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Document name	Certificate of Type Conformity Three-phase oil-immersed distribution transformer for continuous duty, totally filled, hermetically sealed, ONAN Rated power 400 kVA – Rated voltages 20000/410 V – Rated frequency 50 Hz
Date of issue	30 September 2020
CESI reference number	C0010535
Client	CAHORS – Medium Voltage Division - TRANSFIX 836, Route Départementale 97 – 83130 LA GARDE (France).
Signed by	



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Certificate of Type Conformity

in compliance with Technical Specification
ENEDIS ST 52-S-27 Edition B (2019-06)

Product	Three-phase oil-immersed distribution transformer for continuous duty, totally filled, hermetically sealed, ONAN
Designation	01342EAR03
Manufacturer	CAHORS – Medium Voltage Division TRANSFIX 836, Route Départementale 97 – LA CHABERTE 83130 LA GARDE (France)
Applicant	CAHORS – Medium Voltage Division TRANSFIX 836, Route Départementale 97 – LA CHABERTE 83130 LA GARDE (France)
Main ratings	Rated power 400 kVA - Rated voltages 20000/410 V - Rated frequency 50 Hz
Main performance	Complete Type Tests

The certified Product has been evaluated as compliant with the following Standards:
Technical Specification ENEDIS ST 52-S-27 Edition B (2019-06)

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated hereunder, verified by testing according to the above specified normative reference documents.
This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7) in accordance with ISO/IEC 17065:2012.

This certificate is composed of 6 pages

30 September 2020

30 September 2020

29 September 2025

First Issue date

Current Issue Date

Expiry Date

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PRD N° 018B

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Signatory of EA, IAF and ILAC Mutual Recognition agreements

I. Detailed ratings assigned by the Manufacturer

Three-phase oil-immersed power transformer, hermetically sealed

Manufacturer	CAHORS – Medium Voltage Division TRANSFIX
Year of manufacturing	2020
Designation	01342EAR03
Serial number	15020N0030
Rated power	400 kVA
Number of phases	3
Rated voltage of the high-voltage winding (primary winding)	20000 V \pm 1 x 2,5%
Rated voltage of the low-voltage winding (secondary winding)	410 V
Rated current of the high-voltage winding (primary winding)	11,55 A
Rated current of the low-voltage winding (secondary winding)	563,3 A
Short circuit impedance	4%
Rated frequency	50 Hz
Rated insulation level of the high-voltage winding (primary winding)	LI 125 / AC 50
Rated insulation level of the low-voltage winding (secondary winding)	AC 10

II. Tests performed

The tests performed are listed in the following tables.

All documents issued by CESI are available in CESI archive for 10 years.

Normative document	Clause	Test	Test Report	Test results
Tests before short circuit				
ENEDIS ST 52-S-27 EN 60076-1	8.4 11.3	Measurement of voltage ratio and check of phase displacement	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-1	8.4 11.2	Measurement of winding resistance	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-1	8.4 11.5	Measurement of no-load loss and current	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-1	8.4 11.4	Measurement of short-circuit impedance and load loss	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-3	8.4 7.3.1.1.a)	Applied voltage test (AV)	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-3	8.4 7.3.1.1.b)	Induced voltage withstand test (IVW)	C0010532	Passed
Short circuit test				
ENEDIS ST 52-S-27 EN 60076-5	7.5.4	Short circuit withstand test	C0005909	Passed
Tests after short circuit				
ENEDIS ST 52-S-27 EN 60076-1	8.4 11.3	Measurement of voltage ratio and check of phase displacement	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-1	8.4 11.2	Measurement of winding resistance	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-1	8.4 11.5	Measurement of no-load loss and current	C0010532	Passed

