

POWER TRANSMISSION CORPORATION OF UTTARAKHAND LTD.
(A Govt. of Uttarakhand Enterprise)
CHIEF ENGINEER, OPERATION & MAINTENANCE
GARHWAL ZONE, PTCUL
26 - CIVIL LINES, ROORKEE - 247667

E- Tender for “**Procurement of 220KV & 33KV Current Transformer for 220KV Substation Chamba Tehri(G)**”.

DOWNLOADED BY: -

M/s / Shri _____

Sr. No.	DESCRIPTION	
1.	Tender No.	CE/GZR-04/2021-22
2.	Name of Work	“ Procurement of 220KV & 33KV Current Transformer for 220KV Substation Chamba Tehri(G) ”
3.	Completion Time	04 Months
4.	Route Length in Kms.	--
5.	Tender issuing office	Office of Chief Engineer (O&M) Garhwal Zone, Power Transmission Corporation of Uttarakhand Ltd. " 26-Civil Lines, Roorkee-247667
6.	Tender Fees	Rs. 1,000.00+180.00 (GST@18%) =Rs.1,180.00 (Non refundable)
7.	EMD/Bid Security	Rs. 73,000.00
8.	Starting date of issue of Bid documents. The tender document is to be downloaded through website- www.uktenders.gov.in against payment of tender fees as above. The non refundable tender fees as specified above should be sent along with the bids as specified in the bid documents.	18.04.2021
9.	Last date of Request of Bid Documents.	As per tender notice / corrigendum if any
10.	Last date of issue of Bid Documents.	As per tender notice / corrigendum if any
11.	Closing Date of receipt of Bid through E-tendering	As per tender notice / corrigendum if any
12.	Address & Place of Submission of Bid supporting documents.	Chief Engineer (O&M), Garhwal Zone, PTCUL, 26-Civil Lines Roorkee-247667.
13.	Date and Time of Opening of Technical Bid	As per tender notice / corrigendum if any
14.	Address & place of Technical bid(Part-1) opening	Chief Engineer (O&M), Garhwal Zone, PTCUL, 26-Civil Lines Roorkee-247667.
15.	Type of Tender	Open Tender
16.	Validity of Bid	180 days after the date of opening of technical bid (Part-I)
17.	Contact & Telephone No. of the Tender issuing office	Phone No.:- 01332-272256 Fax No. : 01332-2722315
18.	E-mail address of the tender issuing office	ce_oandmg@ptcul.org chiefengineergarhwal@gmail.com

CHIEF ENGINEER (O&M) GARHWAL ZONE, ROORKEE

पावर ट्रान्समिशन कारपोरेशन ऑफ उत्तराखण्ड लि0
मुख्य अभियन्ता (परिचालन एवं अनुरक्षण) कार्यालय,
गढवाल क्षेत्र, 26- सिविल लाईन्स, रूड़की
ई-निविदा सूचना

एतदद्वारा, ई-निविदा सं0 सी0ई0/जी0जैड0आर0-04/2021-22 के द्वारा 220के0वी0 उपकेन्द्र चम्बा (टी0ग0) पर 220के0वी0 एवं 33के0वी0 करेन्ट ट्रान्सफोर्मर की आपूर्ति हेतु ई-निविदाएं आमन्त्रित की जाती हैं। ई-निविदा ऑनलाईन/ऑफ लाईन जमा करने की अन्तिम तिथि 19.05.2021 को समय 15.00 बजे तक हैं, जो दिनांक 20.05.2021 को 15.00 बजे खोली जायेगी। ई-निविदा से सम्बन्धित अन्य विस्तृत विवरण ई-निविदा वेबसाईट www.uktenders.gov.in (Tender ID: 2021_PTCUX_32225_1) से प्राप्त, एवं ई-निविदा सूचना पिटकुल की वेबसाईट www.ptcul.org पर देखी की जा सकती हैं। ई-निविदा सम्बन्धी जानकारी हेतु मोबाईल नं0 +91-8899890000 से सम्पर्क करें।

मुख्य अभियन्ता (परि0एवं अनु0)

“राष्ट्र हित में बिजली बचायें”

