

220kV POWER TRANSFORMER

Transformer



SUMMARY

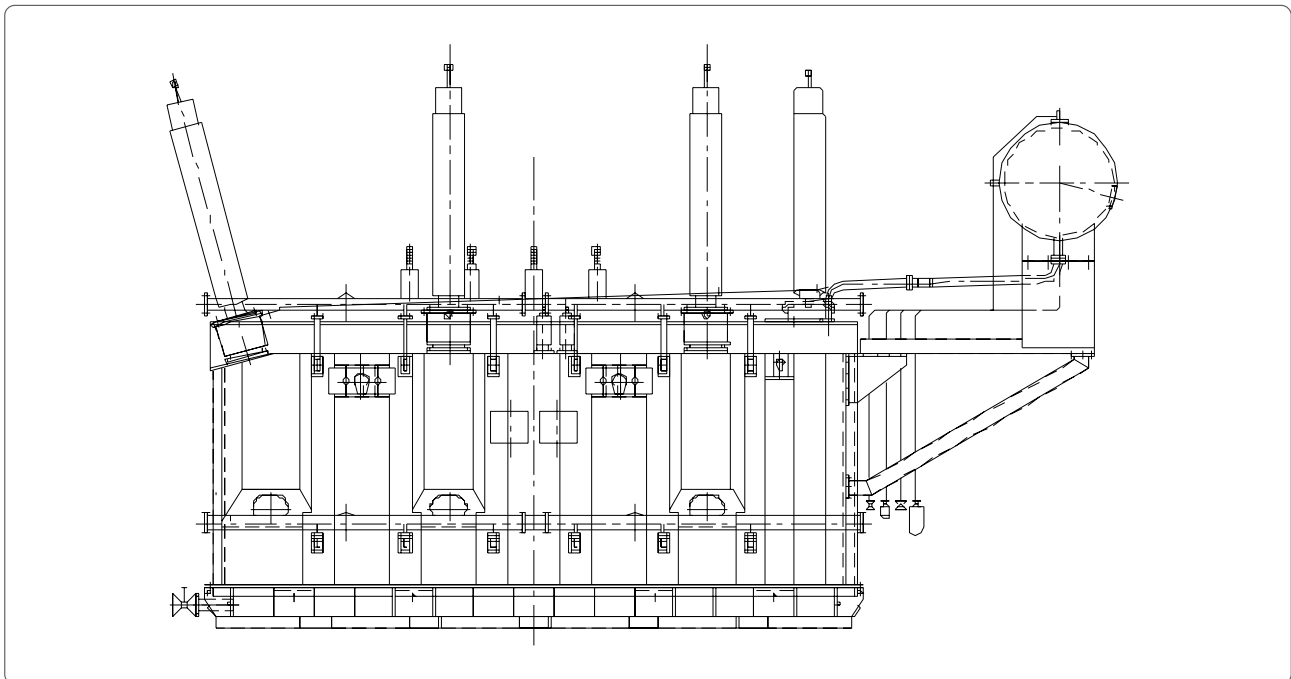
Environmental Conditions

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220kV Three-phase Duplex-winding Non- eld Excitation Changing Power Transformer

Rated capacity (kVA)	Voltage ratio		Vector group	No-load loss (kW)	load loss (kW)	No-load current (%)	Short circuit impedance (%)
	HV	LV					
31500	220 ± 2 × 2.5% 242 ± 2 × 2.5%	6.3	YNd11	28.0	128	0.56	12 - 14
40000		6.6		32.0	149	0.56	
50000		10.5		39.0	179	0.52	
63000		10.5		46.0	209	0.52	
75000				53.0	237	0.48	
90000				64.0	273	0.44	
120000		13.8		75.0	338	0.44	
150000				89.0	400	0.40	
160000		10.5 、 13.8		93.0	420	0.39	
180000				15.75	102	459	
240000		18 、 20		128	538	0.33	
300000				154	641	0.30	
360000		15.75		173	735	0.30	
370000				18	176	750	
400000		20		187	795	0.28	
420000	193		824	0.28			