Normative document	Clause	Test	Test Report	Test results
ENEDIS ST 52-S-27 EN 60076-1	8.4 11.4	Measurement of short-circuit impedance and load loss	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-3	8.4 7.3.1.1.a)	Applied voltage test (AV)	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-3	8.4 7.3.1.1.b)	Induced voltage withstand test (IVW)	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-10	8.3 -	Measurement of sound power level	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-2	8.2 -	Temperature rise test	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-13	8.3 12.2	Check of tank tightness in regard to dielectric fluids and capability to withstand internal pressure variations	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-3	8.2 7.3.1.2	Full wave lightning impulse voltage withstand test (LI) on HV winding	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-13	8.3 12.1	Measurement of partial discharges	C0010532	Passed
ENEDIS ST 52-S-27 EN 60076-5	8.3 7.5.4	Visual inspection of the active parts and dimensional checks	C0010532	Passed
ENEDIS ST 52-S-27	8.6	Test to verify the grounding continuity between cover and tank	See derogation C0012459	Note 1
ENEDIS ST 52-S-27	8.7	Tests on transformer anti-corrosion coating	See derogation C0012459	Note 1

Note 1: according to the ENEDIS derogation (see CESI registration number C0012459) these tests shall not be performed and only a technical report No. DA 135/20 (CESI registration number C0012988) was submitted by Transfix to ENEDIS.

III. Checks performed

The checks performed are listed in the following table

Technical Specification	Clause	Requirement	Document	Check result
ENEDIS ST 52-S-27	1.1 Scope	Specification for oil immersed transformer , for indoor application, two winding, from 160 to 1000 kVA	C0010531	Passed
	1.2	Object	-	-
ENEDIS ST 52-S-27	3 Service conditions	-	-	-
	3.1 Normal service condition	-	-	-
	3.1.1 Ambient temperature	Air cooling medium temperature according to EN 60076-2 (cls. 4.2) – 20°C	C0010531	Passed
	3.1.4 Life duration	40 years	C0010531	Passed
		The transformer can be stored outdoor.	C0010531	Passed

Technical Specification	Clause	Requirement	Document	Check result
	3.2 Storage conditions	The storage environmental class according to EN 60721-3-1 is: - 1K26/1B2/1C2/1S13/1M11.	C0010531	Passed
		The complete storage time during the transformer lifespan is 2 years.	C0010531	Passed
	3.3 Transport conditions	The transport environmental class according to EN 60721-3-2 is : - 2K12/2B2/2C2/2S2/2M4	C0010531	Passed
	3.4 Operating conditions	The operating environmental class according to EN 60721-3-4 is: - 3K5/3B2/3C2/3S2/3M4.	C0010531	Passed
ENEDIS ST 52-S-27	5 Ratings	-	-	-
	5.1 Rated power	400 kVA	C0010531	Passed
	5.2 Highest voltages for winding components	HV winding: 24 kV LV winding: 1,1 kV	C0010531	Passed
	5.3 Winding rated voltage	-	-	-
	5.3.1 HV winding rated voltage	HV winding rated voltage: 20 kV	C0010531	Passed
	5.3.2 LV winding rated voltage	LV winding rated voltage: 410 V	C0010531	Passed
	5.4 Adjustment tapping	Tap position 1: highest voltage on HV winding. Tap position 2: rated voltage. Tap position 3: lowest voltage on HV winding.	C0010531	Passed
		Readable from above the transformer.	Visual inspection	Passed
	5.5 Connection	Dyn11.	C0010531	Passed
	5.6 Sizing of neutral connection of the low voltage winding	Dimensioned for rated current and earth fault current.	Visual inspection	Passed
ENEDIS ST 52-S-27	6 Design requirements	-	-	-
	6.1 Type of oil preservation system and degree of sealing	Hermetically sealed fully-filled.	C0010531	Passed
	6.2 Dielectric filling fluids and component parts	Transformer filled with mineral or ester oil	C0012925/3	
		Free of PCB according to IEC 61619	C0012925/3	Passed
		The gaskets must be resistant to the UV.	C0012925/13	Passed
		The gaskets must withstand all the effects of the dielectric fluid.	C0012925/13 and 14	Passed
	6.3 Tank	Electrical continuity between tank, cover and magnetic core.	Visual inspection; C0010531	Passed
		Tank designed to avoid retention of water.	C0010529/1 Visual inspection	Passed

