

TENDER DOCUMENT

**FOR SUPPLY OF TRANSFORMER
FOR DREAMS MALL, KOTTIYAM, KOLLAM**

TENDER NO: DREAMS MALL/2022 DTD 02/03/2022

CLIENT

**M/s DESINGANADU RAPID DEVELOPMENT & ASSISTANCE
CO-OP SOCIETY LTD, Q - 1666,
KOTTIYAM P.O., KOLLAM, KERALA.**

ARCHITECTS

**M/s ABHILASH ARCHITECTS,
NEAR ART OF LIVING ASHRAMAM,
KOLLAM, KERALA, INDIA -691012**

**Address: - DESINGANADU RAPID DEVELOPMENT & ASSISTANCE CO-OP SOCIETY LTD, Q – 1666,
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NOTE:

Vendor/Tenderer/Contractor - here means Approved Makers.

Architects - here means M/s Abhilash Architects

Client - M/s Desinganadu Rapid Development & Assistance Co-op Society Pvt. Ltd.

SECTION A

NOTICE INVITING TENDER

M/s Desinganadu Rapid Development & Assistance Co-op Society Pvt. Ltd. is inviting tender for "Supply for Diesel Generator (stand-By power) for DREAMS MALL, KOTTIYAM, and KOLLAM".

The Due date of Submission of Tender is 11/04/2022.

- i) The tenderers are required to submit their tender as per the information mentioned in the tender documents and if there is any deviation in tender specification, the same shall be submitted separately along with the tender documents. Tenderers are required to fill the tender technical specification sheets without fail.
To qualify for an award. Each tenderer shall have comply the following requirements
- ii) The successful Tenderer will be required to enter into a formal agreement with Client after the issue of Letter of Intent.
- iii) The tender hard & soft copies should be sent to M/S Desinganadu Rapid Development & Assistance Co-op Society Pvt. Ltd. (dreamsmall.engineering@gmail.com) by 16 00Hrs on or before 11/04/2022.
- iv) Tenders shall be valid for days (ninety) from the date of opening of tender.
- v) Client reserves the right to accept or reject any tender and also shall modify the tender dates without assigning any reason depending upon the site conditions. Further, the client does not bind himself to accept the lowest tender.
- vi) The tender should be signed by an authorized official of the company. The tender should be handed over in a sealed cover.
- vii) Client reserves the right to increase or decrease the no. of units proposed before finalization of the order or reserves the right to nullify the tender if needed without assigning reasons.

SECTION B

Terms of Payment AND Taxes & Duties:

1. Terms of Payment:

- a. 10% of the Contract Value shall be payable as advance immediately upon signing the Contract and against the submission of Bank Guarantee.
- b. 70% of the Contract Value shall be payable against delivery of material at site/Letter of Credit as per rules
- c. 10% of the Contract Value shall be paid after completion of testing & commissioning and handing over of equipment.
- d. 10% of the Contract Value shall be payable as retention after defect liability period of 12 months. However, this amount can be released against the submission of retention Bank Guarantee.

2. Taxes & Duties:

- The prices are inclusive of all taxes, duties, levies prevailing on the date of this proposal. And transport charges etc.

SECTION C

GENERAL SPECIFICATIONS

CONFORMITY WITH STATUTORY ACTS, RULES, REGULATIONS, STANDARDS AND SAFETY CODES

Indian Electricity Act and Rules

All electrical works in connection with installation of electric sub-stations shall be carried out in accordance with the provisions of Indian Electricity Act, 2003 and the Indian Electricity Rules, 1956 amended up to date. Wherever I.E. rule numbers have been indicated, they are based on I.E. Rules, 1956 amended up to date.

Indian Standards

The transformers and their installation shall conform to relevant Indian standards amended up to date.

Safety Codes and Labour Regulations

In respect of all labour employed directly or indirectly on the work, the tenderer, at his own expense will arrange for the safety provision. In case of default, the client shall be at liberty to make arrangements and provide facilities as aforesaid and recover the cost from the tenderer. The tenderer shall provide necessary barriers warning signals and other safety measures to avoid accidents while installation, testing and commissioning.

