box arrangement to be provided any other arrangement to be explained in drawing during tender. Note: Supply of Cable terminations is not to be part of RMU supply.
5.7	**Earthing:**	5.7.1 The RMU outdoor metal clad switchgear enclosure, load Break Switch, VCB, SF6 tank etc. shall be equipped with a copper earth bus throughout all compartments and

		securely fixed along the base of the RMU with cover. 5.7.2 The extension of this earth bus shall be taken out minimum 50mm outside theenclosure on both sides for fixing of the TATA Power CENTRAL TATA POWER CENTRAL ODISHA DISTRIBUTION LTD is GI earth flat of 50mm width. The extension coming out of enclosure shall be properly sealed such a way to ensure vermin proofing of the cable compartment. 5.7.3 The size of copper earth bus-bar should be Min.105 sq.mm inside the enclosure to withstand short time current carrying capacity as per IEC. 5.7.4 Two nos. body earthing bolts of M12X70 mm to be provide on the extended bus-bar. 5.7.5 The mother earth need to be extended up to 250mm periphery of cable entry hole so that the cable termination earthing can be connected easily to the main mother earth with 12mm bolt and washers. This arrangement need to be provided in each compartment of RMU. 5.7.6 The main tank must be connected to mother earth at least two positions with proper contact. 5.7.7 In Three Way outdoor type compact design bidders should ensure the earthing from mother earth is provided inside the cable compartment for earthing of the cable terminations. that TATA POWER CENTRAL TATA POWER CENTRAL ODISHA DISTRIBUTION LTD shall provide only two main earthing on switchgear 5.7.8 Bidder to ensured that the earth bus shall be single conductor/bus suitable for taking specified fault current and both main earthing are interconnected by earth bus and not through thank or enclosure. 5.7.9 If bolt are provided as current carrying path then the bolt material shall be brass and size shall be suitable to carry specified fault current.
5.8	**Voltage indicator lamps and phase comparators**	5.8.1 Each compartment of RMU shall be equipped with a fixed type voltage indicator lamps having dip ports for insertion of phase comparators or line tester to check the phase sequence or presence of charge in cable. This is to be fixed on the front face plate to indicate presence of voltage in the cables. The capacitive dividers will supply low voltage power to the indicator lamps. Three inlets can be used to check the synchronization of phases with phase comparator or other device. These devices shall be in compliance with IEC 62271-206:2011 standard. The VPIS without dip ports are not accepted. 5.8.2 All the VIPS installed on compartments shall have auxiliary contacts wired up to the terminal block of respective compartment which shall be further used for remote status indication at SCADA. The auxiliary contacts in VPIS shall be There should be electrical interlock of cable presence indicator and operation of earth switch in RMU incomer cable compartment of LBS.
5.9	**Front Cover**	5.9.1 The front cover shall provide a clear mimic diagram that indicates the different functions. This shall be permanent in nature throughout the useful life of the RMU. 5.9.2 The position indicators shall give a true reflection of the position of the main contacts. Position Indicators shall be clearly visible to the operator. 5.9.3 The lever operating direction shall be clearly indicated in the mimic diagram. 5.9.4 The bidder shall provide a operating sequence process on each compartment with permanent type arrangements. So that all data shall be self-explanatory. 5.9.5 The mimic shall have clear Words for “CLOSE/OPEN/EARTH’ at each desired place. 5.9.6 All status indicators shall be marked appropriately with permanent labels as Earth On/OFF, Disconnector/LBS On/OFF, CB On/OFF. 5.9.7 All operating ports shall have marking like spring charging provision, three position disconnector port and Shutter operator for interlocking, Operation allowed along with arrow

		indication and labelled as earth operation or disconnector operation. 5.9.8 For better clarity of earthing related operations shutters and ports shall be painted in Green (TPC, Mumbai) background such way that the persons should get clear indication that if operating in yellow region means he is performing earthing related operation. The details shall be as per annexture-2 of this specification for 5.9.9 The Direction of operation shall be clock wise for any close operation and anti-clock wise for any open operation of disconnector/LBS and earth switch or as per type tested design with undertaking 5.9.10 There shall be one label for SF6 gas pressure indicator and a clear message must be fixed near pressure indicator that region of safe operation and Alert message stating 'If GAS pressure not OK. Do not operate any switchgear and report to OEM(name) customer care/engineer in charge' This message should be clearly visible in front with suitable background and shall be with permeant marked. 5.9.11 For gas pressure indication a dial type manometer to be provided with will show actual pressure. Gas pressure shall have SCADA compatible contacts and wired up on TB with labeling. 5.9.12 All the other accessories and boxes shall be properly labelled with permanent marking/printing such a way that the product is self-explanatory for user.
5.10	**Fault Passage Indicators**	5.10.1 Fault Passage Indicators shall be installed on the Ring Main Unit. These devices shall be, electronic devices with their own energy source and connected to Single 3 phase Split Core CTs (CBCT) for O/C. These shall be provided with bright LED s / flag Indicators, which shall be clearly visible in the day time. These shall have the following resetting facilities: a. Manual reset b. Resetting after a set time duration c. Electrically reset from remote with at least 2-spare potential free contacts. d. Resetting on restoration of LV 5.10.2 The unit shall have Short Circuit adjustable to different settings with separate Current transformer. They shall be fully field-programmable and shall have at least and 5 settings for Phase fault or over current. 5.10.3 The preferred range is – O/C setting range 200-1000 A and A. 5.10.4 The default setting shall be and 300A for overcurrent. This shall be ensured before inspection call in each RMU. 5.10.5 It shall be possible to Test these indicators at site thru "Test" push button. The Fault Passage Indicators shall also be provided with a SCADA output contact. 5.10.6 The process of fixing the FPI shall be fixed on the wall of the incomer LBS cable compartment along with pictorial view. 5.10.7 FPI connecting wires should be properly dressed and covered in insulated sleeve and tied to the side walls with help of cable ties. If sticking type arrangement is provide then it must be with good quality permanent adhesive from reputed makes like 3M and should not come out with force of 10kN. 5.10.8 These shall confirm to the following standards:

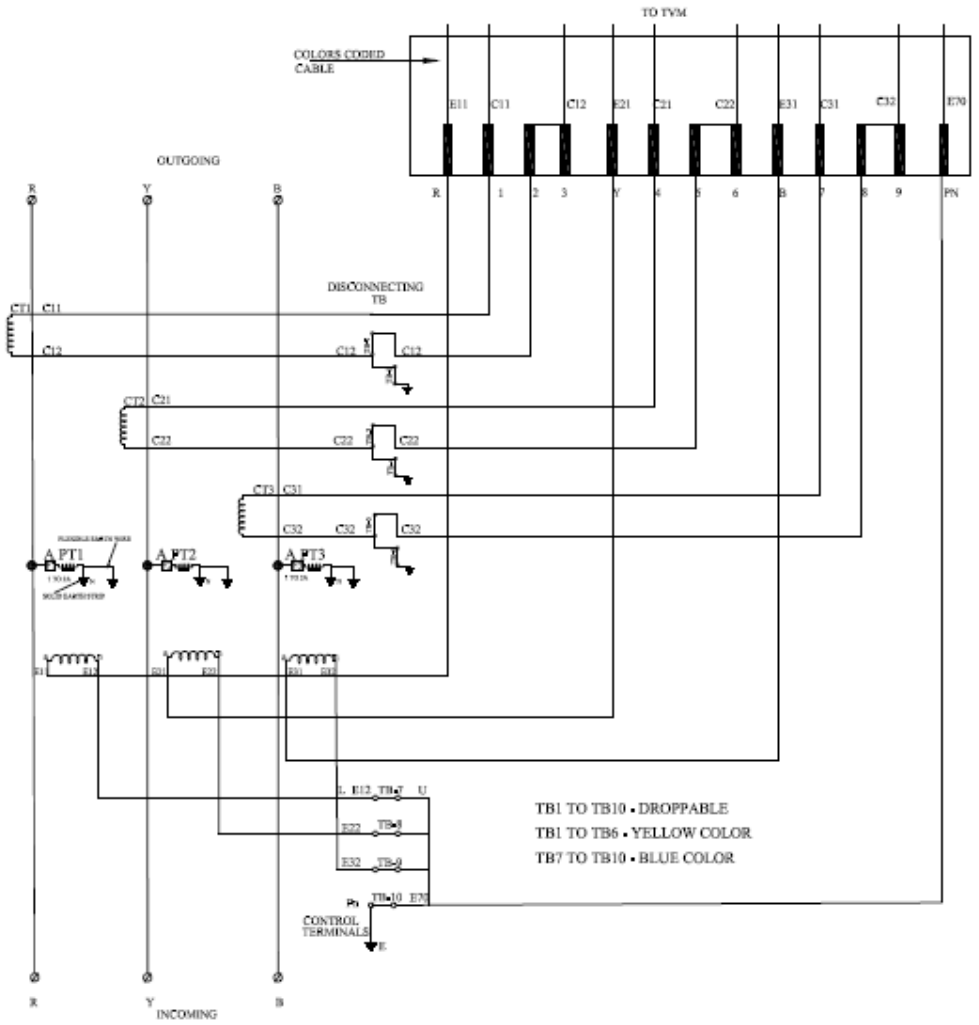
		IEC 60068-2-6, IEC 60068-2-9 : Environmental testing – For Vibration, solar radiations IEC 60950 : Information Technology equipment – Safety IEC 1000-2 : Electromagnetic compatibility for low-frequency conducted disturbances and signalling in public low power supply systems IEC 1000-4 : EMC – Testing & Measurement IEC 1000-6 : EMC- Immunity for Residential, Commercial and light industrial environments.
5.11	**Remote Control of the RMU:**	5.11.1 For non-motorized RMU: Future provision for motorization to be kept along with the hurting plug arrangement on each feeder of each RMU For future requirement of remote operation of the RMU line switches shall be possible using motors fitted to the operating mechanism for both line switch and circuit-breaker functions as and when required. All the necessary accessories shall be supplied separately to stores based on PO placed on quotation provided in this tender. The fitting of the motors to the mechanism must not in any way impede or interfere with the manual operation of the switches. An auxiliary contact to prevent motorized operation of the mechanism while the operating handle is inserted into the operating point shall also be provided. 5.11.2 For motorized RMU- The motors to be fitted in LBS sections only. The fitting of the motors to the mechanism must not in any way impede or interfere with the manual operationof the switches. An auxiliary contact to prevent motorized operation of the mechanism while the operating handle is inserted into the operating point shall also be provided. Preferred communication protocol for FRTU shall IEC-60870-5-104. All Close-Open coils / signaling contacts shall be rated for 24 V DC. Following signalling contacts are essential for remote operation of RMU: A) Aux. contact for Line Isolator (Status) B) Aux. contact for all earthing switch (Status) C) Aux. contact for Breaker (Status) D) Aux. contact for FPI indication E) Aux. contact for Protection trip (Breaker module) F) Aux. Contact for Low Gas Pressure 2 Nos. spare relay tripping NO, NC contacts to be provided. Flag Indications on RMU when tripped should be on shunt trip. A provision for physical disconnection of motor supply (like fuse) of line isolator must be provided in RMU unit itself. (A flag is required for series and shunt coil actuation). There should be harting plug arrangement for individual Isolator as well as breaker motor connections, which will be fitted on the RMU body itself. Also the PCB of motor should be covered by anti-tracking agent. There should be relay with timer instead of only relay, which is used in the latching circuit. Suitable unlatching system to be provided to prevent mal operation of motor in case of any latched command/ non executed command at RMU (case like fuse failure etc.) The separator between terminals to be provided to avoid any tracking etc. Signal requirement for field RTU (which shall be mounted near RTU) is attached (refer Annexure-1). The bidder shall quote the cost of field RTU (FRTU) separately with all technical details for acquisition of the signal as described in Annexure-1.
	General construction of CTPT Metering unit	The 11kV Metering cubicle shall comprise of Three numbers single phase potential transformer and three numbers single phase current transformers. The connection between the CT and PT inside the enclosure shall have adequately reinforced insulation to avoid infringement of clearance in air or to the enclosure from inside the unit. Adequate electrostatic and electromagnetic shielding shall be provided to eliminate the effects of electromagnetic induction/ electrostatic charge on the secondary windings. Creepage distance (minimum) fromany live part to the nearest earth point shall be 190 mm. There shall be 3 no's of single phase, single core PTs with star connection & HV neutral

		earthing to be provided on main earth bus and end turns insulation of PT HV winding towards bushing shall be reinforced. PT termination shall be given with 20 sq.mm Copper Busbar with HT insulation sleeve. No fuse on secondary side of PT shall be provided. PT bushing shall be provided with a PVC cap to avoid creepage due to dust & moisture. The primary terminals of CT shall be of adequate cross section to 120% of full load current continuously without damaging the insulation due to overheating. CT HT terminal to the base plate distance shall be minimum 800 mm. These dimensions may vary slightly taking into consideration the minimum clearances required between phase to phase and phase to earth. The unit shall be fabricated with MS sheet having thickness not less than 2 mm. The dimensions of the metering cubicle shall be approx. 1000 mm (L) x 1500mm (H) x 1000 mm (D). Length (L) i.e. 1500 mm shall also include 100 mm standing channel. The metering cubicle shall be panel type with 2 no's of compartments (one for CT - PT and other for metering). All the edges and joints shall be made and welded in such a way so that no access inside the cubicle shall be possible through them and shall thus provide strength to robust mechanical construction both for transportation and installation for its use. The metering cubicle shall be provided with M16 earthing bolt at two opposite site with welding from inside the cubicle for fixing external earth during installation. Both earthing bolts at opposite ends to be interconnected by 50 x 6 GI. The bolts shall be connected internally to 50 x 6 mm GI earth bus which shall provide earthing to PT neutral & cable earth provision. Terminal bolts and washers used in metering cubicle shall be of stainless steel. A Danger Plate of Aluminum sheet embossed / engraved or Screen Printed on Enclosure with 11000 V and danger mark in English and Hindi also effectively secured. The metering cubicle shall have explosion vent provision at the bottom of back side. Star point of CT & PT should be separate. In secondary side, p2 terminal of PTs shall be in star formation & s2 terminal of CTs shall be in star formation. The primary & secondary terminals of CTs & PTs should be embossed & clearly visible. 1) Both primary and secondary winding of CT and PT must be dry type resin cast. The PT primary winding conductor shall be of Grade 3 conductors/wires. Conductor insulation used for CT primary must be of class H only. All windings of CT and PT must undergo vacuumpressure impregnation with 'H' class varnish of reputed make. After varnish impregnation all coils shall undergo epoxy resin casting with 'F' class resin of reputed make. Leads shall be brought out from epoxy casting. The resin casting shall be done in APG plant and hot curing process shall be adopted for curing of units. The lead size shall be same as conductor diameter. 2) The core material of CT and PT unit shall be of high grade non ageing electrical silicon CRGO steel of first quality having low hysteresis loss and high permeability to ensure accuracy at both terminal and over current/ voltage. B-H curve of the core material to be used shall be provided by the bidder. All clearances and safety measures shall be taken in compliance of relevant sections of CEA guidelines. The grade of the Core shall be ZDKH or better. 5 Limb cores shall be used for PT. Core of PT shall be painted with anti-rust paint. 3) The insulating paper / polyester film used for insulation shall be of high insulation grade, excellent mechanical strength (tensile, tear and stretch), high purity, chemical stability, and heat resistance. The paper density used shall be approx. 60-190 g/m2. The insulating paper shall be used of make Weidman or better. Polyester film shall be used of makes Hertzman/ Dr. Beck/ Resin or better. The insulating materials for winding between HV and LV and between interlayer of the winding and for end turn shall be of reputed make. However endturns shall be provided with reinforced insulation and lead connecting the bushing shall be provided with extra insulation. The lugs shall be properly crimped and soldered. No joints shallbe allowed in CT secondary wires. 4) While resin casting CT, 'Ratio of the CT' and 'Property of TATA POWER CENTRAL ODISHA DISTRIBUTION LTD - Mumbai' shall be embossed on one side and manufacturer name on the other side. The embossed CT shall be mounted such that the manufacturer's name shall not be visible from front. 5) The secondary wiring shall be with flexible color-coded copper wires. 4 sq mm flexible wires to be used for CT & 2.5 sq mm flexible wires to be used for PT wiring. Copper cable with colour coding, thimble (bottle type one side and ring type another side) and ferrule along with marking reputed make. The wiring shall be neatly bunched together. Only 6 wires of CT and 6

		wires of PT shall come out from the chamber for connections. Suitable size of lugs shall be used to tighten the wire with the unit's secondary terminals. The secondary terminal box shall be covered, the same shall be made of proper insulating material. All the secondary wiring shall be taken to metering compartment through conduit. 6) The conductor in secondary winding of CT shall be of adequate cross- section to carry rated current. The CT Primary Copper conductor shall be suitable to meet defined short circuitcurrent rating (not be less than 40 sq.mm.). Normal current density in primary winding of the CT shall not be more than 1.6 A/ sq. mm.
5.12	**Paint**	All paint shall be applied on clean dry surfaces under suitable atmospheric conditions by seven tank process and powder coating. The overall paint thickness shall not be less than 70 microns. The paint shall not scale off or crinkle or be removed by abrasion during normal handling. The enclosure of the RMU shall be painted with shade light Grey, i.e. RAL 7032. If any damage observed after delivery same need to be touch-up painted after delivery at site.
5.13	**SLD and configuration**	The SLD and the offered configurations cannot be changed without prior notice and approval from TATA Power CENTRAL TATA POWER CENTRAL ODISHA DISTRIBUTION LTD . TATA Power CENTRAL ODISHA DISTRIBUTION LTD reserve the right to accept the change or reject the same. Safety being utmostconcern hence same need to be taken care in offered designs.
6.0	**NAME PLATE & MARKING OF RMU: -**	All the components and operating devices of the RMU shall be provided with durable and legible nameplates containing all technical parameters. Name plates shall be suitably embossed with" PO no. with date", "PROPERTY OF TATA Power CENTRAL ODISHA DISTRIBUTION LTD- & "CODE NUMBER" along with the following information. A Danger plate of appropriate size shall also be provided on the enclosure. a) Manufacturer's Name b) Month and year of supply c) PO Number d) Type/Model e) Rated Voltage f) Rated current g) Service voltage h) System Frequency i) Rated Short time withstand current for 1 sec j) Rated Impulse withstand Voltage k) Degree of Protection l) Type Designation or Serial no. m) Year and month of manufacture. n) Applicable Rated values o) Mass of unit p) SF6 gas filling pressure. q) Warranty period THE SR. NO. AND YEAR OF MANUFACTURING SHALL BE PAINTED IN BLACK COLOUR WITH YELLOW BACKGROUND ON SIDE.
	METERING UNIT NAME PLATE AND MARKINGS	The unit shall be provided with a name plate clearly visible and effectively secured against removal. The name plate shall be indelibly and distinctly marked with all essential as per relevant standards along with the following: i) Manufacturer's name ii) Month and Year of manufacture iii)Serial number and Type designation

		iv) Rated primary and secondary currents v) Rated frequency vi) Rated output and the corresponding accuracy class vii)Highest system voltage viii) Rated insulation level of primary neutral ix) Rated short time thermal current x) Rated dynamic current if different than 2.5 times the rated STC rating xi) Rated primary and secondary voltage xii) Rated voltage factor and corresponding rated time xiii)Number of phases and method of connection xiv)Earthed or unearthed xv) Guarantee period xvi) Reference standard xvii)Material code xviii)PO number Reference standard Also, the danger plate should be shown on the front cover. Incoming and outgoing to be marked from inside of the panel (on sidewalls), and CT should be marked with P1 and P2 on the resin casting. Further the following shall be painted on the front with black colour and yellow background: xx) Serial number xxi) Year of manufacture xxii) Ratio • **Additional points** • **Heater should be provided in Metering cubivle** • **High voltage signage to be mentioned on Bakelite sheet.** • **The Bakelite sheet should have self-alignment arrangement.** • **The unit shall be fabricated with MS sheet having thickness not less than 2 mm. HT terminals to the base plate distance shall be minimum 800mm. These dimensions may vary slightly taking into consideration the minimum clearances required between phase to phase and phase to earth.** • **The Current transfer area of the terminals shall be adequate to meet the temperature rise requirement as per IS 2705.** • **The cross-sectional area of the terminal shall be indicated in the drawings. CT/PTterminal should have a provision for sealing.** • **Secondary wiring shall be carried out with 1100V grade PVC insulated stranded copper conductor of 4.0 sq mm for CT circuit and 2.5 Sq.mm for PT and the other circuits** • **All wires will be colour coded (Red, Yellow, Blue, Black, Gary). The Secondary connection to be kept on front side for easy accessibility and ensure tightness.** • **Two types of PT primary Grounding should be provided one is through strip & other through cable** • **The TTB, wiring shall be carried out with source wires from CT and PT at bottom and meters wires at top. Only front connection screw type TTBs should be used and shall be located inside the metering panel and not on the panel door.** • **TTB shall be of DAV make & Model name is SSFS (screw type). The CT/PT secondary circuit should be directly connected to TTB (No droppable links in between) typical photo is attached below.**

