

Technical Specification For 11 KV /110 V Potential Transformer for 11 KV Indoor Incoming Vacuum Circuit Breaker

1.0 SCOPE:

This specification covers design, engineering, manufacture, stage testing, inspection and testing before supply and delivery at PVVNL Stores and testing and commissioning of **11 KV /110 V Potential Transformer for 11 KV Indoor Incoming Vacuum Circuit Breaker** installed at different 33/11 KV Substation in PVVNL & supplied by VCB manufacturers such as **ECE, ERG, ECG, CGL, TOSHIBA, PASCAL, CROMPTON, YAMUNA POWER, ERL, ASIATIC, ASHIDA, ALSTOME, BIECCO, ABB, STELMEC, BHEL, MEGAWIN, AREEVA, SIEMEN, VICKO, EASUN REYROLLE, SCHNEIDER, UBITECH, AUDIOVISION, ELECTRO CONTROL, VIJAY ELECTRICAL, BMC ELECTROMECH, L&T, ISHUN, PLASTOFAB.** *The 11 KV /110 V Potential Transformer for 11 KV Indoor Incoming Vacuum Circuit Breaker shall be compatible to all the makes of 11 KV VCBs mentioned above.*

- 1.1 It is not the intent to specify completely herein all the details of the design and construction of material. However the material shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation in a manner acceptable to the purchaser, 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 STANDARDS :

- 2.1 The materials shall conform in all respects to the relevant Indian Standard Specifications with latest amendments thereto(if any).Equipment conforming to other internationally accepted standards, which ensure equal or higher quality than the standards mentioned above, would also be acceptable. In case the Bidders who wish to offer material conforming to the other standards, salient points of difference between the standards adopted and the specific standards shall be clearly brought out in relevant schedule. Four copies of such standards with authentic English Translations shall be furnished along with the offer. In case of conflict the order of precedence shall be (i) IS, (ii) IEC, (iii) Other standards. In case of any difference between provisions of these standards and provisions of this specification, the provisions contained in this specification shall prevail.

3.0 PRINCIPAL PARAMETERS :

- 3.1 The material shall conform to the following specific parameters :

| Sl. No. | Item | Specification |
|---------|----------------------|------------------|
| 1. | Type of Installation | indoor |
| 2. | System Voltage | 11 KV (+10%) |
| 3. | System Frequency | 50 Hz +/- 5% |
| 4. | No. of Phases | Three |
| 5. | System of earthing | Solidly grounded |

4.0 TECHNICAL REQUIREMENTS :

4.1 MAIN FEATURES :

The **11 KV /110 V Potential Transformer for 11 KV Indoor Incoming Vacuum Circuit Breaker** shall be of 11 KV grade, conforming to relevant standards suitable for 11 KV three phase 50 cycle per second earthed system with following technical requirements.

4.2 *Main Technical Requirements*

3-phase resin cast, draw out type bus bar connected potential transformers of Ratio 11000/110 volts class 0.5 accuracy having minimum **50 VA** output per phase to Operate the AC. static H.T. Trivactor meter, voltmeter etc. and complete with H.T. & LT. fuse suitable to **ECE, ERG, ECG, CGL, TOSHIBA, PASCAL, CROMPTON, YAMUNA POWER, ERL, ASIATIC, ASHIDA, ALSTOME, BIECCO, ABB, STELMEC, BHEL, MEGAWIN, AREEVA, SIEMEN, VICKO, EASUN REYROLLE, SCHNEIDER, UBITECH, AUDIOVISION, ELECTRO CONTROL, VIJAY ELECTRICAL, BMC ELECTROMECH, L&T, ISHUN, PLASTOFAB.**