**POWER TRANSMISSION CORPORATION OF UTTARAKHAND LTD.
OFFICE OF THE CHIEF ENGINEER (OPERATION & MAINTENANCE)
GARHWAL ZONE, 26-CIVIL LINES, ROORKEE
E-TENDER NOTICE**

On line, e-tenders against specification No. CE/GZR-04/2021-22 for procurement of 220KV & 33KV Current Transformer at 220KV Substation Chamba (T.G.) are hereby invited. The last date & time of submission of online/offline bid is upto 15.00 Hours on 19.05.2021 which shall be opened on 20.05.2021 at 15.00Hrs. Details of E-tender can be obtained from E-tender website www.uktenders.gov.in (Tender ID: [2021_PTCUX_32225_1](https://www.uktenders.gov.in/tenders/2021_PTCUX_32225_1)) and information of E-tender can be seen from PTCUL website www.ptcul.org. For any assistance on e-tendering, please contact on Mobile No. +91-8899890000.

CHIEF ENGINEER (O&M)

“SAVE ELECTRICITY IN THE INTEREST OF NATION”

Pre Qualifying Criteria

1. **Scope Of Work:** The scope of work covers the design, manufacturing, assembly, testing at the manufacturer's works and Supply of 245KV and 36KV different ratio Current Transformer at 220KV Substation ChambaTehri(G) for protection and metering system in three phase power network of PTCUL and proper stacking as per direction of site engineer or its representative. Any Tools & Tackles and other accessories to be used for proper stacking of CT's will be provided by contractor at its own cost.

(A) TECHNICAL-QUALIFYING REQUIREMENTS

1. Experience of having successfully completed similar supply during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following;
 - a) Three similar completed supply costing not less than the amount Rs. 9.77 Lac.
Or
 - b) Two similar completed supply costing not less than the amount Rs. 12.22 Lac.
Or
 - c) One similar completed supply costing not less than the amount Rs. 19.54 Lac.
2. The Bidder/Collaborator/JV Partner must have executed similar supply i.e. he must have "supplied 33KV, 132KV and above current transformer" in the last seven years as per above condition and these work should be working satisfactorily. Certificate of completion, Agreement no./PO, Amount of work done and schedule time completion versus actual time of completion work, not less the rank of Executive Engineer of similar work should be submitted.
3. The bidder must comply the technical specification & GTP of Current Transformer with vendor name for supply of items from the approved vendor in PTCUL and an undertaking must be submitted with the bid.
4. The Bidder/Collaborator/JV Partner should be manufacturer/authorized dealer or should have executed successfully the similar supply.
5. Copies of Supply Orders (as per above criteria) from the Govt. Power Utilities/PSUs/Govt. Organizations/Other Govt. Department for similar supply is required to be submitted along with the bid.
6. MSME rules will be applicable as per Uttarakhand Government. The contractor should submit valid certificate.

(B) FINANCIAL-QUALIFYING REQUIREMENTS

1. **Minimum Average Annual Turnover (MAAT):-** The minimum annual average turnover for the preceding best three years (36 months) out of last five financial years should not be less than **Rs. 36.65 Lacs.** (Balance sheet / Documentary proof for last five years should be enclosed). The balance sheet and all other financial documents attested/ certified by CAs to substantiate fulfillment of FQR should be with UDIN.
2. For Financial Qualification Criteria, lead partner of JV Firms should meet minimum 50% of Financial Qualification Requirement (FQR) and collectively meet total FQR. All partners of JV Firms should have the experience for activities of construction/ manufacturing of items or equipments/supply of items or equipments or products, meant for transmission utilities only.
3. Experience of having successfully completed similar Supplies during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following;
 - a) Three similar completed Supply costing not less than the amount Rs. 9.77 Lac.
Or
 - b) Two similar completed Supply costing not less than the amount Rs. 12.22 Lac.
Or
 - c) One similar completed Supply costing not less than the amount Rs. 19.54 Lac.
4. The bidder have to submit affidavit of all ongoing projects which are not completed and Net worth of the ongoing project which are not completed at the time of bidding.

