Australian Standard™

Power transformers

Part 1.2: Minimum Energy Performance Standard (MEPS) requirements for distribution transformers

This Australian Standard was prepared by Committee EL-008, Power Transformers. It was approved on behalf of the Council of Standards Australia on 14 February 2003. This Standard was published on 3 March 2003.

The following are represented on Committee EL-008:

Australasian Railway Association
Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturers Association
Australian Greenhouse Office
Australian Institute of Petroleum
Electricity Supply Association of Australia
Institution of Engineers Australia
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PREFACE

This Standard was prepared by the Standards Australia Committee EL-008, Power Transformers.

This Standard incorporates Amendment No. 1 (August 2005). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to provide industry in general, and manufacturers and suppliers of transformers specifically, with Minimum Energy Performance Standard (MEPS) requirements and high power efficiency levels, for oil-immersed and dry-type distribution transformers with power ratings from 10 kVA to 2500 kVA intended to be used on 11 kV and 22 kV networks. The intention of MEPS is to increase energy efficiency by eliminating low efficiency transformers from the market and to encourage the use of high efficiency transformers.

The minimum power efficiency levels specified in this Standard are in accordance with world best practice at the time of publication. The intention is that these levels will remain in place for a minimum of four years and will be reviewed in accordance with international trends. High power efficiency levels are also included as a guide to future MEPS levels. Transformers which meet the high power efficiency levels may be advertised as 'high efficiency'.

This Standard is published with the approval of the combined State and Territory regulatory authorities responsible for energy efficiency regulation and is structured to be suitable for reference in legislation calling up Minimum Energy Performance Standards. It is anticipated that regulatory authorities will give mandatory effect to this Standard in law.

In 2003, Government officials and industry agreed that MEPS will not take effect earlier than 1 April 2004. Because legislation referencing this Standard has to be introduced by States and Territories individually, interested persons should contact the relevant regulatory authority to ascertain the date that MEPS for these products applies in that jurisdiction. Contact details for these regulatory authorities are available from www.energyrating.gov.au.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This standard applies to dry-type and oil-immersed type, three-phase and single-phase power transformers with power ratings from 10 kVA to 2500 kVA and system highest voltage up to 24 kV. This standard does not apply to certain categories of special transformers such as—

(a) transformers other than those on 11 or 22 kv networks;

(b) instrument transformers;

(c) auto transformers;

(d) traction transformers mounted on rolling stock;

(e) starting transformers;

(f) testing transformers;

(g) welding transformers;

(h) three phase transformers with three or more windings per phase;

(i) arc-furnace transformers;

(j) earthing transformers;

(k) rectifier or converter transformers;

(l) uninterruptible power supply (ups) transformers;

(m) transformers with an impedance less than 3% or more than 8%;

(n) voltage regulating transformers;

(o) transformers designed for frequencies other than 50 hertz;

(p) gas-filled dry-type transformers; or

(q) flameproof transformers.

1.2 OBJECTIVE

The objective of this Standard is to permit the calculation of transformer efficiency, and to specify the permissible minimum power efficiency of distribution transformers under certain defined load conditions. This Standard is intended to be used as an instrument for regulation by State and Territory authorities of the Commonwealth of Australia responsible for energy efficiency regulation.

NOTE: In addition to the requirements of this Standard, consideration may also be given to the loss capitalization or total cost of ownership of a transformer. An example illustrating this principle is given in Appendix B.

