The Tata Power Company Ltd	TATA POWER	*OPEN TENDER NOTIFICATION*
Tender Reference: ***CC26VJS030***		*Document Date:* ***18th Jan 2026***

The Tata Power Company Limited Invites Tender through E-Tender Two-Part Bidding Process from interested bidders for the following package: -

A. Summary of the tendered package:

Sr. No.	Description	Tender Reference no.	Bid Guarantee Fee / EMD (Rs.)	Tender Fee (Rs.)	Last Date and Time for payment of Tender Participation fee
For the following package please send mail to Mr Vinayak Shinde (vinayak.shinde@tatapower.com) with copy to Mr. Rameshkumar P N (pnramesh@tatapower.com).					
1.	OLA for Supply of 11 kV RMU with CTPT Units and FRTU for Mumbai Distribution	CC26VJS030	2,00,000/-	2,000 /-	23rd Jan 2026

B. Procedure to Participate in Tender.

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

1. Non-Refundable Tender Fee, as indicated in table above, to be submitted in the form of

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

Beneficiary Name – The Tata Power Co. Ltd.

Bank Name – HDFC Bank Ltd.

Branch Name – Fort Branch, Mumbai

Address – Maneckji Wadia Building, Nanik Motwani Marg, Fort, Mumbai 400023.

Branch Code – 60

Bank & Branch Code – 400240015

Account No – 00600110000763

Account type – CC

IFSC Code – HDFC0000060

2. Eligible and Interested Bidders to submit duly signed and stamped letter on Bidder's letterhead indicating

Tender Enquiry number

Name of authorized person

Contact number

e-mail id

Details of submission of Tender Participation Fee

E-mail with necessary attachment of 1 and 2 above to be send to vinayak.shinde@tatapower.com with copy to pnramesh@tatapower.com before "Last date and time for Payment of Tender Participation Fee"

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

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

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

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

Any payment of Tender Participation Fee by Bidder who have not done the pre-requisite will not be refunded.

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

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OPEN TENDER NOTIFICATION

FOR

OLA for Supply of 11 kV RMU with CTPT Units and FRTU for Mumbai Distribution

The Tata Power Company Limited (Tata Power)
Smart Center of Procurement Excellence,2nd Floor,
Sahar Receiving Station, Near Hotel Leela,
Sahar Airport Road, Andheri East, Mumbai-400059

Section A : Tender Notice including Instruction to Bidders

1. Tender Details

1.1 Key Tender Specific Details

Reference Number	**CC26VJS030**
Description	**OLA for Supply of 11 kV RMU with CTPT Units and FRTU for Mumbai Distribution**
Type of Tender	**Outline Agreement**
Estimated Period	**Twp years**
Tender Fee	**Rs 2000/-**
Earnest Money Deposit (EMD)	**Rs 2,00,000/-** **Rs. Two Lakhs Only**
Price Basis	**Price Variation basis**
Executive Handling this Tender*	Name: Mr. Vinayak Shinde E-Mail ID: vinayak.shinde@tatapower.com
Technical Query *	Name: Mr. R R Pote E-Mail ID: rrpote@tatapower.com

*You may contact the above personnel from Monday to Friday during office hours only.

1.2 Calendar of Events

(a)	Payment of Tender Fee and Submission of letter nominating authorized person by Interested Bidder indicating their intent to Buy Tender	Till 23rd Jan 2026
(b)	Access to Tender Documents through E-Tender system to authorized person of Interested Bidder	23rd Jan 2026
(c)	Last Date of receipt of pre-bid queries, if any.	27th Jan 2026
(d)	Last Date of Posting Consolidated replies to all the pre-bid queries as received	30th Jan 2026
(e)	Last date and time of receipt of Bids	7th Feb 2026

Note:- * These date and time are as planned and tentative. In case of change the same shall be intimated to Authorized Person of Interested Bidder through E-Tender System.

Please note post submission of Bids relevant communication will be done with Authorized Person of Interested Bidder through E-Tender System

1.3 Mandatory documents required along with the Bid

1.3.1 Bid Guarantee Fee (EMD) of requisite value and validity. PLEASE NOTE THAT BID GUARANTEE ONLY IN FORM OF BANK GUARANTEE WILL BE ACCEPTED.

1.3.2 Requisite Documents to ascertain fulfilling of Technical and Commercial Pre-Qualification Requirement as detailed in Tender Enquiry.

1.3.3 Technical Submission including Drawings, Type Test details etc as detailed in Technical Specification.

1.3.4 Required Commercial Submission as detailed in Tender Document

1.3.5 Technical and Commercial Clarification and Deviations as per the format attached in the Tender Enquiry

1.3.6 Proper authorization letter to sign the tender and participate in Tata Power E-Tender system on the behalf of bidder.

1.3.7 **For vendor not registered with Tata Power, Duly filled Vendor Registration form with all supporting documents is mandatory to participate in the Tender**.

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

Also please note that whenever editable format are shared it is requested that data be filled in relevant cells. No formatting or addition / deletion of rows / columns to be done. Wherever editable Excel submission are requested the file should be free from references, macros etc.

Checklist of Document Submission

Stage of Tendering	Document	Type of Format	Mode of submission
Before last date of Pre-Bid Query	Query / Clarification / Deviation (QCD) Format. (F1) Technical and Commercial	Editable Excel Format	Through message in E-tender system
Bid Submission Envelope 1 (First Part)	**Earnest Money Deposit**	**Original Bank Guarantee**	**In Sealed Envelope**
Bid Submission Envelope 2 (Second Part)	**Documents to be uploaded in Ariba only.** In case of multiple files, a zipped folder can be attached for the same (size limit of 100MB per zipped file)		
To be submitted Under Tab 2.1 in Ariba	Duly filled PQR and supporting documents		
	Duly filled PQR format	Editable Excel Format	E-Tender System
	Backup documents for Technical and Commercial PQR	Signed and Scanned documents	E-Tender System
To be submitted under Tab 2.2 in Ariba	Technical Submission and Supporting Documents		
	Duly filled Unpriced Bid Format. Signed copy of Technical Specifications indicating your acceptance of the same	Signed and scanned copy of document	E-Tender System
To be submitted under Tab 2.3 in Ariba	Commercial Submission and supporting document		

	Letter of Undertaking (FOR VENDORS NOT REGISTERED WITH TATA POWER)	Scanned Copy of letter of undertaking duly filled, stamped and signed	E-Tender System
	E-auction Undertaking form	Scanned Copy of letter of undertaking duly filled, stamped and signed	E-Tender System
Bid Submission Envelope 3 (Third Part)	**Duly filled Priced Bid Format**	Hard copy in original duly signed and stamped	**Sealed Envelope**
	Duly filled Priced Bid Format	To be entered in E-Tender System	E-Tender System

1.4 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 Query / Clarification / Deviation (QCD) Format. Deviations have to be mandatorily submitted in editable Excel sheet.

Technical or Commercial Deviation should be mentioned in Deviation Format only. Deviation in any other document or Format will not be considered.

1.5 Right of Acceptance/Rejection

1.5.1 Bids are liable for rejection in absence of following:-
1.5.2 Mandatory Documents as listed in 1.3 above
1.5.3 Price Bid as per the Price Schedule mentioned in Tender Document
1.5.4 Receipt of Bid and Response to queries within the due date and time

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

1.6 Qualification Criteria

Sr no	Parameter	Tata Power Requirement	Documents To be submitted by Bidder to ascertain meeting of Pre-qualification requirement
1	Infrastructure	Bidder must be an OEM of Equipment with manufacturing facility / assembly in India. The bidder must have in-house routine and acceptance testing facilities for acceptance as per relevant IS/IEC	Self-undertaking to be submitted in this regard. TATA Power reserves the right to inspect the said manufacturing facility as a proof of compliance to this parameter.
2	Supply and Experience	The bidder must have supplied for same or higher size and voltage a) A minimum of 30 nos during last 3 years or b) A single order of 15 nos or c) Two orders of 9 nos during last 3 yrs Indian Subsidiaries of global companies having plant in India are also eligible to bid if the qualification requirements stated above are met independently or in combination with the parent company. Declaration from parent company needs to be submitted.	Purchase Order Copies, Completion Certificates and performance certificates are to be submitted. Self-undertaking to be submitted in this regard. Declaration from parent company needs to be submitted. TATA Power reserves the right to inspect the said manufacturing facility as a proof of compliance to this parameter and qualification.
3	Performance	The bidder should have performance certificates for 2 years satisfactory performance from at least 2 reputed Distribution Utilities for equipments of similar or higher rating. 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 any of Tata Power Groups for similar products and services, the performance feedback for that bidder by Tata Power User Group shall only be considered irrespective of performance certificates issued by any third organization.	Supply List & Performance Certificates from the utilities
4	Commercial Capability	Average of Annual turnover of the bidder for last three years shall not be less than Rs. 10 Crs.	Copy of audited Balance Sheet and P&L Account along with UDIN number to be submitted in this regard.

5	Type Test	The bidder shall submit Type test reports obtained from CPRI/ERDA/ NABL/ International Accredited Lab for the equipment / material offered. The type tests should have been conducted on the equipment / material of the same design. The type tests should have been conducted within 5 years prior to the date of bid opening. Time period for type test can be extended by another 5 years as a special case, if there is no change in design / material of construction (MOC). In case the type test reports furnished are not for the quoted equipment / material but for the equipment / material with higher voltage class and/or different capacity, then type test shall be carried out for the offered equipment / material from CPRI/ERDA/NABL/ International Accredited Lab without any cost implication to the owner and the Type Test reports shall be submitted before dispatch of the equipment / material.	Type Test Reports and clause wise compliance list to be submitted along with bid. Undertaking that there is no change in design / material of construction (MOC) if Type Test Report older than 5 years. Type test reports for the offered equipment / material from CPRI/ERDA/ International Accredited Lab without any cost implication to the owner and the Type Test reports shall be submitted along with BID as per specification requirements.

1.7 Pre-Bid Queries

Technical or Commercial Pre-Bid Queries if any has to be sent through message in E-Tender System. Pre-Bid Query has to be sent only in the Query / Clarification / Deviation (QCD) Format. Pre-Bid Queries sent in any other format or send through any other communication channel will not be accepted and answered. Pre-Bid Query have to be sent in the stipulated timeline as defined in the Tender Document. No Pre-Bid Query will be accepted after the due time and date as specified as "Last Date of receipt of pre-bid queries, if any"

1.8 Marketing Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the General Condition of Contracts and other parts of Tender Documents. Bidders must agree to these rules prior to participating. In addition to other remedies available, Tata Power 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 or other part of the Tender Documents. A bidder who violates the market place rules or engages in behavior that disrupts the fair execution of the marketplace, may result in restriction of a bidder from further participation in the marketplace for a length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace

- Breach of terms as published in TENDER
- Submit irrelevant documents or frequently cases of missing documents as part of compliance to Qualifying, Technical or Commercial Requirements causing unnecessary delay in Tender Evaluation

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 Tata Power. This includes all bidding information submitted to Tata Power. All tender documents remain the property of Tata Power and all suppliers are required to return these documents to Tata Power upon request. Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

1.10 Payment Terms

100% payment shall be made within **60 days** (45 days for MSME) from the receipt and acceptance of the material at the Consignee Stores/Site/Location as per the Contractual Terms and Conditions.

2. 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 complete tender BOQ / each line item as calculated in Schedule of Items. Tata Power however, reserves 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 against each line item.
- Bidder has to mandatorily quote against each item of Schedule of Items. Failing to do so, Tata Power may reject the bids.

NOTE: In case of a new bidder not registered with Tata Power, factory inspection and evaluation shall be carried out to ascertain bidder's manufacturing capability and quality procedures. However Tata Power 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 Tata Power shall be final and binding on the bidder in this regard.

2.1 Price Variation (PV) Clause:

IEEMA formulae and factors governing the price variation shall be as follows:

The prices shall be subject to IEEMA Price Variation Clause with following conditions:

$$P = \frac{Po}{100} \times \left(20 + 28\frac{Is}{IsO} + 26\frac{C}{CO} + 4\frac{Al}{AlO} + 9\frac{In}{InO} + 13\frac{W}{WO} \right)$$

P Price payable as adjusted in accordance with the formula

PO Price quoted / confirmed (Each)

IS Wholesale price index number for 'Manufacture of Basic Metals (Base: 2011-12=100) - Applicable in the Month of ordering.

ISO Wholesale price index number for 'Manufacture of Basic Metals (Base: 2011-12=100) -as per base month of tender.

C Price of Coper wire bars- Applicable in the Month of ordering.

CO Price of Coper wire bars- as per base month of tender.

Al Price of busbar grade aluminum- Applicable in the Month of ordering.

AlO Price of busbar grade aluminum - as per base month of tender.

In Price of epoxy resin for indoor circuit breakers and switchgear OR Wholesale price index of insulator for outdoor circuit breakers (VBF and SDB) - Applicable in the Month of ordering.

InO Price of epoxy resin for indoor circuit breakers and switchgear OR Wholesale price index of insulator for outdoor circuit breakers (VBF and SDB) - as per base month of tender.

W All India average Consumer price index -Applicable in the Month of ordering.

WO All India average Consumer price index average -as per base month of tender

Base circular shall be Jan 2026 circular issued in Feb 2026. Base month for Bid Price shall remain same throughout the negotiation process till Outline Agreement / Rate Contract is finalized. Base month circular has to be attached in the price bid.

Whenever Firm Order has to be placed against Outline Agreement / Rate Contract Tata Power shall seek PVC corrected price based on index published and available during the said month from the bidder. Purchase Order against Outline Agreement / Rate Contact will be placed at PVC corrected price. The said price shall then remain firm till completion of delivery and bill payment.

There will be no cap on positive & negative side.

3.1 Bid Submission

Bidders are requested to submit their offer in line with this Tender document. Bids shall be submitted in 3 (three) parts:

FIRST PART: "EMD – BANK GUARANTEE" of Value detailed in 1.1 valid for 180 days from the due date of bid submission in the form of Bank Guarantee favoring 'The Tata Power Company Limited'. The EMD has to be strictly in the format as mentioned in Tender Document, failing which it shall not be accepted by Tata Power and the bid as submitted shall be liable for rejection.

Note : BG of 180 days and further claim period of 180 days is needed. In case the same cannot be issued by your bank then BG valid for 365 days can be provided.

Note : At times bidders have sought Tata Power bank details which is needed by them to make BG. Hence the same is reproduced below. These details are only provided to facilitate making of BG if needed:

Tata Power's Bank Details for submitting EMD BG:

Bank Name & Address – HDFC Bank, Maneckji Wadia Building, Nanik Motwani Marg, Fort, Mumbai 400 023.
A/c no. - 00600110000763
IFSC Code – HDFC0000060

The hard copy of EMD in a sealed envelope should be sent on address mentioned in Tender document.

First Part has to be submitted in Sealed Envelope.

SECOND PART: "TECHNICAL / UN-PRICED COMMERCIAL BID" shall contain the following documents:

a) Documentary evidence in support of Technical, Commercial qualifying criteria
b) Technical literature/GTP/Type test report/Details of Qualified Manpower Available/ Testing Facility available etc. *(complete in all respect as desired and detailed in Technical Specification and Technical Requirement Section)*
c) Duly filled Technical and Commercial Deviation Sheets
d) Duly filled formats like Authorization affidavit form
e) *Unpriced Commercial Bid*

The technical / un-priced commercial bid shall be properly indexed and is to be submitted in Soft Copy though E-Tender system of Tata Power. Hard Copy of Technical Bids need not be submitted.

Second Part has to be submitted through E-Tender System Only

THIRD PART: "PRICE BID" shall contain only the price details and strictly in Price Bid format along with explicit break up of basic prices and applicable GST. Basic price should include packaging forwarding, freight, transit insurance and any other cost envisaged by the bidder.

Third part has to be submitted through E-Tender System (ARIBA) only.

FOR BIDS INVITED THROUGH E-TENDER SYSTEM (TECHNICAL AND UN-PRICED COMMERCIAL BID) :

In response to advertisement Bidder has to provide details of person authorized to Bid on behalf of the Bidder. An e-mail will be generated by E-Tender System and the authorized person can download the Tender Documents from the system.
SECOND and THIRD PART of the Bid have to be submitted in E-Tender System.