Nothing in these specifications shall be construed to relieve the tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with applicable statutory regulations and safety codes in force from the safety angle.

WORKS TO BE ARRANGED BY THE CLIENT

Unless otherwise mentioned in the tender specifications the following works shall be carried out by the client:

Construction of sub-station building. The tenderer should select such equipment for installation as can be properly installed in the spaces shown in specification drawings. While no guarantee can be given minor modification required by the tenderer if mentioned in the tender or intimated immediately after the receipt of tender shall be carried out if structurally possible.

Cable trench, entry pipe for cable, manholes for drawing of cables, manhole covers etc. as per requirements.

Provision of storage space at site.

WORKS TO BE DONE BY THE TENDERER

In addition to supply, installation, testing and commissioning of transformer as per specifications, the following work shall be deemed to be included within the scope of work, to be executed by the tenderer:

Provision of supports / clamps for equipments, cables etc. wherever required.

Small wiring, inter-connection etc. inclusive of all materials and accessories, necessary to comply with the regulations as well as proper and trouble free operation of the equipment.

Tools and tackles required for handling and installation.

Necessary testing equipments for commissioning.

Watch and Ward of materials and/or installation and equipments till their handing over to the client.

SITE CONDITIONS

All the equipments and their installation shall be suitable for the environmental conditions encountered at the location as indicated in Appendix II.

INSPECTION OF SITE AND COLLECTION OF DATA

The tenderer shall be deemed to have examined the tender documents, detailed specification, data etc. and to have visited the site or ascertained all relevant details for offering suitable equipments/ installation.

EXTENT OF WORK

The scope of work shall consist of cost of all materials, labour i/c supervision, installation, calibration, adjustments as required for commissioning of the sub-station. The term complete installation shall mean, not only, major item of the plant and the equipments covered by these specifications, but also, incidental sundry components necessary for complete execution and satisfactory performance

of installation with all labour charges, whether or not specifically mentioned in the tender documents, which shall be provided by the tenderer at no extra cost.

COMPLETENESS OF TENDER

All fittings, unit assemblies accessories, hardware foundation bolts, terminals blocks for connections, cable glands and miscellaneous materials and accessories of items of work which are useful and necessary for efficient assembly and working of the equipment shall be deemed to have been included within the scope of the work in the tender and within the overall details for complete item whether they have been specifically mentioned or not.

DATA MANUALS AND DRAWINGS TO BE FURNISHED BY TENDERER

After Award of Work:

The tenderer shall submit the following drawing within a fortnight of the award of the work or as specified in tender document which shall prevail, for approval by the consultant.

- General arrangement or location drawing of the equipment complete with dimensions and clearances.
- Schematics & wiring diagram including control wiring.
- Any other drawing or data that may be necessary for the job.

Before Commencement of Installation:

The tenderer shall also furnish 3 copies of detailed installation, operation and maintenance manuals of manufacturer for all items of equipment together with all relevant data sheet, spare parts catalogues, repairs, assembly and adjustment procedure etc. in triplicate.

QUALITY OF MATERIALS AND WORKMANSHIP

All parts of equipment shall be of such design, size and material so as to function satisfactorily under all rated conditions of loading and operation. All components of the equipment shall have adequate factors of safety. Materials/components which are not conforming to standards laid down by Bureau of Indian Standards (BIS) shall not be approved.

The entire work of fabrication, assembly and installation shall conform to sound engineering practice and on the basis of "fail safe" design. The mechanical parts subject to wear and tear shall be of easily replaceable type. The construction shall be such as to facilitate ease of operation, inspection, maintenance and repairs. All apparatus shall also be designed to ensure satisfactory operation under working conditions as specified.

INSPECTION, TESTING AT MANUFACTURERS WORKS

The tenderer will be required to furnish such facilities as will be necessary for inspection of the equipment before dispatch at the manufacturer's works and also for witnessing such tests, at the works, if so required by the client. The tenderer shall furnish information for this purpose and will also give sufficient notice regarding the dates proposed for such test to Inspection agency.