Technical Specification	Clause	Requirement	Document	Check result
	6.3.1 Corrosion protection	Corrosion protection level C3 with durability H (high).	C0010531	Passed
		Colour of painting: grey or green.	C0010531 Visual inspection	Passed
	6.3.1.1 Anticorrosion treatment by galvanization	Not applicable	-	--
	6.3.1.2 Anti-corrosion treatment by painting systems	Painting cycle	C0010531	Passed
		Bolts in stainless steel or galvanized	C0010531	Passed
	6.4 Marking and terminal layout	Marking on the cover of the terminals and of the earthing connexions shall be permanent and indelible, designating without any ambiguity each terminal.	C0010529/3 & Visual inspection	Passed
	6.5 Connection	The HV bushings shall be protected during storage and handling by a removable device.	C0012925/1 to /2	Passed
	6.5.1 High voltage connection	Plug-in type bushings 24 kV, 250 A according to NF EN 50180 and suitable for separable connectors type (CSD-"50-A-24 and CSE-250-A-24)	C0010531 C0012925/1 to /2	Passed
	6.5.2 Low voltage connection	LV bushing according to HN 52 S62 and amendment. Positon on the cover according to Fig.3 to Fig. 7.	C0010529/1 C0010529/3 & Visual inspection	Passed
		Center distance ≥ 142 and the bushing shall be connected to the cover according to fig.5 and 6.	C0010529/1 C0010529/3	Passed
		Bus-bar bushings: 1250 A	C0012925/9 C0010531 & Visual inspection	Passed
		Each LV busbar bushing shall be equipped with an individual protection device which gives to the LV bushing an IP2X protection degree according to EN 60529 and IK07 according to EN 62262.	C0012925/9 and /11	Passed
	6.6 Rollers	In accordance with EN 50216-4.	C0012925/16 C0010529/1 & Visual inspection	Passed
		The rollers shall be bi-directional in the 2 axes of the transformer.	C0010531 C0012925/16 C0010529/1 & Visual inspection	Passed
		Free rotation is requested with possible locking in the chosen direction during displacement		Passed
		Diameter: 125 mm		Passed
		Width: 40 or 50 mm		
		Distance between centres: 670 mm		

Technical Specification	Clause	Requirement	Document	Check result
	6.7 Accessories	A fixed (no accidental lost during the whole life duration) rating plate, located on one side of the corrugated walls of the tank (the exact location has to be defined in accordance with ENEDIS).	C0010529/1 and /6 Visual inspection	Passed
		Earthing terminals by M12 stainless pin or equivalent device able to allow an easy earthing connection and a good electrical continuity (no painting scrapping off): 2 on the cover, diametrically opposed.	C0010531 C0010529/1 & Visual inspection	Passed
		Lifting lugs.	C0010529/1 C0010530/6 Visual inspection	Passed
		A filling hole and plug.	C0010529/1 C0012925/10 Visual inspection	Passed
		Other additional accessories, such as DGPT2 or DCMR relay are forbidden, except a pad lock for the off-circuit tap-changer (minimum diameter hole: 8,5 mm).	C0010529/1 C0012925/15 Visual inspection	Passed
	6.7.1 Rating plate	The no-load and load losses (at 75°C) shall be indicated on the rating plate and the characteristics shall be as those specified in the annex of specification.	C0010529/6	Passed
	6.8 Overall dimensions and weight	Max. length: 1550 mm	C0010529/1 Visual inspection	Passed
		Max. width: 920 mm		
		Max. height: 1500 mm		
		Max. weight: 2500 kg		

IV. Conformity Evaluation

The evaluation of conformity is duly reported in the following document issued by CESI:

EVALUATION REPORT CESI No. C0010534.

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

CESI checked that these drawings adequately represent in shape and dimensions the tested transformer.

According to the evaluation of the above, CESI issues the Certificate of Type Conformity of the transformer manufactured by CAHORS – Medium Voltage Division TRANSFIX – LA GARDE (France).