

Component Certificate



GL Renewables Certificate No. **CC-GL-002A-2010 Revision 1**

This Component Certificate for the Wind Turbine Components

Transformer TDR/630/17.5/12B2B4 Transformer TDR/350/17.5/12B2B4

is issued to

IMEFY, S.L.
Pol. Ind. La Canada C/ Siglo XXI, s/n 45470
Los Yebenes (Toledo)
Spain

We hereby certify that the cast-resin distribution transformers TDR/630/17.5/12B2B4 and TDR/350/17.5/12B2B4 of IMEFY have been assessed by Germanischer Lloyd concerning the system design and the Implementation of the design requirements in Production and Erection (IPE).

The Component Certificate is based on the indicated documents as follows:

74252 Onshore Wind Turbine transformer 50/60 Hz, IMEFY Cast-resin transformer, dated 08.11.2010

74252-15 Cast resin transformer, Inspection of transformer production, dated 18.11.2010

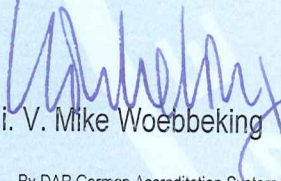
Normative references: "Guideline for the Certification of Wind Turbines", Edition 2003 with Supplement 2004 of Germanischer Lloyd

Changes in design are to be approved by Germanischer Lloyd; otherwise this Component Certificate loses its validity.

This Component Certificate is valid until 14th December 2012, provided that a valid "Certificate for the Quality Management System" according to ISO 9001 is available for this period.

Hamburg, 18th November 2011
TBu

Germanischer Lloyd Industrial Services GmbH


i. V. Mike Woebeking


i. V. Axel Dombrowski

By DAP German Accreditation System for Testing
accredited Certification Body for products
The accreditation is valid for the fields of certification
listed in the certificate



Germanischer Lloyd Industrial Services GmbH
Renewables Certification
Brooktor Kai 18
20459 Hamburg, Germany

Certification Report

Onshore Wind Turbine Transformer 50/60 Hz

IMEFY Cast Resin Transformer

Report No.: 74252

Date: 08.11.2010

Germanischer Lloyd Industrial Services GmbH Renewables Certification

Manufacturer	IMEFY, S.L. Pol. Ind. La Canada C/ Siglo XXI, s/n 45470 Los Yébenes (Toledo) Spain
Documentation by	the manufacturer and suppliers, named in section 1
GL Renewables Order No.	4800/10/42381/254
Expert in Charge	Tobias Bublat
Address	Germanischer Lloyd Industrial Services GmbH Renewables Certification Brooktorkai 18 20457 Hamburg Germany



1 Documentation

Documentation by: [1] Manufacturer, see cover page

Documentations examined by Germanischer Lloyd Industrial Services GmbH, Renewables Certification, (GL) are marked "examined". Documentations noted by GL are marked "noted".

1.1 Descriptions

"Instructions Handbook For Putting Cast Resin Transformers Into Service", TDR E/10-09, [1]	24 pages, dated 16.12.2009	noted
"General Dimensions", no. IM-PL-25289RY30-B, [1]	1 page, dated 09.02.2010	noted
"General Dimensions", no. IM-PL-25288RY30-B, [1]	1 page, dated 09.02.2010	noted