Bidders have to mandatorily submit SECOND PART (Technical and Un-priced commercial Bid) only through E-Tender system of Tata Power. Bids submitted through any other form/ route shall not be admissible.

EMD
"Please mention Tender Reference No"

Please mention our Tender Reference No on the Tender and drop the same in our Tender Box located at The Tata Power Company Limited, Smart Center of Procurement Excellence,2nd Floor, Sahar Receiving Station, Near Hotel Leela, Sahar Airport Road, Andheri East, Mumbai-400059

Bids submitted by Email/Telex/Telegram /Fax will be rejected. No request from any Bidder to Tata Power to collect the proposals from Courier/Airlines/Cargo Agents etc. shall be entertained.

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

Communication Details: Detailed in 1.1

3.3 Bid Prices

Bidders shall quote for the entire Scope of Supply/ work with a break up of prices for individual items and Taxes & duties. The bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total price with taxes, duties & freight up to destination at various sites of Tata Power. 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/ SLA mentioned in the tender, shall be deemed to be included in prices quoted.

3.4 Bid Currencies

Prices shall be quoted in Indian Rupees Only. It also may be noted that the denomination of Purchase Order / Outline Agreement / Rate Contract and associated Payment to Successful Bidder shall also be in Indian Rupees Only. In case Bidder intends to import any equipment, part etc and supply to Tata Power then all liability and costs related to import will rest with the Bidder. All statutory compliances, payments, expenditure etc related to importing of equipment will be responsibility of the bidder.

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, Tata Power 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 Tata Power against the risk of bidder's conduct which would warrant forfeiture.

The EMD shall be in following form:

- Bank Guarantee valid for 180 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) In case of a successful bidder, if the Bidder, within 15 days, does not
i) accept the purchase order, or
ii) furnish the required Contract Performance Bank Guarantee (CPBG)

Original Bank Guarantee submitted as EMD shall be returned only after completion of award process for unsuccessful bidders and issue of Contract Performance Bank Guarantee (CPBG) for successful bidder.

4. Bid Opening & Evaluation process

4.1 Process to be confidential

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence Tata Powers 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 Tata Power as per our standard Process. The bids shall be opened internally by Tata Power. Technical bid must not contain any cost information whatsoever.

First the envelope marked "EMD" will be opened. Bids without EMD 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 in E-Tender system.

4.3 Preliminary Examination of Bids/Responsiveness

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

Prior to the detailed evaluation, Tata Power 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 Tata Power and/or the Tata Power 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, Tata Power may, at its discretion, ask the Bidder for a clarification on its Bid for any deviations with respect to the Tata Power 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 Tata Power.

4.5 Price Bid Opening

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 Tata Power without any further correspondence in this regard.

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.

4.6 Reverse Auction and Price Matching Option

Tata Power reserves the right to go for Reverse Auction (RA) for price negotiation and discover the most competitive price on ARIBA portal, Tata Power's official e-tendering platform. This will be decided after techno-commercial evaluation of the bids. Bidders need to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case Tata Power decides to go for RA.

Only those bidders who are techno-commercially qualified shall be eligible to participate further in RA process. However, the original H1 bidder (whose price bid is the highest post techno-

commercial evaluation) shall not be allowed to participate in further RA process provided minimum three techno-commercially qualified bids are available.

For case where more than one bidders have to be awarded (including Rate Contract / Outline Agreement) Price Matching Option will be exercised. Volume of job allocated to original competitive bidder will be more than bidder who is chosen through Price Matching Option. Tata Power decision regarding work sharing shall be final and no explanation OR clarification shall be given regarding the same.

5.0 Award Decision

Tata Power 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 Priced Bid Format subject to any corrections required in line with Clause 4.3 above. The decision to place purchase order/Outline Agreement/ Rate Contact solely depends on Tata Power on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that Tata Power may deem relevant.

Tata Power 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 Tata Power reserves the right to award other suppliers who are found fit.

5.1 Rate Contract / Outline Agreement

Rate Contract / Outline Agreement does not guarantee any assured business volume in Rupees or Quantity. Quantities are only indicative and specified for the purpose of readiness as per the request from Purchaser. Supplies shall be only against Firm Purchase Orders placed as per the agreed terms and conditions of Rate Contract / Outline Agreement. Purchaser shall be entitled at its discretion to place firm order for such supplies on "As and When Required Basis" without minimum take-off guarantee.
Rate Contract / Outline Agreement will have list of Items with Unit Rate and applicable Taxes and Duties. There will be a cap on value for which order which can be placed against the Rate Contract / Outline Agreement. Actual quantity ordered for each line item may differ significantly from the tentative quantity indicated in the Tender Document. One / few / all items of Rate Contract / Outline Agreement can be ordered till the Cap Value is reached.

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. Outline Agreement/Purchase Order (with Commercial conditions)
2. Special Terms and conditions (if applicable)
3. General Terms and conditions
4. Technical Specifications

In case there is a discrepancy in the BOQ mentioned in tender (to the extent modified through subsequent Corrigendum, if any) and the bid submitted by any bidder, the description as mentioned in the tender (to the extent modified through subsequent Corrigendum, if any) shall prevail.

7.0 Ethics

Tata Power is an ethical organization and as a policy Tata Power 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.

Tata Power work practices are governed by the Tata Code of Conduct. Bidder is request to refer Tata Code of Conduct Clause in General Terms and Conditions.

8.0 General Condition of Contract and Special Condition of Contracts

Any condition not mentioned above shall be applicable as per General Terms and Conditions and Special Condition of Contracts attached along with this tender.

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Annexure 1

Schedule Of Items

Sr. no.	Material / Service Short Text (as per SAP)	Estimated Quantity	UoM	Unit Rate (Basic)	Total
1	RMU 3W 11kV with CTPT Unit motorized O/D with FRTU	30	EA		
	Total				
	GST				
	Total Value including GST				
Total Amount with taxes in Words					

(All Values to be entered in Indian Rs.)

TECHNICAL SPECIFICATION

11KV RMU + CT PT Metering Units with FRTU

The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
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TECHNICAL SPECIFICATION COVER SHEET

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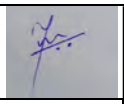
Document Title: Technical Specification of 11kV RMU + CTPT Metering units with FRTU

00	ENSE-DS-2017-R00	01/12/2025	YMM		SDM		RRP	
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1.0	**Scope**	This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and performance of 11kV Ring Main Unit + CT PT Metering with FRTU along 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 TATA POWER, 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.

Standards	Details
IEC 62271-200:2021	HV switchgear and control gear-AC Metal Enclosed switchgear and control gear for voltages above 1kV and up to and including 52Kv.
IEC 62271-100:2021/Cor2:2022	Alternating-current circuit-breakers
IS 513	Cold Rolled Low Carbon Steel Sheets and Strips.
IEC 62271-1:2017/AMD1:2021	High-voltage switchgear and controlgear - Part 1: Common specifications for alternating current switchgear and controlgear
IEC 62271-102:2022	HV switchgear and control gear-Alternating current disconnector and earthing switches
IEC 62271-103:2021	High-voltage switchgear and controlgear - Part 103: Alternating current switches for rated voltages above 1 kV up to and including 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 part-1 to 3
IEC 61439-1	Low-voltage switchgear and controlgear assemblies - Part 1: General rules
IEC 60255-3	Electrical relays – Part 3: Single input energizing quantity measuring relays with dependent or independent time.
IEC 61869-2 / IS 2705	Current Transformers
IEC 60376	Specification of technical grade sulphur hexafluoride (SF6) for use in electrical equipment
IEC 62271-213:2021	High-voltage switchgear and controlgear - Part 213: Voltage detecting and indicating system
IEC 62271-215:2021	High-voltage switchgear and controlgear - Part 215: Phase comparator used with VDIS
IS 13573-2	Cable accessories for extruded power cable for Working

		Voltages from 3.3 kV up to and Including 33 kV.
		IS 2705 — Specification for current Transformer
		IS 3156 — Specification for Voltage Transformer
		IEC 61869 — Specification for Instrument Transformer

Note- *In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.*

FRTU shall comply with the requirements stated in the latest editions of the following recommendations, standard and specifications:

a. International Electro technical Commission (IEC),
b. Institute of Electrical and Electronics Engineer (IEEE)
c. American National Standards Institute (ANSI)
d. National Equipment Manufacturers association (NEMA) standards

3.0 CLIMATIC CONDITIONS OF THE INSTALLATION OF RMU:

1	Maximum ambient temperature	43 deg.C
2	Max. Daily average ambient temp	35 deg.C
3	Min Ambient Temperature	07 deg.C
4	Maximum Relative Humidity	100%
5	Minimum Relative Humidity	40%
6	Average No. of thunderstorm per annum	50
7	Average Annual Rainfall	2380mm
8	Average No. of rainy days per annum	115
9	Rainy months	June to Oct.
10	Altitude above MSL not exceeding	300 meters
11	Average Air Pressure	29.6-inch Hg

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

4.0 GENERAL TECHNICAL REQUIREMENTS OF RMU:

Sr. no.	Description	Requirement
4.1	**RMU**	**11 kV**
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 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	21 kA for 3 sec
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	3 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
23	Motorisation	All configurations shall have Motorised LBS compartment
24	Interlock	Electrical interlock for live cable presence indicator and operation of earth switch in RMU incomer cable compartment of LBS

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 One minute power frequency withstand voltage (on assembled CT-PT)	28 (KV rms)		
4.3	**Current Transformer**			
4.3.1	Transformation ratio (CT ratio)	**300/5 A**		
4.3.2	Rated Output (VA Burden)	Minimum 2.5 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	300/5: 21 KA Amps for 3 sec		
4.3.6	Rated Dynamic Current	2.5 times short time thermal current rating		
4.3.7	No of Cores.	1		
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 Displacement 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.	As per IS 2705-1		
4.4	**Potential Transformer**			
4.4.1	Transformation ratio (PT ratio)	11KV/110-110 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 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	As per IS 3156-1
		4.5	**Bushing**	
		4.5.1	Materials of bushings	Epoxy
		4.5.2	Dimension of bushing	As per IS 8603 -2008
		4.5.3	Minimum creepage distance between phase and earth	16 mm/KV
		4.5.4	Material for Rod of bushings	Copper / brass
		4.6	**Enclosure**	
		4.6.1	Material and thickness of the meter box	CRCA sheet, Minimum 2mm
		4.6.2	Non-current carrying nuts, bolts, screws etc. on enclosure	SS 304
		4.6.3	Protection against penetration of dust and water	Outdoor type (Min IP54)
		4.6.4	Door of metering compartment	Door with toughened glass

Clearances

	Phase to phase	Phase to Ground
	11 KV	11 KV
HV	130 mm	80 mm
LV	25 mm	20 mm

4.1	RMU CONFIGURATIONS	Outdoor type Ring Main Unit with CT PT Metering Units shall be as under (All configurations shall have Motorized LBS compartment) for 11 kV 1. 3 Way with 2 LBS + 1 VCB (Outdoor application): Non extensible 3 Nos. 630A Load Break Switches + Electronic Fault Passage Indicator in each LBS compartment (of TPC approved make). 2. There will be 3 no's of Current Transformer & 3 no's of 11KV Potential Transformer in the metering unit compartment. 3. The PT should have isolation facility either through Load break switch or through Vacuum breaker. 4. There should be mechanical interlock between 630A LBS/VCB of PT & outgoing. Outgoing LBS should not close unless LBS of PT is ON. 5. The connection between RMU & CT PT compartment shall be through bus bars. 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.

		Note- All shunt trip coils shall be 230V AC
4.2	FRTU FUNCTIONS:	4.1.1 FRTU shall support all basic functionalities. 4.1.2 Serial interfaces (RS 485 Configurable) with Modbus serial protocol. 4.1.3 Ethernet 10/100 BaseT interface with IEC 60870-5-104 & IEC60870-5-101 protocol 4.1.4 Minimum number of I/O tags handling capacity shall be 120 I/O tags. 4.1.5 FRTU have inbuilt optical coupler to isolate field signals. 4.1.6 FRTU shall support suitable feature of battery availability check. 4.1.7 Suitable provision in FRTU to supervise and prevent accidental serious discharge of battery. 4.1.8 FRTU shall support Event storage capacity as follows Measurement Events: 10000 System Events: 1000 Alarms: 1000 Normal Events: 5000 4.1.9 Such events shall be stored in the basis of FIFO. 4.1.10 Local viewing of these events shall be possible. 4.1.11 FRTU's digital input/output capacity should be such that it can able to fulfil automation of RMU as per RMU configuration. Please refer Annexure # 2 and it should support expandability. 4.1.12 FRTU shall support web-based monitoring and configuration from remote as well as local. 4.1.13 All DI & DO status shall be visible in FRTU panel. 1.1.1 FRTU shall support feature of remote configuration as well as diagnosis. 1.1.2 FRTU shall have feature of multi master reporting with minimum 4 numbers of master. 1.1.3 As the SCADA/DMS system will use public domain GPRS, therefore it mandatory to guard the data/ equipment from intrusion/damage/breach of security & shall have SSL/VPN based security. 1.1.4 Shall support SNMP. 1.1.5 Capability of time synchronization with GPS receiver and SCADA.
5.0	**General constructio n 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 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.
		5.1.10	Tank explosion vent shall be at the bottom.
5.2	GENERAL DETAILS	5.2.1	The 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 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 outside 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 TATA Power shall be suitable for 3Cx300 sq.mm cables in feeder & outgoing compartments. 5.2.11 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. 5.2.12 Anticorrosive fasteners & components to be provided on switchgear. 5.2.13 The main bus bar current density shall be less than 2.7A/sq.mm. 5.2.14 The cable gland plate shall have split type design having two parts for removal of cable with termination. 5.2.15 The vacuum interrupter shall withstand 10-7 milli-bar Vacuum Pressure ensuring high quality vacuum for interruption and shall have Copper Chromium Arcing Contacts. The interrupter manufacturing unit shall have shall be single Shot brazing and have high First pass Yield. (Shall be part of Bidders own vendor evaluation criteria) 5.2.16 For each terminals bolt should be provided with Cup or Belleville Washer and flat washers. (Note- The cut spring washers are not accepted) 5.2.17 The CT secondary wires & Trip coil wires shall not have any joint in-between CT & TB or relay.
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 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 200 micro-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 (M0) 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 3 NO+ 3 NC auxiliary contacts and 1NO+1NC for earth switch. 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 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.
		5.5.3	In view of safety each VCB shall be assisted with 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.
		5.5.4	They shall be fully mounted and inspected in the factory.
		5.5.5	Breaker contact resistance should be <=50 micro-ohms. The various circuit contact resistance should comply with provisions in IEC 62271-200.
		5.5.6	The breaker should have minimum spare 2 NO + 2 NC auxiliary contacts.
		5.5.7	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.
		5.5.8	The circuit breaker compartment shall have three current transformers, an electronic self-powered relay, a Series & Shunt trip coil for CB tripping.
		5.5.9	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.
		5.5.10	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.
		5.5.11	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
		5.5.12	Breaker shall have mechanical endurance of at least 2000 (M1) operations. Relevant

		type test reports to be submitted along with bid. 5.5.13 Breaker operation counter should be provided and should be visible on front in horizontal alignment. 5.5.14 In control cabinet the Terminal block shall have AC input wiring provision and MCB provision for incoming of LT AC supply. 5.5.15 The relay auxiliary power, communication ports and other required ports should be wired up on the TB. The breaker should have one series trip coil and one shunt trip coil. 5.5.16 The shunt trip coil shall be of 230V AC & wired up on TB 5.5.17 Protection relay: • Electronic self-powered target latched by battery or capacitive unit. • There shall be Conformal Coating on relay PCB 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 5P10 Class shall be employed. CT ratio shall be 300/1 A. The preferable make of relay is Ashida (ADR 241S), make relay. 5.5.18 The terminal protectors to be supplied with the 11 KV RMU by the vendor along with the cable termination bolt for termination 300 Sq. mm 11kV 3 C. 5.5.19 The make of the vacuum bottle shall be same as that of the Type tested design.
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 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/Nylon (fire retardant) cleat. The Sizes of incoming and outgoing cable shall be as per clause no. 5.2.10. 5.6.3 Bidder should provide bimetallic washer for connection between Copper bushing stud and Aluminium Lug. Necessary spring and flat washers to be provided on each terminal. The bimetallic washer shall be suitable M12 bolt for 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 proofed before inspection.
		5.6.8	The cable compartment doors shall have interlocks such that doors can be opened only with earth switch in closed position.
		5.6.9	Termination boots shall be as per type tested design. And should have a proper opening to facilitate the testing. The opening in boot shall be covered by means of removable protection cap.
		5.6.10	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.
		5.6.11	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.
		5.6.12	Locking provision of cable compartment door to be provided in case of any switch/CB is at earth position to avoid pilferage.
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 Tata Powers 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 needs 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 needs 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 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 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.
		5.7.10	Two nos. body earthing bolts of M12X70 mm to be provide on the extended bus-bar. Bolts must be hot dipped galvanized.
5.8	Voltage indicator	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

	lamps and phase comparators		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 wired for 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 Green (TPCL) 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.
		5.9.9	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.
		5.9.10	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.
		5.9.11	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.
		5.9.12	The mimic plate or cover should be separate for each module/feeder of the RMU in view of safety. In case of any work to be done on mechanism of any one feeder then operation staff shall have only access to particular feeder via opening feeder mimic pate or cover plate.
5.10	Fault	5.10.1	Fault Passage Indicators shall be installed on the Ring Main Unit. These devices shall