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

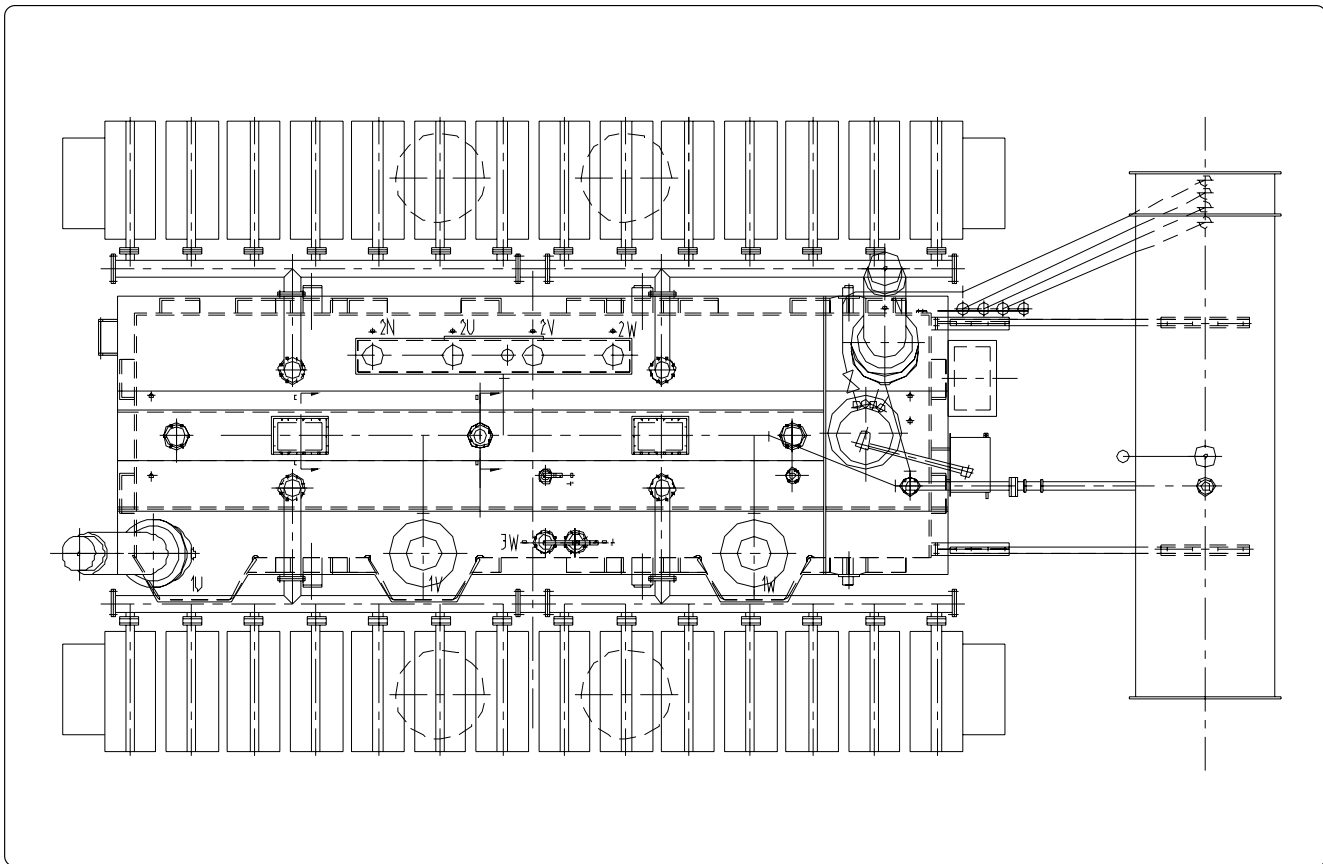


220kV Three-phase Three-winding Non- eld Excitation Changing Power Transformer

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
31500	220±2	69 115 121	6.3/6.6/10.5/ 21/36/37/38.5	YNyn0d11	32.0	153	0.56	HV-MV 22-24 HV-LV 12-14 MV-LV 7-9	HV-MV 12-14 22-24 MV-LV 7-9
40000					38.0	183	0.50		
50000	×2.5%				44.0	216	0.44		
63000	230±2				52.0	257	0.44		
90000	×2.5%		10.5/13.8/ 21/36/37/38.5		68.0	333	0.39		
120000			84.0		410	0.39			
150000	242±2		10.5/13.8/15.75/21, 36/37/38.5		100	487	0.33		
180000					113	555	0.33		
240000					140	684	0.28		
300000	×2.5%		166		807	0.24			

