

# 110/66 kV POWER TRANSFORMER



## SUMMARY

We have adopted series of important reforms on the 110kV level three-phase oil-immersed on-load tap-changing transformer referring material, process and structure. The transformer has the features of small size, light weight, high efficiency, low loss, low noise, reliable operation etc. which can reduce a large amount of power network loss and operation expense with significant economic benefits. It is suitable for power plant, substation, heavy section plant or enterprises etc.

## Environmental Conditions

1. Type: outdoor
2. Ambient temperature: max. Temperature: +40°C; min. temperature: -30°C
3. Altitude:  $\leq 1000\text{m}$  (temperature rise shall be corrected when 1000m)
4. Relative humidity:  $\leq 90\%$  (25°C)
5. Installation place: without corrosive gas and apparent fouling.

## 110kV Three-phase Double-winding NLTC Power Transformer

Rated Capacity (kVA)	Voltage ratio		Vector group	No-load loss (kW)	load loss (kW)	No-Load current (%)	Short circuit impedance (%)
	HV	LV					
6300	110±2×2.5%	10.5	YNd11	7.40	35.0	0.62	10.5
8000				8.90	42.0	0.62	
10000				10.5	50.0	0.58	
12500				12.4	59.0	0.58	
16000				15.0	73.0	0.54	
20000				17.6	88.0	0.54	
25000				20.8	104	0.50	
31500				24.6	123	0.48	
40000				29.4	148	0.45	
50000				35.2	175	0.42	
63000	121±2×2.5%	13.8	YNd11	41.6	208	0.38	12~14
75000				47.2	236	0.33	
90000				54.4	272	0.30	
120000				67.8	337	0.27	
150000				80.1	399	0.24	
180000				90.0	457	0.20	

Above mentioned parameter are only for reference, WESTINGHOUSE is able to design products according to specific requirements from end users.

## 110kV Three-phase Three-winding NLTC Power Transformer

Rated Capacity (kVA)	Voltage combination and range of tapping			Vector group	No-load loss (kW)	Load loss (kW)	No-Load current (%)	Short circuit impedance (%)	
	HV	MV	LV					Step up	Step down
6300	110±2×2.5%	33	6.6	YNyn0d11	8.90	44.0	0.66	HV-MV 17.5~18.5	HV-MV 10.5
8000					10.6	53.0	0.62		
10000					12.6	62.0	0.59		
12500					14.7	74.0	0.56		
16000					17.9	90.0	0.53		
20000					21.2	106	0.53		
25000					24.6	126	0.48		
31500					29.4	149	0.48		
40000					34.8	179	0.44		
50000					41.6	213	0.44		
63000	49.2	256	0.40	MV-LV 6.5	MV-LV 6.5				

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### 110kV Three-phase Double-winding OLTC Power Transformer

Rated capacity (kVA)	Voltage ratio		Vector group	No-load loss (kW)	load loss (kW)	No-load current (%)	Short circuit impedance (%)
	HV	LV					
6300	110±8×1.25%	6.3 6.6 10.5 21	Y N d11	8.00	35.0	0.64	10.5
8000				9.60	42.0	0.64	
10000				11.3	50.0	0.59	
12500				13.4	59.0	0.59	
16000				16.1	73.0	0.55	
20000				19.2	88.0	0.55	
25000				22.7	104	0.51	
31500				27.0	123	0.51	
40000				32.3	156	0.46	12~18
50000				38.2	194	0.46	
63000				45.4	232	0.42	

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### 110kV Three-phase Three-winding OLTC Power Transformer

Rated capacity (kVA)	Voltage combination and range of tapping			Vector group	No-load loss (kW)	Load loss (kW)	No-load current (%)	Short circuit impedance (%)
	HV	MV	LV					
6300	110±8×1.25%	36	6.6 11 24	Y N y n 0 d 11	9.6	44.0	0.76	HV-MV 10.5 HV-LV 18~19 MV-LV 6.5
8000					11.5	53.0	0.76	
10000					13.6	62.0	0.71	
12500					16.1	74.0	0.71	
16000					19.3	90.0	0.67	
20000					22.8	106	0.67	
25000					27.0	126	0.62	
31500					32.1	149	0.62	
40000					38.5	179	0.58	
50000					45.5	213	0.58	
63000					54.1	256	0.53	

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### 66kV Three-phase Power Transformer with Off-load Tap Changer

Rated power (kVA)	HVe (kV)	Tap (kV)	LV (kV)	Vector group	Short-circuit impedance (%)	No-load Loss (W)			On-load Loss (W)			No-load current (%)
						The 9 type of loss	The 10 type of loss	The 11 type of loss	The 9 type of loss	The 10 type of loss	The 11 type of loss	
6300	63 66 69	±2× 2.5%	6.3 6.6 10.5 11 13.2 15	YNd11	9	9.5	8.5	7.5	36	34	34	0.63
8000						11.4	10.2	9	42.8	40.4	40.4	0.63
10000						13.5	12.1	12.1	50.4	47.6	47.6	0.75
12500						15.9	14.2	12.6	59.9	56.5	56.5	0.53
16000						19.1	17.1	15.1	73.53	69.5	69.5	0.49
20000						22.6	20.3	17.9	89.1	84.2	84.2	0.49
25000						26.7	23.9	21.1	105.3	99.5	99.5	0.42
31500						31.8	28.4	25.1	126.9	120	120	0.42
40000						38	34	30	148.5	140.3	140.3	0.39
50000						44.9	40.1	35.4	184.5	174.3	174.3	0.39
63000						53.3	47.7	42.1	222.3	210	210	0.39

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### 66kV Three-phase Power Transformer with On-load Tap Changer

Rated power (kVA)	HV (kV)	Tap (kV)	LV (kV)	Vector group	Short-circuit impedance (%)	No-load Loss (W)			On-load Loss (W)			No-load current (%)
						The 9 type of loss	The 10 type of loss	The 11 type of loss	The 9 type of loss	The 10 type of loss	The 11 type of loss	
6300	63 66 69	±8× 1.25%	6.3 6.6 10.5 11 13.2 15	YNd11	9	10.5	9.4	8.25	36	34	34	0.63
8000						12.5	11.2	9.83	42.8	40.4	40.4	0.63
10000						14.7	13.1	11.6	50.4	47.6	47.6	0.75
12500						17.2	15.4	13.6	59.9	56.5	56.5	0.53
16000						20.6	18.5	16.3	73.53	69.5	69.5	0.49
20000						24.3	21.8	19.2	89.1	84.2	84.2	0.49
25000						28.6	25.6	22.6	105.3	99.5	99.5	0.42
31500						33.9	30.4	26.8	126.9	120	120	0.42
40000						40.4	36.2	31.9	148.5	140.3	140.3	0.39
50000						47.8	42.6	38.6	184.5	174.3	174.3	0.39
63000						56.3	50.4	44.4	222.3	210	210	0.39

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Transformer