	Passage Indicators	be electronic devices with dual energy source – with self-powered inbuilt battery and with provision of 24V DC aux supply. It must be connected to Single 3 phase Split Core CTs for O/C. These shall be provided with bright LED s / flag Indicators, which shall be clearly visible in the daytime. 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 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 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:	LV Box at top (accessible from front side only) 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. Harting plug arrangement to be provided on each feeder of RMU. All the pins not used in harting plugs needs to be provided separately as spare. 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).
FRTU general requirement		
5.12	Communication Port	5.12.1 FRTU shall have one TCP/IP Ethernet port for communication with Master station(s) using IEC 60870-5-104/101 protocol. 5.12.2 FRTU shall have one number of RS 485 ports for communication with MFTs to be connected in daisy chain using MODBUS protocol. FRTU shall have one port for connecting the portable configuration and maintenance tool for FRTU.
5.13	Master Station Communication Protocol	FRTU shall use IEC 60870-5-104/101 communication protocol for communicating with master station. The FRTU communication protocol shall be configured to report Analog & status changes by exception to master stations. However, FRTU shall support periodic reporting of analog data and periodicity shall be configurable from 2 sec to 1 hour. Digital status data shall have higher priority than the Analog data. The dead-band for reporting analog value by exception shall be initially set to 1% (in %) of the full scale value.
5.14	Communication Protocol between FRTU and MFTs	The FRTU shall acquire data from the MFTs using the MODBUS serial protocol. The MFT will act as slave to the FRTU. The FRTU shall transmit these values to the master station in the frame of IEC 60870-5- 104/101 protocol. Mini FRTU shall support and accept AMI, MFI, ITI analog data type.
5.15	FRTU compartment	Compartment conforming the IEC 529, with an index of protection (IP), IP55 for both indoor & outdoor locations. FRTU panel shall be provided with arrangement of housing inside RMU with FRTU hardware, space for battery and communication modems. Louvers for ventilation to be provided and shall comply IP 55. The dimension shall be suitable to accommodate FRTU I/O modules, Power supply accessories, battery/ battery charger, terminal blocks and communication modems. The front access door shall be hinged on cabinet with a common lock and key, locking arrangement

		should be special type of extra protection from theft. Removable type gland plates shall be provided at bottom of enclosure with required knock out holes for single compression glands for DI and DO cable entry. Provision of entry shall be kept for extending GSM/GPRS modem antenna outside the enclosure. 1. All panels shall be supplied with 230 VAC, 50 Hz, single-phase switch and 15/5A duplex socket arrangement for maintenance. 2. All panels shall be provided with an internal maintenance lamp, and gaskets. 3. The safety ground shall be isolated from the signal ground and shall be connected to the ground network. Safety ground shall be a copper bus bar. The contractor shall connect the panel's safety ground of to the owner's grounding network. 4. There shall be no sharp corners or edges. All edges shall be rounded to prevent injury. 5. Droppable disconnecting type link should be used for AC and DC power source termination and it should mount on horizontal C channel. 6. Panel should be design such way that Replaceable accessories like Modems, Batteries, external DI card , DO card, FRTU CPU card, FRTU power supply card, etc. can easily detached from the panel.
5.16	Local/Remote selector Panel	1. A manual Local/Remote selector switch shall be provided for each FRTU to disable all control outputs by breaking the power supply connection to the control outputs. 2. When in "Local" position, the Local/Remote switch shall allow testing of all the control outputs of FRTU without activating the control outputs to field devices. 3. A status input indication shall be provided for the Local/Remote switch to allow the SCADA system to monitor the position of the switch. 4. When in Local mode, Command controls to be allowed from Push button along with LED provision for change of state verification. 5. All lamp & push buttons located on the panel front shall be easily readable & operable. 6. The effects of glare from sunlight and artificial lighting shall be minimized. 7. Pushbuttons and pilot lights shall be oil tight, heavy duty type, hermetically sealed. 8. All control command pushbuttons shall have protective guards to prevent accidental actuation using one common pushbutton for executing command. 9. Lamp test function shall be provided for all indicating lights. 10. Pushbutton and Lamp shall be Omron or equivalent make. 11. Internal cable channels maximum filling shall not to exceed 60% of the cable channel cross sectional area. 12. Terminations shall preferable push on type / screw type. 13. Interconnections signal wiring between Di/DO card shall be made only through terminal blocks. 14. Opening in all enclosures through which wiring passes & each conduit termination shall be suitable bushed to prevent cutting or abrasion of the wiring insulation. 15. Electrical schematic diagrams mimic shall be shown for all switching device. 16. Panel shall be enclosed type with IP55 standard. Panel shall be compact & properly fitted in FRTU panel

5.17	Digital Input Module	1. FRTU shall be capable of accepting isolated dry (potential free) contact status inputs. The FRTU shall provide necessary sensing voltage, current, optical isolation and de-bounce filtering independently for each status input. The sensing voltage shall not exceed 24 V dc. The FRTU shall accept two types of status inputs i.e. Single point Status inputs and Double point status inputs. 2. Single point status input will be from a normally-open (NO) or normally- closed (NC) contact which is represented by 1-bit in the protocol message. 3. The Double point status input will be from two complementary contacts (one NO and one NC) which is represented by 2-bits in the protocol message. A switching device status is valid only when one contact is closed and the other contact is open. Invalid states shall be reported when both contacts are open or both contacts are closed. 4. FRTU configuration software shall have capability to invert the DI signal value if required in configuration. There should be visual indication of status of all DI's present in the FRTU panel for troubleshooting the problem.
5.18	Digital Output Module	1. The FRTU shall provide the capability for a master station to select and change the state of digital output points. These control outputs shall be used to control power system devices such as Circuit breakers, isolator and other two-state devices, which shall be supported by the FRTU. FRTU should also support single command output to control other parameters like reboot/reset from remote, if required. 2. The output contacts shall be rated to operate RMU isolator and Breaker motors. In case Control output module of FRTU does not provide potential free control output contact of required rating, then separate control output relays shall be provided by the contractor. These output contact shall be used to drive heavy duty relays. These output contact must have fuse protection to protect it from overcurrent/overload. Kindly give details of fuse used. Also include spare fuse in panel BOM. There shall be visual indication of DO's available in the FRTU panel when command issued for any digital output for troubleshooting the problem.
5.19	Interface wires to FRTU for DI and DO from RMU	1. Shall be based as plug in type connectors for the bays which are under control, rest will be given on TB. All DI & DO connections pertaining to one bay should be connected to one plug. This will be helpful for in case of issuing outage on the bay, field engineer has to remove the plug so that there will not be any power supply available at motorization circuit to avoid unwanted operation at the time of outage. Considering safe remote operations this is a mandatory requirement. 2. Terminal blocks (disconnecting type links) are not envisaged in such arrangements. 3. The male type connector plug shall have 10 core multicolour armoured cable of 1.5sqmm of suitable length as per requirement of site. 4. Male and female type connector (Pair) should be provided by vendor to terminate cable at FRTU end. 5. All DI supply connection is through fuse. Kindly give details of fuse used. Also include spare fuse in panel BOM. 6. Dressing of input, output communication wiring is in vendor scope. 7. Internal cable channels maximum filling shall not exceed 60 percent of the cable channel cross sectional area. 8. Proper cross ferruling shall be used in input output wiring terminations in Mini FRTU and RMU side.

		9. Interconnections signal wiring between DI/DO card shall be made only through terminal blocks Wire type : PVC insulate, Flexible, multi-stranded, untinned, FRLS type and Wire termination: Tinned copper insulated lugs Ferrule: White PVC tubular ferrule with black painting
5.20	Interface wires to FRTU for Meter communication:	Shall be 0.5sqmm 4 core twisted pair shielded and armoured.
5.21	Provision of AC supply	1. shall be 1.5sqmm 3 core armoured cable with 3 pin plug and socket. Droppable link should be used for AC power source termination. It should be mounted in horizontal arrangement. It must be supplied with plastic cover protection to avoid direct access/touching.
5.22	Accessories:	1. Separate MCBs with 10A protection for AC and DC supply. 2. Separate MCBs for Motor supply and Battery charger needs to be provided. 3. Separate AC socket and switch for Laptop power supply. 4. All intra panel wiring and cable to connect the Batteries. 5. Separate Earthing shall be provided for FRTU panel. Separate Ethernet cable and provision of Antennas for communication.
5.23	Communication Package	1. 1 no of Ethernet, 4G GPRS gateway with 1 Ethernet 10/100 BaseT port. 2. 4G GPRS with fallback 3G/2G Gateway should support multi NAT configuration. 3. Driver software. 4. Gateway shall be remotely manageable and configurable. 5. Cellular router should have dual SIM provision. 6. Antenna with low loss RF cable with minimum 5m (extension of antenna cable shall be possible). 7. 4G cellular router should have two antenna connection (MIMO). One is primary cellular antenna and second is diversity antenna. 8. Rated voltage of 4G Modem should be 9V-36V DC. 9. Cable to be supplied for connecting modem with FRTU. GPRS modem should full fill all requirement mentioned in annexure.
5.24	Troubleshooting	FRTU shall have proper diagnosis tool for trouble shooting the failures related to the following from remotely as well as locally. Supplier shall consider all required configuration and diagnosis cable and software with each supplied FRTU. 1. Communication of FRTU with master 2. Communication of MFM with FRTU. Communication of DI/DO.
5.25	Battery and Battery charger	1. 24 VDC SMPS battery charger 230VAC input, 10 Amps Output. 2. FRTU should capable to monitor Battery and battery charger healthiness. It is more preferable if the battery charger have inbuilt feature of Battery health monitoring. 3. Battery and battery charger should capable for all FRTU required operation and Aux.

		supply to Modem & MFM etc. 4. Battery Rating: 24 V DC, 21 AH, SMF-VRLA with chargers suitable for indoor as well as outdoor applications. 5. The batteries are intended to operate the isolators of 11kV/22kV/33kV RMU. The rating of closing coil is in the range from 90 watts to 120 watts. 6. The battery & its charger must withstand average operations of 10nos for max 30 seconds. 7. Power supply package shall meet the power supply requirement for the MFM and modem as well. 8. Suitable provision in FRTU shall be present to supervise/monitor and prevent accidental serious discharge of battery. 9. Battery and battery charger plays very important role in remote operation while restoration of power supply to the customer. Hence to monitor healthiness of battery continuously in services condition, routine tests for battery condition monitoring shall be ensured. 10. FRTU must be able to perform the battery discharge test at a manual set period or period can be pre-defined for auto discharge test. 11. Battery Health Monitoring Unit must be of standard make. 12. Ambient Temperature Operation: -5deg C to +60degC 13. Ambient temperature Storage: -20deg C to +65 deg C. 14. Humidity: 100% RH, non -condensing Adhere to Standards IEC60927-1, IEC61000 with ingress protection of IP20.
5.26	Advanced Features	The FRTU shall support following advance SMART features without any additional hardware. These SMART features will be instrumental in Tata Power's journey towards Digitalization. 1. Possibility for logic development 2. Auto-change over of source functionality Communication between FRTU's
5.27	Cyber security	The FRTU shall support the advanced cyber security standards as per the ISO/IEC/IS standards listed in MoP Order No. 12/34/2020-T&R dated 24th Dec 2021. (ISO 27001/02, IEC62443, IEC 15408, IEC 17025, IEC27019, IEC 61508, IEC 61850,NERC CIP-009-1, and IS 16335.) 1. FRTU should have following feature: 2. User level configuration User wise authentication like system admin, configuration admin, control, operator. 3. Update the firmware/software with the digitally signed OEM validated patches. enables only those ports and services that are required for normal operations. 3. Disabling the DNS 4. Disabling, enabling & configuration the TCP and UDP ports. Door- lock alarm integration with FRTU.
5.28	Training:	Bidder shall give 20 man-day's training on operation and configuration of FRTU and related accessories and aux equipment to TATA power. Training will be the time of Factory acceptance test (FAT) and site acceptance test at site.

		FRTU training course shall cover the following: 1. FRTU operation including data flow. 2. Troubleshooting, identification and replacement of faulty Modules. 3. Preventive maintenance of the FRTU 4. Use of FRTU configuration and Maintenance tool 5. All functional and Diagnostic testing of FRTU Database modification and configuration of FRTU
5.29	General Construction of CT PT unit	The 11kV Metering cubicle shall comprise of 3 nos single phase potential transformer and 3 nos single phase current transformers. The connection between the CT & 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) from any live part to the nearest earth point shall be 190 mm. The metering cubicle shall have explosion Vent shall be as per type Tested design, but not on front & sides. There shall be 3 no's of single phase PTs with star connection & HV neutral earthing to be provided on main earth bus & 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 600 mm. These dimensions may vary slightly taking into consideration the minimum clearances required between phase to phase and phase to earth. 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. 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. Star point of CT & PT should be separate. In secondary side, s2 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. 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 vacuum pressure 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. 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. 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. Core of PT shall be painted with anti-rust paint. 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 & LV and between interlayer of the winding and for end turn shall be of reputed make. However end turns 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 shall be allowed in CT secondary wires. 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. 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. 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 circuit current 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. Separate Metering compartment with toughened glass window for display reading to be provided. The Test Terminal Block (TTB), wiring shall be carried out with source wires from CT & PT at bottom and meters wires at top. Only front connection screw type TTBs should be used and shall be located inside the metering compartment & not on the panel door. TTB shall be of DAV/IMP make & Model name is SSFS (screw type) 50 A rating. The CT/PT secondary circuit should be directly connected to TTB (No links in between). 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 Energy meter should be provided in compartment (Max dimension envisaged for Energy Meter: L X B X D: 305 x 200 x 180 mm). Location of meter shall be at convenient height for easy reading & testing purpose. Adequate space for mounting Modem to be provided in the compartment. It shall be possible to seal the metering compartment for preventing tampering.
5.30	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.

5.31	SLD and configuration	SLD to be provided by the bidder during bidding stage for reference
5.31	Control Cabinet	5.14.1 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. 5.14.2 The wiring of the relay to be done on the TB for its terminals along with communication terminals. 5.14.3 All terminals wires shall have proper identification ferrules and the identification marking provided on TB. 5.14.4 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.
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 Tata Power-' & "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: Note- In case of any conflict on any technical particular in the specification, the stricter

requirement mentioned in the relevant standard shall be valid.

