

## 8. TECHNICAL DATA SHEET

Power transformer Ungheni 25 MVA, 115 ± 9x1.78 % /38.5±2x2.5%/11 kV				
No	Description	Unit	Data required	Data offered
<b>1</b>	<b>GENERAL</b>			
	Manufacturer			Shandong Dachi Electric Co. Ltd.
	- country			China
	- city			Shandong Heze Chengwu
	Kind of installation		outdoor	Outdoor
	Standards		IEC60076	IEC60076
			IEC60137	IEC60137
			IEC61463	IEC61463
			IEEE 693-2005	IEEE 693-2005
	Single or three-phase unit		Three-phase	Three-phase
	Type of core		3 limb, step-lap stacked core form	3 limb,step-lap stacked core form
	Type of tank		Upper flange tank	Upper flange tank
	Tank fully vacuum proof		Yes	Yes
	Number of windings		Three	Three
	Winding material (HV,MV,LV)		Coper	Copper
	Insulation oil			
	- manufacturer			Xinjiang Karamay
	- type			25#
	- specification of oil		IEC 60296	IEC 60296
	- insulation oil inhibited		Yes	Yes
	- test method for corrosive sulphur		IEC 62535 and ASTM D1275B	IEC 62535 and ASTM D1275B
<b>2</b>	<b>RATINGS</b>			
	Rated power at nominal voltage (primary/secondary/tertiary)			
	- at ONAN cooling	MVA	20/20/20	20/20/20
	- at ONAF cooling	MVA	25/25/25	25/25/25
	Maximum ambient temperature	°C	50	50
	Annual average ambient temperature	°C	15	15
	Minimum ambient temperature	°C	-30	-30
	Maximum service altitude	m	1000	1000
	Temperature rise limits at all tap changer settings			
	- oil/top	K	50	50
	- windings/average	K	55	55
	- windings/hot spot	K	68	68

	Rated voltages (no load)			
	- HV	kV	115	115
	- MV	kV	38.5	38.5
	- LV	kV	11	11
	Rated frequency	Hz	50	50
	Permissible load at neutral point	%	100/solidly earthed/surge arrester	100/solidly earthed/surge arrester
	Vector group symbol		YNyn0d11	YNyn0d11
	Impedance voltage – HV/LV (25 MVA basis)			
	- maximum tap position	%	Specify	18.5
	- nominal tap position	%	17.5	17.5
	- minimum tap position	%	Specify	17.2
	Impedance voltage – HV/MV (25 MVA basis)			
	- maximum tap position	%	Specify	10.6
	- nominal tap position	%	10.5	10.5
	- minimum tap position	%	Specify	10
	Impedance voltage – secondary/tertiary (25 MVA basis)	%	Min. 6.5 ( $\pm 30\%$ /-0%)	Min. 6.5(+ $_{-30\%}$ /-0%)
	Magnetic flux density at			
	-rated voltage and frequency	Tesla	Max. 1.7	Max. 1.7
	No load losses (tolerance +0%)	kW	<15	<15
	No load current (I <sub>0</sub> /I <sub>n</sub> )	%	0.1	0.1
	Core losses (W <sub>17/50</sub> )	W/kg	Max. 0.9	Max. 0.9
	Short circuit voltage			
	- HV-LV	%	17.5	17.5
	- HV-MV	%	10.5	10.5
	- MV-LV	%	6.5	6.5
	Load losses at rated power			
	HV/LV (25 MVA basis)			
	- maximum tap position	kW	Specify	125
	- nominal tap position	kW	Max. 120	Max.120
	- minimum tap position	kW	Specify	158
	HV/MV (25 MVA basis)			
	- maximum tap position	kW	Specify	125
	- nominal tap position	kW	Max. 120	Max.120
	- minimum tap position	kW	Specify	159
	MT/JT (25 MVA basis)	kW	Max. 110	Max.110
	HV winding (25 MVA basis)			
	- maximum tap position	kW	Specify	40

