

Procurement of Transformers for Heo Hydro Electric Project (240 MW), 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 ²					
	· HV winding						
	· LV winding						
viii)	Inrush current at normal voltage, frequency and power rating	A					

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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	Ω					
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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xv)	Copper loss at 95°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°C ambient temperature, the transformer shall be capable of delivering twice every twenty fours hours either						
	· One hundred fifty percent of						

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	full load for 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						

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Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
iii)	Standards						
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						

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Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
	· LV winding						
iii)	Weight of copper required for complete transformer.	Kg					
3	Core						
	· Material for core laminations.						
	· Thickness of laminations.	mm					
	· Whether laminations are of grain oriented 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					

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Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
	Support Insulator	kV					
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 _{peak}					
	· One second thermal short circuit current rating	kA _{peak}					
	· 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						

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Sl. No.	Description	Units	To be filled by the Tenderer				Remarks (if any)
9	Auxiliary Devices						
	· 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						