TEST CERTIFICATE

Copies of all documents for routine, acceptance and type test certificates of the equipment carried out at the manufacturers premise shall be furnished along with supply of the equipment.

DISPATCH OF MATERIALS AND STORAGE

The tenderer shall commence work as soon as the drawings submitted by him are approved. The tenderer should dispatch all materials to site in consultation with the client where suitable storage accommodation may be made available to him temporarily. For this purpose the programme of dispatches of materials shall be framed keeping in view the building progress so that suitable storage accommodation could be made available to the tenderer.

COORDINATION WITH OTHER AGENCIES

The tenderer shall coordinate his work and cooperate with other agencies by exchange of all technical information like details of foundation if required, weight, over all dimensions, clearance and other technical data required for successful and proper completion of his portion of the work in relation to the work of others without any reservation. No remuneration should be claimed from the client for such technical cooperation. Care shall be taken not to damage the water proofing done in the case of substations constructed below ground level. If any unreasonable hindrance is caused to other agencies and any completed portion of the works has to be dismantled and redone for want of the cooperation and coordination by the tenderer during the course of work, such expenditure incurred will be recovered from the tenderer during the course of work, if the restoration work to the original condition of specification of the dismantled portion of the work was not undertaken by the tenderer.

CARE OF BUILDINGS

Care shall be taken, while handling/ installing the equipment to avoid damage to the building. On completion of the installation, the tenderer shall arrange to repair all damages to the building caused during plant installation so as to bring to the original condition. He shall also arrange to remove all unwanted waste materials from substation room and other areas used by him.

PAINTING AND PROTECTION

All damages to painting during transport and installation shall be set right to the satisfaction of the client before handing over. All structural frame work for support of various items of equipment shall be given the final coat of paint of approved shade at site after erection is complete.

Additional protection measures against corrosion shall be provided when installed in special environment.

TRAINING OF CLIENT STAFF

The operation and maintenance staff of the client shall be associated with the manufacturer personnel during the installation, testing and commissioning of the equipments.

COMPLETION DRAWING

Three sets of completion drawings comprising the following shall be submitted by the tenderer while handing over the installation:

- Equipments layout drawing(s) giving complete details of the entire equipments.
- Electrical drawings for the entire electrical equipments showing cable sizes, equipment capacities, switch-gear's ratings, control components, control wiring etc.

FINAL INSPECTION AND TESTING

When the installation is complete, the tenderer shall arrange for inspection and testing of the installation. Test results obtained shall be recorded. The installation shall not be accepted until it complies with the requirement of these Specifications. The transformer installation shall be got inspected by the tenderer from local licensee and/or Electrical inspectorate and their clearance taken before energizing the Sub Station. All the observations/ deficiencies pointed out by the inspecting authorities shall be complied with by the tenderer on priority. The client shall render all help and pay mandatory charges to local licensee and/or Electrical inspectorate, if any, in this regard.

GUARANTEE

The tenderer shall guarantee the entire installation as per specifications. All equipments shall be guaranteed for **24 months** from the date of acceptance against unsatisfactory performance or break down due to defective design, manufacture and installation. The installation shall be covered by the conditions that whole installation or any part thereof found defective within **24 months** from the date of taking over shall be replaced or repaired by the tenderer free of charge as decided by the client. The warranty shall cover the following:-

- Quality, strength and performance of materials used.
- Safe mechanical and electrical stress on all parts under all specified conditions of operation.
- Satisfactory operation during the maintenance period.

- Performance figures and other particulars as specified by the tenderer under schedule of guaranteed technical particulars.

AFTER SALES SERVICES

The tenderer shall ensure adequate and prompt after sales services in the form of maintenance personnel and spares as and when required with a view to minimizing the break down period. Particular attention shall be given to ensure that all spares are easily available during the normal life of installation.

