Test Certificate

No. **L09023** Duly signed copy 0E

Reference: 141-09/52-60 and HV-U-0902

Apparatus: 3-Phase dry-type cast resin transformer

Type:	ES-1000-11-6	Serial-no.:	09-005-01
Rated power:	1000 kVA	Year of manufacture:	2008
Rated voltage:	11±2*2,5%/0,400 kV	Rated frequency:	50 Hz
Vector group:	Dyn 11	LI // AC:	75/- kV // 28/5 kV
Max. duration of short-circuit:	3 s	Rated impedance voltage:	6,0 %

Manufacturer: ELSEWEDY Transformers
10th of Ramadan City, Industrial Zone A3
Egypt

Customer: ELSEWEDY Transformers
10th of Ramadan City, Industrial Zone A3
Egypt

Place and Date of Tests: **FGH** - LPF and -HPF Mannheim, 10th and 11th February 2009

Test Specification: IEC publications 60076-5: 2006-02 Chapter 4.2,
IEC 60076-1: 2004-04, IEC 60076-3: 2000-03 and 60076-11: 2004-05

Test Performed:

a) Execution of Routine tests of transformer.
b) Nine three-phase short-circuit tests with a duration of 0.5 s each with the maximum peak current three times on each limb, to verify the ability to withstand short-circuits.
c) Lightning impulse voltage withstand test with -75 kV peak value for the full wave.
d) Execution of complete Routine tests of transformer with PD measurement.
e) Visual inspection of the active part of transformer.

Test Results:

a) The Routine tests before the short-circuit tests have been executed satisfactorily.
b) The oscillograms and the results of the short-circuit reactance measurements before and after each test did not show any defect, which might endanger the safe operation of transformer.
The maximum increment of the short-circuit reactance was less than 0,2 %, the admissible value for this transformers with circular concentric coils having metal foil as a conductor in the low-voltage winding is 4 %.
c) and d) The lightning impulse voltage withstand test and the routine tests with partial discharge measurement after the short-circuit tests did not detect any faults. The measured PD values are in the allowed range.
e) The visual inspection after the short-circuit tests showed no damage, which might endanger the safe operation of transformer. Nevertheless some changes had to be stated, details see in this report.

The transformer passed the tests.

Jürgen Faber
FGH Engineering & Test GmbH

Karl Haitz
Test Engineer

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Test Engineer

Mannheim, 11. February 2009 Number of sheets: 30

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