(Not completed project means project in Government, Government undertaking or Private sector also include the LOA/Agreement which are allotted/ executed but Supply has not started at the time of bidding)

5. The bidder has to submit the latest Balance sheet and CA Certificate (along with the UDIN no.) for the Net Worth at the time of bidding.
6. Experience certificate should be issued by an officer not below the rank of Executive Engineer mentioning nature of Supply, Agreement No., Amount of Supply, Scheduled time of completion of Supply and Actual time of completion etc. Completion certificate from officer shall be enclosed by contractor.
7. **Access to Finances:** The Bidder must demonstrate access to or availability of financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet the following cash flow requirements Rs. 7.33 Lac supported by documents in form access to credit facilities.

(C) Additional Documents

- (a) Copy of PAN no. of the firm/ Company or PAN no. of all its partner's in case of partnership firm or PAN no. of the individual, in case of proprietorship.
- (b) The Tenderers should have submitted copy of Goods & Service Tax (GST) Registration.
- (c) The Employee Provident Fund (EPF) Registration Number shall be a mandatory PQR. (Documentary proof of the same shall be enclosed with tender document).
- (d) RTGS/ NEFT Details of the bidder are to be submitted.
- (e) Latest Solvency certificate not more than 3 months old issued by bank (20% of bid value) should be submitted.
- (f) The balance sheet and all other financial documents attested/certified by CAs to substantiate fulfillment of FQR should be with UDIN, failing which the tender will be summarily rejected without any further reference.
- (g) Registration. No. under Shops & Estt. Act/issuing authority.
- (h) Details of Partners/Directors of the Firm/Company.
- (i) Experience record and details of orders pending/executed for various utilities.
- (j) Detail of Manufacturing/Fabrication facilities.
- (k) Factory Registration/license details.
- (l) Valid 'A' Class Electrical Contractor License.

COMPLETION PERIOD:

The Supply shall be completed within 04 Months from the date of approval of drawing/GTP. The bidder shall be submitting the drawing/GTP with in 15days from the date of PO/LOA

ENGINEER INCHARGE:

Superintending Engineer, Operation & Maintenance Circle, Srinagar(G) shall be the Supervision/Engineer Incharge of the Supply.

PERFORMANCE GUARANTEE PERIOD:

The Supply under contract shall be under performance guarantee for 24 months from the date of completion of Supply. In case the Supply under performance guarantee period is found poor/unsatisfactory, Contractor will replace the same free of cost

PERFORMANCE GUARANTEE DEPOSIT:

In order to ensure faithful completion of the contract, the successful Contractor shall furnish Performance guarantee in the shape of FDR/TDR/CDR/Bank Guarantee equal to 10% of contract value duly pledged in the name of **Executive Engineer 220KV Operation & Maintenance Division, ChambaTehri (G)** at the time of Agreement which shall be released after successful performance guarantee period of 24 months from the date of completion of Supply satisfactorily. If the performance guarantee is above Rs. 50,000.00 then the Contractor shall furnish only P B.G.

Instrument Current Transformers

1.0 General

- 1.1 The current transformers and accessories shall conform to the latest version of the standards specified below except to the extent explicitly modified in the specifications and shall be in accordance with requirements in Chapter-GTR Current transformers IEC: 44-1 (or IS: 2705)
- 1.2 The instrument transformers shall be complete with its terminal box and a common marshalling box for a set of 3 instrument transformers.
- 1.3 The instrument transformer tank alongwith top metalics shall be hot dip galvanized.
- 1.4 The instrument transforms shall be designed for use in geographic and meteorological conditions as given in Chapter: GTR.

2.0 CONSTRUCTION FEATURES:

The features and constructional details of instrument transformers shall be in accordance with requirements stipulated hereunder:

2.1 Bushing/Insulators:

- a) Instrument transformers shall be of 245kV/33kV class, oil filled/SF6 gas filled, with shedded porcelain/composite bushing/Insulators suitable for outdoor service and upright mounting on steel structure.
- b) Bushing/Insulators shall conform to requirements stipulated in Chapter-GTR. The bushing/insulator for CT shall be one piece without any metallic flange joint.
- c) Bushing shall be provided with oil filling and drain plugs, oil sight glass of CT. The bushing/insulator of instrument transformer shall have cantilever strength of not less than 350kg for 245kV and 350 kg for 33kV Instrument transformers respectively or as per the value obtained vide Chapter-GTR, whichever is higher.
- d) Instrument transformers shall be hermetically sealed units. Bidder/Manufacturer shall furnish details of the arrangements made for the sealing of instrument transformers alongwith the bid.
Bidder/Manufacturer shall also furnish the details of site test to check the effectiveness of hermetic sealing for approval.
- e) Polarity marks shall indelibly be marked on each instrument transformer and at the lead terminals at the associated terminal block.

