

E-Tender Notice

**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 “Providing and Erection of 145 kV Capacitive Voltage Transformer (CVTs) and associated work at 132/33 kV Substation, Virbhadra under 220 kV (O&M) Division, Rishikesh” against E-Tender specification No. CE/GZR-13/2026-27.

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Sr. No.	DESCRIPTION	
1.	Tender No.	CE/GZR-13/2026-27
2.	Name of Work	Providing and Erection of 145 kV Capacitive Voltage Transformer (CVTs) and associated work at 132/33 kV Substation, Virbhadra under 220 kV (O&M) Division, Rishikesh.
3.	Completion Time	06 Months from the date of approval of drawing & GTP.
4.	Tender issuing office	Office of Chief Engineer (O&M) Garhwal Zone, Power Transmission Corporation of Uttarakhand Ltd. " 26-Civil Lines, Roorkee-247667
5.	Tender Fees	Rs. 1,000.00+ 180.00 (GST@18%) =Rs. 1180.00 (Non refundable)
6.	EMD/Bid Security	Rs. 65,000.00
7.	Last date of Submission of Bid	21.09.2026
8.	Last Date and Time of Opening of Bid	22.09.2026
9.	Address & Place of Submission of Bid supporting documents.	Chief Engineer (O&M), Garhwal Zone, PTCUL, 26-Civil Lines Roorkee-247667.
10.	Type of Tender	Open Tender
11.	Contact & Telephone No. of the Tender issuing office	Phone No.:- 01332-272256
12.	E-mail address of the tender issuing office	ce_oandmg@ptcul.org

**(CHIEF ENGINEER (O&M)
GARHWAL ZONE,
ROORKEE**

Pre-Qualifying Criteria

Scope of Work: WORK OF PROVIDING AND ERECTION OF 145 KV CAPACITIVE VOLTAGE TRANSFORMER (CVTS) AND ASSOCIATED WORK AT 132/33 KV SUBSTATION, VIRBHADRA UNDER 220 KV (O&M) DIVISION, RISHIKESH.

Pre-Qualifying Criteria:

1. The tenders/bidders must have to visit site of work & have to submit site visit report issued by concerned Executive Engineer along-with technical bid, failing which the bid of the tender may be rejected summarily.

TECHNICAL CRITERIA

1. The bidder should have successfully completed the similar nature of work i.e. Procurement and installation of 145 KV or above capacity, Capacitive Voltage Transformer (CVTS) or supply/erection of any other electrical equipment's at 33 kV or above voltage substations.
2. Copies of Work Orders (as per above criteria) from the Govt. Power Utilities/PSUs/Govt. Organizations/Other Govt. Department for similar work is required to be submitted along with the bid.
3. The Tenderers/bidders should have adequate experience 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. One similar completed works costing not less than the amount equal to Rs. 15.46 Lakh.
Or
 - b. Two similar completed works costing not less than the amount equal to Rs. 9.66 Lakh.
Or
 - c. Three similar completed work costing not less than the amount equal to Rs.7.73 Lakh.
4. Bidder should have "A" Class Electrical Licence (Uttarakhand only).
5. Any partner shall solely or JV jointly shall meet Technical Qualifying Requirement (TQR) of the respective tender.

FINANCIAL CRITERIA

1. **Minimum Average Annual Turnover:-** The minimum average annual turnover of the tenderer for the best three years (36 months) out of the last five years should not be less than Rs.34.21 Lakh
2. For Financial Qualification Criteria, Joint Venture Partners shall jointly/collectively meet 100% of Financial Qualification Requirement (FQR) of the respective tender.

Note: 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.

3. A copy of PAN of the firm and all its partners.
4. A copy of GST Registration.
5. A copy of EPF Registration.
6. Solvency certificate from Bank (20% of bid value) should be submitted.

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TECHNICAL SPECIFICATION FOR 145 KV CVT

1.0 GENERAL

- 1.1 The instrument 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
Voltage transformers IEC: 186/358 (or IS: 3156)
- 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 metallics 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 420/245kV/145kV/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 and for electromagnetic unit of CVT, etc. The bushing/insulator of instrument transformer shall have cantilever strength of not less than 500kg, 350kg and 350kg for 420/245/145kV and 350 kg for 33kV Instrument transformers respectively or as per the value obtained vide Chapter-GTR, whichever is higher. Oil filling and drain plugs are not required with SF6 gas filled CT.
- 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).
- b) The SF6 gas shall comply with IEC-60376, 60376A and 60376 B and shall be suitable in all respects for use in the switchgear under operating conditions.

2.4 Name Plate:

Name plate shall conform to the requirements of IEC incorporating the year of manufacture. The rated current, extended current rating in case of current transformers and rated voltage, voltage factor in case of voltage 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. The intermediate voltage in case of capacitor voltage transformer shall be indicated on the name plate.

