

Tender Notice NO. NESCO/IAP/ 01 Date: 18.1.2012**ANNEXURE-IV****GUARANTEED TECHNICAL PARTICULARS FOR 100 KVA 11/0.4KV, 3-PHASE STAR RATED DISTRIBUTION TRANSFORMERS**

(To be furnished by the Manufacturer)

Sl. No	Description	As Specified	Bidder's Offer
1	Make		
2	Name of the Manufacturer		
3	Place of Manufacture		
3 (a)	Type of B.E.E Specified Star Level to be fixed near Name Plate.	Three Star	
4	Voltage Ratio	11000/433V	
5	Rating in KVA	100	
6	Core Material used and Grade:	CRGO and M3 or Better	
	a) Flux density	1.5 Tesla (Max.)	
	b) Over fluxing without saturation (Curve to be furnished by the Manufacturer in support of his claim)		
7	Maximum temperature rise of:		
	a) windings by resistance method	40 ⁰ C over an ambient of 50 ⁰ C	
	b) Oil by thermometer	35 ⁰ C over an ambient of 50 ⁰ C	
8	Magnetizing (no-load) current at:		
	a) 90% Voltage		
	b) 100% Voltage	3% (Max.)	
	c) 112.5% Voltage	6% (Max.)	
9	Core loss in watts:		
	a) Normal voltage		
	b) Maximum voltage		
10	Resistance of windings at 20 ⁰ C (with 5% tolerance)		
	a) HV Winding (ohms)		
	b) LV Winding (ohms)		
11	Full load losses (watts) at 75 ⁰ C		
12	Total losses at 100% load at 75 ⁰ C	1800Watts (Max.)	
13	Total losses at 50% load at 75 ⁰ C	520Watts (Max.)	
14	Current density used for : (Ampere/ Sq mm)		
	a) HV Winding	1.6(Max.)	
	b) LV Winding	1.6(Max.)	
15	Clearances : (mm)		
	a) Core and LV		
	b) LV and HV		
	c) HV Phase to Phase		

	d) End insulation clearance to earth		
	e) Any point of winding to tank		
16	Efficiency at 75 ^o C:		
	a) Unity P. F. and		
	b) 0.8 P.F		
	1) 125% load		
	2) 100% load		
	3) 75% load		
	4) 50% load		
	5) 25% load		
17	Regulation at:		
	a) Unity P.F.		
	b) 0.8 P.F. at 75 ^o C		
18	% Impedance at 75 ^o C	4.5+10%(No negative tolerance)	
19	Separate Source Voltage withstand Test:		
	(I) HV 28kV/50 HZ for 1 minute	Yes	
	(ii) LV 3kV/50 HZ for 1 minute	Yes	
20	Induced Over Voltage withstand Test (Double Voltage and Double frequency for 1 minute)	22KV for HV winding by applying 0.866 KV on LV at 100 Hz for the duration of 1 minute.	
21	Impulse test	HV-95KV peak, LV- NA	
22	Mass of : (kg)		
	a) Core lamination (minimum)		
	b) Windings (minimum)		
	c) Tank and fittings		
	d) Oil		
	e) Oil quantity (minimum) (litre)		
	f) Total weight		
23	Oil Data:		
	1. Quantity for first filling (minimum) (litre)		
	2. Grade of oil used		
	3. Maker's name		
	4. BDV at the time of filling (kV)		
24	Transformer:		
	1) Overall length x breadth x height (mmx mmx mm)		
	2) Tank length x breadth x height		
	3) Thickness of plates for		
	a) Side plate (min)	3.15mm	

