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Type Test Certificate

B2011696

Manufacturer

El Sewedy Transformers - Cairo, EGYPT

Apparatus Designation

PT- 066000-161000-0001



Division Testing & Certification
Business Area Testing Operation
Milan Platform

Type Test Certificate of **Short circuit performance**
 Apparatus **Oil-immersed power transformer**
 Designation **PT- 066000-161000-0001**

Rated power 66 MVA ; Rated voltages 161/34,5 kV ; Rated frequency 50 Hz

Manufacturer **El Sewedy Transformers - Cairo, EGYPT**
 Client **El Sewedy Transformers - Cairo, EGYPT**
 Tested by **CESI S.p.A. - Milan, ITALY**

Tests date **from October 18, 2011 to March 7, 2012**

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in the reference documents identified in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 60076-5 (2006)

This Type Test Certificate has been issued by CESI following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached in the Test Reports. The values obtained and the general performance are considered to comply with the above Standard(s) and to justify the ratings assigned by the Manufacturer as listed on page No. 3.

The Certificate applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same designations with that tested rests with the Manufacturer.

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No. of pages **4** No. of pages annexed **-**

Issue date **April 12, 2012**

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B2011696 3019 VER B2011696 1800809 VER

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CESI S.p.A.
 Testing & Certification Division
 Testing Operations Area
 "Milan Platform"
 Manager

PAD B2011696 (1632290) - CONFIDENTIAL USE

Mod. RPRO v. 8

Table of contents

1	RATINGS ASSIGNED BY THE MANUFACTURER AS PROVED BY THE TESTS	3
2	ADDITIONAL TYPE TESTS	3
3	REFERENCE DOCUMENTS.....	3
4	ADDITIONAL REFERENCES	4
5	RECORD OF PROVING TESTS	4
6	IDENTIFICATION OF THE APPARATUS	4

1 RATINGS ASSIGNED BY THE MANUFACTURER AS PROVED BY THE TESTS

rated power	66 MVA
number of phases	3
rated voltage of the high-voltage winding (primary winding)	161 kV
rated voltage of the low-voltage winding (secondary winding)	34,5 kV
rated current of the high-voltage winding (primary winding)	236,7 A
rated current of the low-voltage winding (secondary winding)	1104,5 A
rated frequency	50 Hz
connection symbol	YNd11
short-circuit impedance	11,128 %
load loss	161561 kW
no-load current	0,077 %
no-load loss	34,525 kW
rated insulation level of the high-voltage winding (primary winding)	LI 650 AC 140
rated insulation level of the low-voltage winding (secondary winding)	LI 170 AC 70

2 ADDITIONAL TYPE TESTS

Not applicable.

3 REFERENCE DOCUMENTS

The following reference documents are integral part of this Certificate:

No.	Description	CESI registration
1	CESI Test Report	B1031564
2	CESI Inspection Report	B2007810
3	Manufacturer's drawings	B2007811 ÷ B2007816

4 ADDITIONAL REFERENCES

The conformity of the apparatus is attested with reference to the Standard mentioned in the front sheet and to the following documents

IEC 60076-1 (2000)	Sub-clauses 10.2 to 10.5 and 10.8
IEC 60076-3 (2000)	Sub-clauses 11, 12.3 and 13

5 RECORD OF PROVING TESTS

The table below lists all the tests performed and the references to the relevant Test Reports containing the test values.

No. Standard / Sub-clause	Description of tests	Reference documents
IEC 60076-1 / 10.2	Measurement of winding resistance	B2007810
IEC 60076-1 / 10.3	Measurement of voltage ratio and check of phase displacement	B2007810
IEC 60076-1 / 10.4	Measurement of short-circuit impedance and load loss	B2007810
IEC 60076-1 / 10.5	Measurement of no-load loss and current	B2007810
IEC 60076-1 / 10.8	Tests on on-load tap-changer	B2007810
IEC 60076-3 / 11	Separate-source AC withstand voltage test	B2007810
IEC 60076-3 / 12.3	Short-duration AC withstand voltage test (ACSD)	B2007810
IEC 60076-3 / 13	Lightning impulse (LI) test	B2007810
IEC 60076-5 / 4.2	Dynamic ability to withstand short circuit	B1031564

6 IDENTIFICATION OF THE APPARATUS

The Manufacturer guarantees that the tested apparatus is manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the essential details and the main parts of the tested apparatus.

These drawings, identified by CESI and numbered B2007811 to B2007816 have been returned to the Client.