SECTION D

TECHNICAL SPECIFICATION

1. SUPPLY OF 11kV/433V, 250 KVA TRANSFORMER.

1. General Specification:

Transformers shall be copper wound with NEMA TPI energy efficient standards and connections shall be delta on high voltage side and star on low voltage side, with neutral terminal brought out for solid earthing (grounding) corresponding to the vector symbol DYN-11. Magnetic core shall be made up of cold rolled grain oriented low loss steel stampings. Transformers shall be designed with latest technology having more efficiency with low losses. There shall be provision for Double Earthing body of the transformer. On load Circuit Tapping shall be provided on primary side of the Transformer using removable bolted links to compensate input voltage variations between -15%to+5%. Tapping Links shall be supplied along with the equipment.

The Substation shall comprise of 1no **250KVA** dry type cast resin transformer with all accessories enclosed inside suitable enclosure as per the following specifications.

Cable box shall be provided at the primary/secondary side of the transformer with cable termination facility for 1R 3C 300 Sq.mm HT cable/3R 3.5C 400 Sq.mm XLPE cable. Provision for LT TOD meter shall be provided.

Cable Entry & Termination facilities

Indoor type Cable boxes suitable for terminating incoming 1 run of 3C 300Sq.mm XLPE Cables shall be provided for the primary side of the Substation. Provision for terminating outgoing 2 runs of 3.5C 185 Sq.mm 1.1KV, Armoured Aluminium, (XLPE) Cable shall be provided for secondary of the Substation. Cable entry provision shall be from the top/bottom as required at site.

Drawings

The overall dimensional drawings of the substation shall be forwarded along with the offer. The detailed drawings shall be submitted to the client / Consultant and approved before fabrication is started.

Impedance and losses

Shall match with the requirements of ECBC 2017 amended up to date.

2. SUPPLY OF 11kV/433V, 500 KVA TRANSFORMER

1. General Specification:

Transformers shall be copper wound with NEMA TPI energy efficient standards and connections shall be delta on high voltage side and star on low voltage side, with neutral terminal brought out for solid earthing (grounding) corresponding to the vector symbol DYN-11. Magnetic core shall be made up of cold rolled grain oriented low loss steel stampings. Transformers shall be designed with latest technology having more efficiency with low losses. There shall be provision for Double Earthing body of the transformer. On load Circuit Tapping shall be provided on primary side of the Transformer using removable bolted links to compensate input voltage variations between -15% to +5%. Tapping Links shall be supplied along with the equipment.

The Substation shall comprise of 1 no **500KVA** dry type cast resin transformer with all accessories enclosed inside suitable enclosure as per the following specifications.

Cable box shall be provided at the primary/secondary side of the transformer with cable termination facility for 1R 3C 300 Sq.mm HT cable/3R 3.5C 400 Sq.mm XLPE cable. Provision for LT TOD meter shall be provided.

Cable Entry & Termination facilities

Indoor type Cable boxes suitable for terminating incoming 1 run of 3C 300Sq.mm XLPE Cables shall be provided for the primary side of the Substation. Provision for terminating outgoing 3 runs of 3.5C 400 Sq.mm 1.1KV, Armoured Aluminium, (XLPE) Cable shall be provided for secondary of the Substation. Cable entry provision shall be from the top/bottom as required at site.

Drawings

The overall dimensional drawings of the substation shall be forwarded along with the offer. The detailed drawings shall be submitted to the client / Consultant and approved before fabrication is started.

Impedance and losses

Shall match with the requirements of ECBC 2017 amended up to date.

Inspection and testing

Substation shall be despatched only after completing all the tests as per requirements in the Indian Standards specifications mentioned above. No charges on account of tests conducted shall be payable to the supplier by the Client. Transformer tests shall be conducted in presence of the representative of the Client or to the entire satisfaction of the Client. Any additional tests indicated by the clients' representative if any of the tests results he may think as unsatisfactory shall be done by the supplier without extra charges. Temperature rise test shall be included along with the routine tests. Extra charges if any shall be considered by the supplier.

Warranty

The equipment shall be warranted for replacement and repair for a minimum period of 25 months from the date of supply or 24 months from the date of commissioning whichever occurs earlier.

Transportation

The site is located at Kottiyam.

Transportation of the Substation from manufacturer's works up to site shall be arranged by Supplier. Supplier shall arrange man force to lift transformer to the location if required. Supplier shall be flexible to supply the transformer assembly separately and integrate the same at site.