2.2 Terminal box/Marshalling box:

Terminal box shall conform to the requirements of Chapter-GTR.

2.3 Insulating Oil:

- a) Insulating oil to be used for instrument transformers shall be of EHV grade and shall conform to IS: 335 (required for the first filling).

2.4 Name Plate:

Name plate shall conform to the requirements of IEC incorporating the year of manufacture. The rated current, extended current rating of current transformers shall be clearly indicated on the name plate. The rated thermal current in case of CT shall also be marked on the name plate.

3.0 CURRENT TRANSFORMERS:

- a) Current transformers shall have single primary either ring type, or hair pin type and suitably designed for bringing out the secondary terminals in a weather proof (IP-55) terminal box at the bottom. These secondary terminals shall be terminated to stud type non disconnecting terminal blocks inside the terminal box. In case "Bar primary" inverted type current transformers are offered the manufacturer will meet following additional requirements:

- i) The secondary's shall be totally encased in metallic shielding providing a uniform equipotential surface for even electric field distribution.
 - ii) The lowest part of the insulation assembly shall be properly secured to avoid any risk of damage due to transportation stresses.
 - iii) The upper part of insulating assembly resting on primary bar shall be properly secured to avoid any damage during transportation due to relative movement between insulating assembly & top dome.
 - iv) Nitrogen if used for hermetic sealing (in case of live tank design should not come in direct contact with oil)
 - v) Bidder/Manufacturer shall recommend whether any special storage facility is required for spare CT.
- b) Different ratios specified shall be achieved by secondary taps only and primary reconnection shall not be accepted.
 - c) Core lamination shall be of cold rolled grain oriented silicon steel or other equivalent alloys. The cores used for protection shall produce undistorted secondary current under transient condition at all ratio with specified CT parameters.
 - d) The expansion chamber at the top of the porcelain insulators should be suitable for expansion of oil.
 - e) Facilities shall be provided at terminal blocks in the marshalling box for star delta formation, short circuiting and grounding of CT secondary terminals.
 - f) Current transformer's guaranteed burdens and accuracy class are to be intended as simultaneous for all cores.
 - g) For 245/33kV class CTs, the rated extended primary current shall be 120% (or 150% if applicable) on all cores of the CTs. The secondary winding shall be rated for 2A continuously. Further, the intermediate tapings at 3000-2000 and 2000-500 shall be suitable for using as 1000/1 and 1500/1 ratios.
 - h) For 245/33kV current transformer, characteristics shall be such as to provide satisfactory performance of burden ranging from 25% to 100% of rated burden over a range of 10% to 100% of rated current in case of metering CTs and up to the accuracy limit factor /knee point voltage in case of relaying CTs.
 - i) The current transformer shall be suitable for horizontal transportation. It shall be ensured that the CT is able to withstand all the stresses imposed on it while transporting and there shall be no damage in transit. The Contractor shall submit the details of packing design to the Purchaser for review.
 - j) For 245/33kV CTs the instruments security factor at all ratios shall be less than five (5) for metering core. If any auxiliary CTs / reactor are used in the current transformers then all parameters specified shall have to be met treating auxiliary CTs as an integral part of the current transformer. The auxiliary CTs / reactor shall preferably be inbuilt construction of the CTs. In

case these are to be mounted separately these shall be mounted in the central marshalling box suitably wired upto the terminal blocks.

- k) The wiring diagram plate for the interconnections of three single phase CTs shall be provided inside the marshalling box.
- l) The current transformation should be suitable for mounting on lattice support structure to be provided by the Contractor in accordance with stipulations of Chapter-GTR.
- m) The CT shall be designed as to achieve the minimum risks of explosion in service. Bidder/Manufacturer shall bring out in his offer, the measures taken to achieve this.
- n) 245kV current transformers shall be suitable for high speed auto reclosing.

4.0 TERMINAL CONNECTORS:

The terminal connector shall meet the requirement as given in Chapter-GTR.