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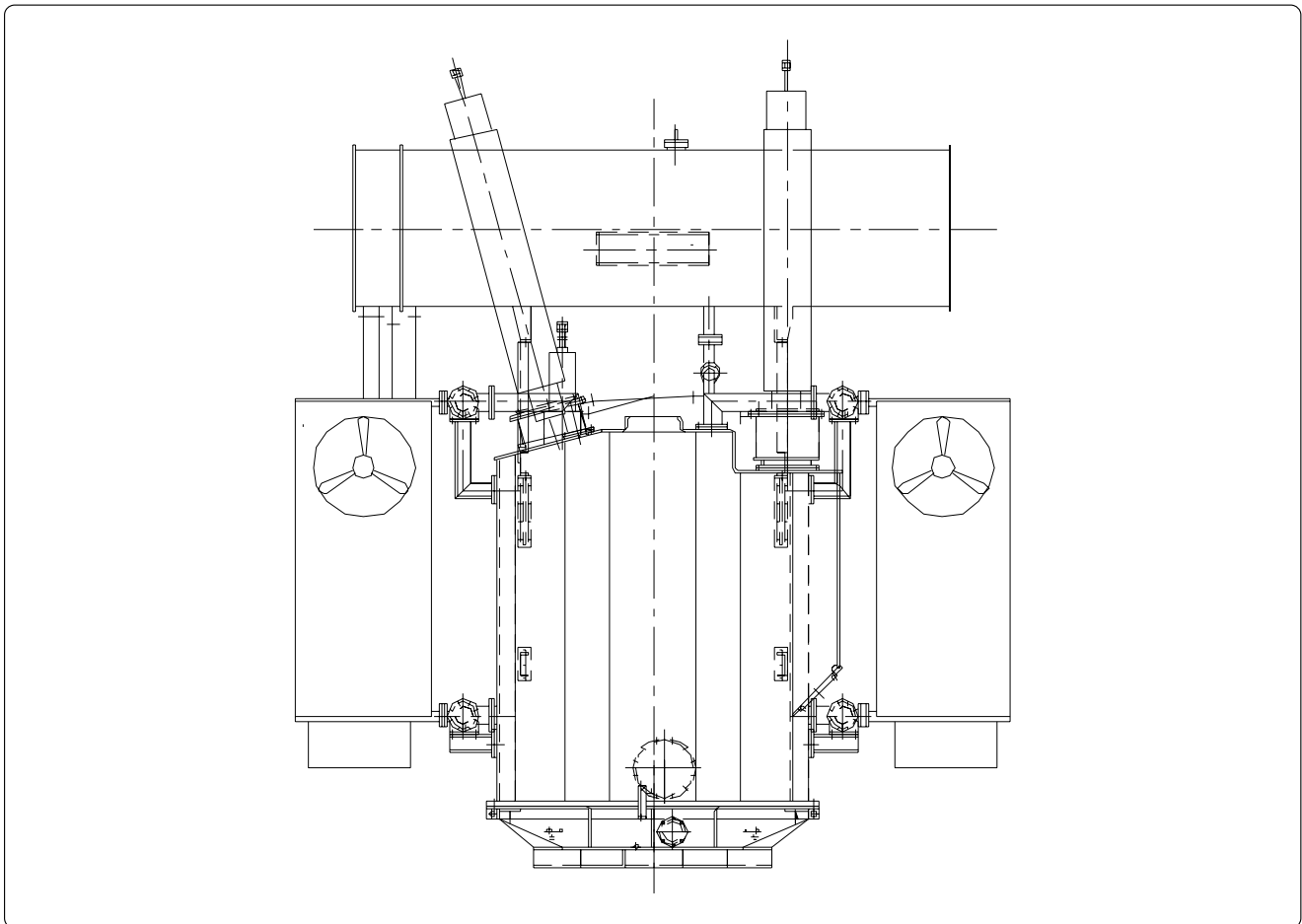