All Insurances, taxes and duties payable for the Transportation of the same shall be borne by the supplier.

3. SUPPLY OF 11kV/433V, 630 KVA WITH OLTC

1. General Specification:

Transformers shall be copper wound with NEMA TPI energy efficient standards and connections shall be delta on high voltage side and star on low voltage side, with neutral terminal brought out for solid earthing (grounding) corresponding to the vector symbol DYN-11. Magnetic core shall be made up of cold rolled grain oriented low loss steel stampings. Transformers shall be designed with latest technology having more efficiency with low losses. There shall be provision for Double Earthing body of the transformer. On load Circuit Tapping shall be provided on primary side of the Transformer using removable bolted links to compensate input voltage variations between -15% to +5%. Tapping Links shall be supplied along with the equipment.

The Unitised Substation shall comprise of 1no OLTC and **630KVA** dry type cast resin transformer with all accessories enclosed inside suitable enclosure as per the following specifications.

Cable box shall be provided at the primary/secondary side of the transformer with cable termination facility for 1R 3C 300 Sq.mm HT cable/3R 3.5C 400 Sq.mm XLPE cable.

Cable Entry & Termination facilities

Indoor type Cable boxes suitable for terminating incoming 1 run of 3C 300Sq.mm XLPE Cables shall be provided for the primary side of the Substation. Provision for terminating outgoing 4 runs of 3.5C 400 Sq.mm 1.1KV, Armoured Aluminium, (XLPE) Cable shall be provided for secondary of the Substation. Cable entry provision shall be from the top/bottom as required at site.

Drawings

The overall dimensional drawings of the substation shall be forwarded along with the offer. The detailed drawings shall be submitted to the client / Consultant and approved before fabrication is started.

Impedance and losses

Shall match with the requirements of ECBC 2017 amended up to date.

Inspection and testing

Substation shall be despatched only after completing all the tests as per requirements in the Indian Standards specifications mentioned above. No charges on account of tests conducted shall be payable to the supplier by the Client. Transformer tests shall be conducted in presence of the representative of the Client or to the entire satisfaction of the Client. Any additional tests indicated by the clients' representative if any of the tests results he may think as unsatisfactory shall be done by the supplier without extra charges. Temperature rise test shall be included along with the routine tests. Extra charges if any shall be considered by the supplier.

Warranty

The equipment shall be warranted for replacement and repair for a minimum period of 25 months from the date of supply or 24 months from the date of commissioning whichever occurs earlier.

Transportation

The site is located at Kottiyam.

Transportation of the Substation from manufacturer's works up to site shall be arranged by Supplier. Supplier shall arrange man force to lift transformer to the location if required. Supplier shall be flexible to supply the transformer assembly separately and integrate the same at site.

All Insurances, taxes and duties payable for the Transportation of the same shall be borne by the supplier.

SECTION E

BILL OF QUANTITIES AND SPECIFICATION / REQUIREMENTS**1. SUPPLY OF 11kV/433V, 250 KVA TRANSFORMER.**

SL NO:	DESCRIPTION	QTY	BASIC PRICE	TAXES & DUTIES	TOTAL PRICE
1	Cost of 250 KVA	1			
2	Transportation	1			
3	AMC Charges for 5 years after Warranty	1			
TOTAL COST:					

2.SUPPLY OF 11kV/433V, 500 KVA TRANSFORMER

SL NO:	DESCRIPTION	QTY	BASIC PRICE	TAXES & DUTIES	TOTAL PRICE
1	Cost of 500 KVA	1			
2	Transportation	1			
3	AMC Charges for 5 years after Warranty	1			
TOTAL COST:					

3.SUPPLY OF 11kV/433V, 630 KVA WITH OLTC

SL NO:	DESCRIPTION	QTY	BASIC PRICE	TAXES & DUTIES	TOTAL PRICE
1	Cost of Substation 630 KVA with OLTC.	1			
2	Transportation	1			
3	AMC Charges for 5 years after Warranty	1			
TOTAL COST:					

Prices, Taxes and Duties

Prices quoted shall be for at site inclusive of all taxes, duties and statutory levies. Prices shall be firm and escalation of prices on no account is permissible. Prices quoted should indicate the percentage of taxes.

