

**SLOVENSKI
STANDARD**

**SIST EN 60076-
1:1997/A12:2004**

februar 2004

Power transformers - Part 1: General - Amendment A12

**iTeh STANDARD PREVIEW
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[SIST EN 60076-1:1997/A12:2004](https://standards.iteh.ai/catalog/standards/sist/bdb0685e-ba14-4b45-8dbb-111ef0cfb07b/sist-en-60076-1-1997-a12-2004)
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ICS 29.180

Referenčna številka
SIST EN 60076-1:1997/A12:2004(en)

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EUROPEAN STANDARD

EN 60076-1/A12

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2002

ICS 29.180

English version

**Power transformers
Part 1: General**

Transformateurs de puissance
Partie 1: Généralités

Leistungstransformatoren
Teil 1: Allgemeines

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This amendment A12 modifies the European Standard EN 60076-1:1997; it was approved by CENELEC on 2002-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

SIST EN 60076-1:1997/A12:2004
<https://standards.iteh.ai/catalog/standards/sist/en-60076-1-1997-a12-2004>
111ef0cfb07b/sist-en-60076-1-1997-a12-2004

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

This amendment 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This amendment to the European Standard EN 60076-1:1997 was prepared by the Technical Committee CENELEC TC 14, Power transformers.

The text of the draft was submitted to the formal vote and was approved by CENELEC as amendment A12 to EN 60076-1:1997 on 2002-02-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-02-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2005-02-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annex ZB is informative.

Annex ZB has been added by CENELEC.

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The text of EN 60076-1:1997 + A1:2000 is modified as follows:

1.1 Scope

Add as second indent in the list of exclusions (end of first paragraph) the following:

- transformers having no windings with rated voltage U_n higher than 1 000 V;

Modify the second paragraph (When IEC ... or in part) into a NOTE.

Add a new annex:

Annex ZB (informative)

Installation and safety of a liquid immersed transformer

ZB.1 Manuals

Instruction manuals concerning installation requirements, transport requirements, erection, maintenance and operation should be given to the purchaser by the supplier, in particular for the supply of a prototype for a given purchaser. Unless otherwise specified in the contract, it is considered a good practice to transmit these manuals in advance, in order to enable the purchaser to check the correctness of the installation and the steps taken to organise transport and erection, if applicable.

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ZB.2 Installation <https://standards.iteh.ai/catalog/standards/sist/bdb0685e-ba14-4b45-8dbb-111ef0cfb07b/sist-en-60076-1-1997-a12-2004>

ZB.2.1 General

Safety in the transformer use can be considered from different points of view:

- a) **intrinsic safety** of the transformer in order to be free from dangerous events arising from internal failure;
- b) safety deriving from steps taken in the **installation precautions** against unavoidable events;
- c) limitation of consequences of **external events**.

National laws and regulations impose in several countries the steps to be taken to improve safety in b) and c) above.

HD 637 S1 and national standards specify installation requirements to be observed.

NOTE National laws and regulations prevail on the contents of this informative annex.

The following subclauses give some examples on the steps to be taken both by the supplier and the purchaser to assure an acceptable degree of safety.

ZB.2.2 Intrinsic safety

The fulfilment of the requirements contained in this standard series gives the necessary reliability against dangerous failures inside the transformer. For the insulation liquid the applicable standards issued by IEC/TC 10 assist, with the exception of IEC 60599. For main fittings the relevant standards are applicable. Manufacturer's instruction on loading capability should be followed and loading guides are available in national standards.

The following particular points may be applicable:

- insulation levels and tests;
- maximum heat generation resulting from the guaranteed losses;
- maximum temperature in service;
- systematic maintenance of the transformer, its accessories and protection. The manual should address these points;
- the manual should give guidance on condition based maintenance.

ZB.2.3 Installation precautions

Installation precautions are given in national laws and regulations, in national standards and in HD 637 S1.

Installation designers should consider the following, non exhaustive, list of points:

- the cooling system should be sufficient to keep the temperature of the ambient air and cooling medium below the specified maximum limits;
- adequate protection against transient overvoltages;
- the short circuit protection and inherent withstand capability of the transformer (see part 5 of this standard);
- other protection on the transformer (gas actuated relay, contacts on temperature indicating devices, etc.) and in the installation (relays, fuses, etc.);
- risk and consequences of and precaution against fire with origin in the transformer itself or origin at other place;
- the generation of gases;
- liquid retention means;
- restricted access to avoid contact with live parts or hot parts and to limit the presence of persons in the case of failure;
- control of the noise emission outside the installation according to applicable rules, if any;
- for busbars, control of the emission of the magnetic field may be necessary.