

Procurement of Transformer for Tato-I Hydro Electric Project (186MW) Arunachal Pradesh		Technical Data Sheets
		Volume II Section-IV
		Distribution Transformer

Distribution Transformers (Guaranteed technical Particulars)							
Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
2	Distribution Transformers		Dry (630 kVA)	Dry Type (1500 kVA)	Oil Type (160 kVA)	Oil Type (5000 kVA)	
A.	Guaranteed technical particulars						
i)	Rating	KVA					
ii)	Rated /No load voltage on principal tap	kV					
	· HV winding						
	· LV winding						
iii)	Maximum operating voltage at full load on principal tap	kV					
	· HV winding						
	· LV winding						
iv)	Voltage between phase to earth for which star point is insulated	V					
v)	Rated frequency	Hz					
vi)	No-load current at rated voltage and rated frequency at principal tap	A					
vii)	Maximum current density in winding at continuous maximum rating	A/cm <sup>2</sup>					
	· HV winding						
	· LV winding						
viii)	Inrush current at normal voltage, frequency and power rating	A					

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Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
ix)	Maximum flux density in iron at normal voltage, frequency and power rating & 110% voltage	Weber/Sq. m	100%	110%			
	· Core		.....	.....			
	· Yoke		.....	.....			
x)	Voltage regulation at full load & at	%					
	· Unity power factor						
	· 0.8 power factor (lagging)						
	· 0.8 power factor (leading)						
xi)	Percentage impedance voltage at rated power and rated voltage on	%					
	(a) Principal tap						
	(b) Min Tap( - 10%)						
	(c) Max Tap (+10%)	%					
xii)	Zero sequence impedance at principal tap	$\Omega$					
xiii)	X/R ratio when off-circuit tap link at rated position						
xiv)	No-load losses at rated voltages and rated frequency on principal tap	KW					

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Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
xv)	Copper loss at 95 <sup>0</sup> C temperature rise at principal tap rated capacity	KW					
xvi)	Total losses at rated load , rated voltage and rated frequency on principal tap	KW					
xvii)	Efficiencies at rated voltage and rated frequency at tap position with maximum losses and unity power factor	%					
	a) at full load						
	b) at 75% of full load						
	c) at 50% of full load						
xviii)	Over load capacity while Transformer shall be capable of operating continuously						
	· On full load at 40 <sup>0</sup> C ambient temperature, the transformer shall be capable of delivering twice every twenty fours hours either						
	· One hundred fifty percent of full load for						

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	fifteen minutes, or						
	· Two hundred percent of full load for five minutes						
	· Two hundred fifty percent of full load for two and half minute.						
xix)	Temperature Rise						
	· One hundred fifty percent of full load for fifteen minutes, or						
	· Two hundred percent of full load for five minutes, or						
	· Two hundred fifty percent of full load for two and half minute						
xx)	Load at which maximum efficiency occurs	% of full load					
xxi)	Maximum efficiency	%					
xxii)	Noise level at a distance of 1 metre at rated voltage on principal tap	dB					
xxiii)	Insulation class						
B.	Other technical particulars						
i)	Type of transformer						
ii)	Manufacturer						
iii)	Standards						

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Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
iv)	Number of windings						
v)	Number of phases						
vi)	Phase connections						
	· HV winding						
	· LV winding						
vii)	Vector group						
viii)	Method of neutral earthing for LV winding						
ix)	Type of cooling						
x)	Type of installation	Indoor					
2	WINDING						
A.	Guaranteed Technical Particulars						
i)	Resistance per phase at 75°C of	Ω					
	· HV winding						
	· LV winding						
ii)	Reactance per phase of	Ω					
	· HV winding						
	· LV winding						
B.	Other Technical Particulars						
i)	Type and material of windings						
	· HV winding						
	· LV winding						
ii)	Insulating materials used for						
	· HV winding						
	· LV winding						

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Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
iii)	Weight of copper required for complete transformer.	Kg					
3	Core						
	· Material for core laminations.						
	· Thickness of laminations.	mm					
	· Whether laminations are of grainoriented cold rolled silicon steel.						
	· Core joints, inter-leaved or butt joints.						
	· Weight of core.	Kg					
	· Insulation between core laminations.						
	· Insulation of core bolts.						
	· Insulation of core and plates.						
	· Number of limbs in the core.						
4	Enclosure						
	Material and thickness of plate for						
	i. Sides						
	ii. Bottom						
	iii. Top cover						
5	Impulse Level						
	HV	kV					
	Winding	kV					
	Support Insulator	kV					

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6	Power Frequency level						
	HV	kV					
	Winding	kV					
	Support Insulator	kV					
7	Neutral CT						
	· Type						
	· Rated voltage	V					
	· Rated frequency	Hz					
	· One second dynamic short circuit current rating	kA <sub>peak</sub>					
	· One second thermal short circuit current rating	kA <sub>peak</sub>					
	· Number of cores						
	· Accuracy class						
	· Transformation ratio						
	· Rated output of each core at 0.8 Power factor	VA					
	· Accuracy limit factor						
	· Magnetising current						
	· Knee point voltage						
8	Tap-changer						
	· Type						
	· Location (HV side )						
	· Step voltage						
	· Number of steps						
9	Auxiliary Devices						

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**Distribution Transformers (Guaranteed technical Particulars)**

Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
	· Type & manufacturer of winding temperature indicator						
10	Dimensions And Weight Of Transformer						
	· Transformer dimensions (complete assembly)						
	- Height (from track to highest top)						
	- Over all length						
	- Overall width						
	· Weight of complete transformer with fittings & accessories						
	· Shipping dimensions of transformer						
	- Height						
	- length						
	- width						
	· Shipping weight of transformer						