All Insurances, taxes and duties payable for the Transportation of the same shall be borne by the supplier.

SPECIFICATION & REQUIREMENT OF 250KVA DRY TYPE TRANSFORMER			
S. No.	Description	UNIT	Parameter
1	General Description		Indoor Dry Type Transformer
2	Reference Standard		IS 11171
3	Installation		Indoor
4	Duty		Continuous
5	Application		Distribution
6	Altitude	m	Less than / equal to 1000 m
7	Rated Power (based on AN Cooling)	kVA	250
8	Rated No-Load Voltage Ratio (HV / LV)	kV	11 / 0.433
9	Rated Frequency	Hz	50
10	Number of Phases	Nos.	3
11	Material of Winding (HV / LV)	--	CU / CU
12	Vector Group	--	Dyn11
13	Connection (HV / LV)	--	Delta / Star
14	Tapping		Off load

15	Type of Tap Changer	--	Off load tap changer
16	Tapping Range/Tap step	--	5% to -10% @ 2.5%
17	No. of Steps	Nos.	+8 / -8 steps
18	For HV Variation / LV Variation	--	HV Variation
19	Class of Insulation	Class	F / F
20	Method of Cooling	--	AN / AF
21	Avg. Temp. Rise of Winding	Deg.C	90 / 90
22	Ambient Temp. (Max. / Mini. / Year / Day)	Deg.C	50 / -5 / 32 / 40
23	Environment / Climatic / Fire Behaviour class		_____ Please specify (if applicable)
24	No-Load Loss at Rated Voltage & Frequency (+15% of IS Tol)	kW	_____ Please specify
25	Full-Load Loss at Rated Current, at 75 Deg. C & at Principal Tap (+15% of IS Tol)	kW	_____ Please specify
26	Total Loss at Rated Voltage at Principal Tapping, Rated Frequency, at 75 Deg. C & at 100% load (+10% of IS Toll)	kW	_____ Please specify
27	% Impedance at Rated Current, at 75 Deg. C & at Principal Tap ($\pm 10\%$ of IS Tol.)	%	_____ Please specify
	A. Reactance	%	_____ Please specify
	Resistance	%	_____ Please specify
28	No-Load Current at Rated Voltage & Frequency (as % of F.L.R.C.) (+30% IS Tol.)	%	_____ Please specify

29	Efficiencies at 75 Deg. C at Unity Power Factor (Reference value)		
	a) At Full Load	%	_____ Please specify
	b) At 3/4 Full Load	%	_____ Please specify
	c) At 1/2 Full Load	%	_____ Please specify
30	Regulation at Full Load at 75 Deg. C		
	a) At Unity Power Factor	%	_____ Please specify
	b) At 0.8 Power Factor (Lagging)	%	_____ Please specify
31	Basic impulse level	kV	
32	Full Wave Lightning Impulse Withstand Voltage (HV / LV)	kV peak	75 / -
33	Separate Source Power-Frequency Voltage Withstand (HV / LV)	kV rms	28 / 03
34	Enclosure	--	
35	Degree of protection of Enclosure	IP	IP23
36	Termination Arrangements		
37	HV	--	Cable box
38	LV	--	Cable box
39	Orientation between HV & LV	Deg.	180
40	Weights (Approx.)		
	Core & Winding	Kg.	_____ Please specify
	Enclosure & Fittings (Including OLTC)	Kg.	_____ Please specify
	Total Weight	Kg.	_____ Please specify
41	Over-all Dimensions (Approx.)		
	Length	mm	_____ Please specify

	Breadth	mm	_____Please specify
	Height (With base channel)	mm	_____Please specify
42	Fittings / Accessories	--	Rating & Diagram plate, Base Channel, Earthing terminals, Lifting lugs, OLTC, Cooling fans & WTI Scanner with 3 PT-100 Sensors.
43	List of Tests to be conducted at Manufacturer's Works		Routine Test According to IS 10028
44	Noise Level when measured at 1 Meter Distance	dB	Noise level values shall be as per NEMA TR-1
45	Copy of CPRI Type Test Certificate		To be attached