7.1 TYPE TESTS

For RMU:

Sr. No.	Type Tests stipulated as per Tender Spec.	Applicable standard	Acceptance Clause as per IS / IEC
1	PF withstand voltage test & Lightning Impulse voltage withstand test for Switches	IEC62271-103	Cl 6.2 0f IEC62271-103, Cl 7.2.7.2 & 7.2.7.3 of IEC62271-1
2	PF withstand voltage test & Lightning Impulse voltage withstand test for CB	IEC 62271-200	Cl 6.2.6.1 & 6.2.6.2-IEC 62271-200
3	Measurement of contact resistance & Temperature rise test LBS & CB combined unit (if individual then two separate reports required)	IEC 62271-200	Cl 6.4 & Cl 6.5 of IEC 62271-200
4	Short Time current and Peak current withstand tests Main Circuit	IEC 62271-200	Cl 6.6 a & b -IEC 62271-200
5	Short Time current and Peak current withstand tests Earthing Circuit	IEC 62271-200	Cl 6.6 a & b -IEC 62271-200
6	Short Circuit Breaking current tests LBS	IEC 62271-103	Cl 6.101, Table 3 of IEC 62271-103
7	Short Circuit Making current test on LBS	IEC 62271-103	Cl 6.101.1.2, Table3 of IEC 62271-103
8	Short Circuit Making test on Earth Switch	IEC 62271-102	Cl 7.101 of IEC 62271-102
9	Short circuit making & Breaking tests on CB – three phase fault	IEC 62271-100	Cl 6.112.1 of IEC 62271-100
10	Single Phase test on CB	IEC 62271-100	Cl 6.108 of IEC 62271-100
11	Double Erath Fault test on CB	IEC 62271-100	Cl 6.108 of IEC 62271-100
12	Mechanical operation tests on LBS	IEC 62271-200	Cl 6.102.2 - IEC62271-200
13	Mechanical operation tests on CB	IEC 62271-200	Cl 6.102.2 - IEC62271-200
14	Mechanical Endurance tests on LBS	IEC 62271-103	Cl 6.102.2. - IEC 62271-103
15	Mechanical Endurance tests on CB	IEC 62271-100	Cl 6.101.2.4 of IEC 62271-100
16	Mechanical Endurance tests on DS	IEC 62271-102	Cl 7.102.3 of IEC 62271-102
17	Partial Discharge test on CB & LBS	IEC 62271-200	Annex BB , Procedure B of IEC 62271-200
18	Pressure withstand test of gas filled compartment/Tank	IEC 62271-200	Cl 6.103.1 of IEC62271-200
19	IP67 of Gas compartment/Tank	IEC 62271-200	Cl 6.7.1 of IEC62271-200
20	IP54 for outdoor RMU	IEC 62271-200 & IEC- 60529	Cl 6.7.1 of IEC62271-200

21	IAC on Cable Compartment	IEC 62271-200	Cl 6.106 IEC62271-200
22	IAC on Gas Compartment	IEC 62271-200	Cl 6.106 IEC62271-200
23	Cable charging current breaking test	IEC 62271-100	Cl 6.102, 6.105 of IEC 62271-100
24	Capacitive current switching test	IEC 62271-100	Cl 6.111 of IEC 62271-100

Note: The bidder can submit the test report with combination of above listed tests. The test of CB & LBS to be done on combined unit. If bidder submits individual unit CB/LBS tests then both units test detailed test reports are to be submitted.

For Current Transformers:

i) Short time current tests (as per clause 9.6 of IS 2705 Part-1)
ii) Temperature rise test (as per clause 9.7 of IS 2705 Part-1)
iii) Lightning impulse test for current transformers for service in electrically exposed installation (as per clause 9.8 of IS 2705 Part-1)
iv) Determination of errors or other characteristics according to the requirements of the appropriate designation or accuracy class (as per clause 7.1.1 of IS 2705 Part-2)
vi) Instrument Security Current Test (as per clause 7.1.2 of IS 2705 Part-2)

For Potential Transformers

i) Lightning impulse test for voltage transformers for service in electrically exposed installation (as per clause 9.6 of IS 3156 Part-1)
ii) Determination of errors or other characteristics according to the requirements of the appropriate designation or accuracy class (as per clause 8.1.1 of IS 3156 Part-2)
iii) Short circuit withstand capability test (as per clause 9.9 of IS 3156 Part-1)
iv) Temperature rise test (as per clause 9.5 of IS 3156 Part-1)

Type test standard for FRTUs:

7.1.1 IEC 60870-1-2:1989 Telecontrol equipment and systems. Part 1: General considerations. Section Two: Guide for specifications.
7.1.2 IEC 60870-2-1:1995 Telecontrol equipment and systems - Part 2: Operating conditions –
Section 1: Power supply and electromagnetic compatibility.
7.1.3 IEC 60870-2-2:1996 Telecontrol equipment and systems - Part 2: Operating conditions –
Section Environmental conditions (climatic, mechanical and other non-electrical influences).
7.1.4 IEC 60870-3:1989 Telecontrol equipment and systems. Part 3: Interfaces (electrical characteristics)
List of designated laboratories for cyber security conformance testing as per MoP Order No. 12/34/2020-T&R dated 24th Dec 2021 are:

Sr. No.	Equipment	Equipment Communication Protocol	Conformance Standards	Designated Laboratories
1	Remote Terminal Units (RTUs) &	IEC 60870-5 - 101 /	IEC 60870-5- 7 Security extension &	Central Power Research

		PLCs with IEC communications protocols	IEC 60870-5 - 104	IEC 62351 series-: IEC 62351-100-1, IEC 62351-100-3, IEC 62351-5, IEC 62351-8, IEC 62443-4-2	Institute (CPRI), Prof Sir C V Raman Road, Sadashivanagar P O, Bengaluru – 560080, Karnataka

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. Helium leakage detection test in vacuum chamber
5. Sf-6 leakage test.
6. HV withstand test across isolator distance.
7. HV withstand test of control and auxiliary circuits.
8. Voltage Indication Tests on VPIS
9. Breaker Contact Resistance Test
10. Total Trip Time Check Test through Current Injection in primary.
11. IR Value.

For other components, as per applicability, the RTC as per relevant IS/IEC from Original Equipment manufacturer (OEM) shall be required:

1. Cable Boots
2. Routine test report of the Relay
3. CTs
4. PTs
5. Motor

7.3 ACCEPTANCE TESTS

The test mentioned in ITP attached as annexure-4 to this document shall be carried out as acceptance test on random samples. Minimum 10% units (or minimum 2 RMU if lot size is small) of the lot shall be selected for acceptance test shall be selected for testing from each offered lot.

Sr. No.	Tests details	Applicable standard	Acceptance Criteria
1	PF withstand voltage test on LBS and CB combined with switches closed position	IEC62271-103 & IEC 62271-200	Cl 6.2 0f IEC62271-103, Cl 7.2.7.2 & 7.2.7.3 of IEC62271-1 Cl 6.2.6.1 & 6.2.6.2-IEC 62271-200 Should withstand 28kV for 1minute
2	HV withstand test across isolator distance with opened contact of VCB	IEC 62271-200	Should withstand 28kV for 1minute

3	Voltage Indication Tests on VPIS	-	VPIS indication should lit up when voltage applied in all phases
4	Measurement of contact resistance on LBS & CB combined with all switches in closed condition	IEC 62271-200	Cl 6.4 & Cl 6.5 of IEC 62271-200 Total resistance limit shall be maximum 350micro ohm with busbar & switches closed.
5	Dimensional & Visual Checks	-	As per approved drawing and technical compliance document for tender
6	Operational & Interlock Tests of breaker & isolator switches	As per specification	All interlock shall operate without fail in any operation
7	Leak Detection Test at bushing terminals after RMU assembly	IEC 62271-1 clause 8.5	For gas-filled systems tested in factory, the probing test using a sniffing device to be done. The sensitivity of the sniffing device shall be at least 10-8 Pa × m3/s.
8	HV withstand test of control and auxiliary circuits of motorized and Smart RMU		Should withstand 2kV for one minute
9	Insulation resistance test		With open contacts and closed contacts of switches. Should be in Giga-ohms.
10	Other components, as per applicability, the RTC as per relevant IS/IEC from Original Equipment manufacturer (OEM) to be shared for a. cable boot b. Relay c. CT d. motor		OEM reports as per IS and IEC.
11	Relay testing- Relay testing should be done with primary injection kit on installed relay.		Total tripping time with relay & without relay (Without relay shall be done at trip coil directly) timing shall be within specified in specification.

Bidder should have all the requisite testing equipment's to carry out routine and acceptance test mentioned in ITP and following set up to be arranged for RMU relay testing:

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.

For other components, as per applicability, the RTC as per relevant IS/IEC from Original Equipment manufacturer (OEM) shall be required:

1. Cable Boots
2. Routine test report of the Relay

		3. CTs 4. PTs 5. Motor FRTU shall have been type tested as per latest IEC. The bidder shall submit Type test reports for FRTU, Battery/ Battery charger, Industrial grade Modem. The FRTU's Shall have passed type tests carried out by government accredited labs and in accordance with IEC 255-4, 255-6, 801-2 and 801-3 to demonstrate that the FRTU's comply with the ratings stated in these standards. As a minimum, certificates for the following type tests shall be furnished: Other test as applicable are include in the given table 1 a) Dielectric test b) Impulse Voltage withstand test c) High frequency disturbance test d) Thermal requirement test e) Mechanical requirement test f) Limiting dynamic value test g) Contact performance test h) Electromagnetic radiation susceptibility test i) Electrostatic discharge susceptibility test 1. Mini FRTU shall pass manufacture's standard routine test in accordance with the reference standard. In addition to the tests described in the IEC standard, the routine test and test reports of the FRTU's shall include the following: 2. Visual test to confirm that construction and sizing requirement have been met. 3. Rigorous testing of each input and output functions of the FRTU's. This shall include the Fault detection and the disturbance data storage functions as well as the operation of the FRTU time and the date facilities. 4. Verification of the use of the FRTU test equipment for maintenance and testing. 5. Verification that FRTU software and firmware support FRTU sizing and expansion requirements. 6. Verification of successful communication (i.e., protocols) all the required data rates. 7. Testing of secure operation. 8. Verification of the ability to download parameter and configuration data from SCADA master station.
8.0	TYPE TEST CERTIFICATE	The Bidder shall furnish the type test certificates of the 11 KV 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. The type test reports for CTs & PTs shall be conducted at ERDA/CPRI/NABL as per relevant IS & IEC. Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 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. Bids without all type test report shall stand disqualified.
9.0	PRE-	Equipment shall be subject to inspection by a duly authorized representative of the TATA

	DISPATCH INSPECTION	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 places of manufacture to TATA POWER's representatives at all times when the work is in progress. Inspection by the TATA POWER 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. Following documents shall be sent along with material a) Routine Test reports b) MDCC issued by TATA POWER 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 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. If any deviation or anomaly observed at this stage same need to be rectified by bidder at bidders own cost at earliest.
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 60 months from the date of commissioning or 66 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. Warranty shall be applicable on all brought out items like Modem, Battery charger.
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. No single use plastic to be used in packing material. Packing should be done with environment friendly recyclable materials.
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 teams as and when required. To ensure quality of installations bidder shall provide supervision support during impartation. Bidder shall conduct root cause and defect analysis of the failed unit and submit the root cause analysis report within two months of reporting of failure.
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 The bidder shall have in-house helium gas leakage detection system and all RMU main tank shall be checked for any leakages.
16.0	MANUFACTURING ACTIVITIES	The successful bidder will have to submit GTP & Drawing with 15 days from placement of order/OLA for approval. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable).
17.0	SPARES, ACCESSORIES & SPECIAL TOOLS / GAUGES	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 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. Bidder shall provide following spares as commissioning spares along with RMU.

SL. No.	Name of Spare Parts	Required spares with above 80 No. of RMU	Required spares with above 20 No. up to 80 No. of RMU	Required spares up to 20 No. of RMU
1	Breaker Mechanism	4 No's	3 No's	1 No's
2	Isolator Mechanism	4 No's	3 No's	1 No's
3	Trip Coil	5 No's	3 No's	2 No's
4	CT (All types)	6 Sets (1 Set = 3 Nos.)	4 Set	2 Set (1 Set = 3 Nos.)
5	Bolt (For cable connection)	5 Sets (1 Set = 3 Nos.)	3 Set	2 Set (1 Set = 3 Nos.)
6	"L" Key (All Size)	2 Sets	1 Set	1 Set
7	VPIs	10	6	2
8	Manometer	8	6	2
9	24V DC Motor for Isolator	8	6	2
10	RMU PCB Card with Contactors	6	4	2
11	FPI CT	6 Set (1 Set = 3 Nos)	4 Set	2 Set
12	**For Schneider FBX RMU: Control Card for**	**12**	**8**	**4**

			Isolator Function Motorization		
		13	FRTU DI Card	10	6	4
		14	FRTU Power supply module	6	4	3
		15	FRTU DO Card	4	3	2
		16	Battery charger	4	3	2
		17	FRTU CPU Module	4	3	2

THE MANDATORY ITEMS WITH EACH RMU ARE AS BELOW,

1. OPERATING HANDLE.
2. CABLE CONNECTING BOLTS WITH WASHERS
3. CABLE BOOTS FOR 11KV

18.0 DRAWINGS & DOCUMENTS

Following drawings and documents shall be prepared based on TATA POWER 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	√	√	√

The bidder shall submit all the FRTU documents for review and approval which includes the following:

1. FRTU Function design document
2. FRTU Hardware description document & all the documents referred therein to meet all the clauses of the specification.
3. FRTU Test equipment user documents.
4. FRTU user guide
5. FRTU Operation & Maintenance document
6. FRTU Training documentation
7. FRTU database document
8. FRTU I/O list (as build) after the execution
9. FRTU Test procedures
10. Data Requirement Sheet (DRS) of all items
11. Protocol documentation including implementation profile etc.
12. FRTU installation and Layout, GA, BOQ, schematics and internal wiring drawings for each FRTU site

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 approval.

Instruction Manuals: Bidder shall furnish softcopies 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**	RMU:

S.N.	Description	As specified by TATA Power (Options defined in specs)	As furnished by Bidder

		1.0	RMU Category	3Way - 1CB & 2 LBS or 3 LBS 4Way - 2CB & 2 LBS or 4 LBS 5Way - 3 CB & 2 LBS
		2.0	RMU application	Indoor or Outdoor as mentioned in tender
		3.0	Offered Model nos. and OEM type	a. 3Way (NE, I/D or O/D) b. 4Way (NE, I/D or O/D) c. 5Way (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	21 kA for 3 s for 11 kV
		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	3 cycles
		18.0	Closing time of breaker (max.)	3 cycles
		19.0	Breaker Duty Cycle	O – 3min - CO - 3min - CO
		20.0	i. Mechanical endurance for Isolator & Earth Switch	Min 1000 (M0) Operations
			ii. Mechanical endurance for Circuit Breaker	Min 2000 (M1) Operations
		21.0	Electrical operations of at rated current a. LBS/Disconnector b. Earth Switch	To be provided by bidder
		22.0	Temp rise above ambient of +40 deg.	+40 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	Dial type Manometer to be provided for gas pressure indication Contacts to be provided and wires

		pressure (indirect method RFS etc. not accepted)	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 for 11 kV	
	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 304 and welding	Should be of SS 304 and non-corrosive, offered grade of SS to be mentioned. The welding shall be such that there shall be no 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	Copper earth bus-bar should be Min.105 sq.mm	
	35.0	Earthing of main CCT Cables shall be earthed with earth switch with S/C making capacity as per IEC 129. 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	To be provided by bidder	

			interlocks. Fitting of motor at site shall be possible & shall have mechanical interlock	
		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 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	Electrical interlock for live cable presence indicator and operation of earth switch in RMU incomer cable compartment of LBS	To be provided by bidder
		39.0	Make of self-powered Relay & offered model	Ashida,241S 760
		40.0	Paint thickness	Minimum 70 microns
		41.0	The cable compartment doors shall have interlocks such that doors can be opened only with earth switch in closed position	To be provided by bidder
		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 compartment suitability shall be	Suitable for cable sizes as per tender document In the isolators compartment 11kV, 3C X 300 sq. mm and in breaker compartment 11kV, 1CX185 sq. mm / 3C X 300 Sq. mm.	
	47.0	The cable compartment	All cable compartments shall be bottom entry and front opening type only	
	48.0	Size of bimetallic washer in all compartments	Must be suitable for M12 for TPC bolt and bushing sizes with min. 2mm thick.	
	49.0	Height of bushing terminal from base plate	Minimum 900mm for proper termination space for 11 KV	
	50.0	Fault passage indicator	One per RMU in all LBS compartments	
	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 Green for TPC, Mumbai background. As per annexture-2	
	53.0	Main Bus bar Material	Copper	
	53.1	Bus bar Cross Section	Copper earth bus-bar should be Min.105 sq.mm	
	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. 200/1, 5P10	
	56.0	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.	
68.0	Making of earthing operations	All earth operation to be marked with green 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/ 230V AC	230V AC shunt trip coil to be provided. 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 for 11 KV RMU		
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	