		 No lugs shall be provided for wires to meter & TTB. For PT fuses on primary side suitable mechanical device to be provided to prevent the HT fuse coming out of holder. • Adequate space for mounting TVM should be provided in compartment (Max dimension envisaged for TVM: L X B X D: 305 x 200 x 180 mm) Location of meter shall beat convenient height (less than five feet from ground level) for easy reading & testing purpose. HT fuses shall be of General electric or English Electric Make. • Adequate space for mounting Modem to be provided in the compartment. • It shall be possible to seal the metering compartment with plastic seals for preventing tampering. • The metering cubicle shall be provided with copper earthing strip welded at two opposite base angles provided with welded bolt from inside the cubicle. The earthingstrip shall be connected by tightening a bolt from outside the metering cubicle at two opposite ends.
	BUSHING	The metering equipment shall be supplied with adequate number of single terminals, epoxy bushings of reputed make (as approved by the Purchaser) with Brass studs as per the rating. 2. The bushings shall be rated for 12 KV. The bushings shall confirm to IS: 8603- 2008 for the dimensions and IS: 5621and IS: 2099 for other electrical requirements.
	TERMINAL BOX	1. TB should be rated at 1.1 kV 2. It is droppable type 3. Make of TB should be connected well 4. PT neutral formation TB should be of blue colour 5. CT Star formation TB should be of Yellow colour. 6. CT & PT Star formation to be made at TB **CT/PT Terminal Box should be followed as per below :(For Metering)** 1. CT Links should AC Terminals-2 Links, 2. PT terminals-Source 1(R, Y, B, N)-4 Links, Source 2(R, Y, B, N)-4 Links If needed. 3. CT Terminals – R-S1, Y-S1, B-S1, R-S2, Y-S2, B-S2-6 Links. 4. All S2 terminals of CTs should be grounded The wiring diagram for secondary side is given below:

		THE TYPICAL CIRCUIT ARRANGEMENT FOR THE CT/PT UNIT AS SHOWN BELOW. 
	APPROVED SUB VENDOR LIST	Epoxy Resin Cast C.T.- Pragati Make, Huphen Fabricator, Huphen Electromech Epoxy Resin Cast P.T.- Pragati Make, Huphen Fabricator, Huphen Electromech TTB - DAV make & Model name is SSFS TB (Link) - Connect well
7.0	**TESTS FOR RMU**	All the Routine and acceptance tests shall be carried out in accordance with the relevant IS/IEC standards. All routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components within the RMU enclosure shall have been tested for Routine/acceptance and Type tests as per the relevant standards. All Type tests as per latest IS / IEC shall have been carried out on the RMU as a whole as per relevant IS/IEC. Following tests shall be necessarily conducted on the equipment and its components as specified in IEC 62271-200:
7.1	TYPE TESTS for RMU + CTPT	**RMU** 1. Lightening Impulse test 2. Power Frequency Voltage Test 3. Temperature Rise Test 4. Measurement of Circuit Resistance 5. Rated Short Time and Peak Current Withstand test for main and Earth Circuit. 6. Breaking and Making Capacity Test for Breaker & Isolating Switches. 7. Operational & Interlock Performance Test 8. Internal Arc Withstand Test. 9. Degree of Protection (IP Code verification tests) 10. Salt Spray Test for 1000Hrs

		10. Mechanical Endurance Tests for Isolator and Breaker. 11. Pressure withstand test & Leakage test on SF-6 Gas chamber 12 Dimensional and Visual Checks. CTPT Metering cubicle Type Test: - (Test shall be included RMU +CT PT with busbar & enclosure) 1. Temperature rise test 2. IP 55 Test 3. Short time current tests (Short circuit withstand test for Metering cubicle along with RMU + CT, PT, busbar and insulator)
7.2	ROUTINE TESTS RMU + CTPT	Following routine tests are to be done on 100% of the lot quantity of RMU with Combined CTPT 1. Power Frequency Withstand Test. 2. Dimensional & Visual Checks 3. Operational & Interlock Tests of breaker & isolator switches 4. Measurement of Circuit Resistance 5. Sf-6 chamber pressure withstands/leakage test. 6. HV withstand test across isolator distance. 7. HV withstand test of control and auxiliary circuits. 8. Voltage Indication Tests. 9. Breaker Contact Resistance Test 10. Total Trip Time Check Test through Current Injection in primary. 11. IR Value. Below routine test has to be provided on cable Boot for cable termination: a) Visual inspection of the final finished product. b) Intactness with Bushing. c) Insulation Test. d) AC HV test. **a. Routine Test for CT & PT Unit** CT: (As per IS2705 Part 2) & PT: (As per 3156.1.1992) 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. Over voltage inter-turn tests 5. Partial discharge test in accordance with IS 11322-1985 6. Determination of errors or other characteristics according to the requirements of the appropriate designation or accuracy class. 7. Accuracy& Ratio test (CT): At 20%, 100% & 120%
7.3	ACCEPTANCE TESTS RMU + CTPT	All the tests specified under Routine Test Clause above shall be carried out as acceptance test on random samples as per sampling plan under IEC/IS for each lot. Bidder should have all the requisite testing equipment's to carry out routine and acceptance test mentioned above including: a. Facility for primary current injection up to 1000amp. b. Facility to check total trip timing of breaker along with breaker main contacts through primary current injection **b. <u>Acceptance Test of CT & PT Unit</u>** 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. Over voltage inter-turn tests 5. IR for CT secondary @ 500 V 6. IR for PT secondary @ 500 V 7. Partial discharge test in accordance with IS 11322-1985

		8. Determination of errors or other characteristics according to the requirements of the appropriate designation or accuracy class
8.0	**TYPE TEST CERTIFICATE**	The Bidder shall furnish the type test certificates of the 11KV RMU of same design as offered in bid for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA or reputed International Laboratory like PHELA, KEMA IPH, etc. as per the relevant standards of IS and IEC. Type tests shall have been conducted in certified Test laboratories during the period not exceeding 5 years from the date of opening the bid. In case if type test conducted beyond 5 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product. In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER CENTRAL ODISHA DISTRIBUTION LTD. Bids without all type test report shall stand disqualified.
9.0	**PRE-DISPATCH INSPECTION**	Equipment shall be subject to inspection by a duly authorized representative of the TATA POWER CENTRAL ODISHA DISTRIBUTION LTD. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material is liable to rejection. Supplier shall grant free access to the places of manufacture to TATA POWER CENTRAL ODISHA DISTRIBUTION LTD's representatives at all times when the work is in progress. Inspection by the TATA POWER CENTRAL ODISHA DISTRIBUTION LTD or it's authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER CENTRAL ODISHA DISTRIBUTION LTD. Following documents shall be sent along with material a) Test reports b) MDCC issued by TATA POWER CENTRAL ODISHA DISTRIBUTION LTD c) Invoice in duplicate d) Packing list e) Drawings & catalogue f) Guarantee / Warrantee card g) Delivery Challan h) Installation and maintenance Manual soft copy for FPI, Relay, RMU i) Other Documents (as applicable)
10.0	**INSPECTION AFTER RECEIPT AT STORE**	The material received at TATA POWER CENTRAL ODISHA DISTRIBUTION LTD Store will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Project Engineering department.
11.0	**GUARANTEE**	Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 48 months from the date of commissioning or 60 months from the date of last supplies made under the contract whichever is earlier, Bidder shall be liable to undertake to replace/rectify such defects atits own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.

		In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure. Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reportedby the Purchaser.
12.	**PACKING**	Bidder shall ensure that all equipment covered by this specification shall be prepared for rail/road transport (local equipment) and be packed in such a manner as to protect it from damage in transit. The packing should be in such manner that during storage the RMU and its components should not be damaged.
13.0	**TENDER SAMPLE**	Not applicable. Bidders to mention offered model number or type in GTP along with GA drawing during tender for each variant.
14.0	**QUALITY CONTROL**	The bidder shall submit with the offer, assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and after finishing, bought out items and fully assembled component and equipment including drives. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's or its nominated representative engineer shall have free access to the manufacturer/sub-supplier's works to carry out inspections. To ensure proper operation of RMU the bidder shall provide onsite training of TATA POWER CENTRAL ODISHA DISTRIBUTION LTD teams as and when required. To ensure quality of installations bidder shall provide supervision support during impartation.
15.0	**TESTING FACILITIES**	Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards
16.0	**MANUFACTURING ACTIVITIES**	The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage with quantity. This bar chart shall be in line with the Quality Assurance Plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.
17.0	**SPARES, ACCESSORIES & SPECIAL TOOLS / GAUGES**	Bidder shall provide a list of recommended spares with quantity and unit prices for 5 years of operation after commissioning. TATA POWER CENTRAL ODISHA DISTRIBUTION LTD may order all or any of the spare parts listed at the time of contract award andthe spare parts so ordered shall be supplied as part of the definite works. The may orderadditional spares at any time during the contract period at the rates stated in the Contract Document. Bidder shall give an assurance that spare parts and consumable items will continue to be available through the life of the equipment which shall be 25 years minimum.However, the TATA POWER CENTRAL ODISHA DISTRIBUTION LTD shall be intimated with a minimum of 12 months' notice in the event that the Bidder or any sub-vendor plans to discontinue manufacturing of any component used in this equipment. Any spare apparatus, parts or tools shall be subject to the same specification, tests and conditions as similar material supplied under the Contract. They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the plant and must be suitably marked and numbered for identification. Bidder has to provide quotation unit rate for below mentioned spare of RMU

SL. No.	Name of Spare Parts	Required spares with above 100 No. of RMU	Required spares with above 30 No. up to 100 No. of RMU	Required spares up to 30 No. of RMU
1	Breaker Mechanism	4 No's	3 No's	2 No's
2	Isolator Mechanism	4 No's	3 No's	2 No's
3	Trip Coil	5 No's	3 No's	2 No's
4	Relay	5 No's	3 No's	2 No's
5	CT (All types)	3 Sets (1 Set = 3 Nos.)	2 Set	1 Set
6	Bolt (For cable connection)	5 Sets (1 Set = 3 Nos.)	3 Set	2 Set
7	"L" Key (All Size)	2 Sets	1 Set	1 Set
8	Operating Handle	1 No.	1 No.	1 No.
9	Cable Bushing (If replaceable)	15 (5 Set)	9 (3 Set)	NA
10	VPIs	10 No's	5	NA
11	FPI	10 No's	5	NA
12	Push Button (ON & OFF Both)	10 (5 On & 5 Off)	6	NA
13	Manometer	5 No's	3	NA
14	Washer (S.S.)	20 No's	15	NA
15	Anti vandal Screw (All Size)	20 No's	15	NA
16	Cable Boot	5 sets	3 Sets	NA
17	Reducer M16 to M12	12	3	NA
18	M12 to M16 conducting Bolt (If M12 bushing supplied in past)	12	3	NA
19	The nonmagnetic base plate arrangement for 3x 1Cx 630 mm cable	10	5	NA
20	HDPE cable cleat arrangement for 3x 1Cx 630 mm cable in incomer LBS Included	10	5	NA
21	The extensibility connection kit – indoor RMU	10	10	NA
22	The extensibility connection kit – Out door RMU	10	10	NA

18.0 **DRAWINGS & DOCUMENTS**

Following drawings and documents shall be prepared based on TATA POWER CENTRAL ODISHA DISTRIBUTION LTD specifications and statutory requirements and shall be submitted with the bid:

a) Completely filled in Technical Particulars
b) Any deviation sheet or No deviation
c) General description of the equipment and all components including brochures.
d) General arrangement for RMU
e) SLD of each feeder
f) Arc path drawing of all variants offered
g) Foundation plan
h) Experience List

i) All set of Type test certificates for offered design each variant

Drawings / documents to be submitted for approval after the award of the contract are as under:

Sl. No.	Description	For Approval	For Review/ Information	Final Submission
1	General Technical Particulars (GTP)	√		√
2	General Arrangement drawings	√		√
3	Schematic Diagram of MIMIC with ON/OFF and all front labelling	√		√
4	Bill of materials	√		√
5	Arc path drawing for each variant	√	√	√
6	SLD of complete RMU and feeders	√	√	√
7	Control wiring diagram and arrangement in control cubicle	√	√	√
8	Cable compartment internal dimension drawing and one drawing stating standard boots arrangement and cable earthing arrangement with cable	√	√	√
9	CT mounting arrangement drawing with details of fixing and frame movement etc.	√		√
10	Foundation Plan/Drawing	√	√	√
11	Installation & Maintenance Instructions and manual			√
12	QA & QC Plan	√		√
13	Test Certificates	√	√	√

All the documents & drawings shall be in English language.

After the receipt of the order, the successful bidder will be required to furnish all detailed drawings of components for TATA POWER CENTRAL ODISHA DISTRIBUTION LTD approval.

Instruction Manuals: Bidder shall furnish softcopies and one hard copy manuals of RMU, FPI, Relay (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.

19.0 **GENERAL TECHNICAL PARTICULARS FOR RMU**

Sr. No	Descriptions	As Specified By TPC
1	RMU Category	3 Way - Non-Extensible
2	RMU Application	Outdoor
3	Dielectric Medium	SF6
4	Interrupting Medium	SF6 / Vacuum
5	System Frequency	50 Hz
6	Rated voltage	12kV
7	Service Voltage	11kV
8	Rated Current-Line Switches	630A
9	Rated Current –CB	630A for All Type

			10	Rated Short time Current Withstand	21kA for 3 sec
			11	Rated Short time Making Capacity	50kA
			12	Rated Cable charging Interrupting current incomer load break switch	25A
			13	Rated Load Interrupting Line Current	630A
			14	Rated Magnetizing Interrupting Current of Line switch.	10 A
			15	No. Of Operations at rated Short Circuit Current on line Switches Earthing Switches and CB	5 close
			16	I. Mechanical endurance for Isolator & earth switch	Min 1000 Operations
				ii. Mechanical endurance for circuit breaker	Min 2000 Operation
			17	Electrical Operations of Isolator & E/Switch at rated current	To be Provided By Bidder
			18	Temp Rise above Ambient	50 Deg C.
			19	Min Gas Pressure	0.05 Bar G
			20	SF6 Gas Pressure Indicator	To be Provided by Bidder
			21	SF6 Gas leakage Detector	1 per 25 RMUs Subject to Minimum One Number
			22	Guaranteed SF6 Leakage per Annum	Less than 0.1%
			23	Degree Of Protection	IP 67 for the tank and IP2X for the front cover/mimic board and IP54 for Outdoor RMUs .The RMU metal parts shall be greater than 2.0 mmthickness high tensile steel whichmust be shot blasted, spray galvanised with minimum thickness of 30 micron and subsequently powder coated. The overall Paint thickness shall be not less than 70 microns.
			24	Moririsation	For all isolators and breaker
			25	Motor supply	24 V DC
			26	Shunt trip coil voltage	230 V AC
			27	Internal arc test	20kA 1 Sec
			28	Lightning Impulse withstand	75kVp
			29	Power frequency withstand	28kVrms
			30	SF6 tank design	Hermetically sealed unpainted stainless steel enclosure with SF6 Gas. Sealed pressure system by Laser welding so that no refilling of gas is required for 30 years. No gas work to prevent access to live parts. No gasket shall be used, No bolts Shall be provided
			31	Earth Bus Bar	In enclosure to prevent tampering.
			31.1	Material & size	To be provided by Bidder
			32	Earthing of main CCT cables shall be earthed with earth switch with S/C making capacity as per IEC 129. Moving contacts of earthing switch shall be visible in closed position thru transparent covers AND closing shall be possible only when Isolator is	To be provided by Bidder

				open.	
			33	Incomer load break switch shall be SF6 type with least maintenance and shall have at least 3 positions, Open, Close & earth with Natural interlocks. Fitting of motor at site shall be possible & shall have mechanical interlock.	To be provided by Bidder
			34	Circuit Breaker Preferably SF6 type with minimum maintenance and shall have at least 2 positions i.e. open & close, manual operation & fitting of motor at site shall be possible if required.	To be provided by bidder
			35	Protection Relay –Without Auxiliary Power & shall include 3 toroid transformer in trans. Tee-off bushing, electronics relay, low energy release & fast on test receptacle forprotection testing.	Self powered O/C+E/F IDMT characteristics with 0.05 Sec TMS.
			36	Relay Characteristic & Make	* TATA Power CENTRAL ODISHA DISTRIBUTION LTD Approved Relay Makecomprises of : a) Self-Powered b) Phase Protection. c) Earth Fault Protection. d) Over Current Protection having flag indication
			37	Flag indication on CB for trip on fault	To be Provided By bidder
			38	Testing of cable-without opening the doors. If doors are opened then earth switch shall be in closed position and cable test rod shall be provided which can be fixed on terminations for testing purpose AND if doors are opened it shall not be possible to operate ,Isolator, E/switch or CB	To be confirmed. If separate test bushing are provided, it Shall be covered with suitable antitheft covers with anti vandal screws.
			39	Protection against Theft	Design Of RMU shall be tamper & arc proof. And vandal Screws shall be provided. Cable covers shall be pad lockable. All live parts / test Bushing etc. Shall be covered with antitheft covers.
			40	Doors	Hinged doors shall be provided. the hinges for the doors need to be riveted and shall not have any access from outside. Bolted hinges shall not be acceptable.
			41	Interlock between RMU and metering unit provided	Elecri and mechanical interlocks shall be ensured between RMU and Metering unit.
			42	Voltage indicator box shall be fixed type- This device shall be in compliance with IEC 61958 standard.	Capacitive dividers type which will supply low voltage to power the lamps and 3 inlets can be used to check phase sequence.
			43	Phase comparator	1 per RMU for purchase of 15 units
			44	Cable Clamps	HDPE
			45	Cable Termination	
			45.1	Type	Heat/Cold shrinkable
			45.2	Size	Suitable for 3C x 400 Sq mm