3.0 VOLTAGE TRANSFORMERS:

- a) 420/245/145kV Voltage transformer shall be capacitor voltage divider type with electromagnetic units and shall be suitable for carrier coupling.
- b) Voltage transformers secondaries shall be protected by HRC cartridge type fuses for all the winding. In addition fuses shall be provided for the protection and metering windings for fuse monitoring scheme. The secondary terminals of the CVTs shall be terminated to the stud type non-disconnecting terminal blocks in the individual phase secondary boxes via the fuse.
- c) CVTs shall be suitable for high frequency (HF) coupling required for power line carrier communication. Carrier signal must be prevented from flowing into potential transformer (EMU) circuit by means of a RF choke/reactor suitable for effectively blocking the carrier signals over the entire carrier frequency range i.e. 40 to 500 KHz. Details of the arrangement shall be furnished along with the bid. H.F. terminal of the CVT shall be brought out through a suitable bushing and shall be easily accessible for connection to the coupling filters of the carrier communication equipment, when utilized. Further, earthing link with fastener to be provided for HF terminal.
- d) The electromagnetic unit comprising compensating reactor intermediate transformer and protective and damping device should have separate terminal box with the entire secondary terminal brought out.
- e) The damping device which should be permanently connected to one of the secondary winding should be capable of suppressing the ferro-resonance oscillations.
- f) The accuracy of 0.2 on secondary III should be maintained throughout the entire burden range upto 100 VA for 420/245/145 kV CVTs and upto 40VA for 33kV PTs on all the windings without any adjustments during operation.
- g) 420/245/145/33kV CVTs/PTs shall be suitable for mounting on tubular GI pipe in accordance with stipulations of Chapter-GTR.
- h) It should be ensured that access to secondary terminals is without any danger of access to high voltage circuit.
- i) A protective surge arrester shall be provided to prevent breakdown of insulation by incoming surges and to limit abnormal rise of terminal voltage of shunt capacitor/primary winding, tuning reactor/RF choke etc. due to short circuit in transformer secondaries. In case of an alternate arrangement, bidder shall bring out the details in the bid.
- j) The wiring diagram for the interconnection of the three single phase CVTs/PTs shall be provided inside the marshalling box in such a manner that it does not deteriorate with time.

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 and Voltage 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.

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Voltage Transformers:

- i) High frequency capacitance and equivalent series resistance measurement (as per IEC-358).
- ii) Seismic withstand test (as per Annexure-B of Chapter-GTR).
- iii) Stray capacitance and stray conductance measurement of the low voltage terminal (as per IEC-358).
- iv) Determination of temperature coefficient test (as per IEC-358).
- i) Radio interference test as per Annexure-A of Chapter-GTR.
- ii) The Ferro-resonance type test shall be carried out on the complete CVT.

5.3 The current and voltage transformer shall be subjected to the following routine/site tests in addition to routine test as per IEC/IS.

VOLTAGE TRANSFORMERS:

- i) Capacitance and loss angle measurement before and after voltage test (as per IEC-358).
- ii) Partial discharge test on capacitor dividers (as per IEC-358).
- iii) Sealing test (as per IEC-358).

6 TECHNICAL PARAMETERS FOR CAPACITIVE VOLTAGE TRANSFORMERS/ POTENTIAL TRANSFORMERS:

S.No	Details	Unit	132 KV system	33 KV system (PT)
1	Nominal/rated voltage	KV	132	33
2	Highest system voltage	KV	145	36
3	Fault current and duration	KA	31.5 (1 sec.)	25 (3 sec.)
4	Rated primary voltage	KV	$145/\sqrt{3}$	$36/\sqrt{3}$
5	Rated secondary voltage	V	$110/\sqrt{3}$	$110/\sqrt{3}$
6	Accuracy class			
	- Protection		3P	3P
	- Metering		0.2	0.2
7	Lightning (full wave) impulse withstand voltage (1.2/50 micro sec.)			
	- between line terminals and ground	KVp	650	170
9	One minute power frequency withstand voltage:			
	- between line terminals and ground	KV _{rms}	275	75
10	Minimum corona extinction voltage	KV _{rms}	105	-
11	Maximum radio interference voltage for frequency between 0.5 to 2 MHz	micro-volt	500 (at 92 kV _{rms})	-
13	High frequency capacitance for entire carrier frequency range	%	80 to 150 % of rated capacitance	NA
14	Equivalent resistance over entire carrier frequency range	Ohms	< 40	-
15	Stray capacitance and stray conductance of LV terminal over entire carrier frequency range		As per IEC-60358	-
16	One minute power frequency withstand voltage (LV side):			
16 (a)	Between LV (HF) terminal and earth			
	- for exposed terminals	KV _{rms}	10	10
	- for terminals enclosed in weather proof enclosure	KV _{rms}	4	4
16 (b)	For secondary winding	KV _{rms}	3	3
17	Rated voltage factor			

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	- continuous		1.2	1.2
	- for 30 sec.		1.5	1.5
18	Maximum partial discharge level	pC	10	10
19	Rated capacitance	pF	4400 (+10, - 5%)	-
20	Cantilever strength	Kg	350	350

7.0 TESTING & COMMISSIONING

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.

Voltage Transformers/Capacitive Transformers:

- (a) Insulation Resistance test for primary (if applicable) and secondary winding.
- (b) Polarity test
- (c) Ratio test
- (d) Dielectric test of oil (wherever applicable)
- (e) Tan delta and capacitance measurement between:-
 - (i) HV-HF point
 - (ii) HF Point-Ground point of Intermediate Transformer.
 - (iii) HV-Ground point of Intermediate Transformer primary winding
- (f) Secondary winding resistance measurement.

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TABLE-I C
REQUIREMENT OF 145 KV CAPACITIVE VOLTAGE TRANSFORMERS

Sl. No.	PARTICULAR			
1.	Rated primary voltage (kVrms)	145		
2.	Type	Single phase capacitor VT		
3.	No. of secondaries	3		
4.	Rated voltage factor	1.2 continuous 1.5-30 seconds		
5.	Phase angle error	± 20 minutes (For metering core)		
6.	Capacitance (pf)	4400 +10%, - 5%		
7.	Voltage Ratio	Secon- dary I	Secon- dary II	Secon- dary III
		132/0.11	132/0.11	132/0.11
8.	Application	Protection	Protection	Metering
9.	Accuracy	3P	3P	0.2
10.	Output burden (VA) (minimum)	50	50	50

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