GTP FOR FRTU:

Sr.	Parameter	Tata Power Requirement	Bidders' response
1	SCOPE of work	Supply of FRTU panel with power supply and battery backup	
2	Applicable Standard	As per specifications- IEC EN 61000-4-2 ,3,4,5,6 & 8, IEC EN 61000-6-2 & 4, IEC 60950, IEC 60068-2-6 ,27&32	

3	Ambient Temperature	-10 deg to + 55 deg Celsius	
	FRTU Functions		
4	FRTU make	Siemens /Schneider /Ashida	
5	Master Protocol	IEC 104	
6	Slave protocol	MODBUS	
7	Ethernet Interface Port and Data Rate	Ethernet port with Ethernet 10/100 BaseT	
8	Ethernet Port expandability	Optional	
9	Serial Interface Port and Data rate	RJ45 interface Ports with 2400 to 38400	
10	User configurability of the serial Port	Essential	
11	Max I/O tag handling capacity	120	
12	Inbuilt opto-coupler for DI/DO	Essential	
13	Support to battery availability Check	Essential	
14	Local event storage capacity	As per specification: Measurement Events 10000 System Events 1000 Alarms 1000 Normal Events 5000	
15	Retrieval of SOE	Required -Should be able to retrieve in form of excel	
16	Web based monitoring	Essential	
17	FRTU's digital input/output capacity	Capacity of I/O should be sufficient for RMU automation. (Minimum 32 DIs and 8DOs hardwired capacity for 3 way and 4-way RMU).	
18	Feature of remote configuration as well as diagnosis	Essential	
19	Number of Multi master reporting possible with same ASDU	4	
20	Number of Multi master reporting possible with different ASDU	Optional	
21	Support to SNMP	Essential	
22	Automatic Startup after power failure	Essential	
23	Support SSL/VPN based security	Essential and adhere to CEA cyber security guidelines 2021	
24	Support remote restart of FRTU as well as Modem	Essential	
25	Support to Time Synchronization with GPS	Essential	
26	Support to Time	Essential	

	Synchronization with Master		
	FRTU Communication Ports		
27	No of Ethernet Interface Port	Min 1	
28	No. of Serial Interface Port	Min 1	
29	No. of configuration Port	Min 1	
30	Configuration port type	Serial/USB/Ethernet	
	DI Card		
35	Digital Input card threshold voltage	18v dc	
36	Digital Input card sensing voltage	24v dc. Separate fuse protection must be available for each DI point	
	DO Card		
37	DO card rating	The output contacts shall be rated to operate RMU isolator and Breaker motors (3-5Amps/min). Fuse protection must be available to each DO output card.	
38	If External relays required, then Make, Type and rating of the relays	If needed then the output external contacts shall be rated to operate RMU isolator and Breaker motors. OEM of relay to be specified	
	Interface between FRTU and RMU		
39	Consideration of Plug type connector	Essential	
40	Is plug wise arrangement include the bay wise DI & DO	After disconnecting plug, particular bay should isolate	
41	Fuses - 5each type in panel	Essential	
42	Supply to MFM through FRTU panel is considered	Essential	
	Troubleshooting		
43	Availability of diagnostic tool	Essential-should be available from remote as well as local	
44	Failure of Communication of FRTU to master	Essential-should be available from remote as well as local	
45	Failure of Communication of FRTU to MFM	Essential-should be available from remote as well as local	
46	Failure of Communication of FRTU to DI/DO	Essential-should be available from remote as well as local	
	Power Supply		
47	FRTU power supply requirement	As per RMU isolator operation requirement. Closing coil of rating from 90-120 watts	
48	Battery Charger Rating	IP 230 VAC, OP 24 VDC, current: 10 Amps-as per specification with separate MCB	

49	Support to monitoring of battery charger and Battery Health	Essential as per specification	
50	Battery Rating	24 Volts DC, 21 AH	
51	Battery Type	Sealed Maintenance Free, VRLA suitable for outdoor operations	
52	Consideration of the power supply requirement for operation of Isolator of RMU.	Essential as per specification	
53	Consideration of the power supply requirement for Modem.	Essential as per specification	.
54	Consideration of the power supply requirement for MFM.	Essential as per specification	
55	Location of the Battery	Inside panel along with battery charger unit	
56	Make of batteries	Standard brand having good efficiency & life period	
57	Suitable provision in FRTU to supervise and prevent accidental serious discharge of battery	Essential as per specification	
58	Integrated Battery and battery charger monitoring function through FRTU	Essential as per specification	
59	Remote alarm of battery and battery charger monitoring	Essential as per specification AC fail, DC fail, Battery Low, Battery polarity reverse, Battery Over/Under voltage, Charger rectifier fail, etc. internal alarms to monitor	
	Advanced feature		
60	Possibility for logic development within FRTU and between FRTU	Essential	
61	Auto-source change over functionality either inbuilt or through logic programming	Essential	
62	Communication between FRTU's	Essential	
63	Inbuilt auto functions management	Essential-In service and out of service option should be available through FRTU configuration	
64	Hardware required for advanced smart function	NO extra hardware required at FRTU end	
	Training		
65	No. of man-day's considered	20-man days	
	Test and Test certificates		

66	Compliance to type tests	As per spec	
67	Consideration of FAT	Essential	
68	Location of FAT	Essential	
69	Consideration of SAT	Essential	
Cyber security			
74	Cyber security standard	Essential. Must adhere to the standards mentioned in Cyber security Guidelines of Power Sector, 2021	
75	User level authentication	Essential	
76	Different type of user configuration	Essential-system, configuration, admin, control	
77	TCP & UDP Port access authentication	Essential	
78	FRTU Door lock & unlock alarm availability	Essential for physical security	

GTP FOR INDUSTRIAL CELLULAR ROUTER:

Sr.No	Technical requirement	Tata Power requirement	Bidders Response
1.0	**Product Description**		
1.1	Make & Model	Teltonica RUT951 with 5 years OEM warranty.	
2.0	**Radio Interface**		
2.1	Radio Interface	4G LTE, Fallback to 3G, 2G	
2.2	Data interface	Cat 4, Max download 150 Mbps, Max upload 50 Mbps	
2.3	Supported frequency band	Modem should support multiband connectivity with FDD 4G LTE & TDD 4G LTE. It should support Band 1,3,5,8, Band 40 and Band 41. The offered cellular router should support and compatible to the data & radio interface of the network of public mobile service provider in Mumbai city	
2.4	Radio Transmitter Power	Vendor to provide details of radio transmitter power	
2.5	Receiver Sensitivity	Vendor to provide details of receiver channel sensitivity	
2.6	Adjacent Channel Sensitivity	Vendor to provide details of Adjacent channel sensitivity	
2.7	Cellular Module / Chip	Vendor shall give details of cellular chip /Module used along with datasheet	

3.0	**Operating Condition**		
3.1	Operating Temperature	-20 C to 70 C	
3.2	Operating Humidity	5 % to 100 % (non -condensing)	
3.3	Power Consumption	Vendor to provide power consumption for idle and max during data transmission	
3.4	Storage /transport temperature	-40 to +85 C	
3.5	MTBF	Vendor to provide details of MTBF	
3.6	Protection from pollution	Vendor shall provide design details such as protective paint /conformal coating on MCB, high grade electronic components use to protect from environmental pollution	
4.0	**System Characteristics**		
4.1	CPU	Vendor to provide make & technical details of CPU used. Vendor should also attach technical data sheet of CPU. CPU usage should not cross 60 % in typical operating & maintenance condition	
4.2	RAM	Vendor to provide details of memory type, Speed & Size. Usage of memory should not cross 60 % in typical operating & maintenance condition	
4.3	Flash Storage	Vendor to provide details of flash storage Memory Provision to store system logs, event logs, configuration file	
5.0	**Mechanical Construction**		
5.1	Dimension (W X H X D)	Vendor to provide details of Dimension (W X H X D)	
5.2	Weight in Kg	Vendor to provide details of Weight in KG	
5.3	Housing	Metal Preferred Aluminium alloy having better heat dissipation & ruggedness	
5.4	Mounting	DIN rail Mounting	
5.5	Degree of Protection	IP 30	
6.0	**Interface/Port Type**		
6.1	Ethernet	Minimum 2 X RJ45 Port ethernet, Speed 10/100 Mbps auto negotiable having status LED indication. Port should be	

		configurable as LAN /WAN as required	
6.2	Cellular interface	Cellular router should have Dual SIM provision.	
6.3	Ethernet Cable (CAT 6)	Vendor to provide Ethernet Cable (CAT 6) minimum 1.5 M	
7.0	**Software Features / Supported protocols**		
7.1	Network Protocols	TCP/IP, UDP/IP, HTTP, ARP, DHCP, ICMP, SNMP, V1/V2 &V3, NTP, SSL/TLS	
7.2	Routing	Astatic Routing, RIP 1 &2, OSPF V2 &V3	
7.3	VPN	Open VPN, IP Sec, L2TP, PPTP, GRE	
7.4	Alarm Message	Device shall have alarm notification on SNMP trap	
7.5	Management /Monitoring	Cellular router should shall support Local /Remote management through web HTMLS, SSHP & Telnet 4. It shall support monitoring through system logs & SNMP version V1/V2 & V3. Notification & command shall be possible over SMS. Firmware upgradation through Web, backup & restore of configuration shall be possible	
7.6	Operating System	Vendor to give the details of operating system & its Version	
7.7	Application	Vendor to give the details of application & package installed in router	
7.8	AT Command Support	YES /NO	
7.9	Scheduled rebooting	Device should be capable to program auto rebooting as per configured scheduled configured scheduled time	
7.10	Watch dog feature	Router Shall have feature of tracking data connectivity status by periodic ping test and switchover on backup. Cellular /WAN interface if tracking ping test fail	
7.11	Factory Reset	Provision of Resetting the device for factory configuration	
7.12	Diagnosis Feature	Device Shall support real time diagnostic such as active	

		connection, traffic on interfaces	
8	**Security**		
8.1	Security	HTTPs, SSH, Authentication with RADIUs or TACACS +, activate cellular interface with SMS, Ethernet 802 .1X (EAP-PEAP/MsCHPv2 or EAP -TLS	
8.2	Authentication	User Management (local, RADIUS, TACACS +, Mixed)	
8.3	State inspection firewall	Static firewall IPv4 / IPv6 with incoming and forwarding ruleset, DoS protection, IP /Port/Protocol filtering, NAT	
9	**Antenna**		
9.1	No Of Antenna	The 4 G Cellular Router Should have two antenna connection (MIMO). One is primary cellular antenna & second is diversity antenna (MIMO)	
9.2	Cable Length	Cable should have Low loss RF Cable with minimum 5 M	
9.3	Type of Antenna	Antenna Should be Omni directional with high gain (High gain ≥5)	
9.4	Construction of antenna	It should be Steady, good quality material, water/ weather proof having adequate gold plate connector compatible with cellular router antenna. Port. It should be suitable mounting arrangement to installed indoor	
9.5	Frequency Band, impedance & Polarization	Vendor Shall provide the details of frequency Band. Antenna should be compatible with offered device & network service provide with frequency band, port impedance & radio signal polarization	
9.6	VSWR	Vendor Shall provide details of VSWR	
9.7	Gain of antenna	Vendor Shall provide Gain details of primary & secondary antenna	
9.8	Input /Output Resistance	Vendor Shall provide details of input /output resistance	
9.9	Polarization Form	Vendor Shall provide details of Polarization Form	
9.10	Efficiency	Vendor Shall provide details of Efficiency	
9.11	Return Loss	Vendor Shall provide details of Return Loss	

9.12	Impedance	Vendor Shall provide details of Impedance	
10	**Power Supply**		
10.1	Power Supply	9 V to 60 V dc	
10.2	Connector Type	Router Should have preferable screw type firm connection. It should have reverse polarity protection & surge protection	
11	**Status & diagnostics indicator**		
11.1	LED indicator	Vendor to provide details of status & diagnostics indicator. (Power- ON & OFF, ERR- Error Red, Signal, network, SIM status)	
12	**Certification: - IEC**	**Specified as below or equivalent to international Standard**	
12.1	Electrostatic discharge immunity test	IEC EN 61000-4-2	
12.2	Radiated, radio-frequency, electromagnetic field immunity test	IEC EN 61000-4-3	
12.3	Electrical fast transient/burst immunity test	IEC EN 61000-4-4	
12.4	Surge immunity test	IEC EN 61000-4-5	
12.5	Immunity to conducted disturbances, induced by radio-frequency fields	IEC EN 61000-4-6	
12.6	Power frequency magnetic field immunity test	IEC EN 61000-4-8	
12.6	Immunity for industrial environments	IEC EN 61000-6-2	
12.7	Emission standard for industrial environments	IEC 61000-6-4:2018	
12.8	Information technology equipment –Safety	IEC 60950	
12.9	Environmental testing-Vibration (sinusoidal)	IEC 60068-2-6	
12.10	Environmental testing-Shock	IEC 60068-2-27	
12.11	Environmental testing-Free Fall (withdrawn)	IEC 60068-2-32	
13.0	Country of manufacturing	Vendor to provide Country of manufacturing details	
14.0	Service centre in India	Vendor to provide details of Service centre in India	

15.0	Regulatory compliance	Vendor shall confirm that offered product is compiled & certified by all Indian government bodies related to telecommunication/ wireless communication (WPC, DOT) to operate &user this product in country. Vendor to share compliance certificate of the same such as MTCTE Certificate	
16.0	Surge protection /electrical isolation	It should be available on all Ethernet communication port & power supply input. vendor shall share certification	
17.0	Warranty	60 months. Repair/Replacement must be with 15days from the date of failure report	

GTP FOR BATTERY & CHARGER:

	Battery & Charger GTP		
Sr.No	**Technical requirement**	**Tata Power requirement**	**Bidders Response**
1.0	Scope	The battery & battery charger are intended for operating 33kV/22kV/11KV RMU isolators. The rating of closing & opening coils is from 90-120 watts. Operating time 50ms Max. The battery should capable of withstanding normal load of FRTU & operational load of RMU isolators	
2.0	Average Number of Operations	Minimum 10 nos for 30 sec	
3.0	Standards	**IS 1885/IEC 600504, IS -15549/2005**	
4.0	Climate	Must able to operate efficiently considering hot & humid climate of Mumbai, India region. The battery shall be capable of operating satisfactorily in outdoor applications when it is housed in a Cubicle between 10 deg. C and 65 deg.C and in locations where the relative humidity between 30% to 100%	
5.0	**Battery Ratings**		
5.1	Voltage	24 VDC specified at 27 deg.C.	