			45.3	Height	Minimum 1200mm above GL
			46	Earth fault passage indicator	One Per RMU with as a part of RMU
			47	Operating handle	To be provided by bidder as part of RMU
			48	MIMIC Diagram on Front of Panel	To be provided by Bidder
			49	Do and don't sticker	To be provided on prominent location
			50	Safety signages	On RMU and CT/PT each compartment and outside unit
			51	Bas bar	
			51.1	Material	Copper
			52.2	Cross section	As specified by bidder
			53	Opening & closing times(max)	To be provided by bidder
			54	Current Transformer	Shall be epoxy resin and are mounted around the cable outside SF6 gas compartment. The CTs around the cables shall be supported on the sheet steel bracket base sized for CTs .CTs shall not be kept hanging or put on base frame directly.
			54.1	CT Dimension	Suitable for 11kV 3Cx400 sqmm cable
			55	SCADA Compatibility-Remote operation of RMU shall be possible by using motors fitted to operating mechanism of isolators & CB etc.	As per specification
			56	Harting Plug arrangement for individual isolator as well as breaker motor connections, which will be fitted on RMU body itself.	As per spécification
			57	Guarantee-from date of taking over by TPL	48 Months from the date of commissioning or 60 months from the date of last supplies made under the contract which ever is later
			58	Dimension (L x W x H) (mm x mm x mm)	To be provided by bidder
			59	Total weight	To be provided by Bidder
			60	Paint	RAL 7032
			61	Type test of product	To be provided by bidder as per specification
			61.1	Internal Arc Test	Not older than 5 years from the date of opening of Bid
			61.2	Temp Rise Test	Not older than 5 years from the date of opening of Bid
			61.3	STC Test	Not older than 5 years from the date of opening of Bid
			61.4	Lightning Impulse withstand	Not older than 5 years from the date of opening of Bid
			61.5	Power frequency withstand	Not older than 5 years from the date of opening of Bid
			61.6	IP Protection	Not older than 5 years from the date of opening of Bid
			62	Availability of Spares	Assurance by bidder for 25 Years
20	**GENERAL TECHNICAL PARTICULARS**				

S. No	Description	Units

	FOR CT/PT		63.1	**General for CT- PT**	
			63.1.1	Type	
			63.1.2	Application	
			63.1.3	Rated Voltage	KV rms
			63.1.4	Service voltage	KV rms
			63.1.5	Frequency	HZ
			63.1.6	No. of Phases	No.
			63.1.7	Impulse withstand voltage (On assembled CT-PT)	KVP
			63.1.8	Insulation Level a) One minute power frequency withstand voltage (on assembled CT-PT) Primary Secondary b) One minute wet withstand voltage (on assembled CT-PT set)	 KV rms KV rms KVP
			63.2		
			63.2.1	Transformation ratio (CT ratio)	
			63.2.2	Rated Output (VA Burden)	VA
			63.2.3	Class of accuracy	
			63.2.4	Rated continuous thermal current	A
			63.2.5	Short time thermal current rating	KA
			63.2.6	Rated Dynamic Current	A
			63.2.7	No of Cores.	Nos.
			63.2.8	Instrument Security Factor	
			63.2.9	Limits of current (ratio) Error and phase Displacement.	
			63.2.10	Maximum temperature rise over ambient temperature	Deg C
			63.3		
			63.3.1	No. OF Phases	
			63.3.2	Transformation ratio	Ratio
			63.3.3	Rated output (VA burden)	VA
			63.3.4	Rated Voltage factor and time	
			63.3.5	Class of accuracy	
			63.3.6	Winding Connection	
			63.3.7	Winding grade and impregnation	
			63.3.8	Limit of voltage (ratio) Error	Ratio
			63.3.9	Limit of phase displacement (minutes)	Minutes
			63.3.10	Maximum temperature rise over ambient temperature	Deg C
			63.4		
			63.4.1	Material and Thickness	Mm
			63.4.2	Protection against Penetration of dust and water	
			63.4.3	Dimensions of LT compartment	Mm x mm x mm
			63.4.4	No. and material of doors of LT compartment	No.
			63.4.5	Dimension of HT Compartment	Mm x mm x mm
			63.5.6	No. and material of doors of HT compartment	No.
			63.4.7	Overall Dimensions	Mm x mm x mm

			63.4.8	Resistance of winding at 75 C per Phase at HV	Ohms
			63.4.9	Resistance of winding at 75 C per Phase at LV	Ohms
			63.4.10	Clearance between HV t earth	Mm
			63.4.11	Size and type of secondary winding	
			63.4.12	Bushing distance between metal part and earth.	Mm
			63.4.13	Locking and sealing arrangement	Yes/No
			63.4.14	Lifting Lugs	
			63.4.15	Paint Shade and thickness	
			63.4.16	Weight of core and winding of CT	KG
			63.4.17	Weight of core and winding of PT	KG
			63.4.18	Total weight of metering cubicle	KG
			63.5		
			63.5.1	Material	
			63.5.2	Size	Mm
			63.5.3	STC rating	KA
			63.5.4	Test performed	
			63.6		
			63.6.1	No. Of materials of bushing	
			63.6.2	Dimension of bushing	Mm
			63.6.3	Minimum creepage distance between phase and earth	Mm/KV
			63.6.4	Material for Rod of bushings	
			63.6.5	Make of Bushing	

21 **SCHEDULE OF DEVIATIONS**

(TO BE ENCLOSED WITH TECHNICAL BID)

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

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

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

		Seal of the Company: **Designation** **Signature**

TPCODL TP CENTRAL ODISHA DISTRIBUTION LIMITED	TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA		
	TECHNICAL SPECIFICATION		
Document Title	TECHNICAL SPECIFICATIONS FOR EXTENSIBLE 33 KV RMU.		
Document No.	ENG-HV		Eff. Date: 20.04.2021
Revision No.	00		Page 1 of 18
Prepared By Priyanka Dash	Reviewed By Niranjan Khuntia	Approved By Khajan C. Bhardwaj	Issued By Pourush Garg

TECHNICAL SPECIFICATION

FOR

33kV RING MAIN UNIT

CONTENTS

TECHNICAL SPECIFICATIONS FOR EXTENSIBLE 33 KV RMU.

1.0 **Scope**:

This specification covers technical requirement of design, engineering, manufacture, testing at manufacturing work, painting, packing, forwarding, supply and performance of 33 kV Ring Main Units complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Central Odisha. at Odisha.

The insulating medium is SF6 and the interrupting media may be SF6 or Vacuum.

2.0 **Applicable Standards**

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with latest editions of the following standards / IEC and shall confirm to the regulations of local statutory authorities.

IEC 62271-200	: HV switchgear and control gear-AC metal enclosed switchgear and control gear for voltages above 1kV and upto and including 52kV
IEC 60694	: Common specifications for high voltage switchgear and control gear standards
IEC 62271-102	: HV switchgear and control gear-Alternating current disconnectors and earthing switches
IEC 60265-1	: High voltage switches – Part 1: Switches for rated voltages above 1kV and less than 52kV
IEC 60529	: Degrees of protection provided by enclosures (IP code)
IEC 62262	: Degree of protection provided by enclosures for electrical equipment against mechanical impacts (IK Code)
IEC 60060	: High-voltage test techniques
IEC 60947 / IS 13947	: Low voltage switchgear and control gear
IEC 60439-1	: Low voltage switchgear and control gear assemblies-Type tested and partially type tested assemblies
IEC 60255-3	: Electrical Relays – Part 3: Single input energizing quantity measuring relays with dependent or independent time
IEC 60044-1 / IS 2705	: Current transformers
IEC 60044-2 / IS 3156	: Voltage transformers
IEC 60376	: Specification of technical grade sulphur hexafluoride (SF6) for use in electrical equipment
IEC 61958	: High voltage prefabricated switchgear and control gear assemblies – Voltage presence indicating systems

3.0 Climatic Conditions of The Installation

a)	Max. ambient temperature	: 50 deg. C
b)	Max. daily average ambient temp.	: 40 deg. C
c)	Min ambient temp.	: 0 deg. C
d)	Maximum humidity	: 95%
e)	Minimum humidity	: 10%
f)	Average no. Of thunderstorm days per annum	: 50
g)	Average annual rainfall	: 1450 mm
h)	Average no. of rainy days per annum	: 60
i)	Rainy months	: June to Oct.
j)	Altitude above MSL not exceeding	: 300 mtrs.
k)	Wind pressure	; 300kg/sq m up to an elevation of 10 mtrs.

The atmosphere is generally laden with mild acid and dust suspended during dry months and subjected to fog in cold months. The design of the equipment and accessories shall be withstand seismic forces corresponding to an acceleration of 0.1 g.

4.0 GENERAL TECHNICAL REQUIRMENTS:

Description	Requirement
Application	Three phase – Three wire
Rated voltage	36kV
Service Voltage	33kV
System Frequency	50 Hz
Min Gas Pressure	0.05 Bar G
Internal arc test	25kA 1 sec
Lightning Impulse Withstand voltage for 1min	170kVP
Power Frequency Withstand voltage for 1min	70kV rms
Rated current of incomer Load break Switch	630 A
Rated Current Of Circuit –Breaker	630 A
Rated Short Time Current Withstand (1 Sec)	25kA
Rated Short Circuit Making Current	50kA
Number of operation at rated Short Circuit Current On line Switches, Earthing Switches and CB	5 close
Rated cable Charging interrupting Current of Incomer Load Break Switch	25kA
Rated Magnetizing Interrupting Current of Incomer Load Break Switch	10A
Insulating medium	SF6
Interrupting Medium	SF6 / Vacuum
Temperature Rise	Maximum permissible temperature for bus bar shall not be 90 Deg C, as per IEC 6094 And IEC 62271. However, the Temperature rise for accessible enclosure and covers shall not exceed 30K and in case they are not required to be touched during normal, the limit shall be raised by 10K.

Functional Requirements:

This specification covers 33kV Ring Main Unit (RMU) of following functions

A) 4 Function Non Extensible/ Extensible Network Ring Main Unit comprising of:
- 4 Nos. 630A Incomer Load Break Disconnector Switches
- 4 Nos. Electronic Fault Passage Indicator per RMU

B) 4 Function Non Extensible/ Extensible Local Transformer Control Ring Main Unit comprising of::
- 2 Nos. 630A Incomer Load Break Disconnector Switches
- 2 Nos. 630A Local transformer Control SF6/Vacuum Feeder Circuit Breakers with self powered O/C + E/F relays & Shunt tripping coil
- 2 Nos. Electronic Fault Passage Indicator per RMU

C) 3 Function Non Extensible/ Extensible Network Ring Main Unit comprising of:
- 3 Nos. 630A Incomer Load Break Disconnector Switches
- 3 No. Electronic Fault Passage Indicator per RMU

D) 3 Function Non-Extensible/ Extensible Local Transformer Control Ring Main Unit comprising of:

2 Nos. 630A Incomer Load Break Disconnector Switches
1No. 630A Local transformer Control SF6/Vacuum Feeder Circuit Breakers with self powered O/C + E/F relays & Shunt tripping coil
2 Nos. Electronic Fault Passage Indicator per RMU

All the RMUs should have provision for dry contacts for status signalling (such as bay open close indication, FPI, gas pressure low, earth switch open/ close etc) to existing Distribution automation system. RMU should be designed in such a way that motors should be provided for remote operation of Load Break switch & Vacuum Circuit Breaker. The RMU should have Battery & battery charger for Motorised operation. All RMUs envisaged are extensible type only and extensible on both the sides of the RMU. Space heaters to be provided in each cable compartment. Cable terminal should be easily accessible externally for IR test.

5.0 GENERAL CONSTRUCTION:

5.1.1 RMU Overall assembly:

The switchgear and busbar shall all be contained in a stainless steel enclosure filled with SF6 gas, hermitically sealed without use of any gaskets, sealants or O-rings. The enclosure should meet the "sealed pressure system" criterion in accordance with the IEC 60298 standard (i.e a system for which no handling of gas is required throughout the 30 years of service life) , so that refilling is not required .In addition, manufacturer shall confirm that maximum leakage rate is lower than 0.1 % / year. It should provide full insulation, making the switchgear insensitive to the environment (temporary flooding, high humidity...), IPX7 degrees of protection in accordance with recommendation IEC 529. The active parts of the switchgear shall be maintenance-free and the switchboard shall be of low-maintenance.

The RMU shall be suitable for mounting on a trench, utilities space or base.

Each unit shall be identified by an appropriately sized label which clearly indicates the functional units and their electrical characteristics.

The RMU shall be designed so that the position of the different devices is visible to the operator on the front of the switchboard and operations are visible as well.

In accordance with the standards in effect, the RMU shall be designed to be tamper proof so as to prevent access to all live parts during operation without the use of tools.

5.1.2 Earthing of the main circuit

The cables shall be earthed by an earthing switch with short-circuit making capacity, in compliance with IEC 129 standard. The earthing switch can only be operated when the switch is open.
The earthing switch shall be fitted with its own operating mechanism and manual closing shall be driven by a fast-acting mechanism, independent of operator action.
Mechanical interlocking systems shall prevent access to the operating shaft to avoid all operator errors such as closing the earthing switch when the switch is closed.
The position indicator shall provide **positive** contact indication in accordance with IEC 265-1 standard. In addition, manufacturer shall prove reliability of indication in accordance with IEC 129.

5.1.3 Incomer Load Break Switches

The Load break switches shall have positions, open-disconnected closed, and earthed, and will be constructed in such a way that natural interlocking prevents unauthorized operations

The position indicator shall provide **positive** contact indication in accordance with IEC 265-1 standard. In addition, manufacturer shall prove reliability of indication in accordance with IEC 129.

The switches shall be fully mounted and inspected in the factory. Manual opening and closing will be driven by a fast-acting mechanism, independent of operator action.

Mechanical Interlock should be provided for Earth switch, If cable is back charged Earth switch should not be closed.

Each switch can be fitted with an electrical operating mechanism in a specially reserved location, without any modification of the operating mechanism and without de-energizing the RMU. **Incomer Load break Switch should be operated manually & motorized.**

5.1.4 "Feeder and Local Transformer Control circuit-breaker" feeders

The circuit breakers shall be of the maintenance-free, low pressure SF6 gas/ Vacuum type. The position indicator shall provide positive contact indication in accordance with IEC 265-1 standard. In addition, manufacturer shall prove reliability of indication in accordance with IEC 129.
The circuit breakers shall have at least 2 positions: Open-disconnected & closed and shall be constructed in such a way that natural interlocks prevent all unauthorized operations. They shall be fully mounted and inspected in the factory.

Mechanical Interlock should be provided for Earth switch, If cable is charged Earth switch should not be closed. Vacuum circuit breaker should be operated manually & motorized.

An operating mechanism can be used to manually close the circuit breaker and charge the mechanism in a single movement.

It shall be fitted with a local system for manual tripping by an integrated push button. There will be no automatic reclosing.

The circuit breaker shall be associated with an integrated protection unit that will operate without any auxiliary power supply and shall include:

- Three toroid transformers incorporated in the transformer tee-off bushings,
- An electronic relay,
- A low energy release,
- A "fast-on" test receptacle for protection testing (with or without CB tripping)

The protection relaying shall have following features:

- Phase Protection: With Definite time/ IDMT element having standard characteristics of Standard Inverse, Very inverse, Extremely Inverse (as per IEC 255-3) or Fuse Characteristics.
- Earth Fault Protection: With Definite time or IDMT element having standard characteristics of Standard Inverse, Very inverse, Extremely Inverse as per IEC 255-3 standard.
- The CTs of 5P20 Class shall be employed.
- The transformer ratings which are to be controlled by the breaker are as follows: 400kVA to 2000kVA.
- The terminal protectors to be supplied with the RMU by the vendor along with the cable termination bolt for termination 400 Sq. mm 33kV 1C cable or 33kV 3C 400 Sq. mm cable in breaker & 400 Sq. mm 33kV 3 C for isolator compartment.

There should be provision of flag Relay on each outgoing vacuum breaker module for indication of Trip on Fault

5.1.5 RMU bushings and Cable terminations

Bushings: The bushing should be conveniently located for working with cables specified and allow for the termination of these cables in accordance with the instructions supplied. The profiles of the cable connection bushings shall be in compliance with EN-50181 standard.
A suitable provision for cable door interlocks shall be such that the doors can not be opened unless the Earth switch is closed. Cable testing facility to be provided.
The cables going to use for terminations in the isolators compartment is 33kV, 3C X 400 sq. mm and in the breaker compartment 33kV, 1CX400 sq. mm/ 33KV,1CX630Sqmm / 33kV 3C X 400 Sq. mm. The termination should be suitable for above said cables.

Note: Supply of Cable terminations is to be considered to be part of RMU.

5.1.6 Padlocking facilities :

The circuit breakers, Load break switches and earthing switches can be locked in the open or closed position by 1 to 3 padlocks 6 to 8mm in diameter

5.1.7 Voltage indicator lamps and phase comparators

Each function shall be equipped with a fixed type voltage indicator box on the front of the device to indicate whether or not there is voltage in the cables. The capacitive dividers will supply low voltage power to the lamps. Three inlets can be used to check the synchronization of phases. This device shall be in compliance with IEC 61958 standard.

5.1.8 Explosion Vent

Any accidental overpressure inside the sealed chamber will be limited by the opening of a pressure limiting device in the rear part of the enclosure. Gas will be released to the rear of the switchboard away from the operator. Manufacturer shall provide type test report to prove compliance with IEC 298 appendix AA 'Internal fault'.

5.1.9 Operating lever

An anti-reflex mechanism on the operating lever shall prevent any attempts to reopen immediately after closing of the switch or earthing switch. All manual operations will be carried out on the front of the switchboard. The effort exerted on the lever by the operator should not be more than 250 Nos for the switch and 250 Nos for the circuit breaker.

5.1.10 Front plate

The front plate shall have an IP2XC degree of protection. The front shall include a clear mimic diagram which indicates the different functions. The position indicators shall give a true reflection of the position of the main contacts. They shall be clearly visible to the operator. The lever operating direction shall be clearly indicated in the mimic diagram.
The manufacturer's plate shall include the switchboard's main electrical characteristics.

5.1.11 Fault Passage Indicators

Fault Passage Indicators shall be installed directly on the Ring Main Unit. These devices shall be electronic devices with their own/ Aux. energy source and connected to single phase CTs mounted on the individual phase bushings directly.
They shall be provided with bright LEDs which shall be clearly visible in the day time.
They shall have the following resetting facilities:

- Manual reset and

- Resetting after a set time duration
- Resetting on restoring of LV
- Electrically reset from remote with at least 2 spare potential free contacts

It should offer wide selection of trip current values and trip delays.
It should be possible to Test these indicators at site thru “Test” push button.
The Fault Passage Indicators should also be provided with Potential free output contact (1 NO, 1 NC) for SCADA. The FPI should be communicable FPI so that the status will be available on SCADA.
Complete testing and commissioning procedure of FPI to be provided along with FPI detail manual.
Provision for relay testing and FPI testing without taking outage of FPI and relay to be made available.
These shall confirm to the following standards:

IEC60068-2-6, IEC60068-2-9 : Environmental testing-For Vibration, solar radiations
IEC 60950, IEC1000-2, IEC1000-4, IEC10006 – EMC-Testing & Measurement

Approved Make –EKL8000NS, Flair 22D
Any other make is approved subject to TPCODL Approval.

5.1.12 Remote control of the RMUs

The RMUs shall be provided with arrangements for remote monitoring the position of Line switches and o/g breaker modules.

Preferred communication protocol for FRTU shall IEC-60870-5-104.

All Close-Open coils / signalling contacts shall be rated for 24 V DC. Following signalling contacts are essential for remote operation of RMU:

A) Aux. contact for Line Isolator (Status)
B) Aux. contact for all earthing switch (Status)
C) Aux. contact for Breaker (Status)
D) Aux. contact for FPI indication
E) Aux. contact for Protection trip (Breaker module)
F) Aux. Contact for Low Gas Pressure

2 Nos. spare relay tripping NO, NC contacts to be provided. Flag Indications on RMU when tripped should be on shunt trip. A provision for physical disconnection of motor supply (like fuse) of line isolator must be provided in RMU unit itself. A flag is required for series and shunt coil actuation.

There should be harting plug arrangement for individual Isolator as well as breaker motor connections, which will be fitted on the RMU body itself. Also the PCB of motor should be covered by anti tracking agent. This will reduce commissioning time as well as corrosion of contacts, lose connection
And insure 100% operation of motor. There should be relay with timer instead of only relay, which is used in the latching circuit.

