	TECHNICAL CHARACTERISTICS	Project Nr: PA585-01..02 WINDYHILL BESS PROJECT

1) Type			:	3 Phase Power Transformer
2) Rated power		HV / LV1 - LV2	MVA :	250 / 125 - 125
3) Cooling type			:	ONAN (75%) / ODAN (100 %)
4) Rated voltages (at no load)		HV / LV1 - LV2	kV :	132,0 / 33,0 - 33,0
5) Regulation			% :	± 12 steps x 1,75 % on HV side with On - Load Tap Changer (OLTC)
6) Rated frequency			Hz :	50
7) Vector group symbol			:	YNd1d1
8) Minimum / Maximum ambient temperature			°C :	-25 °C (min) / 40 °C (Max)
9) Temperature rise (oil / winding / HS)			K :	60 / 70 / 78

10) No load losses

		TAP 01	TAP 13	TAP 25
- at 1,0 Un	kW :	110 (Guaranteed)	110 (Guaranteed)	110 (Guaranteed)

11) No load current

- at 1,0 Un	% :	0,20

12) Load losses at 75 °C,

		TAP 01	TAP 13	TAP 25
- 250 / 125 - 125 MVA base	kW :	575 (Information)	585 (Guaranteed)	850 (Information)

13) Auxiliary Losses	kW :	10,0	(Excluding spare)

14) Total loss (no-load loss , load loss and auxiliary losses)

		TAP 01	TAP 13	TAP 25
- 250 / 125 - 125 MVA base	kW :	695 (Information)	705 (Guaranteed)	970 (Information)

15) Impedance voltage at 75 °C,

		TAP 01	TAP 13	TAP 25
- HV / LV1 (125 MVA)	% :	15,0 (Information)	14,0 (Guaranteed)	13,5 (Information)
- HV / LV2 (125 MVA)	% :	15,0 (Information)	14,0 (Guaranteed)	13,5 (Information)
- LV1 / LV2 (125 MVA)	% :	26,5 (Guaranteed)		
		IEC tolerances are applicable to the guaranteed values.		

16) Peak Efficiency Index (PEI)

- 250/125-125 MVA base, (132 / 33,0 - 33,0 kV , Tap 13)	% :	> 99,797	(as per TIER II 2021) (*) Please refer to attached page

17) Sound pressure /LpA) / ~~power (LwA)~~ level			:	
	(ODAN, at 2,0 meter)		dB (A) :	77 (LpA , including load noise)
	(ODAN, at 1,0 meter)		dB (A) :	80 (LpA , including load noise)
18) Insulation level				
- HV	(Um / AC / BIL / SI)		kV :	145 / 230 / 550 / -
- HV-N	(Um / AC / BIL)		kV :	145 / 230 / 550
- LV1	(Um / AC / BIL)		kV :	36 / 70 / 170
- LV2	(Um / AC / BIL)		kV :	36 / 70 / 170

19) Altitude		m :	< 1000	
20) Approximate transformer dimensions *			Total /	Transport
	width	mm :	7800	3500
	lenght	mm :	19600	9000
	height	mm :	8700	4600
21) Approximate weights				
	total weight	kg :	283 T	
	oil weight	kg :	66 T	
	activepart weight	kg :	139 T	
	transport weight (without oil)	kg :	177 T	
22) Manufacturing standarts and tolerances		:	IEC 60076	
23) Terminations (Bushings)				
- HV		:	GE RPV - PNO 145. 650.2500 (oil-air , OIP , Condenser , porcelain)	
- HV-N		:	GE RPV - PNO 145. 650.1250 (oil-air , OIP , Condenser , porcelain)	
- LV1		:	30 NF 3150A (oil-air , solid-DIN , porcelain)	
- LV2		:	30 NF 3150A (oil-air , solid-DIN , porcelain)	
24) Type of gas filled during transport		:	Nitrogen	
25) Maximum magnetic induction in the magnetic circuit	(at 1,0 Un)	:	≤ 1,71 T	
26) Brand and model type of Tap Changer	(OLTC)	:	MR, VRL III 1600Y-170/E-14 27 3W	

	Project Nr: PA585-01..02
	132/33-33 kV
P0 (kW)	110,0
Pc0 (kW)	0
PcK (kW)	0
kPEI	0,43
Pk (kW)	585,0
Sr (MVA)	250
PEI	0,99797

$$PEI = 1 - \frac{2(P_0 + P_{c0} + P_{ck}(k_{PEI}))}{S_r\sqrt{\frac{P_0 + P_{c0} + P_{ck}(k_{PEI})}{P_k}}} = 1 - \frac{2}{S_r}\sqrt{(P_0 + P_{c0} + P_{ck}(k_{PEI}))P_k}\ (\%)$$

Where:

P_0	is the no load losses measured at rated voltage and rated frequency on the rated tap
P_{c0}	is the electrical power required by the cooling system for no load operation, derived from the type test measurements of the power taken by the fan and liquid pump motors (for ONAN and ONAN/ONAF cooling systems P_{c0} is always zero)
P_{ck} (k_{PEI})	is the electrical power required by the cooling system in addition to P_{c0} to operate at k_{PEI} times the rated load. P_{ck} is a function of the load. P_{ck} (k_{PEI}) is derived from the type test measurements of the power taken by the fan and liquid pump motors (for ONAN cooling systems P_{ck} is always zero).
P_k	is the measured load loss at rated current and rated frequency on the rated tap corrected to the reference temperature
S_r	is the rated power of the transformer or autotransformer on which P_k is based
k_{PEI}	is the load factor at which Peak Efficiency Index occurs':