

1. TECHNICAL DATA SHEET

Power transformer 25 MVA, 115 ± 9x1.78 % /38.5±2x2.5%/11 kV				
No	Description	Unit	Data required	Data offered
1	GENERAL			
1.1	Manufacturer			CEEG
1.2	- country			China
1.3	- city			Yangzhong
1.4	Kind of installation		outdoor	outdoor
1.5	Standards		IEC60076	IEC60076
			IEC60137	IEC60137
			IEC61463	IEC61463
			IEEE 693-2005	IEEE 693-2005
1.6	Single or three-phase unit		Three-phase	Three-phase
1.7	Type of core		3 limb, step-lap stacked core form	3 limb, step-lap stacked core form
1.8	Type of tank		Upper flange tank	Upper flange tank
1.9	Tank fully vacuum proof		Yes	Yes
1.10	Number of windings		Three	Three
1.11	Winding material (HV,MV,LV)		Coper	Coper
1.12	Insulation oil			
1.13	- manufacturer			PetroChina
1.14	- type			45#
1.15	- specification of oil		IEC 60296	IEC 60296
1.16	- insulation oil inhibited		Yes	Yes
1.17	- test method for corrosive sulphur		IEC 62535 and ASTM D1275B	IEC 62535 and ASTM D1275B
2	RATINGS			

2.1	Rated power at nominal voltage (primary/secondary/tertiary)			
2.2	- at ONAN cooling	MVA	20/20/20	20/20/20
2.3	- at ONAF cooling	MVA	25/25/25	25/25/25
2.4	Maximum ambient temperature	°C	50	50
2.5	Annual average ambient temperature	°C	15	15
2.6	Minimum ambient temperature	°C	-30	-30
2.7	Maximum service altitude	m	1000	1000
2.8	Temperature rise limits at all tap changer settings			
2.9	- oil/top	K	50	50
2.10	- windings/average	K	55	55
2.11	- windings/hot spot	K	68	68
2.12	Rated voltages (no load)			
2.13	- HV	kV	115	115
2.14	- MV	kV	38.5	38.5
2.15	- LV	kV	11	11
2.16	Rated frequency	Hz	50	50
2.17	Permissible load at neutral point	%	solidly earthed/surge arrester	solidly earthed/surge arrester
2.18	Vector group symbol		YNyn0d11	YNyn0d11
2.19	Impedance voltage – HV/LV (25 MVA basis)			
2.20	- maximum tap position	%	Specify	18
2.21	- nominal tap position	%	17.5	17.5
2.22	- minimum tap position	%	Specify	17
2.23	Impedance voltage – HV/MV (25 MVA basis)			
2.24	- maximum tap position	%	Specify	11
2.25	- nominal tap position	%	10.5	10.5

2.26	- minimum tap position	%	Specify	10
2.27	Impedance voltage – secondary/tertiary (25 MVA basis)	%	Min. 6.5 (±30%/-0%)	Min. 6.5 (±30%/-0%)
2.28	Magnetic flux density at			
2.29	-rated voltage and frequency	Tesla	Max. 1.7	Max. 1.7
2.30	No load losses (tolerance +0%)	kW	<15	<11
2.31	No load current (I ₀ /I _N)	%	0.1	0.1
2.32	Core losses (W17/50)	W/kg	Max. 0.9	Max. 0.9
2.33	Short circuit voltage			
2.34	- HV-LV	%	17.5	17.5
2.35	- HV-MV	%	10.5	10.5
2.36	- MV-LV	%	6.5	6.5
2.37	Load losses at rated power			
2.38	HV/LV (25 MVA basis)			
2.39	- maximum tap position	kW	Specify	95
2.40	- nominal tap position	kW	Specify	Max. 100
2.41	- minimum tap position	kW	Specify	115
2.42	HV/MV (25 MVA basis)			
2.43	- maximum tap position	kW	Specify	115
2.44	- nominal tap position	kW	Specify	Max. 120
2.45	- minimum tap position	kW	Specify	130
2.46	MT/JT (25 MVA basis)	kW	Specify	Max. 160
2.47	HV winding (25 MVA basis)			--
2.48	- maximum tap position	kW	Specify	About 60kW
2.49	- nominal tap position	kW	Specify	About 60kW
2.50	- minimum tap position	kW	Specify	About 60kW
2.51	LV winding (25 MVA basis)	kW	Specify	About 60kW
2.52	MT winding (25 MVA basis)			About 60kW