Signal requirement for field RTU (which shall be mounted near RTU) is attached (refer Annexure-1). The bidder shall quote the cost of field RTU (FRTU) separately with all technical details for acquisition of the signal as described in Annexure-1.
The bidder shall quote the unit price for supply and fitting of the motor into the line switches and circuit breakers at a later date.

6.0 RMU Enclosure :

RMU which need to be used for outdoor application should be having enclosure specified with IP55 degree of protection in accordance with recommendation of IEC 529. Type test certificates for test conducted earlier on similar equipments shall be furnished.

5.1.13 PAINT

All paint shall be applied on clean dry surfaces under suitable atmospheric conditions by seven tank process and powder coating. The overall paint thickness shall not be less than 70 microns. The paint shall not scale off or crinkle or be abrasion during normal handling. The enclosure shall be painted with shade RAL 7035. Sufficient quantity of touch-up paint shall be furnished for application at site. The RMU is going to be installed in sea facing .There should be minimum 5years of warranty for paint.Incase of paint peeled off because of Saline weather within 5years OEM has to the repainting at his own Cost

6.0 NAME PLATE & MARKING

All the components and operating devices of the RMU shall be provided durable and legible nameplates containing all technical parameters. Name plates shall be suitably embossed with “PO no. with date” “PROPERTY OF TATA POWER CENTRAL ODISHA” & “CODE NUMBER” along with the following information. A Danger plate of appropriate size shall also be provided on the enclosure.

1. Manufacture’s Name
2. Rated Voltage
3. System Frequency
4. Rated Short time withstand current for 1 Sec
5. Rated Impulse withstand Voltage
6. Degree of Protection
7. Type Designation of Serial No.
8. Year of manufacture
9. Applicable rated values
10. Mass of unit
11. SF6 gas filling pressure

7.0 TESTS

Routine & acceptance Tests shall be conducted on the Ring Main Units in accordance with the latest versions of IS/IEC. All the tests shall be witnessed by the purchaser/his authorized representative. All the components within the RMU enclosure shall have been tested for routine/acceptance and type tests as per the relevant standards. All type tests are as per latest IS/IEC shall have been carried out on the RMU as a whole as per relevant IS/IEC. Following tests shall be necessarily conducted on the equipment and its components in addition to others specified in the IS/IEC.

1. Dimensional and visual check
2. Mechanical operation test and checking of interlocks
3. Dielectric test on main and control circuits
4. Temperature rise test
5. Internal Arc withstand test
6. Degree of protection test
7. Test to check the capability of main and earthing circuits subjected to rated peak and short time withstand current

8. Stability Test on the self powered electronic relay
9. Contact Resistance Measurement (CRM),Hi Pot Test with Leakage current Test
10. Trial Tripping of the main circuit from the relay.
11. Salt spray Test for 1000Hrs.

8.0 TYPE TEST CERTFICATE

Bidder shall furnish the type test certificates of the 33kV RMU for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA as per relevant standards. The test shall have been conducted in certified test laboratories during the period **not exceeding 5 years from the date of opening the bid**. In the event of any discrepancy in the test reports, i.e any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to Tata Power

9.0 PRE-DISPATCH INSPECTION

Equipment shall be subject to inspection by a duly authorized representative of the Tata power. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material is liable to rejection. Supplier shall grant free access to the paces of manufacture to TPCODL representatives at all times when the work is in progress. Inspection by the Tata Power or its authorized representatives shall not relieve the supplier of this obligation of furnishing equipments in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL. Following documents shall be sent along with material:

1. Test reports
2. MDCC issued by TPCODL
3. Invoice in duplicate
4. Packing list
5. Drawings & catalogue
6. Guarantee / Warrantee card
7. Delivery Challen
8. Other Documents (as applicable)

10.0 INSPECTION AFTER RECEIPT AT STORE

Material received at Tata Power Central Odisha Distribution LTD store will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to project engineering department.

11.0 GUARANTEE

Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect found by the purchaser up to a period of at least 48 months from the date of commissioning or 60 months from the date of supply made under the contract whichever is later, bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the purchaser, failing which the purchaser will be at liberty to get it replace / rectifier at bidder's risks and costs and recover all such expenses plus the purchaser's own charges from the bidder of from the security cum performance deposit as the case may be.

Bidder shall further be responsible for free replacement for another period of Three years from the end of the guarantee period for any Latent Defects if noticed and reported by the purchaser.

12.0 PACKING

Bidder shall ensure that all equipment covered by this specification shall be prepared for rail/road transport and be packed in such a manner as to protect it from damage in transit.

13.0 TENDER SAMPLE

Not applicable.

14.0 QUALITY CONTROL

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

15.0 TESTING FACILITIES

Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant IS/IEC.

16.0 MANUFACTURING ACTIVITIES

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage with quantity. This bar chart shall be in line with the quality assurance plan submitted with the offer. This bar chart will be submitted within 15 days from the release of the order.

17.0 SPARES, ACCESSORIES & SPECIAL TOOLS/GAUGES

Bidder shall provide a list of recommended spares with quantity and unit price for 5 year of operation after commissioning. The purchaser may order all of any of the spare parts listed at the time of contract award and the spare parts so ordered shall be supplied as part of the definite works. The purchaser may order additional spares at any time during the contract period at the rate stated in the contract document.
The bidder shall provide one SF6 gas leak indicator & one no. phase comparator. A list of complete set special tools and gauges required for erection & maintenance and installation procedure shall be submitted.
Bidder shall give an assurance that spare parts and consumable items will continue to be available through the life of the equipment which shall be 25 year minimum. However the purchaser shall give a minimum of 12 month notice in the event that the bidder or any sub vendor plans to discontinue manufacture of any component use in this equipment.
Any spare apparatuses, parts or tools shall be subjected to the same specification, tests, and conditions as similar material supplied under the contract. They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the plant and must be suitably marked and numbered for identifications.

18.0 Drawing / documents to be submitted after the award of the contract are as under:

Following drawings and documents shall be prepared based on TPCODL specification and statuttory requirements and shall be submitted with the bid:

1. Completely filled in technical Particulars
2. General description of the equipment and all components including brochures
3. General arrangement for RMU

4. Power flow diagram
5. Foundation plan
6. Bill of material
7. Experience List
8. Type test certificates

Sr. No	Descriptions	For Approval	For Review/ Information	Final submission
1	General technical particulars	√		√
2	General Arrangement drawings	√		√
3	Schematic Diagram	√		√
4	Bill of Materials	√		√
5	Foundation Plan & loading Details		√	√
6	Installation instructions		√	√
7	Instruction for Use		√	√
8	Transport/Shipping Dimension Drawing		√	√
9	QA & QC Plan	√	√	√
10	Test Certificates	√	√	√

All the documents & drawings shall be in English language.
After the receipt of the order, the successful bidder will be required to furnish **five copies** of all relevant drawings for Tata Power approval.
Instruction Manuals: Bidder shall furnish two softcopies (CD) and (4) hard copies of nicely bound manuals (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.

19.0 GENERAL TECHNICAL REQUIRMENTS:

Sr. No	Descriptions	As Specified By TPL	As Furnished By Bidder
1	RMU Category-Motorised with Inbuilt Battery charger & Battery	3 Way - Extensible right side 3 Way - Non-Extensible 4 Way - Extensible right side 4 Way - Non-Extensible	
2	RMU Application	Outdoor	
3	Dielectric Medium	SF6	
4	Interrupting Medium	SF6 / Vacuum	
5	System Frequency	50 Hz	
6	Rated voltage	36Kv	
7	Service Voltage	33Kv	
8	Rated Current-Line Switches	630A	
9	Rated Current –CB	630A for All Type	
10	Rated Short time Current Withstand (1 Sec)	25kA	
11	Internal ARC (1 Sec)	25KA	
12	Rated Short time Making Capacity	50kA	
13	Rated Cable charging Interrupting current incomer load break switch	25A	
14	Rated Load Interrupting Line Current	630A	
15	Rated Magnetizing Interrupting Current of Line switch.	10 A	

16	No. Of Operations at rated Short Circuit Current on line Switches Earthing Switches and CB	5 close	
17	I. Mechanical endurance for Isolator & earth switch	Min 1000 Operations	
	ii. Mechanical endurance for circuit breaker	Min 2000 Operation	
18	Electrical Operations of Isolator & E/Switch at rated current	To be Provided By Bidder	
19	Temp Rise above Ambient	50 Deg C.	
20	Min Gas Pressure	0.05 Bar G	
21	SF6 Gas Pressure Indicator	To be Provided by Bidder	
22	SF6 Gas leakage Detector	1 per 25 RMUs Subject to Minimum One Number	
23	Guaranteed SF6 Leakage per Annum	Less than 0.1%	
24	Degree Of Protection	IP 67 for the tank and IP2X for the front cover/mimic board and IP54 for Outdoor RMUs .The RMU metal parts shall be greater than 2.0 mm thickness high tensile steel which must be shot blasted, spray galvanised with minimum thickness of 30 micron and subsequently powder coated. The overall Paint thickness shall be not less than 70 microns.	
25	Internal arc test	25kA 1 Sec	
26	Lightning Impulse withstand Phase to Earth	170kVp	
27	Power frequency withstand for 1Minutes	70kVrms	
28	SF6 tank design	Hermetically sealed unpainted stainless steel enclosure with SF6 Gas. Sealed pressure system by Laser welding so that no refilling of gas is required for 30 years. No gas work to prevent access to live parts. No gasket shall be used, No bolts Shall be provided	
28.1	Earth Bus Bar	In enclosure to prevent tampering.	
29	Material & size	To be provided by Bidder	
30	Earthing of main CCT cables shall be earthed with earth switch with S/C making capacity as per IEC 129. Moving contacts of earthing switch shall be visible in closed position thru transparent covers AND closing shall be possible only when Isolator is open.	To be provided by Bidder	
31	Incomer load break switch shall be SF6 type with least maintenance and shall have at least 3 positions, Open, Close & earth with Natural interlocks. Fitting of motor at site	To be provided by Bidder	

	shall be possible & shall have mechanical interlock.		
32	Circuit Breaker Preferably SF6 type with minimum maintenance and shall have at least 2 positions i.e. open & close, manual operation & fitting of motor at site shall be possible if required.	To be provided by bidder	
33	Protection Relay –Without Auxiliary Power & shall include 3 toroid transformer in trans. Tee-off bushing, electronics relay, low energy release & fast on test receptacle for protection testing.	Self powered O/C+E/F IDMT characteristics with 0.05 Sec TMS.	
34	Make of Relay	SEG-WIP1 or Schneider-VIP 300 or REJ 603 or any other as per TPCODL Approval.	
35	Flag indication on CB for trip on fault	To be Provided By bidder	
36	Testing of cable-without opening the doors.If doors are opened then earth switch shall be in closed position and cable test rod shall be provided which can be fixed on terminations for testing purpose AND if doors are opened it shall not be possible to operate ,Isolator, E/switch or CB	To be confirmed. If separate test bushing are provided, it Shall be covered with suitable antitheft covers with anti vandal screws.	
37	Protection against Theft	Design Of RMU shall be tamper & arc proof. And vandal Screws shall be provided. Cable covers shall be pad lockable. All live parts / test Bushing etc. Shall be covered with antitheft covers.	
38.0	Doors	Hinged doors shall be provided. the hinges for the doors need to be riveted and shall not have any access from outside. Bolted hinges shall not be acceptable.	
39.0	Voltage indicator box shall be fixed type- This device shall be in compliance with IEC 61958 standard.	Capacitive dividers type which will supply low voltage to power the lamps and 3 inlets can be used to check phase sequence.	
40.0	Phase comparator	1 per RMU	
41	Cable Clamps	HDPE	
41.1	Cable Termination		
41.2	Type	Heat/Cold shrinkable	
41.3	Size	Suitable for 3C x 400 Sqmm/ 1CX400Sqmm / 1CX630Sqmm	
42	Height	Minimum 1200mm above GL	
43	Earth fault passage indicator	One Per RMU with as a part of RMU	
44	Operating handle	To be provided by bidder as part of RMU	
45	MIMIC Diagram on Front of Panel	To be provided by Bidder	
45.1	Bas bar		
45.2	Material	Copper	

46	Cross section	As specified by bidder	
47	Opening & closing times(max)	To be provided by bidder	
47.1	Current Transformer	Shall be epoxy resin and are mounted around the cable outside SF6 gas compartment. The CTs around the cables shall be supported on the sheet steel bracket base sized for CTs .CTs shall not be kept hanging or put on base frame directly.	
48	CT Dimension	Suitable for 33kV 3Cx400 sqmm cable or 1CX400Sqmm / 1CX630Sqmm	
49	SCADA Compatibility-Remote operation of RMU shall be possible by using motors fitted to operating mechanism of isolators & CB etc.	As per specification	
50	Harting Plug arrangement for individual isolator as well as breaker motor connections, which will be fitted on RMU body itself .	As per spécification	
51	Guarantee-from date of taking over by TPL	48 Months from the date of commissioning or 60 months from the date of supplies made under the contract whichever is later	
52	Dimension (L x W x H) (mm x mm x mm)	To be provided by bidder	
53	Total weight	To be provided by Bidder	
54	Paint	TPL Blue PANTON E 2727C	
54.1	Type test of product	To be provided by bidder as per specification	
54.2	Internal Arc Test	Not older than 5 years from the date of opening of Bid	
54.3	Temp Rise Test	Not older than 5 years from the date of opening of Bid	
54.4	STC Test	Not older than 5 years from the date of opening of Bid	
54.5	Lightning Impulse withstand	Not older than 5 years from the date of opening of Bid	
54.6	Power frequency withstand	Not older than 5 years from the date of opening of Bid	
55	IP Protection	Not older than 5 years from the date of opening of Bid	
56	Availability of Spares	Assurance by bidder for 25 Years	

SCHEDULE OF DEVIATIONS

(TO BE ENCLOSED WITH TECHNICAL BID)

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

Sr. No.	Clause No.	Details of deviation with justifications

ANNEXURE-1

SIGNAL LIST FOR AUTOMATION

Description	Analog Inputs (AI)					Status (DI)		
Type	Amp. Loading-R ph	Amp. Loading-Y ph	Amp. Loading-B ph	Phase Voltage	Power Factor	Switch Close	Switch Open	Reset Element
RMU Switch *	0	0	0	0	0	1	1	
Breakers *	1	1	1	1	0	0	0	
FPI							1	1

FRTU SIGNAL LIST

Description	Analog Inputs (AI)				
Type	Amp. Loading-R ph	Amp. Loading-Y ph	Amp. Loading-B ph	Phase Voltage	Power Factor
RMU Switch *	0	0	0	0	0
Breakers *	1	1	1	1	0
FPI *	0	0	0	0	0

Note: 0 indicates functionality not required for that element, 1 indicates functionality required for that element
* Denotes the nos of switches/Breakers in RMU based on the type of RMU (3 W, 4 W)

Additional IOs

RMU switch Control Command
Earth Sw. 1 Status Input
Earth Sw. 2 Status Input
FPI Reset
FRTU Local/Remote Position
FRTU Door Open
FRTU Battery Charger Faulty
FRTU Switchgear Supply Off
FRTU Aux Supply Off
FRTU Fault
Relay operation
CB OFF status
CB ON status
CB ON/OFF Command

TPCODL TP CENTRAL ODISHA DISTRIBUTION LIMITED	TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA		
	TECHNICAL SPECIFICATION		
Document Title	**TECHNICAL SPECIFICATIONS FOR 33KV RMU with HT Metering Unit**		
Document No.	ENG-HV		Eff. Date: 20.04.2021
Revision No.	00		Page 1 of 39
Prepared By Priyanka Dash	Reviewed By Niranjan Khuntia	Approved By Khajan C. Bhardwaj	Issued By Pourush Garg

TECHNICAL SPECIFICATIONS

FOR

33 kV RING MAIN UNIT WITH HT METERING.

TECHNICAL SPECIFICATIONS FOR EXTENSIBLE 33 kV RMU With HT Metering Unit

1.0 SCOPE:

The specification covers Design, manufacturing, pre dispatch testing and delivery of 33KV Motorized 3/4 way RMUs with metering arrangement in accordance with the technical requirements mentioned in the specification and relevant standards.

2.0 STANDARDS:

a) The equipment delivered shall be new and of high quality, suitable for the purpose it is intended for, free from defects and imperfections and of the classifications listed herein, or their equivalents, subject to acceptance by the Owner.

b) The bidding shall be done by original equipment manufacturers only as specified in the bid.

c) Materials used in the manufacture of the specified equipment shall be of the kind, composition and physical properties best suited to their various purposes and in accordance with the best engineering practices.

d) The equipment design shall be suitable to render satisfactory operation under the conditions prevailing at site, and the equipment shall operate satisfactorily under normal load and voltage variations and frequency variations (50 c/s ± 3%) ensuring the safety, further include all necessary provisions ensuring the safety of the operating and maintenance personnel.

e) The design must be an outdoor design with IP55 class, use of indoor RMU in an outdoor Kiosk is not acceptable.

f) The applicable standards of various equipment for the project is as specified here below:

Description	Standard
33kV 3/4 way Ring Main units	
AC metal enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV	IS 3427
Classification of degrees of protection provided by enclosures of electrical equipment	IS 12063
High Voltage Switches	IS 9920 (Parts 1 to 4)
Specification for AC disconnectors and earthing switches for voltages above 1000 V	IS 9921 (Parts 1 to 5)
HV AC Circuit Breakers	IS 13118
Dimensions of terminals of HV Switchgear and Control gear	IS 10601
General requirements of switchgear and control gear for	IS 12729

Description	Standard
voltages exceeding 1000 V	
High voltage/Low voltage prefabricated substations	IEC 1330
Common clauses for MV switchgear standards	IEC 62271-100/200
Monitoring and control	IEC 6081
Current Transformers	IS 2705
Voltage transformers	IS 3156
Specification for Static Protective Relays	IS 8686
Main International Standards	
Circuit breaker	IEC 62271-100
Disconnector and earthing switch	IEC 62271-102
Switch	IEC 62271-103
Metal enclosed switchgear	IEC 62271-200
VPIS	IEC 62271-206
VDS	IEC 61243-5
Relays	IEC 60255
Common specification for switchgear	IEC 60694 changed to 62271-1

2.1 Key RMU Configurations of RING MAIN UNIT

- **3 WAY RMU with metering :** Both side extensible Two (2) Motor operated load break switches (LBSs) with earthing switches in SF6 and one vacuum circuit breaker with motorized Electrical closing and tripping along with disconnector and earthing switches and with Line PT metering module connected by Busbar/Cable housing metering PT and CT.
- **4 WAY RMU with metering:** Both side extensible Two (2) Motor operated load break switches (LBSs) with earthing switches in SF6 and two vacuum circuit breaker with motorized Electrical closing and tripping along with disconnector and earthing switches and with Line PT metering module connected by Busbar/Cable housing metering PT and CT.
- **4 WAY RMU:** Both side extensible four vacuum circuit breaker with motorized Electrical closing and tripping along with disconnector and earthing switches.

3.0 RATINGS:

The Protection and control unit range shall be designed to accommodate the control power

supply voltages of 24 V DC voltage.

4.0 Scope of Work

- The Package scope of work shall include design, manufacture, testing, delivery supervision of installation commissioning of new "SCADA-Ready" Ring Main Units capable of being monitored and controlled by the SCADA/DMS.

- Each RMU shall include its own power supply unit (batteries, and battery charger), which shall provide a stable power source for the RMU. The RMUs will be in future connected to the FRTU including the power supply required and shall have DI/DO's wired out to harting connectors.

