

Field Certification Certificate of Compliance

Certificate: 2317875

Master Contract: 249811

Project: 2317875

Date Issued: October 5, 2010

Issued to: IMEFY
Industrias Mecano Electricas
Fontecha Yebenes, S.L.
45470 LOS YEBENES, TOLEDO
SPAIN
Attention: Mr. Oscar Rodriguez

*The products listed below are eligible to bear CSA Field Certification Labels,
bearing the CSA Mark shown*



G. Foulem
Issued by: G. Foulem

PRODUCTS

CLASS – 5411 06 TRANSFORMERS – Power

Cast Resin dry-type transformers, open type, air cooled, indoor use, floor mounted, insulation class F-155°C, rated as follows:

- primary 12kV \pm 2.5%, \pm 5%, 3ph, 60Hz, maximum 630kVA; secondaries, 690V, 3ph, 630kVA and 400, 3ph, 150kVA. Serial 101092.
- primary 12kV \pm 2.5%, \pm 5%, 3ph, 60Hz, maximum 350kVA; secondaries, 690V, 3ph, 350kVA and 400, 3ph, 150kVA. Serial 101093.

CSA Field Certification Label(s) issued: serial number FB 492329 to FB 492330 (total of 2 labels).

APPLICABLE REQUIREMENTS

CSA C22.2 No. 47-M90 (R2007) – Air-Cooled Transformers (Dry type)
UL Standard 1562 – Transformers, Distribution, Dry-type – Over 600 Volts (as reference)



Supplement to Certificate of Compliance

Certificate: 2317875

Master Contract: 249811

*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Product Certification History

Project	Date	Description
2317875	October 5, 2010	Original Field Certification cast resin dry-type transformers, Serials 101092 and 101093. CSA Field Certification Label issued: FB 492329 to FB 492330 <u>(total of 2 labels)</u> .

MASTER CONTRACT: 249811

REPORT: 2317875

PROJECT: 2317875

Edition 1: April 16, 2010 - Project 2317875
Issued by: G. Foulem – CSA International

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Supplement to Certificate of Compliance - Page 1
Description and Tests – Pages 1 to 4
Photographs – Pages 1 to 35
Appendix A – 6 pages – ISO 17025 assessment checklist
Appendix B – 285 pages – 350kVA – Dwgs, BOM, Tests Results and Calibration
Appendix C – 282 pages – 630kVA – Dwgs, BOM, Tests Results and Calibration

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The test report shall not be reproduced, except in full, without the approval of CSA International.

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MARKINGS

The transformers are marked with a riveted metal nameplate, with the following information as requested by C22.2 no. 47:

- Manufacturer's name, serial, natural air cooled (AN) or the equivalent, high and low voltages rating, number of phases, frequency, tap voltages, output ratings in Amperes or kVA, temp rise, vector group, percent impedance, BIL levels (primary side), weight, connexion diagram, year of manufacturing, the words "dry-type transformer", conductor material and the CSA Field Certification Label.

Sample of a nameplate is included in Photograph pages 1 and 5.

ALTERATIONS

- None required.

FACTORY TESTS

See Test Results section at the end of this report.

DESCRIPTION

This report covers the CSA certification of 2 cast resin dry-type transformers, open type, air cooled, for indoor use, Class F insulation system. The primary windings nominal of 12kV are provided with taps enabling an operation range between 12.6kV to 11.4kV. Transformers are provided with eyelets for lifting. Each secondary winding is fitted with one PT100 thermal probe wired to end user terminal blocks. Two bounding means are provided (one on each side of the transformers) located on the lower section of the frame. See photographs 1 to 35 for more details.

Supply and output terminals:

Supply HV terminals are provided by means short length of AL bus bar, 30mm by 58mm by 5 mm thick, with a 13mm centre hole. The secondary terminals are by means of aluminium bus bars (50mm x 5mm thick) with one 9mm hole on each phase for end user cable lugs. See Appendixes B and C, pages 4 to 7, for drawings showing details and overall dimensions.

Auxiliary circuits:

Certified terminal blocks DIN rail mounted for the field connexion of the temperature probes auxiliary devices. The auxiliary temperature probe cables are fitted inside a supplemental silicon impregnated fibre glass sleeving. Then exit out from the bottom of each secondary winding and are prevented from touching the bare secondary terminal and/or neutral bars by routing into a polymeric channel up to the auxiliary terminal blocks.

Grounding and Bonding: complies with CSA C22.2 no 47, clause 4.8.2

- 2 main bounding terminals consisting of size M12 bolts, with 2 nuts and 2 flat washers are provided with identifying symbol one on each lower side of the frame.

Insulation system and windings:

HV windings in coils of aluminum band and with 2 layers of insulation material between each turn, cast in resin under vacuum. LV windings made of aluminum foil coils, with Nomex inter layer insulation material, impregnated under vacuum. Insulation system components are listed in Appendixes B and C.

TEST RESULTS

The following tests according to CSA standard C22.2 no. 47 were performed with satisfactory results:

- 6.2 Temperature
- 6.3 Dielectric Withstand
 - 6.3.2 Low Frequency
 - 6.3.3 Induced Voltage
 - 6.3.4 Basic Impulse Insulation Level

As reference, the following tests according to UL standard 1562 were performed with satisfactory results:

16 - Partial Discharge Test

According to UL standard 1562, paragraph 13, the following tests were performed with satisfactory results:

13 Conformance Tests

13.1 The transformers shall comply with the test requirements listed in Table 9 of the American National Standard for Transformers – Dry-Type Transformers Used in Unit Installations, Including Unit Substations Conformance Standard, ANSI C57.12.55-1987:

- Resistance measurement, referring to ANSI/IEEE C57.12.91, Section 5.
- Ratio Test, referring to ANSI/IEEE C57.12.91, Section 7.
- Polarity and Phase Relation, referring to ANSI/IEEE C57.12.91, Section 6.
- No load losses and excitation Current, referring to ANSI/IEEE C57.12.91, Section 8.
- Load losses and impedance voltage referring to ANSI/IEEE C57.12.91, Section 9.
- Temperature Rise Test, referring to ANSI/IEEE C57.12.91, Section 11.
- Low Frequency Dielectric/Applied voltage test, referring to ANSI/IEEE C57.12.91, Section 10 referring also to IEEE C57.12.01, section 5.10.3.2
- BIL, referring to ANSI/IEEE C57.12.91, clause 10.5, referring to IEEE C57.12.01, table 5

Tests results are included in attached Appendix Tests, pages 1 to 34.

Note: At the time of evaluation, it was not possible to show compliance to UL standard 1562, paragraph 8, regarding the thermal aging evaluation of the cast resin insulation system, because of the relatively large number of aging testing hours required (equivalent to 40 000hours). Therefore the CSAus mark was not applied. The final acceptance of the equipments for installation in the US shall be subject to further evaluation from LAHJ at place of installation.