PASCHIM GUJARAT VIJ COMPANY LIMITED

TENDER NO. PGVCL/PROC/Lightning Arrester/797

9KV/18KV METAL OXIDE LIGHTNING ARRESTORS WITHOUT GAPS WITH STANDARD NOMINAL DISCHARGE CURRENT 5KA

Technical specification for 9KV/18KV 5KA Metal oxide Lightning Arrestors without Gap.

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1. SCOPE :-

This specification provides for design, manufacturing, inspection/Testing before dispatch of 9KV/18KV 5KA Gapless type (Metal Oxide surge arrestor without gap) Lightening Arrestor with all its accessories to limit voltage surges on 11/22KV Rural & Urban Distribution system with nominal voltage of 11KV & 22KV.

2. APPLICABLE STANDARDS :-

9KV/18KV Gapless type lightening arrestor shall confirm to the latest edition & amendment if any available on the date of invitation of Tender listed below:

Sr.No.	Applicable standards		Title
1.	IS: 3070(Part-3)-1993	:-	Metal Oxide Lightening Arrestors without Gaps.
2.	IEC-99-4 1991-II (Part-4)	:-	Metal Oxide surge arrestor without gap for AC system.
3.	IS: 2625/1985 with latest revision/amendment	:-	recommended practice for for Hot dip Galvanizing of Iron & Steel.
4.	IS-5621/1980 with latest revision/amendment, if any	:-	Specification for large hollow porcelain for use in electrical installation
5.	IS: 6745/1972	:-	Method of determination of weight of zinc coating on zinc coated iron and steel article.
6.	IS:2633 with latest revision	:-	Method for testing of Uniformity of zinc coating
7.	IS:2147/1962	:-	Degree of protection provided by enclosures for low voltage switchgears & control gear.

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3. CLIMATE CONDITIONS :-

The lightening arrestor and all its accessories shall be suitable for continuous satisfactory operation in under following climate condition listed below:

1.	Location	:-	In Rural and Urban Distribution system of Gujarat State.
2.	Maximum ambient air temperature degree centigrade	:-	50 C
3.	Minimum ambient air temperature degree centigrade	:-	0 C
4.	Average daily ambient temperature degree centigrade	:-	35 C
5.	Maximum relative humidity	:-	95%
6.	Maximum altitude above mean sea level	:-	Not exceeding 1000Mtrs.
7.	Average annual rain fall Cm.	:-	1150
8.	Minimum wind pressure Kg/Sq.Mt.	:-	150
9.	Seismic level (Horizontal acceleration)	:-	0.3 g.
10.	ISO keraunic level (Days/year)	:-	15 days

11 Lightening arrestor shall be suitable for moderately hot-cold & tropical humid climate of polluted areas/sea-shore prone to rest & fungus growth. The climate conditions may have wide variations in ambient temperature and equipments offered, shall be suitable for installation at any place. All the electrical devices shall be given tropical and fungicidal treatment to enable its satisfactory operation in above climate condition.

4. VOLTAGE RATING :-

4.1. Standard voltage ratings are 9KV for 11KV system voltage & 18KV for 22KV system.

4.2. Standard rated frequency 50 Hz.

4.3. The nominal discharge current shall be 5KA of 8/20 micro second-wave shape.

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5. PROCELLIN HOUSING FOR LIGHTENING ARRESTORS :-

5.1. The porcelain housing for the lightening arrestor shall be confirming to IS:5621/1980 with latest amendment/ revision (specification for hollow insulators for use in electrical equipment)

5.2 Make of porcelain housing to be used for lightening arrestor as shown below:

a) Jayshree Make - JSI
b) WSI
c) Shesashayee
d) BHEL
e) Luster Ceramics
f) Shakti make
g) Oblum make.

Any other make approved by the PGVCL/GUVNL.

Creepage Distance : 11KV - 320 mm.
22KV - 600 mm.

5.3 The porcelain housing used for the lightening arrestor shall be legibly marked to show following details:

a) Name of trade mark of the manufacturer
b) Month & year of manufacturer
c) Country of manufacture

Marking on porcelain shall be printed & shall be applied before firing.

6. METAL PARTS :-

The metal parts & fillings shall be made of non-magnetic corrosion proof material. The conducting parts shall have suitable current density to have satisfactory performance during service life.

7. CLAMPS :-

The clamps for holding the lightening arrestor should be made from M.S. Flat 3mm thickness & should be capable of holding L.A. in position. The fixing holder should be oblong. The clamps should be Hot-dip Galvanized. With 630 gm/m2 zinc coating by mass minimum and must withstand 4 dips of 1 minute each with tested for uniformity of zinc coating.

8. PACKING & FORWARDING :-

The lightening arrestor fully assembled with fittings shall be carefully covered with shock absorbing protective material and should be packed in either wooden crates or corrugated box. The packing should be properly done to protect i from damage during transit, loading unloading, stacking etc. The lightning arrestor shall not be packed more than 15 Nos. in each box / crate.

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9. SEALING :-

Lead seal & wire on each wooden crate to be provided by the supplier at their cost to facilitate sealing by inspector of PGVCL after the lot passes in all acceptable tests.