- Each new RMU shall be equipped with main-line load break switches and a fault passage indicator (FPI) in (n-1) configuration. Furthermore, to protect each of its lateral / transformer feeders, it shall be equipped with a corresponding set of circuit breakers and self-powered numerical relays. The RMU shall include potential-free contacts so as to connect to SCADA/DMS via FRTUs, so as to:

  - Monitor and control the open/closed status of the RMU circuit breakers and load break switches.

  - Monitor the local/remote position of RMU manually-operated switches that can be used to enable and disable remote monitoring

  - Monitor the health of the power supply, which will include battery failure and low voltage indications.

  - Monitor the open/closed status of RMU earthing switches.

  - Monitor for low SF6 gas pressure indication.

  - Monitor for circuit breaker relay operations.

  - Monitor for indication of main-circuit fault detected by the RMU's FPI.

4.1 Environmental Conditions

All materials supplied shall be capable of operating under relevant environmental conditions are listed as follows:

- Maximum ambient air temperature: - 50 °C
- Minimum ambient air temperature: - 0 °C
- Average ambient air temperature : - 45 °C
- Maximum relative humidity: - 0-100 %
- Average thunder storm days per annum: - 10
- Average rainfall per annum: - 400 mm
- Maximum wind speed: - 119 km/hr
- Altitude above mean sea level: - 1000 m

The supplied 33kV Ring Main Unit must have no derating at 50 °C and must be capable to carry 630A continuously without any derating.

4.2 Distribution Network Electrical Parameters

The main parameters of the distribution network are as follows:

- Nominal system voltage: - 36 kV (rms)
- Highest system voltage: - 33 kV (rms)
- Number of phases: - 3
- Frequency: - 50 Hz
- Variation in frequency: - 50 ±3% Hz
- Type of earthing: - Solid
- Power frequency withstand voltage: - 70 kV rms
- Basic impulse withstand voltage: - 170 kV peak

5.0 33 KV 3/4 Way RMU TECHNICAL PARAMETERS

5.1 The scope of supply is supply 11 kV 3/4 Way RMU suitable for outdoor application. Kiosk type design or cladded design wherein an indoor RMU is cladded with kiosk and converted to outdoor RMU is not acceptable.

5.2 The RMU to be supplied shall be compact and shall meet the following requirements:

- Easy to install

- Safe and easy to operate
- Compact
- Low maintenance

5.3 It shall include, within the same metal enclosure number of MV functional units required for connection,

- Power supply including the battery bank for controlling the LBS and breakers ,
- Load break switches,
- Earthing Switches
- Breakers
- Relays
- FPI's and other allied equipment.

5.4 Equipment and material conforming to any other standard, which ensures equal or better quality, may be accepted. In such case copies of English version of the standard adopted shall be submitted.

5.5 The electrical installation shall meet the requirement of Indian Electricity Rules, 1956 as amended up to date; relevant IS code of practice and Indian Electricity Act, 1977. The Electricity Act, 2003 and Amendment if any shall also apply. In addition other rules and regulations applicable to the work shall be followed. In case any discrepancy the most stringent and restrictive one shall be binding.

5.6 The high-tension switchgear offered shall in general comply with the latest issues including amendments of the following standards but not restricted to them.

5.7 All design features of the proposed RMU, as described in the supplier's bid and in the bid's reference materials, shall be fully supported by the equipment actually delivered. The key design features include those that relate to:

- Maintainability, expandability, and life span
- Ability to operate in severe outdoor environmental conditions.
- Immunity to electrical stress and disturbance.
- Acceptable insulation properties.
- Convenient FRTU interconnection features.

5.8 Maintainability, Expandability, and Life Span

5.8.1 Maintainability

- The Utility intends to be self-reliant for RMU maintenance. To this end, the Supplier shall provide the support, documentation, and training necessary to operate and repair the RMU. The Utility will prefers RMU designs that do not require periodic preventive maintenance and inspections. To facilitate expansion and maintenance, the RMUs should be of modular type.

5.8.2 Expandability

- The whole switchgear (RMU) should be suitable for extension on both sides through bolted type bushings; plug in arrangement for extension of 33kV RMU is not acceptable since in case of unequal foundations the chances of failure are more on the plug in bushings. RMU designs offering plug in extension through link busbars are not acceptable.

5.8.3 Life Span

- Each RMU shall have a design life of at least 25 years from the date of final acceptance. The Contractor shall make available, at no cost to the Employer, the manufacturing drawings, wiring diagrams, bill of material, foundation detail drawings, unpacking and transportation instructions, operation & maintenance manual, As-built drawings, installation and commissioning manual, and other relevant documentation. The specific components of each component /sub-assembly shall be identified and referenced in Supplier-supplied documentation.

5.9 Outdoor Features

5.9.1 General

- The RMUs shall be designed specifically for outdoor installation with ingress protection degree of IP55. They shall also be suitable for conditions in which they will be exposed to heavy industrial pollution, and high levels of airborne dust.
- The Outdoor RMU shall be conformably coated to meet these climatic conditions. In this respect, standards such as IEC 62271-200, covering equipment, systems, operating conditions, and environmental conditions shall apply.

- In particular, the RMU equipment shall have been type tested for IP55 from a national NABL aggregated laboratory. Failure to conform to this requirement shall constitute grounds for rejection of the proposal.

- In addition to the above, materials promoting the growth of fungus or susceptibility to corrosion and heat degradation shall not be used, and steps shall be taken to provide rodent proof design, hence the enclosure shall be made of Galvatite sheet of 3.0 mm thickness, CRCA enclosures are not acceptable looking into the corrosiveness of the environment and coastal environment.

- Use of indoor RMU by placing it an outdoor enclosure is not acceptable.

5.9.2 Corrosion Protection

The main SF6 tank, housing the on-load break switches and the vacuum circuit breakers, should be of no other material except 3 mm robotically stainless steel tank so as to have high corrosion resistance and ensure high longevity. This tank containing SF6 should be robotically welded and sealed for life, ensuring a leakage rate not more than 0.1 % per annum. Except for stainless steel, all steel surfaces that are not galvanized shall be treated to protect against corrosion. As a minimum, corrosion treatment shall include the following procedures:

- The surface shall be cleaned to bare material by mechanical or chemical means.
- Must be powder coated by means of seven tank process
- All outdoor metal enclosures shall be treated in 7 tank Pre-treatment process & should be painted with UV Resistant Pure Polyester Powder coating. The powder coated sheet steel fabrication shall fulfill 1000Hrs of Salt spray test. The thickness of Painting/Powder coating shall be of minimum 80 microns to withstand tropical heat and extremes of weather.

5.9.3 Minimum Insulation of Equipment

- The RMUs shall be of SF6 gas-insulated type with Vacuum circuit breaker. Use of SF6 breaker is not acceptable.

6.0 Nameplate Information

RMU nameplate information shall be determined in agreement with the Employer. This information may include for example:

- Name of manufacturer and country
- Type, design, and serial number
- Rated voltage and current
- Rated frequency
- Rated symmetrical breaking capacity
- Rated making capacity
- Rated short time current and its duration
- Rated lightning impulse withstand voltage
- Mass of Unit
- SF6 Gas Filling Pressure
- Purchase Order number and date
- Month and year of supply
- Warranty Period.

Each RMU shall also exhibit a Danger Board to indicate the presence of high voltage (33,000 V).

6.1 Metallic Cables

- All metallic cables and wiring shall be of required cross-section solid or multiple strands of round copper conductors and have flame retardant insulation. All wiring shall be neatly laced and clamped.
- All wire and cable connectors and terminators shall be permanently labelled for identification. All connection points for external cables and wires shall be easily accessible for connection and disconnection and shall be permanently labelled. Conductors in multi-conductor cables shall be individually color-coded.

6.1.1 Interconnecting Cables, Wiring, Connectors, and Terminal Blocks

- The manufacturer shall provide all interconnecting wires, cables, connectors, terminations and other wiring accessories such as terminal blocks required by the RMU.
- In case of cable connected metering modules , the cable shall be provided along with the termination kit by the utility and the interconnection shall be done by the utility at site , supervision for the same shall be provided by the manufacturer as per the bid documents.
- Compartment shall be suitable for connecting 1C 630 Sq. mm Cable.

6.1.2 Connectors

- Terminal blocks shall be provided in LV compartment for SCADA connectivity and to accommodate FRTU.

7.0 RMU-FRTU Connectors

- For ease of installation and maintenance, the interconnection between the RMU and the FRTU in future it shall be supported by having heavy-duty terminal blocks with screw type terminals shall be provided by the supplier for necessary cable terminations. In using a terminal block, no more than two cables or wires shall be connected to any of its individual terminals.
- Making strips shall be used to identify all external connection blocks. Marking tags shall be read horizontally. All terminals to which battery or other high voltages are connected shall be provided with fireproof covers.
- All individual status input, AC voltage input, and control output points shall be isolatable without the need to remove wiring by means of individual terminal blocks of the removable link type. In order to avoid open circuits on the secondary side of CTs, termination blocks with by-pass bridges shall be provided for all AC current inputs.
- Terminal blocks shall comply with IEC 60947-7-1 (2009): Low-voltage Switchgear and Control Gear, Part 7-1: Ancillary Equipment, Terminal Blocks for Copper Conductors.
- DI/DO's required for SCADA connections in future shall be provided with Harting/Eq connectors.

8.0 General Requirements

- Each RMU shall include its own power supply, including battery (Min 7AH) and battery charger (5A) which shall serve as the 24VDC power supply's 230 V AC input shall be provided externally.
- Within this context, the general requirements of the RMU shall include, but shall not be limited to provision of the following monitoring and control features:
  - Positions of local/remote switches as used to control local and remote access to circuit breakers and load break switches
  - Power supply indications including battery failure and voltage alarms
  - Open/closed position of load break switches, circuit breakers, and earthing switches
  - SF_6 gas-pressure low indication.
  - Circuit breaker relay indications
  - Indications of fault in the RMU's main feeder circuit as detected by the FPI
  - Load break switch and circuit breaker open/close control

8.1 Parameter Requirements

The RMUs shall be suitable for cable networks of 630 Amps . The minimum design parameters to which their major components shall conform or exceed are summarized in the following tables.

Table 0-1: System Parameters

Parameter	Value
Nominal System Voltage	36kV
Highest System Voltage	33 kV
Rated Voltage	33 kV
System frequency	50 Hz

Parameter	Value
Number of Phases	3 Phase/3 Wire
Internal Arc Rating	25kA/ 1 Sec IAC-AFLR For main tank and Cable box.

Table 0-2: Circuit Breaker Parameters

Parameter	Value
Lightning Impulse Withstand Voltage Phase-to-Phase & Phase-to- Earth:	170 kV (peak)
Power Frequency Withstand Voltage to Earth, Between Poles, & Across Opening Span	70 kV rms for 1 minute
Rated Short Time Withstand/Breaking Current:	25 kA (rms)
Rated Duration of Short Circuit:	1 seconds
Rated Normal Current:	630 Amps (rms)

Table 0-3: Load Break Switch Parameters

Parameter	Value
Rated Short Circuit Making Capacity	62.5kA peak at rated voltage (both LBS & Earthing Switch)
Rated Load Interrupting Current	630 Amps

The RMU switchgear shall be capable of withstanding the specified currents without damage in accordance with the latest versions of IEC 60694 (Common Specifications for High-Voltage Switchgear and Control Gear Standards) and IS 3427 (AC Metal Enclosed Switchgear and Control Gear for Rated Voltages above 1 kV and up to and including 52 kV).

The equipment offered shall be as per the standards specified in the bid specification and if the offered equipment is tested with any other international standards which is superior to the standards specified they can also be considered and the bidder has to submit the documentary evidence for the same.

8.2 Design Details

- The RMU shall be designed to operate at the rated voltage of 33 kV.
- It shall include, within the same metal enclosure, On-load break switch, circuit breakers and earthing switches for each Load Break Switch/Circuit Breaker.
- Suitable fool-proof interlocks shall be provided to the earthing switches to prevent inadvertent or accidental closing when the circuit is live and the concerned Load Break Switch/Circuit Breaker is in its closed position.
- The degree of protection required against prevailing environmental conditions, including splashing water and dust, shall be not less than IP 55 as per IS 12063.
- The active parts of the switchgear shall be maintenance free. Otherwise, the RMU shall be of low-maintenance type.
- The tank shall be made of minimum 3 mm thickness of robotically stainless steel.
- The Stainless Steel tank should be completely welded so as to ensure IP 67 degree of protection and shall be internal arc tested both for tank and cable box.
- The RMU shall be suitable for mounting on its connecting cable trench.
- For each RMU enclosure, a suitably sized nameplate clearly identifying the enclosure and the electrical characteristics of the enclosed devices shall be provided.
- The RMU tank must be equipped with a suitable pressure relief device. The pressure relief must ensure that the escaping gases are dissipated to the bottom trenchof the switchgear only tested for 25kA 1 s / IAC AFLR for tank and cable box
- The complete RMU shall be tested in an accredited NABL, INDIAN or FOREIGN laboratory and designed for an Internal Arc for IAC-AFLR

8.2.1 Earthing

- There shall be continuity between metallic parts of the RMUs and cables so that there is no dangerous electric field in the surrounding air and the safety of personnel is ensured.

- The RMU frames shall be connected to the main earth bars, and the cables shall be earthed by an Earthing Switch having the specified short circuit making capacity.

- The Earthing Switch shall be operable only when the main switch is open. In this respect, a suitable mechanical fail-proof interlock shall be provided.

- The Earthing Switch shall be provided with a reliable earthing terminal for connection to an earthing conductor having a clamping screw suitable for the specified earth fault conditions. The connection point shall be marked with the earth symbol. The flexible connections between the earthing blade and the frame shall have a cross-section of at least 50 mm^2 copper or equivalent in GI.

- The Earthing Switch shall be fitted with its own operating mechanism. In this respect, manual closing shall be driven by a fast acting mechanism independent of the operator's action.

- Suitable interlock shall be provided to prevent earthing of incoming and outgoing load break switch on live cable.

8.2.2 Incomer Load Break Switches

- The Load Break Switches shall be maintenance free. With outdoor canopy doors open, the position of power contacts and earthing contacts shall be clearly visible from the front of the RMU through Mimic facia.

- The position indicator shall provide positive contact indication in accordance with IS 9920. In addition, the manufacturer shall prove the reliability of indication in accordance with IS 9921. These switches shall have three positions (or states), i.e., Open, Closed, and Earthed, and shall be constructed in such a way that natural interlocking prevents unauthorized operations.

- The switches shall be fully assembled, tested, and inspected in the factory.

- In case of Manual operation without motors, opening and closing shall be driven by a fast-acting mechanism independent of manual operator action.

- The Load Break Switches shall be provided with a motorized operating mechanism suitable for SCADA control.

- The switch and earthing switch mechanisms shall have a mechanical endurance of at least 5,000 operations due to repeated switching on-off of the isolators.

- The load break switches shall be provided with cable test bushings interlocked with the earth switch, since touch proof termination is involved opening of cable box and testing of the cable is not feasible.

- Mechanical interlock should be provided for earth switch, if cable is charged the earth switch should not be closed.

8.2.3 Circuit Breakers

- The Circuit Breakers shall be maintenance free and, when standing in front of the RMU with outdoor canopy doors open, their positions shall be clearly visible, through the Mimic facia. The position indicator shall provide positive contact indication in accordance with IS 9920. The breakers shall have three positions (or states), i.e., Open, Closed, and Earthed, and shall be constructed in such a way that natural interlocking prevents unauthorized operations. They shall be fully assembled, tested, and inspected in the factory.

- Each Circuit Breaker shall operate in conjunction with a suitable protection relay under transformer feeder/ circuit phase and earth fault conditions. In addition, the Circuit Breaker shall be provided with a motorized operating mechanism that can be remotely controlled by the SCADA.

- The VCB shall be provided with reliable manual spring charging mechanism, design which have inbuilt spring charging handle is not acceptable since the breakage of the plastic spring charging handle will render the whole breaker unusable.

- The VCB shall be provided with cable test bushings interlocked with the earth switch, since touch proof termination is involved opening of cable box and testing of the cable is not feasible.

8.2.4 Cable Termination

- Bushings shall be conveniently located for working with the specified cables and shall allow for the termination of these cables in accordance with the prevailing practice

and guidelines of cable manufacturers. The dimensions of the terminals shall be in accordance with IS 10601.

- Designs with Aluminium cable bushings are not acceptable.
- A non-Ferro-magnetic cable clamp arrangement shall be provided for each cable to be terminated in the RMU.
- A suitable arrangement for the Circuit Breakers, Earthing Switches, and Load Break Switches shall be provided so that these devices can be padlocked in the "Open" and "Closed" positions.
- A permanent "Live Cable" indication as per IEC 61958 shall be provided for each cable using a capacitor voltage divider.
- It shall be possible to test the core or sheath insulation of the cables without disconnecting the cables in the cable compartment.

8.2.5 Fully integral test facilities for isolator and VCB.

- Fully integrated and interlocked earth and test facilities in accordance with ENATS 41-36 requirements shall be provided for VCB and Ring switches. Access to the test terminals shall be achieved by opening the cover located at the front fascia.
- This is a mandatory feature requirement to be provided with the ring main unit, Testing by removing the cable cover and accessing of the termination through cable test probes is not acceptable since touch proof cable termination kits are involved and disturbing the termination for testing can lead to failure and flashover of the termination.

9.0 Current and Voltage Transformers.

- The RMU shall be provided with current and voltage transformers. These CTs & PTs shall meet the electrical and mechanical ratings as per the relevant standards.

9.1 Current Transformers

- A arrangement shall be provided in each circuit breaker cable compartment to mount a 3 Nos. single-core, ring type CT for protection purposes.

- The CTs shall conform to IS 2705. The design and construction shall be sufficiently robust to withstand thermal and dynamic stresses during short circuits. Secondary terminals of CTs shall be brought out suitably to a terminal block, which will be easily accessible for testing and terminal connections.
- Further characteristics and features distinguishing CTs used for metering from CTs used for protection are listed as follows:

CTs for Metering:

- Material : Epoxy resin cast
- Burden : 5VA
- Ratio : 100-50 /1 A
- Accuracy Class : 0.2

CTs for Protection:

- Material : Epoxy resin cast
- Burden : 2.5VA
- Ratio : 100-50/1 A
- Accuracy Class : 5P10
- The RMU's other CTs / sensors, i.e., those used by Fault Passage Indicators (FPIs), shall be supplied by the FPI manufacturer. These CTs/sensors shall be an integral part of the FPI's design to ensure that they properly match the requirements of the FPI.

9.2 Voltage Transformers

- A 3 phase single or 3 nos. single phase potential transformers shall be provided. These may be housed in a separate air insulated PT Panel, directly connected to the RMU through main bus. The burden per transformer shall not be more than 50 VA and the voltage ratio shall be 33000/110 V or 230 V. The accuracy class shall be 0.2.
- HRC fuses shall be provided on the HV side.

- Interconnection with Line PT shall be through bus or cable arrangement.
- The PTs shall be of cast epoxy-resin construction, and they shall conform to IS 3156. Their design and construction, in particular, shall be sufficiently robust to withstand the thermal and dynamic stresses during short circuits.

10.0 Fault Passage Indicator for RMU

- The FPI shall facilitate quick detection of faulty section of line. The fault indication may be on the basis of monitoring fault current flow through the device. The FPI should be self-powered and should have internal lithium battery for external indication and setting of FPI in the absence of current.

10.1 The FPIs shall include:

- Fault detection - Phase to phase and Phase to earth faults.
- One potential-free output contacts for hardwiring to FRTUs. On this basis, the SCADA/DMS will be able to monitor phase / earth fault condition.
- Local fault indications - LCD display on FPI front panel along with LED indication on front panel of RMU enclosure.
- Multiple reset option –
- End of time delay (Adjustable from 2 to 16 Hrs)
- Remote reset (Via potential free input contact of FPI)
- Manual reset (Reset button on front panel of FPI) .