	b) Top and bottom plate (min)	5mm	
	4) Conservator Dimensions.		
25	Radiation		
	1) Heat dissipation by tank walls excluding top and bottom		
	2) Heat dissipation by cooling tube.		
	3) Diameter and thickness of cooling tube.		
	4) Whether calculation sheet for selecting cooling area to ensure that the transformer is capable of giving continuous rated output without exceeding temperature rise is enclosed.		
26	Inter layer insulation provided in design for:		
	1) Top and bottom layer	Epoxy Dotted Kraft Paper	
	2) In between all layer	Epoxy Dotted Kraft Paper	
	3) Details of end insulation.	Press Board	
	4) Whether wedges are provided at 50% turns of the HV coil		
27	Insulation materials provided		
	a) For conductors		
	(1) HV	DPC	
	(2) LV	DPC	
	b) For Core	Carlite	
28	Material and Size of the wire used.		
	1) HV Dia (mm) (SWG)		
	2) LV		
	a) Strip size		
	b) No. of Conductors in parallel		
	c) Total area of cross section (sq mm)		
29	Whether the name plate gives all particulars as required in Tender	Yes	
30	Particulars of bushings HV/LV		
	1) Maker's name		
	2) Type IS-3347/ IS-2099/ IS- 7421		
	3) Rating as per IS		
	4) Dry power frequency voltage withstand test	HV-28KV, LV-3KV	
	5) Wet power frequency voltage withstand test	HV-28KV, LV-3KV	
Note:			
	The following shall be specifically confirmed:		
1)	Whether the offer conforms to the limits of impedance mentioned in the specification.		
2)	Whether the offer conforms to the limits of temperature rise mentioned in the specification.		
3)	Whether the transformer offered is already type tested for the design & test reports enclosed		
4)	Whether the losses of the Transformers (3 Star Rated) offered are within the limits specified.		

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ANNEXURE-IV

GUARANTEED TECHNICAL PARTICULARS FOR 63 KVA 11/0.4KV, 3-PHASE STAR RATED DISTRIBUTION TRANSFORMERS

(To be furnished by the Manufacturer)

Sl. No	Description	As Specified	Bidder's Offer
1	Make		
2	Name of the Manufacturer		
3	Place of Manufacture		
3 (a)	Type of B.E.E Specified Star Level to be fixed near Name Plate.	Three Star	
4	Voltage Ratio	11000/433V	
5	Rating in KVA	63	
6	Core Material used and Grade:	CRGO and M3 or Better	
	a) Flux density	1.5 Tesla (Max.)	
	b) Over fluxing without saturation (Curve to be furnished by the Manufacturer in support of his claim)		
7	Maximum temperature rise of:		
	a) windings by resistance method	40 ⁰ C over an ambient of 50 ⁰ C	
	b) Oil by thermometer	35 ⁰ C over an ambient of 50 ⁰ C	
8	Magnetizing (no-load) current at:		
	a) 90% Voltage		
	b) 100% Voltage	3% (Max.)	
	c) 112.5% Voltage	6% (Max.)	
9	Core loss in watts:		
	a) Normal voltage		
	b) Maximum voltage		
10	Resistance of windings at 20 ⁰ C (with 5% tolerance)		
	a) HV Winding (ohms)		
	b) LV Winding (ohms)		
11	Full load losses (watts) at 75 ⁰ C		
12	Total losses at 100% load at 75 ⁰ C	1250Watts (Max.)	
13	Total losses at 50% load at 75 ⁰ C	380Watts (Max.)	
14	Current density used for : (Ampere/ Sq mm)		
	a) HV Winding	1.6(Max.)	
	b) LV Winding	1.6(Max.)	
15	Clearances : (mm)		
	a) Core and LV		
	b) LV and HV		
	c) HV Phase to Phase		