SPECIFICATION & REQUIREMENT OF 500KVA DRY TYPE TRANSFORMER

S. No.	Description	UNIT	Parameter
1	General Description		Indoor Dry Type Transformer
2	Reference Standard		IS 11171
3	Installation		Indoor
4	Duty		Continuous
5	Application		Distribution
6	Altitude	m	Less than / equal to 1000 m
7	Rated Power (based on AN Cooling)	kVA	500
8	Rated No-Load Voltage Ratio (HV / LV)	kV	11 / 0.433
9	Rated Frequency	Hz	50
10	Number of Phases	Nos.	3

11	Material of Winding (HV / LV)	--	CU / CU
12	Vector Group	--	Dyn11
13	Connection (HV / LV)	--	Delta / Star
14	Tapping		Off load
15	Type of Tap Changer	--	Off load tap changer
16	Tapping Range/Tap step	--	5% to -10% @ 2.5%
17	No. of Steps	Nos.	+8 / -8 steps
18	For HV Variation / LV Variation	--	HV Variation
19	Class of Insulation	Class	F / F
20	Method of Cooling	--	AN / AF
21	Avg. Temp. Rise of Winding	Deg.C	90 / 90
22	Ambient Temp. (Max. / Mini. / Year / Day)	Deg.C	50 / -5 / 32 / 40
23	Environment / Climatic / Fire Behaviour class		_____ Please specify (if applicable)
24	No-Load Loss at Rated Voltage & Frequency (+15% of IS Tol)	kW	_____ Please specify
25	Full-Load Loss at Rated Current, at 75 Deg. C & at Principal Tap (+15% of IS Tol)	kW	_____ Please specify
26	Total Loss at Rated Voltage at Principal Tapping, Rated Frequency, at 75 Deg. C & at 100% load (+10% of IS Toll)	kW	_____ Please specify
27	% Impedance at Rated Current, at 75 Deg. C & at Principal Tap ($\pm 10\%$ of IS Tol.)	%	_____ Please specify
	A. Reactance	%	_____ Please specify

	Resistance	%	_____ Please specify
28	No-Load Current at Rated Voltage & Frequency (as % of F.L.R.C.)(+30% IS Tol.)	%	_____ Please specify
29	Efficiencies at 75 Deg. C at Unity Power Factor (Reference value)		
	a) At Full Load	%	_____ Please specify
	b) At 3/4 Full Load	%	_____ Please specify
	c) At 1/2 Full Load	%	_____ Please specify
30	Regulation at Full Load at 75 Deg. C		
	a) At Unity Power Factor	%	_____ Please specify
	b) At 0.8 Power Factor (Lagging)	%	_____ Please specify
31	Basic impulse level	kV	
32	Full Wave Lightning Impulse Withstand Voltage (HV / LV)	kV peak	75 / -
33	Separate Source Power-Frequency Voltage Withstand (HV / LV)	kV rms	28 / 03
34	Enclosure	--	
35	Degree of protection of Enclosure	IP	IP23
36	Termination Arrangements		
37	HV	--	Cable box
38	LV	--	Cable box
39	Orientation between HV & LV	Deg.	180
40	Weights (Approx.)		
	Core & Winding	Kg.	_____ Please specify
	Enclosure & Fittings (Including OLTC)	Kg.	_____ Please specify

	Total Weight	Kg.	_____Please specify
41	Over-all Dimensions (Approx.)		
	Length	mm	_____Please specify
	Breadth	mm	_____Please specify
	Height (With base channel)	mm	_____Please specify
42	Fittings / Accessories	--	Rating & Diagram plate, Base Channel, Earthing terminals, Lifting lugs, OLTC, Cooling fans & WTI Scanner with 3 PT-100 Sensors.
43	List of Tests to be conducted at Manufacturer's Works		Routine Test According to IS 10028
44	Noise Level when measured at 1 Meter Distance	dB	Noise level values shall be as per NEMA TR-1
45	Copy of CPRI Type Test Certificate		To be attached