5.0 TESTS:

5.1 In accordance with the requirements in Chapter-GTR, Current Transformers should have been type tested and shall be subjected to routine tests in accordance with IEC: 44-1/IS:2705 and IEC: 186/IS:3156 respectively.

5.2 The test report of the type tests and following additional type test shall be also be submitted for the Purchaser's review.

a) **Current Transformers:**

- i) Radio interference test
- ii) Seismic withstand test
- iii) Thermal stability test, i.e. application of rated voltage and rated extended thermal current simultaneously by synthetic test circuit.
- iv) Thermal co-efficient test i.e measurement of tan delta as a function of temperature (at ambient and between 80⁰ C & 90⁰ C) and voltage (at 0.3, 0.7, 1.0 and 1.1 Um/ $\sqrt{3}$).
- v) The current transformer shall be subjected to Fast Transient test by any one of the following two methods given below to assess the CT performance in service to withstand the high frequency over voltage generated due to closing & opening operation of isolators. Alternatively, method as per IEC: 44-1 may be followed:

a) **Current Transformers:**

Routine Tests:

- i) Measurement of Capacitance.
- ii) High voltage power frequency withstand test on Secondary winding.
- iii) Over-voltage inter turn test (as per BS-3938).
- iv) Oil leakage test.
- v) Measurement of tan delta at 0.3, 0.7, 1.0, and 1.1 Um/ $\sqrt{3}$.
- vi) Measurement of partial discharge shall be carried out as per IEC.

Dissolved gas analysis to be carried out at the time of commissioning. CTs must have adequate provision for taking oil samples from the bottom of the CT without exposure to atmosphere. Bidder/Manufacturer shall recommend the frequency at which oil samples should be taken and norms for various gases in oil after being in operation for different durations. Bidder/Manufacturer should also indicate the total quantity of oil which can be withdrawn from CT for gas analysis before refilling or further treatment of CT becomes necessary.

6.0 Spare Parts And Maintenance Equipment:

The Bidder shall include panther & zebra connector for 36KV CT & 245KV CT respectively.

7.1 Technical Parameters for Current Transformers:

S.No	Details	Unit	220 KV system	33 KV system
1	Nominal/rated voltage	KV	220	33
2	Highest system voltage	KV	245	36
3	No. of cores	Nos.	5	3
4	Rated primary current	A	1600	800
5	Rated transformation ratio			
5 (a)	Protection			
	- Bus differential	A	1600/800/1	800/400/1 400/200/1
	- other	A	as required/1	as required/1
5(b)	Metering	A	as required/1	as required/1
6	Rated fault current and duration	KA	40 (1 sec.)	25 (3 sec.0
7	Rated dynamic short circuit current	KAp	100	62.5
8	Lightning (full wave) impulse withstand voltage (1.2/50 micro sec.)			
	- between line terminal and ground	KVp	1050	170
10	One minute power frequency withstand voltage:			
	-Between line terminal and ground	KV _{rms}	460	75
11	One minute power frequency withstand voltage of secondary winding	KV	5	5
12	Minimum corona extinction voltage	KV _{rms}	156	-
13	Maximum radio interference voltage for frequency between 0.5 to 2 MHz	micro – volt	1000 (at 156 kV _{rms})	-
14	Maximum partial discharge level	pC	10	10
15	Cantilever strength	Kg	350	350

- **CT ratios specified above are tentative actual CT ratio to be supplied shall be decided during detail engineering.**

8.0 Testing & Commissioning

8.1 An indicative list of test is given below. Contractor shall perform any additional test based on specialties of the items as per the field Q.P/Instructions of the equipment Supplier or Purchaser without any extra cost to the Purchaser. The Contractor shall arrange all instruments required for conducting these tests along calibration certificates and shall furnish the list of instruments to the Purchaser for approval.

9.2 Current Transformers

- (a) Insulation Resistance Test for primary and secondary.
- (b) Polarity test.
- (c) Ratio identification test-checking of all ratios on all cores by primary injection of current.
- (d) Dielectric test of oil (wherever applicable)
- (e) Magnetising Characteristics test.
- (f) Tan delta and capacitance measurement
- (g) Secondary winding resistance measurement.