5.2	Battery Type	SMF, VRLA with chargers of conventional type	
5.3	Voltage/cell	2 volts	
5.4	Capacity of Batteries	21 AH,10Amps	
5.5	Connecting cables	Cable size selection should provide the lowest voltage Drop possible between battery system and operating Equipment.	
5.6	Method of charging	Constant voltage method and current limit (variable Current)	
5.7	Efficiency	Not less than 90% at full rated load	
6	**Battery Charger Rating**		
6.1	Battery Charger type	Constant Voltage and Current limiting charger. **Charger with inbuilt battery health monitoring is highly preferable**. Preferred make Gogate	
6.2	Charger Input Voltage	Single phase (2 wire) voltage 250V AC +30% to -20% Frequency 50Hz ± 5%.	
6.3	**Charger Output**		
6.3.1	Regulation	± 1%	
6.3.2	Charger current	10 Ampere	
6.3.3	Efficiency	Not less than 85% at full rated load	
6.3.4	Current limit	110% of rated load	
6.3.5	Insulation	Not less than 5 mega Ohms. i. between DC output terminals and AC input terminals. ii. Between AC input terminals and earth	
6.3.6	Indication	The charger shall have suitable indicators to visually know its mode of operation. Charger indication as below must be available: Mains on (Red LED), Charger on (Yellow), Boost on (Yellow LED), Float on (Green LED) and Battery reverse polarity (Red LED), O/p DC fuse blown (Red/ LED) LED lamp indication. (LED colours can be changed)	
6.3.7	Protection	Input single pole MCB's for AC & DC of 10 Amperes separate for battery & charger. The battery charger must include protections like: i) AC input MCCB & ELBS with input ON/OFF switch and fuses/ contactor. ii) DC output MCCB with output ON/OFF switch and fuses. iii) Current limit protection, soft start features, surge suppressor. iv) Fast semiconductor fuses for rectifier bridge.	

		v) Charger over load / short circuit vi) Battery polarity reverse, Battery Over/Under voltage, Charger rectifier fail, etc.	
6.3.9	Battery & charger Alarms	Potential free contacts must be available to integrate with SCADA for abnormality if any. Most preferred alarms are like: AC supply fail DC supply fail Battery Low Battery Fail Battery Charger fail Battery polarity reverse	
6.3.8	Cooling	External exhaust fan (Optional)	
6.4	Climate	Must able to operate efficiently considering hot & humid climate of Mumbai, India region. The battery shall be capable of operating satisfactorily in outdoor applications when it is housed in a Cubicle between 10 deg. C and 65 deg.C and in locations where the relative humidity between 30% to 100%	
6.5	Wiring	The internal wiring of the charger shall be carried out with PVC insulated 650V grade standard copper conductor. The control wiring shall be carried out with 2.5 Sq.mm copper conductors.	
6.6	Accessibility	All the important components of the charger must be easily accessible for maintenance, repair, replacement in case of trouble without giving interruption to total D.C. supply as far as possible.	
6.7	**Test**		
6.7.1	ACCEPTANCE AND ROUTINE TESTS	All acceptance and routine tests as stipulated in the relevant standards shall be carried out by the bidder. The test certificates are to be furnished for approval.	
6.7.2	Acceptance test for battery charger with batteries	1. Marking 2. Verification of dimensions. 3. Regulation test. 4. Ripple test, 5. Megger values and HV Test. 6. Test for battery discharge capacity.	
6.7.3	Type Tests:	Following shall constitute type tests in respect of chargers and batteries. 1. Insulation resistance 2. High voltage test at 1.5KV for 1 minute 3. Regulation (Load & Line) 4. Dry heat test at 55°C for 16 hrs with full load on as per IS: 9000 part 3/Sec5/1977. 5. Damp heat test at 55°C and at 95%	

		RH for two cycles as per IS: 9000 part 5/Sec1/1981 6. Cold test at -10°C for 4 hrs as per IS: 9000 part 2/Sec4/1977	
7	Drawings	Detailed drawings, circuit details and technical literature of batteries shall be enclosed to the offer. Tenders not accompanied by the above are liable for rejections, Trouble shooting charts shall be supplied with each unit to trace faults in the charger with voltage and Resistances to be measured at various test joints.	
8	painting	The box shall be painted with powder coating with siemens grey colour.	
9	Warranty	The batteries supplied must have guarantee for a period of minimum 36 months from date of supply. The Battery Charger supplied should have the guarantee for a period of minimum 60 months from the date of supply. The replacement of both must be supplied within 15 days of complaint raised.	

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

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

Rev No.	Prepared By & Date	Checked By & Date	Approved for Issue By & Date
R00	Yash M. Mane	Shreyas D. Mane	Ravindra R. Pote
	01/12/2025	01/12/2025	01/12/2025

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

Annexture-2

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.

Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

Centre aligned - Stacked (Preferred)

.

Annexture-3

The reference sample MIMIC used for earthing color identifications.

Annexture-4: Inspection Test Plan

Sr. No.	Type Tests stipulated as per Tender Spec.	Applicable standard	Acceptance Clause as per IS / IEC
1	PF withstand voltage test on LBS and CB combined with switches closed position	IEC62271-103 & IEC 62271-200	Cl 6.2 0f IEC62271-103, Cl 7.2.7.2 & 7.2.7.3 of IEC62271-1 Cl 6.2.6.1 & 6.2.6.2-IEC 62271-200 Should withstand 28kV for 1minute
2	HV withstand test across isolator distance with opened contact of VCB	IEC 62271-200	Should withstand 28kV for 1minute
3	Voltage Indication Tests on VPIS	-	VPIS indication should lit up when voltage applied
4	Measurement of contact resistance on LBS & CB combined with closed switch condition	IEC 62271-200	Cl 6.4 & Cl 6.5 of IEC 62271-200
5	Dimensional & Visual Checks	-	As per approved drawing and technical compliance document for tender
6	Operational & Interlock Tests of breaker & isolator switches	As per specification	All interlock shall operate without fail in any one operation
7	Leak Detection Test at bushing terminals after RMU assembly	IEC 62271-1 clause 8.5	For gas-filled systems tested in factory, the probing test using a sniffing device to be done. The sensitivity of the sniffing device shall be at least 10-8 Pa × m3/s.
8	HV withstand test of control and auxiliary circuits.		Should withstand 2kV for one minute
9	Insulation resistance test		With open contacts and closed contacts of switches. With be in Giga-ohms.
10	Other components, as per applicability, the RTC as per relevant IS/IEC from Original Equipment manufacturer (OEM) to be shared for a. Cable boot b. Relay c. CT d. PT e. motor		OEM reports as per IS and IEC.
11	Relay testing- Relay testing should be done with primary injection kit on installed relay.		Total tripping time with relay & without relay (Without relay shall be done at trip coil directly) timing shall be within specified in specification.

Annexure -5

Signal addressing

S.No.	Alarm Description	Equipment	Normal state	Alarm state	INFO type	IOA
1	Local Remote S/W status	FRTU	Remote	Local	SPI	1
2	IC1 IS status	RMU#1	Close	Open	DPI	501
3	IC1 ES status		Open	Close	DPI	502
4	IC2 IS status		Close	Open	DPI	503
5	IC2 ES status		Open	Close	DPI	504
6	OG#1 CB status		Close	Open	DPI	505
7	OG#1 ES status		Open	Close	DPI	506
8	OG#2 CB status		Close	Open	DPI	507
9	OG#2 ES status		Open	Close	DPI	508
10	LT#1 CB status		Close	Open	DPI	509
11	LT#2 CB status		Close	Open	DPI	510
12	IC1 IS status	RMU#2	Close	Open	DPI	511
13	IC1 ES status		Open	Close	DPI	512
14	IC2 IS status		Close	Open	DPI	513
15	IC2 ES status		Open	Close	DPI	514
16	OG#1 CB status		Close	Open	DPI	515
17	OG#1 ES status		Open	Close	DPI	516
18	OG#2 CB status		Close	Open	DPI	517
19	OG#2 ES status		Open	Close	DPI	518
20	LT#1 CB status		Close	Open	DPI	519
21	LT#2 CB status		Close	Open	DPI	520
22	Motor supply	BC	Normal	Fail	SPI	3
23	Battery Charger		Normal	Fail	SPI	4
25	Battery		Normal	Alarm	SPI	5
26	Equipment fault		Normal	Alarm	SPI	6
27	AC Supply		Normal	Fail	SPI	7
28	FPI#1	IS 1	Reset	Operated	SPI	8
29	FPI#2	IS 2	Reset	Operated	SPI	9
30	ISO 1 VPIS status	VPIS	Reset	Operated	SPI	10
31	ISO 2 VPIS status	VPIS	Reset	Operated	SPI	12

Control						
S.N.	**Alarm description**	**Equipment**	**Normal state**	**Alarm state**	**INFO type**	**IOA**
1	IC1 IS Control	RMU#1	Close	Open	DCO	1001
2	IC2 IS Control		Close	Open	DCO	1002
3	IC1 IS Control	RMU#2	Close	Open	DCO	1005
4	IC2 IS Control		Close	Open	DCO	1006
5	FPI#1	FPI	Reset	Operated	SCO	2001
6	FPI#2		Reset	Operated	SCO	2002

AGREED TERMS & CONDITIONS (ATC)- Indigenous Supply

Bidder's Name: M/s. _____

RFQ ref. No. CC26VJS030

Enquiry Description: OLA for 11 kV RMU with CTPT and FRTU for Mumbai Distribution

Bidder's Offer Ref.: *<pls mention your offer reference no here>*

1. SUBMISSION OF THIS DOCUMENT DULY SIGNED, SHALL CONSTRUE THAT ALL THE CLAUSES OF AGREED TERMS AND CONDITIONS HAVE BEEN ACCEPTED BY YOU. PURCHASE ORDER, IF ANY, SHALL BE GOVERNED BY THE CONFIRMATION PROVIDED HERE.

S. No.	Description	BIDDER'S RESPONSE
A	**TECHNICAL**	
1	Acceptance of technical specifications / scope of work including General/Technical notes as per Tender specification **In case of deviation, confirm that the same has been furnished separately.**	
2	Confirm data sheets duly filled in have been submitted, wherever required as requested in Technical specification/ Scope of work	
B	**COMMERCIAL**	
3	**Bid Validity** Confirm Bid Validity 180 days from date of bid submission.	
4	**Firm price:** No Price Variation is applicable on this tender	
5	**Delivery Terms** Confirm delivery terms DAP (FOR) basis for any spares/consumables	
6	**Packing & Forwarding** Confirm that Packing & Forwarding charges including Special Packaging Requirement (if applicable) are included in base price	
7	**Freight Charges** Confirm that Freight charges are included in base price	
8	**Taxes and duties:** GST: __% HSN/ SAC Code: Any other tax as applicable:	
9	**Price Reduction / LD / SLA**: Confirm that Bidder agrees to the LD charges as specified in GCC Supply	
10	**Delivery Period:** Mention the delivery timelines from the date of order	
11	**Payment Terms Acceptance:** Confirm acceptance to the Payment terms as specified in GCC Supply.	
12	**Warranty / Latent Defect Liability Period:** Confirm that Bidder agrees to the clause as specified in Technical specs	
13	**Contract Performance Bank Guarantee**: Confirm acceptance to Submission of Unconditional Bank Guarantee as per GCC Supply.	

S. No.	Description	BIDDER'S RESPONSE
14	**Testing and Inspection charges (if applicable):** Confirm the quoted are Inclusive of all testing and inspection charges as per Tender specification	
15	**Compliance to other terms & conditions** Acceptance of all other terms & conditions as forming the Part of the RFQ/ Tender document and communicated vide subsequent addendum(s) if any: **In case of deviation, confirm that the same has been furnished separately.**	

*Bidders / Vendor shall note that in case of any contradiction between the Agreed Terms and Conditions (ATC); and the Bidders offer, the ATC shall prevail.

Bidder's Authorised Signatory and stamp:

Name:

The Tata Power Company Limited is hereunder referred to as the "Purchaser" or "Company". The person, firm or company selling the goods, the subject of this purchase order is referred to as "Vendor" or "Contractor". The subject of this purchase order is hereinafter referred to as the "Material(s)"or "Goods".

The Contract shall mean the contract as derived from the following:

1. Purchase Order (with 'Commercial Notes' and Annexures to the Purchase Order referred thereon)
2. Technical Specifications.
3. General Terms & Conditions

The documents including all reference document (s) and Annexures forming the Contract are to be read together as a whole and are to be taken as mutually explanatory.

1. Price:

Unless otherwise specifically stipulated, the price shall be firm and shall not be subject to escalation for any reason till the validity of this Contract.

Unless otherwise specifically stipulated, the price shall be inclusive of road/ rail worthy water-proof packing & forwarding charges up to effecting delivery at FOT/ FOR despatch point, GST and shall also be inclusive of inland freight, terminal taxes and entry taxes as leviable on the transportation or entry of goods into any local area limits pursuant to the Contact.

2. Taxes and Duties:

2.1 The Contract Price shall be inclusive of all taxes, duties, including but not limited to GST or any local taxes, levies imposed by State/Central/Local governments

2.2 Taxes as mentioned in the Contract Price or Price Schedule shall be paid to the contractor subject to the Contractor complying with all the statutory requirements and furnishing the relevant documents including error free invoices containing detailed break-up of the taxes

2.3 However the payment of GST or local levies shall be restricted to the total amount as indicated in the price schedule.

2.4 Any duties, levies or taxes not mentioned in Contract Price or Price Schedule but applicable as per any statute (s) shall be deemed to be included in the Contract price and shall be to the account of the Contractor.

2.5 Any statutory variation in duties, levies or taxes if applicable and specified in this Contract till the scheduled date for supply of Goods and limited to direct invoices of the Contractor shall be to the account of Purchaser. The Contractor shall have the obligation to provide the necessary documentary evidence / supporting by way of gazetted notifications etc. to prove the change in such levies or taxes between the due date of submission of the Bid and the scheduled date of supply of goods to claim the difference.

2.6 The Contractor shall pass on to the Purchaser all the benefits of either reduction in tax rates, exemptions, concessions, rebate, set off, credits etc. or introduction of new tax rates exemptions, concessions, rebate, set off, credits etc. pertaining to all taxes, duties, imposts, fees and levies in respect of the supplies of Goods or performance of obligations under the contract. This would specifically include reduction of tax rates as a result of statutory changes or judicial rulings.

2.7 Any other taxes, levies and duties not mentioned in Contract Price or Price Schedule but applicable as per any statute (s) or introduction (omission) of new taxes, levies and duties shall be deemed to be included in the Contract Price and shall be to the account of the Contractor.

2.8 For facilitating availment of a credit, set-off, rebate, drawback or like benefit available to the Purchaser, the Contractor will facilitate the Purchaser by providing the necessary documentary and/or procedural support. In any process of assessment or re-assessment, of taxes payable by the Purchaser. Wherever expressly agreed the purchaser would provide the statutory form 'C' to the seller for availing the concessional rate of Central sales tax.

2.9 The Contractor shall bear and pay all the costs, liabilities, levies, interest, penalties in respect of non-compliances of any legal requirements as per various statutory provisions. The contractor shall keep the owner indemnified at all times from any tax liability, interest, penalties or assessments that may be imposed by the statutory authorities for non-compliances or non-observation of any statutory requirements by the Contractor.

2.10 Purchaser shall pay the invoices to the Vendor after necessary deductions as prescribed under the applicable law, income – tax or other

deductions under the State Tax laws as may be applicable to the Contract.

3 Packing details:

Packing details: The material must be packed in suitable packing to suit the mode of transport and to ensure its safe receipt at point of delivery. Any damage to material noticed at the time of delivery at site, due to improper packing or any other reason whatsoever shall be the responsibility of the Vendor. Such damaged goods shall be replaced within 14 days from intimation from the Purchaser.

4 Transportation and Unloading at Site:

The Vendor shall deliver the Material(s) at site/ Stores as per the delivery address specified in the Purchase order. The unloading at delivery shall be organised by the Purchaser unless otherwise specified. The receipt of the material/ equipment is subject to inspection and rejection if Material(s) is found unsatisfactory or any of the clauses under this purchase order are violated.

5 Insurance:

Unless otherwise specified, Purchaser will be responsible to obtain transit insurance for the Material(s). The Vendor shall intimate the Order Manager (as mentioned in the Purchase Order) along with Invoice, packing list, the Railway Receipt/Truck or Lorry Receipt etc. immediately after the consignment is booked, at the e-mail id mentioned in the Purchase order.

6 Payment Terms:

100% payment shall be made within 60 days from the receipt and acceptance of the material at the Consignee Stores/ Site/ Location as per the Contractual terms and conditions herein.

7 Bills and invoice:

The tax invoices should contain the details to comply with the GST Law. The supplier shall:

i) Furnish (electronically) and communicate to the Owner, the details of Goods or Services supplied by the 10th of the month succeeding the said tax period,
ii) Upon discovery of any discrepancy, rectify it and shall pay the tax and interest thereof,
iii) Furnish the returns (electronically), for the inward and outward supplies of Goods and/or Services, before the specified dates as per the GST Law,
iv) Communicate the tax paid, credits etc. as and when credited.
v) The Invoice should clearly state the description of the goods, quantity, sale price, tax %, and tax amount;
vi) The Invoice should be signed by an Authorized Signatory.

Bills/Invoices in the name of The Tata Power Company Ltd. with packing lists in triplicate shall be forwarded along with the equipment.

