GBE S.p.A. TEST REPORT

Order — Customer VESTFOLD TRAFO ENERGI AS

Type ER3O24.1250 — Serial Number 20528_1 — Phase 3 — KVA 1.250

Voltage ratio (V) 22.000- 11.000 +2- 4 X 2,50 % / 415 - — 50 Hz

Connection Dyn11

Currents 32,80 - 65,61 / 1.739,01 -

Insulation Class A / A — Temperature Class 65 °C / 65 °C

Voltage ratio

Pos.	Theoretical	U Measured	V Measured	W Measured
7	82,64	82,48	82,48	82,48
6	84,93	84,79	84,79	84,79
5	87,23	87,11	87,11	87,11
4	89,52	89,42	89,42	89,42
3	91,82	91,74	91,74	91,74
2	94,11	94,05	94,05	94,05
1	96,41	96,36	96,36	96,36
3	45,91	45,88	45,88	45,88

Insulation test

Voltage test applied to the primary against secondary and ground:

Test voltage 50000 V t = 60 Sec Result: POSITIVE

Voltage test applied to the secondary against primary and ground:

Test voltage 3000 V t = 60 Sec Result: POSITIVE

Induced voltage test

Supplied voltage 830 V f = 100 Hz t = 60 Sec Result: POSITIVE

Note

Measurement of no-load loss and current

Winding supply : Secondary — Measured at 415,0 V — Frequency 50 Hz

Voltage K = 1 — Current K 1 — K W = 1 — Note

VMuv	VMuw	VMvw	VMm	Iu	Iv	Iw	Averag	W tot
416,90	413,92	416,61	415,81	2,14	2,66	2,70	2,50	954,28

I0 = 0,14 % — **P0 = 954,28 W**

Winding resistance measurement, Voltamperometric method — **t. amb. : 20 C°** — Note

Primary winding 22.000 V

Terminals	Volt	Amp.	Ohm
1U1V	9,0553	3,6808	2,4601
1U1W	9,0429	3,6964	2,4464
1V1W	9,0498	3,6878	2,4540

Average resistance (20,0 C°) 2,4535 Ohm

Average resistance

Secondary winding 415 V

Terminals	mVolt	Amp.	mOhm
2U2V	11,7439	14,9853	0,7837
2U2W	11,8003	14,9852	0,7875
2V2W	11,7686	14,9853	0,7853

Average resistance (20,0 C°) 0,7855 mOhm

Average resistance

Measurement of short circuit impedence and load loss

Winding supply : Primary — A Current 32,80 A — Frequency 50 Hz

Voltage K = 1 — Current K 1 — K W = 1 — Note

Vuv	Vuw	Vvw	Vm	Iu	Iv	Iw	Averag	W tot
1.288,	1.281,	1.289,	1.286,	30,31	30,37	30,34	30,34	7.623,94

Determination of short circuit impedance and load loss

Ratio 22.000 / 415 V — Primary winding — Aluminium — Secondary winding — Aluminium

Ambient temperature	20,0 °C	Reference temperature	75 °C	K Temp	1,22 / 1,22
Vcc at rated current	1.390,92 V	RIn % = RIp % * KTemp	0,87 %	Ohmic losses primary windings	4.849,4 W
ZIp% = (VCC/VNcc)*100 =	6,32 %	XIn% = XIp%	6,28 %	Ohmic losses secondary	4.363,1 W
RIp % (WCup/PN)*100	0,71 %	ZIn % = ((XIn%)² + (RIn%)²) =	**6,34 %**	Additional losses	1134,4 W
XIp % = ((ZIp%)²-(RIp%)²) ½	6,28 %	**Load losses**	**10346,8 W**		
Pcc at rated current	8912,5 W				

Efficiency

load	Cos F =0,8	Cos F =1
100 %	98,883 %	99,104 %
75 %	99,105 %	99,283 %
50 %	99,297 %	99,437 %

Voltage drop (%)

Cos F =0,8	Cos F =1
4,533 %	1,024 %
3,382 %	0,731 %
2,243 %	0,463 %

Tests carried out according to IEC 60076 Standards.

Instrument used Norma D5255 and Norma 4000.

The transformer is delievered with the following ratio 11.000 / 415 V

Customer

Manufacturer

Date 27/10/2023