	- nominal tap position	kW	Specify	52
	- minimum tap position	kW	Specify	74
	LV winding (25 MVA basis)	kW	Specify	36
	MT winding (25 MVA basis)			
	- maximum tap position	kW	Specify	40
	- nominal tap position	kW	Specify	43
	- minimum tap position	kW	Specify	48
	Power consumption of cooling plant	kW	Specify	0.37
	Efficiency referred to 75 °C at rated voltage taping and at:			
	- 100% rated output and 1.0 power factor	%	99.7	99.7
	- 75% rated output and 1.0 power factor	%	99.7	99.7
	- 50% rated output and 1.0 power factor	%	99.7	99.7
	- 25% rated output and 1.0 power factor	%	99.7	99.7
	- 100% rated output and 0.8 power factor	%	99.7	99.7
	- 75% rated output and 0.8 power factor	%	99.7	99.7
	- 50% rated output and 0.8 power factor	%	99.7	99.7
	- 25% rated output and 0.8 power factor	%	99.7	99.7
	Voltage variation range HV	kV	+/- 18.423	+/- 18.423
	Taping range HV	%	+/- 16	+/- 16
	Number of steps HV	steps	+/- 9	+/- 9
	Continuous power on all taps		Yes	Yes
	Voltage variation range MV 38.5 kV	kV	+/- 1.925	+/- 1.925
	Tapping range MV 38.5 kV	%	+/- 5	+/- 5
	Number of steps MV 38.5 kV	steps	+/- 2	+/- 2
	Principal taping HV	kV	115	115
	Principal taping MV	kV	38.5	38.5
	Winding insulation design			
	- HV		Uniform	Uniform
	- MV		Uniform	Uniform
	- LV		Uniform	Uniform
	Seismicity on MSK scale		IX	IX
<b>3</b>	<b>INSULATION LEVEL</b>			
	Insulation level HV winding			
	- Power frequency withstand voltage line/neutral	kV	230/230	230/230
	- Lightning impulse level line/neutral	kV	550/550	550/550
	Insulation level LV winding			

	- Power frequency withstand voltage	kV	34	34
	- Lightning impulse level	kV	110	110
	Insulation level MT winding			
	- Power frequency withstand voltage line/neutral	kV	95/95	95/95
	- Lightning impulse level line/neutral	kV	250/250	250/250
<b>4</b>	<b>OPERATION DETAILS</b>			
	Cooling method		ONAN/ONAF	ONAN/ONAF
	Noise level (LpA) at a measuring distance of 2.0 m (all forced cooling in operation)	dB(A)	Max. 60	Max.60
<b>5</b>	<b>BUSHINGS</b>			
	HV (lines)			
	- manufacturer			Dachi matched
	- type			BRDLW-1000/126
	- rated current	A	800	1000
	- power frequency test voltage	kV	255	255
	- lightning impulse level		550	550
	- minimum creepage distance in accordance with IEC 60815	mm	2835	2835
	- cantilever load level according to IEC 60137	daN	Specify	2000N
	HV (neutral)			
	- manufacturer			Dachi matched
	- type			BRDLW-630/126
	- rated current	A		630
	- power frequency test voltage	kV	105	255
	- lightning impulse level		250	550
	- minimum creepage distance in accordance with IEC 60815	mm	1050	2835
	- cantilever load level according to IEC 60137	daN	Specify	2000N
	LV			
	- manufacturer			Dachi matched
	- type			BDW-2000/40.5
	- rated current	A	2000	2000
	- power frequency test voltage	kV	42	42
	- lightning impulse level		110	110
	- minimum creepage distance in accordance with IEC 60815	mm	280	280

	- cantilever load level according to IEC 60137	daN	Specify	Meet IEC
	MT (lines/neutral)			
	- manufacturer			Dachi matched
	- type			BDW-630
	- rated current	A	630	630
	- power frequency test voltage	kV	105	105
	- lightning impulse level		250	250
	- minimum creepage distance in accordance with IEC 60815	mm	1050	1050
	- cantilever load level according to IEC 60137	dan	Specify	Meet IEC
<b>6</b>	<b>CURRENT TRANSFORMERS</b>			
	<b>115 kV line side</b>			
	For protection purposes			
	Rated output	VA	10	10
	Ratio			
	- primary	A	100-150-200-300	100-150-200-300
	- secondary	A	5	5
	Class		0.5sFS5	0.5sFS5
	For protection purposes			
	Rated output	VA	30	30
	Ratio			
	- primary	A	200-300-400-600	200-300-400-600
	- secondary	A	5	5
	Class		5P20	5P20
	For protection purposes			
	Rated output	VA	30	30
	Ratio			
	- primary	A	200-300-400-600	200-300-400-600
	- secondary	A	5	5
	Class		5P20	5P20
	<b>115 kV neutral side</b>			
	For protection purposes			
	Rated output	VA	10	10
	Ratio			
	- primary	A	200-300-400-600	200-300-400-600