220kV Low Voltage 66kV Three-phase Duplex-winding Non-eld Excitation Changing Power Transformer

Rated capacity (kVA)	Voltage ratio		Vector group	No-load loss (kW)	load loss (kW)	No-load current (%)	Short circuit impedance (%)
	HV	LV					
31500	220 ± 2 × 2.5%	63	Ynd11	30.0	143	0.71	12-14
40000				36.0	167	0.71	
50000				42.0	200	0.65	
63000				50.0	234	0.65	
90000				66.0	306	0.60	
120000	230 ± 2 × 2.5%	69		81.0	367	0.60	
150000				97.0	430	0.54	
180000				110	487	0.54	
240000				136	603	0.48	

Transformer

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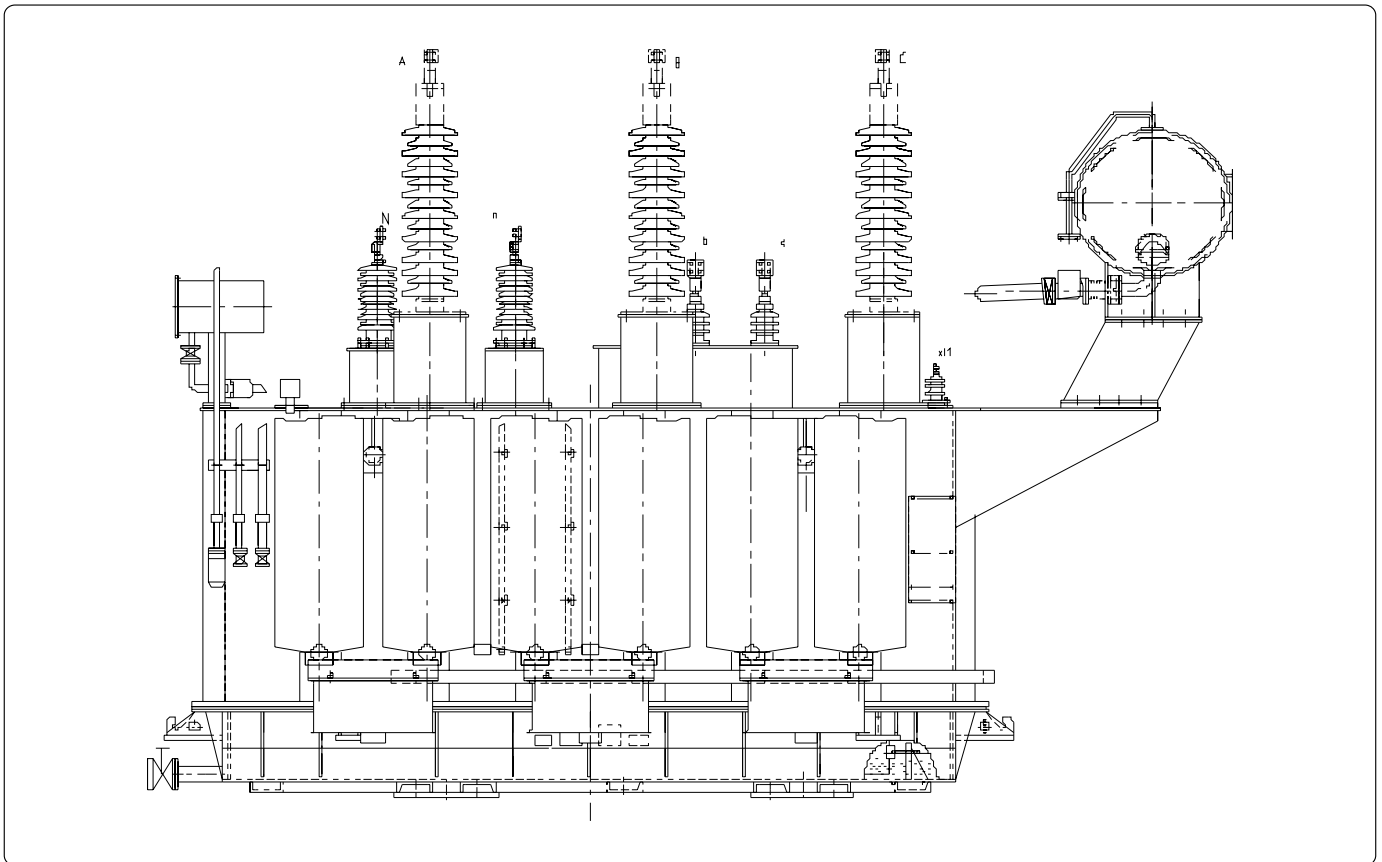