1.2 Transformer

"Dry type transformers technical data", IM-25289/50Hz, [1]	1 page, dated 15.01.2010	examined
"Test Report 50 Hz", no. 101194100119, [1]	14 pages, dated 09.03.2010	examined
"Temperature Rise Test 50 Hz", Type TDR/630/17.5/12B2B4, [1]	9 pages, dated 11.03.2010	examined
"Dry type transformers technical data", IM-25289/60Hz, [1]	1 page, dated 15.01.2010	examined
"Test Report 60 Hz", no. 101194100119, [1]	1 page, dated 09.03.2010	examined
"Temperature Rise Test 60 Hz", Type TDR/630/17.5/12B2B4, [1]	8 pages, dated 11.03.2010	examined
"Dry type transformers technical data", IM-25288/50Hz, [1]	1 page, dated 15.01.2010	examined
"Test Report 50 Hz", no. 101195100119, [1]	14 pages, dated 29.09.2010	examined
"Temperature Rise Test 50 Hz", Type TDR/350/17.5/12B2B4, [1]	9 pages, dated 18.02.2010	examined
"Dry type transformers technical data", IM-25288/60Hz, [1]	1 page, dated 15.01.2010	examined
"Test Report 60 Hz", no. 101195100119, [1]	1 page, dated 29.09.2010	examined
"Temperature Rise Test 60 Hz", Type TDR/350/17.5/12B2B4, [1]	8 pages, dated 19.02.2010	examined

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The English version of these documents was taken to be authoritative.

2 Assessment criteria

Electrical installations and lightning protection were assessed on the basis of:

"Guideline for the Certification of Wind Turbines", Edition 2003 with Supplement 2004 of Germanischer Lloyd

3 Scope of assessment

The IMEFY Cast Resin Transformers 630 kVA 50/60 Hz and 350 kVA, 50/60 Hz have been assessed according to section 2 on the basis of section 1. The main electrical data is listed in section 4.

The Design Assessment includes the check of the following items:

- completeness of the documentation
- design of protection against electrical shock
- plausibility of the documents and their agreement with the drawings and the assessment criteria
- lightning protection

4 Remarks

4.1 General Description

The transformer iron core is made of low-loss grain oriented metal sheets. The high and low voltage windings are impregnated and casted under high vacuum. Detailed transformer data is listed in section 4.3.

4.2 Transformer

Manufacturer	[1]	[1]
Type of transformer	Cast resin dry type transformer TDR/630/17.5/12B2B4	Cast resin dry type transformer TDR/350/17.5/12B2B4
Rated power	630 kVA	350 kVA
Rated voltage (LV)	0.69 kV	0.69 kV
Rated voltage (HV)	12 kV	12 kV

Highest voltage U_m	17,5 kV	17,5 kV
Rated frequency	50/60 Hz	50/60 Hz
Environmental Class	E2	E2
Climatic Class	C2	C2
Fire Class	F1	F1
Connection Symbol	Yyn0	Yyn0

5 Conditions

- 5.1 The expected power quality at the low voltage terminals of the transformer has to be specified and compliance with transformer design shall be verified prior to operation.
- 5.2 When the transformer is put into operation, this has to be performed in accordance with IEC 60364-6-61 "Electrical installations of buildings. Part 6: Verification. Chapter 61: Initial verification" (VDE 0100 T 610). The test report shall be given as part of the wind turbine documentation to the user.
- 5.3 It has to be secured that unauthorized handling of the transformer is impossible. The transformer has to be protected against touching, e.g. by placement in a separate room.
- 5.4 The environmental conditions as per section 4.2 shall be observed for operation of the transformer.
- 5.5 The geographical altitude of the erection site shall be less than 1 000 m above sea level.

6 Conclusion

The Conditions (section 5) are to be observed

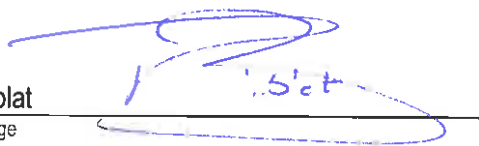
The design of the IMEFY Cast Resin Transformers complies with the requirements as given in the regulation stated in section 2.

Changes in design are to be approved by GL; otherwise this Certification Report loses its validity.