	- secondary	A	5	Shenyang Yuguo
	Class		5P20	5P20
	<b>38.5 kV line side</b>			
	For protection purposes			
	Rated output	VA	10	10
	Ratio			
	- primary	A	100-200-300-400	100-200-300-400
	- secondary	A	5	5
	Class		0.5sFS5	0.5sFS5
	For protection purposes			
	Rated output	VA	30	30
	Ratio			
	- primary	A	200-300-400-600	200-300-400-600
	- secondary	A	5	5
	Class		5P20	5P20
<b>7</b>	<b>ON-LOAD TAP CHANGER</b>			
	Manufacturer			ABB
	Type			VUC
	Rated through current	A	400	400
	Rated step capacity	kVA	1320	1320
	Lightning impulses level	kV	550	550
	Power frequency withstand test voltage	kV	230	230
	Short-time current			
	- 3s value	kA	6	6
	- peak value	kA	15	15
	Type of connection		Neutral	Neutral
	Type of switching		Vacuum type diverter switch	Vacuum type diverter switch
	Contact life operation	Nos	Min. 600 000	Min. 600000
	Auxiliary supply voltage (AC)	V	400/230	400/230
<b>8</b>	<b>PROTECTION AND MONITORING EQUIPMENT</b>			
	- Buchholz relay		EMB BF 80/10 (or. equ.)	EMB BF 80/10 (or.equ.)
	- Oil flow operated protection relay		EMB URF 25/10 (or. equ.)	EMB URF 25/10 (or.equ.)
	- Conservator gas detection relay		EMB CF-38 (or/ equ.)	EMB CF-38 (or equ.)
	- Oil level indicator			
	Type			UZF -250

	Manufacturer			Shengyang Yuguo
	- Pressure relief device		resettable spring loaded	resettable spring loaded
	Type			YSF8-55/130KJ
	Manufacturer			Shengyang Yuguo
	- Dehydrating breather		Automatic, maintenance free	Automatic, Maintenance free
	Type			Xianxian Beidan
	Manufacturer			1kg
	- Oil temperature indicator			
	Type			BWY-802A
	Manufacturer			Dalian Shiyou
	- Winding temperature indicator			
	Type			BWR-04J
	Manufacturer			Dalian Shiyou
<b>9</b>	<b>MASSES, MEASURES AND DRAWINGS</b>			
	Transformer masses:			
	- total mass	kg		59000
	- transportation mass	kg		49000
	- untanking mass	kg		32000
	- mass of insulating liquid	kg		15000
	Overall dimensions including bushings:			
	- height	mm		4900
	- depth	mm		5000
	- width	mm	max. 6250	6250
	Gauge of the tank			
	- longitudinal	mm	1524	1524
	- transverse	mm	2000	2000
<b>10</b>	<b>RELIABILITY REQUIREMENTS</b>			
	Design of windings and/or magnetic core pressing system should not require any maintenance for the whole expected life term		Yes	Yes
	Manufacture has to have experience in short-circuit tests $\geq$ 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 SFZ-26000/132kV KEMA Test report(include short-circuit Test report)
	Life time	year	Min. 30	Min. 30
<b>11</b>	<b>DELIVERY</b>			
	Incoterms		DAP	DDP, Ungheni, SS Ungheni 110kV, Incoterms 2020

	Unloading on site		Yes	
<b>12</b>	<b>DOCUMENTS TO BE PROVIDED WITH THE OFFER</b>			
	Transformer data plate (photo or drawing)		Provide	Provided
	Passport or Test Certificate of the similar* transformer previously manufactured not earlier than 2010		Provide	Provided
	Reference list of the similar transformers for the last 5 years with end users contacts		Provide	Provided
	Certificate for manufacture's test laboratory (ISO/IEC)		Provide	Provided
	Outline transformer drawing		Provide	Provided
	Oil test certificate		Provide	Provided
	Short-circuit test report		Provide	Provided
	OLTC Type Test Report performed in independent and accredited European Laboratory according to IEC 60214-1:2014,		Provide	Provided
	OLTC instalatuon and operation manual		Provide	Provided
	Other documents required according to chapter 5 of the present document		Provide	Provided

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

**Bidder's name:** Shandong Dachi Electric Co., Ltd.

**Signature and stamp/electronic signature of the bidder:** \_\_\_\_\_