10. INSPECTION :-

The supplier shall offer the material for inspection in lots as and when ready with him. The PGVCL will arrange for inspection of each lot as early as possible within 15 days from the date of receipt of intimation, and on availability of transport/ rail facility-tickets available to Inspector. The lot offered shall not be dispatched by the supplier without having clearance from PGVCL inspector or waiver of inspection in writing from the PGVCL.

The acceptance tests as prescribed under Clause No. 7.2 of IS: 3070 (part -3) -1993 for the offered lot will be carried out by the inspector the works of manufacturer. The manufacturer shall provide all the facilities for all the required tests. The testing instruments should be in proper working condition, duly calibrated up to date either by the original manufacturer of instrument or by any approved Government laboratory. Copies of calibration certificates shall be made available to the inspector.

11. TYPE TEST CERTIFICATE :-

The tenderer shall submit the type test certificate/s along with attested certified copies of Drawings of their product, of any approved Government laboratory along with the offer. Offer without type tests certificate/s with attested drawings/ incomplete/provisional type test certificates will not be considered & straightway rejected. Type test report shall not be older than 5 years from the date of invitation of tender,

12. ROUTINE TEST CERTIFICATE :-

The supplier should carryout various routine test as per Clause No. 7.1 of IS: 3070 (part-3)-1993 on each lightening arrestors offered in the lot and provide test certificate to the inspector during inspection of the lot offered. Supplier is also required to maintain register for the routine tests carried out on each lightening arrestor and has to show the same during inspection on demand.

13. GUARANTEED TECHNICAL PARTICULARS :-

The lightening arrestors manufactured shall confirm to the relevant IS:3070 (Part-3) -1993 or IEC-99-11 (Part-4) of 1991 and also other IS standards mentioned in this specification, over & above the other details mentioned in this specification, and would meet all the requirements specified in guaranteed Technical Particulars indicated at Annexure-B.

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14. GUARANTEE:-

The manufacturer shall guarantee satisfactory performance of the lightening arrestors for a period of 12 months from the date of installation or 18 months from the date of receipt by purchaser whichever is earlier.
It will also be guaranteed by the manufacturer that no nuisance operations shall take place in the event of lightening arrestors effectively discharging the high voltage to earth & returning to normal conditions.

15 MARKING :-

Each lightening arrestor shall be provided with a name-plate or plates legibly marked with following details (Details on sticker not acceptable)

a) Gapless lightening arrestor
b) Continuous operating voltage
c) Rated voltage & current
d) Rated frequency
e) Nominal discharge current
f) The manufacturer's name or trace mark with type & identification
g) The year & month of manufacturer
h) Serial Number of arrestors
i) Property of PGVCL
j) A/T No. with date & reference

16. SAFETY DEVICE :-

Arrestors will be provided with safety device with properly designed blow off hollow device, to disconnect arrestor from off time in case of spark over resulting in failure of lightening arrestor. No nuisance operation should occur in event of lightening arrestor effectively discharging H.V. to earth and returning to normal in sub-station level.

17. TYPE TEST :

Following type test as per IS:3070 (part-3) -1993 on offered type of arrestors should be carried out at Government approved laboratory & certificate along with attested drawing shall be submitted along with technical bid of the tender. Offer without complete type test certificate along with attested drawing will be straightway rejected.

The following type test shall be made as far as required in Table -7 of IS: 3070 (part-3) 1993:

a) Insulation withstand test.
b) Residual voltage test
c) Long duration current impulse withstand test.
d) Operating duty test.

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e) Presume relief test (when fitted with relief device)
f) Tests of arrestor disconnect or (when fitted)
g) Artificial pollution test on porcelain housed arrestors.
h) For porcelain housed arrestors
   (i) Temperature cycle test on hollow porcelain housings.
   (ii) Porosity test.
i) Galvanizing test on exposed ferrous metal parts.

18. ACCEPTANCE TESTS :-

18.1 The sample criteria for acceptance tests shall be nearest lower whole number to the cube root of the number of arresters in the lot available for inspection in accordance with the clause No.7.2 of IS: 3070 (part-3) -1993
(a) Measurement of Power frequency voltage on the complete Arrestors at the reference current. (All samples)
(b) Lightening impulse residual voltage test.(All samples)
(c) Partial discharge test.(All samples)
(d) Visual examination and dimensional verification test.(All samples)
(e) Porosity test of porcelain housing (on two samples)
(f) Galvanizing test on exposed ferrous metal parts for uniformity of zinc coating test and weight of zinc coating test. (on two samples)

19. ROUTINE TESTS :-

The minimum requirement for routine tests to be made by the manufacturer shall be as follows as per Clause No. 7.1 IS:3070 (part-3)-1993 with latest amendment/ revision if any on each arresters offered for inspection.

(a) Reference voltage test
(b) Residual voltage test
(c) Test for satisfactory absence from partial discharge and contact noise shall be checked on each unit by any sensitive method adopted by the manufacturer.
(d) Leakage check
(e) Current distribution test for multi column arrestor.
(f) Visual examination test on porcelain housing.

The supplier is required to mention the results in special register to be maintained at their works, and to be shown to the inspector for each lot offered for inspection.

20. IMPORTANT:-

The material supplied shall be confirming to Indian standard specification and also with ISI marking as well as relevant IS number and after inspection of the lot. If the material received at the site is found without ISI marking and relevant IS number, the lot shall be rejected and no further correspondence shall be entertained in this regard.

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