



**GUJARAT ENERGY TRANSMISSION
CORPORATION LTD.**

**SARADAR PATEL VIDYUT BHAVAN,
RACE COURSE, BARODA – 390 007.**

**TECHNICAL SPECIFICATIONS
FOR**

**400 KV, 220 KV, 132 KV & 66 KV
SOLIDCORE POST INSULATORS**

GETCO/E/4,2,1,6 TS – 1-400BPI/R3 Dec09

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SPECIAL INSTRUCTIONS TO BIDDER

Please read following instructions carefully before submitting your bid.

1. All the drawings, i.e. elevation, side view, plan, cross sectional view etc., in AutoCAD format and manuals in PDF format, for offered item shall be submitted. Also the hard copies as per specification shall be submitted.
2. The bidder shall submit Quality Assurance Plan for manufacturing process and Field Quality Plan with the technical bid.
3. The bidder shall have to submit all the required type test reports for the offered item. In absence of this confirmation, the evaluation shall be carried out accordingly as non-submission of type test reports.
4. The bidder must fill up all the point of GTP for offered item/s. Instead of indicating “refer drawing, or as per IS/IEC”, the exact value/s must be filled in.
5. All the points other than GTP, which are asked to confirm in technical specifications must be submitted separately with the bid.
6. The bidder is required to impart training in view of manufacture, assembly, erection, operation and maintenance for offered item, at his works, to the person/s identified by GETCO, in the event of an order, free of cost. The cost of logistics will be bear by GETCO.
7. Please note that the evaluation will be carried out on the strength of content of bid only. No further correspondence will be made.
8. The bidder shall bring out all the technical deviation/s only at the specified annexure.
9. The bidder should indicate manufacturing capacity by submitting latest updated certificate of a Chartered Engineer (CE).

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QUALIFYING REQUIREMENT DATA

(For Supply)

Bidder to satisfy all the following requirements.

- 1) The bidder shall be Original Equipment Manufacturer (OEM). The offered equipment have to be designed, manufactured and tested as per relevant IS/IEC with latest amendments.
- 2) The minimum requirement of manufacturing capacity of offered type, size and rating of equipment shall be **5 times (for 400KV) and 7 times (for 220KV,132KV & 66KV) tender / bid quantity**. The bidder should indicate manufacturing capacity by submitting latest updated certificate of a Chartered Engineer (CE).
- 3) Equipment proposed shall be of similar or higher rating and in service for a minimum period of THREE (3) years and satisfactory performance certificate in respect of this is to be available and submitted.
- 4) The bidder should clearly indicate the quantity and Single Value Contract executed during last FIVE (5) years, for the offered equipment. Bidder should have executed one single contract during last five years for the quantity equivalent to tender / bid.

The details are to be submitted in following format,

Sr. No	ITEMS SUPPLIED TO	ORDER REFERENCE No. & DATE	ITEMS	QUANTITY	ORDER FULLY EXECUTED. YES/NO	STATUS, IF ORDER UNDER EXECUTION	REMARK
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- 5) Equipment offered shall have Type Test Certificates from accredited laboratory (accredited based on ISO/IEC Guide 25 / 17025 or EN 45001 by the National accreditation body of the country where laboratory is located), as per IEC / IS / technical specification. **The Type test reports shall not be older than FIVE years and shall be valid upto the expiry of validity of offer.**

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**TECHNICAL SPECIFICATION FOR 400/220/132/66 KV
SOLIDCORE POST INSULATORS**

1 SCOPE

This specification provides for the supply of 400, 220, 132, & 66 kV solid core post insulators required for the 400 kV, 220 kV ,132 kV or 66 kV sub-stations at various sites in State of Gujarat.

2 DESIGN

The post insulator required for sub-station shall be of outdoor type suitable for operation under tropical conditions with high temperature, humidity and rainfall. The insulation level should be as under:

Item	Power frequency <u>withstand value</u> 1 min (dry)/ (wet) in KV (rms)	Impulse withstand <u>strength</u> KV (Peak)
400KV Solid core post insulator	760/680 KV (w/o arc horns)	1550 KVp
220 KV solid core post insulator	510/460 KV	1050 KVp
132kV solid core post insulator	275 KV	650 KVp
66kV solid core post insulator	165/140KV	350 KVp

the post insulator shall be suitable for outdoor operation and shall be suitable for mounting on *lattice* or one pole structure. *The mounting bolts, nuts and washers shall be in the scope of supply.*

3 PROTECTION AGAINST CORROSION

All malleable iron steel work, steel bolts and nuts and flanges shall be hot dip galvanized in accordance with IS: 2629/1966 with the latest amendment thereof.