Contractor to furnish GST Registration no. in all invoices as well as Purchaser's (Tata Power's) GST no.

8 Transfer of Title and risk:

The transfer of property and risk of Material(s) shall be deemed to take place as follows:

a. For delivery F.O.R. or F.O.T. despatch point: Transfer of property on handing over the Material(s) to the carrier against receipt of clean Railway Receipt/Truck or Lorry Receipt and such receipt having been handed over to Purchaser. However, the risk of loss shall pass to the Purchaser on delivery of goods at the specified destination.

b. In case the Material(s) are procured by the Vendor from sub-vendors on receipt of duly endorsed documents of title to the goods.

9 Contract Performance Bank Guarantee (In case applicable):

9.1 The Vendor shall within 15 days of issue of this Purchase Order furnish an unconditional irrevocable bank guarantee duly stamped and strictly as per the prescribed format of the Purchaser from any nationalized bank or any scheduled bank having a branch in Mumbai and approved by the Purchaser for a sum equivalent to 10% of the Total value of Order valid for a period not less than 6 months from the expiry of the Warranty period.

9.2 Irrespective of the performance demonstrated as part of the Factory Acceptance Tests Take-over tests / Performance Tests etc, the Purchaser may call for re-validation of performance of the system during the performance guarantee period by conducting fresh performance tests if in its opinion, the

system is not able to deliver the designed performances based on its operational performance results. If the equipment fails to prove the performance during such performance tests, the Purchaser may allow the Vendor to either rectify the system by addition / modification of equipment etc at the Vendor's costs & risk to restore the performance levels. Failure to rectify the system to achieve the designed performance levels may result in imposition of penalties including revocation of the Performance Bank Guarantee and forfeiture of the entire amount under the Performance Guarantee.

9.3 In case the Vendor fails to furnish the requisite Bank Guarantee as stipulated above, then the Company shall have the option to terminate the contract besides other contractual remedies.

10 Price reduction:

10.1 The Vendor agrees that time of supply of Material(s) is of prime importance.
If the Vendor fails to supply Material(s) before the respective scheduled / fixed date for supply. Company may without prejudice to any other right or remedy available to the Company: -

10.1.1 Recover from the Vendor ascertained and agreed, genuine pre-estimate liquidated damages, and not by way of penalty, a sum equivalent to 1% (of total value of order) per week or part thereof for each week's delay, beyond the scheduled supply date each subject to maximum of 10% of the total order value, even though the Company may accept delay in supply after the expiry of the scheduled supply date. The Company may, at its discretion, set off the aforesaid amounts from any other amounts owed by the Company to the Vendor or recover such amounts in other manner as may be permissible under applicable laws.

10.1.2 Arrange to get supply from elsewhere on account and at the sole risk of the Vendor, such decision of the Company being final and binding on the Vendor; or

10.1.3 Terminate the contract or a portion of supply of the supply work thereof, and if so desired, arrange for the supply in default by the Vendor to be attained from elsewhere at the sole risks and costs of the Vendor.

10.2 Liquidated damages for performance shortfall (if applicable) shall be specified in the Technical Specifications.

10.3 The Liquidated Damages referred in this clause 10 may be recovered by the Company from the Vendor as set off against any monies owed by the Company to the Vendor or in any other manner permissible under applicable laws.

11 Warranties:

11.1 Materials and Workmanship: Vendor shall fully warrant that all the stores, equipment and component supplied under the order shall be new and of first class quality according to the specifications and shall be free from defects (even concealed fault, deficiency in design, materials and workmanship).

11.2 Should any defects be noticed in design, material and/or workmanship within 12 months after the Material(s) or any portion thereof as the case may be have been commissioned or for 24 months from the date of delivery, whichever period concludes earlier. Purchaser shall inform Vendor and Vendor shall immediately on receipt of such intimation, depute their personnel within 7 days to investigate the causes of defects and arrange rectification/ replacement/modification of the defective equipment at site, without any cost to Purchaser within a reasonable period. If the Vendor fails to take proper corrective action to repair/replace defects satisfactorily within a reasonable period, Purchaser shall be free to take such corrective action as may be deemed necessary at Vendor's risk and cost after giving notice to the Vendor, including arranging supply of the Goods from elsewhere at the sole risk and cost of the Vendor.

11.3 In case defects are of such nature that equipment shall have to be taken to Vendor's work for rectification etc., Vendor shall take the equipment at his costs after giving necessary undertaking or security as may be required by Purchaser. After repair Vendor shall deliver the equipment at site on freight paid basis. Any taxes applicable in relation to this repair shall be to the Vendor's account. All risks in transit to and fro shall be borne by the Vendor.

11.4 Equipment or spare parts thereof replaced shall have further warranty for a period of 12 months from the date of acceptance.

12 Quality, Testing, inspection, installation:

12.1 All Material(s) supplied under this Contract shall be new and unused.

12.2 Wherever a specific Quality Assurance Plan is provided with the Request for Quotation (RFQ) or agreed as part of the commercial/ technical discussions, the same shall be binding on the Vendor.

12.3 The material shall be inspected

a. At consignee end by Purchaser.

b. At factory premise of the Vendor/ sub-vendor by Purchaser or third party duly nominated by Purchaser. The Vendor shall extend all necessary co-operation to Purchaser/ third party inspector carrying out the inspection. The Inspector(s) shall have the right to carry out the inspection or testing, which will include inspection and testing of the raw materials at manufacturers shop, at fabricators shop and at the time of actual despatch before and/or after completion of packing.

12.4 The Vendor will inform Purchaser at least eight (8) days in advance of the exact place, date and time of tendering the Material(s) for required inspection and provide free access to the Inspector(s) during normal working hours at Vendor's or his/ its sub-Suppliers works, and place at the disposal of the Inspector(s) all useful means for undertaking the Inspection, checking the results of tests performed, marking the Material(s), getting additional tests conducted and final stamping of the Material(s).

12.5 Even if the inspection and tests are fully carried out, the Vendor shall not be absolved from its responsibilities to ensure that the Material(s), raw materials, components and other inputs are supplied strictly to conform and comply with all the requirements of the Contract at all stages, whether during manufacture and fabrication, or at the time of Delivery as on arrival at site and after its erection or start up or consumption, and during the defect liability period. The inspections and tests are merely intended to prima facie satisfy Purchaser that the Material(s) and the parts and components comply with the requirements of the Contract.

12.6 *All costs associated with the inspection shall be included in cost of Material(s).*

12.7 Original material test certificate/ performance test certificate/ fitment certificate/ test reports etc. relevant/ applicable as per the specifications/ standards shall be dispatched along with the material supply failing which the material may be rejected.

13 Rejection:

13.1 Rejected goods shall be removed and replaced within 14 days of the date of communication of rejection.

13.2 Claim in respect of breakage/shortages in any cases shall be referred on the Vendor within ninety (90) days from the date of receipt of Goods by the Purchaser which shall be replaced/made good by the Vendor at his own cost. All risk of loss or damage to the material shall be upon the Vendor till it is delivered to the purchaser/consignee.

14 **General Indemnity:**

The Vendor shall indemnify and keep the Purchaser indemnified from and against any and all claims, costs, liabilities (financial), litigations, compensations, judgments, expenses or damages (including attorney's fees and other related expenses) arising out of any breach or alleged breach of any of the conditions of this Contract, performance of the obligations hereunder, or any representation or misrepresentation made by the Vendor or any third party with regard to the subject of this Contract.

15 **Indemnity against IPR:**

The equipment, system, drawings, and other materials that shall be supplied against the order will become the Purchaser's property. Without limitation of any liability of whatsoever nature, the Purchaser shall be indemnified and kept indemnified against any claim for infringement or breach of any of the statues, rules & regulations by the use of or sale of any article or material supplied by the Vendor. The indemnity shall include any infringement of patent, trade mark, design, copyright or other property rights whether in Country of Origin, or elsewhere resulting from the Vendor's design, manufacture, use, supply or re-supply & would also cover use or sale of any article or material supplied by the Vendor to the Purchaser under the Purchase Order. The Indemnity shall cover any claim/action taken by a third party either directly against the Purchaser or any claim/action made against the Vendor & where under the Purchaser is made liable. The

Indemnity shall be for losses, damages, and costs including litigation costs, attorney fees etc incurred by the Purchaser in relation to the Purchase Order.

16 Latent Defects Liability period (if applicable):

Notwithstanding the inspections, acceptance tests, quality checks etc carried out by the Vendor and witnessed/accepted by the Purchaser, the Vendor shall further warrant the equipment for any latent defects in its design, material or workmanship against the specifications set forth and shall make good any such defects by way of repair or replacement of the part or whole of the defective product at its own cost & risks as and when such latent defects are observed and intimated by the Purchaser and intimated to the Vendor within 36 months of completion of warranty period.

17 Force Majeure:

17.1 In the event of either party being rendered unable by force majeure to perform any obligation required to be performed by it under this Contract the relative obligation of the party affected by such force majeure shall, after notice under this articles be suspended for the period during which such cause lasts. The term 'Force Majeure' as employed herein shall mean acts of God, wars (declared or undeclared), riots or civil commotion, fire, floods, and acts and regulations of the Government of India or State Government or any of the statutory agencies. Both the party shall pay to the other party, the amount payable upon the date of the occurrence of such force majeure.

17.2 Upon the occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid, thereby shall notify the other party in writing immediately but not later than twenty four (24) hours of the alleged beginning and ending thereof giving full particulars and satisfactory evidence in support of the claims.

17.3 During the period, the obligations of the parties are suspended by force majeure, the contractor shall not be entitled to payment of any rate.

17.4 In the event of the force majeure conditions continuing or reasonably expected to continue for a period more than thirty (30) days, Purchaser shall have the option of terminating the contract by giving seven (7) days notice thereof to the contractor.

18 Variation:

Except for any provisions in this Purchase Order, any change /modification to the terms and conditions of this Order can be issued only by Purchaser or with the prior written approval from Purchaser.

19 Termination

19.1 The Contract shall be deemed to be terminated on completion of delivery of Material(s)

19.2 Termination of Default by Vendor:
Purchaser may terminate the contract at any time if the Vendor fails to carry out any of his obligations including timely delivery under this Contract. Prior to termination, the Vendor shall be advised in writing of the causes of unsatisfactory performance to be improved upon 15 days of the receipt of notice. In case, if the Vendor fails to bring about the improvement to the satisfaction of the Purchaser, then the order shall be terminated.

19.3 Without prejudice to the rights and remedies available to Purchaser, Purchaser may terminate the Contract or part thereof with immediate effect with written notice to the Vendor if,:

19.3.1 The Vendor becomes bankrupt or goes into liquidation.

19.3.2 The Vendor makes a general assignment for the benefit of creditors.

19.3.3 A receiver is appointed for any substantial property owned by the Vendor.

19.3.4 The Vendor has misrepresented to Purchaser, acting on which misrepresentation Purchaser has placed the Purchase Order on the Vendor.

The Vendor/ Contractor shall not be entitled to any further payment under the Contract if the Contract is terminated. If the order is terminated under clause 19.2 and 19.3, the Vendor shall not be entitled to any further payment, except that, if Purchaser completes the supply of Material(s) and the costs of completion are less than the Total Order value, the Purchaser shall pay Vendor an amount properly allocable to supply of Material(s) fully performed by Vendor prior to termination for which payment was not made to Vendor. In case, the cost of completion of Material(s) exceed the total Order value, the additional cost incurred by Purchaser for such completion shall be paid by the Vendor.

19.4 Purchaser shall be entitled to terminate the Contract at it's convenience, at any time by giving thirty (30) Days prior notice to the Contractor. Such notice of termination shall specify that termination is for Companies convenience and the date upon which such termination becomes effective. Upon receipt of such notice, the Contractor shall proceed as follows:

19.4.1 cease all further work, except for such work as may be necessary and instructed by the Company/ Company's representative for the purpose of protecting those parts of the supplies already manufactured;

19.4.2 stop all further sub-contracting or purchasing activity, and terminate Sub-contracts;

19.4.3 handover all Documents, equipment, materials and spares relating to the supply of goods prepared by the Contractor or procured from other sources up to the date of termination for which the Contractor has received payment equivalent to the value thereof; and

19.4.4 handover those parts of the supplies manufactured by the Contractor up to the date of termination.

Upon termination pursuant to clause 19.4, the Vendor shall be entitled to be paid the full value on the Material(s) delivered in accordance with the Contract.

19.5 The Contractor shall not be released from any of his obligations or liabilities accrued under the Contract on termination. For the avoidance of doubt, the termination of the Contract in accordance with this clause shall neither relieve the Contractor of his accrued obligations for Warranty or his accrued liability to pay (liquidated) damages for Delay nor shall entitle him to reduce the value of Performance Security.

20 Sub letting and assignment:

The contractor shall not without prior consent in writing of the Purchaser, sublet, transfer or assign the contract or any part thereof or interest therein or benefit or advantage thereof in any manner whatsoever, provided nevertheless that any such consent shall not relieve the contractor from any obligation, duty or responsibility under the contract.

21 **Dispute Resolution**:

Dispute or differences arising out or relating to this Order shall be resolved amicably by the parties. Failing such amicable resolution of dispute / differences either party may refer the matter to arbitration of a Sole Arbitrator to be appointed jointly by both the parties. The award of the Arbitrator shall be final, binding and conclusive on the parties. The venue for arbitration shall be Mumbai. The Arbitration proceedings will be governed and regulated by the provisions of Indian Arbitration and Conciliation Act, 1996 as amended from time to time and the rules framed there under.

22 Governing laws

This Contract shall be construed in accordance with and governed by the Laws of India without giving effect to any principle of conflict of law.

23 Jurisdiction

This Contract and the transaction contemplated herein shall be subject to the exclusive jurisdiction of the competent Courts in Mumbai only.

24 Limitation of Liability

Notwithstanding anything contained in the Contract, the Contractor's aggregate liability under this Contract shall be limited 100% of the Total order value. This shall however, exclude liability arising pursuant to clause 2.8- tax indemnity, clause 14- General Indemnity, clause 15- Indemnity against IPR, clause 25 – Confidentiality and liabilities arising due to wilful misconduct, gross negligence, third party claims and corrupt acts attributable to the Vendor.

25 Confidentiality:

The Vendor shall use the Confidential Information of the Purchaser only in furtherance of this Contract and shall not transfer or otherwise disclose the Confidential Information to any third party. The Vendor shall (i) give access to such Confidential Information solely to those employees with a need to have access thereto; and (ii) take the same security precautions to protect against disclosure or unauthorized use of such Confidential Information that the party takes with its own confidential information but, in no

event, shall a party apply less than a reasonable standard of care to prevent such disclosure or unauthorized use.

26 Consequential Damages:

Unless otherwise specified, neither Party shall be responsible for and nor shall be liable to the other Party for indirect/consequential losses and damages suffered by such Party including for loss of use, loss of profit whether such liability or claims are based upon any negligence on the part of the other Party or its employees in connection with the performance of the Purchase Order.

27 New Legislation (The Micro, Small and Medium Enterprise Development Act 2006)

a. This Act has been enacted and made effective from 2nd October 2006. The Interest on Delayed Payments to Small Scale and Ancillary Industrial Undertaking Act, 1993 is repealed.

b. Vendor is requested to inform the purchaser if vendor fall under The Micro, Small and Medium Enterprises Development Act, 2006 legislation and provide the purchaser, registration number and date to enable purchaser to take necessary care. The vendors are also requested to mention the same on their invoice / bill.

28 Relation between parties:

The Purchase Order shall be entered into on a principal-to-principal basis only. The Purchase order shall not be construed as a partnership or an association of persons. There is no agent and principal relationship between the parties. Each party shall be responsible for its own conduct. The Vendor shall ensure at all times that all the work carried out under this contract either by its own person or through any of its sub-Vendors shall be always done under its own direct supervision.

29 Environment / ISO 14001 Certification:

The Vendor to confirm whether their organization is ISO 14001 certified. If not, the Vendor must certify that the handling, use and disposal of their product / by-products conform to practices consistent with sound environmental management and local statutes. The Vendor shall ensure that all the wastes are disposed in environmental friendly way with strict compliance to applicable laws including adherence to MoEF guidelines with respect to disposal of batteries, lead waste, copper cables, ash, waste oil, e-waste etc which shall be disposed through MoEF approved parties only. The Vendor shall also be responsible to collect and recycle all the e-waste generated at the end of the product life cycle at its own costs and risks as per the MoEF guidelines/ orders.