TABLE-IIA-1

REQUIREMENT for 245 KV CURRENT TRANSFORMERS

No. of Cores	Core No.	Appli Max. Excitation current	Current		Output	Accuracy	Min. knee	Max. CT
			ratio	burden (VA)	Class as per IEC: 44-1	Vk (mA)	Pt. Voltage resistance (ohms)	Sec. wdg. rent at Vk (In
5	1	BUS DIFF CHECK	800/400/1	-	PS	800/400	8/4	25 on 800/1 50 on 400/1
	2	BUS DIFF MAIN	800/400/1	-	PS	800/400	8/4	25 on 800/1 50 on 400/1
	3	METERING	800/400/1	20	0.2	-	-	-
	4	TRANS. Backup/LINE Protection	800/400/1	-	PS	800/400	8/4	25 on 800/1 50 on 400/1
	5	TRANS. DIFF/LINE PROTECTION	800/400/1	-	PS	800/400	8/4	25 on 800/1 50 on 400/1

All relaying CTs shall be of accuracy class PS as per IS: 2705

TABLE-IIA-2

REQUIREMENT for 245 KV CURRENT TRANSFORMERS

No. of Cores	Core No.	Appli Max. Excitation cur	Current		Output Class as	Accuracy	Min. knee Pt. Voltage	Max. CT Sec. wdg. rent at Vk (In
			ratio	burden (VA)				
5	1	BUS DIFF CHECK	150-75/1	-	PS	800/400	8/4	25 on 150/1 50 on 75/1
	2	BUS DIFF MAIN	150-75/1	-	PS	800/400	8/4	25 on 150/1 50 on 75/1
	3	METERING	150-75/1	20	0.2	-	-	-
	4	TRANS. Backup/LINE Protection	150-75/1	-	PS	800/400	8/4	25 on 150/1 50 on 75/1
	5	TRANS. DIFF/LINE PROTECTION	150-75/1	-	PS	800/400	8/4	25 on 150/1 50 on 75/1

All relaying CTs shall be of accuracy class PS as per IS: 2705

TABLE-IIB-1

REQUIREMENTS for 33 KV CURRENT TRANSFORMERS for Feeder bays

No. of Cores	Core No.	Appli Excitation cur	Current		Output burden	Accuracy	Min. knee Pt. Volt.	Max. CT Sec. wdg. rent at Vk (In mA)
			ratio	burden (VA)				
3	1	Protection	400-200/1	-	-	800/400	8/4	25 on 400/1 Tap; 50 on 200/1 Tap
	2	Protection	400-200/1	-	-	800/400	8/4	25 on 400/1 Tap; 50 on 200/1 Tap
	3	METERING 200/1	400-	20	0.2	-	-	-

All relaying CTs shall be of accuracy class PS as per IS:2705

TABLE-IIB-2

REQUIREMENTS for 33 KV CURRENT TRANSFORMERS
for Transformer Bays

No. of Cores	Core No. wdg.	Appli cation	Current ratio cur	Output (VA)	burden per IEC: 44-1	Accuracy Class as Vk	Min. knee Pt. Volt. resistance (ohms)	Max. CT rent at Vk (In mA)	Max. Sec.
3	1	Protection	1000-500/1	-	-	800/400	8/4	25 on 1000/1 Tap; 50 on 500/1 Tap	
	2	Protection	1000-500/1	-	-	800/400	8/4	25 on 1000/1 Tap; 50 on 500/1 Tap	
	3	METERING	500/1	1000-20	0.2	-	-	-	

All relaying CTs shall be of accuracy class PS as per IS:2705

TABLE-IIB-3

REQUIREMENTS for 33 KV CURRENT TRANSFORMERS
for Transformer Bays

No. of Cores	Core No. wdg.	Appli cation	Current ratio cur	Output (VA)	burden per IEC: 44-1	Accuracy Class as Vk	Min. knee Pt. Volt. resistance (ohms)	Max. CT rent at Vk (In mA)	Max. Sec.
3	1	Protection	200-100/1	-	-	800/400	8/4	25 on 200/1 Tap; 50 on 100/1 Tap	
	2	Protection	200-100/1	-	-	800/400	8/4	25 on 200/1 Tap; 50 on 100/1 Tap	
	3	METERING	100/1	200-20	0.2	-	-	-	

All relaying CTs shall be of accuracy class PS as per IS:2705