4.2.1 *GUARANTEED TECHNICAL PARTICULARS:*

The guaranteed technical particulars in the prescribed format shall be furnished along with the bid without which the Bid shall be treated as non-responsive

| SI. No. | Specification of 11 KV /110 V Potential Transformer Suitable to above makes | Specification offered for 11 KV/110 V PT by Bidder |
|---------|---|--|
| 1 | Type | |
| 2 | Rated Primary voltage. | |
| 3 | Rated Secondary voltage. | |
| 4 | Rated burden of Secondary. | |
| 5 | Rated Frequency | |
| 6 | Potential Transformer Ratio. | |
| 7 | Accuracy Class. | |
| 8 | Phase Displacement | |
| 9 | Temperature rise at 1.2 times. Rated voltage with rated burden. | |
| 10 | Temperature rise for (8 above) | |
| 11 | Rated Voltage factor and time. | |
| 12 | Fuse Protection | |
| | (a) Rated Primary side | |
| | (b) Rated Secondary side | |
| 13 | Insulation Level | |
| | (a) Impulse withstand voltage | |
| | (b) One minute power withstand voltage | |
| 14 | One minute power frequency withstands Test (dry) voltage. | |
| 15 | 1.2/50 ms Impulse voltage withstand | |
| 16 | One minute power frequency withstand test voltage | |
| 17 | Mounting details | |

5.0 INSPECTION & TESTING:

- 5.1 Successful type test of **11 KV /110 V Potential Transformer for 11 KV Indoor Incoming Vacuum Circuit Breaker** of same design, size, type and manufacturing process during last five years (counted from the date of tender opening) should be made available by the firm.,
- 5.2 However, the purchaser reserves the right to get the **11 KV /110 V Potential Transformer** type tested at any stage during the pendency of contract at its own expenses in any reputed test house mentioned above. The transportation and arrangement of testing of sample to test laboratory shall be the responsibility of the contractor.
- 5.3 Routine and Acceptance tests as laid down in relevant IS (if any) with latest amendment thereof shall be carried out by the inspecting officers of the PVVNL on sample selected at random as per relevant ISS.

6. ROUTINE /ACCEPTANCE TEST

Following Routine / Acceptance tests shall be carried out as per relevant standard shown in clause '2' of Technical specification.

VOLTAGE TRANSFORMER

1. Verification of terminal marking and polarity.
2. Power frequency dry withstand test on primary winding.
3. Power frequency dry withstand test on secondary winding.
4. Partial discharge test in accordance with IS: 11322/1985 and latest amendment thereof.
5. Determination of errors or other characteristics according to the requirement of the appropriate designation or accuracy class.

7. INSPECTION AND TESTING:

All PTs shall be inspected and tested at manufacturer works to verify that these are being supplied in accordance with relevant standards. Technical Specification, Guaranteed Technical Particulars and acceptance and routine tests.

Inspection of material offered for inspection shall be carried out by the representatives of Superintending Engineer (Discom Quality Cell), PVVNL, Meerut.

While offering for inspection /testing confirmation to the effect that the cubicle have successfully withstood the routing tests (along with test results) is required to be submitted for each lot offered for inspection Superintending Engineer (Discom Quality Cell), PVVNL, Meerut.

All testing equipment used in inspection and testing should be properly calibrated and sealed once a year. Calibration certificate when demanded by the inspecting officer shall be provided / produced for verification purpose. In case of any dispute regarding calibration, instruments shall be sealed and signed by the representative of the supplier and purchaser and will be sent to test house / Govt. Lab / Govt. institution of repute, for calibration at the cost of supplier. The result of such testing shall be binding on the supplier.

Purchaser reserves the right to get the PT's inspected / type tested before dispatch by any independent inspection agency at the cost of purchaser in case the equipment with stand the type test, otherwise the supplier has to bear such cost in addition to any other action deemed appropriate by the purchaser.

One sample of PT of any ratio randomly selected from each offered lot, shall be opened for verifying the diameter & cross sectional area of primary coil conductors including verification of GTP

Testing Facility: - The manufacturer must have testing facilities at their works to carry out all the routine & acceptance test (including partial discharge test). List of Testing equipment with photo copy of calibration certificates should be enclosed with Part- I of the tender.