30 Tata Code of Conduct

The Purchaser abides by the Tata Code of Conduct in all its dealing with stake holders and the same shall be binding on the Purchaser and the Vendor for dealings under this Purchase Order. A copy of the Tata Code of Conduct is available at our website: http://www.tatapower.com/aboutus/code-of-conduct.aspx. The Vendor is requested to bring any concerns regarding this to the notice of our Chief Ethics Officer on the e-mail ID: cecounsellor@tatapower.com.

31 Responsible Supply Chain Management:

The Purchaser is committed for a cleaner environment and respect of Human rights through its Responsible Supply Chain Management policy. The Vendor is required to comply with all the environment & Human rights related laws, including emission norms, Labour and environmental regulations. The Purchaser encourages its Vendors/ Contractors/ Business partners to pay more attention to green design, green supply, green production, green logistics and green packaging in performing their business obligations.

The Vendor is required to abide by the Tata Power Corporate Environment policy, Energy Conservation and Corporate Sustainability Policy.

A copy of the Responsible Supply Chain Management Policy along with Environment policy, Energy Conservation policy, Sustainability policy, Health & Safety policy and Human Rights policy is available at website: http://www.tatapower.com/sustainability/policies.aspx.

Vendor/Bidder is required to completely fill the attached "Supplier Sustainability Questionnaire" in support of their Green Supply Chain Management initiatives and submit the same with their offer.

The Owner recognizes that diversity in the workplace positively impacts business. The Owner is committed to help people from SC/ST background either by helping them to become entrepreneurs or by engaging workforce from SC/ST community under the contracts agreed herein. To encourage engaging SC/ST community, the owner may consider on the merit to incentivize the Contractor by paying additional 1% of the service contract portion if the number of SC/ST workforce engaged in the contract exceeds 30% of the total deployed strength and 2%, if the strength goes beyond 50%. While the Contractor will assist the workforce so engaged to become self-reliant in meeting the work expectation, the Owner may also volunteer its training resources to the extent possible to improve their employability. The Contractor shall maintain the proper documentation of such category of the workforce engaged and the owner may consider to pay the incentive after its verification.

The Owner may also consider extending price preference of 5% in the bid evaluation for an order value up to Rs.50 Lacs, provided the company is owned by a person from SC/ST community having minimum 50% holding in the company.

32 Vendor rating

You are requested to ensure compliance to the terms of the individual orders with regards to timely delivery, provision of all applicable documents / challans / test certificate, quality of the material etc. Your performance with respect to the said factors will be taken into consideration for future business.

33 Vendor Feedback:

33.1 In this dealing Vendors feedback is important for the purchaser to improve its processes. If vendor have to report any grievance, problem or require any clarification, information, vendor is requested to contact purchaser at email ID: CC_CUSTOMERFEEDBACK@tatapower.com

33.2 Vendor is requested to ensure compliance to the terms of the individual orders with regards to timely delivery, provision of all applicable documents / challans / test certificate, quality of the material etc. Vendor performance with respect to the said factors will be taken into consideration for future business.

34 Non-Waiver:

Failure of Purchaser or its representatives to insist upon adherence to any of the terms or conditions incorporated in the Contract or failure or delay to exercise any right or remedies herein or by law accruing, or failure to promptly notify the Vendor in the event of breach or the acceptance of or the payment of any Material(s) hereunder or approval of any design or Material(s) shall not release the Vendor and shall not be deemed a waiver of any right of Purchaser to insist upon the strict performance thereof or of any of its rights or remedies as to any such Material(s) regardless of when the Material(s) are shipped, received or accepted not shall any purported oral modification or revisions of the Contract by Purchaser or its representative(s) act as waiver of the terms hereof.

35 **Repeat Order**:

Purchaser may place the repeat order for 100% of ordered quantities within a span of 6 months from the date of issue of this Purchase Order & Vendor shall execute it at same rates, terms and conditions.

36 Severability

If any provision of this Contract is invalid, unenforceable or prohibited by law, this Contract shall be considered divisible as to such provision and such provision shall be inoperative and shall not be part of the consideration moving from any Party hereto to the others, and the remainder of this Contract shall be valid, binding and of like effect as though such provision was not included herein.

ESG FRAMEWORK FOR BUSINESS ASSOCIATES

Tata Power's Sustainability philosophy sits at the core of its Business Strategy. Tata Power Sustainability Model has an overarching objective of 'Leadership with care' with key elements of 'Care for the Environment'; 'Care for the Community'; 'Care for our Customers / Partners' and 'Care for our People'. These sustainability objectives encompass the Environmental, Social and Governance objectives driven as integrated elements.

Tata Power, together with its stakeholders is determined to achieve sustainable growth while creating shared value for all.
As a part of future ready roadmap, Tata Power has targeted following as our Environment, Social and Governance priorities:

- Being Carbon Net Zero before 2045
- Growing Clean capacity (80% by 2030)
- Customer centricity
- Becoming water neutral before 2030
- Achieving zero waste to landfill before 2030
- No net loss of biodiversity before 2030
- Positively impacting 80 million lives by 2027

In order to create a sustainable business ecosystem, Tata Power expects that all its Business Associates (BA) which includes its suppliers, vendors, consultants and service providers to align to its ESG and sustainability commitments.

Tata Power encourages improved efficiencies and scaling up of green initiatives through technology and innovation taking us farther on the journey of reducing carbon emissions and preparing the entire eco-system towards products and services that would have net positive impact on the environment and communities that we operate in.

The Vendors/ bidders wishing to associate with Tata Power are expected to share their own sustainability and ESG journey. We at Tata Power promote all Business Associates to have a sustainable procurement policy for their supplier and service providers to contribute to our integrated approach in achieving a sustainable supply chain. The BA is encouraged to carry out the assessment of their sub-contractors and sub-vendors on sustainability readiness so that they are aware of the expectation/ business requirement.

The Vendor/ Bidder shall fill-in the 'Environment, Social and Governance Compliance Screening Questionnaire for Business Associates' attached at Annexure-I and submit the same along with the Bid in Ariba online platform.

Responsible Supply Chain Management:

Tata Power is committed for a cleaner environment and respect of Human rights through its Responsible Supply Chain Management policy.
Tata Power Business Associate (BA) shall comply with all the environment & Human rights related laws, including emission norms, Labour and environmental regulations.

Tata Power encourages its BA to focus on green design, green supply, green production, green logistics and green packaging in performing their business obligations. The BA is expected to abide by the Tata Power Corporate Environment policy, Energy Conservation and Corporate Sustainability Policy (enclosed with this document as Annexure-II).

The BA is expected to:

- Strive towards Conservation of Energy, Water, Resources and optimize transportation of Men & Materials to minimize environmental impact and reduce carbon footprint.
- Carry out the assessment of materials used for construction, operation & maintenance, consumables and accordingly phase out those materials which are environmentally hazardous.
- Be cognizant that diversity in the workplace positively impacts business.
- Promote affirmative action by supporting people from SC/ ST background by engaging workforce from SC/ ST community under the contracts agreed herein.
- Share the commitment of 'No child labour', 'No forced labour', Non-discrimination on the basis of caste, colour, religion, gender, disability, maternity or pregnancy or any other factor unrelated to the requirements of the job
- Pay the wages or remuneration to the workforce, personnel deployed in compliance to all applicable laws and regulations.
- Provide its employees/ deployed labor with an employment environment that is free of physical or psychological harassment.
- Carry out the assessment of their Sub-contractors on their Sustainability Readiness so that they are aware of the above expectation/ standards
- To ensure usage of suitable package material which is more environmentally sustainable. Further the packing material shall be recycled to the extent possible. The material used for packing is expected to suit the mode of transport and to ensure its safe receipt at point of delivery.

Waste Disposal:

The BA is expected to follow best practices for disposal of waste, few of which are listed below:

- Have a detailed project plan that includes the waste management, segregation of all designated waste material (Recyclable/ Non-Recyclable), collecting, storing, disposing and transferring the same to pre-arranged facility/ destination in timely and safe manner as per environmental legislations. The project plan shall also include the innovative construction practice to eliminate or minimize waste, protect surface/ground water, control dust and other emissions to air and control noise.

- Have purchase policy to encourage the procurement of material with recycled and minimum packaging of goods during delivery and appropriate means for site-to-site transportation of materials to avoid damage and litter generation.

- Ensure that the residents living near the site are kept informed about proposed working schedule and timings/ duration of any abnormal noise full activity that is likely to happen.

- Ensure the regular maintenance and monitoring of vehicles and equipment for efficient fuel use so that emissions and noise are within acceptable limits to avoid air pollution.

Water Management:

The BA is expected to follow best practices for water management, few of which include a management and monitoring system for water withdrawals and consumption, procedures to reduce water usage or reuse/recycle water, and pretreatment of wastewater before disposal.

Compliance to Law:
The BA shall adhere to responsible business practices and comply with the provision of all the Statutory Acts Applicable. Special attention of the BA is drawn towards the compliance of provision of the following statues: (along with the latest amendments/additions, as applicable):

- The Child Labour (Prohibition and Regulation) ACT, 1986.
- The Contract Labour (Regulation and Abolition) ACT, 1970.
- The Employee's Pension Scheme, 1995.
- The Employee's Provident Funds and miscellaneous provisions Act, 1952.
- The Employees State Insurance Act, 1948.
- The Equal Remuneration Act, 1976.
- The Industrial Disputes Act, 1947.
- The Maternity Benefit Act, 1961.
- The Minimum Wages Act, 1948.
- The Payment of Bonus Act, 1965
- The Payment of Gratuity Act, 1972.
- The Payment of Wages Act, 1936.
- The Shops & Establishment Act, 1954.
- The Workmen's Compensation Act, 1923.
- The Employer's Liability Act, 1938.
- and any other applicable statutory act

Social Accountability (SA 8000):

Tata Power expects its BAs to follow guidelines of SA 8000:2014 on the following aspects

- Child Labour
- Forced or Compulsory Labour
- Health & Safety
- Freedom of Association & Right to Collective Bargaining
- Discrimination
- Disciplinary Practices
- Working Hours
- Remuneration
- Management System

Health and Safety

The BA is expected to ensure the health and safety of his and his Sub-contractor’s staff and labour. The BA shall, in collaboration with and according to the requirements of the local health authorities, ensure that medical staff, first aid facilities, sick bay and ambulance service are available at the accommodation and on the Site at all times, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The BA shall maintain records and make reports concerning health, safety and welfare of persons deployed, and damage to property, as the Owner’s Representative may reasonably require. The BA shall be responsible for the medical treatment / hospitalization of his and his Sub-contractor’s staff/ labour.

The BA shall appoint a qualified Safety officer at the Site to be responsible for maintaining the safety, and protection against accidents, of all personnel on the Site. Such Safety officer shall have the authority to issue instructions and take protective measures to prevent accidents.

The BA shall comply in toto with the Tata Power's Contractor Safety Terms & Conditions, Health Safety & Environment Manual while working on Tata Power Site/ Services/ Contracts.

Grievance Mechanism

The BA is expected to have grievance procedures that allow stakeholders to anonymously bring environmental and/or work-related violations and/or concerns to the attention of management. In addition, the BA is expected to have procedures for examining reports of environmental and/or work-related violations or concerns and/or privacy complaints.

Data Protection

The BA is expected to have a formal process to address data security or privacy issues.

ANNEXURE-I

TATA

TATA POWER

Sr. No.	Question Description	Response (Y/N)	Remarks
Organization			
1	Does your Company have Sustainability Policy at Organization Level? If Yes, Please attach		
2	Do you have sustainable procurement policy in place for your own suppliers? If Yes, Please attach		
3	Does your company do regular assessment of its suppliers on ESG parameters?		
4	Are there ESG risks, or negative impacts identified in your supply chain		
Governance			
1	Is diversity taken into consideration when appointing board members/ senior management? Do you have an independent director/s?		
2	Has your company taken initiatives to ensure ethical practices at workplace? Please share the details, Policies etc.		
3	Does your company have a formal process to address data security or privacy issues? Please share the details, Policies etc.		
4	Does your company have grievance mechanism for stakeholder issues and track resolution?		
Environment/ Planet			
1	Does your company have Environmental Policy? If Yes, Please attach		
2	Do you have a formal process for waste management including solid wastes, liquid wastes and hazardous waste?		
3	Does your company track greenhouse gas emission? Also, what percentage of own consumption comes from the renewable energy?		
4	Does your company have a formal process for water management including monitoring of water consumption and withdrawals, and if applicable, pretreatment of wastewater?		
Green Technology/ Innovation			
1	Are your facility/ Product/ Services provided by you is based on green design, green production, green packaging or green logistics considerations? Please elaborate.		
2	Do your products or services have any environmental or social features or benefits (e.g. environmental/energy certification, ecolabels, fair trade certification, etc.)?		
Social/ People			
1	Does you facility/ Company have written personnel policies in place Are you an equal opportunity employer?		
2	Please describe any formal programme / campaign in place to promote company involvement with the community (volunteering, etc.). What is the percentage of profit spend on community activities?		
3	Does your company have a written Health & Safety Policy or Program? If Yes, Please attach		
Certifications: Does your company have following certifications (valid till date-please mention validity)			
1	ISO9001 accreditation		
2	SA8000 or equivalent		
3	ISO 14001 certification		
4	ISO 18001/45001 or equivalent		
5	ISO/IEC 27001 or equivalent		
6	Any Other (Please specify)		

Signature

Business Associate Name

ANNEXURE-II

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!

Supplier Code of Conduct

Tata Power follows the Tata Code of Conduct (TCoC) and the Whistle blower Policy and expect all its Suppliers to adhere to the same principles. **"Supplier"** here means any business, company, corporation, person or other entity that provides, sells or seeks to sell, any kind of goods or services to Tata Power, including the Supplier's employees, agents and other representatives.

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

Whistle Blower Policy: https://www.tatapower.com/pdf/aboutus/whistle-blower-policy-and-vigil-mechanism.pdf

Anti-Bribery & Anti-Corruption Policy: https://www.tatapower.com/pdf/aboutus/abac-policy.pdf

The suppliers are expected to adhere to the following Do's and Don'ts:

Do's

1. The Suppliers shall be committed to supplying products and services of high quality that meet all applicable standards and laws, including product packaging, labelling and after-sales service obligations.
2. Comply with all applicable laws and regulations, both in letter and in spirit, in all the territories in which it operates.
3. Strive to provide a safe, healthy and clean working environment for its employees.
4. Strive for environmental sustainability, particularly with regard to the emission of greenhouse gases, consumption of water and energy and the management of waste and hazardous materials.
5. The Supplier shall represent our company (including Tata brand) only with duly authorised written permission from our company.
6. Safeguard the confidentiality on the use of intellectual property, information and data of the Company.
7. Gifts and hospitality given or received should be modest in value and appropriate as per Company Policy.
8. The assets of Tata Power shall be employed primarily and judiciously for the purpose of conducting the business for which they are duly authorised.
9. All actual or potential conflicts due to financial or any other relationship with a Tata Power employee shall be disclosed.

Don'ts

1. The Supplier shall not make unfair or misleading statements about the products and services of competitors.
2. Children shall not be employed at workplaces.
3. Forced labour shall not be used in any form.
4. The Suppliers shall neither receive nor offer or make, directly or indirectly, any illegal payments, remunerations, gifts, donations or comparable benefits that are intended, or perceived, to obtain uncompetitive favours for the conduct of its business with Tata Power.

Reporting Violations

The Supplier shall notify the Company regarding any known or suspected improper behaviour of other suppliers or employees relating to its dealings with Tata Power, by email to: cecounsellor@tatapower.com. The same can also be raised through our 3rd party ethics helpline facility:

Toll-free Number	1800 267 4065
Email	tatapower@tip-offs.in
Website & Chatbot	www.tatapower.tip-offs.in
Postal address	Attn to: Mr. Puneet Arora, Deloitte Touch Tohmatsu India LLP, 6 floor, AIPL Business, Sector 62, Gurugram, Haryana 122102