TBu

Germanischer Lloyd Industrial Services GmbH
Renewables Certification

Tobias Bublat
Expert in Charge



Inspection Report

Cast Resin Transformer Inspection of transformer production (IMEFY, Spain)

Report No.: 74252-15

Date 18.11.2010

Germanischer Lloyd Industrial Services GmbH Renewables Certification

Manufacturer	IMEFY, S.L. Pol. Ind. La Canada C/ Siglo XXI, s/n 45470 Los Yebenes (Toledo) Spain
Documentation by	the manufacturer and various suppliers named in section 2
Inspected workshop	IMEFY, S.L. Pol. Ind. La Canada C/ Siglo XXI, s/n 45470 Los Yebenes (Toledo) Spain
GL Renewables Order No.	4800/10/42381/254
Experts in Charge	Tobias Bublat Volker Riedlinger
Address	Germanischer Lloyd Industrial Services GmbH Renewables Certification Brooktorkai 18 20457 Hamburg Germany



1 General

The Inspection Report is valid for the transformer types IMEFY Cast Resin Transformers 630 kVA 50/60 Hz and 350 kVA, 50/60 Hz.

2 Documentation

The documentation for critical manufacturing process is marked "examined". The randomly checked documentation during inspection (e.g. filled out record scheme) is marked "noted" as well quality documentation prepared for supplied parts. In case of multilingual documents the English text is authoritative.

Documentation by

- [1] IMEFY
- [2] IQNET
- [3] AENOR
- [4] Huntsman

2.1 Technical specifications and instructions

Transformadores ingles.indd, Instructions handbook for putting cast resin transformers into service, [1]	24 pages, dated 10/2009	noted
IM-PC-04-02, CONTROL DE ASEGURAMIENTO DE CALIDAD DISTRIBUCION ENCAPSULADO, [1]	1 page, issued 03.11.2010	noted
IM-25288/60Hz, DRY TYPE TRANSFORMERS TECHNICAL DATA, [1]	1 page, issued 03.11.2010	noted
IM-25289/60Hz, DRY TYPE TRANSFORMERS TECHNICAL DATA, [1]	1 page, issued 03.11.2010	noted
IM-25288/50Hz, DRY TYPE TRANSFORMERS TECHNICAL DATA, [1]	1 page, issued 03.11.2010	noted
IM-25289/50Hz, DRY TYPE TRANSFORMERS TECHNICAL DATA, [1]	1 page, issued 03.11.2010	noted
IM-PC-05-02, REVISION FINAL DE TRANSFORMADORES AISLAMIENTO SECO, [1]	1 page, issued 03.11.2010	examined
QUALITY CONTROL PLAN AND INSPECTION POINTS, REV.24, [1]	9 pages, dated 02.09.2010	noted

FLOW DIAGRAM FOR CAST RESIN TRANSFORMERS, [1]	1 page, issued 03.11.2010	examined
IM-PL-25289RY30-B, GENERAL DIMENSIONS, [1]	1 page, dated 09.02.2010	noted
IM-PL-25288RY30-B, GENERAL DIMENSIONS, [1]	1 page, dated 09.02.2010	noted
2.2 Technical protocols and reports		
Serial no. 101194/60, Temperature rise test, [1]	8 pages, dated 15.03.2010	noted
Serial no. 101194, Temperature rise test, [1]	9 pages, dated 11.03.2010	noted
Serial no. 101194, Impulse test, [1]	13 pages, issued 03.11.2010	noted
101194100119, Routine test report 50Hz, [1]	1 page, dated 09.03.2010	noted
101194100119, Routine test report 60Hz, [1]	1 page, dated 09.03.2010	noted
2.3 Certificates		
Certificado de analisis, Ser. no. AA00740500, Quality Specification, [4]	1 page, dated 18.05.2010	examined
Certificado de analisis, Ser. no. AA00901800, Quality Specification, [4]	1 page, dated 23.06.2010	examined
Certificado de analisis, Ser. no. AC09065701, Quality Specification, [4]	1 page, dated 14.06.2010	examined
Certificado de analisis, Ser. no. AC09065705, Quality Specification, [4]	1 page, dated 14.06.2010	examined
Certificado de analisis, Ser. no. AC09065707, Quality Specification, [4]	1 page, dated 14.06.2010	examined
Certificate acc. to ISO 9001:2000 ES-0009/1994 [2]	valid until 18.02.2011	noted
Certificate acc. to UNE-EN ISO 14001:2004 GA-1998/0053 [3]	valid until 02.09.2013	noted