	d) End insulation clearance to earth		
	e) Any point of winding to tank		
16	Efficiency at 75 ^o C:		
	a) Unity P. F. and		
	b) 0.8 P.F		
	1) 125% load		
	2) 100% load		
	3) 75% load		
	4) 50% load		
	5) 25% load		
17	Regulation at:		
	a) Unity P.F.		
	b) 0.8 P.F. at 75 ^o C		
18	% Impedance at 75 ^o C	4.5+10%(No negative tolerance)	
19	Separate Source Voltage withstand Test:		
	(I) HV 28kV/50 HZ for 1 minute	Yes	
	(ii) LV 3kV/50 HZ for 1 minute	Yes	
20	Induced Over Voltage withstand Test (Double Voltage and Double frequency for 1 minute)	22KV for HV winding by applying 0.866 KV on LV at 100 Hz for the duration of 1 minute.	
21	Impulse test	HV-95KV peak, LV- NA	
22	Mass of : (kg)		
	a) Core lamination (minimum)		
	b) Windings (minimum)		
	c) Tank and fittings		
	d) Oil		
	e) Oil quantity (minimum) (litre)		
	f) Total weight		
23	Oil Data:		
	1. Quantity for first filling (minimum) (litre)		
	2. Grade of oil used		
	3. Maker's name		
	4. BDV at the time of filling (kV)		
24	Transformer:		
	1) Overall length x breadth x height (mmx mmx mm)		
	2) Tank length x breadth x height		
	3) Thickness of plates for		
	a) Side plate (min)	3.15mm	

	b) Top and bottom plate (min)	5mm	
	4) Conservator Dimensions.		
25	Radiation		
	1) Heat dissipation by tank walls excluding top and bottom		
	2) Heat dissipation by cooling tube.		
	3) Diameter and thickness of cooling tube.		
	4) Whether calculation sheet for selecting cooling area to ensure that the transformer is capable of giving continuous rated output without exceeding temperature rise is enclosed.		
26	Inter layer insulation provided in design for:		
	1) Top and bottom layer	Epoxy Dotted Kraft Paper	
	2) In between all layer	Epoxy Dotted Kraft Paper	
	3) Details of end insulation.	Press Board	
	4) Whether wedges are provided at 50% turns of the HV coil		
27	Insulation materials provided		
	a) For conductors		
	(1) HV	DPC	
	(2) LV	DPC	
	b) For Core	Carlite	
28	Material and Size of the wire used.		
	1) HV Dia (mm) (SWG)		
	2) LV		
	a) Strip size		
	b) No. of Conductors in parallel		
	c) Total area of cross section (sq mm)		
29	Whether the name plate gives all particulars as required in Tender	Yes	
30	Particulars of bushings HV/LV		
	1) Maker's name		
	2) Type IS-3347/ IS-2099/ IS- 7421		
	3) Rating as per IS		
	4) Dry power frequency voltage withstand test	HV-28KV, LV-3KV	
	5) Wet power frequency voltage withstand test	HV-28KV, LV-3KV	
Note:			
	The following shall be specifically confirmed:		
1)	Whether the offer conforms to the limits of impedance mentioned in the specification.		
2)	Whether the offer conforms to the limits of temperature rise mentioned in the specification.		
3)	Whether the transformer offered is already type tested for the design & test reports enclosed		
4)	Whether the losses of the Transformers (3 Star Rated) offered are within the limits specified.		

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ANNEXURE-IV

GUARANTEED TECHNICAL PARTICULARS FOR 25 KVA 11/0.4KV, 3-PHASE STAR RATED DISTRIBUTION TRANSFORMERS

(To be furnished by the Manufacturer)

Sl. No	Description	As Specified	Bidder's Offer
1	Make		
2	Name of the Manufacturer		
3	Place of Manufacture		
3 (a)	Type of B.E.E Specified Star Level to be fixed near Name Plate.	Three Star	
4	Voltage Ratio	11000/433V	
5	Rating in KVA	25	
6	Core Material used and Grade:	CRGO and M3 or Better	
	a) Flux density	1.5 Tesla (Max.)	
	b) Over fluxing without saturation (Curve to be furnished by the Manufacturer in support of his claim)		
7	Maximum temperature rise of:		
	a) windings by resistance method	40 ⁰ C over an ambient of 50 ⁰ C	
	b) Oil by thermometer	35 ⁰ C over an ambient of 50 ⁰ C	
8	Magnetizing (no-load) current at:		
	a) 90% Voltage		
	b) 100% Voltage	3% (Max.)	
	c) 112.5% Voltage	6% (Max.)	
9	Core loss in watts:		
	a) Normal voltage		
	b) Maximum voltage		
10	Resistance of windings at 20 ⁰ C (with 5% tolerance)		
	a) HV Winding (ohms)		
	b) LV Winding (ohms)		
11	Full load losses (watts) at 75 ⁰ C		
12	Total losses at 100% load at 75 ⁰ C	695Watts (Max.)	
13	Total losses at 50% load at 75 ⁰ C	210Watts (Max.)	
14	Current density used for : (Ampere/ Sq mm)		
	a) HV Winding	1.6(Max.)	
	b) LV Winding	1.6(Max.)	
15	Clearances : (mm)		
	a) Core and LV		
	b) LV and HV		
	c) HV Phase to Phase		