220kV Three-phase Three-winding Non-field Excitation Changing Self-coupled Power Transformer

Transformer

Rated Capacity (kVA)	Voltage combination and range of tapping			Vector group	Step up combination			Step down combination			Short circuit impedance	
	HV	MV	LV		No-load loss (kW)	load loss (kW)	No-load current	No-load loss (kW)	load loss (kW)	No-load loss	Step up	Step down
31500	220±	115 121	6.6/10.5	YNa0d11	20.0	111	0.45	17.0	94.0	0.40	HV-MV 12-14 HV-LV 8-12 MV-LV 14-18	HV-MV 8-10 HV-LV 28-34 MV-LV 18-24
40000	2x				23.0	136	0.45	20.0	114	0.40		
50000	2.5%		21/36		27.0	161	0.40	24.0	136	0.34		
63000			37/38.5		32.0	190	0.40	28.0	162	0.34		
90000	230±				40.0	262	0.34	36.0	222	0.28		
120000	2x		10.5/13.8		49.0	323	0.34	44.0	273	0.28		
150000	2.5%		15.75/18		58.0	384	0.28	52.0	324	0.26		
180000	242±				67.0	439	0.28	60.0	367	0.26		
240000	2x 2.5%		21/36 37/38.5		79.0	545	0.26	71.0	478	0.20		

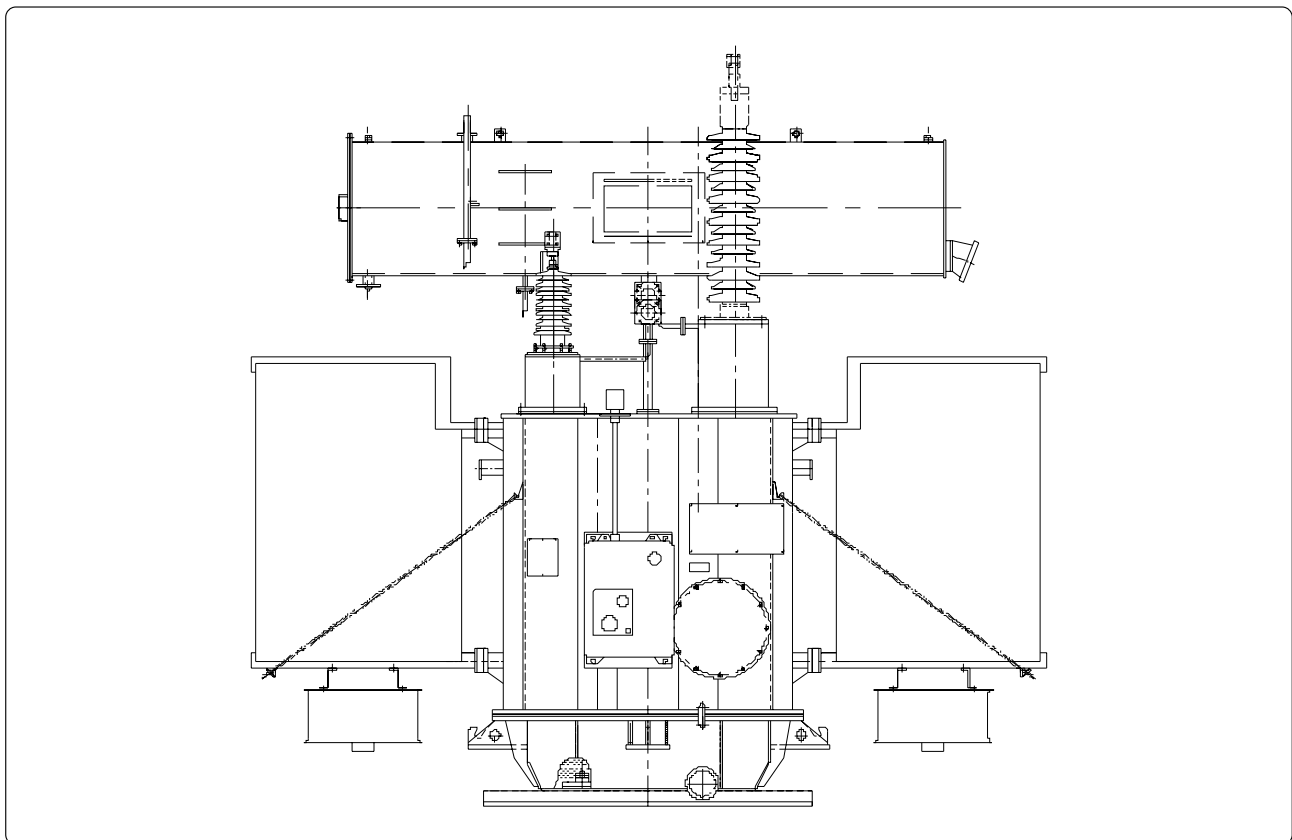
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220kV Three Phase Double Windings Power Transformer With On Load Tap Changer