3 Assessment criteria

Germanischer Lloyd "Guideline for the Certification of Wind Turbines", Edition 2003 with Supplement 2004

4 Scope of assessment

The objective of the assessment of the Implementation of the design-related requirements in Production and Erection (IPE) for the components listed in section 2 is:

It shall be ensured that the requirements stipulated in the technical documentation of the Design Assessment with regard to the components are observed and implemented in production. This is shown once only to Germanischer Lloyd Industrial Services GmbH (GL) by the manufacturer of the wind turbine by inspection.

The assessment comprises:

- verification that design specifications are properly implemented in workshop drawings, workshop instructions, purchase specifications and installation instructions
- random inspection of manufacturer's workshop
- verification of fabrication methods, procedures and qualification of personnel
- random review of material certificates
- random checks on effectiveness of procedures for acceptance of purchased components
- random checks of fabrication processes.

The focus of the random checks was on critical manufacturing processes.

This Inspection Report is based on the design, which is already assessed by GL and stated in the following Certification Report.

- Onshore Wind Turbine Transformer 50/60 Hz, IMEFY Cast Resin Transformer, Certification Report No. 74252 dated 08.11.2010.

The manufacturing evaluation presupposes that the manufacturer operates a quality system in conformance with ISO 9001 (cf. section 2.3).

5 Remarks

The inspection manufacturing process and the incoming goods inspection at

IMEFY, S.L.
Pol. Ind. La Canada C/ Siglo XXI, s/n
45470 Los Yébenes (Toledo), Spain

was carried out by examination and inspecting the manufacturing processes stated under section 4 and its documentation for the components listed under section 2. The documents were assessed for compliance with section 1.2.5.3 of the "Guideline for the Certification of Wind Turbines" (cf. section 3).

The inspection was performed by the expert in charge (Volker Riedlinger) on 03rd November 2010.

The testing and manufacturing of the transformers were shown exemplary on similar components in general because no Cast Resin Transformers 630 kVA 50/60 Hz and 350 kVA, 50/60 Hz were manufactured on 03rd November 2010.

The manufacturing process was presented and explained based on the manufacturing flow diagram for cast resin transformers (cf. section 2.1).

The manufacturing of the low and high voltage windings was shown on 1250 kVA cast resin transformers as well as the transformer assemblies. The assembly of windings in band (IM-PE-02, Rev.16 and IM-PE-03, Rev.4) and the final assembling (IM-PE-06, Rev.16) were inspected in detail.

The routine tests were performed on 50kVA cast resin transformers at the day of inspection.

The quality of incoming goods supplied with sub-supplier's quality certificates is verified at Imefy. Examples of quality certificates were presented during the inspection (cf. section 2.3).

The calibration of measurements and test devices was confirmed by random checks of the labels indicating a valid calibration date and the corresponding certificates of the respective devices.

The general Imefy Purchasing and Quality Specifications have to be observed.

We are proceeding on the assumption that records will keep at least for 20 years for every component.

6 Conditions

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7 Conclusion

The assessment of the manufacturing of IMEFY cast resin transformers 630 kVA 50/60 Hz and 350 kVA, 50/60 Hz was carried out at the workshop in Los Yebenes, Spain. This inspection report is valid only for this workshop, listed components and respective supplier.

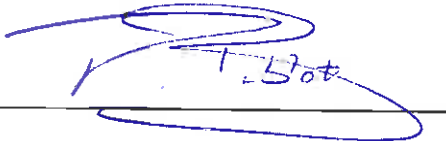
We attest conformity in compliance with section 1.2.5.3 according to the standard listed in section 3.

Any changes in the manufacturing processes (purchase and quality) of the transformers at Imefy are to be communicated to GL, otherwise this Certification Report loses its validity.

GL reserves the right to assess these changes.

VoRi/TBu

Germanischer Lloyd Industrial Services GmbH
Renewables Certification



Tobias Bublat