



SOCIETA' Elettromeccanica ARZIGNANESE S.P.A.

Transformer Test Certificate 3.1.B.

TEST ACCORDING TO : I.E.C. 60726 / 1982 - DRY-TYPE POWER TRANSFORMER
C.E.I. 14-8 ANNO 1999 - TRASFORMATORI DI POTENZA A SECCO

CERTIFICATE N° 81934 Testing Date : 28/01/2005 Page 1

ORDER N° : (ns. VEN001107)
CUSTOMER : SENERJI MUHENDISLIK LTD -TURKEY-

Transformer type : ENCAPSULATED-WINDING DRY-TYPE TRANSFORMER Type : TTR - D
POWER : 1250.0 kVA SERIAL N° : 81934 Phase: 3 Frequency= 50 Hz
VOLTAGE RATIO : 31500 +/-2x1500V / 400 Volt
CURRENT RATIO : 22.910 / 1804.220 Ampere
CONNECTION : Dyn11 GROUP : 11

Measurements Summary

GUARANTEED RATIO : 31500/400 V

	NO LOAD LOSSES (Watt)	NO LOAD CURRENT(%)	LOAD LOSSES (Watt)	IMPEDANCE (%)
GUARANTEED VALUES	3650.0	1.3000	12000	6.0000
TOLLERANCE (%)	15.000	30.000	15.000	10.000
MEASURED VALUES	2997.2	0.37832	11775	6.1243
DIFFERENCE (%)	-17.884	-70.899	-1.8787	2.0709

REMARK CLASSES : E2 - C2 - F1

DIELECTRIC TESTS

SEPARATE-SOURCE VOLTAGE WITHSTAND TEST

Highest voltage = 36 kV Testing voltage= 70 kV t. = 60 sec. Result : SATISFACTORY

SEPARATE-SOURCE VOLTAGE WITHSTAND TEST

Highest voltage = 1.1 kV Testing voltage= 3 kV t. = 60 sec. Result : SATISFACTORY

INDUCED OVERVOLTAGE WITHSTAND TEST

Supplied Voltage = 0.8 kV f = 150 Hz t = 40 sec Supplied side: L.V. Result : SATISFACTORY

MEASUREMENT OF NO-LOAD LOSSES AND CURRENT

SUPPLIED WINDING: 400 V FREQUENCY: 50.000 Hz

VOLTAGE K = 1					CURRENT K = 1				POWER K = 1				
VMuv	VMuw	VMvw	VMm	Vm(rms)	Iu	Iv	Iw	Aver. I	Wu	Wv	Ww	W tot	W corr.
399.58	400.97	399.93	400.16	400.10	7.6570	5.6160	7.2040	6.8257	972.50	771.20	1253.1	2996.8	2997.2

REMARK

CUSTOMER

MANUFACTURER

per **S.E.A. Sp.A.**
TEZZE DI ARZIGNANO (VI)

SEA SOCIETA' Elettromeccanica ARZIGNANESE S.P.A.

Via L. Galvani, 8 - 36070 Tezze di Arzignano VICENZA ITALY
Tel. 0444/482100 Telefax 0444/482519

Page 0. 1



SOCIETA' ELETTROMECCANICA ARZIGNANESE S.P.A.

Transformer Test Certificate 3.1.B.

TEST ACCORDING TO : I.E.C. 60726 / 1982 - DRY-TYPE POWER TRANSFORMER
C.E.I. 14-8 ANNO 1999 - TRASFORMATORI DI POTENZA A SECCO

CERTIFICATE N° 81934 TESTING DATE 28/01/2005 PAGE 2

TRANSFORMER TYPE: ENCAPSULATED-WINDING DRY-TYPE TRANSFORMER TYPE: TTR - D
RATING: 1250.0 kVA SERIAL N° 81934 Phase: 3 Frequency= 50 Hz

MEASUREMENT OF VOLTAGE RATIO

METHOD: Barbagelata

MEASURE ON RATIO :

31500/400 Volt

TAP-CHANGER POSITION	MEASURED RATIO			NOMINAL RATIO	DIFFERENCE (%)	REMARK
	1U1V/2U2N	1V1W/2V2N	1W1U/2W2N			
7-8	123.400	123.400	123.400	123.409	-0.007	
6-7	129.900	129.900	129.900	129.904	-0.003	
5-6	136.300	136.300	136.300	136.399	-0.073	
4-5	142.800	142.800	142.800	142.894	-0.066	
3-4	149.300	149.300	149.300	149.389	-0.060	

MEASUREMENT OF WINDINGS RESISTANCE

METHOD: VOLT-AND-AMMETER Amb. Temp.= 16.0 °C

PRIMARY WINDING : 31500 V				SECONDARY WINDING : 400 V				REMARKS
TERMINALS	V (Volt)	I (Amp)	R (Ohm)	TERMINALS	V (Volt)	I (Amp)	R (Ohm)	
1U1V	12.271	2.0000	6.1355	2U2V	0.034010	50.000	0.00068020	
1V1W	12.375	2.0000	6.1875	2V2W	0.035130	50.000	0.00070260	
1W1U	12.411	2.0000	6.2055	2W2U	0.034170	50.000	0.00068340	
Average Resistance			6.1762 Ohm	Average Resistance			0.00068873 Ohm	
Average resistance 75 °C			7.6882 Ohm	Average resistance 75 °C			0.00085734 Ohm	

MEASUREMENT OF IMPEDANCE AND LOAD LOSS

Energized winding : 31500 V Frequency: 50.000 Hz Ambient Temperature= 16.0 °C

VOLTAGE K=1				CURRENT K=1				POWER K=1			
Vuv	Vuw	Vvw	Vm	Iu	Iv	Iw	Im	Wu	Wv	Ww	WM
1215.7	1213.0	1216.8	1215.1	14.526	14.517	14.384	14.476	1370.0	1331.7	1344.9	4046.6

Voltage at In (V) : 1923.2 Nominal current: 22.911 A Losses at In (W) : 10137

CALCULATION OF LOAD LOSSES AND IMPEDANCE

Ratio:	31500/400 V	Primary winding in:	ALLUMINIUM	Secondary winding in:	ALLUMINIUM
Ambient Temperature:	16.0 °C	Reference Temperature =	75 °C	Coefficient K=	1.245
Prim. wind. resistance:	6.1762 Ohm	Total ohmic losses:	10240	Watt	
Secon. wind. resistance:	0.00068873 Ohm	Additional losses:	1535.0	Watt	
Prim. wind. ohmic losses :	4862.8	Total load losses:	11775	Watt	
Secon. wind. ohmic losses :	3363.0	Inductive component XI:	6.0514	%	
Total ohmic losses :	8225.8	Resistive component RI:	0.94196	%	
Load losses:	10137	Impedance:	6.1243	%	
Additional losses:	1910.8	Power factor :	0.15381		

VOLTAGE DROP (%)

LOAD	Cosfi=0.8	Cosfi=1
1/1	4.4758	1.1251
3/4	3.3397	0.80946
1/2	2.2151	0.51676

EFFICIENCY (%)

LOAD	Cosfi=0.8	Cosfi=1
1/1	98.544	98.832
3/4	98.734	98.984
1/2	98.826	99.058

CUSTOMER MANUFACTURER per S.E.A. S.p.A. TEZZE DI ARZIGNANO (VI)