The characteristics of the FPIs shall include:

- Phase fault thresholds configurable from at least 100 to 800 A
- Earth fault thresholds configurable from at least 20 to 200 A
- Multiple number of steps for adjusting phase and earth fault thresholds.

- Fault current duration range configurable from at least 40 ms to 100 ms in 20 ms steps and further 100 ms to 300 ms in 50 ms steps.

- Variations with respect to these characteristics may be acceptable as long as they prove applicable and provide the same or better flexibility.

'11.0 Protection Relay

- The RMU shall be equipped with self-powered numerical relays(*Communicable relays shall be with auxiliary power which shall be given from battery but the tripping shall be self-powered philosophy)* communicable to trip the RMU circuit breakers.

- The protection relay's auxiliary contacts shall be provided for hardwiring to the FRTU. The relay shall also interface with the FRTU via an RS 232/485 port in order to send, as a minimum, real-time readings using the MODBUS protocol.

- The numerical relay shall be self-powered and should provide Inverse Definite Minimum Time (IDMT) and Instantaneous protection characteristics. On this basis, the relay as a minimum shall provide:

  - Phase Overcurrent Protection (50/51)
  - Earth Fault Protection (50N/51N)

- The relay shall be provided with an input for remote tripping, which shall be realized via an electric output pulse even without presence of phase current. A flag indicator shall be installed for signaling the occurrence of trip conditions.

  - It shall have three phase overcurrent elements and one earth fault element.
  - IDMT trip current settings shall be 50-200% in steps of 1% for phase overcurrent and 20-80% in steps of 1% for earth fault.
  - Iinstantaneous trip current settings shall be 100-3000% in steps of 100% for phase overcurrent and 100-1200% in steps of 100% for earth fault.
  - Selectable IDMT curves shall be provided to include, for example, Normal Inverse, Very Inverse, Extreme Inverse, Long Time Inverse, and Definite Time. Separate curve settings for phase overcurrent and earth fault shall be supported.

- For IDMT delay multiplication, the Time Multiplier Setting (TMS) shall be adjustable from 0.01 to 0.1 in 0.01 steps.
- The relay shall also be provided with:
  - Alphanumeric Liquid Crystal Display (LCD) for relay setting.
  - Communications via a MODBUS RS232/RS485 port to provide the FRTU (and hence the DMS) with phase current measurements. It is also desirable that this same means of communication can be used by the FRTU to send setting and control commands to the relay.
  - Parameter change capability that is password protected.
  - There should be provision of Shunt tripping coil for remote tripping of RMU.

12.0 Power Supply and auxiliary power transformer

Each RMU shall be fitted with a power supply, including batteries and battery charger, suitable for operating the motors of the On-load Isolators and Circuit Breakers. On this basis, the following operational specifications shall apply:

- The power supply unit shall conform to the following requirements:
  - Input: 230 V AC nominal from supplied externally allowing for possible variations from 190 to 300 V AC
  - Output: Stable 24 V DC.
  - Batteries: 24 V DC (2 Nos of 12 V DC each)
- The 24 V DC batteries shall have sufficient capacity to supply power to the following devices with a nominal backup of 4 hours:
  - RMU's motors for a minimum of five (5) operations
  - RMU's trip coils, FPI.
- The battery charger shall be fully temperature compensated.
- To prevent deep discharge of the batteries on loss of AC power source, the battery charger shall automatically disconnect all circuitry fed by the batteries following a user-adjustable time period or when the battery voltage falls below a present value.

If the battery voltage falls below the present value, the time to fully recharge all batteries shall not exceed twenty-four (24) hours.

- The battery charger shall be provided with an alarm displayed at the local control panel and remotely at the DAS to account for any of the following conditions
  - Low battery voltage
  - High battery voltage
  - Battery failed
  - Battery charger overvoltage
  - Grounded battery/battery-charger
  - Others according to manufacturer's design

'13.0 Construction

- The RMU shall be sufficiently sturdy to withstand handling during shipment, installation, and start-up without damage. The configuration for shipment shall adequately protect the RMU equipment from scraping, banging, or any other damage.
- The switchgear shall have a mechanical impact protection of IK10 and type test shall be submitted accordingly.

14.0 Gas filling provision.

- Gas filling / Top up provision shall be provided on the mimic of the ring main unit without removal of mimic, design which are sealed for life and which offer gas filling required after removing manometer value is not acceptable since the chances of gas leakage are more during refitting of the manometer.

15.0 Configuration requirements

'A) Two isolator + 1 VCB + Line metering

The following configurations shall be available in each RMU:

Load break switch: 2 Nos

1No- Cable switch 36 kV, 630 A, 25 kA/1 s
1No- Mechanism for manual/Motorised operation
1No- Fault passage indicator in (n-1) configuration.

1No- Capacitive voltage indication fixed type
1No- ON, OFF, EARTH indication on the front mimic of the panel.
1No- Cable box for termination of cable up to 3C 300 sq. mm.
1 Set Integral Test Bushings on Mimic

Circuit Breaker: 1Nos

1No- Circuit breaker 36 kV, 630 A , 25 kA/1s

1No- Mechanism for manual / Motorised operation.
1No- Self Powered protection relay providing over-current & earth fault protection.

3No- Ring core current transformers for protection as per CT specifications.

1No- Capacitive voltage indication fixed type

1No- ON, OFF, TRIP indication on the front mimic of the panel.

1No- Cable box for termination of cable 3C 300 sq. mm.

1No- Emergency Trip Push Button.

1Set- of 36kV touch-proof Cable Boots.

1 Set- Integral Test Bushings on Mimic

Metering Cubicle (Connected by cable/Bus)

3No- 1ph VT for metering as per specifications.

3 Nos metering CT as per the specifications.

<u>B) Two isolator + 2 VCB + Line metering</u>

The following configurations shall be available in each RMU:

Load break switch: 2Nos

1No- Cable switch 36 kV, 630 A, 25 kA/1 s
1No- Mechanism for manual/Motorised operation
1No- Fault passage indicator in (n-1) configuration.
1No- Capacitive voltage indication fixed type
1No- ON, OFF, EARTH indication on the front mimic of the panel.
1No- Cable box for termination of cable up to 3C 300 sq. mm.
1 Set Integral Test Bushings on Mimic

Circuit Breaker: 2 Nos

1No- Circuit breaker 36 kV, 630 A , 25 kA/1s

1No- Mechanism for manual / Motorised operation.
1No- Self Powered protection relay providing over-current & earth fault protection.

3No- Ring core current transformers for protection as per CT specifications.

1No- Capacitive voltage indication fixed type

1No- ON, OFF, TRIP indication on the front mimic of the panel.

1No- Cable box for termination of cable 3C 300 sq. mm.

1No- Emergency Trip Push Button.

1Set- of 36kV touch-proof Cable Boots.

1 Set- Integral Test Bushings on Mimic

Metering Cubicle (Connected by cable/Bus)

3No- 1ph VT for metering as per specifications.

3 Nos metering CT as per the specifications.

C) Four VCB configuration

The following configurations shall be available in each RMU:

Circuit Breaker: 4 Nos

1No- Circuit breaker 36 kV, 630 A , 25 kA/1s

1No- Mechanism for manual / Motorised operation.
1No- Self Powered protection relay providing over-current & earth fault protection.

3No- Ring core current transformers for protection as per CT specifications.

1No- Capacitive voltage indication fixed type

1No- ON, OFF, TRIP indication on the front mimic of the panel.

1No- Cable box for termination of cable 3C 300 sq. mm.

1No- Emergency Trip Push Button.

1Set- of 36kV touch-proof Cable Boots.

1 Set- Integral Test Bushings on Mimic

16.0 Inspection and Test

- Inspections and tests shall be performed to ensure RMU compliance with these Technical Specifications. Responsibility for conducting the inspections and tests shall rest with the Supplier. The Utility representatives will participate in the RMU inspections and will witness the testing as described in the following sub-clauses.

- All type tests are as per latest IS/IEC shall have been carried out on the RMU as a whole as per relevant IS/IEC. Following tests shall be necessarily conducted on the equipment and its components in addition to others specified in the IS/IEC.

    - Dimensional and visual check
    - Mechanical operation test and checking of interlocks
    - Dielectric test on main and control circuits
    - Temperature rise test
    - Internal Arc withstand test
    - Degree of protection test
    - Test to check the capability of main and earthing circuits subjected to rated peak and short time withstand current
    - Stability Test on the self-powered electronic relay
    - Contact Resistance Measurement (CRM),Hi Pot Test with Leakage current Test
    - Trial Tripping of the main circuit from the relay.
    - Salt spray Test for 1000Hrs.

16.1 Inspections

- Utility's representatives shall be allowed access to supplier's facility where the RMU or its parts are being produced or tested. Such access will be used to verify by inspection that the RMUs are being or have been fabricated and tested in accordance with the Technical Specifications.

- The supplier shall give the utility's representatives 15 days' notice in writing concerning the date and place at which the equipment will be ready for inspection or testing. The supplier shall provide all the necessary assistance and facilities to utility's representatives to carry such inspections and test witnessing.

- The supplier shall provide any and all documentation that is necessary to complete the inspections. The representatives shall be allowed to inspect the supplier's quality assurance standards, procedures, and records. Inspections, as a minimum, shall include checks on inventory, general appearance, cabling, drawing conformance, and labelling.

16.2 Test Procedures

- The supplier shall provide test plans and detailed procedures for all required testing. The plans and procedures shall ensure that each test is comprehensive and verifies proper performance of the RMU under test and, in this respect, shall be submitted for review and approval by the Utility.

- The test plans shall include all routine tests and acceptance tests as per relevant BIS/IEC standards and shall describe the overall test process including the responsibilities of the test personnel and how the test results will be documented.

- The test procedures shall describe the individual tests segments and the steps comprising each segment, particularly the methods and processes to be followed.

16.3 Test Reports

- The Tenderers should, along with the tender documents, submit copies of all Type test certificate of their make in full shape as confirming to relevant IS/IEC of latest issue obtained from an International/NABL/National Govt. Lab/Recognized laboratory.

- The above type test certificates should accompany the drawings for the materials duly signed by the institution that has type test certificate.

- The supplier shall maintain complete records of all test results. The records shall be keyed to the test procedures.

- Upon completion of each test, the supplier shall submit a test report summarizing the tests performed and the results of the tests.

- Bidder shall furnish the type test certificates of the 33kV RMU for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA as per relevant standards. The test shall have been

conducted in certified test laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to Tata Power.

16.4 Factory Acceptance Test

- A formal factory acceptance test shall be conducted to ensure that the RMUs have been designed to meet the utility's functional requirements in all respects. Utility representatives shall witness the test on a representative RMU, and the test shall be carried out in accordance with the supplier's test plan and procedures as approved by the Owner. Should the factory acceptance test prove unsatisfactory in any way, the Owner reserves the right to have further tests conducted and, if applicable, request further improvements in the supplier's RMU design.

16.5 Routine Factory Tests

- These tests shall be carried out during RMU manufacture as a quality control measure, i.e., to ensure each RMU to be delivered meets the Employer's minimum requirements including all relevant standards. Recording and reporting the routine test results shall be the responsibility of the Supplier.

- Further for additional reliability of the manufactured RMU it is mandatory to have the complete assembled tank tested for partial discharge.

16.6 PRE-DISPATCH INSPECTION

Equipment shall be subject to inspection by a duly authorized representative of the Tata power. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material is liable to rejection. Supplier shall grant free access to the paces of manufacture to TPCODL representatives at all times when the work is in progress. Inspection by the Tata Power or its authorized representatives shall not relieve the supplier of this obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched

after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL. Following documents shall be sent along with material:

1. Test reports
2. MDCC issued by TPCODL
3. Invoice in duplicate
4. Packing list
5. Drawings & catalogue
6. Guarantee / Warrantee card
7. Delivery Challen
8. Other Documents (as applicable)

16.7 INSPECTION AFTER RECEIPT AT STORE

Material received at Tata Power Central Odisha Distribution LTD store will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to project engineering department.

16.8 Type tests:

Test certificates certified by NABL/central Govt. or any international recognized testing laboratory as per IEC 62271-100/200 or relevant IS Standard with latest amendments. Following Test Certificate has to be submitted. The design of the RMU used for other type tests shall be same as the internal arc tested design.

Bidder shall furnish the type test certificates of the 33kV RMU for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA as per relevant standards. The test shall have been conducted in certified test laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to Tata Power

- Dielectric Withstand Test of breaker in combination with isolator.
- Short time withstand - STC withstand test
- Mechanical endurance test
- Internal Arc test - IAC Test. Tank and Cable compartment (IAC-AFLR).
- Degree of protection test – IP67 test for tank and IP55 test for GI enclosure.

- IK10 impact test
- Partial discharge test.
- Temperature rise test.
- Making and Breaking test for switch and VCB.
- Salt Spray Test for 1000Hrs.
- Lighting Impulse Test.
- Power Frequency Voltage Test.
- Measurement of Circuit resistance.
- Rated Short Circuit Time and Peak Current Withstand test for Main and Earth Circuit.
- Operational and Interlock Performance Test.
- Pressures withstand Test & Leakage Test on SF-6 Gas Chamber.
- Dimensional and Visual Check.

16.9 Operating Manuals

- The Supplier shall submit, operating manuals for all RMU components including items such as FPI, Relay, and other equipment provided by the bidder. These manuals shall be in English. They shall include the RMU operating instructions. Context sensitivity shall be used to go directly to the appropriate place in the manual.

- The manuals shall be organized for quick access to each detailed description of the operator procedures that are required to interact with the RMU functions. This shall include the procedures to define, build, edit, and expand all data points provided with the RMU.

- The manuals shall present in a clear and concise manner all information that operators, including maintenance personnel, need to know to understand and operate RMUs satisfactorily. The manuals shall make abundant use of diagrams and/or photographs to illustrate the various procedures involved.

16.10 QUALITY CONTROL

The bidder shall submit with the offer, assurance plan indicating the various stages of inspection, the tests and checks which will be carried out in the material of construction,

components during manufacture and after finishing, bought out items and fully assembled component and equipment including drives. As a part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The purchasers of its nominated representative engineer shall have free access to the manufacture / sub supplier's works to carry out inspections.

16.11 TESTING FACILITIES

Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant IS/IEC.

16.12 MANUFACTURING ACTIVITIES

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage with quantity. This bar chart shall be in line with the quality assurance plan submitted with the offer. This bar chart will be submitted within 15 days from the release of the order.

16.13 SPARES, ACCESSORIES & SPECIAL TOOLS/GAUGES

Bidder shall provide a list of recommended spares with quantity and unit price for 5 year of operation after commissioning. The purchaser may order all of any of the spare parts listed at the time of contract award and the spare parts so ordered shall be supplied as part of the definite works. The purchaser may order additional spares at any time during the contract period at the rate stated in the contract document.

The bidder shall provide one SF6 gas leak indicator & one no. phase comparator. A list of complete set special tools and gauges required for erection & maintenance and installation procedure shall be submitted.

Bidder shall give an assurance that spare parts and consumable items will continue to be available through the life of the equipment which shall be 25 year minimum. However the purchaser shall give a minimum of 12 month notice in the event that the bidder or any sub vendor plans to discontinue manufacture of any component use in this equipment.

Any spare apparatuses, parts or tools shall be subjected to the same specification, tests, and conditions as similar material supplied under the contract. They shall be strictly

interchangeable and suitable for use in place of the corresponding parts supplied with the plant and must be suitably marked and numbered for identifications.

16.14 As-Built Documents and Drawings

The supplier shall submit as built documents including applicable drawings for review and approval. All deliverable documents and drawings shall be revised by the supplier to reflect the as- built RMU components including all the FPI, LLI & Relay. Any errors in or modifications to an RMU resulting from its factory and/or site acceptance test shall be incorporated. Within this same context, all previously submitted documents that are changed because of engineering changes, contract changes, errors, or omissions shall be resubmitted for review and approval. The successful bidder has to provide his quality document to Utility.

Following drawings and documents shall be prepared based on TPCODL specification and statutory requirements and shall be submitted with the bid:

1. Completely filled in technical Particulars
2. General description of the equipment and all components including brochures
3. General arrangement for RMU
4. Power flow diagram
5. Foundation plan
6. Bill of material
7. Experience List
8. Type test certificates

17. Training

All successful tenderers for switchgear shall provide training facilities of Engineers & line staff. The training shall be for not less than 3 man days. Syllabus and other details of the training shall be finalized in consultation with the Owner.

18. PACKING

Bidder shall ensure that all equipment covered by this specification shall be prepared for rail/road transport and be packed in such a manner as to protect it from damage in transit.

Guaranteed Technical Particulars

Sr. No	Descriptions	As Specified By TPL	As Furnished By Bidder
1	RMU Category-Motorised with Inbuilt Battery charger & Battery	3 Way - Extensible right side 3 Way - Non-Extensible 4 Way - Extensible right side 4 Way - Non-Extensible	
2	RMU Application	Outdoor	
3	Dielectric Medium	SF6	
4	Interrupting Medium	SF6 / Vacuum	
5	System Frequency	50 Hz	
6	Rated voltage	36Kv	
7	Service Voltage	33Kv	
8	Rated Current-Line Switches	630A	
9	Rated Current –CB	630A for All Type	
10	Rated Short time Current Withstand (1 Sec)	25kA	
11	Internal ARC (1 Sec)	25KA	
12	Rated Short time Making Capacity	50kA	
13	Rated Cable charging Interrupting current incomer load break switch	25A	
14	Rated Load Interrupting Line Current	630A	
15	Rated Magnetizing Interrupting Current of Line switch.	10 A	
16	No. Of Operations at rated Short Circuit Current on line Switches Earthing Switches and CB	5 close	
17	I. Mechanical endurance for Isolator & earth switch	Min 1000 Operations	
	ii. Mechanical endurance for circuit breaker	Min 2000 Operation	
Metering Unit			
	CTs for Metering: ▪ Material : Epoxy resin cast ▪ Burden : 5VA ▪ Ratio : 100-50 /1 A ▪ Accuracy Class : 0.2 **CTs for Protection:**		