2.53	- maximum tap position	kW	Specify	About 60kW
2.54	- nominal tap position	kW	Specify	About 60kW
2.55	- minimum tap position	kW	Specify	About 60kW
2.56	Power consumption of cooling plant	kW	Specify	3kW
2.57	Efficiency referred to 75 °C at rated voltage taping and at:			
2.58	- 100% rated output and 1.0 power factor	%	99.7	99.5@HV-MV PEI:99.70%
2.59	- 75% rated output and 1.0 power factor	%	Specify	99.64@HV-MV
2.60	- 50% rated output and 1.0 power factor	%	Specify	99.71@HV-MV
2.61	- 25% rated output and 1.0 power factor	%	Specify	99.72@HV-MV
2.62	- 100% rated output and 0.8 power factor	%	Specify	99.44@HV-MV
2.63	- 75% rated output and 0.8 power factor	%	Specify	99.55@HV-MV
2.64	- 50% rated output and 0.8 power factor	%	Specify	99.64@HV-MV
2.65	- 25% rated output and 0.8 power factor	%	Specify	99.65@HV-MV
2.66	Voltage variation range HV	kV	+/- 18.423	+/- 18.423
2.67	Taping range HV	%	+/- 16	+/- 16
2.68	Number of steps HV	steps	+/- 9	+/- 9
2.69	Continuous power on all taps		Yes	Yes
2.70	Voltage variation range MV 38.5 kV	kV	+/- 1.925	+/- 1.925
2.71	Tapping range MV 38.5 kV	%	+/- 5	+/- 5
2.72	Number of steps MV 38.5 kV	steps	+/- 2	+/- 2
2.73	Principal taping HV	kV	115	115
2.74	Principal taping MV	kV	38.5	38.5
2.75	Winding insulation design			
2.76	- HV		Uniform	Uniform
2.77	- MV		Uniform	Uniform
2.78	- LV		Uniform	Uniform
2.79	Seismicity on MSK scale		IX	IX
3	INSULATION LEVEL			
3.1	Insulation level HV winding			
3.2	- Power frequency withstand voltage	kV	230/230	230/230

	line/neutral			
3.3	- Lightning impulse level line/neutral	kV	550/550	550/550
3.4	Insulation level LV winding			
3.5	- Power frequency withstand voltage	kV	34	34
3.6	- Lightning impulse level	kV	110	110
3.7	Insulation level MT winding			
3.8	- Power frequency withstand voltage line/neutral	kV	95/95	95/95
3.9	- Lightning impulse level line/neutral	kV	250/250	250/250
4	OPERATION DETAILS			
4.1	Cooling method		ONAF	ONAF
4.2	Noise level (LpA) at a measuring distance of 2.0 m (all forced cooling in operation)	dB(A)	Max. 60	Max. 65
5	BUSHINGS			
5.1	HV (lines)			
5.2	- manufacturer			Nanjing Zhida, China
5.3	- type			OIP
5.4	- rated current	A	800	800
5.5	- power frequency test voltage	kV	255	255
5.6	- lightning impulse level		550	550
5.7	- minimum creepage distance in accordance with IEC 60815	mm	2835	2835
5.8	- cantilever load level according to IEC 60137	daN	Specify	Fx Horizontal:300 Fy Axial static load: 125 Fz Vertical cantilever load:150
5.9	HV (neutral)			
5.10	- manufacturer			Nanjing Zhida, China

5.11	- type			OIP
5.12	- rated current	A		800
5.13	- power frequency test voltage	kV	105	255
5.14	- lightning impulse level		250	550
5.15	- minimum creepage distance in accordance with IEC 60815	mm	1050	2835
5.16	- cantilever load level according to IEC 60137	daN	Specify	Fx Horizontal:200 Fy Axial static load: 100 Fz Vertical cantilever load:100
5.17	LV			
5.19	- manufacturer			Nanjing Zhida, China
5.20	- type			Pure porcelain bushing
5.21	- rated current	A	2000	2000
5.22	- power frequency test voltage	kV	42	42
5.23	- lightning impulse level		110	110
5.24	- minimum creepage distance in accordance with IEC 60815	mm	280	280
5.25	- cantilever load level according to IEC 60137	daN	Specify	Fx Horizontal:300 Fy Axial static load: 150 Fz Vertical cantilever load:150
5.26	MT (lines/neutral)			
5.27	- manufacturer			Nanjing Zhida, China
5.28	- type			Pure porcelain bushing

5.29	- rated current	A	630	630
5.30	- power frequency test voltage	kV	105	105
5.31	- lightning impulse level		250	250
5.32	- minimum creepage distance in accordance with IEC 60815	mm	1050	1050
5.33	- cantilever load level according to IEC 60137	daN	Specify	Fx Horizontal:300 Fy Axial static load: 150 Fz Vertical cantilever load:200
6	CURRENT TRANSFORMERS			
6.1	115 kV line side			
6.2	For protection purposes			
6.3	Rated output	VA	30	30
6.4	Ratio			
6.5	- primary	A	150-300	150-300
6.6	- secondary	A	5	5
6.7	Class		5P20	5P20
6.8	For protection purposes			
6.9	Rated output	VA	30	30
6.10	Ratio			
6.11	- primary	A	150-300	150-300
6.12	- secondary	A	5	5
6.13	Class		5P20	5P20
6.14	115 kV neutral side			
6.15	For protection purposes			
6.16	Rated output	VA	10	10
6.17	Ratio			
6.18	- primary	A	150-300	150-300
2.19	- secondary	A	5	5
6.20	Class		5P20	5P20
6.21	38.5 kV line side			
6.22	For protection purposes			
6.23	Rated output	VA	30	30
6.24	Ratio			
6.25	- primary	A	600-800	600-800