	d) End insulation clearance to earth		
	e) Any point of winding to tank		
16	Efficiency at 75 ^o C:		
	a) Unity P. F. and		
	b) 0.8 P.F		
	1) 125% load		
	2) 100% load		
	3) 75% load		
	4) 50% load		
	5) 25% load		
17	Regulation at:		
	a) Unity P.F.		
	b) 0.8 P.F. at 75 ^o C		
18	% Impedance at 75 ^o C	4.5+10%(No negative tolerance)	
19	Separate Source Voltage withstand Test:		
	(I) HV 28kV/50 HZ for 1 minute	Yes	
	(ii) LV 3kV/50 HZ for 1 minute	Yes	
20	Induced Over Voltage withstand Test (Double Voltage and Double frequency for 1 minute)	22KV for HV winding by applying 0.866 KV on LV at 100 Hz for the duration of 1 minute.	
21	Impulse test	HV-95KV peak, LV- NA	
22	Mass of : (kg)		
	a) Core lamination (minimum)		
	b) Windings (minimum)		
	c) Tank and fittings		
	d) Oil		
	e) Oil quantity (minimum) (litre)		
	f) Total weight		
23	Oil Data:		
	1. Quantity for first filling (minimum) (litre)		
	2. Grade of oil used		
	3. Maker's name		
	4. BDV at the time of filling (kV)		
24	Transformer:		
	1) Overall length x breadth x height (mmx mmx mm)		
	2) Tank length x breadth x height		
	3) Thickness of plates for		
	a) Side plate (min)	3.15mm	

	b) Top and bottom plate (min)	5mm	
	4) Conservator Dimensions.		
25	Radiation		
	1) Heat dissipation by tank walls excluding top and bottom		
	2) Heat dissipation by cooling tube.		
	3) Diameter and thickness of cooling tube.		
	4) Whether calculation sheet for selecting cooling area to ensure that the transformer is capable of giving continuous rated output without exceeding temperature rise is enclosed.		
26	Inter layer insulation provided in design for:		
	1) Top and bottom layer	Epoxy Dotted Kraft Paper	
	2) In between all layer	Epoxy Dotted Kraft Paper	
	3) Details of end insulation.	Press Board	
	4) Whether wedges are provided at 50% turns of the HV coil		
27	Insulation materials provided		
	a) For conductors		
	(1) HV	DPC	
	(2) LV	DPC	
	b) For Core	Carlite	
28	Material and Size of the wire used.		
	1) HV Dia (mm) (SWG)		
	2) LV		
	a) Strip size		
	b) No. of Conductors in parallel		
	c) Total area of cross section (sq mm)		
29	Whether the name plate gives all particulars as required in Tender	Yes	
30	Particulars of bushings HV/LV		
	1) Maker's name		
	2) Type IS-3347/ IS-2099/ IS- 7421		
	3) Rating as per IS		
	4) Dry power frequency voltage withstand test	HV-28KV, LV-3KV	
	5) Wet power frequency voltage withstand test	HV-28KV, LV-3KV	
Note:			
	The following shall be specifically confirmed:		
1)	Whether the offer conforms to the limits of impedance mentioned in the specification.		
2)	Whether the offer conforms to the limits of temperature rise mentioned in the specification.		
3)	Whether the transformer offered is already type tested for the design & test reports enclosed		
4)	Whether the losses of the Transformers (3 Star Rated) offered are within the limits specified.		