	• Material : Epoxy resin cast/ • Burden : 2.5VA • Ratio : 100-50/1 A • Accuracy Class : 5P10		
	PT: Made of Epoxy –Resin Cast 50 VA and the voltage ratio shall be 33000/110 V or 230 V. The accuracy class shall be 0.2. (		
18	Electrical Operations of Isolator & E/Switch at rated current	To be Provided By Bidder	
19	Temp Rise above Ambient	50 Deg C.	
20	Min Gas Pressure	0.05 Bar G	
21	SF6 Gas Pressure Indicator	To be Provided by Bidder	
22	SF6 Gas leakage Detector	1 per 25 RMUs Subject to Minimum One Number	
23	Guaranteed SF6 Leakage per Annum	Less than 0.1%	
24	Degree Of Protection	IP 67 for the tank and IP2X for the front cover/mimic board and IP55 for Outdoor RMUs .The RMU metal parts shall be greater than 2.0 mm thickness high tensile steel which must be shot blasted, spray galvanised with minimum thickness of 30 micron and subsequently powder coated. The overall Paint thickness shall be not less than 70 microns.	
25	Internal arc test	25kA 1 Sec	
26	Lightning Impulse withstand Phase to Earth	170kVp	
27	Power frequency withstand for 1Minutes	70kVrms	
28	SF6 tank design	Hermetically sealed unpainted stainless steel enclosure with SF6 Gas. Sealed pressure system by Laser welding so that no refilling of gas is required for 30 years. No gas work to prevent access to live parts. No gasket shall be used, No bolts Shall be provided	
28.1	Earth Bus Bar	In enclosure to prevent tampering.	
29	Material & size	To be provided by Bidder	
30	Earthing of main CCT cables shall be earthed with earth switch with S/C making capacity as per IEC 129. Moving contacts of earthing switch shall be visible in closed position thru transparent covers AND closing shall be possible only when Isolator is	To be provided by Bidder	

	open.		
31	Incomer load break switch shall be SF6 type with least maintenance and shall have at least 3 positions, Open, Close & earth with Natural interlocks. Fitting of motor at site shall be possible & shall have mechanical interlock.	To be provided by Bidder	
32	Circuit Breaker Preferably SF6 type with minimum maintenance and shall have at least 2 positions i.e. open & close, manual operation & fitting of motor at site shall be possible if required.	To be provided by bidder	
33	Protection Relay –Without Auxiliary Power & shall include 3 toroid transformer in trans. Tee-off bushing, electronics relay, low energy release & fast on test receptacle for protection testing.	Self powered O/C+E/F IDMT characteristics with 0.05 Sec TMS.	
34	Make of Relay	SEG-WIP1 or Schneider-VIP 300 or REJ 603 or any other as per TPCODL Approval.	
35	Flag indication on CB for trip on fault	To be Provided By bidder	
36	Testing of cable-without opening the doors.If doors are opened then earth switch shall be in closed position and cable test rod shall be provided which can be fixed on terminations for testing purpose AND if doors are opened it shall not be possible to operate ,Isolator, E/switch or CB	To be confirmed. If separate test bushing are provided, it Shall be covered with suitable antitheft covers with anti vandal screws.	
37	Protection against Theft	Design Of RMU shall be tamper & arc proof. And vandal Screws shall be provided. Cable covers shall be pad lockable. All live parts / test Bushing etc. Shall be covered with antitheft covers.	
38.0	Doors	Hinged doors shall be provided. the hinges for the doors need to be riveted and shall not have any access from outside. Bolted hinges shall not be acceptable.	
39.0	Voltage indicator box shall be fixed type- This device shall be in compliance with IEC 61958 standard.	Capacitive dividers type which will supply low voltage to power the lamps and 3 inlets can be used to check phase sequence.	
40.0	Phase comparator	1 per RMU	
41	Cable Clamps	HDPE	
41.1	Cable Termination		
41.2	Type	Heat/Cold shrinkable	
41.3	Size	Suitable for 3C x 400 Sqmm/ 1CX400Sqmm / 1CX630Sqmm	
42	Height	Minimum 1200mm above GL	
43	Earth fault passage indicator	One Per RMU with as a part of RMU	
44	Operating handle	To be provided by bidder as part of RMU	

45	MIMIC Diagram on Front of Panel	To be provided by Bidder	
45.1	Bas bar		
45.2	Material	Copper	
46	Cross section	As specified by bidder	
47	Opening & closing times(max)	To be provided by bidder	
47.1	Current Transformer	Shall be epoxy resin and are mounted around the cable outside SF6 gas compartment. The CTs around the cables shall be supported on the sheet steel bracket base sized for CTs .CTs shall not be kept hanging or put on base frame directly.	
48	CT Dimension	Suitable for 33kV 3Cx400 sqmm cable or 1CX400Sqmm / 1CX630Sqmm	
49	SCADA Compatibility-Remote operation of RMU shall be possible by using motors fitted to operating mechanism of isolators & CB etc.	As per specification	
50	Harting Plug arrangement for individual isolator as well as breaker motor connections, which will be fitted on RMU body itself .	As per spécification	
51	Guarantee-from date of taking over by TPL	48 Months from the date of commissioning or 60 months from the date of supplies made under the contract whichever is later	
52	Dimension (L x W x H) (mm x mm x mm)	To be provided by bidder	
53	Total weight	To be provided by Bidder	
54	Paint	TPL Blue PANTON E 2727C	
54.1	Type test of product	To be provided by bidder as per specification	
54.2	Internal Arc Test	Not older than 5 years from the date of opening of Bid	
54.3	Temp Rise Test	Not older than 5 years from the date of opening of Bid	
54.4	STC Test	Not older than 5 years from the date of opening of Bid	
54.5	Lightning Impulse withstand	Not older than 5 years from the date of opening of Bid	
54.6	Power frequency withstand	Not older than 5 years from the date of opening of Bid	
55	IP Protection	Not older than 5 years from the date of opening of Bid	
56	Availability of Spares	Assurance by bidder for 25 Years	

Load Break Switch

Rated normal current	A	630

Rated cable charging breaking current	A	35
Rated line charging breaking current	A	35
Rated cable and line charging current	A	60
Rated earth fault breaking current	A	105
Load break switch	Class	M2 (5,000 operations)
Load break switch	Class	E3 (100 operations)
Earth switch	Class	E2 (5 operations)

Vacuum Circuit breaker

Rated normal current	A	630
Rated short circuit breaking current	kA	25/1S
Rated short circuit making current	kA	62.5
Rated cable charging breaking current	A	100
Rated line charging breaking current	A	10
Main electrical circuit		
Rated short time withstand current	kA	25 kA (1 s)
Rated peak withstand current	kA	62.5
Circuit breaker	Class	M1 (2,000 operations)
Earth switch	Class	M0 (1,000 operations)
Circuit breaker	Class	E2 (2 operations)
Earth switch	Class	E2 (5 operations)

All of the switchgear shall be mandatorily capable of withstanding these parameters without any damage being caused, in accordance with the standards mentioned in this specification

SCHEDULE OF DEVIATIONS

(TO BE ENCLOSED WITH TECHNICAL BID)

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

Sr. No.	Clause No.	Details of deviation with justifications

ANNEXURE-1

SIGNAL LIST FOR AUTOMATION

Description	Analog Inputs (AI)					Status (DI)		
Type	Amp. Loading-R ph	Amp. Loading-Y ph	Amp. Loading-B ph	Phase Voltage	Power Factor	Switch Close	Switch Open	Reset Element
RMU Switch *	0	0	0	0	0	1	1	
Breakers *	1	1	1	1	0	0	0	
FPI							1	1

FRTU SIGNAL LIST

Description	Analog Inputs (AI)				
Type	Amp. Loading-R ph	Amp. Loading-Y ph	Amp. Loading-B ph	Phase Voltage	Power Factor
RMU Switch *	0	0	0	0	0
Breakers *	1	1	1	1	0
FPI *	0	0	0	0	0

Note: 0 indicates functionality not required for that element, 1 indicates functionality required for that element

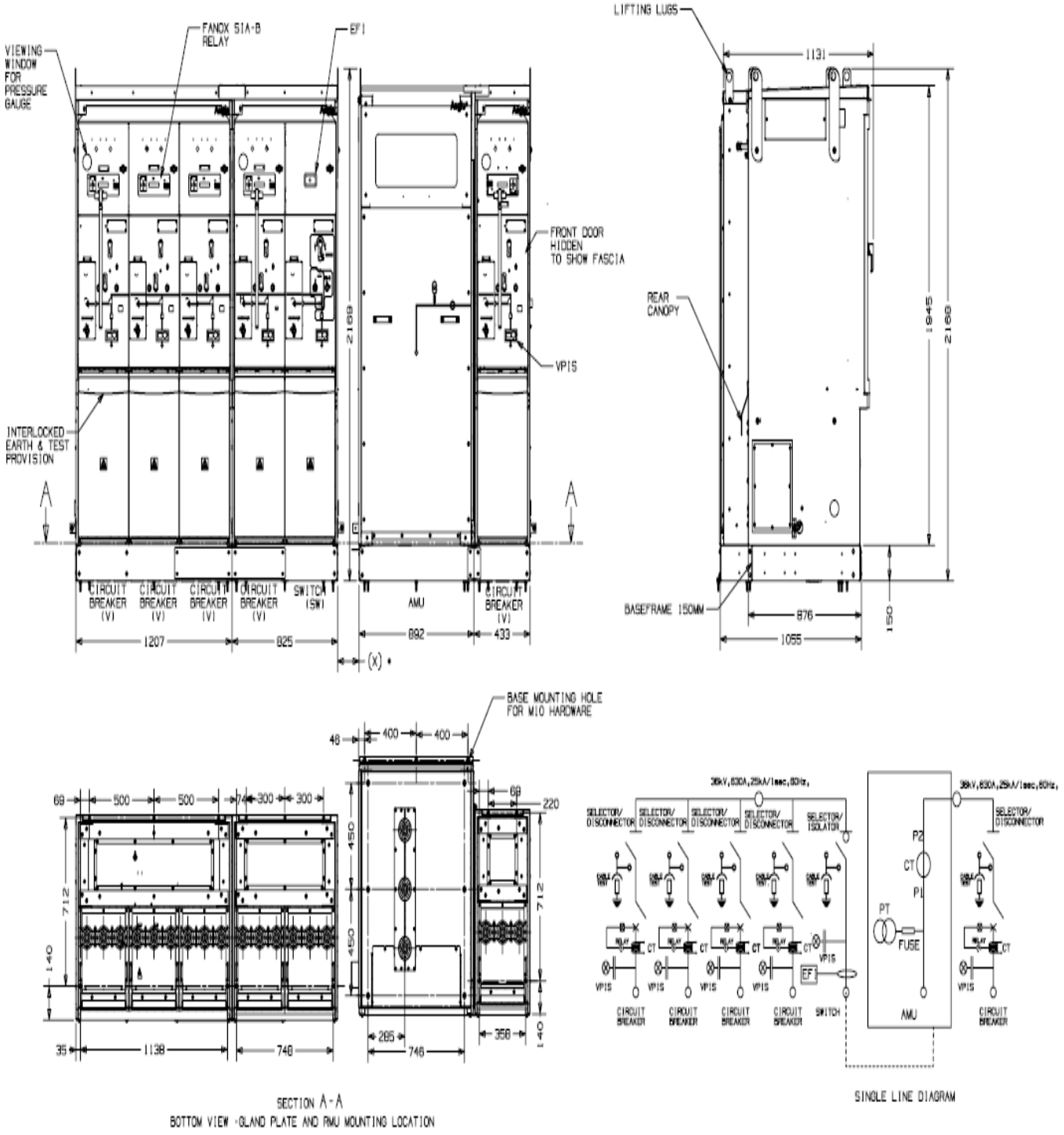
* Denotes the nos of switches/Breakers in RMU based on the type of RMU (3 W, 4 W)

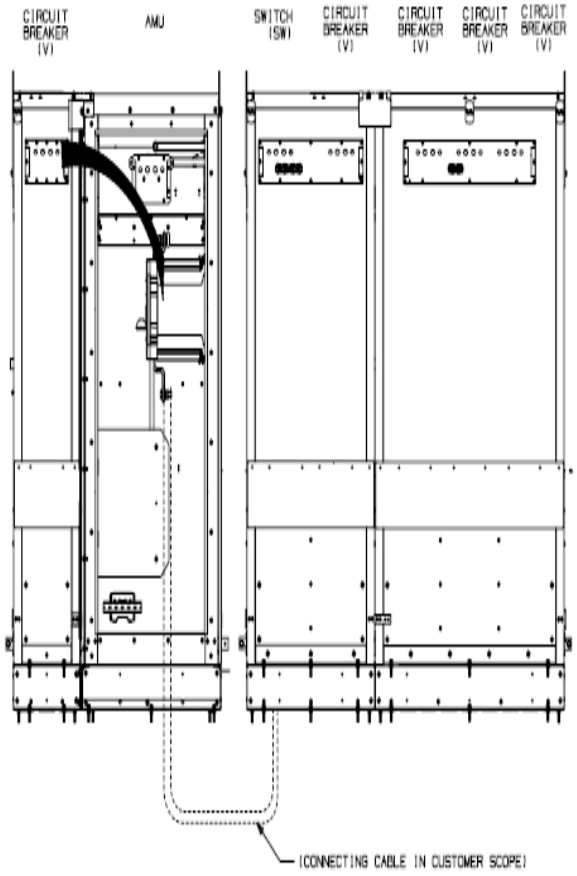
Additional IOs

RMU switch Control Command
Earth Sw. 1 Status Input
Earth Sw. 2 Status Input
FPI Reset
FRTU Local/Remote Position
FRTU Door Open
FRTU Battery Charger Faulty
FRTU Switchgear Supply Off
FRTU Aux Supply Off
FRTU Fault
Relay operation
CB OFF status
CB ON status
CB ON/OFF Command

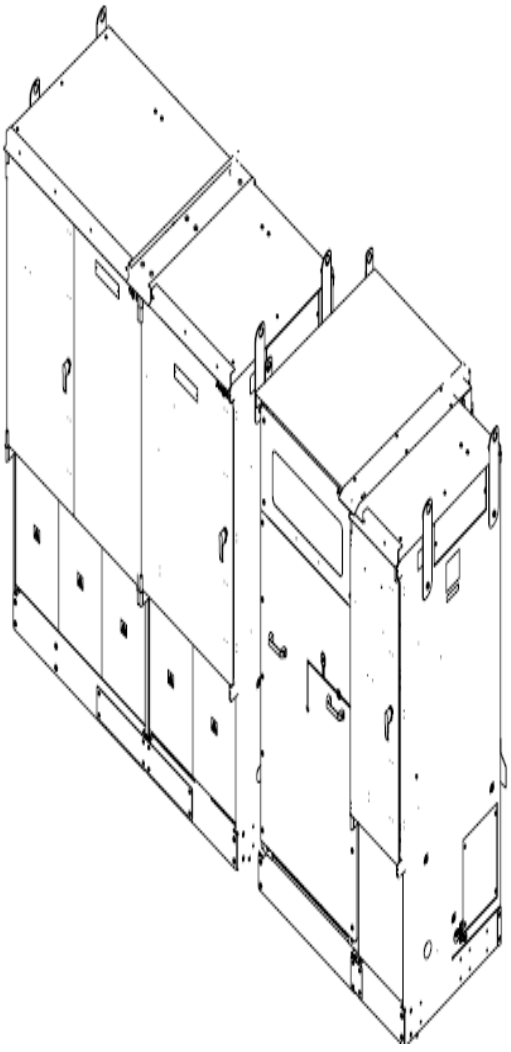
TPCODL TP CENTRAL ODISHA DISTRIBUTION LIMITED	TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA		
	TECHNICAL SPECIFICATION		
Document Title	**TECHNICAL SPECIFICATIONS FOR 33KV RMU with HT Metering Unit**		
Document No.	ENG-HV		Eff. Date: 20.04.2021
Revision No.	00		Page 38 of 39
Prepared By Priyanka Dash	Reviewed By Niranjan Khuntia	Approved By Khajan C. Bhardwaj	Issued By Pourush Garg

Sample Drawing (Only for Indication Purpose)





AMU & RMU REAR COVER SHEET HIDDEN TO SHOW CABLE CONNECTION INSIDE



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CLAUSE NO.	**DESCRIPTION**

1.0 ORGANIZATIONAL VALUES

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

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

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

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

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

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

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

2.0 ETHICS

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

The main objective of the Ethics Management Team is to:

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

All Associates and Stakeholders are requested to register any grievance on ethics violation on our website www.tpcentralodisha.com.

3.0 CONTRACT PARAMETERS

3.1 Issue/Award of Contract

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

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

3.2 Contract Commencement Date

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

3.3 Contract Completion Date

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

3.4 Contract Period/Time

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

3.5 Contract Execution Completion Date

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

3.6 Contract Price /Value

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

3.7 Contract Document

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

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

3.8 Contract Language

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

The Contract documents and all correspondence between the TPCODL, Third Parties associated with the contract, and the Associate shall be in English language.
However, all signboards required indicating "Danger" and/or security at site and otherwise statutory required shall be in English, Hindi, and local languages.

3.9 Reverse Auction

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

4.0 SCOPE OF WORK

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

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

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

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

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

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

5.0 PRICES/RATES/TAXES

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

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

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

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

5.1 Changes in Statutory Tax Structure

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

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

6.0 TERMS OF PAYMENT

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

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

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

6.1 Quantity Variation

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

6.2 Full and Final Payment

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

7.0 MODE OF PAYMENT

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

8.0 SECURITY CUM PERFORMANCE DEPOSIT

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

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

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

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

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

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

9.0 STATUTORY COMPLIANCE

9.1 Compliance to Various Acts

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

9.2 SA 8000

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

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

9.3 Affirmative Action

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

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

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

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

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

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

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

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

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

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

10.0 QUALITY

10.1 Knowledge of Requirements

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

10.2 Material/Equipment/Works Quality

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

10.3 Adherence to Rules & Regulations

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

10.4 Specifications and Standards

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

Brand names mentioned in the Contract documents are for the purpose of establishing the type and quality of products to be used. The Associate shall not change the brand name and

qualities of the bought out items without the prior written approval of the TPCODL. All such products and equipment shall be used or installed in strict accordance with original manufacturer's recommendations, unless otherwise directed by the TPCODL. In any circumstances the codes, specimen and standards prescribed by any government agency should not be violated.

11.0 INSPECTION/PARTICIPATION

11.1 Right to Carry Out Inspection

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

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

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

11.2 Facilitating Inspection

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

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

The Associate shall be responsible for the safety of employees of TPCODL/Third Party Agency when they are at the Associate's /Associate's outsource agency's plant or facility for carrying out/witnessing inspection/testing. All statutory safety precautions as applicable shall be followed by the Associate during Inspection Testing. If TPCODL inspectors are not satisfied with the safety arrangements at the plant, TPCODL have the right to call off inspection till such time corrective action is taken by the Associate.
Before raising the call for pre-dispatch final inspection and testing, the Associate shall conduct all the tests—type tests, routine tests etc-as specified in the contract document and submit copies of the test certificates to TPCODL along with the inspection call, for scrutiny of TPCODL.

The Associate and TPCODL shall jointly document all the observations, comments and action points after completion of inspection and it shall be binding on the Associate to provide

compliance on all the points requiring compliance and furnish the compliance report to the designated authority of TPCODL for receiving clearance for dispatch of materials

11.3 Third Party Nomination

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

11.4 Waiver of Inspections

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

11.5 Incorrect Inspection Call

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

12.0 MDCC & DELIVERY OF MATERIALS

12.1 Material Dispatch Clearance Certificate

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

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

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

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

All packing cases, containers, packing and other similar materials shall be new and supplied free by the associate and it shall not be required to be returned to the associate.
Notwithstanding anything stated in this clause, the associate shall be entirely responsible for loss, damage or depreciation or deterioration to the materials and supplies due to faulty and/or insecure packing or otherwise during transportation to the Site until otherwise provided herein.

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

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

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

Timelines for inspection and MDCC is as below:

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

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

12.2 Right to Rejection on Receipt

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

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

12.3 Consignee

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

12.4 Submission of mandatory documents on Delivery

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

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

12.5 Dispatch and Delivery Instructions

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

13.0 GUARANTEE

13.1 Guarantee of Performance

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

13.2 Guarantee Period

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

13.3 Failure in Guarantee Period (GP)

If the equipment and material supplied under the contract fails to perform its due, rated & intended quality performance, during the Guarantee period, the associate is liable to undertake repair/rectify/replace the equipment and material supplied within time frame specified in the SCC or elsewhere in the contract documents at associate's cost to make the equipment and material supplied/service or work rendered under the contract of performing its due, rated and

intended quality performance. If Associate fails to repair/rectify/replace the equipment or material supplied rendered under the contract, failed in Guarantee Period, TPCODL will be at liberty to get the same done at Associate's risks and costs and recover all such expenses plus the TPCODL's own charges (@ 20% of expenses incurred), from the Associate or from the "Security cum Performance Deposit" as the case may be.

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

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

13.4 Cost of repairs on failure in GP

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

13.5 Guarantee period for Goods Outsourced

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

13.6 Latent Defect

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

13.7 Support beyond the Guarantee Period

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

14.0 LIQUIDATED DAMAGES

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

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

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

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

14.1 LD Waiver Request

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

15.0 UNLAWFUL ACTIVITIES

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

16.0 CONFIDENTIALITY

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

16.1 Documents

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

16.2 Geographical Data

Maps, layouts and photographs of the unit/plant including its surrounding regions showing vital installation for national security of country or those of TPCODL shall not be published or

disclosed to the third parties or taken out of the country without prior written approval of the TPCODL and upon execution of confidentiality agreements satisfactory to the TPCODL with such third parties prior to disclosure.

