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Part 11:
Dry-type transformers
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Annex A (informative) Installation and safety of dry-type transformers
INTERNATIONAL ELECTROTECHNICAL COMMISSION

POWER TRANSFORMERS –

Part 11: Dry-type transformers

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

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International Standard IEC 60076-11 has been prepared by IEC technical committee 14: Power transformers.

This standard cancels and replaces IEC 60726 (1982) and its amendment 1 (1986).

The text of this standard is based on the following documents:

<table>
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<th>FDIS</th>
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Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.
IEC 60076 consists of the following parts, under the general title *Power transformers:*

Part 1: General
Part 2: Temperature rise
Part 3: Insulation levels, dielectric tests and external clearances in air
Part 4: Guide to lightning impulse and switching impulse testing – Power transformers and reactors
Part 5: Ability to withstand short-circuit
Part 6: Reactors ¹
Part 7: Loading guide for oil-immersed power transformers ¹
Part 8: Application guide
Part 10: Determination of sound levels
Part 10-1: Determination of transformer and reactor sound levels – User guide ¹
Part 11: Dry-type transformers
Part 12: Loading guide for dry-type power transformers ¹
Part 13: Self protected liquid filled transformers ¹
Part 14: Guide for the design and application of liquid-immersed power transformers using high-temperature insulation materials ¹
Part 15: Gas-filled-type power transformers ¹

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

¹ Under consideration.
POWER TRANSFORMERS –
Part 11: Dry-type transformers

1 Scope

This part of IEC 60076 applies to dry-type power transformers (including auto-transformers) having values of highest voltage for equipment up to and including 36 kV and at least one winding operating at greater than 1,1 kV. The standard applies to all construction technologies.

This standard does not apply to:

- gas-filled dry type transformers where the gas is not air;
- single-phase transformers rated at less than 5 kVA;
- polyphase transformers rated at less than 15 kVA;
- instrument transformers (see IEC 60044 and IEC 60186);
- starting transformers;
- testing transformers;
- traction transformers mounted on rolling stock;
- flameproof and mining transformers;
- welding transformers;
- voltage regulating transformers;
- small power transformers in which safety is a special consideration.

Where IEC standards do not exist for the transformers mentioned above or for other special transformers, this standard may be applicable as a whole or in parts.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60050 (all parts), *International electrotechnical vocabulary (IEV)*

IEC 60071 (all parts), *Insulation co-ordination*


IEC 60076-2, *Power transformers – Part 2: Temperature rise*

IEC 60076-3, *Power transformers – Part 3: Insulation levels, dielectric tests and external clearances in air*
3 Terms and definitions

For the purpose of this part of IEC 60076, the following terms and definitions apply.

3.1 dry-type transformer
transformer of which the magnetic circuit and windings are not immersed in an insulating liquid

3.2 totally enclosed dry-type transformer
transformer in an un-pressurised enclosure cooled by the circulation of the internal air

3.3 enclosed dry-type transformer
transformer in a ventilated enclosure cooled by the circulation of the external air

3.4 non-enclosed dry-type transformer
transformer supplied without a protective enclosure cooled by natural or forced air ventilation

4 Service conditions

4.1 General
The requirements of IEC 60076-1 apply to dry-type transformers only in so far as they are referred to in this standard.

4.2 Normal service conditions

4.2.1 General
Unless otherwise stated, the service conditions in 4.2.2 to 4.2.6 apply. When transformers are required to operate outside the normal service conditions, de-rating in accordance with 11.2 and/or 11.3 applies.