6.26	- secondary	A	5	5
6.27	Class		5P20	5P20
6.28	For protection purposes			
6.29	Rated output	VA	30	30
6.30	Ratio			
6.31	- primary	A	600-800	600-800
6.32	- secondary	A	5	5
6.33	Class		5P20	5P20
7	ON-LOAD TAP CHANGER			
7.1	Manufacturer			MR
7.2	Type			V type
7.3	Rated through current	A	≥400	≥400
7.4	Rated step capacity	kVA	≥2200	≥2200
7.5	Lightning impulses level	kV	550	550
7.6	Power frequency withstand test voltage	kV	230	230
7.7	Rated step voltage per phase	kV	3200	3200
7.8	Short-time current			
7.9	- 3s value	kA	≥10	≥10
7.10	- peak value	kA	≥25	≥25
7.11	Type of connection		Neutral	Neutral
7.12	Type of switching		Vacuum type diverter switch	Vacuum type diverter switch
7.13	Contact life operation	Nos	Min. 500 000	Min. 500 000
7.14	Number of switching operation till first revision	Nos	Min. 250 000	Min. 250 000
7.15	Auxiliary supply voltage (AC)	V	400/230	400/230
8	PROTECTION AND MONITORING EQUIPMENT			
8.1	- Buchholz relay		EMB BF 80/10 (or. equ.)	EMB BF 80/10 (or. equ.)
8.2	- Oil flow operated protection relay		EMB URF 25/10 (or. equ.)	EMB URF 25/10 (or. equ.)
8.3	- Conservator gas detection relay		EMB CF-38 (or/ equ.)	EMB CF-38 (or/ equ.)
8.4	- Oil level indicator			
8.5	Type			MTO-STF
8.6	Manufacturer			Messko, Germany

8.7	- Pressure relief device		resettable spring loaded	resettable spring loaded
8.8	Type			MPreC
8.9	Manufacturer			Messko,Germany
8.10	- Dehydrating breather		Automatic, maintenance free	Automatic, maintenance free
8.11	Type			MTraB
8.12	Manufacturer			Messko,Germany
8.13	- Oil temperature indicator			Messko's product
8.14	Type			MT-ST160F
8.15	Manufacturer			Messko,Germany
8.16	- Winding temperature indicator			Messko's product
8.17	Type			MT-STW160F2
8.18	Manufacturer			Messko,Germany
9	MASSES, MEASURES AND DRAWINGS			
9.1	Transformer masses:			
9.2	- total mass	kg		About 55000
9.3	- transportation mass	kg		About 42000
9.4	- untanking mass	kg		About 25000
9.5	- mass of insulating liquid	kg		About 12500
9.6	Overall dimensions including bushings:			
9.7	- height	mm		5300
9.8	- depth	mm		7500
9.9	- width	mm	max. 6250	max. 6250

9.10	Gauge of the tank			
9.12	- longitudinal	mm	1524	1524
9.12	- transverse	mm	2000	2000
10	RELIABILITY REQUIREMENTS			
10.1	Design of windings and/or magnetic core pressing system should not require any maintenance for the whole expected life term		Yes	Yes
10.2	Manufacture has to have experience in short-circuit tests ≥ 110 kV rated voltage transformers (withstand short circuit) according to IEC standard in independent laboratories not earlier than 2010		Specify transformer type, present test report	Provide
10.3	Life time	year	Min. 30	Min. 30
11	DELIVERY			
11.1	Incoterms		DAP	DAP
11.2	Unloading on site		No	No
12	DOCUMENTS TO BE PROVIDED WITH THE OFFER			
12.1	Transformer data plate (photo or drawing)		Provide	Provide
12.2	Passport or Test Certificate of the similar* transformer previously manufactured not earlier than 2010		Provide	Provide
12.3	Reference list of the similar transformers for the last 5 years with end users contacts		Provide	Provide
12.4	Certificate for manufacture's test laboratory (ISO/IEC)		Provide	Provide
12.5	Outline transformer drawing		Provide	Provide
12.6	Oil test certificate		Provide	Provide
12.7	Short-circuit test report		Provide	Provide
12.8	OLTC Type Test Report performed in independent and accredited European Laboratory according to IEC 60214-I:2014,		Provide	Provide
12.9	OLTC instalation and operation manual		Provide	Provide
12.10	Other documents required according to chapter 5 of the present document		Provide	Provide

- Similar transformer is a three – winding transformer with same/similar rated power, HV / MV/LV rated voltage, no-load and load losses, impedance voltage, sound pressure level.