SPECIFICATION & REQUIREMENT OF 630KVA INDOOR DRY TYPE TRANSFORMER WITH OLTC

S. No.	Description	UNIT	Parameter
1	General Description		Indoor Dry Type Transformer(with OLTC)
2	Reference Standard		IS 11171
3	Installation		Indoor
4	Duty		Continuous
5	Application		Distribution

6	Altitude	m	Less than / equal to 1000 m
7	Rated Power (based on AN Cooling)	kVA	630
8	Rated No-Load Voltage Ratio (HV / LV)	kV	11 / 0.433
9	Rated Frequency	Hz	50
10	Number of Phases	Nos.	3
11	Material of Winding (HV / LV)	--	CU / CU
12	Vector Group	--	Dyn11
13	Connection (HV / LV)	--	Delta / Star
14	Tapping		On Load
15	Type of Tap Changer	--	On Load Tap Changer
16	Tapping Range/Tap step	--	+5% to -15% @ 1.25%
17	No. of Steps	Nos.	+8 / -8 steps
18	For HV Variation / LV Variation	--	HV Variation
19	Class of Insulation	Class	F / F
20	Method of Cooling	--	AN / AF
21	Avg. Temp. Rise of Winding	Deg.C	90 / 90
22	Ambient Temp. (Max. / Mini. / Year / Day)	Deg.C	50 / -5 / 32 / 40
23	Environment / Climatic / Fire Behaviour class		_____Please specify(if applicable)
24	No-Load Loss at Rated Voltage & Frequency (+15% of IS Tol)	kW	_____Please specify
25	Full-Load Loss at Rated Current, at 75 Deg. C & at Principal Tap (+15% of IS Tol)	kW	_____Please specify

26	Total Loss at Rated Voltage at Principal Tapping, Rated Frequency, at 75 Deg. C & at 100% load (+10% of IS Toll)	kW	_____ Please specify
27	% Impedance at Rated Current, at 75 Deg. C & at Principal Tap ($\pm 10\%$ of IS Tol.)	%	_____ Please specify
	A. Reactance	%	_____ Please specify
	Resistance	%	_____ Please specify
28	No-Load Current at Rated Voltage & Frequency (as % of F.L.R.C.) (+30% IS Tol.)	%	_____ Please specify
29	Efficiencies at 75 Deg. C at Unity Power Factor (Reference value)		
	a) At Full Load	%	_____ Please specify
	b) At 3/4 Full Load	%	_____ Please specify
	c) At 1/2 Full Load	%	_____ Please specify
30	Regulation at Full Load at 75 Deg. C		
	a) At Unity Power Factor	%	_____ Please specify
	b) At 0.8 Power Factor (Lagging)	%	_____ Please specify
31	Basic impulse level	kV	
32	Full Wave Lightning Impulse Withstand Voltage (HV / LV)	kV peak	75 / -
33	Separate Source Power-Frequency Voltage Withstand (HV / LV)	kV rms	28 / 03
34	Enclosure	--	
35	Degree of protection of Enclosure	IP	IP23

36	Termination Arrangements		
37	HV	--	Cable box
38	LV	--	Cable box
39	Orientation between HV & LV	Deg.	180
40	Weights (Approx.)		
	Core & Winding	Kg.	_____ Please specify
	Enclosure & Fittings (Including OLTC)	Kg.	_____ Please specify
	Total Weight	Kg.	_____ Please specify
41	Over-all Dimensions (Approx.)		
	Length	mm	_____ Please specify
	Breadth	mm	_____ Please specify
	Height (With base channel)	mm	_____ Please specify
42	Fittings / Accessories	--	Rating & Diagram plate, Base Channel, Earthing terminals, Lifting lugs, OLTC, Cooling fans & WTI Scanner with 3 PT-100 Sensors.
43	List of Tests to be conducted at Manufacturer's Works		Routine Test According to IS 10028
44	Noise Level when measured at 1 Meter Distance	dB	Noise level values shall be as per NEMA TR-1
45	Copy of CPRI Type Test Certificate		To be attached

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