Rated Capacity (kVA)	Voltage ratio		Vector group	No-load loss (kW)	load loss (kW)	No-load current (%)	Short circuit impedance (%)
	HV	LV					
31500	220 ± 8 × 1.25%	6.3/6.6/10.5/21, 36/37/38.5	Ynd11	30.0	128	0.57	12-14
40000				36.0	149	0.57	
50000				43.0	179	0.53	
63000				50.0	209	0.53	
90000				64.0	273	0.45	
120000				79.0	338	0.45	
150000	230 ± 8 × 1.25%	10.5/21/36/37/38.5		92.0	400	0.41	
180000				108	459	0.38	
120000				81.0	337	0.45	
150000				96.0	394	0.41	
180000				112	451	0.38	
240000				140	560	0.30	
		66					
		69					

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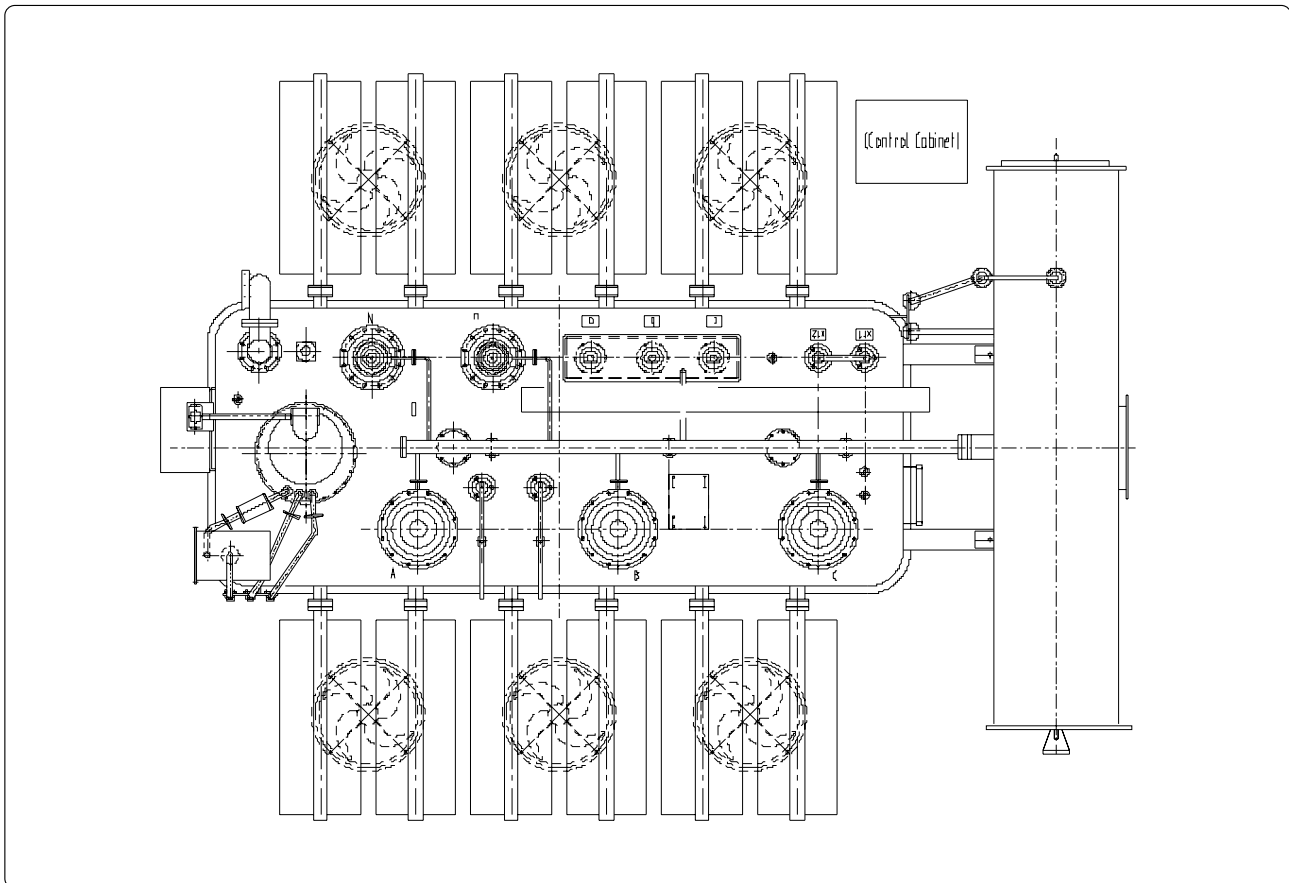


220kV Three-phase Three-winding On-load Transforming Power Transformer

Transformer

Rated Capacity (kVA)	Voltage combination and range of tapping			Vector group	No-load loss (kW)	load loss (kW)	Load current (%)	Capacity Assignment (%)	Short circuit impedance (%)
	HV	MV	LV						
31500	220±8×	69	6.3/6.6	YNy n0d11	35.0	153	0.63	100/100/100 100/50/100 100/100/50	HV-MV 12-14 HV-LV 22-24 MV-LV 7-9
40000			10.5/21		41.0	183	0.60		
