KESKMISED JÕUTRAFOD SAGEDUSELE 50 Hz SEADME SUURIMA LUBATAVA KESTEVPINGEGA MITTE ÜLE 36 kV. OSA 1: ÜLDNÕUDED

Medium power transformers 50 Hz, with highest voltage for equipment not exceeding 36 kV - Part 1: General requirements

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50588-1:2017 sisaldab Euroopa standardi EN 50588-1:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 50588-1:2017 consists of the English text of the European standard EN 50588-1:2017.
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 15.09.2017.	Date of Availability of the European standard is 15.09.2017.
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 50588-1

September 2017

ICS 29.180

Supersedes EN 50588-1:2015

English Version

Medium power transformers 50 Hz, with highest voltage for equipment not exceeding 36 kV - Part 1: General requirements

Transformateurs 50 Hz de moyenne puissance, de tension la plus élevée pour le matériel ne dépassant pas 36 kV - Partie 1: Exigences générales

Mittelleistungstransformatoren 50 Hz, mit einer höchsten Spannung für Betriebsmittel nicht über 36 kV - Teil 1: Allgemeine Anforderungen

This European Standard was approved by CENELEC on 2017-07-03. 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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 50588-1:2017 E

Contents

Page

European foreword

This document (EN 50588-1:2017) 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)	[2018-07-03]
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	[2020-07-03]

This document supersedes EN 50588-1:2015 and EN 50588-1:2015/A1:2016.

EN 50588-1:2017 includes the following significant technical changes with respect to EN 50588-1:2015 and EN 50588-1:2015/A1:2016:

- definition of declared values.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

1 Scope

This European Standard covers medium power transformers. 'Medium power transformer' means a power transformer with a highest voltage for equipment higher than 1,1 kV, but not exceeding 36 kV and a rated power equal to or higher than 5 kVA but lower than 40 MVA.

National practices may require the use of highest voltages for equipment up to (but not including) 52 kV, when the rated voltage is less than 36 kV (such as U_m = 38,5 kV or U_m = 40,5 kV). This is considered to be an unusual case of a large power transformer, where the requirements are those for a medium power transformer with U_m = 36 kV.

NOTE 1 'Large power transformer' means a power transformer with a highest voltage for equipment exceeding 36 kV and a rated power equal to or higher than 5 kVA, or a rated power equal to or higher than 40 MVA regardless of the highest voltage for equipment. Large power transformers are in the scope of EN 50629.

NOTE 2 Transformers with tap changer (DETC or OLTC) are included in this European Standard even if they have separate tapping winding.

The object of this European Standard is to set up requirements related to electrical characteristics and design of medium power transformers.

The following transformers are excluded from this European Standard:

a) instrument transformers, specifically designed to supply measuring instruments, meters, relays and other similar apparatus;

b) transformers with low-voltage windings specifically designed for use with rectifiers to provide a DC supply;

c) transformers specifically designed to be directly connected to a furnace;

d) transformers specifically designed for offshore applications and floating offshore applications;

e) transformers specially designed for emergency installations;

f) transformers and auto-transformers specifically designed for railway feeding systems;

g) earthing or grounding transformers, this is, three-phase transformers intended to provide a neutral point for system grounding purposes;

h) traction transformers mounted on rolling stock, this is, transformers connected to an AC or DC contact line, directly or through a converter, used in fixed installations of railway applications;

i) starting transformers, specifically designed for starting three-phase induction motors so as to eliminate supply voltage dips;

j) testing transformers, specifically designed to be used in a circuit to produce a specific voltage or current for the purpose of testing electrical equipment;

k) welding transformers, specifically designed for use in arc welding equipment or resistance welding equipment;

l) transformers specifically designed for explosion-proof and underground mining applications;

m) transformers specifically designed for deep water (submerged) applications;

n) medium Voltage (MV) to Medium Voltage (MV) interface transformers up to 5 MVA;

o) large power transformers where it is demonstrated that for a particular application, technically feasible alternatives are not available to meet the minimum efficiency requirements set out by the commission regulation (EU) No 548/2014;

p) large power transformers which are like for like replacements in the same physical location/installation for existing large power transformers, where this replacement cannot be

achieved without entailing disproportionate costs associated to their transportation and/or installation.

In case one of the last two exclusions is claimed, this should be documented at the signature of the contract with a declaration made by the customer.

NOTE 3 This standard covers the transformers under the Commission Regulation (EU) No. 548/2014 and gives additional specific guidance for single phase transformers, multi winding transformers and for transformers with OF or OD cooling systems, necessary for the correct application of energy efficiency requirements to these categories of transformers.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50180, *Bushings above 1 kV up to 52 kV and from 250 A to 3,15 kA for liquid filled transformers – Part 1: General requirements for bushings*

EN 50181, *Plug-in type bushings above 1 kV up to 52 kV and from 250 A to 2,50 kA for equipment other than liquid filled transformers*

EN 50216 (all parts), *Power transformer and reactor fittings*

EN 50329, *Railway applications - Fixed installations - Traction transformers*

EN 50386, *Bushings up to 1 kV and from 250 A to 5 kA, for liquid filled transformers*

EN 50387, *Busbar bushings up to 1 kV and from 1,25 kA to 5 kA, for liquid filled transformers*

EN 50464-4, *Three-phase oil-immersed distribution transformers 50 Hz, from 50 kVA to 2 500 kVA with highest voltage for equipment not exceeding 36 kV - Part 4: Requirements and tests concerning pressurised corrugated tanks*

EN 60076-1:2011, *Power transformers - Part 1: General (IEC 60076-1:2011)*

EN 60076-6:2008, *Power transformers - Part 6: Reactors (IEC 60076-6:2007)*

EN 60076 (all parts), *Power transformers (IEC 60076, all parts)*

EN 60085, *Electrical insulation - Thermal evaluation and designation (IEC 60085)*

EN 60505, *Evaluation and qualification of electrical insulation systems (IEC 60505)*

EN 61100, *Classification of insulating liquids according to fire point and net calorific value (IEC 61100)*

EN 61378-1, *Convertor transformers - Part 1: Transformers for industrial applications (IEC 61378-1)*

EN 61869-1:2009, *Instrument transformers - Part 1: General requirements*

IEC/TR 60616, *Terminal and tapping markings for power transformers*