4 ELECTRICAL AND MECHANICAL CHARACTERISTICS OF INSULATORS

Imported insulator meeting electrical and mechanical characteristics will be accepted if only they are offered against suppliers import license and the transit breakages if any, are also covered by the supplier for replacement of material from their stock. Insulators shall be of “Post Type” and the metal fitting cemented by insulator manufacturers.

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5 TECHNICAL PARTICULARS

Technical particulars of 400 220, 132 & 66 KV solid core post insulator (Guaranteed details to be furnished by the bidder in Schedule-A attached with the specification).

Sr. No.	Description	Unit	Solid core post insulator			
			400 kV	220 kV	132 kV	66 kV
01	02	03	04	05	06	07
01	Highest system voltage	KV	420	245	145	72.5
02	Height of unit	mm	3910	2300±3.5	1500±2.5	770 ± 1
03	Bending strength (approximate failing load): a) Upright	Kgf	800	800	600	400
04	Tensile strength (Approximate)	Kgf	17,000	8000	7000	3500
05	Compression strength (Approximate)	Kgf	33,000	20000	14000	7000
06	Torsion strength (Approximate)	KgfM.	460	450	300	200
07	a) Power frequency flashover voltage (dry)	KV	890	625	275	180
	b) -do- (wet)	KV	820	570	275	155
08	a) Impulse flashover voltage (Positive)	KV	1850	1210	650	355
	b) -do- (Negative)	KV	1850	1450	650	405
09	a) One minute power frequency withstand voltage (dry)	KV	760 (w/o arcing horns)	510	275	165
	b) -do- (wet)	KV	680 (w/o arcing horns)	460	275	140
10	Impulse positive/negative withstand voltage	KV	1550	1050	650	350
11	Power frequency puncture voltage	KV	Puncture proof	Puncture proof	Puncture proof	Puncture proof
12	RIV	KV				
	a) Test V to Ground KV (rms)		266		---	---
	b) at 1000 KHz with grading rings	mV	<1000mV	<500 mV		

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13	(a) Visible discharge (b) Switching surge withstand voltage	KV KVp	320 with grading ring 1080	154 --	105 --	53 --
14	Creepage distance (Approximate) a) Total b) Protected	mm	10,500 5250	6125 3065	3625 1815	1815 910
15	Top metal fitting PCD	mm	4 holes of M16 PCD 127	4 holes of M16 PCD = 127	4 holes of M16 PCD = 127	127 ± 0.2
16	Bottom metal fitting PCD	mm	8 Holes of M18 PCD 300	8 holes of M18 and PCD = 254	4 holes of M18 and PCD = 225	127 ± 0.2
17	All ferrous part should be hot dip galvanized to IS:2629/1966		Yes	Yes	Yes	Yes
18	Suitable for Hot line washing		Yes	Yes	Yes	Yes
19	Corona Extinction device		Corona ring provided	--	--	--
20	Dry Arcing Distance	mm.	3400	--	--	--

1KN = 101.972 Kgs.

6 TESTING

The tenderers shall clearly state in their tender whether they have in their factory adequate facilities for carrying out type tests and routine tests as specified in related ISS & IEC and its latest amendments. Offers of those firms who have necessary equipment in their factory for carrying out type tests will be preferred. Offers of those firms who have no testing equipment within their factory for carrying out even routine test will be ignored. All the acceptance tests shall be carried out as IS 2544-1973 (latest amendments). **Power Frequency (dry) withstand test shall be carried out on selected samples at the time of Acceptance Test.**

List of Type Tests:

1. Visual Examination,
2. Verification of dimensions,
3. Visible discharge (Corona extinction) test,
4. Lightning Impulse Voltage withstand test,
5. Lightning Impulse 50% flashover Voltage test,

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6. Dry Power frequency voltage withstand test,
7. Wet Power frequency voltage withstand test,
8. Dry Power frequency flashover voltage test,
9. Wet Power frequency flashover voltage test,
10. Temperature Cycle test,
11. RIV test,
12. Corona inception & extinction ,
13. Switching Impulse voltage test
- 14 Mechanical Strength test
 - (i) Compression Test,
 - (ii) Tensile Test,
 - (iii) Torsion Test,
 - (iv) Cantilever Strength test and,
 - (v) Bending test
15. Porosity Test
16. Puncture Test (for Insulators type B only) and,
17. Galvanizing test

7 DEVIATION

The offer shall conform in all respects to the above specifications. If not, the deviations shall specifically be brought out in the tender otherwise it will be presumed that the offer conform to above specifications in all respects.