50000			36/37		48.0	216	0.60		
63000			38.5		56.0	257	0.55		
90000	1.25%	115	10.5		73.0	333	0.44		
120000	230±8×	121	21		92.0	410	0.44		
150000	1.25%		36		108	487	0.39		
180000			37		124	598	0.39		
240000			38.5		154	741	0.35		

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220kV Three-phase Three-winding On-load Transforming Self-coupled Power Transformer

Rated Capacity (kVA)	Voltage combination and range of tapping			Vector group	No-load loss (kW)	load loss (kW)	No-Load current (%)	Capacity Assignment (%)	Short circuit impedance (%)
	HV	MV	LV						
3150	220±8×	115	6.3/6.6	YNa0d11	20.0	102	0.44	100/100/50	HV-MV 8-11 HV-LV 28-34 MV-LV 18-24
40000			10.5/21		24.0	125	0.44		
50000			36/37		28.0	149	0.39		
63000	1.25%	121	38.5		33.0	179	0.39		
90000			10.5/21		40.0	234	0.33		
120000			36/37		51.0	292	0.33		
150000	230±8×	121	38.5		60.0	346	0.28		
180000			10.5/21		68.0	39	0.28		
240000			36/37		83.0	513	0.24		

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220kV Steel plant installation



35kV steel Furnace Plant installation



20kV Glad Mine installation

