Oil-immersed cable connection assemblies for transformers and reactors having highest voltage for equipment Um from 72,5 kV to 550 kV - Part 1: Fluid-filled cable terminations

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50299-1:2014 sisaldab Euroopa standardi EN 50299-1:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 50299-1:2014 consists of the English text of the European standard EN 50299-1:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 14.11.2011.	Date of Availability of the European standard is 14.11.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 29.180

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50299-1

November 2014

ICS 29.180

Supersedes EN 50299:2002 (PART)

English Version

Oil-immersed cable connection assemblies for transformers and reactors having highest voltage for equipment Um from 72,5 kV to 550 kV - Part 1: Fluid-filled cable terminations

Boîte de raccordement de câble pour transformateurs immergés et bobine d'inductance de tensions comprises entre 72,5 kV et 550 kV - Partie 1: Extrémité de câble remplie d'un fluide

Ölgefüllte Kabelanschlusseinheiten für Transformatoren und Drosselspulen mit einer höchsten Spannung für Betriebsmittel Um von 72,5 kV bis 550 kV - Teil 1: Flüssigkeitsgefüllte Kabelendverschlüsse

This European Standard was approved by CENELEC on 2014-10-13. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 50299-1:2014 E

Contents

Foreword 3
1 Scope 4
2 Normative references 4
3 Terms and definitions 5
4 Limits of supply 5
5 Rated values 5
6 Preferred values 5
6.1 Highest voltage for equipment (U_m) 5
6.2 Rated currents (I_r) 6
6.3 Transformer test voltages 6
6.4 Transformer test currents 6
6.5 Cable installation test voltage 6
7 Requirements 6
7.1 Connection interface 6
7.2 Mechanical requirements 6
7.3 Dimensions 6
7.4 Protection against corrosion 7
7.5 Mechanical forces on cable terminations 7
8 Tests 7
8.1 Factory tests 7
8.2 Tests after installation 7
Bibliography 11

Figures

Figure 1 – Limits of supply between transformer and cable termination 8
Figure 2 – Typical arrangement of cable connection assemblies 9

Foreword

This document (EN 50299-1:2014) has been prepared by CLC/TC 14 "Power transformers".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-10-13
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2017-10-13

This document partially supersedes EN 50299:2002, together with EN 50299-2:2014. Changes have been made in this document to bring it line with EN 50299-2:2014.

Dimensions mentioned in EN 50299-1 are valid for fluid-filled cable terminations. Dry-type cable terminations may also fit to these requirements.

A new standard EN 50299-2 is issued which describes requirements for dry-type cable terminations only.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

1 Scope

This European Standard covers the oil-immersed single-phase connection assembly of cables for transformers and reactors, designed in accordance with EN 60076 series.

NOTE In the standard the term "transformer" is used as common definition for transformer and reactor.

The purpose of EN 50299-1 is to establish for the cable assemblies:

- the electrical and mechanical requirements, including interchangeability;
- the limits of supply;
- the test to be carried out.

It complements and amends, if necessary, the relevant IEC standards and applies to oil immersed cable connections, suitable for fluid-filled or dry-type cable terminations.

EN 50299-1 does not cover direct cable terminations (see 3.1.1.3), but, in this case, upon agreement between purchaser and supplier, the standard may be used for guidance except for Figure 1 and Figure 2 which are not applicable.

This standard applies to oil-immersed cable connection boxes on transformers with highest voltage for equipment U_m = 72,5 kV to 550 kV, including the current conductor terminal at the cable sealing end of the transformer.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 60076 Series *Power transformers (IEC 60076 Series)*

EN 60296 *Fluids for electrotechnical applications — Unused mineral insulating oils for transformers and switchgear (IEC 60296)*

EN ISO 1302 *Geometrical product specifications (GPS) — Indication of surface texture in technical product documentation (ISO 1302)*

IEC 60141 Series *Tests on oil-filled and gas-pressure cables and their accessories*

IEC 60840 *Power cables with extruded insulation and their accessories for rated voltages above 30 kV (U_m = 36 kV) up to 150 kV (U_m = 170 kV) — Test methods and requirements*

IEC 62067 *Power cables with extruded insulation and their accessories for rated voltages above 150 kV (U_m = 170 kV) up to 500 kV (U_m = 550 kV) — Test methods and requirements*

HD 632 S2 *Power cables with extruded insulation and their accessories for rated voltages above 36 kV (U_m = 42 kV) up to 150 kV (U_m = 170 kV)*