8 SPECIAL CONDITIONS

The following information shall invariably be furnished by the tenderer along with the tender, if the same is not furnished along with the tender, the offer may be ignored without making correspondence.

- a. Name and full address of the manufacturer of post insulators offered.
- b. Make and Electrical and Mechanical characteristics of post insulators.
- c. Testing facilities available with the factory for carrying out type tests and routine tests.
- d. Dimensional drawings with full particulars.
- e. The list of orders executed for the offered items by the manufacturer of the post insulators giving full details such as voltage, type, quantity etc.
- f. The un-priced schedule of the offered item shall also be submitted in technical bid.

9 *Bidder shall furnish, MQP and FQP along with technical bid. Also drawings shall be submitted for approval in the event of an order.*

10 *Bidder shall give all the required guaranteed technical parameters as per attached Schedule – A.*

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SCHEDULE - A
SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS
FOR 400/245/145/72.5 kV POST INSULATORS
(To be filled in and signed by the Tenderer)

Sr. No.	Description	Unit	Guaranteed Value
1	Highest system voltage	kV	
2	Height of unit	mm	
3	Bending strength (approx. failing load): i) Upright	kN	
4	Tensile strength (Approx.)	kN	
5	Compression strength (Approx.)	kN	
6	Torsional strength (Approx.)	kN	
7	a) Power frequency flashover voltage (Dry) b) Power frequency flashover voltage (Wet)	kV kV	
8	a) Impulse flashover voltage (Positive) b) Impulse flashover voltage (Negative)	kVp kVp	
9	a) 1 min. power frequency withstand voltage (Dry) b) 1 min. power frequency withstand voltage (Wet)	kV (rms)	
10	Lightning Impulse positive / negative withstand voltage.	kVp	
11	Power frequency puncture voltage.	kV	
12	Visible discharge voltage	kV	
13	Radio Interference Voltage	Micro Volts	
14	Creepage distance (Minimum) : a) Total b) Protected	mm mm	
15	Dry Arcing distance (Minimum)	mm	
16	Top metal fitting PCD	mm	
17	Bottom metal fitting PCD	mm	
18	All ferrous parts should be hot dip galvanized to IS:No.2629/1966.	--	YES / NO

Date:

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AMENDMENT

Amendement to technical spécifications of BPI

April - 2013

Sr No.	Clause no. of tech spec.	Amendment
1	5 -14 (b)	Requirement of 50% protected Creepage distance is removed.

CHIEF ENGINEER (ENGG)

DATED: 15.04.2013

Approved by competent authority and released on 15.04.2013.



Dated: 08.09.2020

TTR validity amendment-1

(Addendum to Technical Specification for validity of type test reports for major electrical equipments)

Sr. No.	Name of test/ Equipment	Type test reports validity (In Years)
i.	On Line Tap Changer (OLTC)	10
ii.	Power Transf. Bushing/ Reactor Bushing	7
iii.	Transformer/reactor fittings and accessories.	10
iv.	Circuit Breaker	10
v.	Isolators	10
vi.	Lightning Arrestors	10
vii.	Wave Trap	10
viii.	Instrument Transformer	7
ix.	Low Voltage (LV) & Medium Voltage (MV) Switchgear	10
x.	Cable & associated joints	10
xi.	Capacitors	10
xii.	Energy Meters [including smart meters & Availability Based Tariff (ABT) meters]	5
xiii.	Conductors & earth wire	10
xiv.	Insulators(Porcelain/ Glass)	10
xv.	Composite Insulators	5
xvi.	Power Line Carrier Communication (PLCC)/Fibre Optic (FO) cable/Optical Ground Wire (OPGW)	5
xvii.	Terminal connectors of all major equipments including transformers	10

Note: Type test reports shall be valid as on the last date of submission of bid.



Dated: 08.09.2020

TTR validity amendment-2

(Addendum to Technical Specification for validity of type test reports of *all the equipments*)

The validity of type test reports to be submitted with technical bid shall be considered as per following:

“Type test reports shall be valid as on the last date of submission of bid”