16.3 Associate's Processes

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

16.4 Exclusions

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

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

16.5 Violation

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

17.0 INTELLECTUAL PROPERTY RIGHTS

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

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

18.0 INDEMNITY

The Associate shall at all times indemnify, keep indemnified and hold harmless the TPCODL and its officers, directors, employees, affiliates, agents, successors and assigns against all actions, claims, demands, costs, charges and expenses arising from or incurred by reason of any infringement of patent, trade mark, registered design, copy rights and/or industrial property rights by manufacture, sale or use of the equipment supplied by the Associate whether or not the TPCODL is held liable for by any court judgement. In this connection, the TPCODL shall pass on all claims made against him to the Associate for settlement.

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

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

19.0 LIABILITY & LIMITATIONS

19.1 Liability

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

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

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

19.2 Limitation of Liability

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

20.0 FORCE MAJEURE

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

“Force Majeure” shall mean any event or circumstance or combination of events or circumstances referred below and their consequences that wholly or partly prevents or unavoidably delays any Party in the performance of its obligations under this Agreement, but only and to the extent that such events and circumstances are not within the reasonable control, directly or indirectly, of the Affected Party and could not have been avoided even if the Affected Party had taken reasonable care:

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

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

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

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

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

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

21.0 SUSPENSION OF CONTRACT

21.1 Suspension for Convenience

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

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

- Immediately discontinue further supply of material/goods specified in the suspension notice for supply contracts

- Immediately discontinue further service/work and supply of materials of those services/materials/work specified in the suspension notice for service /composite contract
- Promptly make every reasonable effort to obtain suspension, upon terms satisfactory to TPCODL, of all orders, outsourcing arrangements, and rental Contracts to the extent that they relate to performance of the portion of Work suspended by the notice.
- Protect and maintain the portion of the service/Work already completed, including the portion of the Work suspended hereunder, unless otherwise specifically stated in the notice.
- Continue delivering/carrying out the supply/service/work items as per contract conditions, which do not fall under purview of the suspension notice.

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

21.2 Suspension for Breach of Contract conditions.

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

21.3 Compensation in lieu of Suspension

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

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

22 TERMINATION OF CONTRACT

22.1 Termination for Default/Breach of Contract

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

a. Withdrawal or intimation by the Associate of its intent to withdraw or surrender the execution / completion of the contracted work /PO or failure in ensuring adherence to any delivery schedules, in deviation of the contract/PO.

b. Refusal or neglect on the part of the Associate to supply material/equipment of quantity or quality as specified by TPCODL and within the timeframe as specified in the contract document or refusal or neglect to execute the services/work in terms of the agreed standards of quantity or quality and/or within the timeframe specified in the contract/PO.

c. Failure in any respect to perform any portion of the Work contracted with promptness, diligence, or in accordance with the terms of the contract.

d. Failure to furnish guarantees as specified and /or failure to comply with the terms thereof.

e. Failure to furnish such relevant documents or information within the time specified which may be necessary for due execution / completion of the works and documentation.

f. Liquidation, bankruptcy either voluntary or involuntary OR entering into any composition or compromise with its creditors, or Insolvency.

g. In case any reasonable information has been received by TPCODL that Associate has adopted/ or attempted to adopt any unethical conduct, action in award of the contract /PO or at any time thereafter.

h. Failure to comply with applicable statutory provisions as contained in the contract or failure to comply with the applicable laws.

i. Failure to comply with safety regulations/clauses stipulated in the contract or as may be generally instructed by TPCODL.

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

In case the contract is terminated for any breach of the nature specified in clause 22 g stated above, TPCODL shall have the right to terminate all the contracts TPCODL is having with the Associate by issuing termination notice which shall be without prejudice to the other rights of TPCODL available to it under law.
Without prejudice to its right to terminate for breach of contract, TPCODL may, without assigning any reason, terminate the Contract in whole or in part at any time at its discretion while the contract is in force by serving a written notice of two weeks to the Associate.

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

a) Associate shall discontinue the supply, on the expiry of the said period of two weeks.

b) Associate shall ensure that no further steps are being taken towards discharge of the obligations, terms and conditions as contained in the contract/PO. This shall include initiation of actions not limited to discontinuation of other allied and associated arrangements which the associate might have entered into with third parties for due discharge of its obligations under the contract with TPCODL.

c) The Associate shall perform thereafter such tasks as may be necessary to preserve and protect the terminated portion of the material/service/work in progress and the materials and equipment at TPCODL sites or in transit thereto. However the associate shall continue to fulfill its contractual obligations with regard to the part of contract not terminated.

d) It shall be open for TPCODL to conduct a joint assessment with the associate of the material, supplies, equipment ,works or in general as to the subject matter of the contract in regard to which the associate claims having completed its obligations before or during such termination.

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

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

a) In case TPCODL exercises its right of termination as stated above the associate shall not dispute or object to the same.

b) The Associate shall be entitled to receive and claim only such payments OR sums of money from TPCODL as may be found payable to it in regard to works executed by it under the terms of the contract and no other claim of any nature whatsoever shall be made by the Associate.

c) All such provisions which the parties have agreed to survive and prevail even after termination of the contract shall remain effective despite the termination.

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

22.2 Termination for Convenience of Associate

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

22.3 Termination for Convenience of TPCODL

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

23.0 DISPUTE RESOLUTION & ARBITRATION

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

23.1 Governing Laws and Jurisdiction

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

24.0 ATTRIBUTES OF GCC

24.1 Cancellation

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

24.2 Severability

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

24.3 Order of Priority

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

25.0 ERRORS AND OMISSIONS

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

26.0 TRANSFER OF TITLES

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

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

27.0 INSURANCE

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

a) The value of the policy shall cover the total value of all the items till they are handed over to TPCODL.

b) TPCODL shall be the principal holder of the policy. The Associate shall be the loss payee under the policy. Associate / Sub-contractor of the Associate shall not be holders or beneficiaries in the policy nor shall they be named in the policy. TPCODL reserves the exclusive right to assign the policy.

c) While the payment of premium may be phased in agreement with the insurance company, at no time shall goods and services required to be provided by the associate shall remain uninsured in accordance with (a) above.

d) A copy of the Insurance policy shall be made available to TPCODL prior to first dispatch lot of any Equipment and policy shall be kept alive and valid at all times up to the stage of final acceptance.

e) TPCODL reserves the right to take out whatever policy that is deemed necessary by him if the associate fails to keep the said policy alive and valid at all times and/or causes lapses in payment of premium thereby jeopardizing the said policy. The cost of such policy(s) shall be recovered / deducted from the amount payable to the associate.

f) The policy shall ensure that the TPCODL's decision regarding replacement of goods damaged, lost or rendered unusable shall be final.

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

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

28.0 SUGGESTIONS & FEEDBACK

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

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

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

• Any issues with TPCODL.

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

29.0 CONTACT POINTS

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

30.0 LIST OF ANNEXURES

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

ANNEXURE-A

PROFORMA FOR BID SECURITY BANK GUARANTEE

The TP Central Odisha Distribution Limited
Bhubaneswar

WHEREAS, (Name of the Bidder) _____

(hereinafter called "the BIDDER") has submitted his bid dated_____ for the (Name of Contract) _____ (hereinafter called "the BID").

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

SEALED with the Common Seal of the said Bank this _____ day of _____ 20_____.

The CONDITIONS of this obligation are**:**

i) If the Bidder withdraws his Bid during the period of bid validity specified in the Proforma of Bid or

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

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

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

DATE …… **SIGNATURE OF THE BANK** ……..
WITNESS …… **SEAL** ……..
(Signature, Name & Address) (At least 2 witnesses)

ANNEXURE- B

PROFORMA FOR PERFORMANCE BANK GUARANTEE (CP cum EP)

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

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

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The TP Central Odisha Distribution Limited

Bhubaneswar

CP cum EP BG No……

Order/Contract No……dated……

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

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

6. We also agree that you shall be entitled at your option to enforce this guarantee against our bank as a principal debtor, in the first instance, notwithstanding any other security or guarantee that you may have in relation to “the Vendor’s” liabilities in respect of the premises

7. This guarantee shall not be affected by any change in the constitution of our Bank or “the Vendor” or for any other reason whatsoever.

8. Any claim / extension under the guarantee can be lodge-able at outstation banks or at Bhubaneswar branch and claim will also be payable at Bhubaneswar Branch (to be confirmed by Bhubaneswar Branch by a letter to that effect in case BG is from the branch outside Bhubaneswar).

9. Notwithstanding anything herein contained, our liability under this guarantee is limited to Rs._____ (Rupees_____ only and the guarantee will remain in force upto and including _____(Date) and shall be extended from time to time for such period or period as may be desired by “the Vendor”.

10. Unless a demand or claim under this guarantee is received by us in writing within one months from_____ (expiry date) i.e. on or before _____ (claim period end date), we shall be discharged from all liabilities under this guarantee thereafter.

Dated at_____ this_____ day of _____ 20__

Bank’s rubber stamp

1. Banks full address

Designation of Signatory

2. Bank official number

ANNEXURE-C

PROFORMA FOR "NO DEMAND CERTIFICATE" BY ASSOCIATE

(On Company's Letter head or with Company Seal)
(To be submitted by the Associate to TPCODL Accounts Department at the time of receipt of full and final payment)

(Certificate No. CCP/002)

Name of the Project Order/

Contract No.

Dated

Name of the Associate Scheme

No. / Job No.

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

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

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

Place **Name**

(Company Seal)

ANNEXURE-D

PROFORMA FOR APPLICATION FOR ISSUANCE OF CONSOLIDATED TDS CERTIFICATE

To be printed on the letterhead

To,

The TP Central Odisha Distribution Limited,

Bhubaneswar

Sub: Application for issuance of Consolidated TDS Certificate for the FY _____

Dear Sir,

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

Signature

Name

Address

Contact No. (Land Line)

(Mobile)

PAN #

Assessing authority

ATTACH THE COPY OF PAN CARD

ANNEXURE-E

BUSINESS ASSOCIATE FEEDBACK FORM

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

You are associated with us as

☐ OEMs ☐ Service Contractor ☐ Material Suppliers ☐ Material & Manpower Supplier

You are associated with us for

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

Your office is located at

☐ Bhubaneswar ☐ Within 200 kms from Bhubaneswar ☐ More than 200 kms from Bhubaneswar

Your nearly turnover with TPCODL

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

Additional Information

Your Name	
Your Designation	
Your Organization	
Contact Nos.	
Email	

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

SECTION – A

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

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

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

SECTION – B

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

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

SECTION – C

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

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

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

SECTION - D

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

1	2	3	4	5	6	7	8	9	10

SECTION – E

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

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

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

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

5	*Inspection & quality assurance support for timely job completion*	

We thank you for your time and courtesy!!

ANNEXURE-F

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

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

In a bid to make our entire procurement process more fair and transparent, TPCODL intends to use the reverse auctions through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as technically qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

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

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

Signature & Seal of the Bidder

ANNEXURE-G

To,

DGM (Finance)
The TP Central Odisha Distribution Limited
Bhubaneswar

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

Dear Sir,

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

Vendor Code :

Title of Account in the Bank :

Account Type :

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

Bank Account Number :

Name & Address of Bank :

Bank Contact Person's Names :

Bank Tele Numbers with STD Code :

Bank Branch MICR Code :

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

Bank Branch IFSC Code :

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

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

Name of the Authorized Signatory: :

Contact Person's Name:

Official Correspondence Address:

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

Thanking you,

For _____

(Authorised Signatory)

(Signature with Rubber Stamp)

Certification from Bank:

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

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

(Manager's/ Officers Signature under Bank Stamp)

ANNEXURE-H

VENDOR APPRAISAL FORM

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

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

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

	1. FACTORY LICENSE 2. ANNUAL REPORT FOR LAST THREE YEARS 3. TYPE TEST REPORT FOR THE ITEM 4. PAST EXPERIENCE REPORTS 5. ISO CERTIFICATE –QMS, EMS, OHAS, SA 6. REGISTRATION OF SALES TAX 7. COPY OF TIN NO. 8. COPY OF SERVICE TAX NO. 9. REGISTRATION OF CENTRAL EXCISE 10. COPY OF INCOME TAX CLEARANCE. 11. COPY OF PF REGISTRATION 12. COPY OF ESI REGISTRATION 13. COPY OF INSURANCE FOR WORK MAN COMPENSATION ACT NO 14. COPY OF ELECTRICAL CONTRACT LIC NO 15. COPY OF PAN NO 16. COPY OF WC TAX REGISTRATION 17. DOCUMENTS IN SUPPORT OF SC/ST RELAXATION AT S.NO.16.0 18. GSTN CERTIFICATE	

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

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

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

ANNEXURE-I

MANUFACTURER AUTHORIZATION FORM

(To be submitted on OEM's Letter Head)

Date: …….

Tender Enquiry No.: ……..

To,

Chief (Procurement & Stores)

The TP Central Odisha Distribution Limited,
Bhubaneswar

Sir,

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

……and to subsequently negotiate and sign the Contract.

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

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

Yours Sincerely,

For ……..

Authorized Signatory

TPCODL

Business Associate Registration Form
Corporate Contracts

To be Filled in Block letters By Associate. Note **Annexure 1 - CSM F1** is Mandatory for Service / Composite Associate Registration

MATERIAL ☐ **SERVICE** ☐ **COMPOSITE** ☐ **CONSULTANT** ☐

Category: MSME / OTHERS (If MSME, please provide details as mentioned in Page No-2)

Title (M/S., Mr., Mrs., Dr.,) *						
Company Name (35 Char) *						
Country code - Mobile No *						
Country Code - Tel. No *						
Country Code - Fax No						
Email ID *						
Street / House No *						
Country *		State *		District *		
City *		Pin code *		Language		
Category	General		MOEF		SC / ST	
	Related Party		MSME / SSI		OBC/Others	

Bank Details (all details to be filled for enabling NEFT Transfer)-Cancelled cheque to be attached

Name of Bank *			
Bank Details ID *		PAN Number *	
Account No. *		Account Holder *	
Bank Key *		Bank Country *	INDIA
MICR Code * (Attach Cancelled Cheque)			
IFSC Code *			
IBAN *			
Payment thro RTGS/NEFT*			

Quality / Safety Systems (Mandatory for Service and Composite Associate Registration

OHSAS 18001 Certified		Risk Management Process	
ISO 9001 Certified		ISO 14001 / EMS Certified	

Declaration and Associate Authorized Signature

I / We certify that the information furnished above is correct and complete to the best of my/our knowledge and belief. If at any time, I / We are found to have concealed any material information or given any false details, my/our registration shall be liable to summary termination without notice or compensation. I / We are not related to any employee of TP Central Odisha Distribution Limited.

Name *	
Designation *	
Email *	
Signature & Company Seal *	

TP CENTRAL ODISHA DISTRIBUTION LIMITED
(A Tata Power & Odisha Govt. joint venture)
2nd Floor, IDCO Tower, Janpath Bhubaneshwar, Odisha 751022

Taxation Registration Details				
GST Scheme	Normal		Composite	
GST Registration No.				
GST Classification				
GST Registration Date				
Provident Fund No.				
ESI Registration No.				
MSME / SSI Registration No.				
MSME / SSI Registration Date				
MSME / SSI Registration Valid Upto				

Mandatory For SERVICE & COMPOSITE *(Material + Service)* **Associate Registration**						
Annexure 1 - CSM F1-'Safety Category Qualification Form	YES		NO		N / A	
OSHAS 18001 Certificate	YES		NO		N / A	
ISO 9001 Certificate	YES		NO		N / A	
ISO 14001 / EMS Certificate	YES		NO		N / A	
Safety Organization Structure	YES		NO		N / A	
Safety Training Process	YES		NO		N / A	
Safety Policy	YES		NO		N / A	
Safety Statistics	YES		NO		N / A	
Address of sites where WIP	YES		NO		N / A	
Check List of Documents enclosed *(To be filled by the Associate)*						
PAN Card Copy	YES		NO		N / A	
GST Registration Certificate	YES		NO		N / A	
Certificate of Incorporation / Partnership Deed etc	YES		NO		N / A	
Signed Conflict of Interest Declaration	YES		NO		N / A	
MSME Industry Registration (Mandatory if applicable)	YES		NO		N / A	

Evaluation Sheet

(To be filled by **Requistioner** - After Checking & Verifying Page 1 to 2 and Annexure 1 - CSM F1 Form)

Whether mandatory requirements are filled/attached and verified?	YES		NO		If No, explain reason for waiver in evaluation area	
If registration is for Services also, whether CSM F1 Form has been completed? Documents attached CSM F1 - Safety Category Qualification Form	YES		NO		N / A	
OHSAS 18001/ ISO 9001 / ISO 14001 Certificate	YES		NO		N / A	
Safety Organization Structure	YES		NO		N / A	
Safety Training Process	YES		NO		N / A	
Safety Policy	YES		NO		N / A	
Safety Statistics	YES		NO		N / A	
Evaluation Process Report	YES		NO		N / A	
Company Code & Description -						

Requested By	**Approved by (HOD)**
Name	Name
Signature	Signature
Department	Department

ERP Associate Company Codes			
Company Code *		Sort Key *	
Reconciliation A/C *		Check Double Invoice	
With Holding Tax Country		With Hold Tax	
Terms of Payment		Payment Methods	
ERP Associate Purchasing Organization			
Purchasing Organization *		Order Currency *	
Schema Group *		Sales Person *	
ABC Indicator *		Terms of Payment	
Service Based Invoice		GR Based Invoice	

ANNEXURE – 1 **CSM F1 - Safety Category Qualification Form**

Type of Associate - **Service / Composite** *(Material + Service)*

Category - **A / B / C / D** *(Tick any one)*

Name of the Associate -

No	Safety Information	Remarks	Attachments		
1	**Organization is certified /accredited to following systems**				
1A	OHSAS : 18001	Yes / No	No		
1B	ISO : 14001	Yes / No	N0		
1C	ISO : 9001	Yes / No	No		
1D	Any Other	Yes / No			
2	**Safety Statistics for Last Three (03) Years**		Year 1 Current Year	Year 2 Last Year	Year 3 Year Before
2A	LTIFR – Lost Time Injury Frequency Rate	NIL			
2B	LTISR – Lost Time Injury Severity Rate	NIL			
3	Safety Training Process for your Organization	Yes / No	If "Yes", kindly attach Details / Procedures		
4	Safety Organization Structure of your Organization 1. Total No of Employees 2. No of Safety Professional 3. No of Engineers /Supervisor 4. No of Skilled /unskilled work men	Yes / No			
5	Certified /Skilled workers as a percentage of overall workforce ITI Trained, TPSDI Trained, Licensed Electrician, IBR welder, etc.	Yes / No			
6	Name and Address of Sites where work are in Progress or worked earlier	Details of the Site			

Name, Signature & Company Seal

To be filled by the Tata Power Requestor Associate to be registered for CATEGORY **A** **B** **C** **D**

1) **Category A**- Associate eligible to carry out High risk Jobs
2) **Category B**- Associate eligible to carry out technical jobs that are low risk
3) **Category C**- Associate eligible to carry out administrative and office jobs
4) **Category D**- Associate eligible to carry out consultant job/other than above A, B, C category

No	Description	Category A	Category B	Category C	Category D
1	Does the Contractor have OHSAS 18001 Certificate?				
2	During site visit check for safety adequacy at site				
3	Check the safety statistics of Contractor				
4	Check the safety orientation & training process of contractor				
5	Check the organization structure for safety professionals / engineers / supervisors				
6	Certified / skill workers as a percentage overall work force				
7	Does the Contractor have ISO 9001 Certificate?				